LEGISLATIVE COUNCIL SELECT COMMITTEE INQUIRY INTO ROAD SAFETY IN TASMANIA

SUBMISSION ON BEHALF OF THE TASMANIAN GOVERNMENT AND THE ROAD SAFETY ADVISORY COUNCIL

Background

In Tasmania, around 300 people are seriously injured (meaning they spent 24 hours or more in hospital) or killed on our roads each year.

The Government has a long-term vision of zero serious injuries and deaths on Tasmanian roads and is committed to working towards this target.

The *Towards Zero – Tasmanian Road Safety Strategy 2017-2026* is a 10-year strategy aimed at improving road safety in Tasmania, with a shorter-term target of fewer than 200 deaths and serious injuries per year by 2026.

Significant progress has been made in reducing road trauma on Tasmanian roads in the last 50 years. The implementation of evidence-based road safety measures over that period saw the annual fatalities and serious injuries fall from approximately 1,300 to the current rates of around 300, despite a five-fold increase in the number of registered vehicles in that time. A graph setting out the reduction in fatalities on Tasmanian roads since 1960, together with the implementation of key road safety initiatives, is attached to this submission (Attachment 1). Nevertheless, these reductions have stalled. On current trends, Tasmania will not achieve the 2026 road safety target of fewer than 200 serious injuries and deaths.

As of 19 August 2021, there have been 23 fatalities and 174 serious injuries, compared to 23 fatalities and 175 serious injuries at the same time in 2020. This year-to-date serious casualty figure (being a combination of serious injuries and fatalities) of 197 is 4.1 per cent higher than the five-year average (2016-2020).

Road Safety Governance in Tasmania

Tasmania has a mature governance structure for road safety.

The Road Safety Advisory Council (RSAC) was established in 2010 to provide leadership in developing the Government's road safety policy agenda and strategic alignment through recommendations on strategies and action plans. RSAC provided direction on the development of the strategic plan, monitors and provides advice and recommendations on initiatives, public education campaigns, enforcement and programs that will reduce serious injuries and deaths on Tasmanian roads.

RSAC makes recommendations to the Minister for Infrastructure and Transport and oversees expenditure of the Road Safety Levy and other funds available for the purpose of improving road safety.

RSAC comprises key stakeholders with the authority and responsibility for road safety in their organisations. Membership includes an independent Chair, an independent road safety expert, and representatives of Tasmania police, the Motor Accidents Insurance Board, the Department of State Growth, the Local Government Association of Tasmania, Royal Automobile Club of Tasmania, Tasmanian Bicycle Council, Tasmanian Motorcycle Council, and the Tasmanian Transport Association.

Tasmanian Road Safety Strategies and Action Plans

Tasmanian Road Safety Strategy 2007-2016

The first strategy was the *Tasmanian Road Safety Strategy 2007-2016* (TRSS). The TRSS was evidence based. It drew on a combination of expert analysis of 10 years of Tasmanian crash data, international research and incorporated the most successful approaches from around the world, proven to reduce road trauma.

This Strategy had four key Strategic Directions:

- Safer Travel Speeds
- Best Practice Infrastructure
- Increased Safety for Young Road Users
- Increase Vehicle Safety.

Towards Zero - Tasmanian Road Safety Strategy 2017-2026

The Government launched the *Towards Zero – Tasmanian Road Safety Strategy 2017-2026* (the Strategy) in December 2016 (Attachment 2).

Extensive community and stakeholder consultation and independent research and modelling informed the development of the Towards Zero Strategy at every stage.

Research

The Centre for Automotive Safety Research (CASR) gathered data on our crash statistics, road environment, treatment costs, our commitment to invest and many other factors that have an effect on the Towards Zero Strategy.

Secondly, CASR reviewed the performance of the TRSS to determine what measures were successful and priorities for improvement.

Thirdly, CASR developed a method for modelling fatal and serious road injuries in Tasmania. This modelling involved using road transport data (including crash data, traffic growth and the impact of previous road safety changes) from past years to predict the number of serious casualties in future years. The effects of possible future changes were also modelled to determine their possible effect on the number of serious casualties.

Lastly, CASR identified and discussed a range of potential countermeasures which could decrease serious casualties and move Tasmania's road network further towards Safe System performance. Targets for the Towards Zero Strategy were proposed and best-practice options recommended. The report produced by CASR is set out as Attachment 3.

Consultation

The first stage of stakeholder and community consultation saw 22 separate forums take place across Tasmania from October 2015 to December 2015.

Initially, 13 internal government stakeholder forums were held with relevant sections of the Department of State Growth, external Tasmanian Government agencies and Members of Parliament. A total of approximately 125 people attended these sessions.

Following the internal forums, four separate regional stakeholder forums were conducted in Hobart, Burnie, Smithton and Launceston, with approximately 60 stakeholders attending. To achieve the best possible outcomes at these forums, all key stakeholders were contacted prior and provided with information to assist them to consult within their organisations about road safety issues.

Five regional public forums were also conducted in Hobart, Queenstown, Burnie, Launceston and St Helens, with approximately 70 people attending. Due to attendance numbers, the forums in Queenstown and St Helens were combined stakeholder and public forums. Advertising to promote the forums took place across various media platforms (including print media, television and radio).

There was a high level of discussion at all forums and various road safety issues were raised and debated. Collectively, approximately 250 people attended all forums to have their say on what they believed should be included in the Towards Zero Strategy.

Additionally, a total of 370 people completed an online survey which was created to gather community views on the development of the Towards Zero Strategy. This option was primarily provided for people who were unable to attend a forum, however, forum participants were still encouraged to complete the survey. The survey consisted of 44 questions and was open from 8 October to 31 December 2015.

In addition to the forums and survey, community members and stakeholders were also invited to put forward a written submission if they wished. A total of 17 submissions were received, many of which were thoroughly researched and highly detailed. The Stakeholder and Public Consultation Report is set out as Attachment 4.

Discussion Paper and further consultation

A discussion paper based on the results of independent research and community views from phase 1 (as discussed above) was developed and released (Attachment 5).

Subsequent consultation of the discussion paper occurred with the community and stakeholders. This included consultation with service and special interest groups, regional community forums, on-line surveys, independent random community attitude surveys and feedback to those who had provided submissions.

The Strategy and first Action Plan was then developed under the auspices of RSAC.

The Strategy continues to be based on the best-practice Safe System approach to road safety.

This approach recognises that people make mistakes, that our bodies are fragile, and that we need to create a more forgiving road system.

There are four elements to the Safe System – encouraging safer road use through education, regulation and enforcement; safer roads through designing and maintaining roads to reduce the risk and severity of crashes; safer speeds that are more appropriate to the safety features of individual roads; and safer vehicles that protect occupants, reduce the likelihood of a crash and simplify the driving task. The Safe System requires all four elements to work together to prevent crashes.

To work towards a Safe System and achieve the long-term vision of zero serious injuries and deaths on Tasmanian roads, the Strategy has an interim target of reducing the number of serious injuries and deaths each year to fewer than 200 by 2026. There are 13 key directions under the Strategy, grouped under the four Safe System pillars.

The Action Plan 2017-2019 (the first of three action plans under the Strategy) (Attachment 6), expired at the end of 2019.

The Towards Zero Action Plan 2020-2024

The current *Towards Zero Action Plan 2020-2024* (Action Plan) details the Tasmanian Government's commitment of more than $75 million in road safety over the five-year life of the Action Plan. This complements the Tasmanian and Australian Governments' investment of $1.5 billion on major state road construction projects to improve efficiency and safety on Tasmania's roads during the life of the Action Plan. The Action Plan is set out at Attachment 7.

The Action Plan targets our highest risk road safety areas, deliberately focusing on those initiatives that will gain the greatest reductions in serious injuries and deaths.

The selection of initiatives and programs was informed by extensive community engagement, stakeholder consultations, and independent research and modelling.

The Action Plan utilises a thematic approach that succinctly communicates the priority road safety areas that the Government will focus on over the next five years. The key themes are:

- Making our rural roads safer
- Improving safety in our towns and cities

- Saving young lives
- Encouraging safer road use
- Making visitors safer, and
- Improving safety through vehicles and technology.

The Action Plan contains 42 specific measures to help bring down the road toll. The Action Plan is progressively delivering proven road safety initiatives within available Road Safety Levy funding.

In the Tasmanian context, improved infrastructure, lower default speed limits and increased levels of automated enforcement are the leading evidence-based approaches to reducing road trauma. $20 million of Road Safety Levy funding over five years has been allocated to road safety infrastructure projects on rural roads where 60 per cent of fatalities occur.

Cost effective, mass action infrastructure treatments such as shoulder sealing, pavement markings, curve warnings, roadside hazard removal and safety barriers reduce the risk of run-off road and head-on crashes on high-speed rural roads. These treatments are progressively being rolled out.

$31 million of Road Safety Levy funding over five years is also allocated to improving safety in our towns and cities where one in four serious casualties are pedestrians and cyclists. This includes infrastructure upgrades to separate vehicles from vulnerable road users, funded under initiatives such as the Vulnerable Road User Program, which provides local governments with funding for small-scale infrastructure treatments to improve road safety for vulnerable road users. The program provided funding for 68 projects during the 2020-21 financial year, supporting installation of pedestrian crossing infrastructure and shared use paths to separate cyclists and pedestrians from vehicle traffic.

Amendments to the Graduated Licensing System introduced on 1 December 2020 mean that Tasmania now meets the enhanced model under the Australian Graduated Licensing Scheme Policy Framework.

The current project to enhance automated speed enforcement is the highest priority project for RSAC and is well underway, with a view to launching new mobile speed camera devices by the end of this year.

Funding

RSAC and Tasmania's road safety strategies are primarily funded by the Road Safety Levy. Additional funding is provided by the Motor Accidents Insurance Board and reviewed on a triennial basis. Around $4 million per annum (MAIB funding) is spent on public education campaigns and enforcement aimed at reducing high risk behaviours. This funding is managed by the Education and Enforcement Sub Committee, a sub-committee of RSAC and Tasmania Police.

Road Safety Levy

The Road Safety Levy was introduced in December 2007 as a funding source for the purposes of improving road safety in accordance with Tasmania's road safety strategies. The Levy is payable on the registration of all vehicles that have broad access to the road network. The Levy was initially set at $20 per annum (concession $12) before it was increased in 2011 to $25 per annum (concession $15) and extended to November 2017.

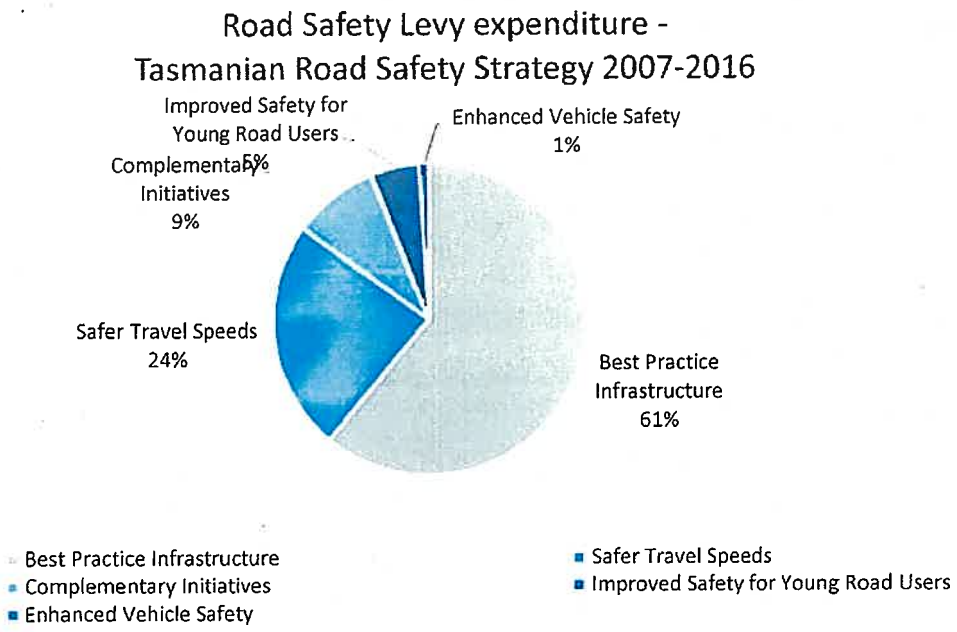
In 2016, to coincide with the launch and life of the Towards Zero Strategy, the Levy was extended to 30 June 2027 and from 1 July 2017 was indexed by an amount relevant to Hobart CPI, with payments prescribed in Fee Units.

The Levy raises around $14 million per annum. Quarterly progress reports detailing progress under the Strategy and expenditure of the Levy are provided to RSAC and the Minister and published on the RSAC website.

Expenditure of the Levy

Throughout the first strategy nearly two thirds of Levy funds were allocated to high return infrastructure safety improvement projects. The remaining allocation funded a range of policy-based initiatives, community and school programs, grants programs, public education, campaigns and support to RSAC. Chart 1 provides an overview of the expenditure profile from the first strategy.

Chart 1 - Road Safety Levy expenditure - Under the *Tasmanian Road Safety Strategy 2007-2016*

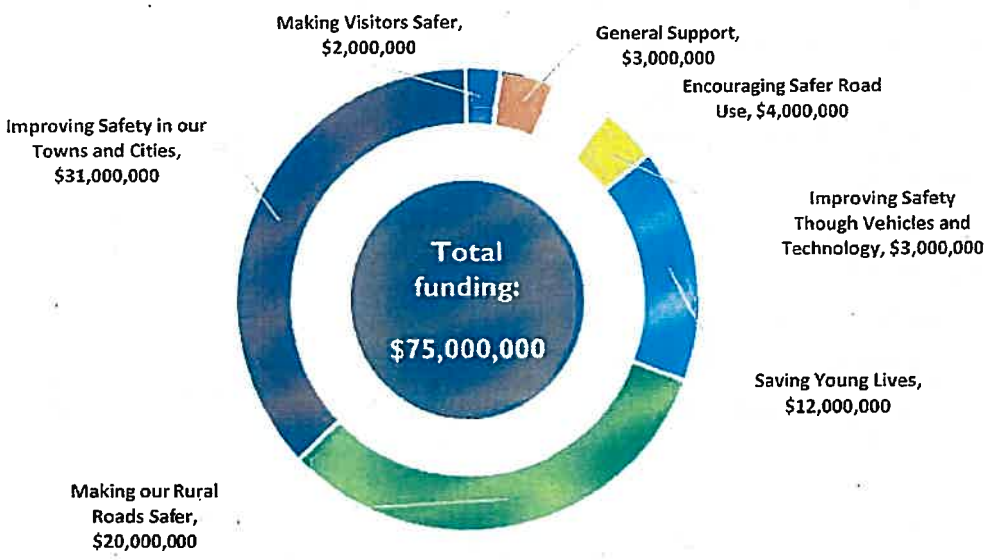


The Towards Zero Strategy utilises the Safe System approach to road safety with expenditure categorised by the four 'pillars' (Safe Roads and Roadsides, Safe Vehicles, Safe Speeds and Safe Road Users). Under the Towards Zero Strategy the majority of funding (over 75 per cent) has been allocated to high return infrastructure safety improvement projects.

A similar allocation of remaining funds exists with the funding delivered to a range of policy-based initiatives, community and school programs, grants programs, campaigns and support to the RSAC.

Chart 2 provides an overview of the expenditure profile under the current Action Plan, broken down by theme.

Chart 2 - Road Safety Levy expenditure - Under the *Towards Zero Action Plan 2020-2024*



Infrastructure projects

Infrastructure can produce long lasting road safety benefits and help reduce the likelihood of crashes and the severity of crashes should they occur. Whilst the Tasmanian and Australian Governments are investing heavily on our major state roads, the Levy can be used to improve lower volume roads that would not otherwise attract funding. In addition, the Levy provides funding to trial innovative technologies on our road network.

Some infrastructure projects funded from the Levy include:

- electronic speed limit signs at schools (more than 600 around the State)
- the Vulnerable Road User Program - a grants program for local government to install infrastructure that reduces conflict between vehicles and pedestrians and cyclists
- flexible safety barrier on the Bass and Midland Hwy
- enhanced delineation, including audio tactile line marking, reflective pavement markers, speed and curve warning signage
- weather-based warning signage
- cyclist warning signage on popular cycling routes
- fixed speed cameras
- motorcycle safety treatments, such as rubrail, collapsible CAMS, warning signage, on gateways to the Tasman Hwy, the Great Eastern Drive and Sheffield area
- shoulder sealing on lower priority State roads
- line marking on local government roads.

Policy and projects, rules and regulation, community and education programs, public education campaigns

A quarter of Levy funding and $1.4 million MAIB funding has contributed to a range of policy changes, changes to regulations, community and school education, public education and tourist education campaigns aimed at reducing serious injuries and deaths on our roads. The 'fatal five' high risk behaviours are targeted through our campaign funding. In addition, campaigns are also developed to support changes to the law and on the introduction of new road safety measures.

Rules and regulations

Some examples of rules and regulation changes funded by the Levy include:

- Introduction of safe passing distances for cyclists
- Introduction of lane filtering rules
- Introduction of 40km/h speed limits around emergency vehicles.

Policy and projects

Some examples of policy and projects funded by the Levy include:

- Review of Tasmania's Graduated Licensing System
- Support of the Mandatory Alcohol Interlock Program
- Support to ANCAP and MotoCAP
- Community Road Safety Grants - program of low-cost community centric road safety initiatives

Campaigns

Some examples of campaigns funded by the MAIB funding include:

- Speed shatters lives
- Real Mates don't let mates drink drive
- 'Vet' - Drinking. Driving. They're better apart
- Don't drive blind. Leave your phone alone
- What sort of driver are you raising?

Some examples of campaigns for policy and law changes funded by the Levy include:

- Quality Time - to support learner drivers gaining more experience
- Distance makes the difference - allowing 1.5m to pass cyclists
- Love 40 - safe speeds around schools and school buses
- See Red and Blue know what to do - supports the introduction of 40km/h speed limits around emergency vehicles.

Public and school education

Some examples of education activities funded by the Levy include:

- the Learner Driver Mentor Program - assisting disadvantaged to gain a licence by providing mentors and cars to log hours on the road
- the Rotary Youth Driver Awareness Program (RYDA) - road safety education program for grade 10-12 students
- the Driving for Jobs Program - supports disadvantaged grade 11-12 students to progress through the Graduated Licensing System and reduce barriers to employment opportunities
- the RACT and Bicycle Network education programs.

Tourist education

Tourist education is delivered through initiatives of the Levy funded Tourist Road Safety Strategy.

The Tourist Road Safety Strategy has been developed to educate visiting drivers and new Tasmanians about road safety in Tasmania, including the different driving conditions prevalent on our roads.

Activity is focused on key gateway entry points to Tasmania including airports and the Spirit of Tasmania but is also reinforced through rental vehicles, key tourism locations and the RSAC webpage.

Visiting drivers include international tourists, touring motorcyclists and people new to Tasmania.

Compliance and enforcement efforts

Traffic policing is a major focus for Tasmania Police, being one of four output groups for the service (the others being public safety, crime, and emergency management). Traffic policing is undertaken not only by the service's Road and Public Order Services teams, but by all operational police, and particularly by frontline uniform officers stationed throughout the state.

Tasmania Police aims, through its traffic law enforcement, to change driver behaviour to achieve safer road users. This includes immediate intervention to offending and through general deterrence, where traffic policing activities increase the perception among drivers that they will be caught for doing the wrong thing.

To achieve the greatest road safety benefits, Tasmania Police focuses its efforts on the fatal five causes of road casualties: speeding; drink- and drug-driving; failure to wear a seat belt; inattention

(particularly related to mobile phones); and fatigue. In addition, significant investment is made to apprehend drivers who evade police or otherwise engage in negligent, reckless, or dangerous driving.

To ensure these aims are met, operational performance targets are set for each policing district, setting targets for alcohol and drug tests conducted, and for the apprehension of speeding offenders, drink- and drug-driving offenders, and high-risk traffic offenders. This last category includes:

- speeding by more than 15km/h
- drink- and drug-driving related offences
- failure to wear a seatbelt
- mobile phone use
- offences relating to negligent, reckless, and dangerous driving.

To achieve these targets, Tasmania Police has a range of equipment to support operational police in detecting and prosecuting offences, most notably a variety of speed detection equipment and alcohol and drug testing devices. These are further bolstered by fixed speed cameras deployed around the state and laboratory alcohol and drug testing provided by the Forensic Science Service Tasmania.

Supporting these enforcement efforts to change driver behaviour, Tasmania Police engages in regular public education campaigns, often in partnership with the Road Safety Advisory Council. In recent years, social media has been a significant focus of such campaigns, with Tasmania Police having 218,000 followers on Facebook and 39,000 on Instagram.

Tasmania in the national context

Nationally, Tasmania has the second highest number of deaths per 100,000 population, noting that Victoria is the best performing state in Australia.

There are no silver bullets in road safety. There are, however, proven initiatives that we know work.

Research, data analysis and modelling have identified the most effective road safety countermeasures for reducing serious injuries and deaths on Tasmanian roads. These proven initiatives are being progressively delivered and will see future reductions in the road toll. Whilst the benefits are recognised, infrastructure takes time to deliver, and it therefore takes time to realise the road safety benefits.

As an example, the installation of median and roadside barriers on high speed and high-volume roads offers the greatest opportunity to prevent or reduce the severity of run-off road and head-on crashes. Between 2018 and the end of 2020, more than 250 repairs to flexible safety barrier posts along the Midland Highway were carried out. Most, if not all, of the damage to the posts was caused by a vehicle hitting the barrier. Each hit is a potential life saver.

Flexible safety barriers have now been installed on approximately 272 kilometres of Tasmania's state road network. A total of 103 kilometres of the Midland Highway upgrade has been completed, and barriers have been installed on all high-speed sections. Barriers have been installed on a total of 89 kilometres of the Bass Highway, and an estimated 100 kilometres of flexible safety barrier will be installed as part of planned upgrades to Tasmania's major highways (the Category One road network).

The Commonwealth Office of Road Safety recently finalised the new *National Road Safety Strategy 2021-30* (National Strategy), which Ministers supported at the last Infrastructure and Transport Ministers' Meeting on Friday, 28 May 2021. The Strategy is expected to be publicly launched in the coming months, subject to jurisdictions obtaining Cabinet approval of the National Strategy. The draft National Strategy is set out at Attachment 8.

RSAC has agreed that the Action Plan would be reviewed in 2022, half-way through its five-year life. This will ensure it aligns with the National Strategy.

Jeremy Rockliff MP

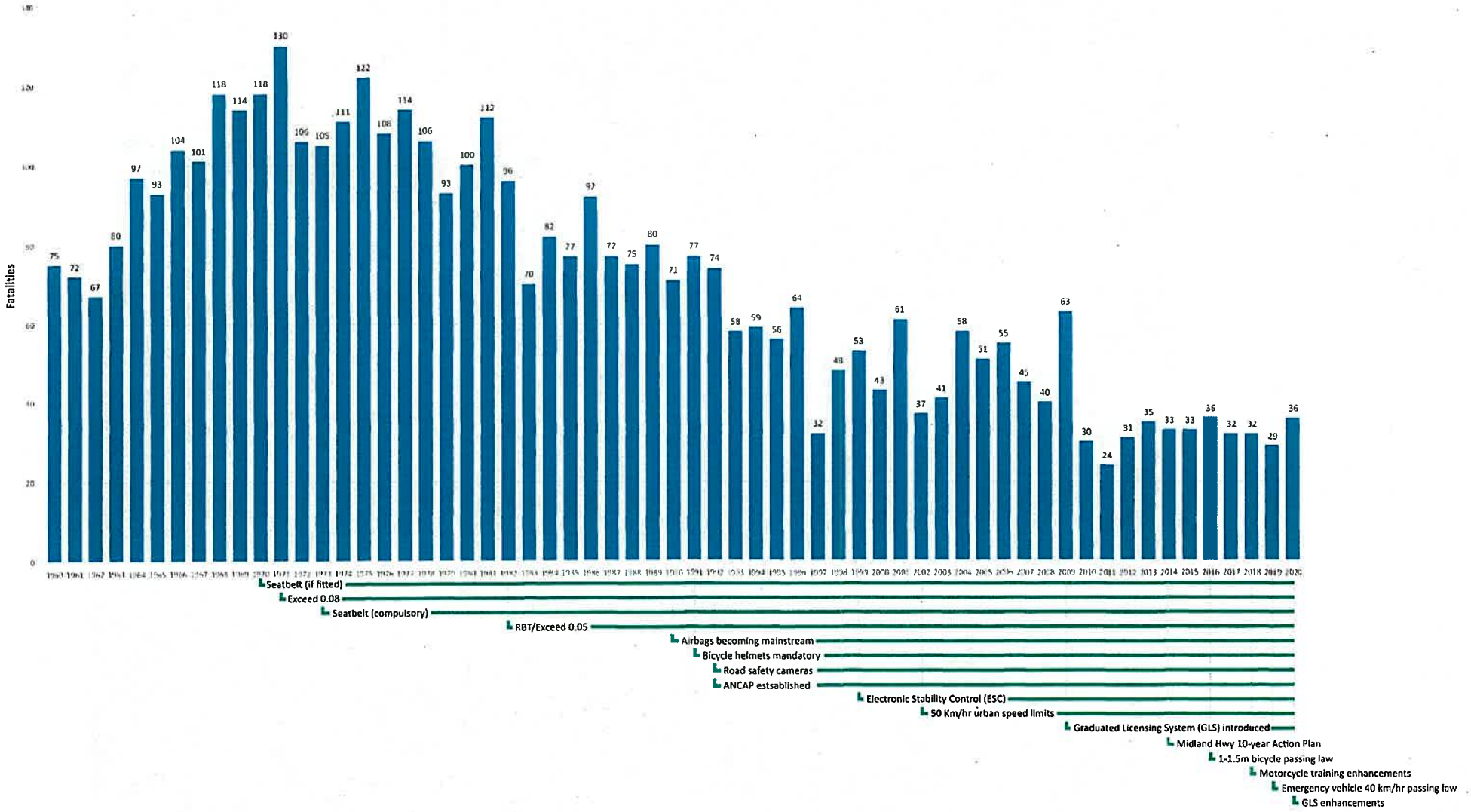
Acting Premier

Date: 2/9/21

ATTACHMENTS:

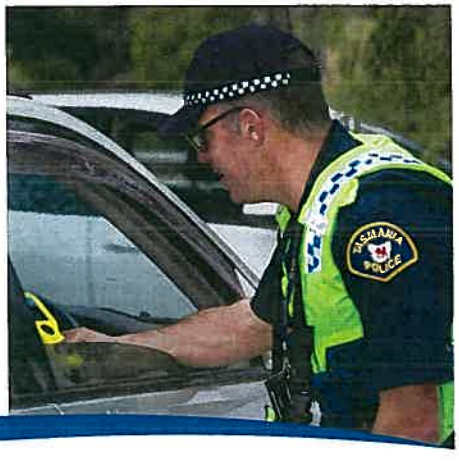
1. Tasmanian Road Crash Fatalities and Key Road Safety Measures
2. Tasmanian Road Safety Strategy 2017-2026
3. Centre for Automotive Safety Research Report – Analysis and modelling of crashes in Tasmania
4. Stakeholder and Public Consultation Report – Towards Zero Strategy 2017-2026
5. Towards Zero Discussion Paper
6. Towards Zero Action Plan 2017-2019
7. Towards Zero Action Plan 2020-2024
8. Draft National Road Safety Strategy 2021-30

Attachment 1 – Tasmanian Road Crash Fatalities and Key Road Safety Measures



Fewer than 200 serious injuries and deaths on our roads by 2026

Towards Zero
Tasmanian Road Safety Strategy 2017-2026



Tasmanian Government

Department of State Growth

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Photo credits
Images courtesy of ANCAP and the Tasmanian Government.

Minister's foreword

As Minister responsible for safety on Tasmanian roads, I am fully committed to working towards a reality where no one is seriously injured or killed as a result of a crash. We are a long way from this reality but I strongly believe that this *Towards Zero – Tasmanian Road Safety Strategy 2017-2026* (Towards Zero Strategy) will help to make significant progress.

Over the past 15 years we have seen a steady reduction in the number of serious injuries and deaths on our roads. However, the numbers have recently started to plateau and we still see around 300 people being seriously injured or losing their lives on our roads each year. Sadly, I believe Tasmanians have become far too accepting of serious injuries and death on our roads. So, to keep reducing road trauma, we need to strive for better road safety outcomes together.

Our Towards Zero Strategy has set a short-term, ambitious target of reducing the number of annual serious injuries and fatalities on Tasmania's roads to fewer than 200 by the year 2026. To achieve this goal and to keep moving towards our ultimate vision of zero, we need to continue to adopt the 'Safe System' approach to road safety. This approach recognises that people make mistakes and considers how the whole road system can be made more forgiving, so mistakes don't cost lives. We will continue, of course, to do everything in our power to prevent illegal and negligent road user behaviour.

The Strategy outlines a set of new key directions to improve the safety of Tasmania's roads, vehicles, speeds and road users. By considering Tasmania's crash problem, technology advancements and community feedback, I believe we have created a Strategy that is well informed, has considerable community input and is up to the challenge of preventing serious injuries and saving lives. Over the life of this Strategy, a number of Action Plans will be developed and best practice road safety initiatives implemented to deliver these results.

The Strategy and Action Plan targets our highest risk areas and deliberately focuses on those initiatives that will gain the greatest reductions in serious injuries and deaths. The Government will also continue to undertake a broader range of road safety initiatives for vulnerable road users such as tourists, cyclists and pedestrians. These are outlined in our *Road Safety Work Program 2017-2019*. Importantly, during the life of the Strategy, our initiatives will be revised and improved to address emerging issues. Education and enforcement will remain at the core of our Strategy.

I would like to take this opportunity to thank the Road Safety Advisory Council (RSAC) for its key role in engaging the community in the development of this Strategy and in helping us to achieve long-term changes in our attitude towards road safety.

Road safety is everyone's responsibility.

The Government will take the lead in implementing initiatives to improve our roads, vehicles and enforcement efforts to create a more forgiving road system. It will be the support of Tasmanian road users through safer driver behaviour that will ultimately drive real change and help us to achieve our goal. Together we can create a safer road system and work 'towards zero' serious injuries and deaths on Tasmanian roads.

Hon Rene Hidding MP
Minister for Infrastructure

Message from the Chair of the Tasmanian Road Safety Advisory Council

We don't like using the phrase 'road toll' because it implies that a life is a commodity which we are willing to trade in order to use our roads. To monitor our progress, we use statistics, but referring to those who have been seriously injured or killed as a number removes us from the reality of road trauma. One of those numbers may be somebody you know or love.

Some argue that the price of mobility is unavoidable. We think not.

Tasmania has made significant progress in reducing the number of serious injuries and deaths on our roads under the *Tasmanian Road Safety Strategy 2007-2016*. As a small state with limited funding, we have taken a strategic and targeted approach that focuses on high return initiatives. We have installed best practice infrastructure at various locations, introduced alcohol interlocks, installed electronic speed signs at schools, provided information on how to maintain a safe vehicle and implemented numerous road safety campaigns to benefit cyclists, tourists and motorcyclists.

We need to continue this important work.

The RSAC has taken a lead role in developing the Towards Zero Strategy. Hearing how the community believes road safety can be improved was central to the development of the Strategy, with around 2 500 people participating in a two-staged consultation process. The response was fantastic as it allowed us to hear community and stakeholder concerns first-hand and understand which road safety initiatives you support. Issues such as driver inattention, education, speed limits and safer vehicles were raised, as well as issues surrounding safety for young drivers and vulnerable road users.

Understanding why crashes happen and identifying best-practice countermeasures have also been an important part of developing the Strategy. We engaged the Centre for Automotive Safety Research (CASR) to undertake extensive analysis and research on Tasmania's road environment and provide us with recommendations that, if implemented, will help us to reduce serious injuries and save lives on our roads.

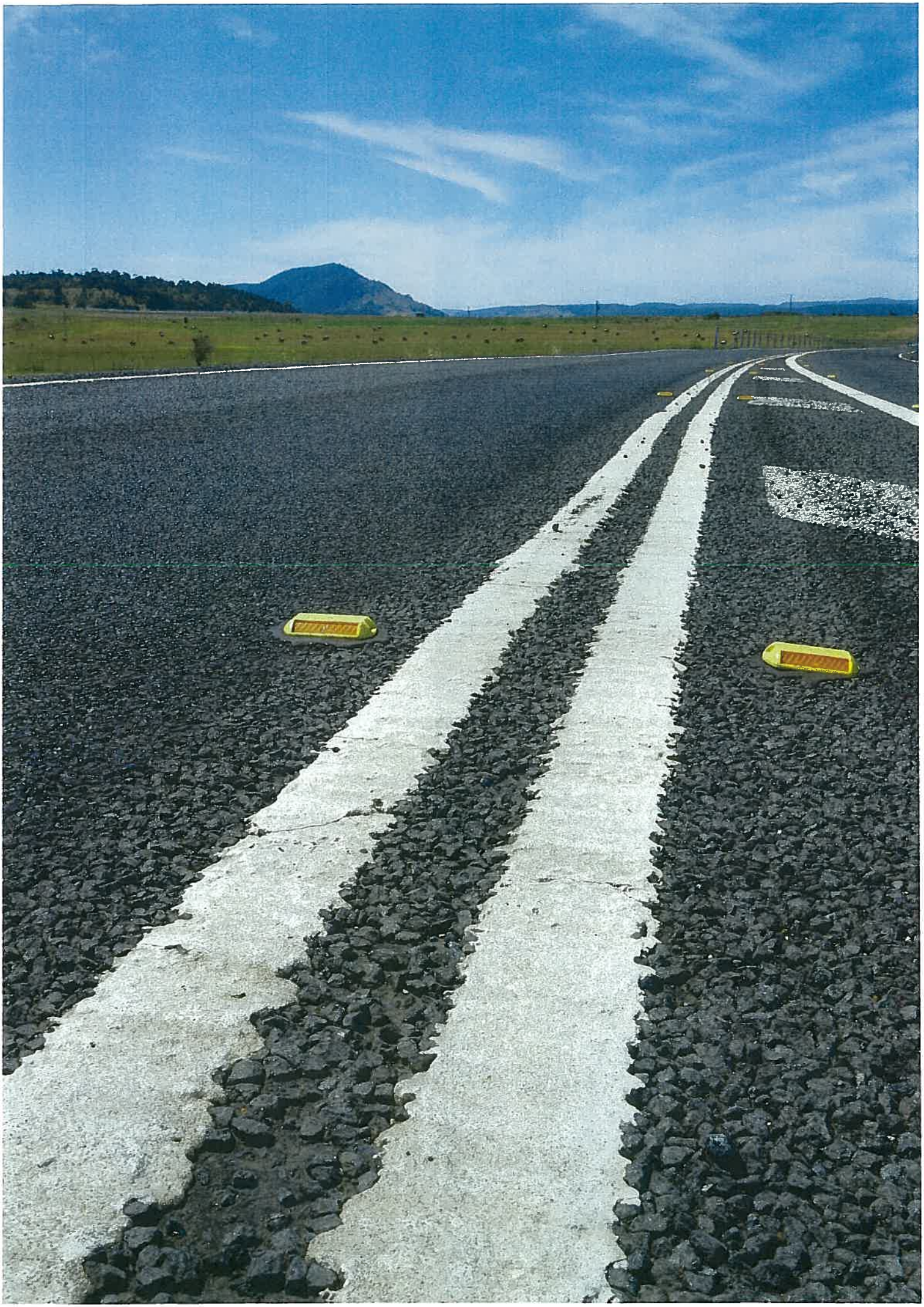
With new challenges upon us, it is necessary that we keep being innovative and strive for best practice.

I believe we can make significant progress if we are successful in getting our next generation of road users to understand and embrace their role within a Safe System.

We all have our part to play in the success of the new Strategy – this includes road designers, vehicle manufacturers, policy makers and most importantly, road users. Every life is precious and, as Chair of the RSAC, I am committed to continuing to engage with the Tasmanian community to improve road safety and save lives.

Jim Cox,
Chair, Road Safety Advisory Council

ROAD SAFETY ADVISORY COUNCIL
TOWARDS ZERO



Snapshot

Thirteen key directions support the Towards Zero Strategy. The Strategy will work towards reducing the annual number of serious injuries and deaths on Tasmanian roads to fewer than 200 by 2026. The long-term goal for road safety in Tasmania is to have a 'Safe System' of zero serious injuries and deaths on our roads and this Strategy will help us on our journey. A Safe System has four essential elements – **safe road users, safe roads and roadsides, safe vehicles and safe speeds.** Each element plays its part in ensuring the safety of people using our roads.

Key directions

Safe Road Users

1. Improve the Graduated Licensing System to reduce serious casualties for 17-25 year olds.
2. Introduce safety initiatives to reduce motorcyclist serious casualties.
3. Encourage safer road user behaviour through education and enforcement.
4. Reduce driver inattention and distraction to reduce serious casualties.

Safe Roads and Roadsides

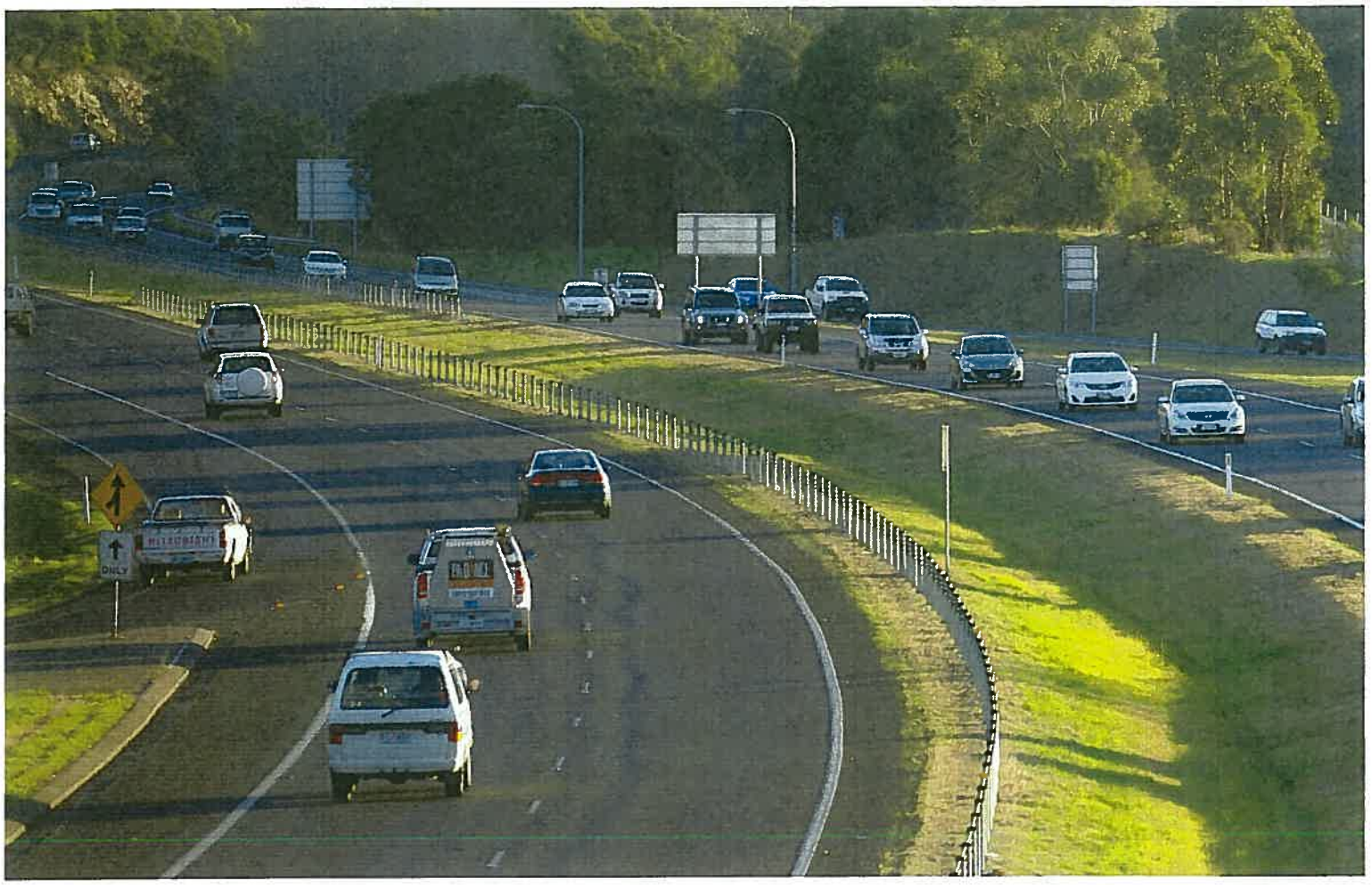
5. Reduce run-off-road and head-on crashes through improved infrastructure.
6. Reduce the severity of intersection crashes through improved infrastructure treatments.
7. Encourage the latest thinking in safe road design (the Safe System approach).
8. Monitor the latest innovations in Safe System infrastructure treatments and trial in Tasmania.
9. Reduce serious casualties through improved delineation (e.g. line marking).

Safe Vehicles

10. Improve the star rating of Tasmania's vehicle fleet to include vehicles with better safety features.
11. Increase the number of motorcycles with ABS.

Safe Speeds

12. Establish speed limits that are more appropriate to the safety features of individual roads.
13. Increase enforcement through technology to reduce speed related serious casualty crashes.

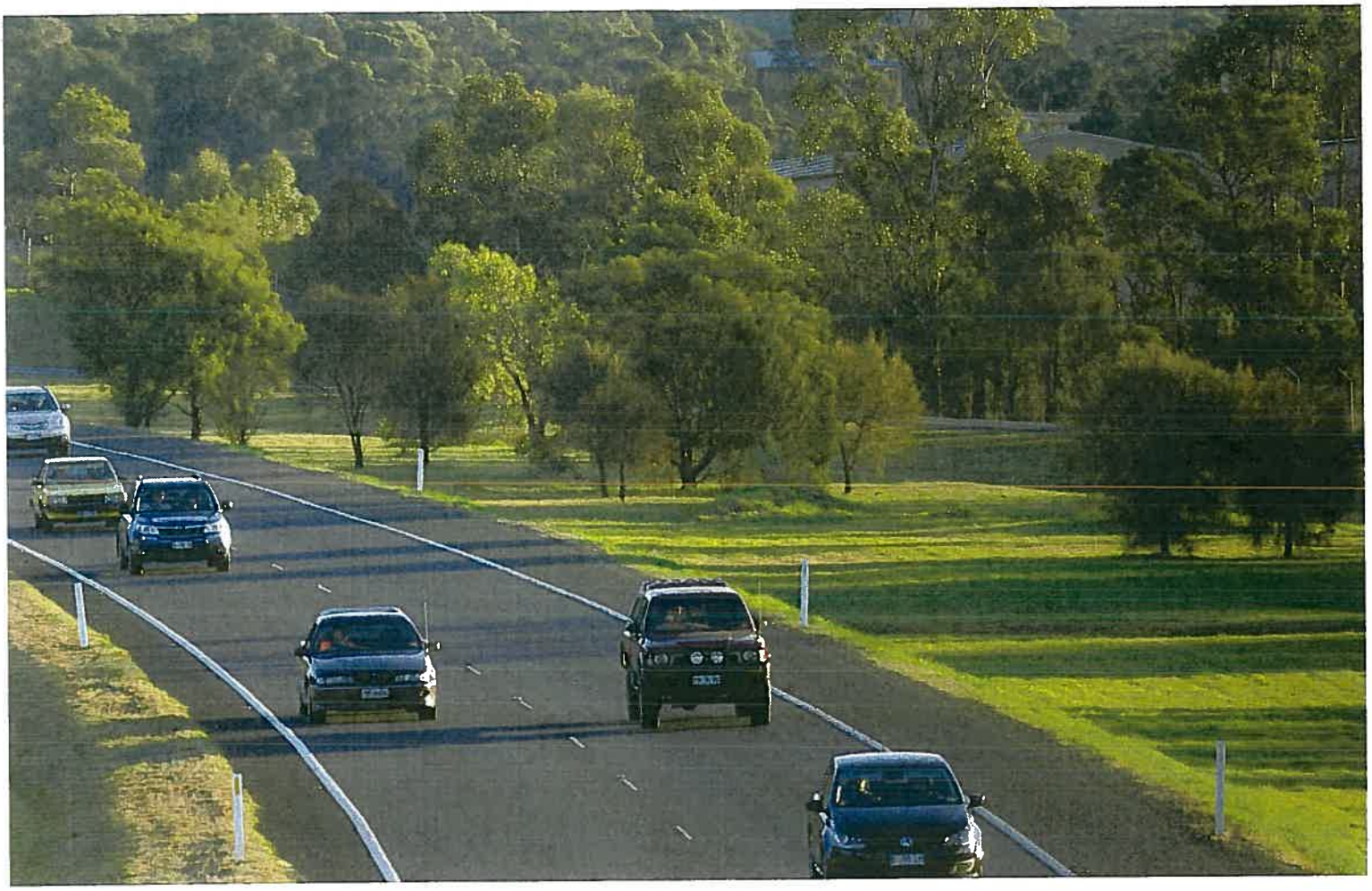


Our vision

Driving the *Towards Zero – Tasmanian Road Safety Strategy 2017-2026* (Towards Zero Strategy) is the long-term vision of a Tasmania where **no one is seriously injured or killed as the result of a crash on our roads**.

Achieving this vision will only happen if everyone accepts responsibility for road safety.

We know that our vision will not be easy to achieve and it will not happen overnight. We must continue to take incremental steps, look for innovative solutions, address our crash problem areas and build upon our road safety achievements in order to realise our vision.



Our target

Currently around 300 people are seriously injured and killed on Tasmanian roads each year.

To work towards our long-term vision, the key target for the Towards Zero Strategy is to reduce the number of annual serious injuries and deaths on Tasmanian roads to **fewer than 200 by 2026**.

We will be working towards reducing the number of serious injuries and deaths on our roads by at least 100 over current levels (annual average). This is deliberately ambitious and we will need to embrace our vision, be guided by this Strategy and implement our Action Plans to accomplish this level of safety improvement.

Fortunately, we're not starting from scratch. During this time we hope to benefit from the actions taken under the previous road safety strategy including promotion of safer vehicles, improvements to driver licensing for young drivers and increased safety features as part of our standard road design.

The Towards Zero Strategy will focus our road safety efforts over the next decade on 13 key directions to help us reach our short-term target and move closer to our long-term goal of zero.

Regular Action Plans will identify key initiatives under the Strategy to reach our short-term target. For the first Action Plan (2017-2019), these initiatives have been selected based on what we've heard from community consultation and recommendations from independent road safety experts. Initiatives that will take longer for the benefits to be realised are to be prioritised and implemented early in the life of the Strategy.

We will review progress towards our target at the end of each Action Plan and use the results to inform our future actions.

Not just a number

Using numbers to talk about serious injuries and road deaths is an easy way to distance ourselves from road trauma, but behind each of those numbers is a person. That person may be somebody you know or love or they may be a complete stranger, but to somebody else they are very special. Death is forever and it is hard to forget such tragedies. However, it is the hidden cost of road trauma that we often overlook.

Serious injuries cost individuals and those closest to them their wellbeing and happiness. It also has numerous financial implications, all of which can be for life. Others involved in a road crash are also affected. Whether it be an emergency service worker, paramedic, by-stander or the person who caused the crash, their lives change forever as a result of the experience. Each road statistic has a desperately sad story at its core.

Kirby's story

"I'd had a really busy day. I was driving home and I fell asleep around a corner. I shattered both of my legs. The car then flipped in the air and the impact of this shattered my face."

She is still feeling the effects of her injuries. She wants drivers to listen to their bodies and take a rest break when they need to.

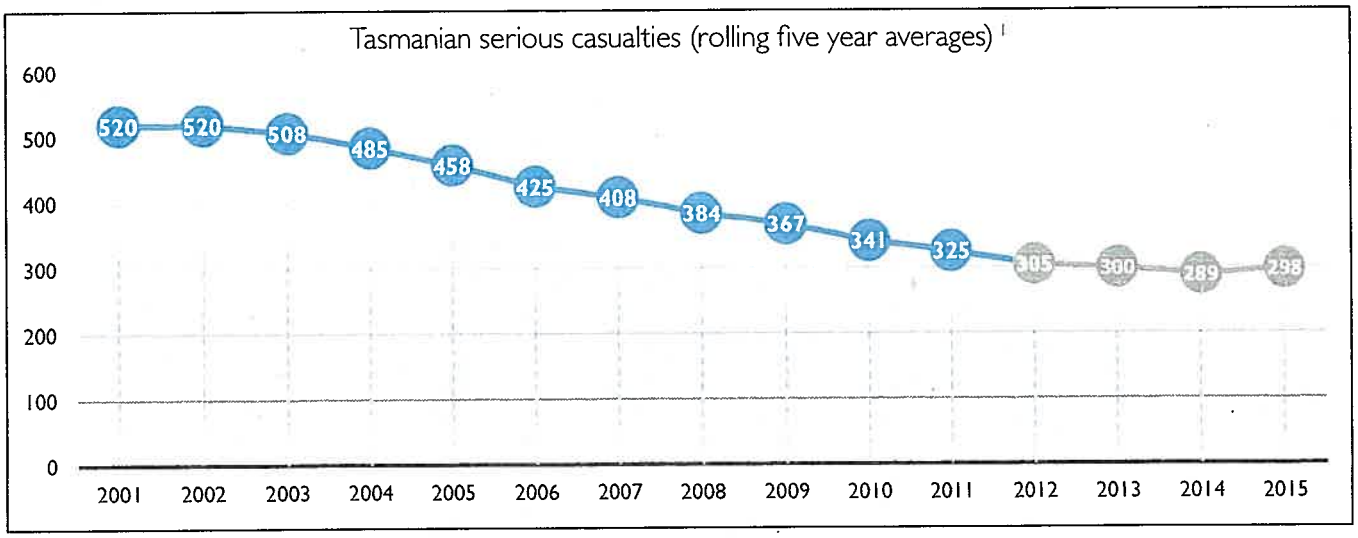
Lisa's story

"Aaron was the light of my life. He was such a fun-loving boy. The first thing I remember is the policeman saying to my husband Aaron has passed away. He was on his motorbike, he didn't stand a chance."

Aaron was killed by two speeding cars racing each other. His mother Lisa's message: everyone deserves a good life. Just be respectful of other people.

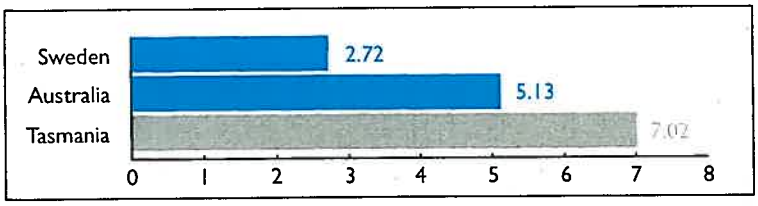
Tasmanian road crashes

Between 2006 and 2015, 3 193 people have been seriously injured or killed from road crashes in Tasmania. Since 2001 there has been a downward trend in the annual number of serious casualties. However, this reduction has clearly plateaued, with around 300 people each year continuing to be seriously injured or killed as a result of crashes on Tasmanian roads.



Tasmanian Serious Casualties [2] 2001-2015.

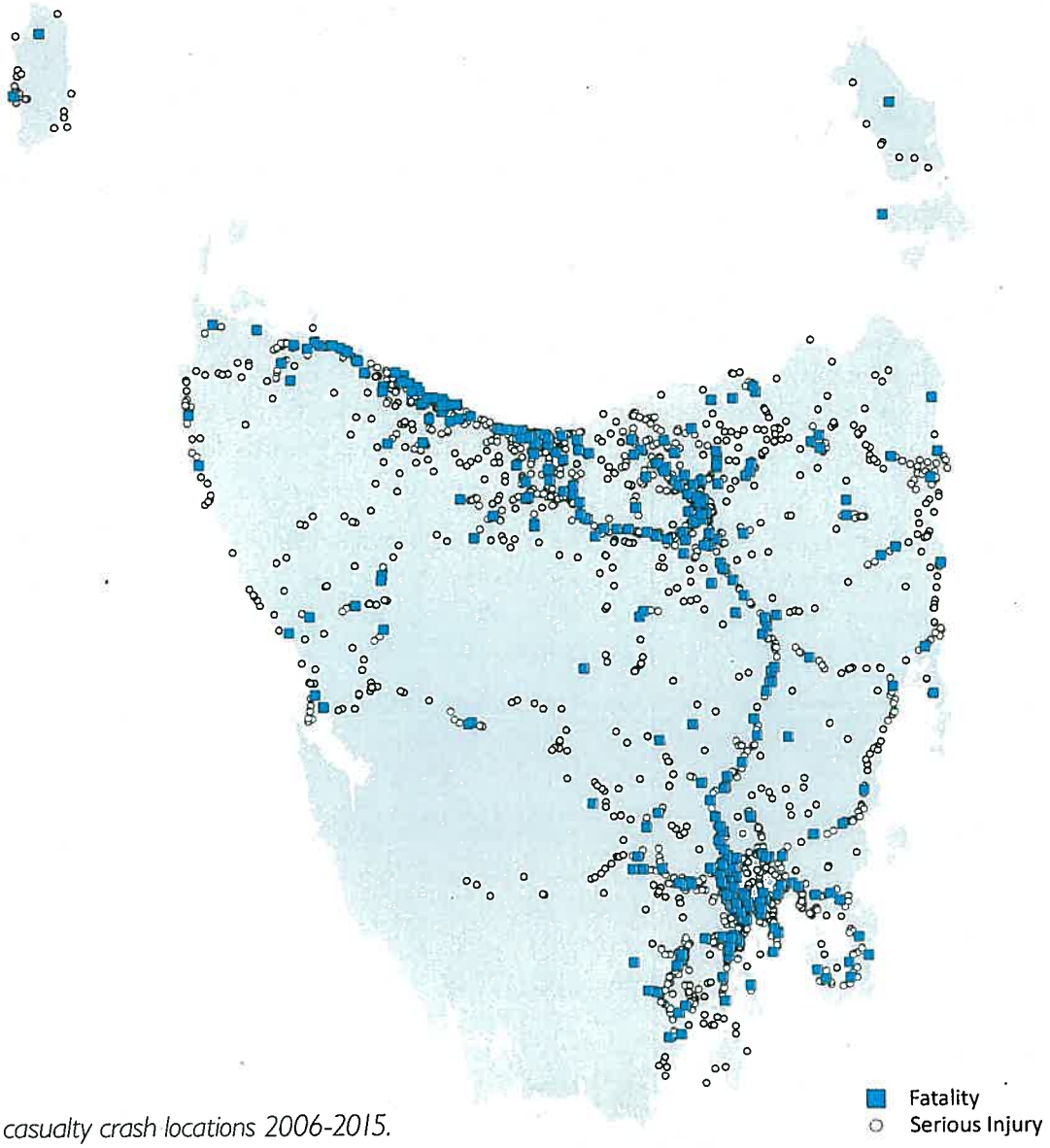
In terms of annual deaths per 100 000 population in 2013, Tasmania's rate of 7.02 was higher than the national average (5.13) – with only the Northern Territory having a higher rate. It was also significantly higher than Sweden – a country renowned for its road safety practices – which had the lowest rate (2.72).



Road deaths per 100 000 population – OECD countries and Australian states/territories, 2013.

The road safety performance achieved nationally and internationally should provide optimism that improved road safety is indeed possible in Tasmania. Sweden's road safety record demonstrates that Towards Zero is a realistic vision.

1. Each data point represents the average of that year and preceding four years (e.g. 2001 data point is average number of serious casualties for 1997-2001 period).
2. A 'serious casualty' collectively describes fatalities and serious injuries as the result of a crash. A fatality is where a person dies up to 30 days after the crash. A serious injury involves a person being admitted to hospital for 24 hours or more after the crash.



Serious casualty crash locations 2006-2015.

Where do fatal and serious injury crashes occur?

A large proportion of serious casualties occur on our higher speed/high traffic volume roads. These are the higher speed feeder roads to our major population centres and suburban connectors. Many serious casualties are also occurring on our higher speed/lower volume rural roads. Less than a quarter of our serious casualties are occurring on lower speed urban roads despite high traffic volumes.

Areas where there have been clusters of crashes have largely been treated. It is important that we are proactive and implement network-wide safety countermeasures and treatments.

What types of crashes are they?

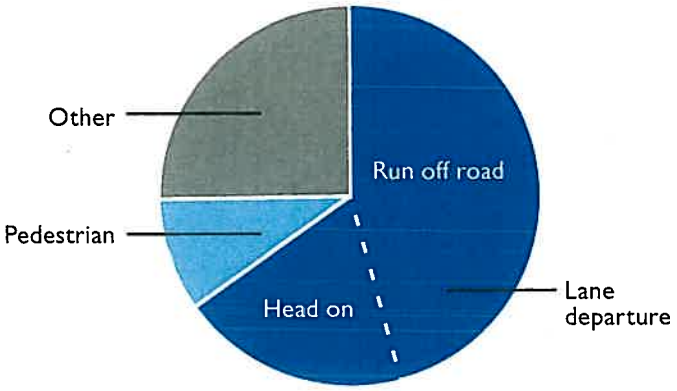
'Lane departure' crashes (run-off-road and head-on crashes) account for over two thirds of serious casualties on Tasmanian roads. Strategies to reduce lane departure crashes have the greatest potential to improve road safety in Tasmania.

The most common 'lane departure' crash type resulting in serious casualties is run-off-road crashes. Run-off-road crashes occur when a vehicle veers off the roadway or across the opposing traffic lane. Run-off-road crashes account for almost one in two serious casualties. The severity of this type of crash can be reduced by protecting roadside hazards with safety barriers or removing hazards where practicable. Improved line marking (delineation), including audible edge lines and road edge widening, can help in preventing this type of crash from occurring.

The other form of 'lane departure' crash is head-on crashes, which occur when vehicles travelling in opposing directions impact one another head/front on. Head-on crashes have increased and represent around one fifth of serious casualties. Physically separating opposing traffic with median or centerline barrier is an effective method to prevent this crash type. Improved delineation can also help in reducing head-on crashes.

Active vehicle technologies such as electronic stability control, lane departure warning, and autonomous braking systems will increasingly play an important role in preventing lane departure crashes or reducing the severity when a crash of this type occurs.

Crash type 2006-2015



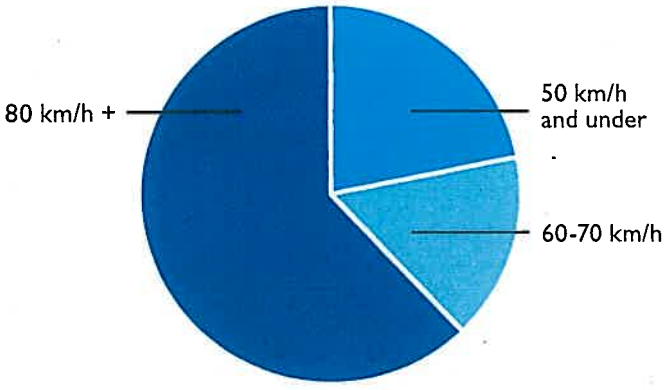
Almost two thirds of serious casualties occur in higher speed zones (80 km/h or above). However, only around a quarter of all crashes occur on these roads (serious casualty crashes, minor crashes and property only). Importantly, this helps demonstrate the lower crash survivability when travelling at higher speeds.

At intersections, the potential for crashes is high as road users are required to make more complex decisions and respond to a changing road environment. Intersection crashes account for around one in 10 serious casualties on Tasmanian roads. Serious casualties from intersection crashes have decreased significantly over the last 10 years, however they still represent around 13 per cent of all serious casualties. Most intersection crashes involve light vehicles, but a significant number of crashes involve pedestrians and a quarter of these crashes involve motorcyclists. Almost a quarter of intersection crashes involve older road users aged over 65. Reductions in intersection crashes have been achieved through a targeted program of infrastructure treatments such as controlling more intersections with traffic signals, converting intersections to roundabouts, and providing protected left and right hand turn bays. Reduced urban speed limits from 60 to 50 km/h has undoubtedly improved safety at these conflict points.

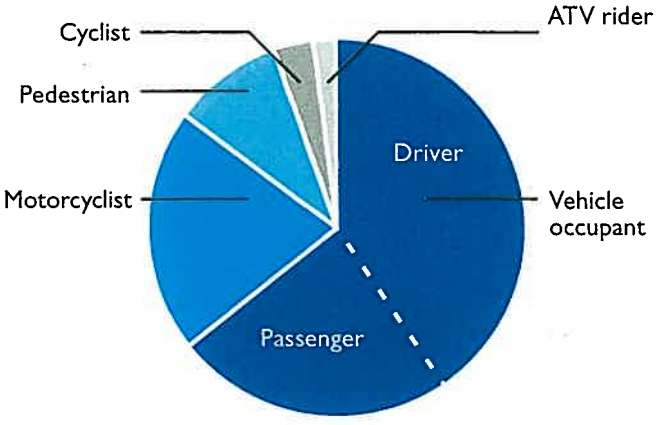
Who is most at risk?

Drivers and passengers continue to be the road user type most often seriously injured or killed on Tasmanian roads. Improved driver safety can be achieved through a better licensing regime, enforcement, active vehicle technologies, and safer, more 'crashworthy' vehicles.

Speed zone 2006-2015



Road user type 2006-2015



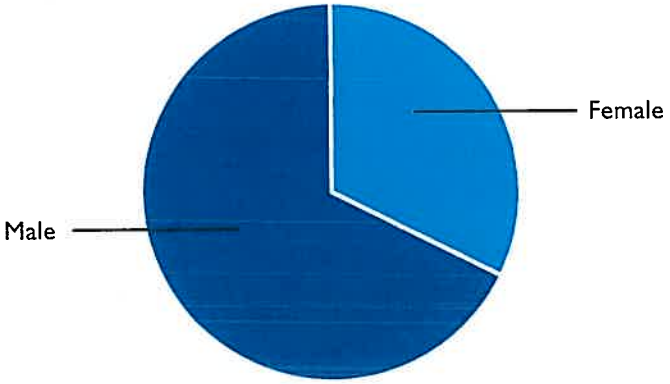
Motorcycle riders represent more than one in five serious casualties on Tasmanian roads yet motorcycles comprise less than one in 20 of the vehicle fleet. Motorcyclist serious casualties have increased over the last 10 years, from 705 (between 1996 and 2005) to 759 (between 2006 and 2015). Motorcyclists are vulnerable road users as there is little protecting them from injury in the event of a crash. Improved rider training and enforcement will help to improve motorcyclist safety. Active vehicle technologies such as Antilock Braking Systems (ABS) and traction control have a role to play in improving safety for these road users. Protective clothing can also reduce the level of crash injury for motorcyclists.

Pedestrians represent less than one in 10 serious casualties. The number of pedestrians seriously injured or killed on Tasmanian roads has reduced dramatically over the last 30 years. This has been achieved through improving pedestrian safety with more intersections controlled by traffic signals, a continued focus at school crossings, and increased 'mid-block' treatments, such as 'pedestrian islands' to provide safe crossing points.

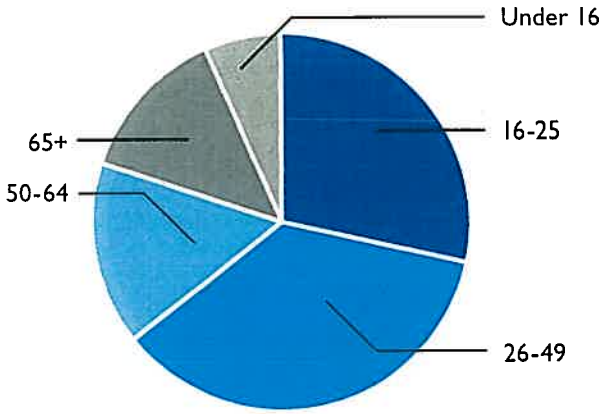
Young road users aged 16-25 years continue to be overrepresented in Tasmania's crash statistics. More than 28 per cent of serious casualties were young road users aged 16-25 years. Improved training for those entering the licensing system, together with licensing restrictions to prevent higher risk behaviours, such as zero blood alcohol concentration, provide opportunities to improve safety for these road users.

Males account for two out of every three serious casualties. A review of the Graduated Licensing System and targeted public education are measures aimed at improving road safety for men.

Gender 2006-2015



Age 2006-2015



What behaviours contribute to serious casualties?

Speed (either excessive speed for the conditions or exceeding the speed limit) is a factor in one in three serious casualties.

Alcohol, inattention, and inexperience continue to be the other leading behavioural factors associated with crashes in Tasmania.

Public and targeted road safety education campaigns clearly have an important role in attracting attention to road safety as an important public health issue. These campaigns promote safe driving and help to make unsafe behaviours, such as drink driving, socially unacceptable in much the same way as anti-cigarette advertising has done to smoking.

Targeted and random enforcement are also fundamental in deterring negligent and illegal road use.

Behaviour is important for road safety. However over two thirds of crashes are not the result of high risk/illegal behaviour but simply the result of unintended mistakes.

Behaviours contributing to serious casualties	Number of serious casualties	Percentage of serious casualties
Inattention	829	26%
Inexperience	826	26%
Excessive speed for the conditions	783	25%
Alcohol	685	21%
Exceeding the speed limit	404	13%

Behaviours that contributed to serious casualties 2006-2015.

The Safe System approach

Safe System thinking requires us all to accept responsibility for road safety – road and traffic engineers, vehicle designers, manufacturers and marketers, police, educators, trauma managers, as well as each of us as individual road users.

The Safe System approach has been effective in improving road safety and reducing road trauma. Safe System thinking is underpinned by the belief that all road related serious injuries and deaths are preventable and therefore no loss of life is acceptable. We acknowledge that the road system needs to keep us moving, but the system must be designed to protect us.

The key principles of the 'Safe System' approach are:

- We will make mistakes.
- Our bodies are fragile.
- We need to create a more forgiving road system.
- Road safety is everybody's responsibility.

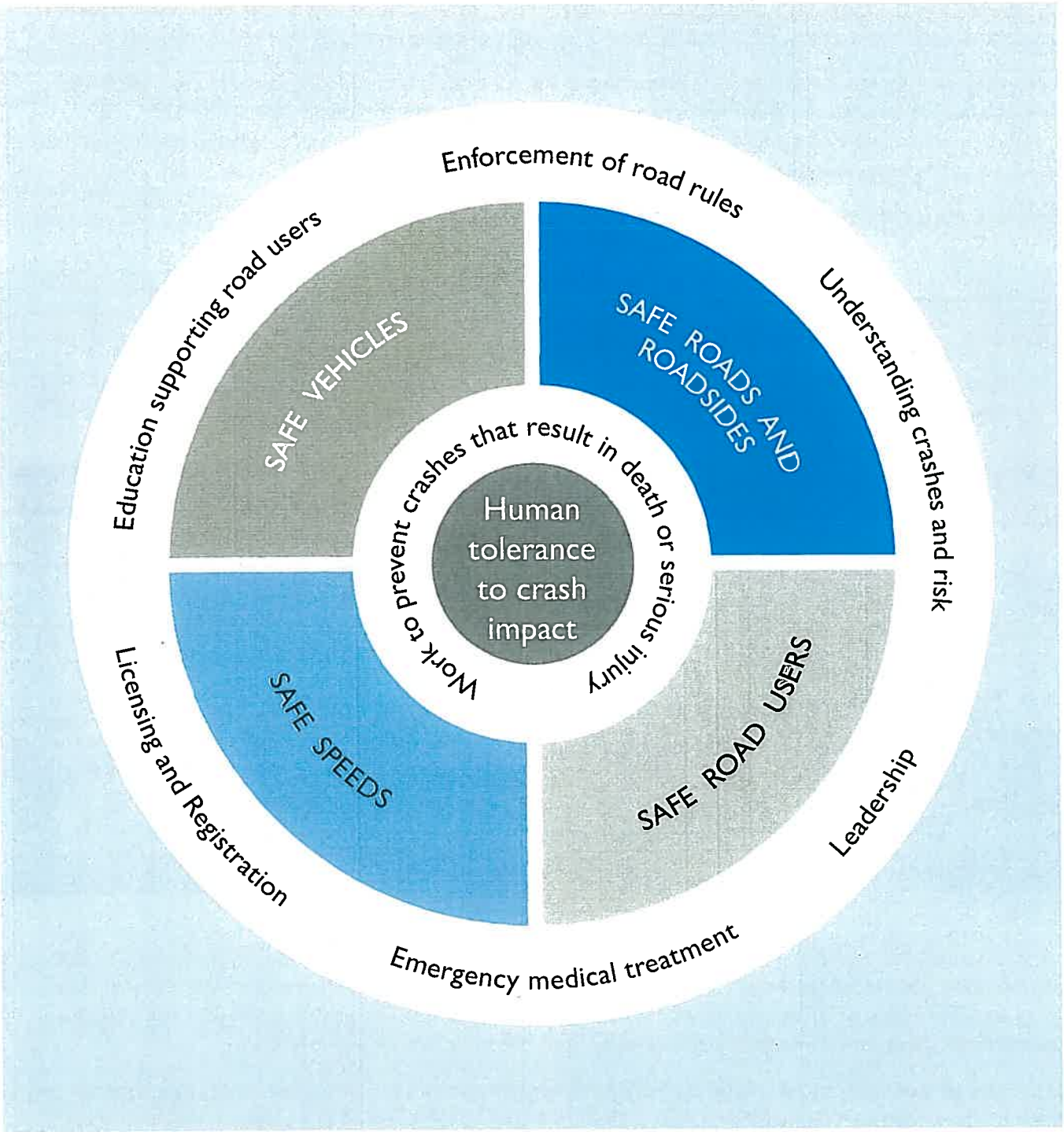
Human frailty is placed at the centre of the system design, so that mistakes don't cost lives.

A Safe System has four essential elements which all interact

- **Safe Road Users** – encouraging safe behaviour through education, enforcement and regulation.
- **Safe Roads and Roadsides** – designing and maintaining roads to reduce the risk and severity of crashes.
- **Safe Speeds** – establishing speed limits that are more appropriate to the safety features of individual roads.
- **Safe Vehicles** – designing vehicles that protect occupants, lessen the likelihood of a crash and simplify the driving task.

In a Safe System, for example, if you are distracted for a split second and veer off the road, audio tactile edge lines may alert you in time to recover. If there is no time to recover, a roadside barrier may prevent you from hitting another vehicle or object. If a collision is imminent, the speed you are travelling and your vehicle safety rating will play a key part in whether you walk away from the scene unharmed or not.

To prevent serious injury and death on our roads, all four elements of the Safe System must work together and continue to be improved. If a crash occurs as a result of a specific weakness of one element, the other three elements either individually or collaboratively should be strong enough to reduce the effects of the crash.



Tasmania's Safe System approach (adapted from New Zealand's Safe System approach).

The way forward

Thirteen key directions will guide our road safety efforts over the next decade. These directions align with the four elements of the Safe System approach. While we will continue to focus on a range of road safety issues, the key directions will help us to reach our short-term target of fewer than 200 serious injuries and deaths annually on our roads by 2026 and our long-term goal of zero. Over the next 10 years we will put in place measures to improve road safety and move closer to having a truly Safe System. We know that saving more lives depends on the community's understanding and acceptance of the Safe System approach and we all need to be committed to this way of thinking to achieve our vision.

Safe Road Users – encouraging safe, compliant behaviour through education, enforcement and regulation.

What we know

When looking at what we can do to improve road safety we tend to focus heavily on the road user and 'correcting' behaviours. Educating people about the road rules and safe driving is at the heart of road safety, but on its own it is not enough. Safe driving behaviour is best achieved when complemented by enforcement activities. Education and enforcement will continue to underpin our road safety efforts. However, we know that no matter how well trained or educated we are, we will make mistakes and crashes will continue to occur.

In terms of our road users, young drivers and motorcyclists are the most at risk of being seriously injured or killed in a crash and we need to make these road users our priority.

Research tells us that introducing further changes to our current Graduated Licensing System (GLS) will achieve important reductions in serious crashes involving young drivers. A GLS is designed to protect drivers in the learning stage by requiring them to gain on-road experience in a supervised environment, undertake assessments before they can drive unsupervised and by placing safety restrictions on them that do not apply to other road users. Restrictions are gradually lifted as a learner progresses through the different stages of the licensing system and they improve their knowledge, driving skills, hazard perception and road craft. An effective GLS does this in a way that reduces the likelihood of young drivers being involved in a serious crash, particularly in the early stages of the provisional driving period when they are most at risk (as shown in the diagram on next page). Currently there are age, speed, and alcohol restrictions on novice drivers in Tasmania. Other jurisdictions have passenger, night-time and vehicle power-to-weight ratio restrictions.

In terms of motorcycles, we know that their numbers on our roads have increased steadily over the last 10 years. Although they only account for 4 per cent of all registered vehicles, motorcycle crashes account for over 22 per cent of serious casualties. Motorcyclists are extremely vulnerable in the road environment as there is very little protecting them from injury when something goes wrong. There is no 'silver bullet' for improving the safety of motorcyclists on our roads but it is an area where we must identify actions to benefit these road users.

Source: Austroads (2008), The Crash and Offence Experience of Newly Licensed Young Drivers, Sydney, AP-R331/08.

What we've heard

Road safety education and enforcement activities are strongly supported in the community, as is improving the safety of motorcyclists through increased education and targeted campaigns.

Making changes to the current licensing requirements for learners and provisional drivers (GLS) is also supported. However, there is greater support for improving young driver training than for introducing any further licensing restrictions, such as passenger and night-time driving restrictions.

What we're going to do

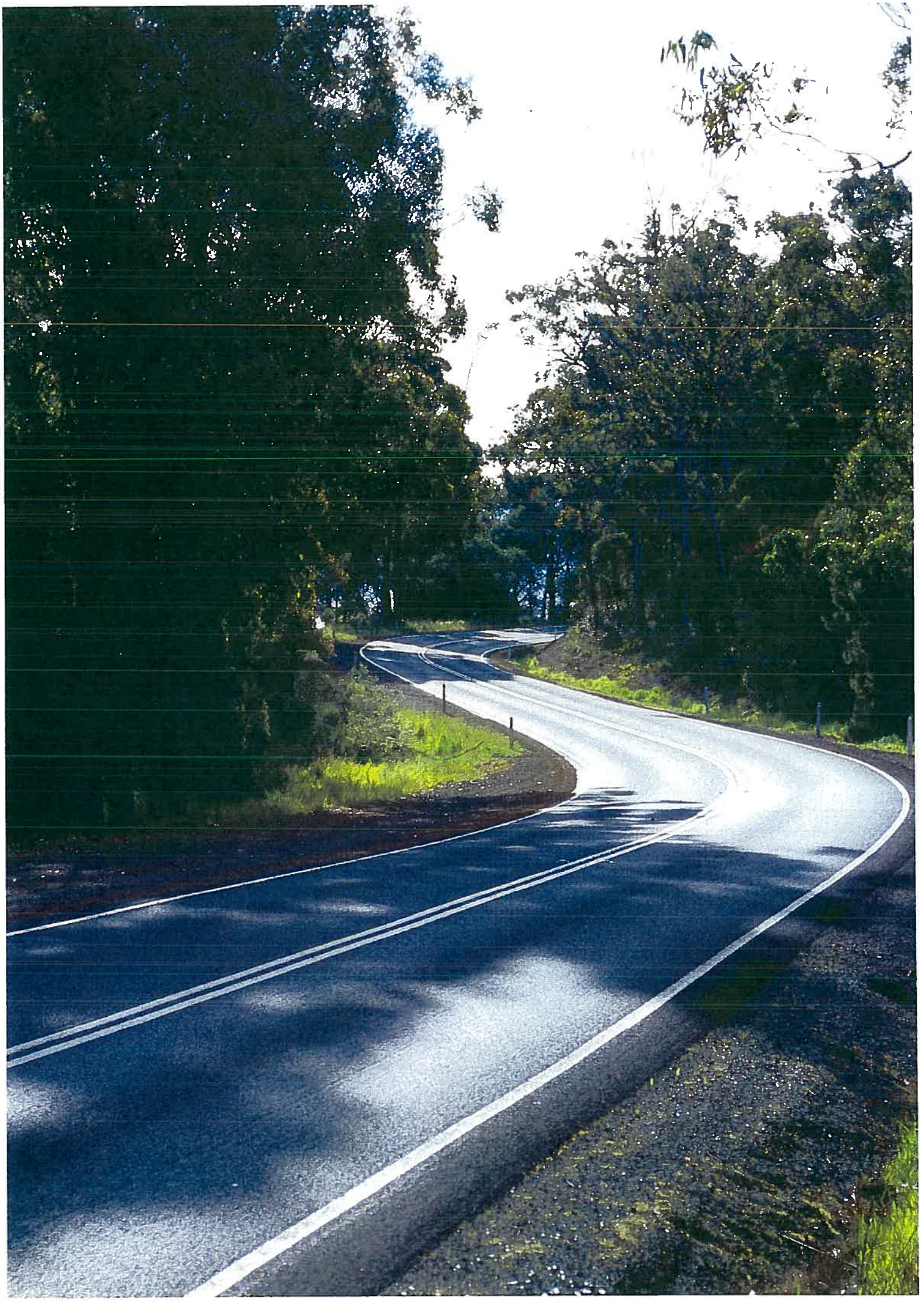
Current levels of road safety education and enforcement on our roads will continue. For motorcyclists, we will direct our efforts toward improving training, promoting the benefits of protective clothing and encouraging safe riding practice. More generally, we will also concentrate on promoting safe road user behaviours and raise awareness about the dangers of inattention and distraction.

We need to build on education and enforcement activity to improve safety for road users. Our future drivers need to understand their responsibility for road safety and commit to safe driving practices from a young age. That is why we will be strengthening our GLS. The number of serious casualty savings we can expect from improving the GLS reduces if we only make changes to the training and assessment elements. We need to introduce a number of restrictive elements even though there is mixed support for doing this. It will be important that we continue to work with our community to inform and create a better understanding of the road safety benefits to all from making further improvements to our GLS.

Our key directions for safe road users are:

- improve the Graduated Licensing System to reduce serious casualties for 17-25 year olds
- introduce safety initiatives to reduce motorcyclist serious casualties
- encourage safer road user behaviour through education and enforcement
- reduce driver inattention and distraction to reduce serious casualties.

Young drivers are most at risk of being involved in a crash in the early stages of the provisional period



Safe Roads and Roadsides – designing and maintaining roads to reduce the risk and severity of crashes.

What we know

Tasmania has a network of more than 18 000 kms of roads. Many of these roads are higher speed rural roads that are narrow, winding and hilly. They are missing important safety features such as line marking, sealed shoulders and clear zones on the roadsides.

Significant investment is required to improve the safety standard of Tasmanian roads. We know that the infrastructure required to keep people safe and minimise risk on our roads is costly, but this is justified by the number of serious injuries prevented and lives saved. We can work towards increasing the level of safety by ensuring we are guided by best practice in road design, retrofitting safety features on existing lengths of road, and using evidence to target our most unsafe roads. It is extremely important that we focus our efforts on this aspect of the Safe System, as we know it is best practice infrastructure that provides ongoing benefits and an environment which is forgiving of human error.

In a Safe System, opposing traffic is physically separated by the use of median barrier such as 2+1 and 2+2 road configurations, or separated dual carriageway to eliminate the risk of head-on crashes. Similarly, roadside hazards are protected with barrier to eliminate the risk of run-off-road occurrences resulting in road trauma crashes. Retrofitting these safety treatments in the road network is expensive and cannot be achieved overnight. Increasingly, our high speed 110 km/h network is being enhanced with these safety features. By 2025, the Midland Highway will have median barrier for much of its length and will also have extensive lengths of side barrier. On other parts of the network we only have the resources to use these safety treatments as a targeted measure on the higher risk, higher volume roads. Less costly infrastructure can also deliver positive road safety outcomes by minimising road user risk. This includes sealing road shoulders, removing roadside hazards or protecting them with barriers, improved delineation and audible edge line markings.

What we've heard

Many lower-cost infrastructure treatments like audible edge line markings and sealed road shoulders are strongly supported by the community as ways of reducing head-on and run-off-road crashes. Support for these treatments shows a shared understanding of the risk and seriousness of these crash types and how even simple infrastructure treatments can improve safety.

In terms of reducing side impact crashes, we know that there is little support for safety measures such as eliminating right hand turns or introducing raised 'plateaus' at intersections that will either eliminate or reduce the risk of crashes at these conflict points. However, there is support for roundabouts. Roundabouts are a proven safety measure because they reduce speed, protect opposing traffic and reduce the potential for dangerous side impact crashes so that when crashes do occur at these locations the risk of serious injury and death is significantly reduced. Community feedback also indicates there is some confusion about using roundabouts. Ongoing education about the rules for using them will ensure proper use and continued safety benefit.

What we're going to do

Our two biggest challenges for making our roads and roadsides safer are managing road lane departures and collisions at intersections. We can significantly reduce the likelihood of lane departures occurring by installing continuous lengths of flexible safety barrier on the road network. This is a relatively expensive treatment. Nevertheless it is being adopted as the standard for our 110 km/h network and will also be installed at higher risk locations around the state.

Our key directions for safe roads and roadsides are:

- reduce run-off-road and head-on crashes through improved infrastructure
- reduce the severity of intersection crashes through improved infrastructure treatments
- encourage the latest thinking in safe road design (the Safe System approach)
- monitor the latest innovations in Safe System infrastructure treatments and trial in Tasmania
- reduce serious casualties through improved delineation (e.g. line marking).

Delineation and line markings minimise lane departures. Innovative vehicle technologies also use line markings to avoid crashes. We will improve the quality of delineation and line marking on our road network.

We will work towards eliminating points of conflict and minimising opportunities for side impacts at high risk locations across our road network. We will trial a range of lower-cost Safe System infrastructure on a case-by-case basis and as part of larger demonstration projects.

Where best practice infrastructure improvements cannot be achieved, we will manage speeds to increase the likelihood of survival in the event of a crash. Working with our road designers to improve knowledge of the Safe System and implementing innovative safety solutions will facilitate the construction and management of safer roads.

Flexible safety barriers provide full separation between vehicles travelling in opposing directions.

Safe Vehicles – designing vehicles that protect occupants, lessen the likelihood of a crash and simplify the driving task.

What we know

Tasmania has the oldest vehicle fleet in the country, with an average age of 12 years. Vehicle safety has been improving at a rapid rate over the past decade. The ability for the vehicle structure to protect occupants in a collision (passive safety) has improved dramatically over time and attention has now turned to technologies that are capable of avoiding crashes altogether (active safety). With a relatively old vehicle fleet we know many people are not benefiting from the improved safety features of new vehicles.

It is important to get as many 5 star vehicles as possible into the Tasmanian vehicle fleet to accelerate the introduction of safety features found in modern 5 star cars. Every year that a new vehicle or safety technology is delayed from entering the fleet results in a diminished safety effect in future years. This is because it takes many years for the vehicle fleet to turn over. If a new safety technology is introduced tomorrow, it will take approximately 20 years before it penetrates the entire fleet [3]. If everybody drove the safest vehicle available serious casualties could be reduced by 26 per cent [4].

We also need to increase the safety features on motorcycles as motorcyclists continue to be over-represented in serious casualty crashes. Research tells us that ABS for motorcycles have significant safety benefits and have been shown to reduce serious casualties by up to 39 per cent [5].

What we've heard

Understandably, concerns have been raised about the affordability of initiatives to accelerate the uptake of new vehicles. We have taken this into consideration but we also recognise the significant reductions in serious casualties that can be gained from addressing issues with the safety of vehicles currently on Tasmanian roads. There is also a level of misunderstanding about 'roadworthiness' and 'crashworthiness'. It is important that vehicles are properly maintained and kept 'roadworthy'. However, the performance of a vehicle in a crash will relate to its inbuilt safety features such as air bags and its physical structure and less so to its roadworthy status, such as a failed headlight. Increasingly 'active safety' features like autonomous emergency braking and lane departure warning will help prevent crashes from occurring.

What we're going to do

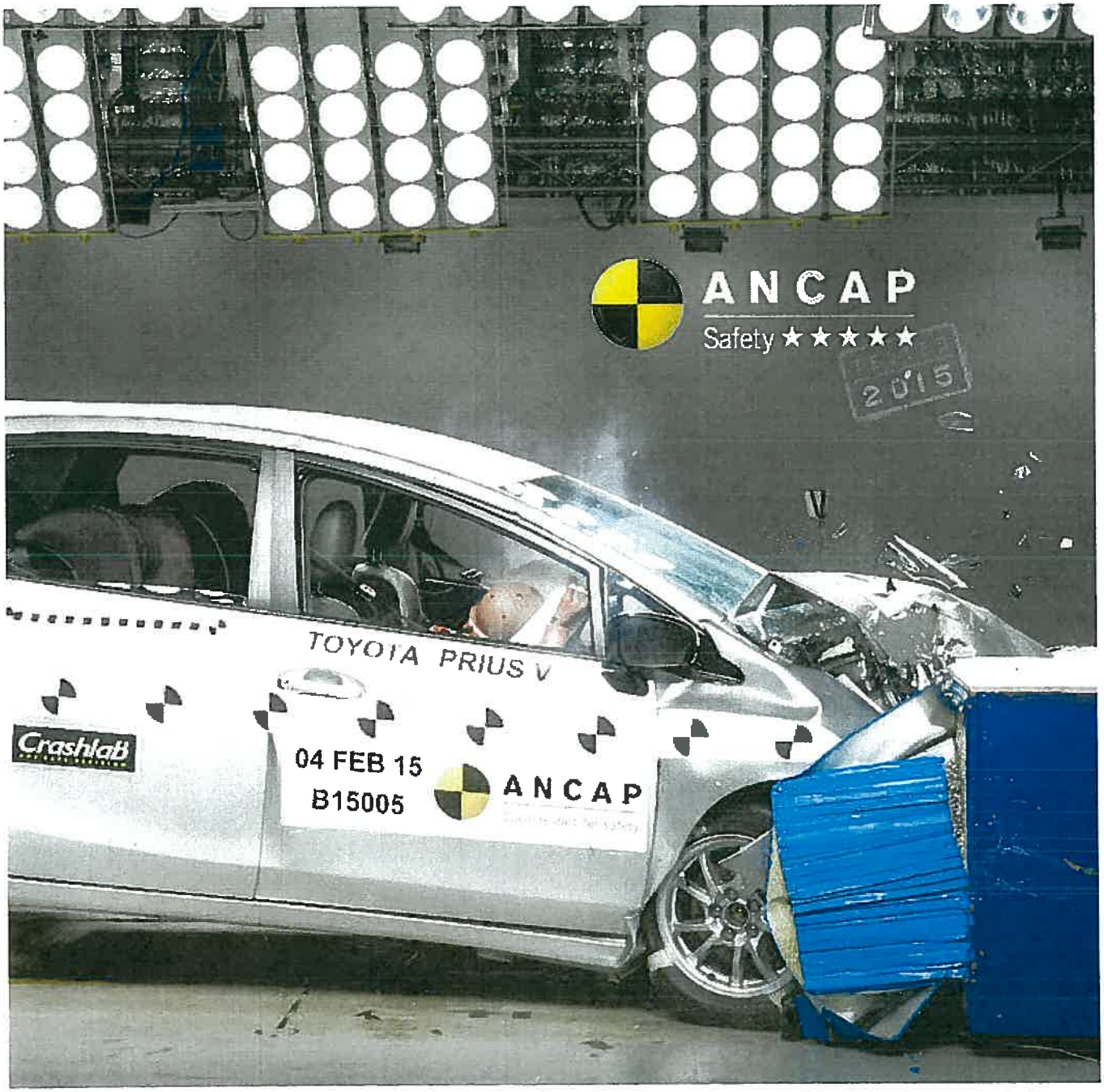
Through public education we will continue to actively promote the value of buying the safest vehicle that you can afford. We will also continue to support the work of the Australian New Car Assessment Program (ANCAP). The Tasmanian Government needs to be proactive in ensuring that safer vehicles are more widely available. As the largest vehicle fleet managers in Tasmania, the Tasmanian Government must take the lead in purchasing 5 star vehicles. This will increase the availability and affordability of safer vehicles as they are resold into the community.

Actions to encourage the purchase of ABS equipped motorcycles will also be pursued.

3. Mackenzie, J., Wooley. J., Stokes. C., Kloeden., Raftery., S. (2016). Analysis and modelling of crashes in Tasmania. (CASR136). Centre for Automotive Research. Adelaide.
4. Newstead, S., Delaney, A., Watson, L., Cameron, M. (2004). A model for considering the "total safety" of the light passenger vehicle fleet. Monash University Accident Research Centre. Report No. 228.
5. Fildes, B., Newstead, S., Rizzi, M., Fitzharris, M., Budd, L. (2015) Evaluation of The Effectiveness of Anti-Lock Braking Systems on Motorcycle Safety in Australia, Monash University Accident Research Centre Report No. 327.

Our key directions for safe vehicles are:

- improve the star rating of Tasmania's vehicle fleet to include vehicles with better safety features
- increase the number of motorcycles with ABS.



A 5 star rated vehicle provides a greater level of occupant protection in a crash than a lower rated vehicle (Image source: ANCAP).

Safe Speeds – establish speed limits that are more appropriate to the safety features of individual roads.

What we know

The higher the travel speed, the greater the chance of being involved in a crash and the more severe the consequences will be if a crash occurs. Safe travel speed is a fundamental cornerstone of the Safe System approach. Speed limits need to be set at appropriate levels and road users need to travel at speeds that are suitable for the conditions. Some speed limits may currently be set at a higher level than our bodies can tolerate should a crash occur. This can result in serious injury or death. Under a Safe System, speed limits are set at survivable levels that are appropriate for the level of protection provided by safety infrastructure on a particular road or section of road.

It is important that road speed limits reflect the safety features of the road to reduce the risk of road trauma resulting from a crash. Admittedly, lower travel speeds will have a moderate impact on travel times but this is a very small price to pay for the significant reduction in serious injury and death on our roads. Research tells us that even small reductions (10 km/h) in travelling speeds can lead to reductions of 25 per cent in serious casualties across the road network [6].

What we've heard

It is widely acknowledged that speed is a major factor in road crashes, but we generally associate speeding with 'bad drivers'. We know that the community does not currently support reduced blanket speed limits on our roads. However, there is support for targeted improved speed management on individual roads. This is a step towards a Safe System.

What we're going to do

We will continue to focus on penalising road users that put others at risk by speeding on our roads. We will look to use new, more effective speed camera technologies and ensure all cameras are operated in a manner that maximises safety.

A key focus will be working on changing our collective attitude to driving to the road conditions including the acceptance of the need to moderate speed to the safety features of the road. We have a natural fear of heights but lack the ability to perceive the inherent danger of horizontal travel speeds. As pedestrians, we happily stand centimetres away from vehicles whizzing past at 50 or 60 km/h. As car drivers, we feel perfectly safe as we drive at 100 km/h with oncoming vehicles and trucks flying past us at similar speeds. Should something go wrong in either scenario, serious injury or death is almost certain. We know changing our attitude toward speed will be a challenge and will require a number of actions to change our perception of the risks of using our roads.

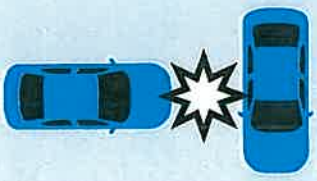
A combination of approaches can help us achieve safer speeds. This could include public education, enforcement, policy changes, and reviewing individual roads to assess whether current speed limits are appropriate for the level of safety features provided. However, it is crucial in moving towards a Safe System that we all have a greater understanding of the speeds the human body can tolerate in a crash situation.

We will work towards sensible speed limits based on infrastructure standards and safety features, and have fewer speed zone changes. We will also encourage compliance with speed limits through the use of new and additional enforcement technologies.

6. Mackenzie, J., Kloden, C., & Hutchinson, T. (2015). Reductions of speed limit from 110 km/h to 100 km/h on certain roads in South Australia: a follow up evaluation (CASR115). Centre for Automotive Research. Adelaide.

Our key directions for safe speeds are:

- establish speed limits that are more appropriate to the safety features of individual roads.
- increase enforcement through technology to reduce speed related serious casualty crashes.

	Crash type	Impact speed
	Head-on	70 km/h
	Side-impact	50 km/h
	Side-impact with fixed object	30 km/h
	Pedestrian	30 km/h

International research shows the maximum survivable impact speeds above which the chances of serious injury and death are more likely.

We must use a combination of safer vehicles with better safety features, safer infrastructure treatments, and more appropriate speed limits to reduce conflict points between road users and protect people from the impact of crashes.

Working Towards Zero

Actions Plans will support the implementation of initiatives under the key directions of the Strategy. The results of community consultation and recommendations from independent road safety experts at the Centre for Automotive Safety Research (CASR) have informed the selection of initiatives under the *Towards Zero Action Plan 2017-2019* (Action Plan 2017-2019).

Three Action Plans will cover the 10 year period of the Strategy and will be for three years, three years and four years respectively.

a. Action Plan 2017-2019
b. Action Plan 2020-2022
c. Action Plan 2023-2026

The Government will be monitoring our progress towards implementing the initiatives outlined in our Action Plans through quarterly reporting by the Road Safety Advisory Council. Towards the end of each three year Action Plan we will use this and our crash data to review progress towards our short-term target.

This information will be essential in determining the initiatives under the Action Plan for the following period.

Glossary of terms

'2+1' configuration	A three-lane road with the provision of alternating lanes and a flexible safety barrier located in the narrow median.*
'2+2' configuration	A four-lane road with a flexible safety barrier located in the narrow median.*
Audio tactile line markings	Raised or specifically textured strips typically installed on the edge line (or in some cases centreline), generating noise and vibrations through vehicles in order to alert drivers that they are leaving their lane, and encouraging them to return to their lane. †
Centreline barrier	A device used on multilane roads to keep opposing traffic in prescribed carriageways. †
Delineation	Treatments that enhance the selection of the appropriate path and speed, or position, to allow a manoeuvre to be carried out safely and efficiently, e.g. line marking, raised pavement markers, traffic cones and flaps and post-mounted reflectors. †
Fatality	Where a person was killed before a report was made by Tasmania Police or died up to 30 days after the crash.
Flexible safety barrier	A road safety barrier system consisting of wire rope cables under high tension that are supported on posts and anchored at the ends. †
Motorcycle Antilock Braking System (ABS)	System which prevents the wheels from locking up by automatically modulating the brake pressure when the rider brakes hard. By preventing the wheels from locking, the system aids riders to maintain steering control which may reduce stopping distances in certain situations.†
Safe System	The 'Safe System' approach works to improve road safety and eliminate road trauma. A Safe System has four essential elements which all interact, including safe road users, safe roads and roadsides, safe vehicles and safe speeds. This approach is underpinned by the beliefs that road safety is everybody's responsibility, people will make mistakes and the human body is fragile. Human frailty is placed at the centre of the system design, so that mistakes don't cost lives.
Sealed shoulder	The sealed edge of roads outside of the travelled carriageway (the shoulder) of roads. Sometimes it is delineated by an edge line applied between the sealed shoulder and the travelled section of a carriageway. The treatment is almost invariably associated with unkerbed roads, and is often applicable to rural roads.‡
Serious casualties	Include fatalities and serious injuries.
Serious injury	Where a person was admitted to hospital for 24 hours or more.
Wide centrelines (painted median)	Two parallel painted centrelines, often with audio tactile surfaces, which provide separation of opposing traffic.*

* Jurewicz, C., Aumann, P., Bradshaw, C., Beesley, R., Lim, A. (2015). Road Geometry Study for Improved Rural Safety. Austroads Ltd. Sydney.

† OECD and ITF. (2015). Improving Safety for Motorcycle, Scooter and Moped Riders. OECD Publishing. Paris.

‡ Austroads (2015). Glossary of Terms (2015 Edition). Austroads Ltd. Sydney.

Department of State Growth

Road Safety Branch

Towards Zero – Tasmanian Road Safety Strategy 2017-2026

GPO Box 536
Hobart TAS 7001 Australia

Phone: 03 6166 3239
Email: towardszero@stategrowth.tas.gov.au
Web: www.towardszero.tas.gov.au

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Analysis and modelling of crashes in Tasmania

JRR Mackenzie, JE Woolley, CS Stokes, CN Kloeden, SJ Raftery

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Analysis and modelling of crashes in Tasmania

AUTHORS

JRR Mackenzie, JE Woolley, CS Stokes, CN Kloeden, SJ Raftery

PERFORMING ORGANISATION

Centre for Automotive Safety Research
The University of Adelaide
South Australia 5005
AUSTRALIA

SPONSORED BY

Department of State Growth
GPO Box 536
Hobart TAS 7001
AUSTRALIA

AVAILABLE FROM

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ABSTRACT

This report provides advice on the focus and components of the next Tasmanian Road Safety Strategy. The progress of the Tasmanian Road Safety Strategy 2007-2016, and the associated action plans, was reviewed through an analysis of crash data. It was found that the overall number of crashes per year in Tasmanian has remained fairly constant. However, the percentage of crashes that resulted in fatal or serious injuries has decreased by around five percent in the last decade. Several crash problem areas that had been identified and targeted with various road safety actions were investigated. The majority were found to have experienced a decrease in average crash rate from the period 2006-2010 to the period 2011-2014. Crashes involving older drivers, pedestrians, and cyclists were found to have an increased crash rate and may warrant further attention in the future. The number of fatal and serious casualties over the 2001-2014 period was reviewed and, based on the current trend, it was considered unlikely that the 2010-2015 casualty reduction target of 20 percent would be achieved. A model was then developed to predict the casualty trends into future years and determine the likelihood that future targets will be achieved. Modelling was performed to explore the effect of several potential road safety countermeasures and suggest what combination of these countermeasures might be used to improve the chances of reaching future targets under the current best practice approach of the Safe System.

KEYWORDS

Road safety, strategy, safe system, crashes, injuries

Summary

The progress of the Tasmanian Road Safety Strategy 2007-2016, and the associated action plans, was reviewed through an analysis of crash data. It was found that the overall number of crashes per year in Tasmanian has remained fairly constant. However, the percentage of crashes that resulted in fatal or serious injuries has decreased by around five percent in the last decade. Several crash problem areas that had been identified and targeted with various road safety actions were investigated. The majority were found to have experienced a decrease in average crash rate from the period 2006-2010 to the period 2011-2014. Crashes involving older drivers, pedestrians, and cyclists were found to have an increased crash rate and so may warrant further attention in the future. In addition, only small progress towards reducing crashes involving motorcycles was achieved. The number of fatal and serious casualties over the 2001-2014 period was reviewed and, based on the current trend, it was considered unlikely that the 2010-2015 casualty reduction target of 20 percent would be achieved.

A review of potential road safety countermeasures under the four areas of the Safe System (safer speeds, safer road users, safer vehicles, and safer roads) was conducted. Then, a model was developed to predict the number of fatal and serious casualties into future years and determine the likelihood that future targets will be achieved. Additionally, the model was used to explore the effect of several of the suggested road safety countermeasures and explore what combination of these countermeasures might be used to improve the chances of reaching future targets. The predicted number of fatal and serious casualties that would be prevented through the implementation of each of the modelled countermeasures is presented. Lowering speed limits showed the greatest potential for reducing casualties, followed by implementing measures to reduce the average age of Tasmania's vehicle fleet and introducing further limitations to novice drivers. The effect of infrastructure treatments was also explored along with the considerable associated costs.

Strategic directions, roll-out strategies, and appropriate casualty reduction targets for the 2017-2026 road safety strategy are then suggested based on the earlier exploration of crash trends and the predicted effectiveness of various countermeasures. Potential strategic directions that focus on speed reductions or efforts that reduce the average age of the vehicle fleet are detailed, along with a third direction that utilises a mixture of measures. An exploration of the optimal infrastructure countermeasures to implement is also presented.

A suitable method of setting (and tracking) a target for the desired reduction in fatal and serious casualties over the 2017-2026 road safety is presented. Based on the predicted effectiveness of the potential strategic directions, a range of reduction targets are then suggested with some commentary of how easily they could be achieved.

Some commentary on the value of the road safety levy and alignment with the National Road Safety Strategy is also provided.

Contents

1 Introduction

Road trauma presents a significant burden that encompasses the psychological impacts of death and injury borne by the victims and their families, as well as the direct financial costs associated with property repair, casualty rescue, medical treatment, and rehabilitation. The Tasmanian Road Safety Strategy 2007-2016 reports that the yearly burden of road trauma in Tasmania includes more than 470 people admitted to hospital, around 48 lives lost, and an estimated cost of nearly $500 million.

In response to this, the Tasmanian Government and the Tasmanian Road Safety Council have adopted the philosophy of European countries such as Sweden and The Netherlands (who are considered world leaders in road safety) and committed to the long term vision of the elimination of all road related fatalities and serious injuries.

The path to achieving this vision of zero fatalities and serious injuries relies on an approach called the Safe System, which acknowledges that mistakes within the road system will occur. The road system should thus be designed such that the consequences of mistakes do not result in fatal or serious injuries for any road user.

The Tasmanian Road Safety Strategy 2007-2016 highlighted areas where safety may be lacking and proposed to address them with actions under four areas of the Safe System: safer travel speeds, best practice infrastructure, increased safety for young road users, and enhanced vehicle safety. Targets for a reduction in fatal and serious casualties were also set. Subsequent action plans then outlined practical actions that would be implemented to pursue these desired casualty reductions and address the areas highlighted for urgent attention.

The current road safety strategy is due to expire in 2016 and the new Tasmanian Road Safety Strategy 2017-2026 is under development. This 2017-2026 strategy will call for a new set of targets that consolidate on the gains already made and provide strategies for how future targets will be met under the Safe System framework.

This report provides analyses to assist with informing the development of the 2017-2026 road safety strategy and is presented in four main Sections. In Section 2 the progress and achievements of the 2007-2016 strategy are investigated. The casualty reduction targets specified in the 2007-2016 strategy are outlined and crash data is then analysed to explore the success, and future likelihood, in meeting these targets. The crash data is also further analysed to explore the progress in reducing casualties in several identified target areas.

Section 3 introduces a wide range of potential countermeasures and discusses their relative effectiveness. A methodology for modelling fatal and serious injury casualties in Tasmania is then presented. The effects of background changes to the road transport system are modelled to predict the number of casualties in future years. The effects of several potential countermeasures, such as speed limit reductions or alterations to the GLS system, are also modelled to assess their potential impact on the number of casualties.

In Section 4, a number of strategic directions for the 2017-2026 strategy are suggested based on the findings of the previous Sections. Advice on the intelligent roll out of countermeasures is provided with comments on the ramifications of delaying implementation. Achievable new targets for the reduction of fatal and serious casualties are then proposed.

2 Progress and achievements of the 2007-2016 strategy

This Section investigates the progress and achievements of the Tasmanian Road Safety Strategy 2007-2016 (henceforth referred to as the "2007-2016 strategy"). Section 2.1 outlines the fatal and serious casualty reduction targets stated in the 2007-2016 strategy. In addition to the general casualty reduction targets, the 2007-2016 strategy highlights several target areas as warranting specific attention for casualty reductions. In Section 2.2 an analysis of Tasmanian crash data is performed to determine the progress in achieving the fatal and serious casualty reduction targets. Further crash analyses are then performed in Section 2.3 to determine whether there have been casualty reductions in the identified target areas and whether there are other areas where attention may be required.

In order to provide some perspective and background to the crash data analyses presented below, a brief investigation of Tasmania's public road system is presented here. The road system, and particularly the safety of the road system, can be affected by many factors. The most significant effect on the system is likely to be driving exposure – that is, the amount of driving that is occurring. In Figure 2.1, the changes in several factors that may be indicative of driving exposure are shown for the period of 2001-2014. Tasmanian population, vehicle kilometres travelled, and number of registered vehicles were obtained from the Australian Bureau of Statistics (ABS, 2001 – 2015a; ABS, 2001 – 2015b). The number of licences was obtained from the Tasmanian Department for State Growth. Also shown in Figure 2.1 is the annual number of casualty crashes in Tasmania.

Over the period shown in Figure 2.1 there have been gradual increases in population, number of registered vehicles, and number of licences. However, apart from an increase between 2001 and 2005, the number of vehicle kilometres travelled has remained relatively constant. In regards to the current 2007-2016 strategy these changes indicate that, while the number of vehicles and drivers has increased, it is unlikely that there has been a substantial increase in the amount of driving occurring in Tasmania. In addition, it can be seen that there has been little change in the total number of casualties.

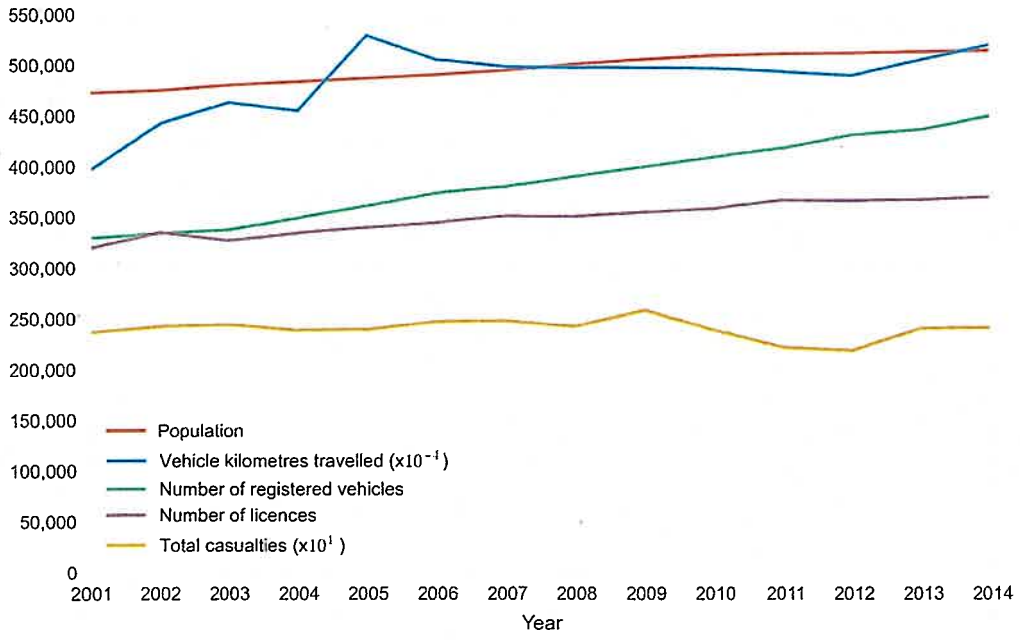

Figure 2.1
Changes relevant to Tasmania's public road system over the period 2001-2014

The focus of the 2007-2016 strategy (and indeed the upcoming 2017-2026 strategy) is on reducing fatal and serious casualties. Figure 2.2 shows the percentage of casualties that were fatal or serious over the 2001-2014 period. It can be seen that the percentage of fatal and serious casualties has decreased from more than 20 percent to less than 15 percent over the last decade. This is indicative of a positive general improvement in road safety across Tasmania.

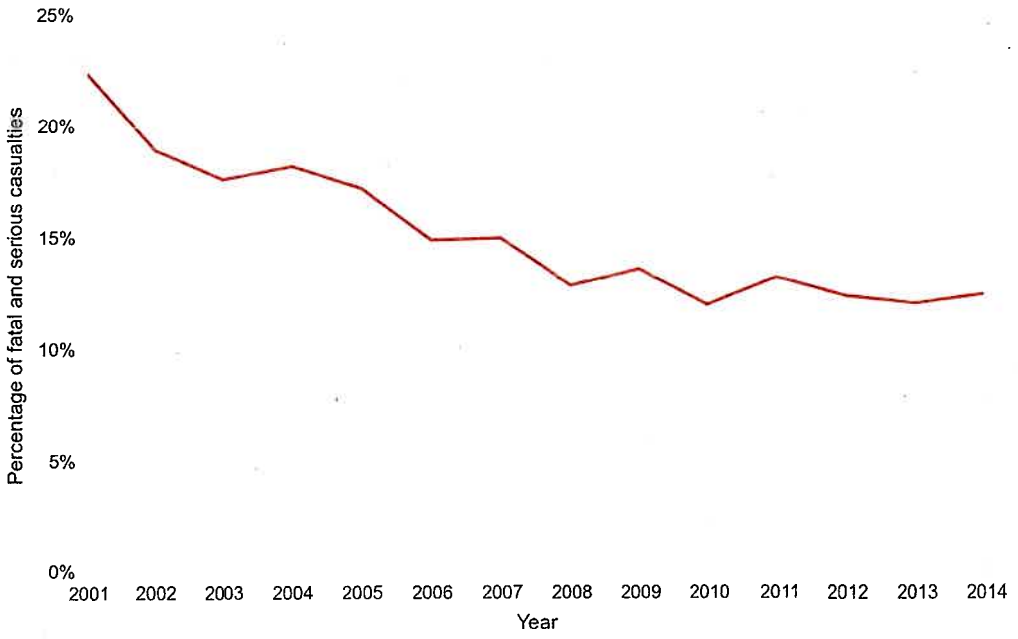

Figure 2.2
Percentage of casualties that were fatal or serious over the period 2001-2014

In Figure 2.3 the location of the fatal and serious casualties that occurred during the period of 2001-2014 is shown. The majority of casualties occurred near the main metropolitan centres of Hobart, Launceston, and along the northern coast around Devonport. There are also a considerable number of casualties that occurred along the main highways that connect these metropolitan centres.

Tasmania's roads are separated into several functional categories as shown in Table 2.1. The number of kilometres within each category and the number of fatal and serious casualties that occurred on each category and the rate of casualties per kilometre over the 2001-2014 period is also shown. It can be seen that the Trunk roads had the highest rate of casualties, followed by the Regional Freight and Access roads. This is also likely to be a reflection of where traffic volumes are highest on the road network.

Table 2.2 shows the number of fatal and serious casualties by vehicle type (including pedestrians). Unsurprisingly, light vehicles account for the majority of the casualties over the 2001-2014 period. Motorcycles were the second most common vehicle from which a casualty occurred, followed by pedestrians.

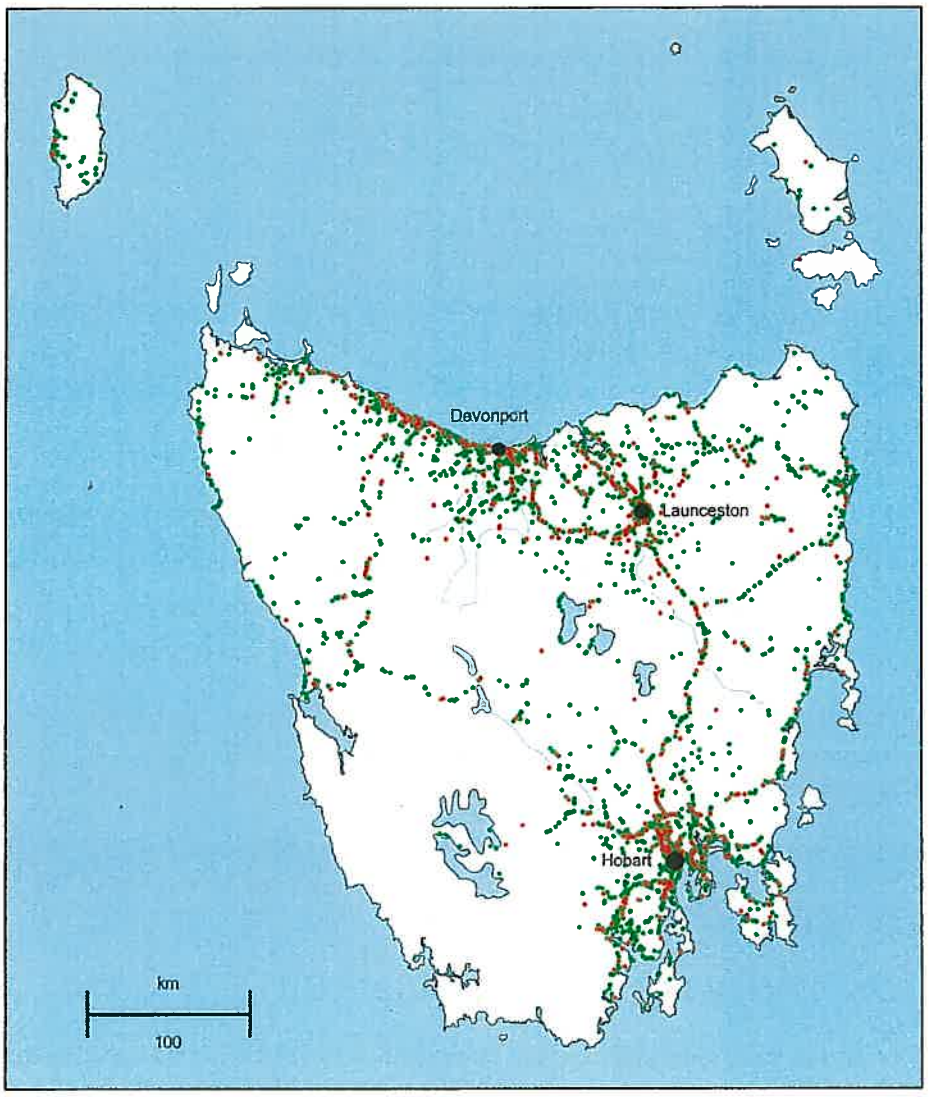

Figure 2.3
Location of fatal (red dot) and serious (green dot) casualties in Tasmania over the 2001-2014 period

Table 2.1
Number of kilometres, number of fatal and serious casualties, and casualties per kilometre by road category (2001-2014)

Road category	Total km	Fatal and serious casualties	Casualties per km
Trunk roads	489	725	1.48
Regional freight roads	425	374	0.88
Regional access roads	726	634	0.87
Feeder roads	841	432	0.51
Other state roads	1,214	357	0.29
Local council roads	-	2,620	-

Table 2.2
Number of fatal and serious casualties by vehicle type (2001-2014)

Vehicle type	Fatal and serious casualties
Light vehicle	3,231
Motorcycle	1,053
Pedestrian	508
Bicycle	163
Heavy vehicle	115
All-terrain vehicle	67
Wheeled toy	5

2.1 Casualty reduction targets and identified risk areas

The Tasmanian Road Safety Strategy 2007-2016 set the following casualty reduction targets:

- By 2010, a 20% reduction in the number of serious injuries and fatalities from 2005.
- By 2015, a 20% reduction in the number of serious injuries and fatalities from 2010.
- By 2020, a 20% reduction in the number of serious injuries and fatalities from 2015.

In addition, a number of crash problem areas were identified: run-off road crashes; intersection crashes; head-on crashes; speed; inattention; non-use of seatbelt; drink driving; young road users; motorcyclists; and pedestrians.

There was a focus on four strategic directions to achieve the casualty reduction targets and improve safety in the identified problem areas: safer travel speeds, best practice infrastructure, increased safety for young road users, and enhanced vehicle safety.

2.2 Casualty reduction targets for 2010-2015 and 2015-2020 periods

The 2007-2016 strategy calls for specific reductions in the number of fatal and serious casualties over three periods. Figure 2.4 shows the number of fatal and serious casualties over the period 2001-2014, along with the specified 20 percent reduction targets over the two periods of 2005-2010 and 2010-2015.

As was highlighted in the 2014-2016 Action Plan, the 2005-2010 target was successfully achieved with a reduction of approximately 30 percent in fatal and serious casualties from 2005 to 2010. In fact the number of fatal and serious casualties in 2010 was unusually low when compared to the trend over the previous five year period. This natural fluctuation is to be expected, particularly in the state of Tasmania where the annual number of fatal and serious casualties is relatively low.

However, while this low number in 2010 ensured that the 2005-2010 target was met, it also produced an unrealistic goal for the 2010-2015 target. It is clear from Figure 2.4 that this target is unlikely to be met, despite a continuing downward trend in casualties and the promising reductions in various target areas highlighted in Section 2.3 below. The modelling presented in Section 3 also predicts that the 2010-2015 target in unlikely to be met.

As suggested, the use of a single year of casualty data for setting goals can result in unrealistic targets due to the natural fluctuation in casualty numbers. For future target setting a more appropriate method may be to base goals on the average of, or trend over, several years of baseline data. It is worth noting, however, that the modelling in Section 3 predicted only an 11.2 percent reduction over

the 2010-2015 period, indicating that the goal of a 20 percent reduction was unlikely to have been met even if the target was more appropriately set.

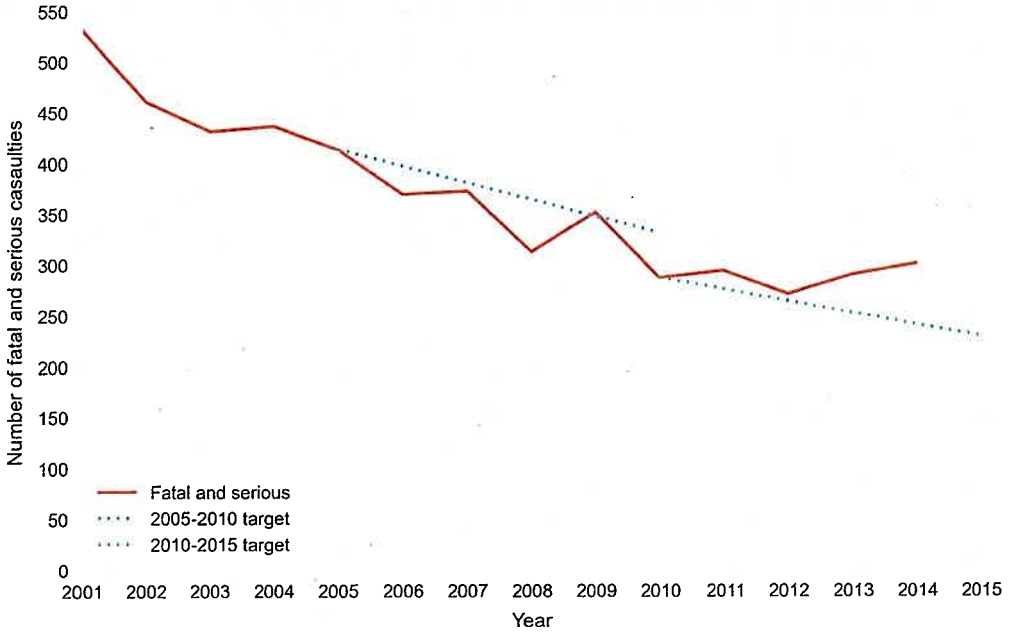

Figure 2.4
Number of fatal and serious injury casualties in Tasmania over the 2001-2014 period, with casualty reduction targets from the 2007-2016 strategy

2.3 Crash trends in target areas

The 2014-2016 Action Plan noted a decrease in the number of crashes in each of the target areas highlighted in the 2007-2016 strategy. The progress in addressing these target areas is further investigated here. Table 2.3 shows the annual average number of fatal and serious casualties during three different periods in various target areas. The three periods were selected to facilitate the analysis of progress over various stages of the 2007-2016 strategy; period A (2001-2006) is prior to the current strategy, period B (2007-2010) is early in the current strategy, and period C (2011-2014) is later in the current strategy. Also shown in Table 2.3 is the percentage of fatal and serious casualties attributed to each target area in the most recent period (2011-2014) and the percentage change in casualties between periods.

As noted above, the overall number of fatal and serious casualties had trended downwards over time. The annual average number of casualties has reduced from 442 in period A, to 332 in period B and then to 290 in period C. Many of the target areas considered below were addressed specifically by various countermeasures as part of the 2007-2016 strategy and associated action plans. As such, it would be expected that these target areas should experience a decrease in casualties that is greater than the general reduction.

The target areas that had the most prevalent number of fatal and serious casualties were crashes in rural locations, crashes on high speed roads, run off road crashes (on curves), crashes involving motorcycles, hit fixed object crashes, and crashes involving young drivers.

The change in the average number of casualties between period A and period B may represent the early effects of the 2007-2016 strategy. There was a general reduction of 25 percent between periods A and B. Crashes at intersections and crashes involving young drivers had notably higher reductions between the same periods. Run off road crashes (on straight alignment) showed a limited reduction of 12 percent, while crashes involving motorcycles showed a particularly limited reduction of only 6 percent.

There was a general reduction in casualties of 34 percent between periods A and C, which may represent the effects of the 2007-2016 strategy as more actions are implemented. Notably high reductions in the average number of casualties was observed for crashes involving young drivers, crashes involving trucks, crashes at night time, and crashes involving novice drivers. More limited reductions were found for crashes involving motorcycles, crashes involving older drivers, and crashes involving pedal cycles.

Progress over the course of the 2007-2016 strategy may be represented by the change in the average number of casualties between periods B and C. The general reduction in fatal and serious casualties between these periods was 13 percent. Crashes involving novice drivers, crashes involving trucks, crashes involving young drivers, hit fixed object crashes, and crashes at night time had notably greater reductions in casualties. On the other hand, crashes involving motorcycles displayed a notably lower reduction. Additionally, crashes involving pedal cycles, crashes involving older drivers, and crashes involving pedestrians showed an increase in the average number of casualties between periods B and C.

Taken as a whole, the results in Table 2.3 are indicative of a positive improvement in road safety since the implementation of the 2007-2016 strategy. Compared to the six year period prior to the implementation of the 2007-2016 strategy, all of the target areas that were considered have experienced a reduction in the average number of casualties.

Specifically attributing certain actions brought about by the 2007-2016 strategy to these reductions is beyond the scope of this report. However, it is clear that the 2007-2016 strategy and the associated action plans have brought about an accelerated reduction in fatal and serious casualties that would otherwise not have occurred.

There were several target areas in which there was particularly notable progress. Casualties resulting from crashes at night time decreased by almost a third over the course of the 2007-2016 strategy and by more than half compared to the pre-strategy period. Casualties resulting from hit fixed object crashes (which account for a quarter of all casualties) showed a similar reduction. Crashes involving young or novice drivers were a focus of the 2007-2016 strategy. Casualties associated with these crashes reduced by over a third over the course of the strategy and by half compared to the pre-strategy period. Crashes involving trucks were not specifically mentioned in the 2007-2016 strategy. Nonetheless, fatal and serious casualties associated with truck crashes also showed considerable reductions.

There were four target areas in which progress was noted to be lacking. Casualties resulting from crashes involving older drivers, crashes involving pedestrians, and crashes involving pedal cycles were all found to have increased over the course of the 2007-2016 strategy. Each of these target areas also displayed limited casualty reductions relative to the pre-strategy period. Casualties resulting from crashes involving motorcycles account for over a quarter of all fatal and serious casualties. Alarmingly, however, casualties associated with motorcycle crashes showed only limited reductions between all of the considered periods. Attention on these four target areas will need to be maintained in the 2017-2026 strategy.

Table 2.3
Annual average number of fatal and serious casualties for various target areas during the three periods 2001-2006 (A), 2007-2010 (B), and 2011-2014 (C), along with the percentage change in average casualties between periods

Target area	Annual average in period (rounded to nearest integer)			Percentage of all fatal and serious casualties in period C	Percentage change between periods		
	A	B	C		A to B	A to C	B to C
All crashes	442	332	290	100.0%	-24.9%	-34.4%	-12.7%
Rural crashes	260	216	181	62.4%	-19.2%	-30.4%	-16.2%
High speed crashes (80 km/h and above)	267	210	173	59.7%	-21.3%	-35.2%	-17.6%
Night time crashes (8pm-6am)	94	68	46	15.9%	-27.7%	-51.1%	-32.4%
Run off road crashes (straight alignment)	73	64	50	17.2%	-12.3%	-31.5%	-21.9%
Run off road crashes (curved alignment)	128	94	83	28.6%	-26.6%	-35.2%	-11.7%
Crashes at intersections	68	43	39	13.4%	-36.8%	-42.6%	-9.3%
Hit fixed object crashes	128	109	73	25.2%	-14.8%	-43.0%	-33.0%
Head on crashes	79	61	49	16.9%	-22.8%	-38.0%	-19.7%
Crashes involving young drivers (<25 years old)	132	86	57	19.7%	-34.8%	-56.8%	-33.7%
Crashes involving novice drivers (L or P licence)	79	65	41	14.1%	-17.7%	-48.1%	-36.9%
Crashes involving older drivers (>65 years old)	49	38	43	14.8%	-22.5%	-12.2%	+13.2%
Crashes involving pedestrians	44	30	33	11.4%	-31.8%	-25.0%	+10.0%
Crashes involving pedal cycles	14	10	12	4.1%	-28.6%	-14.3%	+20.0%
Crashes involving motorcycles	86	81	76	26.2%	-5.8%	-11.6%	-6.2%
Crashes involving trucks	39	29	19	6.6%	-25.6%	-51.3%	-34.5%

3 Potential effectiveness of road safety countermeasures

The aim of the upcoming 2017-2026 Road Safety Strategy for Tasmania will be to build upon the progress and achievements of the 2007-2016 strategy (highlighted in the previous Section), and to address target areas in which progress was found to be lacking. These aims will be accomplished through the implementation of road safety countermeasures under the Safe System approach.

The Safe System approach represents what is regarded as best practice in addressing road safety and underpinned the previous 2007-2016 strategy. The approach represents a major shift in the way road safety is perceived and managed. It forms the basis of the National Road Safety Strategy (NRSS) as well as the strategies of the various States and Territories throughout Australia.

What is different under the Safe System is that we acknowledge that the road system is inherently unsafe and that errors are to be expected. It therefore follows that we need to transform our road system into one that is forgiving of error. In other words, people should not be killed or seriously injured as a result of errors that occur on the road system. This means keeping crash forces to survivable levels and in many cases "designing crashes out of the system". Transforming the road system in this way means that solutions should be sought and coordinated across four key areas: speed, vehicles, roads and road users.

Evidence is emerging that better quantifies the nature of the road safety problem. In a study by Wundersitz and Baldock (2011) it was found that extreme behaviours only explained a limited amount of the circumstances behind death and injury on the road. For fatality crashes, approximately 40% of cases involved extreme behaviour. In the case of injury crashes, only 10% of crashes involved extreme behaviour. This indicates two important things. Firstly, the community perception that road safety is a problem of all the "bad" drivers out there is unfounded. Secondly, fatal crashes do not constitute a good basis for making judgements on injury crashes in general. Therefore we need to regard the road safety problem as one of system failures, where people in everyday driving situations make errors. Extreme behaviours also need to be managed but they should not govern countermeasure solutions for all road users.

It is also important to note that under the Safe System there is also a shift away from a black spot mindset as the reality is that crashes will become increasingly random in location into the future. Instead, systemic changes that address the core issue of energy transfer and human tolerance to injury will increasingly receive more attention. Solutions will need to have more of a focus on mitigating consequences should a crash occur rather than just considering likelihood.

There are numerous Safe System countermeasures that could be adopted in a road safety strategy. A number of countermeasures are introduced in Section 3.1 to 3.4 under the four headings of safer speeds, safer road users, safer vehicles, and safer roads. An indication of the potential effectiveness of these countermeasures is given. However, for some countermeasures it is difficult to determine the effectiveness as evaluations have not been conducted, the research evidence is contradictory, or it is difficult to translate results from a specific study to more general circumstances. It should be noted that the effectiveness of many potential countermeasures have been considered for the sake of completeness, even though some may not necessarily be practicable in Tasmania. The ability of the countermeasures discussed in each of the Safe System areas to address the target areas highlighted in Section 2 is then presented in Section 3.5.

In order to assess the potential effectiveness of several of these countermeasures in Tasmania, a model of fatal and serious casualties was developed. This model is described in Section 3.6, with further details provided in Appendix A.

Section 3.7 utilises the model to predict how the number of fatal and serious casualties in Tasmania would change over time due to background effects, such as changes to the number of registered vehicles or the advancement of vehicle safety technologies, without the implementation of any countermeasures. Then, in Section 3.8, the additional effects of various modelled countermeasures are explored.

3.1 Safer speeds

Speed is one of the main determinants of death and injury from use of the road system. Simply put, speed in combination with mass determines the energy in the road system and therefore the extent of injury when inevitable errors and consequent crashes occur.

The issue of speed is not just related to compliance with the speed limit. The appropriateness of the speed limit in the first place also needs to be questioned. It is quite evident that at current travelling speeds, vehicles are unable to protect occupants, motorcyclists, pedestrians and cyclists when collisions occur. It is not well known that the speeds at which vehicles can prevent injury are generally much lower than the posted speed limits on the road network. Table 3.1 below highlights aspirational speeds that minimise harm and injury when a collision occurs.

Table 3.1
Safer speeds initiatives and their effectiveness

Crash configuration	Speed above which likelihood of death increases dramatically
Head on collision between passenger cars	70 km/h
Right angle impact between passenger cars	50 km/h
Side impact of a passenger car into a tree or pole	30 km/h
Collision between a pedestrian and a passenger car	30 km/h

Although the actual values of these numbers may be debated as car fleets change, the most important point to note is that there is a significant mismatch between current operating speeds and the speeds that minimise harm. Add to this the complexity of children, the elderly, motorcycles and heavy vehicles and it becomes apparent that the road system is inherently unsafe.

Our understanding of the role of speed in injury outcomes has increased significantly over the past decade and it would be fair to say that current speed limits would not have been set as high if this knowledge existed over 60 years ago. In the same way that the community respects changes to practices in relation to smoking and asbestos, speed should also be reviewed on the basis of increased knowledge.

The good news is that speed is a "silver bullet" in road safety terms. There is overwhelming evidence that whenever speed limits are lowered, road trauma reduces. Even small changes in travelling speed across the network can lead to large reductions in road trauma. This is supported internationally but much of the research evidence has actually originated in studies on Australian roads. For example, in South Australia the move from 60 to 50km/h (Kloeden et al., 2007) and 110 to 100km/h (Makenzie et al., 2015) is associated with a 25% drop in casualties on those roads where the change occurred.

For this reason, establishing appropriate travelling speeds that are safe remains one of the most effective ways that injury and death can be reduced on the road network and must remain a key consideration of any road safety strategy. To achieve the equivalent reductions using any other countermeasure would be very difficult, and certainly would not be possible at the same low cost or in a rapid timeframe.

The safer speed countermeasures mentioned above, and their effectiveness, are summarised in Table 3.2.

Table 3.2
Safer speeds countermeasures and their effectiveness

Countermeasure	Effectiveness
* 110 km/h limits to 100 km/h	~ 25% reduction in all casualties (Mackenzie et al., 2015)
* 100 km/h limits to 90 km/h	Estimated 20% reduction, based on other studies of speed effects
* 60 km/h limits to 50 km/h	~ 25% reduction in all casualties (Kloeden et al., 2007)

* Modelled

3.2 Safer road users

The road user has received the bulk of attention when considering road safety management over past decades. It seems logical that people make mistakes and therefore we need to ensure we educate and enforce so that road users do not make mistakes. While Australia has been one of the most successful countries in achieving crash reductions from behavioural initiatives, it is also unrealistic to think that errors when using the road can ever be totally eliminated. No matter how well trained or skilled people are, mistakes will still continue to occur. We therefore need to focus on solutions that encourage appropriate road user behaviour but be open to the idea that more effective solutions could lie within other areas of the Safe System. For example, a barrier in the middle of the road will eliminate risky overtaking manoeuvres and an alcohol interlock in a vehicle will eliminate drink driving in that vehicle.

This is not to say that current attempts to enforce or educate should cease and quite the opposite, they should continue. However, we should have more realistic expectations about what can be achieved through the behavioural approaches when compared to other options and the effort required to achieve equivalent outcomes.

Traditional approaches that have been highly successful include the adoption of Graduated Licencing Systems (GLS) for novice drivers, speed enforcement, and random breath testing.

A well designed GLS will protect novice drivers from the potential cognitive overload of the more complex tasks associated with driving, such as night time driving or maintaining concentration while there are other occupants in the vehicle. This protection allows novice drivers to develop crucial experience in a safer driving environment. Healy et al. (2012) found that the introduction of a GLS in Victoria, which included passenger restrictions and vehicle power restrictions, resulted in a 31 percent reduction in fatal and serious injury crashes for novice drivers. Since GLS initiatives are always introduced as a package of restrictions, the individual effects of the various elements are difficult to quantify. Another initiative targeted towards novice drivers is the raising of the age at which a provisional licence can be obtained. By delaying the provisional licensing age, young drivers are able to gain more experience while on their learner's licence, where they are supervised by a fully licenced driver, and will also be more mature by the time they are ready to obtain their provisional licence.

A commonly held belief among many is that deficits in road safety can be addressed by an improvement in the driving skills among the broader driving community. Driver training programs have been in operation throughout Australia and internationally for over 50 years and the effectiveness of these has been the subject of numerous evaluations and reviews (e.g., Christie, 2001; Engstrom et al., 2003; Vernick et al., 1999; Woolley, 2000). These investigations have produced little evidence that driver training programs effectively reduce either crash involvement or driving violations of those who undergo training.

The majority of drivers observe the posted speed limit (Kloeden and Woolley, 2015). However, because speed plays such a crucial role in the causation and severity of crashes, increasing the proportion of drivers who observe the posted speed limit will invariably lead to a reduced crash rate. Increasing compliance with speed limits can be achieved through enforcement. A Cochrane Collaboration meta-analysis of speed cameras concluded that they were effective at reducing speeds, and also resulted in reductions in crashes (Wilson et al., 2011). Fatal and serious injury crashes were noted to decrease by around 35 percent.

Point to point cameras are a relatively new type of speed enforcement technology that was not investigated by the Cochrane Collaboration meta-analysis. An Austroads study (Soole et al., 2012) of the effectiveness of point to point cameras in overseas countries, such as the United Kingdom and The Netherlands, found that they are associated reductions in crash rates that are similar to traditional speed cameras. Additionally, they are considered to be more acceptable and fair by drivers.

Manual police enforcement is also an option for addressing drivers that travel over the speed limit. Newstead at al. (2001) investigated the effect of manual police enforcement and concluded that an operation that was well-managed and utilised random location selection to maximise coverage could result in fatal crash reductions of approximately 30 percent.

Deterrence theory proposes that the threat of punishment can deter people from committing offending behaviours. The deterrent associated with a given punishment is influenced by three things: the certainty that the punishment will be received (e.g., likelihood of detection), the severity of the punishment, and how soon following the behaviour the punishment is received. From a traffic enforcement perspective the two main options for increasing deterrence are by increasing enforcement (certainty) or severity. Research has shown that enforcement activities that increase the likelihood of detection (e.g., speed cameras, visible police operations/presence) have been found to improve compliance with road laws (e.g., Soole et al., 2009; Wilson et al., 2011). On the other hand, examinations of penalties have found that fines alone provide little deterrence (Elvik & Christensen, 2007; Lawpoolsri et al., 2007; Moffatt & Poynton, 2007; Watson et al, 2010), and that increased or more severe fines also provide little deterrence (Moffatt & Poynton, 2007; Watson et al., 2010). While the severity of a punishment certainly contributes to deterrence, it would appear that the perceived risk of receiving the punishment may be the more important factor.

Alcohol is often highlighted as a factor in fatal or serious injury crashes. Even in legal concentrations (i.e. below 0.05), alcohol can impair a driver's decision making or reaction time. One method to overcome the effect that alcohol may have on crash causation is the lowering of the legal BAC limit. Numerous studies have found that any reduction in the legal BAC limit is associated with significant reductions in fatal and serious crashes (Norstrom and Laurell, 1997; Fell and Voas, 2006; Desapriya et al., 2007).

Some potential countermeasures could be targeted at specific groups that have been found to be more at risk of injury in the event of a crash. For example, promotion of high-visibility clothing for cyclists or protective clothing for motorcyclists. While it has been shown that high-visibility clothing assists drivers in detecting the presence of cyclists, no studies have investigated whether there is an associated crash or injury reduction (Kwan and Mapstone, 2009). On the other hand, there are clear benefits for motorcyclists in wearing protective clothing. Motorcycle jackets and motorcycle pants were found to reduce the likelihood of being admitted to hospital by 21 percent and 51 percent respectively (de Rome et al., 2011).

The safer road user countermeasures and their effectiveness are summarised in Table 3.3.

Table 3.3
Safer road users countermeasures and their effectiveness

Countermeasure	Effectiveness
GLS with all components	High (Healy et al. 2012)
* P1 at 18 years of age	GLS effective but individual effects unclear
* Night time curfew for novice drivers	GLS effective but individual effects unclear
* Passenger restrictions for novice drivers	GLS effective but individual effects unclear
Vehicle power restrictions for novice drivers	No strong evidence to support effectiveness
Greater education/training	Low
More speed cameras	~ 30% reduction in crashes (Wilson et al., 2011; Soole et al., 2012)
Increased police enforcement	~ 30 % reduction in crashes (Leggett, 1997)
Increased penalties for infringements	Low – more dependent on perception of being caught
Lowered legal BAC limit	~ 10% reduction in crashes by lowering to 0.02 (Norstrom & Laurell, 1997)
Promote high-vis clothing for cyclists	Increases cyclist detection but crash effects are unknown
Promote protective clothing for motorcyclists	~ 50% less likely to be admitted to hospital (de Rome et al., 2011)

* Modelled

3.3 Safer vehicles

Vehicle safety has been improving at a rapid rate over past decades. The ability for the vehicle structure to protect occupants in a collision (passive safety) has improved dramatically over time and attention has now turned to technologies that are capable of avoiding crashes altogether (active safety). A good indication of how vehicle safety has improved over time can be found in Newstead et al. (2013).

There is much talk of autonomous or driverless vehicles and while many technologies are currently available or soon to come to assist drivers, the world of full autonomy on all parts of the network is still some way off. It is more likely that automation is allowed on some parts of the network under certain circumstances such as specific sections of freeway for example. There is already an explosion of driver assistance technology available on the market and this will greatly enhance safety into the future. Efforts need to be made to ensure that all new vehicles sold in Tasmania and fleet purchases incorporate the safest vehicles in each class.

The research has informed us that it is important to get as many new vehicles as possible into the vehicle fleet so that maximum safety benefits can be realised. Every year a new vehicle or safety technology is delayed from entering the fleet results in a diminished safety effect in consequent years. This is because it takes many years to change over the vehicle fleet. If a new safety technology is introduced tomorrow, it will take approximately 20 years before it penetrates the entire fleet. Therefore it is important that government and private industry adopt practices that ensure the newest and safest vehicles are adopted for their fleets. This will also have a flow on effect to the community when the vehicles are resold at a later date.

While promoting new vehicle safety is an important endeavour, improving the safety of the current fleet should also be pursued. Given the strong link between the age and the crashworthiness of a vehicle, the task of improving the general safety of the fleet should be focussed on reducing the average age of the fleet. Various methods of pursuing this goal exist, including "cash for clunkers" type schemes, insurance disincentives for older vehicles, new (or newer) vehicle purchasing incentives, vehicle safety inspections, or simply mandating a maximum vehicle age.

There is also a need to get the safest vehicles to those most at risk. For example, younger drivers tend to drive older less safe vehicles while the safest vehicle in the family is at home sitting in the

driveway (Anderson et al., 2013). From a risk management perspective, they should be driving the safest vehicle they have access to.

For motorcyclists, research evidence is emerging on the significant effectiveness of ABS braking systems (Teoh, 2011). At a federal level consideration is being given to making such systems mandatory on new motorcycles. Efforts to increase the numbers of ABS equipped motorcycles in Tasmania would be regarded as highly worthwhile.

Some vehicle based countermeasures are targeted at encouraging (or indeed forcing) safer behaviours from the driver and occupants. These include alcohol interlocks, seatbelt interlocks, and intelligent speed adaptation.

Alcohol interlocks are usually fitted to the vehicles of drivers who have been charged with a drink driving offence. In these situations alcohol interlocks are very effective at reducing further drink driving, though the likelihood of offending tends to increase once the device is removed (Bailey et al., 2013). Current interlock technology is perceived to be time consuming to operate, and thus there is a reluctance to voluntarily install the devices despite the potential benefits. Therefore, little is known about the effect of expanding the use of alcohol interlocks beyond drink driving offenders.

Many injuries sustained during a crash are more severe than necessary due to the non-use of seatbelts. Modelling, conducted using South Australian crash data, found that the mandatory introduction of seatbelt interlocks to all new vehicles in 2015 had the potential to prevent 2% of serious injuries and 7% of fatalities by 2030 (Searson & Anderson, 2013).

Intelligent speed adaptation (ISA) is a technology that aids the driver in observing the posted speed limit. There are three types of ISA system; advisory, supportive, and limiting. Advisory systems provide a warning (audio or visual) to the driver when they travel over the speed limit. Supportive systems operate similarly to advisory systems but additionally provide some resistance to the accelerator pedal to help the driver stay within the speed limit. Limiting systems are integrated with the vehicle's drive train and totally prevent the vehicle from travelling faster than the speed limit. The potential for the various types of ISA system to reduce crash risk was explored by Doecke and Woolley (2011). Advisory systems were found to reduce fatal and serious crashes by around 10%. Supportive and limiting systems reduced fatal and serious crashes by around 17% and 27% respectively.

The safer vehicles countermeasures mentioned above, and their effectiveness, are summarised in Table 3.4.

Table 3.4
Safer vehicles countermeasures and their effectiveness

Countermeasure	Effectiveness
Promote advanced vehicle safety systems	Large benefits would be expected but depends on level of success
* Reduce the average age of vehicle fleet	Large benefits would be expected but depends on level of success
Promote safer vehicles for novice drivers	Young driver will benefit but depends on level of success
Promote ABS for motorcycles	~ 37% reduction in fatal motorcycle crashes (Teoh, 2011)
Broader use of alcohol interlocks	Effective when fitted but broader use effects unknown (Bailey et al., 2013)
Seatbelt interlocks	~ 5% reduction in fatal and serious casualties (Searson & Anderson, 2013)
Intelligent speed adaptation	~ 10% - 27% reduction in serious crashes depending on type (Doecke & Woolley, 2011)

* Modelled

3.4 Safer roads

Under the Safe System a road environment that is forgiving of human errors is required. In the current road network, errors can easily lead to fatal outcomes and road users are often placed in situations where mistakes are to be expected. The two biggest challenges that remain from past decades are managing road departures and collisions at intersections.

Road departures are a difficult problem as they generally occur randomly in rural areas and often involve vehicle rollover or collisions with roadside hazards such as trees. Such events tend to be biased towards death or severe injury outcomes. Road departure manoeuvres are also associated with head on collisions as they often involve the same loss of control mechanisms and slewing into the path of an oncoming vehicle.

From a Safe System perspective, best practice in handling road departures and head on crashes is to make extensive use of crash barriers. There are good examples internationally and within Australia that high levels of safety can be achieved when continuous lengths of flexible safety barrier is used on the roadside and in the centre of the road (Ray et al., 2009; Washington State Department of Transport, 2009; Carlsson, 2009; Bergh et al., 2003; Candappa et al., 2011; Larsson et al., 2009). Head on crashes are virtually eliminated and departing vehicles are decelerated in a more forgiving manner. There is a growing body of evidence that such treatment can be safer and less costly than the traditional dual carriageway approach with wide medians. Thinking in relation to clear zones has been changing over time in the light of emerging evidence (Doecke and Woolley 2010). High quality rural roads can achieve safer outcomes with continuous lengths of barrier rather than a reliance on clear zones. Where barrier protection cannot be achieved, clear zones can provide some benefit for road departure crashes and the first four metres of clear zone are thought to provide the most benefit (Levett et al., 2009; Austroads, 2015b).

Despite an assumption that overtaking lanes improve safety, there are actually very few studies that prove that this is the case. This suggests that the safety effect is likely to be influenced by many other factors. Traditionally, overtaking lanes were implemented on the basis of traffic efficiency with safety as an assumed benefit. The few studies that do exist demonstrate a variation in benefits from 25% reduction in all crashes and over 50% reduction in injury crashes, to increases in certain types of crashes (Rinde 1977, Harwood and St John 1985, Harwood and Hoban 1987, Koorey et al 1999, Bui 2001, Potts and Harwood 2004, Jaehrig 2014). It is worthwhile noting that the greatest reductions in injury crashes were associated with the use of overtaking lanes with additional centreline treatments such as wide medians or centreline barriers (Koorey et al 1999, Jaehrig 2014). In the Tasmanian context the past philosophy of adopting a 2+1, or a 2+2 configuration where overtaking is provided, is still regarded as important. Consideration should also be given to mitigating crash effects upstream and downstream of the overtaking facility and at the very least the monitoring of crashes in such zones should be performed.

There has also been success with wide centreline treatments. Such treatments have been applied in in New South Wales, Queensland and South Australia and basically consist of a parallel line separated by 1 metre dividing the traffic (traditional barrier lines have a 10cm separation). Overtaking is permitted on the wide centrelines where broken lines are applied (see Figure 3.1). Evidence is emerging in some jurisdictions that installing a wide centreline can lead to significant reductions in crashes (Austroads, 2015b).

Figure 3.1
Wide centreline treatments along the Dukes Highway (South Australia) showing sections that allow overtaking (left) and no overtaking (right)

Audio tactile line marking, delineation and sealed shoulders can all contribute to a reduction in road departure crashes (DIRD, 2015 and Austroads 2015b) and there should be an aspiration to implement these on as much of the network as possible, especially where barrier protection cannot be achieved.

Collisions between vehicles at intersections are a problem because vehicles are commonly struck in their most vulnerable orientation. The risk of car occupants receiving an injury from a frontal collision is lower than a side impact because there is a "crumple zone" ahead of the windscreen that can absorb the energy in the collision. With a side impact, only the width of the door can be used to protect the occupants. In this regard, the right turn and through movement across traffic are particular problems as vehicles will tend to be struck on the side.

The provision of a forgiving road environment will mean the elimination points of conflict by closing intersections, grade separation or restricting movements such as right turns, thereby eliminating the opportunity to crash or at least avoid side impacts. Where this cannot be achieved speeds must be managed to survivable speeds (50km/h for a right angle collision between passenger cars) or the geometry of the intersection altered so that right angle collisions are not likely. One way of ensuring safe speeds is to construct plateaus on approach or within the intersection (see Figure 3.2). Similar to speed humps, this treatment guarantees that vehicles interact at safe speeds (Pratt et al., 2015) – something that speed limit signs, intersection warning signs and even traffic signals do not guarantee. This treatment also facilitates safe interactions with cyclists and pedestrians. This has been a common practice in The Netherlands for many years and the first implementations on major roads are starting to emerge in Australia.

Figure 3.2
Plateau treatment implemented at a high crash risk intersection in Kent Town, Adelaide.

Roundabouts have been an outstanding safety success as they do not allow vehicles to collide at right angles and their geometric design ensures lower interaction speeds (DIRD, 2015; Austroads, 2015a; Austroads, 2010). The gap selection task is also much simpler as traffic only circulates in one direction and fewer points of conflict exist when compared to a cross road junction (8 versus 32 for a single lane junction). Current practice means that roundabouts tend to have large footprints and cost in the $1-$5 million price range. Further research into roundabout design is needed and efforts made to see if effectiveness can still be maintained with lower cost innovative designs.

The task of retrofitting the road system to improve cyclist safety is difficult as the road system is inherently unsafe for these road users in most locations and there is community resistance to giving up car space for cyclists. From a theoretical perspective the solution is straightforward: where speeds cannot be managed to safe levels, segregation should occur. In practice and with limited funds, it may be easier to provide safe corridors as viable alternatives for cyclists to access different quadrants of the city backed up by appropriate infrastructure treatments. Such an example exists in Vancouver, Canada, amongst others, where road space was removed from motor vehicles to create a pair of safe cycling corridors (NACTO, 2014; City of Vancouver, 2015).

Pedestrian collisions are likely to be highly random in built up areas in Tasmania which makes an infrastructure response difficult. Where dedicated pedestrian crossing facilities are provided, a raised platform for the pedestrians is desirable to slow vehicle down to safe speeds. In addition, where there are concentrations of pedestrian activity, 40km/h activity zones could be implemented to provide further protection. Speed management remains key to achieving safety for pedestrians across built up areas (Retting et al., 2003; Oxley et al., 2013).

The safer roads countermeasures mentioned above, and their effectiveness, are summarised in Table 3.5.

Table 3.5
Safer roads countermeasures and their effectiveness

Countermeasure	Effectiveness
*Rumble strips (Audio tactile line marking)	Medium but issues exist with ongoing maintenance (Levett et al. 2009, DIRD 2015)
* Sealed shoulders	Medium - Austroads 2015b and DIRD 2015
Overtaking lanes	Inconclusive however best outcomes are with central median or barrier in place (Koorey et al 1999, Jaehrig 2014)
Clear zones	Medium – best practice now moving towards barriers for high standard roads (Levett et al. 2009) however clear zones still worthwhile on roads that do not receive barrier treatment
* Wide centrelines	Medium/High (Austroads 2015b)
* Roundabouts	High (DIRD 2015, Austroads 2015a, Austroads 2010)
* Right turn bans	High – potential to eliminate most right-angle crashes if executed well
* Right turn lanes	Medium/Low but still allows right angle crashes to occur
* Plateaus	High – guarantees safe speed interactions (Pratt et al. 2015)
Separation of cycle and vehicle traffic	High – eliminates interactions between vehicles and cyclists
* 2+1 Side and median barriers (wire rope, W-beam)	High – eliminates almost all off-road and cross-path crashes (Carlsson 2009)
* Wide scale improvements directed at specific crash types (e.g. run off road or head on)	High if continuous barrier options included Medium/High if wide centre lines adopted
Raised pedestrian crossings	High if speeds are effectively managed Candappa et al. 2014)

* Modelled

3.5 Safe System countermeasures ability to address target areas

The ability of countermeasures in each of the four Safe System areas to address the target areas identified in Section 2 is shown in Table 3.6 using a three star rating system. These star ratings were selected based on a synthesis of the literature on each countermeasure reviewed in the previous sections. A three star rating indicates that the countermeasures in that Safe System area directly address the specific target area. A two star rating indicates that, while the countermeasures may not directly address a particular target area, there would be some significant benefit expected nonetheless. A one star rating indicates that there would be little effect on the target area.

Safer speeds are likely to affect all the target areas, while safer roads and safer vehicles are limited in some specific areas. The effect of safer road user behavioural countermeasures is very limited and is only relevant to a few specific areas.

Table 3.6
Effectiveness of Safe System countermeasures to address specific target areas

Target area	Percentage of all fatal and serious casualties	Ability of countermeasures in the area to reduce injury			
		Speeds	Road users	Vehicles	Roads
All crashes	100.0%	+ + +	+	+ + +	+ +
Rural crashes	62.4%	+ + +	+	+ + +	+ +
High speed crashes (80 km/h and above)	59.7%	+ + +	+	+ + +	+ + +
Night time crashes (8pm-6am)	15.9%	+ + +	+ + +	+ + +	+ +
Run off road crashes (straight alignment)	17.2%	+ + +	+	+ + +	+ + +
Run off road crashes (curved alignment)	28.6%	+ + +	+	+ + +	+ + +
Crashes at intersections	13.4%	+ + +	+	+ + +	+ +
Hit fixed object crashes	25.2%	+ + +	+	+ + +	+ + +
Head on crashes	16.9%	+ + +	+	+ + +	+ + +
Crashes involving young drivers (<25 years old)	19.7%	+ + +	+ + +	+ + +	+ + +
Crashes involving novice drivers (L or P licence)	14.1%	+ + +	+ + +	+ + +	+ + +
Crashes involving older drivers (>65 years old)	14.8%	+ + +	+	+ + +	+ + +
Crashes involving pedestrians	11.4%	+ + +	+	+ +	+ +
Crashes involving pedal cycles	4.1%	+ + +	+	+ +	+ +
Crashes involving motorcycles	26.2%	+ + +	+	+ +	+ +
Crashes involving trucks	6.6%	+ + +	+	+ +	+ +

3.6 Modelling future fatal and serious casualties in Tasmania

The model described here examines road crash casualties from the past (in this case serious injuries and fatalities) and predicts the likelihood that they will occur again in the future. The prediction process takes account of various changes to the road transport system over time. The effect of each change is applied to the appropriate subset of casualties to revise the likelihood of reoccurrence in future years. For example, a change that reduced all 60 km/h speed limits to 50 km/h would be modelled by reducing the risk of reoccurrence for all casualties that occurred in a 60 km/h speed zone by an appropriate factor. Multiple changes to the road transport system can be modelled and their effects combined. By aggregating the revised risk for all the casualties in the baseline sample, a prediction for the total number of casualties in future years can be determined.

Some changes to the road transport system are classified as background effects. These include changes to driving exposure and improvements to vehicle primary and secondary safety. Modelling these effects predicts how the number of casualties will change over time without any future implementation of active countermeasures.

Other changes are direct countermeasures implemented with the aim of improving road safety such as speed limit reductions, large scale infrastructure improvements, and licencing changes for novice drivers. The specifics of each countermeasure can be customised within the model, including the year of implementation and the effects of the change (which will nominally be based on literature and accepted effects). The expected reductions in the number of casualties can then be determined and the effectiveness of different combinations of countermeasures can be explored. This provides various potential options for road safety actions that can deliver greater reductions in casualties.

The accuracy of the model relies on the selection of an appropriate baseline sample of casualties from which to model forward into future years. The larger the baseline sample of past casualties, the more representative of Tasmania's road safety situation it will be. Given the relatively low number of serious injuries and fatalities on Tasmanian roads, several years of casualty data are necessary. This suggests that using data from many years into the past is desirable. However, because the road safety situation changes over time, using data from too far into the past can result in inaccurate predictions of future casualties as past effects are obscured or unaccounted for. Initial modelling indicated that casualties from the years 2007 to 2014 were the most representative baseline sample for use in the model.

There were two major changes to the road transport system implemented during this baseline period; changes to the GLS over 2008-2009 and a reduction of speed limits on unsealed roads in 2014. For both of these changes there will be some baseline casualties that occurred before the change and some that occurred after. No action needs to be taken for those baseline casualties that occurred after a particular change as they will have already experienced the effects of the change. However, modelling was required to account for the effect of the changes on those baseline casualties that occurred prior to the implementation, so that their likelihood of occurring in future years could be predicted properly. Details on how these changes during the baseline period were accounted for are presented in Appendix A.

The model utilises the baseline sample of representative casualties to investigate the effect of broad changes to the road transport system. For example, investigating the effect of reducing all 60 km/h speed zones to 50 km/h across the entire state. Relatively minor changes that affect only a small proportion of baseline casualties cannot be modelled accurately. Thus, small actions such as changing the speed limit from 60 km/h to 50 km/h on a specific road or within a small area should not be modelled.

Note that the modelling work described here involves many complex and dynamic interactions between the various background effects and active countermeasures. Every effort has been made to identify and accurately account for these interactions. Appendix A contains details on how each countermeasure was modelled.

3.7 Background effects

Changes to the road transport system that occur naturally, or slowly, and are not the direct result of the implementation of a countermeasure are modelled as background effects. The predicted change in the number of casualties in future years as a result of these background effects represent the baseline change if no further countermeasures are introduced.

Two background effects were modelled. The first was changes to driving exposure on Tasmanian roads. Over time the number of registered vehicles on the road network changes. This change has implications for how often vehicles are exposed to events in which a collision may occur. The risk of crashes occurring increases as the number of vehicles on the network increases and vice versa. The average amount that each vehicle is driven on the road network also changes over time and again has

implications for how often vehicles are exposed to collision events. If vehicles are driven more then they have a greater chance of being involved in a collision and vice versa. The details on how these changes to driving exposure were modelled can be found in Appendix A.

The second background effect that was modelled was changes over time in the safety of vehicles. Over time, the general fleet will transition to newer vehicles with advanced safety technologies. The prevalence of vehicles with a great number and more advanced technologies will thus increase and the risk of serious injuries will decrease. Details on how this decrease in casualty risk, due to the turnover of the vehicle fleet, was modelled are provided in Appendix A.

The predicted number of fatal and serious casualties in each of the modelled years, as a result of background effects, are shown in Figure 3.1. This prediction provides an estimate for the number of casualties over time if no further changes to the road transport system are implemented.

In the five year period of 2010 to 2014 both the number of actual casualties and predicted casualties are shown. It can be observed that the model predictions are comparable to the number of actual recorded casualties and the downward trend over time.

The predicted casualties highlight again that meeting the 2010-2015 target is unlikely. Additionally, there was only an 11.2 percent reduction in the predicted number of casualties for the 2010 to 2015 period which indicates that the goal of 20 percent may not have been achieved even if the target was more appropriately set.

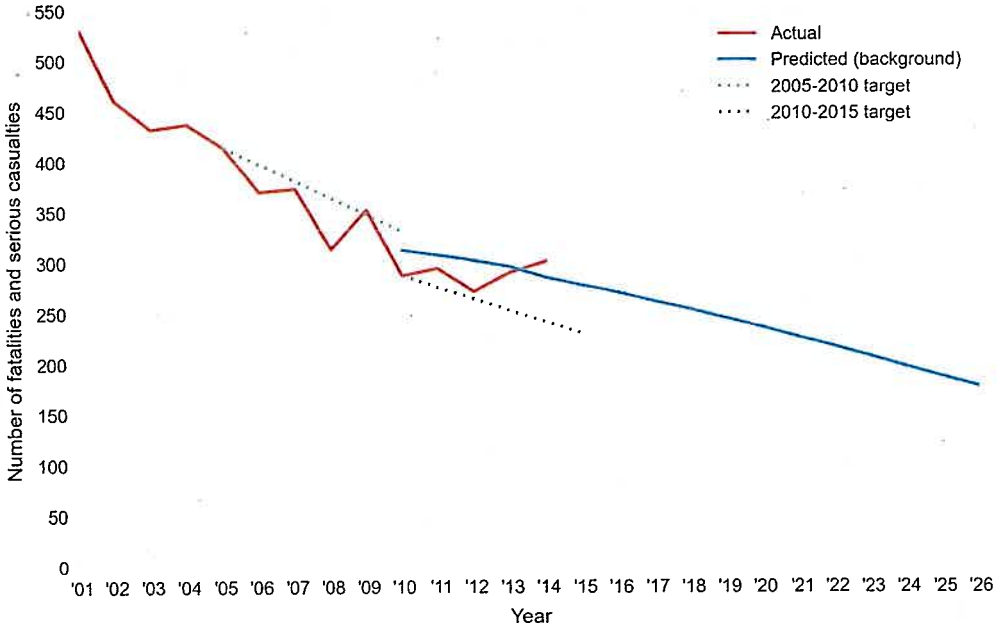

Figure 3.1
Predicted number of fatal and serious casualties based on modelled background effects, along with 2007-2016 strategy targets

3.8 Predicted countermeasure effects

Several potential countermeasures that were highlighted in the previous subsections are modelled here. They represent 'what if' scenarios that predict the effect that the countermeasures will have on

the number of fatal and serious injury casualties into the future. The details on how each of the countermeasure scenarios was modelled are presented in Appendix A.

Three speed limit reduction scenarios were modelled; all 110 km/h limits reduced to 100 km/h, all 100 km/h limits reduced to 90 km/h, and all 60 km/h limits reduced to 50 km/h. These speed limit reductions were also further split into implementations on specific road categories.

For safer road users there were also three scenarios modelled, based around the expansion of the GLS. The first was a restriction that drivers must be at least 18 years old before obtaining a P1 licence. The second was that drivers on a P1 licence may only carry a maximum of one passenger in a vehicle they are driving. The last was a curfew that restricts drivers with a P1 licence from driving between midnight and 6am.

Without detailed knowledge of the Tasmanian vehicle fleet it is difficult to model specific countermeasures that target safer vehicles. Instead, the potential effect of reducing the age of the vehicle fleet was modelled. The effects of reducing the average age of the fleet by 5%, 10%, and 15% was modelled.

The model described above was used to predict the number of fatal and serious casualties for each year in the period 2010 to 2026. Each of the countermeasures was modelled individually and the annual number of casualties during the 2010-2026 period was predicted.

Table 3.7 shows the results of the modelling work. The predicted number of casualties that would be prevented over the 2017-2026 period by the implementation of each countermeasure is displayed. These predictions are based on implementing the countermeasure in the year 2017, and the number of casualties prevented would obviously be reduced if countermeasures were implemented in later years (see Section 4.2). The estimated cost of the implementation of each countermeasure is also shown.

Speed limit reductions show the best potential for reducing casualty numbers. The benefit of reducing speed limits from 100 km/h to 90 km/h appears to be a fairly evenly spread across the various road categories. On the other hand, reducing 110 km/h limits to 100 km/h will need to focus on trunk roads and reducing 60 km/h limits to 50 km/h will need to focus on non state-controlled roads.

Reducing the age of the general vehicle fleet showed the second best potential for casualty reductions. As would be expected, the greater the overall reduction in age the greater the reduction in casualties. Even the smallest modelled reduction in vehicle age of 5 percent was predicted to produce a reduction in casualties that was comparable to reducing the speed limit on large sections of road.

The most promising GLS action was the restriction that drivers must be at least 18 years old before obtaining a P1 licence, followed by a night time driving curfew, and then passenger restrictions. The predicted benefits of these GLS actions were relatively small compared with the other possible actions. This may be due to the success of a number of other GLS actions that have already been implemented, such as the increase to a mandatory 12 months on a learners licence before progressing to a provisional licence.

Note that implementing multiple countermeasures at the same time will result in some interactions and so the individual effects cannot simply be added together. Some combined effects are listed in Table 3.7 and further combinations are covered in Section 4.1.

Table 3.7
Individual effect on the number of fatal and serious casualties from various road safety countermeasures

Countermeasure	Predicted number of casualties prevented by 2026 if implemented in 2017	Estimated cost of implementation
Speed limit changes		
110 km/h to 100 km/h		
All road categories	44	$1M
Trunk roads	37	$1M
100 km/h to 90 km/h		
All road categories	162	$1M
Regional access roads	27	$1M
Regional freight roads	22	$1M
Feeder roads	27	$1M
Other state-controlled roads	22	$1M
Non state-controlled roads	55	$1M
60 km/h to 50 km/h		
All road categories	63	$1M
Non state-controlled roads	44	$1M
GLS changes		
P1 at 18 years of age	31	$1M
Passenger restrictions	10	$1M
Curfew	20	$1M
All GLS initiatives	56	$3M
Average age of vehicle fleet		
Reduction of 5%	42	^
Reduction of 10%	85	^
Reduction of 15%	126	^

^ The exact mechanism for manipulating the age of the fleet is unknown but many measures are expected to be low in cost

Accurately modelling the effects of large scale, wide spread infrastructure treatments is impossible without detailed data on the characteristics and location of currently existing infrastructure. This type of data is simply not available and so several assumptions were made for the infrastructure scenarios modelled.

The effect of implementing specific treatments along the entire length of a particular road category was modelled as outlined in Appendix A. This type of action is obviously unrealistic (and ignores the effect of existing infrastructure), but highlights the potential for casualty reductions through the implementation of infrastructure countermeasures. Furthermore, it allows comparisons to be made between different countermeasures and the investigation of which road categories are likely to benefit more than others.

The predicted effect of the infrastructure countermeasures is shown in Table 3.8. For each countermeasure (implemented in 2017), the predicted number of fatal and serious casualties that would be prevented over the 2017-2026 period is displayed. An estimated cost for the implementation of each infrastructure countermeasure along the specific road category is also given.

It is evident that achieving a Safe System compliant network using crash barriers alone is cost prohibitive. While 2+1 configurations are clearly the best option, centreline treatments also show promising casualty reductions. Sealing shoulders and installing audio-tactile line marking are less effective but still worthwhile. Roundabouts are the most effective intersection treatment, followed by installing plateaus and eliminating right turns.

Given the unrealistic nature of the infrastructure countermeasures that were modelled, caution is advised in comparing the results displayed in Table 3.8 with those in Table 3.7.

Table 3.8
Individual effect on the number of fatal and serious casualties from various road safety infrastructure countermeasures

Countermeasure	Predicted number of casualties prevented by 2026 if implemented in 2017	Estimated cost of implementation
Centreline barrier		
Trunk roads	103	$54M
Regional access roads	88	$80M
Regional freight roads	60	$47M
Wide centreline		
Trunk roads	82	$60M
Regional access roads	63	$49M
Regional freight roads	45	$35M
Two plus one		
Trunk roads	125	$730M
Regional access roads	110	$1,080M
Regional freight roads	70	$640M
Sealed shoulders		
Trunk roads	66	$200M
Regional access roads	62	$290M
Regional freight roads	38	$170M
Audio-tactile line marking		
Trunk roads	22	$8M
Regional access roads	31	$12M
Regional freight roads	19	$7M
Roundabouts		
Trunk roads	26	$280M
Regional access roads	8	$120M
Regional freight roads	6	$70M
No right turn		
Trunk roads	16	$7M
Regional access roads	8	$3M
Regional freight roads	6	$2M
Right turn lanes		
Trunk roads	8	$70M
Regional access roads	7	$30M
Regional freight roads	2	$20M
Plateaus		
Trunk roads	17	$20M
Regional access roads	8	$10M
Regional freight roads	6	$5M
Grade separation		
Trunk roads	36	$2,130M
Regional access roads	20	$930M
Regional freight roads	10	$540M

4 Suggestions for the 2017-2026 strategy

This Section utilises the analyses from Sections 2 and 3 to make suggestions for the 2017-2026 strategy. A number of potential strategic directions are suggested and a discussion of how actions should be rolled-out is presented. Suggestions for new fatal and serious casualty reduction targets are then provided. The implications of the continuation or cessation of the Road Safety Levy are discussed and finally, some details of further considerations stemming from National Road Safety Strategy are provided.

4.1 Potential strategic directions

It is evident that Tasmania has limited resources with which to invest in road safety. The transformation of the road network that is required to Safe System standards will not be achievable on all roads nor within the life of the next strategy. This situation is not unique to Tasmania and all of the states in Australia with many times the resources still struggle to transform their road networks into safe ones.

Although many countermeasures are available it is important to consider their cost, likely effectiveness and the timeframe in which they can achieve benefits. Table 3.7, in the previous Section provided an indication of likely effectiveness of countermeasures and their related costs, from different areas of the Safe System.

It is quite apparent that speed management remains the most viable option for reducing death and injury on Tasmania's roads. Safer infrastructure is capable of providing more forgiving environments; however this would take immense investment and considerable time to achieve. Safer vehicles also hold much potential benefit for the future however it will take time for the vehicle fleet to turnover sufficiently with newer and safer vehicles. Some programs supporting safer road users can be effective but are generally not as efficient as other countermeasure approaches. Notable exceptions are traffic enforcement backed up by mass media and the graduated licencing system.

As an example, it is likely that the implementation of a lower speed limit will cost under a million dollars to implement. In contrast, the creation of a safe road environment using barriers in the centre of the road and on the roadsides in a "2+1" configuration will cost something in the order of $730 million on trunk roads alone. The upgrading of intersections where people have been injured to roundabouts on the same road type will cost in the order of $280 million. It would also take several years to construct the upgrades whereas the benefits from the lower speed limit would accrue immediately.

Safer vehicles should be promoted and fleet purchases should involve the safest vehicles in each category. However with an average fleet age of over 10 years in Tasmania, it would be many years before even half the fleet had a new safety feature that was made available tomorrow.

Enforcement activity backed up by mass media is expensive to maintain and finding additional resources to increase upon current levels is always a challenge. However this activity needs to continue to prevent regression in road safety performance. Regulation and licencing are other avenues that have proven to be effective and GLS schemes have proved to be highly effective internationally. Other intervention programs may be beneficial provided resources are available and they are operated at a very low cost. Researchers have generally been struggling for decades to demonstrate the effectiveness of behavioural programs in road safety. This is not to say that such programs do not work, however demonstrating that they work has been difficult. This indicates that if they do work, there are many factors that are likely to also influence the chances of successful outcomes.

The following sections highlight various combinations of countermeasures and their likely effect on casualty numbers by 2026. The potential strategic directions that are suggested below detail a set of major actions that could be implemented. However, these actions can, and should, be complemented by the continuation of current activities and the introduction of further small scale activities where appropriate.

4.1.1 A focus on lower speed limits

One strategic direction for reducing fatal and serious casualties is to focus the majority of efforts into reducing speed limits. The reduction of speed limits has been shown by the modelling to be the most effective countermeasure. The expected reduction in casualties would be significant and immediate. In addition, the implementation of speed limit reductions would be relatively low in cost.

These suggested actions are based on the Safe System approach that the speed limit should be set based on the available safety infrastructure. Under this approach, most roads have a posted speed limit that is too high. Tasmania could adopt a position that no road has a speed limit above 100 km/h. In addition, there are many roads with a currently posted speed limit of 100 km/h that are poorly maintained of have insufficient infrastructure and should be reduced to 90 km/h. On this basis, one set of suggested actions for a focus on lower speed limits are as follows:

- Reducing all 110 km/h speed limits to 100 km/h
- Reducing 100 km/h speed limits on minor road categories to 90 km/h (i.e. feeder roads, other state-controlled roads, and non state-controlled roads).

The modelling predicts that the implementation of these countermeasures in 2017 would prevent 165 casualties by 2026.

In addition to these speed reductions, some effort could be expended on actions that reduce the average age of the vehicle fleet. This would complement the speed limit reductions and result in further safety benefits. Thus, a second set of suggested actions for a focus on lower speed limits are as follows:

- Reducing all 110 km/h speed limits to 100 km/h
- Reducing 100 km/h speed limits on minor road categories to 90 km/h (i.e. feeder roads, other state-controlled roads, and non state-controlled roads)
- Reducing the average age of the fleet age by 5%.

The modelling predicts that the implementation of these countermeasures in 2017 would prevent 185 casualties by 2026.

Speed limit reductions could also be utilised in urban areas with the reduction of 60 km/h zones to 50 km/h. The third set of actions that focus on lower speed limits would then be as follows:

- Reducing all 110 km/h speed limits to 100 km/h
- Reducing 100 km/h speed limits on minor road categories to 90 km/h (i.e. feeder roads, other state-controlled roads, and non state-controlled roads)
- Reducing all 60 km/h speed limits to 50 km/h.

The modelling predicts that the implementation of these countermeasures in 2017 would prevent 205 casualties by 2026.

The implementation of lower speed limits however remains a contentious issue in the community both in Tasmania and nationally. Despite the overwhelming research evidence there is still resistance to

change. From the community risk management perspective, any reductions in travelling speed that can be achieved are considered worthwhile. This may therefore mean that implementation occurs on specific road corridors or in certain geographical areas rather than over the whole state at any one point in time.

4.1.2 A focus on reducing vehicle age

Another strategic direction is to invest the majority of efforts into reducing the age of vehicles in the Tasmanian fleet. Reductions in the age of the vehicle fleet showed the second highest potential for reductions in fatal and serious casualties. However, a clear pathway to achieve a reduction in the age of the fleet is not clear due to the economic complexities of the vehicle market and limited areas where the state government can directly influence outcomes. In spite of this, it is suggested that a suitable method could be developed by economists who are familiar with vehicle taxation and trading (particularly in Tasmania). Any potential method is likely to experience political difficulties as well as technical difficulties, but the payoff from a successful age reduction program would be substantial. A potential advantage for Tasmania may be that it is an island state, where the fleet could be manipulated without significant interferences by vehicle transfers from other states. Changing the age of the vehicle fleet might invariably rely on changes to state based vehicle taxes, such as petrol excise, vehicle registration, or stamp duty on purchases and transfers. Thus, it is likely that the cost of implementation could be arranged to be relatively low or even neutral.

Reducing the average age of the vehicle fleet by 15% in 2017 is predicted to prevent 126 fatal and serious casualties as shown by the modelling in Table 3.7.

4.1.3 A combination of measures

Countermeasures in the three Safe System areas of speeds, vehicles, and road users would be implemented. This diversified approach may be more welcomed by the public if there was strong opposition to the speeds or vehicle focussed strategic directions. However, it should be noted that there is less opportunity for significant reductions in casualties when speed and vehicle measures are omitted. A set of actions using a mixture of measures might be as follows:

- Reducing all 110 km/h roads to 100 km/h
- Reducing the average age of the vehicle fleet by 5%
- Implementing further GLS countermeasures (night time and passenger curfew).

The modelling predicts that the implementation of these countermeasures in 2017 would prevent 108 casualties by 2026. Given this sub-optimal performance, a final strategic alternative is heavy investment into infrastructure.

4.1.4 Infrastructure measures

Each of the strategic directions described above could be complemented with investment in infrastructure countermeasures that further align the road environment with Safe System objectives. Due to the cost of implementing road safety infrastructure it is important to ensure the maximum benefit is achieved for the amount funding that is available.

Optimisation modelling was used to identify treatment types and combinations of treatments that best utilise a $7.5 million annual infrastructure budget sourced from the road safety levy. The details of this optimisation process are presented in Appendix A. It should be noted that this optimisation modelling was undertaken while considering the broad network costs and casualty reduction potentials of each treatment type. As such, the results should only be used to compare treatment options on a broad

network basis. Application of the results to individual or small numbers of sites in not advised as the random nature of crashes at this scale is likely to become a dominant factor. Similarly, the optimization results are only likely to be accurate when each treatment is implemented on a large scale. Small scale implementation of treatments would require a highly targeted approach in order maximize their benefits.

When considering midblock treatments it is clear that extensive use of crash barriers will achieve close to Safe System performance, especially in 2+1 and 2+2 configurations, but it is unlikely that the funding required to achieve this even on a small proportion of the road network will ever become available. Other less costly measures therefore have to be considered in terms of their potential to reduce overall death and injury (see Figure 4.1). Audio-tactile line markings (ATLMs) are an effective treatment because of the higher proportion of the network that can be treated within the limitations of the infrastructure budget. It would cost approximately $18.2 million to install ATLM on the entire length of 100 km/h roads without sealed shoulders in Tasmania. This represents about 2.4 years of a $7.5 million annual budget. Due to their higher costs, widespread implementation of other midblock treatments would take considerably longer. The benefits from wire rope barrier or wide centrelines are closely aligned and both show similar safety benefits with a limited budget. However, the limited lengths of roads that could be treated under the budget mean that a more targeted approach to selecting treatment sites would be required.

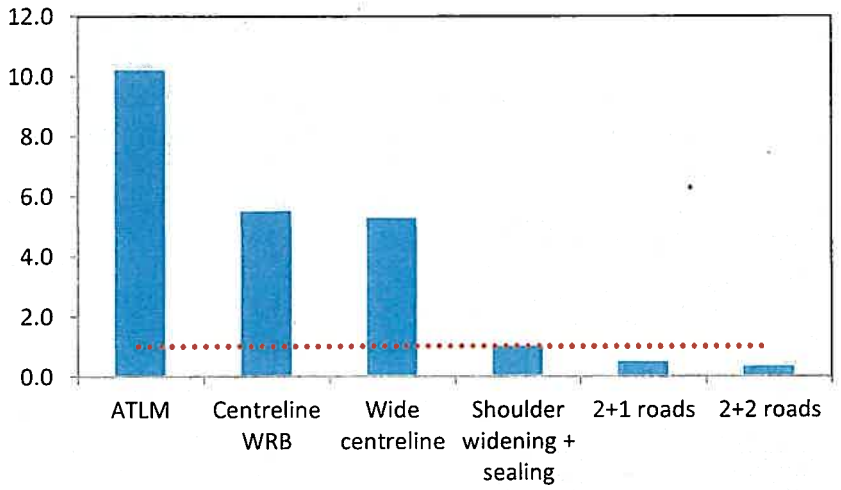

Figure 4.1
Relative comparison of the safety benefits of various intersection infrastructure treatment with an annual budgetary constraint of $7.5 million. The dotted line represents the safety benefit of shoulder widening and sealing

When considering intersection treatments, grade separation represents the most effective way to eliminate the possibility of interactions between vehicles traversing an intersection. However, the high level of funding that would be required severely limits the feasibility of widespread use. The elimination of right turns and implementation of plateaus show strong potential due to their low cost, the ability to therefore use them on a widespread basis, and their ability to reduce the incidences of high speed, right-angle interactions (see Figure 4.2). While roundabouts are also effective at reducing these interactions, their higher cost limits the number of sites that could be treated each year.

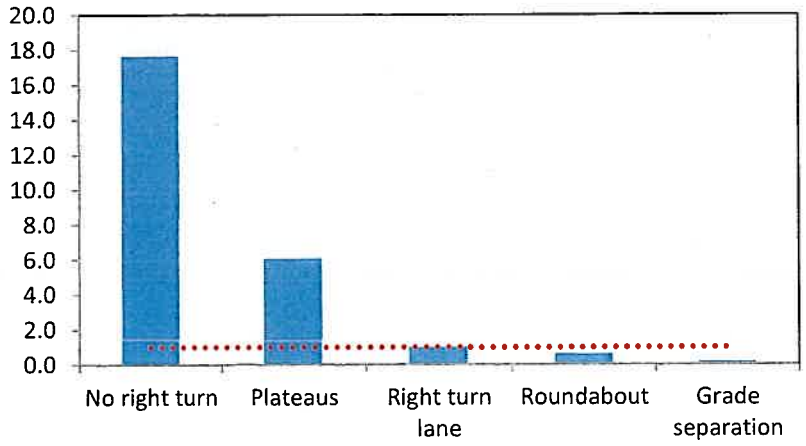

Figure 4.2
Relative comparison of the safety benefits of various intersection infrastructure treatments with an annual budgetary constraint of $7.5 million. The dotted line represents the safety benefit of implementing right turn lanes

Taking into account infrastructure funding of $7.5 million per annum sourced from the road safety levy and the costs of infrastructure treatment, the most effective combination of treatment options include ATLM and centreline treatments (wide centrelines or centreline wire rope barrier) for midblocks, and eliminating right turns and installing plateaus for intersections. Implementing a combination of different treatments may be beneficial. Such a strategy allows treatments to be selected while considering the desired outcomes and limitations of each location. The safety benefits for different combinations of midblock and intersection treatments are shown in Figures 4.3 and 4.4 respectively. The safety benefits of three suggested options that combine midblock and intersection treatments are shown in Figure 4.5.

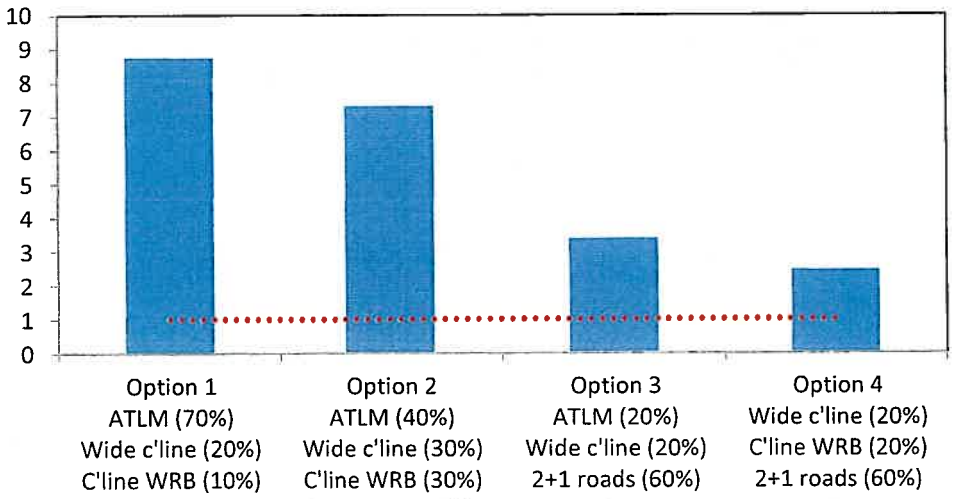

Figure 4.3
Relative comparison of the safety benefits of various midblock infrastructure treatment combinations with an annual budgetary constraint of $7.5 million. The dotted line represents the safety benefit of shoulder widening and sealing

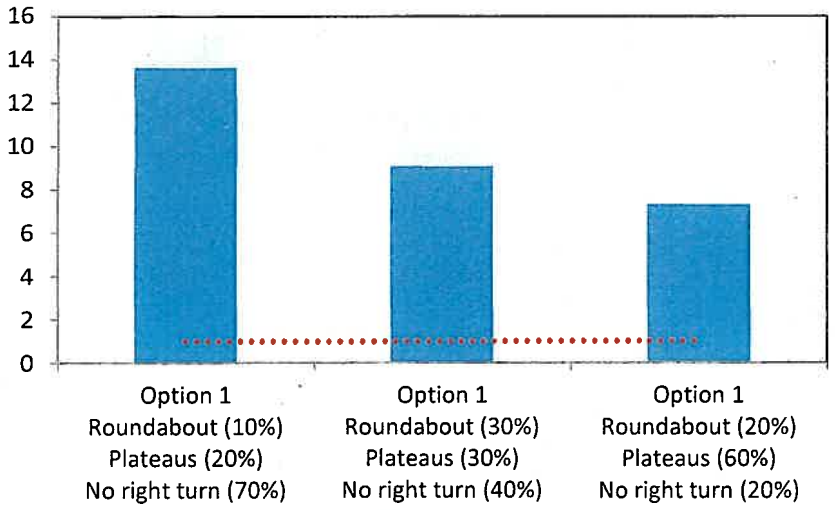

Figure 4.4
Relative comparison of the safety benefits of various intersection infrastructure treatment combinations with an annual budgetary constraint of $7.5 million. The dotted line represents the safety benefit of implementing right turn lanes

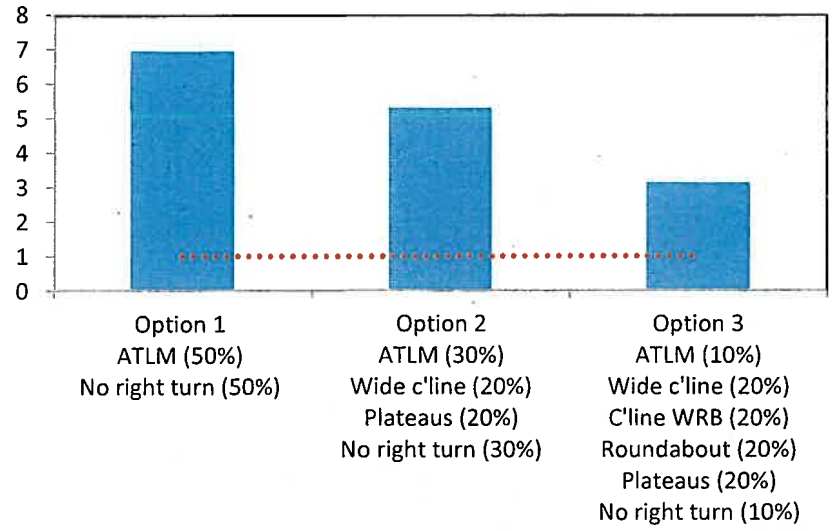

Figure 4.5
Relative comparison of the safety benefits of various mid-block and intersection treatment combinations with an annual budgetary constraint of $7.5 million. The dotted line represents the safety benefit of implementing right turn lanes and shoulder widening and sealing with equal budgetary weighting

Given that all treatments are unlikely to be applied on all parts of the network, Table 4.1 is suggested as a guide as to where the countermeasures might be applied in the road network.

Table 4.1
Proposed locations for infrastructure implementation

Treatment	Where
2+1 and 1+1 cross sections	Highest volume strategically important roads
Continuous Centreline barriers only	Highest volume trunk, freight and regional access routes
Continuous Roadside barriers	Highest volume trunk, freight and regional access routes
Wide Centrelines	Highest volume trunk, freight and regional access routes where centre line barriers not feasible
Sealed shoulders	Highest volume trunk, freight and regional access routes where above treatments not possible Commence with treatment on bends if warranted
Audio tactile line marking	Highest volume trunk, freight and regional access routes where above treatments not possible Commence with treatment on bends if warranted
Centreline barrier (discrete site)	Road lengths with identified head on collision crashes and road departures to the right
Hazard mitigation (discrete site) – barrier protection and clear zones where barriers cannot be achieved	All road types commencing with highest volume roads
Install roundabouts	Highest volume trunk, freight and regional access routes Discrete sites if warranted on lower order routes
Install speed plateaus at intersections	Largest effect will be on highest volume trunk, freight and regional access routes Any road types in a built up area if warranted
Eliminating redundant intersections and access points in the network	Entire Network
Eliminating right turns and through movements at intersections and points of access in the network	Entire Network
Modifying intersection geometry to eliminate right angle crash configurations	highest volume trunk, freight and regional access routes
Adopt full right turn control at signalised intersections	Entire Network
Adopt innovative roundabout and intersection designs	Entire Network
Create safe cycling corridors in large urban centres	North / South and East / West safe corridor for cyclists preferably with segregation
Implement calmed 40km/h pedestrian activity areas	Urban areas with high pedestrian activity
Raised pedestrian crossings	Any new crossings that are implemented

Monitoring of progress could be based on number of new sites or length of network that contains the treatment each year over the life of the strategy.

The countermeasure options presented for intersections in this report are quite novel for Australia and may not yet have strong community support. The prospect of using plateaus on busy roads and removing right turns on a widespread basis is likely to be met with considerable resistance. If these options are removed, new low cost innovative intersection designs that can be implemented on a widespread basis will need to be pursued. Low cost roundabout designs that still deliver safety benefits will also need to be explored. This highlights the need to develop innovative demonstration projects to demonstrate what Safe System infrastructure might look like into the future.

4.2 Roll-out strategy

The strategic directions suggested above specify predicted fatal and serious casualty reductions based on the modelling of countermeasures that are implemented in 2017. An implementation year of 2017 provides a 10 year period to 2026 over which the benefits of the countermeasure effect can

accrue. However, it is unlikely that all the countermeasures investigated could be implemented immediately. While speed limit and GLS interventions could arguably be introduced relatively quickly, infrastructure changes and vehicle age changes would require some lead time and their full effects would build over time.

Examples of the ramifications of delaying countermeasure implementation are demonstrated in Table 4.2. It is evident that the longer the delay, the less potential there is to save lives and prevent injuries.

Table 4.2
Example of the number of fatal and serious casualties that would be prevented in the year 2026, by year of countermeasure implementation

Countermeasure	Year of implementation									
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
110 km/h to 100 km/h	44	39	34	29	24	20	16	12	8	4
Curfew	20	18	16	14	12	10	8	6	4	2
10% age reduce	85	77	68	59	50	41	32	23	15	7

In light of this, it is prudent to introduce all intended countermeasures as soon as possible in order to maximise the safety benefit. However, if unavoidable delays between the implementation of various countermeasures are expected then some strategic planning should be applied. More immediate acting countermeasures (i.e. speed limit reductions and GLS measures) should be implemented first, while slower acting countermeasures (i.e. vehicle age manipulation or safety infrastructure construction) should be implemented later. This strategy provides an early benefit, while the later benefit has an opportunity to build.

4.3 Suggested casualty reduction targets

It was highlighted in Section 2 that the use of percentage reductions can result in unrealistic targets. A target number of fatal and serious casualties may be more appropriate and easier to understand than a target percentage reduction.

The advantage of the modelling conduced in Section 3 is the knowledge regarding the predicted number of fatal and serious casualties in Tasmania over time. Given current background trends it is estimated that, if no additional countermeasures are implemented, there will be 177 fatal and serious casualties in 2026. The effects of a number of countermeasure options were noted in Sections 3.1 to 3.2 and several of these were modelled. This modelling predicted the individual effects of each countermeasure. In addition, the combined effect of several countermeasures has been presented above.

In presenting the individual or combined effects of countermeasures, an estimate of the number of fatal and serious casualties in 2026 was provided. This enabled the following suggestions for possible casualty targets in the year 2026:

- A target of 170 is regarded as very achievable and should be considered the minimum to aim for.
- A target of 168 is regarded as very achievable with some effort and investment into the countermeasures under the mixture of measures strategic direction.
- A target of 166 is regarded as achievable under the mixture of measures strategic direction plus the addition large investment into infrastructure treatments.
- A target of 163 is regarded as possibly achievable but would require some political will along with the intelligent and careful manipulation of the vehicle fleet average age.

- A target of 160 is regarded as aspirational, but could be achieved with good political will and community acceptance of lower speeds.

These potential targets represent reductions in fatal and serious casualties trending over the period 2017 to 2026. These could be further broken down into sub-targets for each of the three expected action plan periods of 2017-2019 (1st action plan), 2020-2022 (2nd action plan), and 2023-2026 (3rd action plan).

In Figure 4.6 the minimum and maximum change in the number of fatal and serious casualties over the three action plan periods is shown. The minimum change is represented by the background effects only, without any other countermeasures. The maximum change is shown as the predicted effect form the implementation of all the modelled countermeasures.

A logical method of target setting is to use the annual average number of casualties during each action plan periods. In Table 4.3 several overall fatal and serious casualty targets are presented with an associated star rating for achievability based on the result of the modelling. For each potential target the yearly reduction in casualty is also presented, along with the required average annual number of casualties in the three action plan periods.

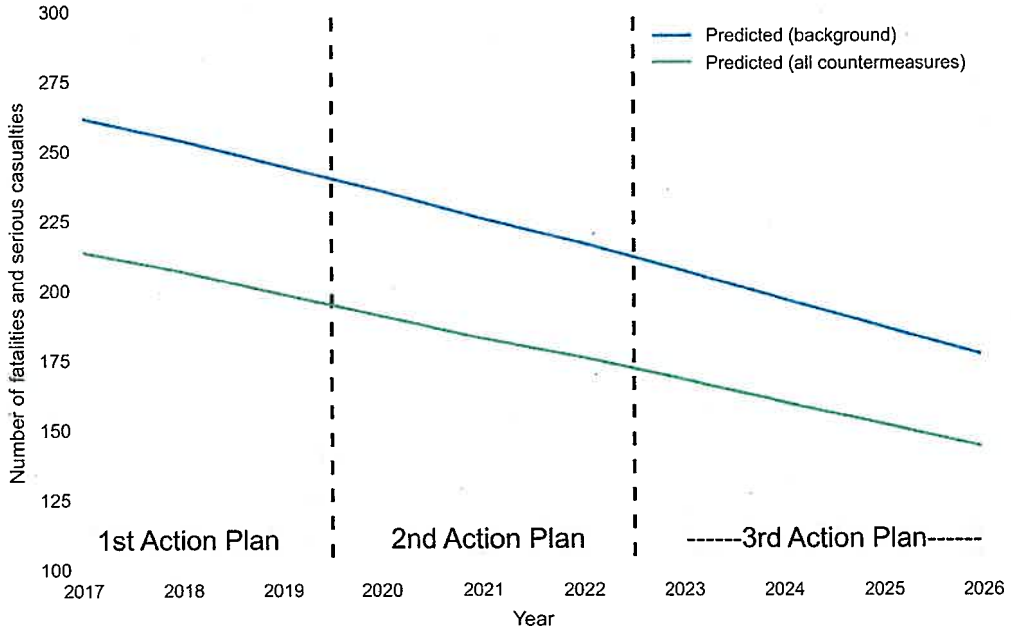

Figure 4.6
The minimum (background effects only) and maximum (implementation of all countermeasures) change in fatal and serious casualties over the three action plan periods

Table 4.3
Suggested targets for the 2017-2026 strategy and the three expected action plan periods

2026 casualty target	Achievability	Yearly reduction in casualties	Average annual number of casualties over specific periods		
			1st Action Plan period (2017-2019)	2nd Action Plan period (2020-2022)	3rd Action Plan period (2023-2026)
177 (do nothing)	-	9.4	252.2	224.0	191.1
170	+ + +	10.1	250.8	220.5	185.2
168	+ +	10.3	250.4	219.5	183.5
166	+ +	10.5	250.0	218.5	181.8
163	+	10.8	249.4	217.0	179.2
160	+	11.1	248.8	215.5	176.7

4.4 The road safety levy

The road safety levy generates approximately $12 million per annum for investment into road safety and is due to expire in 2017. From 2007-2015 61% of the funds raised from the levy have gone into infrastructure investment, 24% into safer speeds, 5% on young road users and 9% on complementary initiatives. With the exception of promoting safer vehicles, these proportions are broadly consistent with the commentary in this report around resources required and effectiveness of countermeasures in each area. As the levy was associated with the GLS, lower travelling speeds and best practice infrastructure it is likely that a return on investment will be obtained.

Are these proportions appropriate? There is no doubt that speed management constitutes the best option for Tasmania and any levy expenditure on achieving this is regarded as appropriate. There is scope to provide more funding to strategies that ensure the Tasmanian vehicle fleet is made up of the newest and safest cars in each category as possible. As is evident in this report, achieving safer infrastructure is prohibitively expensive and expectations about what the levy can achieve need to be realistic. Using a high proportion of the levy for infrastructure is inevitable but is unlikely to have a significant effect in any one year. The cumulative effect of infrastructure investment over several years is what needs to be considered in determining if the approach has been effective and it is therefore important that a levy is sustained over a period of several years for effectiveness to be leveraged.

Another less obvious benefit of the levy is the support for innovation and the creation of what are in effect demonstration projects. It is important that deviations from traditional practices, especially in relation to traffic management and road design, are developed in the transition towards a Safe System. Such projects can provide the community and engineers additional confidence that changes to traditional practices are warranted. Fundamentally, work is still needed to demonstrate what a Safe System actually looks and feels like to the community. The identification of innovative infrastructure approaches that are proven to be effective are likely to hold the key to Tasmania making significant progress towards a network aligned with Safe System performance. New low cost intersection designs and speed management treatments hold much potential to transform the road network in a practical and affordable way. The levy provides an ideal opportunity to pursue this type of agenda.

4.4.1 Scenarios with and without the levy

In the past few years in Australia there has been a trend towards targeted funding aimed at improving road safety. Most of these have been specifically associated with transforming road infrastructure towards Safe System outcomes. The two most notable schemes have been the Victorian Transport Accident Commission (TAC) $1 billion investment and the South Australian Motor Accident Commission (MAC) $100 million investment, both aimed at Safe System treatment and innovation. The TAC scheme (known as the *Safe System* Road Infrastructure *Program,* SSRIP) aims to

accelerate the transition towards the Safe System using a highly targeted approach to safety improvements. It is notable that the third party insurers have strong business cases for their additional investment in road safety and are contributing in this way. In Tasmania, the Motor Accident Insurance Board (MAIB) has also been contributing to coordinated road safety activity since the late 1990s mainly in the area of publicity and mass media.

The removal of the levy in Tasmania without a replacement source of funding for targeted road safety expenditure would go against national trends and leave a significant gap in the ability to continually improve the road system over the long term. This gap could be covered via traditional road maintenance and investment activity (if sufficiently funded), however many of the schemes in Australia were created to be more effective in targeting safety improvements compared to the traditional approaches.

Should the levy not be available until 2026, in the order of $120 million will not be spent on the transition towards a safer road system. This is likely to have most impact on infrastructure investment which is the most costly of the countermeasures. The likely outcome of this scenario is that speed management and full GLS provisions would be the key countermeasures that would need to be pursued. Of concern would be the fact that there might not be funds to seek innovative and alternative safety countermeasures and therefore the potential to establish more cost effective ways of achieving a safe road system in Tasmania over and above speed management approaches.

4.4.2 Should the Levy be increased?

There is of course an argument that any increases in road safety funding will translate to further benefits. However this consideration is probably best made in the context of infrastructure costs. The additional benefits on combinations of infrastructure treatments by increasing the annual income from the Levy by up to three times are shown in Figure 4.7. The proportionate benefit for the increased funding is evident. As discussed earlier however, even this amount of funding would still fall short of transforming large parts of the network to 2+1 configurations for example. Therefore we suggest that considerations of increased budgets for the levy be on the basis of permitting innovative road design solutions and demonstration projects. The discovery of a low cost infrastructure treatment that is effective and can be used on a widespread basis would reap significant benefits for Tasmania in the transition towards a Safe System road network.

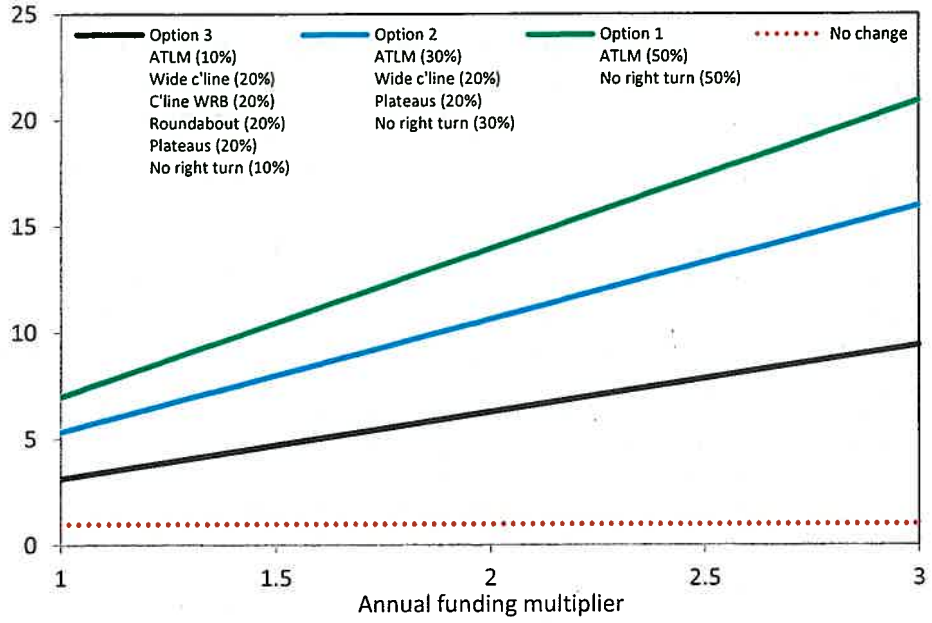

Figure 4.7

Relative comparison of the safety benefits of various infrastructure treatment combinations with an increase in annual budgetary constraint. The dotted line represents the safety benefit of implementing right turn lanes and shoulder widening and sealing with equal budgetary weighting totalling $7.5 million annually

4.5 Alignment with the National Road Safety Strategy (NRSS)

The National Road Safety Strategy (NRSS) was released in May 2011 and is based firmly on Safe System principles. At its core is the aspiration that no one should be seriously injured or killed as a result of using the road system. The strategy provides a guide for road safety directions, priorities and initiatives until 2020 and was initially supported by an action plan (the "First Steps" agenda) covering the years 2011-13.

A review of the strategy was conducted in 2014 and the following action areas were recommended as national priorities (Austroads 2014):

- Vulnerable Road Users
- Older Drivers
- Indigenous Road Users
- Speed Management
- Remote Areas
- Vehicle Technology
- Cooperative - ITS
- Monitoring Serious Injuries
- Targeted Infrastructure Investment
- Coordination with Urban Planning
- Workplace Road Safety
- National Leadership

Each of these is explained further in Appendix B. In the Tasmanian context, many of these are relevant and further exploration is warranted to establish if further activities in these areas could deliver benefits. Several of these areas have already been addressed elsewhere in this report however some further options that could be explored as part of the next strategy include:

Is there a need for a separate rural / remote component to the road safety strategy?

In the National context this suggestion was to deal with the low density remote areas common to Western Australia, South Australia, Queensland and the Northern Territory. While Tasmania does have some remote areas, it is likely that general road safety initiatives across the state would still have an influence in these areas and therefore the need to have a separate rural/remote strategy is not as high as is the case with other parts of Australia.

Are there any ITS trials that could be conducted in Tasmania?

The lower population and geographic nature of Tasmania might lend itself to trials of Intelligent Transport Systems technology. The Road Safety Levy to date has funded vehicle activated signage and further applications for innovate solutions could be considered, especially with increases in vehicle safety technologies available.

Can any enhancements be made to serious injury reporting (eg linking with hospital data) to better understand the extent of the road safety problem and prioritise treatments? This is a current national priority.

Linking health data to police crash data will provide a better understanding of injury from the road system and therefore provide better information for decision making around countermeasure selection and implementation. Linking such data is not necessarily straightforward and can be expensive. Options for linking could be explored in Tasmania to determine if there are easy pathways that are cost effective and sustainable.

Is there a linkage between urban planning and road safety and are best practice treatments adopted when the urban environment is altered (e.g. plateaus considered for any new intersections)?

Is there coordination between urban development and safety at local and state government levels and if not can this be introduced? Are best practice approaches being utilised for urban developments (e.g. raised pedestrian crossings, 40km/h pedestrian zones, non-right angle intersection designs).

Are there opportunities to engage with the private sector to adopt risk management approaches to road use? Can the Road Safety Partnerships Program be promoted more strongly in Tasmania?

The Road Safety Partnerships Program provides an excellent resource for industry to network and establish a knowledge base in relation to enhancing road safety. There are many success stories of companies achieving considerable efficiency and cost savings by pursuing a culture of safety in relation to road transport. There may be opportunities for Tasmanian industry to adopt a stronger safety culture and also see how this could be translated into the community.

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Appendix A – Modelling Tasmania's road transport system

Changes to driving exposure

The number of registered passenger vehicles and motorcycles in Tasmania was obtained from ABS survey data for the years where it was available (ABS, 2001 – 2015a). This data is shown in Figures A1 and A2, along with fitted linear trend lines.

The number of registered vehicles and motorcycles in Tasmania was estimated for future years by extrapolating the trend lines. The risk of a casualty from the baseline period reoccurring was calculated as the ratio of the volume of registered vehicles in the year being modelled to the volume of registered vehicles in the year of the casualty.

The passenger vehicle trend line was used for all vehicles apart from motorcycles. Motorcycles experienced a higher level of growth in recent years and so utilised a separate trend line.

The average number of annual kilometres driven by passenger vehicles and motorcycles in Tasmania was obtained for the years where it was available (ABS, 2001 – 2015b). This data is shown in Figures A3 and A4, along with fitted linear trend lines.

By extrapolating the trend lines forward, the annual usage of vehicles and motorcycles in Tasmania was estimated for future years. The risk of a casualty from the baseline period reoccurring was then calculated as the ratio of the average usage of vehicles in the year being modelled to the average usage of vehicles in the year of the casualty.

The passenger vehicle trend line was used for all vehicles apart from motorcycles. Motorcycles have experienced a unique decrease in average usage over recent years and so utilised a separate trend line.

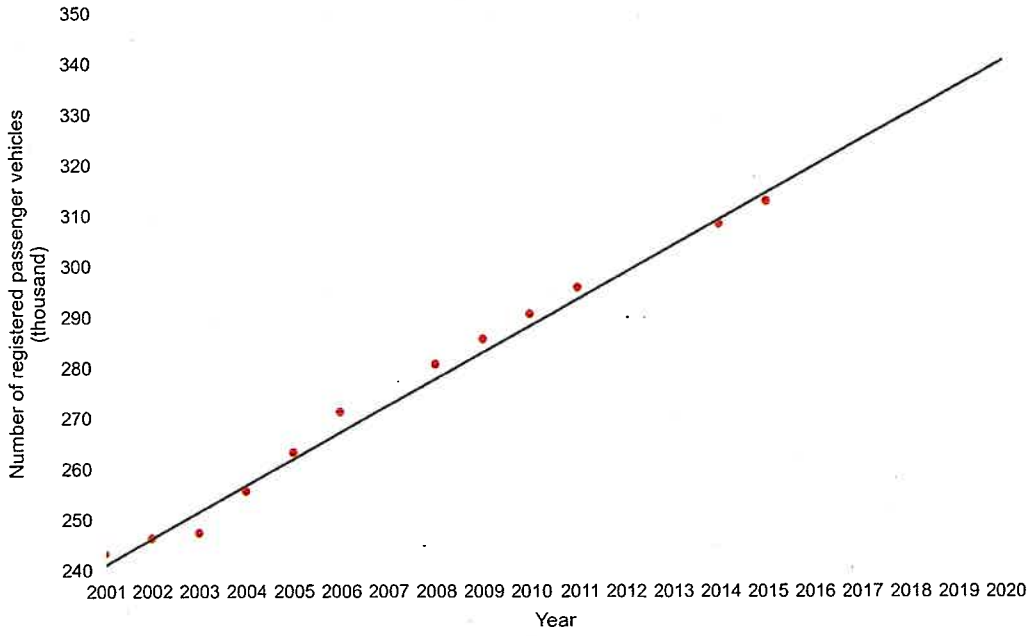


Figure A1
Number of registered passenger vehicles in Tasmania (2001-2015) based on ABS data with linear trend line

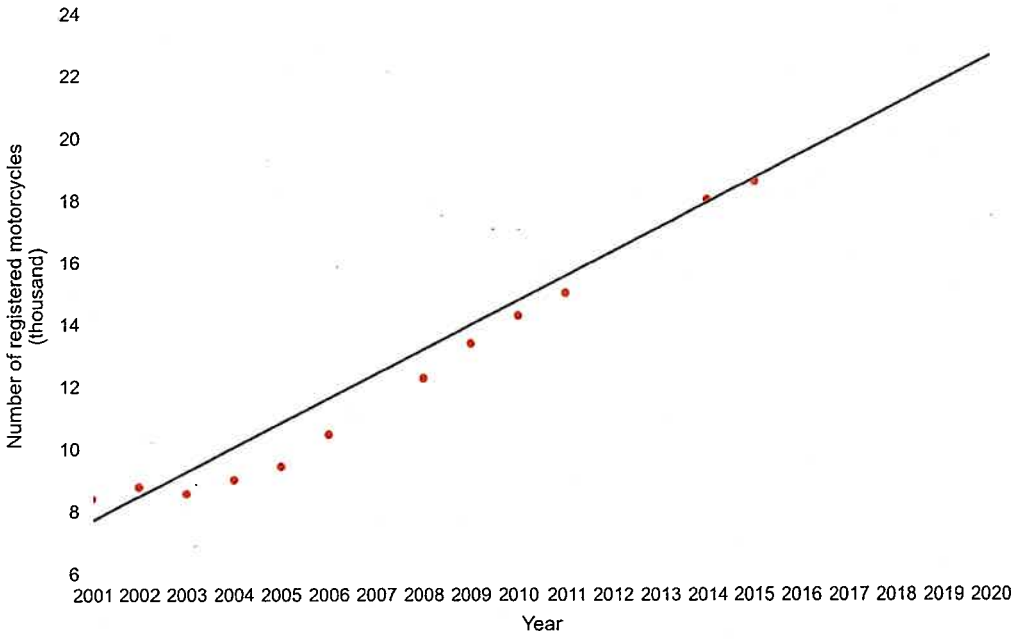


Figure A2
Number of registered motorcycles in Tasmania (2001-2015) based on ABS data with linear trend line

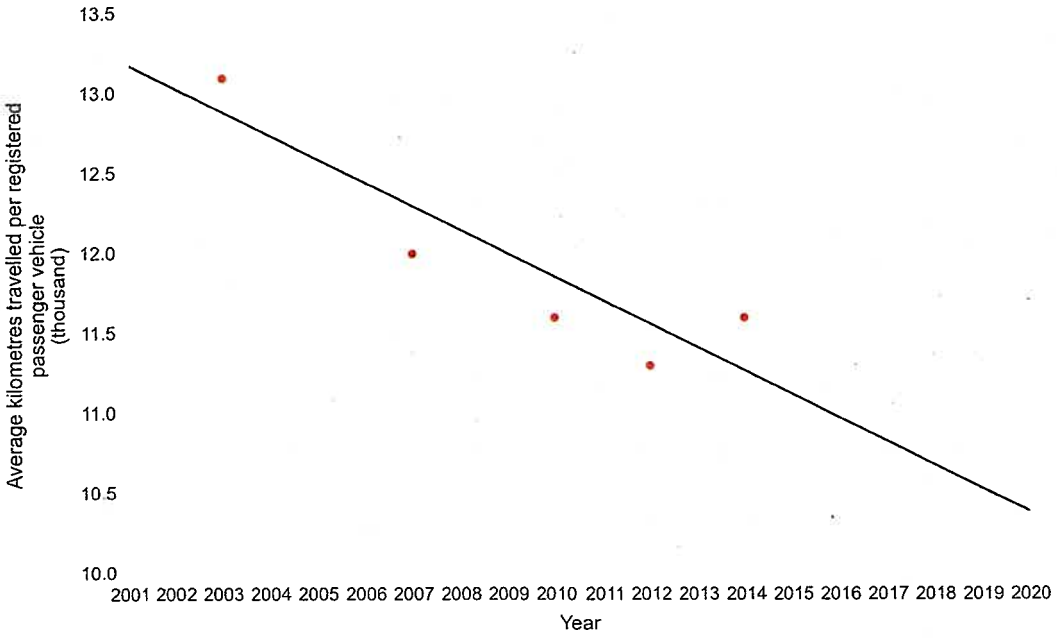


Figure A3
Average number of annual kilometres travelled per registered passenger vehicle in Tasmania (2001-2015) based on ABS data with linear trend line

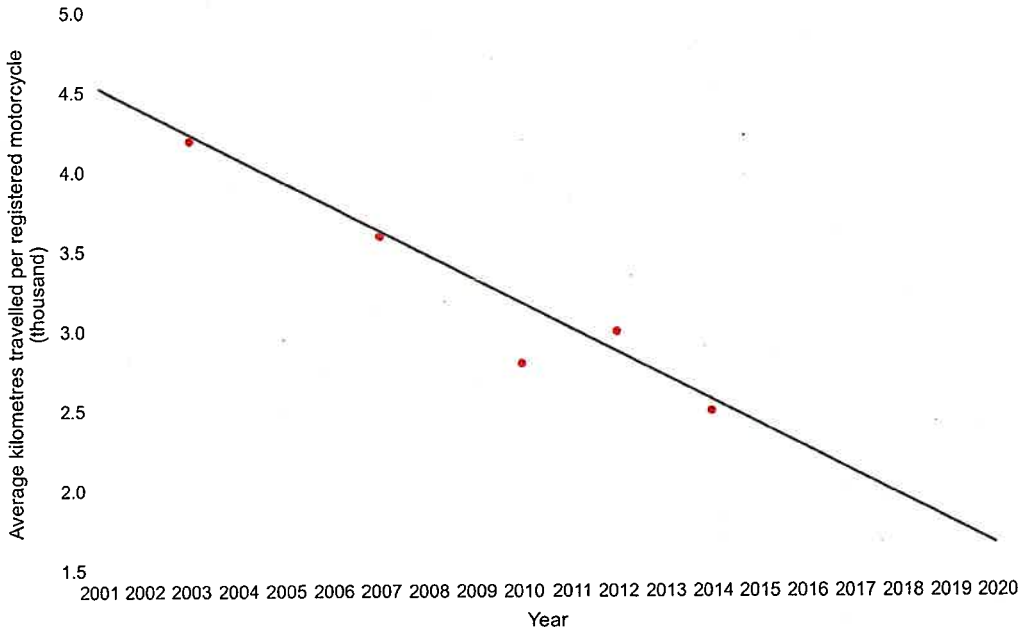


Figure A4
Average number of annual kilometres travelled per registered motorcycle in Tasmania (2001-2015) based on ABS data with linear trend line

Changes in the safety of vehicles over time

Anderson and Searson (2014) used data from NSW to disaggregate how collision year, vehicle age, and vehicle year of manufacture each affect crash risk. As a result of this research, the effect of improvements in vehicle safety over time was isolated and quantified. It was found that risk began to decline considerably for vehicles built after about 1996 and continued to increase to a maximum rate of decline for vehicles built around 2004. Anderson and Searson (2014) considered data up to the year 2010 but through extrapolation of trends were able to estimate a relative risk of being involved in a casualty crash for vehicles manufactured up to the year 2020, as shown in Figure A5 below. The curves describe the combined effects of crash involvement (primary safety) and vehicle crashworthiness (secondary safety).

The relative crash risk for each casualty in the baseline period was determined based on the year of manufacture for the vehicle of which they were an occupant. In future (modelled) years the casualty is assumed to be an occupant of a vehicle of the same age and so the year of manufacture is updated accordingly. For example, a baseline casualty who was an occupant of a vehicle manufactured in 2005 and crashed in 2010 would be modelled in 2020 as being an occupant of a vehicle manufactured in 2015. The relative crash risk in the modelled year could thus be determined.

The change in risk due to vehicle safety was then calculated as the ratio of the modelled year crash risk to the baseline year crash risk.

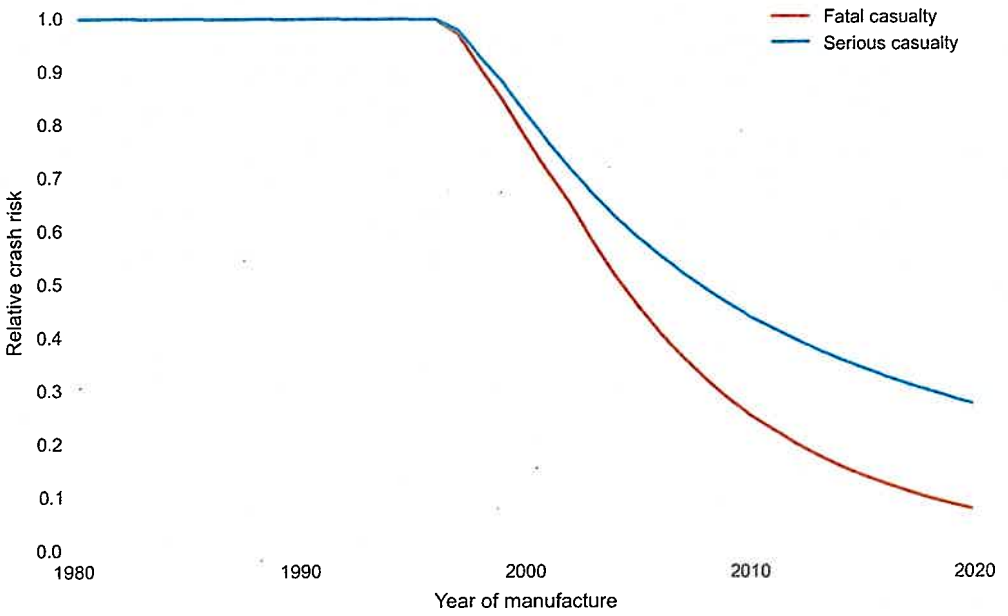


Figure A5
The dependence on vehicle year of manufacture of being killed (red line) or seriously injured (blue line) in a crash

Changes to the GLS in 2008 and 2009

In August 2008 several changes were made to the GLS including a mandatory 12 months on a P2 licence before graduating to a full licence, the introduction of a two tiered provisional system for motorcyclists, and increased penalties for offences while on provisional and learner licences. In April 2009 another set of changes were made to the GLS which included the introduction of a two tiered learner system, a mandatory 12 months on a learner licence before graduating to a provisional licence, and a further increase of penalties for offences while on provisional and learner licences.

Because changes to the GLS, such as these, are a relatively recent occurrence in Australia there has been little research so far on their effectiveness. As a result, the effects of the changes in 2008 are difficult to quantify. While it may be possible to quantify the extension of the mandatory P2 period somewhat, doing so would require detailed analysis of the number of provisional licence holders over time as well as investigation of the licence history of each of the drivers involved in crashes during the baseline period.

The effect of many of the changes that occurred in 2009 are similarly difficult to quantify. However, previous research on the crash risk of novice drivers provides an opportunity to quantify the effect that the introduction of a mandatory 12 months on a learner licence may have had.

Austroads (2008) identified South Australian drivers who obtained their first provisional car licence between July 1998 and June 2001 and who were 16 to 19 years of age at the time of provisional licensure. The crash history of these drivers during their learner period and for the five years after obtaining their provisional licence was then analysed. The risk of being involved in a casualty crash was found to be low during the learner period. However, once the driver obtained a provisional licence the risk was considerably higher and then decreased over time as experience and skill developed.

This quantification of casualty crash risk over time for novice drivers is shown by the red line in Figure A6.

The effect of extending the mandatory learners period could be estimated by shifting this curve to the right by six months and then calculating the difference in the aggregated risk over a 36 month period. However, it was found by Healy et al. (2012) that an extra six months under a learners licence reduces the crash risk upon graduating to a provisional licence. In the first year after obtaining a provisional licence the crash risk was found to be 30 percent lower, and for the second year the crash risk was 13 percent lower. If this reduced risk is accounted for (using slightly more conservative values) then the casualty crash risk over time for novice drivers can be updated as represented by the blue line in Figure A6.

By utilising the curves from Figure A6 the aggregated casualty crash risk for a novice driver post April 2009 was determined to be 0.77 times that of a novice driver prior to April 2009. Baseline casualties that involved a driver on a provisional licence and occurred prior to April 2009 can be modelled into the future by adjusting for this aggregated difference in risk.

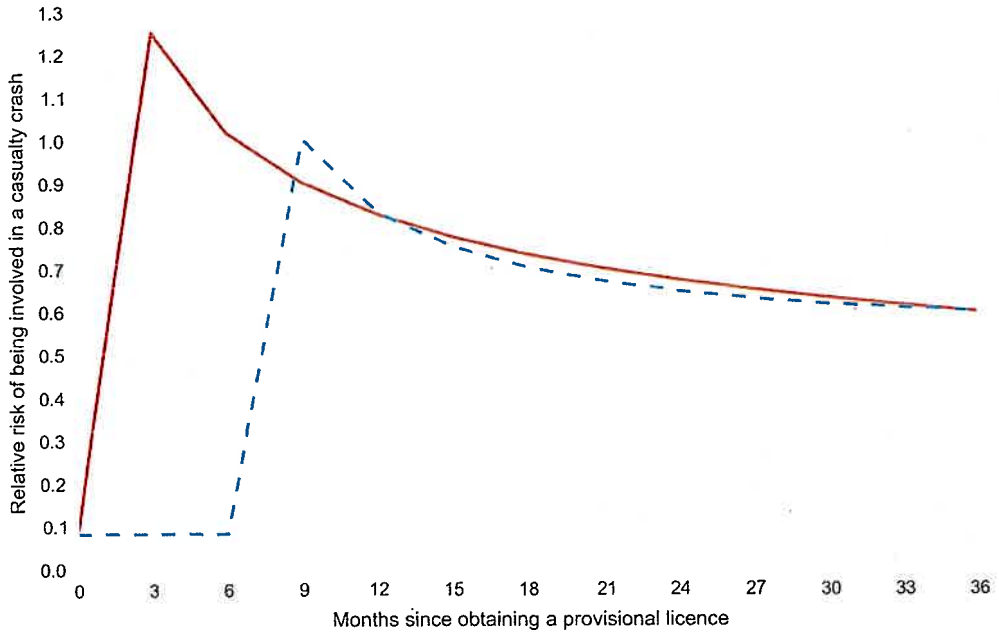


Figure A6
The relative risk of a novice driver being involved in a casualty crash based on the time since obtaining a provisional licence (red line) and the adjusted effect of spending an extra 6 months on a learner licence (blue line)

Changes to the speed limit on unsealed roads

In February 2014 the speed limit on unsealed rural roads in Tasmania was reduced from 100 km/h to 80 km/h. While it is not possible to precisely quantify the effect of this particular speed limit reduction (100 km/h to 80 km/h on unsealed roads), various studies from Australia and overseas have investigated the effects of lowering speed limits (Mackenzie et al., 2015; De Pauw et al., 2014; Elvik, 2013; Bhatngar et al., 2010; Kloeden et al., 2001, 2002, 2007; Sliogeris, 1992). Based on the findings of these studies, a conservative crash risk reduction of 30 percent was used in the model.

Changes to speed limits

As above, the effect of speed limit reductions was based on the findings of previous studies (Mackenzie et al., 2015; De Pauw et al., 2014; Elvik, 2013; Bhatngar et al., 2010; Kloeden et al., 2001, 2002, 2007; Sliogeris, 1992). Reductions from 110 km/h to 100 km/h and 60 km/h to 50 km/h were conservatively predicted to result in a 20 percent reduction in crash risk.

GLS changes

The casualties that would be avoided by implementing each of three initiatives were identified; P1 licence at 18 years of age, passenger restrictions, and a night time driving curfew. For example, casualties that resulted from a crash that occurred at 3am and involved a driver with a P1 licence would not have occurred (in most circumstances) if a curfew was implemented.

While most of these identified casualties would be avoided, there are several scenarios in which a crash (and thus the casualties) might still occur. For example a novice driver may choose not to comply with the restrictions or may have an exemption from the restrictions for work purposes. To account for these circumstances in the model a compliance rate of 80 percent was assumed, leaving a residual risk of 20 percent.

Reduction in the age of the fleet

The age of each of the vehicles in the modelled years was reduced by 5, 10, or 15 percent. A new crash risk was then calculated as described above in the section on changes in safety of vehicle over time.

Potential for improvement in infrastructure

The typical reduction in casualties resulting from the implementation of several major infrastructure countermeasures was investigated. Fatal and serious casualty reductions were identified (where possible) for the five most common types of crash, as shown in Table A.1 below (Austroads, 2010; 2015a; 2015b; Carlsson, 2009; Pratt et al., 2015; Ray et al., 2009; Washington State Department of Transport, 2009).

The large scale implementation of these infrastructure countermeasures was modelled by applying these reduction factors to the relevant baseline casualties. This provided an estimate for the effect of each infrastructure countermeasure. The effects were limited to specific road categories where these types of infrastructure treatments might be implemented. However, it should be noted that this modelling did not account for what infrastructure may already have been implemented.

Table A.1
The effect of infrastructure countermeasures on casualties resulting from various crash types

Area	Countermeasure	Reduction in fatal and serious casualties in crash type				
		Head on	Off left	Off right	Right turn	Right angle
Mid-block	Centreline barrier	80%	15%	80%	-	-
	Wide centreline	65%	-	65%	-	-
	2 + 1	90%	60%	60%	-	-
	Sealed shoulders	40%	40%	40%	-	-
	Audio-tactile line marking	-	30%	30%	-	-
Intersection	Roundabouts	70%	-	-	70%	70%
	No right turn	-	-	-	50%	-
	Right turn lanes	20%	-	-	20%	20%
	Plateaus	40%	-	-	40%	40%
	Grade separation	100%	-	-	100%	100%

Optimization infrastructure spending

A number of infrastructure treatment options were considered and the choice of which treatments to use was optimized in order to maximize safety benefit (a reduction in casualties). The safety benefit of each treatment is shown in comparison to a standard treatment type; for midblock and intersections treatments, the standard treatments used for comparison are shoulder widening and sealing and the installation of right turn lanes, respectively. For example, for the same budget the installation of plateaus has an ability to reduce casualties by about six times more than that of right turn lanes, and thus the safety benefit of plateaus is six. When calculating the safety benefit of each treatment, the following procedure was used:

- Infrastructure unit costs for each kilometre (midblock treatments) or site (intersection treatments) were used.
- Trunk (Cat I), regional freight (Cat II) and regional access (Cat III) roads were considered when calculating the total number of intersections and total length of roads.
- Casualty reduction potentials for each treatment were based on the modelling performed in Section 3.8. Unit casualty reduction potentials for each treatment were calculated as the expected reduction in casualties per treated intersection or treated kilometre of road.
- Casualty reduction potentials per dollar were calculated using unit costs and unit casualty reduction potentials.
- The safety benefit of each treatment was calculated as the casualty reduction potential per dollar multiplied by the infrastructure budget.

Appendix B – National road safety priority areas

The following is an excerpt from the Austroads (2014) review of the National Road Safety Strategy:

Thirteen priority areas were identified for which more emphasis is recommended because of changing crash patterns or a real or perceived lack of activity. The priority areas are not intended to replace the content of the 2011 strategy but are aimed at supplementing both the strategy commentary and associated action agendas.

Vulnerable Road Users

The Safe System philosophy for vulnerable road users is not as well developed as for vehicle occupants. This has been found to be true nationally and internationally, with even leading countries such as Sweden increasing their focus on vulnerable road users. The main finding of the recent review of road safety from the International Transport Forum was that vulnerable road users are receiving smaller benefits from recent road safety improvements than vehicle occupants.

The analysis of fatal crashes in Australia from 2008-13 showed the same pattern as internationally, with vehicle occupants accounting for most of the reduction in fatalities. There was almost no change in total fatalities involving vulnerable road users, with fatalities of motorcyclists and cyclists rising over the period. The analysis of hospital separations data found a much higher proportion of road-related injuries involving motorcycling and cycling than shown by the police-collected data. It also showed that injury cases among these road user types are increasing.

Motorcycling exposure has grown since 2008 with a sharp increase in vehicle kilometres travelled relative to other motorised vehicles. Cycling exposure is also thought to be increasing rapidly although there is no reliable measure. These relative increases in exposure would be expected to account for some of the difference between road user types, together with cyclists and motorcyclists not gaining the benefit from increased vehicle crashworthiness.

The "First Steps" and "Future Steps" agendas include some actions to assist vulnerable road users including improved infrastructure, lower speed limits, vehicle regulations and the development of a GLS for motorcyclists. These could be expanded and strengthened in the next action plan.

A number of infrastructure improvements have been shown to improve safety for vulnerable road users; these include improved pedestrian crossings, cyclist friendly intersection design, separation of bicycles and motor vehicles and improved road surfaces. There is also evidence that pedestrian safety would be enhanced by the rapid introduction of forward collision avoidance systems such as Autonomous Emergency Braking (AEB).

With the encouragement of active travel modes it is expected that walking and cycling will continue to increase. Both the safety and amenity provided to cyclists could be improved by better cooperation between road safety professionals and urban planners.

There is also a need for research to better understand what constitutes a Safe System for vulnerable road users. Although pedestrians, cyclists and motorcyclists are often grouped together as vulnerable road users, the three modes demonstrate different crash patterns and have different requirements of a Safe System.

Older Road Users

Fatalities of older road users are reducing at a slower rate than road user fatalities overall and particularly compared with younger road users. This is true for the total number of deaths and deaths per 100,000 people. The differences are likely to be related, in some part at least, to changing driving patterns of older people, with research showing people are driving further and into older ages and that this is increasingly applying to both males and females. It is also possible that the difference between older and younger drivers is related to road safety measures such as enhanced GLS systems that have targeted younger drivers. The vehicles driven by the different groups could also be a factor, as younger drivers, who generally drive older cars, would have only recently started to benefit from the improvements in crashworthiness that began over 15 years ago.

The current First and Future Steps agendas, which concentrate on understanding fitness to drive and alternative mobility options, need to continue and be complemented by measures to make the road system safer for older road users.

Research indicates that older drivers can benefit from receiving better information regarding vehicle choice, and a range of infrastructure changes has been recommended to assist older drivers. These changes address basic failures to provide a Safe System and so will be of benefit to all drivers.

Indigenous Road Users

While various initiatives have been undertaken to address the disproportionate risk faced by Indigenous Australians on the road, there is continued concern about inequitable outcomes. A relatively large proportion of Indigenous Australians live in remote and very remote regions, and so the overall impact of the higher rates experienced by residents of remote areas is greater for Indigenous than other Australians.

Patterns of road injury events differ between Indigenous and non-Indigenous road users including higher rates of injury as a motor vehicle passenger (not a driver) and as a pedestrian.

Institutions such as Aboriginal community-controlled health services may be appropriate avenues for road safety interventions specifically directed to Indigenous individuals and communities.

National Indigenous Road Safety Forums were held every two years from 2002 to 2010. The five forums were convened by the Commonwealth Department of Infrastructure and Regional Development. Re-establishing the Forums would provide a valuable opportunity for the limited number of people working in this area to consult and share experiences.

The 2010 Indigenous Road Safety Forum recommended a fund for Indigenous road safety projects that produce measurable change, sustainability and capacity for replication in other settings.

Speed Management

Speed management is a core component of a Safe System and remains the best opportunity for a rapid reduction in road trauma. Since 2011 some attempts at implementing safer speed limits have been made, however only limited progress has been made on major urban and rural arterial roads. The critical role of speed in the Safe System was recognised by the strategy and Safe Speeds was treated as a cornerstone area.

The stakeholder consultation suggested further exploration of technological solutions to speed management, including extending the use of Intelligent Speed Adaption (ISA). It was also suggested

that national approaches to speed management and speed-related media campaigns be adopted. These items were also listed in the "First Steps" agenda.

The actions from the First and Future Steps agendas could be pursued more vigorously on rural arterial roads and also address reducing speed limits on rural local government roads.

Remote Areas

The data analysis has shown that deaths are reducing at a slower rate on rural and remote roads than in urban areas. Remote areas present a particular challenge; low volumes mean investment in infrastructure on these roads is always going to be given a low priority by traditional assessment methods and traditional enforcement is unlikely to be effective given the vast distances, extremely limited enforcement resources and infrequency of vehicles.

In time, vehicle safety technology may be the most effective countermeasure for remote areas where single vehicle road departures are a significant issue. The increasing use of Electronic Stability Control (ESC), for example, would be expected to result in a reduction in loss of control crashes in these areas. Unfortunately new technology takes considerable time to be taken up by the majority of the fleet, and those most at risk, such as young drivers in remote areas, are likely to be amongst the last to receive the benefits.

Stakeholders suggested development of a separate remote area strategy following the Western Australian model from 2009. This would need to include the potential of vehicle technologies and low cost infrastructure solutions that address core Safe System issues. As a first step, the challenges of remote area road safety need to be acknowledged in the action plan.

Vehicle Safety

Improvements to vehicles have been a major contributor to trauma reductions for over 15 years through developments in crashworthiness and occupant protection. These improvements will continue to deliver trauma reductions throughout the life of the strategy as more and more new vehicles achieve high safety standards and the older vehicles driven by the most at risk drivers improve over time.

New technologies are now being developed to assist in crash avoidance as well as occupant protection but these are likely to have most impact in trauma reductions as part of the next national road safety strategy. AEB holds the most potential and will also benefit vulnerable road users.

ISA appears to have the second highest potential to prevent crashes after AEB. The availability of accurate and reliable digital speed maps remains a challenge for the deployment of ISA in Australia, although in 2014 New South Wales made their map available via a smartphone application.

A rapid take up of technologies into the vehicle fleet will bring forward the benefits of these technologies. The Australian automotive market is characterised by low entry barriers and a high level of competition. The resultant strong competition means that regulation, plus good, easily understood consumer information is vital to ensure the safety of vehicles and to promote vehicle choice based on issues other than price.

Cooperative ITS

There have been considerable developments in Intelligent Transport Systems (ITS) since 2011. Most significant has been the imminent feasibility of connected vehicle solutions, otherwise known as Cooperative Intelligent Transport Systems (C-ITS), which have the potential to significantly improve

road safety. Research and technical capacity exists within Australia but there is no clear path to implementation and a variety of approaches and operation scenarios are possible.

There is a high level of confidence that V2V and V2I technologies can deliver considerable safety benefits. While V2V has no dependence on the surrounding infrastructure, it requires both vehicles to have the technology in order to avoid the crash.

Although ITS was mentioned in the NRSS, the rapid changes since 2011 mean that the area needs to be revisited. The action plan needs to be aligned with the Austroads C-ITS Strategic Plan to ensure that a safety perspective guides major policy positions. Given the potential paradigm shift in traffic management possible with C-ITS, it would be a missed opportunity if solutions were primarily based on traffic efficiency.

Communication Strategies

Communication of road safety messages is essential in gaining support for road safety initiatives. All jurisdictions face similar challenges in communicating Safe System principles and shifting community perceptions in favour of interventions that will work. The literature review found some innovative and promising communication campaigns, reflecting a variety of approaches. The cooperative development of resources and guidelines to assist jurisdictions in communication activities could be part of the action plan.

Monitoring Serious Injuries and Crashes

Road safety has long relied upon road fatality counts as the main outcome indicator. It has been recognised that this provides an incomplete basis for planning and monitoring because initiatives directed at reducing deaths are not necessarily effective at reducing other harm, particularly persisting disability.

Measurement of serious road injury is necessary because of the large numbers of cases, the substantial burden of disability resulting from many of the cases, and the differences in trends and other aspects of the data between fatalities and serious injuries.

The measurement and monitoring of serious injuries is a complex issue, and improving the availability and reliability of data needs to be a priority of the next action plan. The Road Safety Committee of the Parliament of Victoria has recently published the report of its extensive investigation into measuring serious road injury. The findings and recommendations provide guidance on the steps needed to establish useful measures of serious road related injuries.

Infrastructure Investment

There is support for both increased infrastructure investment and modified targeting of the available funds, including increased investment to address trauma on country roads, and trauma facing vulnerable road users on urban roads. The analytical tools Australian Road Assessment Program (AusRAP) and Australian National Risk Assessment Model (ANRAM) offer considerable potential to provide a better focus for investment.

The "First Steps" agenda includes recommendations to increase safety related funding and change the priorities for infrastructure investment. The "Future Steps" agenda is focussed on more specific infrastructure treatments, such as facilities to assist cyclists and motorcyclists and low cost treatments on rural roads. These actions are still relevant to the new action plan and a study to establish best safety management practices and processes for prioritising and developing infrastructure projects may be useful in completing some of these actions. There has been support for resetting the

socioeconomic value used in the appraisal of transport projects to better reflect community demand for road safety, through the Willingness to Pay (WTP) approach adopted by many countries around the world. The New South Wales WTP measure still represents the most appropriate national measure until a full national study is conducted. It is noted that the Victorian Parliamentary Road Safety Committee, in the report on its Inquiry into Serious Injury, did not support the step towards applying WTP values. The Victorian Government has yet to respond to this report.

Coordination with Urban Planning

Although fatal crashes are reducing in urban areas there is still a major problem with serious injury crashes. The planning context within which towns and cities are managed will play an important role in determining the extent to which these injuries are reduced, particularly in relation to encouraging active travel and injuries to vulnerable road users.

The recent Victorian Parliamentary Road Safety Committee Inquiry into Serious Injury highlighted the issue of bringing together urban planning and road safety. That committee noted the absence of a link to road safety in city plans and to urban planning in road safety strategies. The report considered active engagement of road safety with planning to be essential in encouraging increased use of active transport modes. The inquiry also endorsed the Organisation for Economic Co-operation and Development (OECD) recommendation that a functional road hierarchy catering for all modes is fundamental to producing a Safe System urban design.

There are clear indications of the need for engagement between safety, transport planning and urban design professionals but there has been limited success in making this happen. The Dutch Sustainable Safety approach has had some success and this is being extended, with regional governments in the Netherlands providing specific resources to make sure this engagement happens with transport policy and urban planning professionals.

Workplace Road Safety

Work-related road crashes in Australia account for about half of all occupational fatalities and a significant proportion of all road-related fatalities. Despite the road being the dominant setting for occupational fatalities, not all government agencies with occupational safety and health responsibilities identify work-related road trauma as an occupational safety priority.

Employers and fleet managers have a pivotal role in the composition of the vehicle fleet and influence the safety of very high volumes of trips each day, therefore playing an important role in the safety of the road transport system as a whole.

Workplace road safety was identified as an issue to be addressed in the way forward for the National Road Safety Strategy but was not specifically included in the First or Future Steps agendas.

Engagement with occupational safety and health agencies is important and could build on the progress of the National Road Safety Partnership Program (NRSPP). There is still an unclear picture of the scale of work-related road trauma. Incorporating purpose of trip data in crash reports could be considered to provide a more complete picture of this significant issue.

National Leadership

Internationally, road safety management is a growing focus of attention as various institutions and jurisdictions recognise that the limits to improved road safety performance are, in part, shaped by the capacity of the road safety management system operating in a country.

Many stakeholders thought that the accountability for road safety is unclear and does not assist the leadership task. Improvement in institutional structures, capacities and delivery arrangements at a national level were identified as part of the "First Steps" agenda. Governance arrangements for road safety under the Transport and Infrastructure Council have been modified in the last two years to improve national oversight and coordination of the NRSS and provision of policy advice to Commonwealth, state and territory governments.

A review of governance and management arrangements for road safety could be considered to assist subsequent decision-making. Internationally, a common tool for addressing these matters is a road safety management capacity review and this methodology (or aspects of it) would be useful.

There was also concern about a lack of engagement in the implementation of the NRSS. Many of the non-government stakeholders referred to a lack of engagement on the national road safety issue. Consideration could be given to establishing and formalising a strong stakeholder engagement process.

ROAD SAFETY ADVISORY COUNCIL

TOWARDS ZERO

TOWARDS ZERO – TASMANIAN ROAD SAFETY STRATEGY 2017-2026

STAKEHOLDER AND PUBLIC CONSULTATION REPORT – STAGE 1

Contents

Executive Summary

The Road Safety Advisory Council (RSAC) is undertaking a staged approach to develop the *Towards Zero – Tasmanian Road Safety Strategy 2017-26* (Towards Zero Strategy). This includes two stages of stakeholder and public consultation.

The purpose of the first stage of consultation was to raise awareness of the Toward Zero Strategy's development process, share information on the Safe System approach and crash problems in Tasmania, gather community and stakeholder views on issues and potential solutions and engage Tasmanians in the process of developing the new road safety strategy.

Stakeholder and Public Forums

The first stage of stakeholder and community consultation saw 22 separate forums take place across the State from October 2015 to December 2015.

To begin with, 13 internal government stakeholder forums were held with relevant sections of the Department of State Growth, external Tasmanian Government agencies and Members of Parliament. A total of approximately 125 people attended these sessions.

Following the internal forums, four separate regional stakeholder forums were conducted in Hobart, Burnie, Smithton and Launceston, with approximately 60 stakeholders attending. To achieve the best possible outcomes at these forums, all key stakeholders were contacted prior and provided with information to assist them to consult within their organisations about road safety issues.

Five regional public forums were also conducted in Hobart, Queenstown, Burnie, Launceston and St Helens, with approximately 70 people attending. Due to attendance numbers, the forums in Queenstown and St Helens were combined stakeholder and public forums. Advertising to promote the forums took place across various media platforms (including print media, television and radio).

There was a high level of discussion at all forums and various road safety issues were raised and debated. Collectively, approximately 250 people attended all forums to have their say on what they believed should be included in the new Strategy.

Online Survey and Written Submissions

A total of 370 people completed an online survey which was created to gather community views on the development of the Towards Zero Strategy. This option was primarily provided for people who were unable to attend a forum, however, forum participants were still encouraged to complete the survey. The survey consisted of 44 questions and was open from 8 October to 31 December 2015.

In addition to the forums and survey, community members and stakeholders were also invited to put forward a written submission if they wished. A total of 17 submissions were received, many of which were thoroughly researched and highly detailed.

Key Findings

In total, approximately 650 community members and stakeholders participated in the first stage of consultation. The majority of participants were male and in the 46-65 age group. However, a significant number of students participated in the online survey, ensuring there was adequate representation from young road users.

The comments made at the forums, in the survey and in the written submissions were grouped into key themes. The most frequent themes discussed were driver education, driver training, law enforcement, road maintenance, vehicle safety, speed and vulnerable road users.

At the stakeholder and public forums, education was the most frequently raised theme, accounting for 26% of comments. Developing more information on misunderstood/changed road rules, mandating road safety education in schools and developing a campaign to improve driver attitudes were major issues discussed.

The online survey gave an indication of how seriously the community takes road safety. Overall, the majority agreed with the Safe System principles and believed they could do something to make a difference on our roads. The overwhelming majority of respondents believe that road users are currently the biggest threat to road safety, with inattention, bad attitudes and carelessness considered to be the major crash causes.

Over 1000 additional comments were made beyond the specific questions asked in the survey, with education and training being the most frequently raised theme, accounting for around 27% of comments. Improving education and training to combat poor driver attitudes, lack of driving skills and road rule ignorance was believed to be the key step in improving road safety. Improving roads, vehicles and setting appropriate speeds were largely seen as secondary to the issue of driver behaviour.

Improving law enforcement on our roads was also frequently raised in additional comments. This theme accounted for 20% of comments, with many respondents believing that an increased police presence on our roads and harsher penalties would deter people from driving dangerously. Many respondents also raised that there should be less focus on speeding (especially minimal breaches) and more focus on dangerous driving behaviours.

It is evident that the majority of those who participated in the consultation process believe that addressing road user behaviour through better education and training methods is the key to improving road safety.

Many suggestions were made as to how each cornerstone of the Safe System can be improved to increase road safety as a whole (see following table). All of these comments will be evaluated in conjunction with crash analysis and best practice, and will inform the development of the Towards Zero Strategy.

Safe Road Users	Safe Roads/ Roadsides	Safe Speeds	Safe Vehicles
Improve driver attitudes (courtesy, attention)	More consideration of cyclists/pedestrians in road design	More police	Block mobile phone signals
Improve driver training	Better maintenance	Reduce speed limits	Periodic vehicle inspections
More police	Better signage	More speed cameras (fixed and moving)	Speed limiters
Drive to Conditions	More pull over bays/overtaking lanes	Increase speed penalties	Alcohol interlocks
Education	Remove overgrown vegetation on roadsides	No penalties for minor breaches	Less in-car technology
Road rules education (intersections; roundabouts; merging; updates of changes)	Wire rope barriers	Less speed zones/changes	Novice power restrictions
Ongoing driver training and assessment	Separation of traffic at high speeds	Uniform, sensible speed limits	Incentives to drive safer vehicles
Increase penalties			Ban vehicle modifications
Primary/High School education			

1. Introduction

The current Tasmanian Road Safety Strategy 2007-2016 is nearing the end of its life (end 2016). While there have been reductions in the number of serious casualties, far too many people are still involved in crashes. Over the past 10 years 3287 people have been killed or seriously injured on Tasmanian roads. This is totally unacceptable. In fact, there is no acceptable level for road trauma.

The development of the new *Towards Zero – Tasmanian Road Safety Strategy 2017-26* (Towards Zero Strategy), which will provide the strategic direction for road safety in Tasmania for the next ten years, is being undertaken by the Road Safety Advisory Council (RSAC).

The Towards Zero Strategy will continue to be based on the Safe System approach to road safety which aims to provide for safe people, travelling on safe roads, at safe speeds, in safe vehicles (the Safe System approach is further explained in 5.6.4). It will also be based on the long-term vision of zero deaths and serious injuries on Tasmanian roads. The path to zero deaths and serious injuries will not be easy. Everyone needs to think about a future where no one is hurt or killed as a result of using our road network and actively work towards making that goal a reality.

Road safety is a shared responsibility for all Tasmanians. Everyone has a part to play including: policy makers; engineers; urban planners; the vehicle industry; fleet owners; businesses; utility companies; property developers; road maintenance workers; lobby groups; schools; parents; insurers; retailers and road users. That is why RSAC is undertaking a two-staged community and stakeholder consultation process as part of the development of the Towards Zero Strategy. This is a greater degree of consultation than has previously been conducted, and will ensure that the Strategy receives a greater level of community understanding and support.

The RSAC will also take into consideration the results of independent crash analysis and modelling which will review the crash problem in Tasmania and model potential Safe System countermeasures to address

the identified issues. Initiatives under the Towards Zero Strategy will be best practice, evidence-based measures proven to reduce road trauma.

This report provides an overview of the first-stage consultation process, including an in-depth summary of the results obtained from all stakeholder and community forums, the online community attitude survey and the written submissions. Findings from this stage of consultation will be considered and incorporated where possible into the Towards Zero Strategy.

2. Stakeholder Forums

Technically speaking, all road users could be considered as a 'stakeholder' in road safety, as we all have a vested interest in remaining safe on the road. However, for the purposes of this report, a 'stakeholder' refers to someone from a road safety industry or association.

A total of 17 stakeholder forums were held in the first stage of consultation for the Towards Zero Strategy. Forum participants included Members of Parliament (MPs), internal government stakeholders and external stakeholders.

Each forum included a 20-minute presentation on the Strategy development process, the Safe System approach and the key road safety problems in Tasmania (including State-wide and local crash statistics and crash causes). A 10-minute video on the Safe System was also shown, which depicted a scenario describing how the Safe System approach could reduce the consequences of a crash.

At the conclusion of the presentation at each of the forums, discussion points were displayed to prompt questions and conversation within the group.

2.1. Stakeholder Framework for Consultation

Prior to the forums, a 'Stakeholder Framework for Consultation' booklet was developed and provided to MPs and key external stakeholders. The purpose of this Framework was to assist MPs and key stakeholders to effectively engage with their constituents/members about road safety issues, to ensure concerns were fully represented at the forums.

The Framework provided information on the Safe System, Tasmanian crash statistics, the Strategy development process and the stakeholder/community forums. The Framework also provided a number of example questions to consider prior to the forums, including:

- What are the major road safety issues for your organisation/constituents? How can these be addressed? What are the barriers for addressing them?
- What may change in the near future that will impact road safety?
- How would you like to be involved in and informed about the new Strategy?

The Framework also contained a print copy of the online survey, which included further questions for potential consideration.

2.2. External stakeholder forums

Four separate external stakeholder forums were held in the following regions:

- South (Hobart)
- North-West (Burnie)
- North (Launceston)
- Far North-West (Circular Head)

Invitations were sent to relevant stakeholders prior to the forums, including:

Royal Automobile Club of Tasmania (RACT)	Tasmanian Catholic Schools Parents Council
Motor Accidents Insurance Board (MAIB)	Driver Safety Services
Local Government Association of Tasmania (LGAT)	Association for Children with a Disability
Tasmanian Motorcycle Council (TMC)	Brain Injury Association Tasmania
Tasmanian Transport Association	Tasmanian Forest Contractors Association
Tasmanian Bicycle Network	Advanced Driving Techniques
Australian Driver Trainers Association	Tasmanian Farmers and Graziers Association
Local Government Mayors and General Managers	Livestock Transporters Association of Tasmania
Metro Tasmania	Royal Australasian College of Surgeons
Tasmanian Bus Association	Australian Institute of Advanced Motorists
Road Trauma Support Tasmania	Tasmanians with Disabilities
Headway Tasmania	Guide Dogs Tasmania
Pedestrian Council of Australia	Occupational Therapy Driving Assessors
Cycling South Tasmania	Kidsafe Tasmania

The Hobart, Launceston and Burnie external stakeholder forums were run by an independent facilitator, with an expert panel in attendance to answer any questions from the floor. This panel consisted of a local police officer, local paramedic, State Growth traffic engineer, State Growth statistical expert, Professor Ian Johnston (RSAC road safety expert) and Jim Cox (RSAC chair).

The Circular Head forum was run by the Road Safety Branch, as it was a smaller, much more regionally focused forum.

When discussion was opened to the floor, participants were asked what they thought were the major road safety issues in Tasmania, and how these could be addressed within a Safe System context.

A total of 60 stakeholders attended these four forums, all representing diverse organisations. Many stakeholders expressed that they were pleased to have the opportunity for input at an early stage, and wished to remain part of the process throughout the Towards Zero Strategy's development.

Details of attendees and comments made at each stakeholder forum is provided in Appendix A.

Major topics of discussion at the forums included:

- Education and Driver Training – Most people agreed that road safety education needs to begin at an early age and continued throughout high school and college.
- Improving Roads – Ensuring all road users are considered in road design and that infrastructure assists in reducing crash risk.
- Vehicle Safety – Not all people can afford cars with five star safety features. Incentives/discounts could be applied to encourage people to drive the safest car they can afford.

Representatives from motorcyclist, cyclist, bus and driver training associations participated actively in putting forward their particular views on the road safety problem. This prompted good debate in the room, and ensured that these road user groups were adequately represented.

At the conclusion of the forum, stakeholders were thanked for their participation and provided with a brochure of the key points from the presentation. Stakeholders were also encouraged to complete the online survey or put forward a written submission.

2.3. Members of Parliament

The Minister for Infrastructure briefed the House of Assembly (on 13 October 2015) and Legislative Council (on 14 October 2015) on the development of the Towards Zero Strategy.

As this was a sitting week, there were many other engagements taking place in Parliament at the time of the briefings. As a result, only 3 House of Assembly members were in attendance at their briefing, and 9 Legislative Council members. All MPs at the briefings were provided with a 'Stakeholder Framework for Consultation' booklet, with the remaining MPs receiving a copy in the mail.

Many questions were asked by MPs throughout the presentation, especially regarding crash statistics and behaviours. Particular MPs were concerned that some traffic penalties were not effective, and suggested that more analysis be done in this area. Improving crash data quality was also discussed, with conversation around how data can be more consistent and the value of 'near miss' crash information.

It was also suggested that consultation could be improved by engaging with particular regions in Tasmania which are more active in the road safety space.

As these were briefing sessions only, MPs were encouraged to engage with their constituents about road safety and represent their views by attending a public forum.

2.4. Internal Government stakeholder forums

Eleven forums were held for relevant internal State Growth and Government stakeholders:

- Infrastructure Policy Branch (State Growth)
- Passenger Transport Branch (State Growth)
- State Growth Executive
- Driving Assessors (State Growth – two sessions)
- Registration and Licensing Services (State Growth)
- Department of Police and Emergency Management
- State Roads Division (State Growth)
- Transport Inspectors (State Growth - two sessions)
- External Government Agencies

These one-hour sessions were designed to provide participants with information on how the Towards Zero Strategy will be developed, and to gather their views on what they see as the emerging road safety issues for their Department/Branch and how these can be addressed. These sessions were facilitated by the Road Safety Branch and gave a reasonable indication of what issues were arising before the external stakeholder and public forums took place.

A total of 125 people attended these internal stakeholder forums. Each group had their own specific road safety concerns which were unique to their particular area of work.

Details of the comments made at the internal forums are provided in Appendix B. Major topics of discussion included:

- Road Safety Education and Driver Training – Misunderstood road rules are an issue and there is a need for continuous road safety education in the school system. Changing driver attitudes must also be focused on, especially regarding courtesy, drug driving and penalties.
- Road infrastructure – The State Roads Division gave valuable insight on this topic, explaining that the lifecycle cost of certain treatments needs to be weighed up against other more cost-effective solutions. Vehicle advancement may also render some current treatments obsolete in the future.

The presentation and Safe System video received positive feedback from participants, most reporting that they found the forum interesting and engaging. Emails with additional suggestions and a number of online surveys were also received from many internal participants.

3. Public Forums

Five public forums were held in the first stage of consultation for the Towards Zero Strategy in the following regions:

- South (Hobart)
- West (Queenstown)
- North-West (Burnie)
- North (Launceston)
- East (St Helens)

Due to the low number of stakeholders on the West and East Coasts, stakeholders in these regions were invited to attend the public forums.

3.1. Background and process

Effective community consultation is critical in the development of the Towards Zero Strategy. The public forums allowed for community debate on road safety issues and promoted community engagement in this area. It also allows for the development of a Strategy that has a greater level of understanding and support from community members.

The public forums were advertised widely throughout the State. Print advertisements appeared in the Mercury, the Advocate, the Examiner, regional newspapers and stakeholder publications. Online advertisements appeared on the Mercury, Advocate and Examiner websites, with various stakeholders also placing advertisements on their website, social media site and e-newsletter. A thirty second advertisement was also aired on Southern Cross television and on 7XS radio (Queenstown) in the weeks leading up to the forums.

The forum format was largely the same as the external stakeholder forums. Each session was two-hours long, run by an independent facilitator and included the attendance of a five-person expert panel (outlined earlier) to answer questions and give insight.

A presentation on the Strategy development process was shown, which included information on the Safe System approach, the key road safety problems in that particular region and a 10-minute 'Safe System' video. Around one and a half hours were set aside for discussion. At the conclusion of the forums, participants were provided with a 'key points' brochure and encouraged to complete the online survey and provide a written submission.

3.2. Participants

Approximately 70 community members participated in the public forums across the State. These included concerned citizens, researchers, council workers, MPs, car enthusiasts, health professionals and cyclists.

The majority of participants were very engaged in the discussion at all forums. Although attendance numbers were not large, the conversation was of a high quality, with many participants eager to put forward their thoughts and talk further with the panel after the forum had concluded.

3.3. Key issues

Many of the issues that arose during the stakeholder forums were also raised at the public forums. Full details are provided in Appendix C. Major topics of discussion included:

- Tourists – It is clear that there is some concern among the community surrounding road safety education for tourists. Many people raised the issue of overseas tourists, who (due to language barriers and differing rules in their own country) may not understand Tasmania's road environment.
- Road Rules Education – Many participants felt that there is a need for a general public education campaign on misunderstood road rules, and improving driver attitudes. Lack of road courtesy, driver awareness and general understanding of intersections and roundabouts seem to be common frustrations among many drivers. They believe that this is only being increased by the use of mobile phones, and many feel that improving initial driver training may help in improving driver attitudes in these areas.

Being smaller rural areas, the forums in Queenstown and St Helens presented some unique issues which were much more regionally focused.

The roads surrounding Queenstown are quite different to drive on compared to the rest of the State, which presents a number of road safety issues for visitors to the region. The Lyell Highway on Mount Black was widely discussed at the forum, with suggestions put forward as to how this section of road can be made safer.

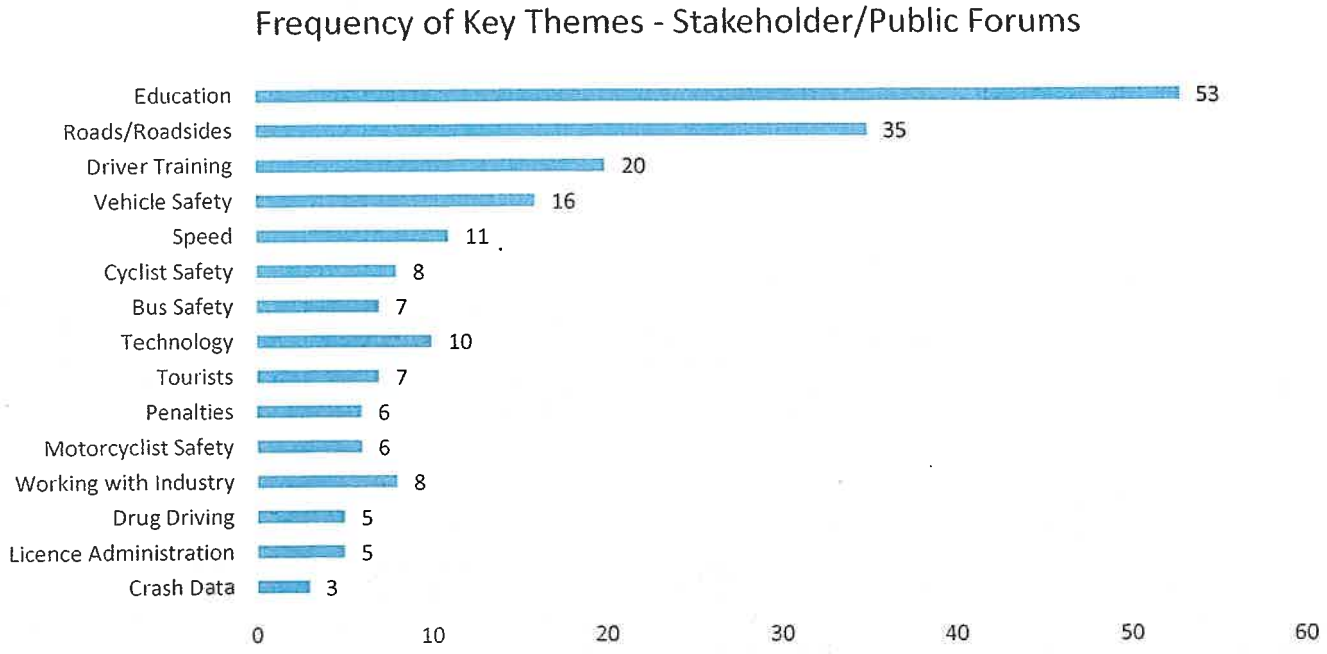
The East Coast is a popular tourist destination, with attendees at the St Helens forum very interested in discussing issues around the management of tourists on the roads (especially tourist cyclists). Specific sections of road considered to have high crash rates were also discussed at this forum (in particular, the Great Eastern Drive).

4. Key Findings – Stakeholder and Public Forums

In total, approximately 250 people attended the stakeholder and public forums. The following table outlines the major themes and sub-themes which came out of the forum discussions, as well as the frequency in which they were raised:

Theme		Frequency
Education	Misunderstood road rules (road works, intersections, amber lights, roundabouts, merging, speed limits)	15
	Primary/High School education	15
	Fitness to Drive	4
	Child restraint fitting	3
	Driver Behaviour/attitudes (fatigue, courtesy, attention)	16
Roads/Roadsides	Appropriate signage/treatments/lights in problem areas	19
	Improve roadsides/clear vegetation and hazards	5
	Create more pull-over bays	2
	Improve/change road surfaces	2
	Consider all road users in road design	5
	Less roundabouts	2
Driver Training/Novice Drivers	Mandate defensive driver training	3
	Improve novice training (including gravel, merging, braking, attitudes, introduce P2 test)	15
	Increase learner hours	1
	Periodic testing for all licence holders	1
Vehicle Safety	Incentives to drive safer cars	2
	Regular vehicle inspections	2
	Consider what can be done for low-income earners	4
	Better advertisements for cars	2
	Alternative vehicle regulation (eg. Segways, scooters)	1
	Improve hire car accreditation standards	1
	Headlights on at all times on certain roads	1
	Power to weight restrictions for novices	3
Speed	Less speed zones	2
	Reduce speed limits	7
	Lower speed at road works	1
	Allow speed limit to be exceeded to overtake	1
Cyclist Safety	Cyclist registration	2
	High visibility clothing	1
	Improve infrastructure for cyclists	5
Bus Safety	Enforce 40km/h around buses at all times	2

	Encourage use of public transport	3
	Safer bus pick-up zones	1
	Discourage J-walking	1
Technology	Block mobile phone use	5
	Introduce auto-breaking	1
	Consider introduction of driverless cars	1
	Automatic speed infringements	1
	Speed displayed to passengers	1
	Less technology in cars to distract drivers	1
Drug Driving	Education	3
	Increase testing	2
Tourists	Increase education (campaign, video on boat/plane)	4
	More signage	3
Penalties	Improved enforcement of rules	4
	Effectiveness of penalties	2
Motorcyclist Safety	Attitudes/risk taking behaviour	1
	Improve training/education	3
	Introduce lane filtering	2
Working with Industry	More interaction with local Council	5
	Lower insurance premiums for safe drivers	3
Licensing Administration	Introduce knowledge tests upon licence renewal	1
	Review licencing processes (suspension, novice process, discounts)	4
Crash Data	Improvements to crash data obtained	3



Improving road safety education was the most frequently theme raised, in particular, introducing compulsory road safety education into the primary and high school curricula. Currently, there is a road safety component which can be undertaken as part of the Year 10 Health Curriculum, however, this is not compulsory. Many participants believe that the earlier education is introduced, the better, with it continuing on throughout the schooling years.

Many participants also raised that there needs to be more education to improve driver attitudes and behaviour (eg. encouraging courtesy on the road, the importance of remaining aware/attentive, less risk taking), and more education on road rules. It was suggested that this education should be directed at all drivers, however, novice driver training should also focus on this area. Many participants believed that if you train/educate novice drivers correctly and fully at the beginning of their driving career, they are less likely to develop bad habits.

Improving our roads and roadsides by way of installing more signage, treatments and lights in appropriate areas was also a key topic raised by participants. Most people were able to identify certain areas of road which needed treatments and offered suggestions of what initiatives would work best.

Many interesting comments and suggestions were made in regard to all key themes. All of these will be analysed and will inform the development of the new Strategy.

5. Online Survey

5.1. Survey population and administration

On behalf of the RSAC, the Department of State Growth developed an online survey which was available at www.towardszero.tas.gov.au from 8 October 2015 to 31 December 2015. The target population for the survey was all Tasmanian road users. A total of 370 surveys were submitted. Participants filled in the survey online and were informed that their personal details would remain confidential and answers would remain anonymous.

The survey was advertised through the same channels as the public forums - in local regional newspapers (including the Mercury, the Examiner and the Advocate), through television advertisements and radio, and via social media and news websites. A print copy of the survey was also included in the 'Stakeholder Framework for Consultation' which was mailed to all key stakeholders.

5.2. Survey format

The online survey consisted of 44 questions and took around 20 minutes to complete. Various question formats were utilised, including open-ended questions, rank order, five point scales and 'yes or no' responses. The questions were separated into the following categories:

- Vision and road safety performance
- Crash causes
- The Safe System approach
- Safe road user behaviour
- Safe roads and roadsides
- Safe speeds
- Safe vehicles
- Demographics

Participants were also given the opportunity to make further comment at the end of the survey.

5.3. Student participation

With 18-25 year olds being over-represented in crash statistics, the Towards Zero Strategy will have a direct impact on the next generation of young drivers. To ensure that young road users were adequately represented in the consultation process, various schools were contacted and encouraged to circulate the survey to their senior students. Given the timing of the consultation forums, a student forum was unable to be organised due to examinations and end-of-year school commitments.

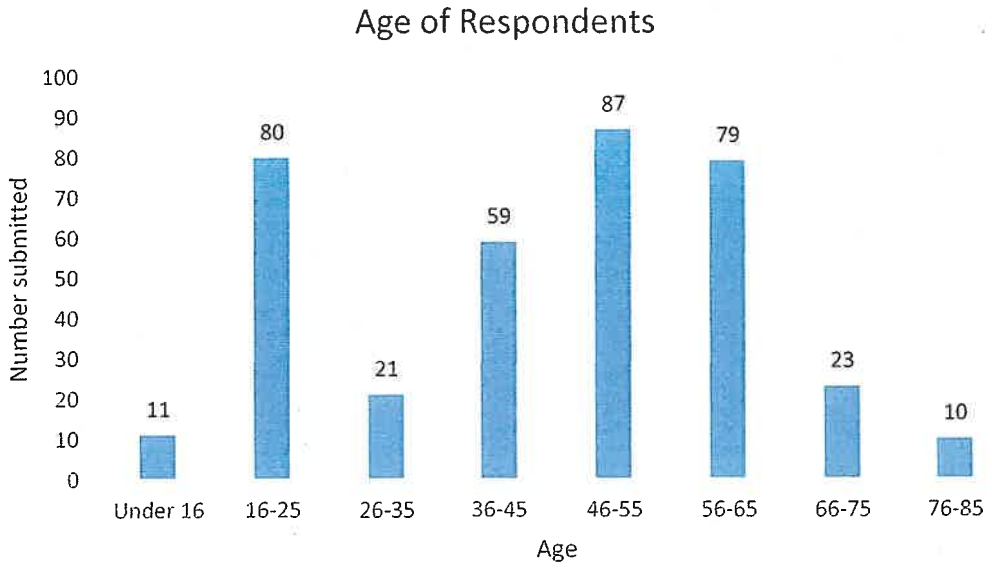
Six schools incorporated the survey into the Health Curriculum (which includes a road safety awareness component) or circulated the survey link to students via email. 73 students from the Hutchins School, St Marys College, Hobart College, St Virgils College, St Patricks College and MacKillop College completed the survey, ensuring that young road users were represented in the consultation process.

5.4. Data analysis

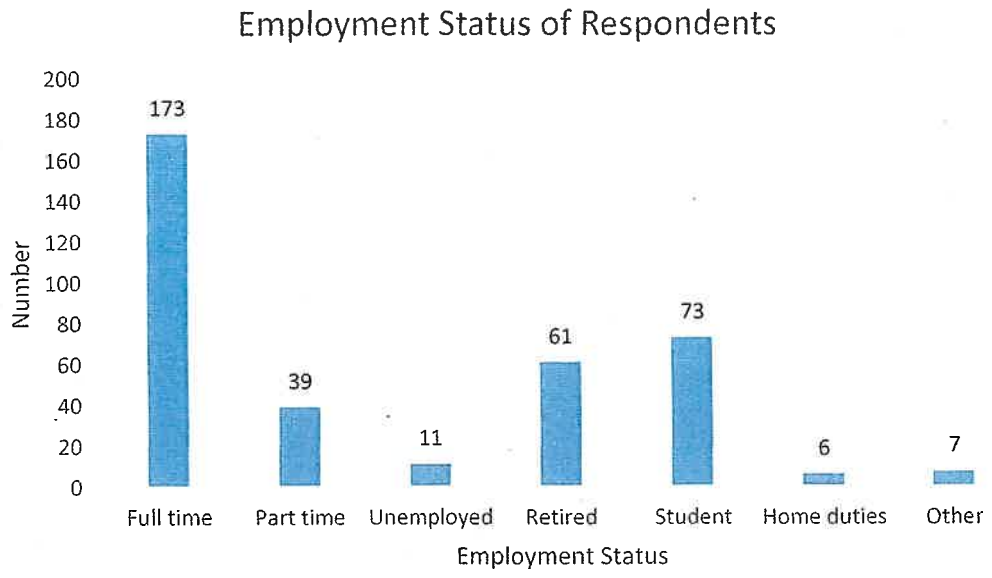
The results of the online survey have been analysed and coded. Frequency analysis was conducted to identify the number of people responding to each question. Qualitative responses have been included where appropriate to provide supporting information.

5.5. Sample

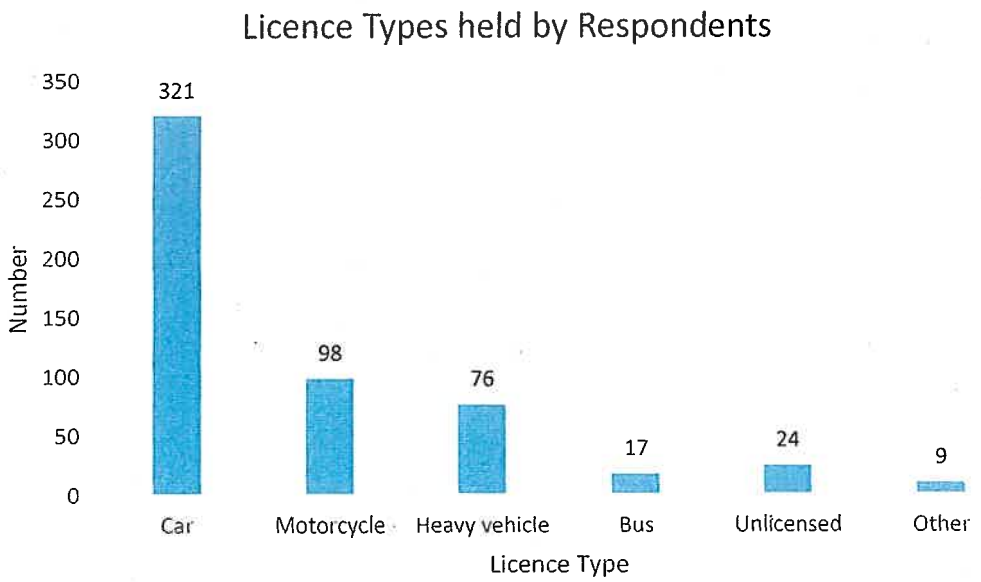
370 people completed the online survey. The majority of respondents (69%) were male. The majority of the sample population was aged between 46-55 years (23%), with the 16-25 and 56-65 age groups each making up 21% of the sample population.



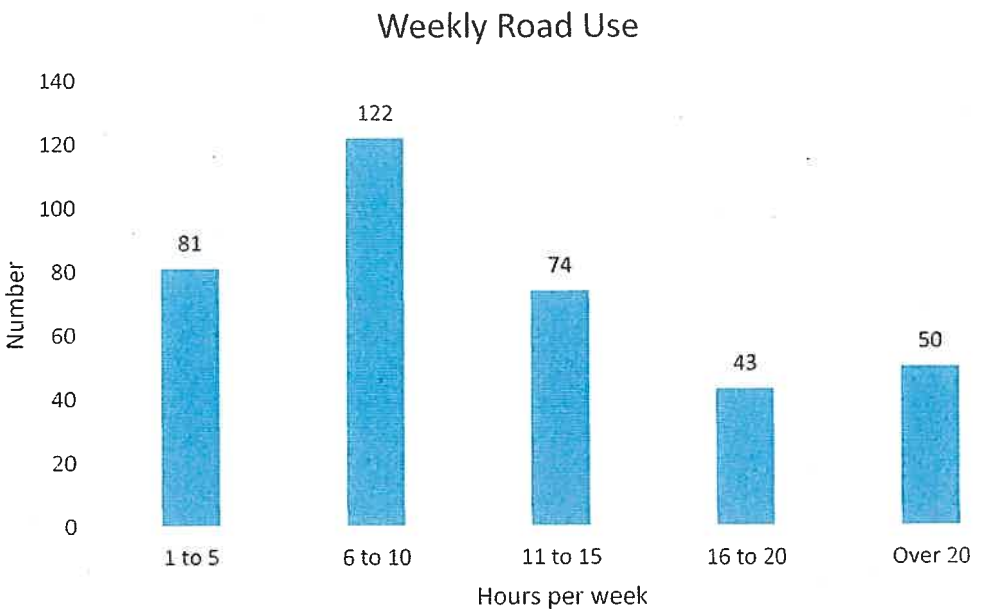
The majority of respondents (47%) were employed on a full time basis.



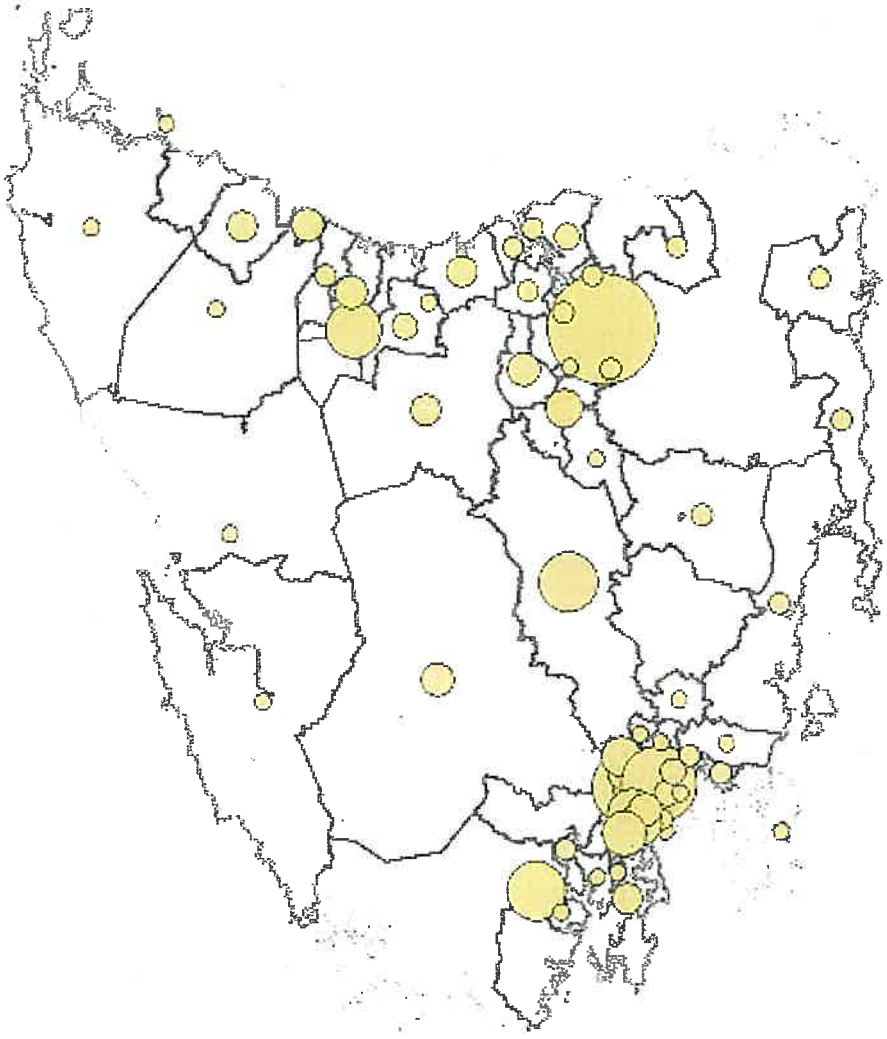
The majority of respondents (59%) have a car licence, and 18% of respondents have a motorcycle licence.



The majority of respondents (33%) indicated that they use our roads for a total of 6-10 hours per week. This includes using the road as a driver, rider or pedestrian.



Respondents were located in various areas around Tasmania, with 68 out of 107 postcode regions being represented (Map 1). The majority of respondents (56%) were from the Greater Hobart region, with 30% from the North/North East and 12% from the North West/West.

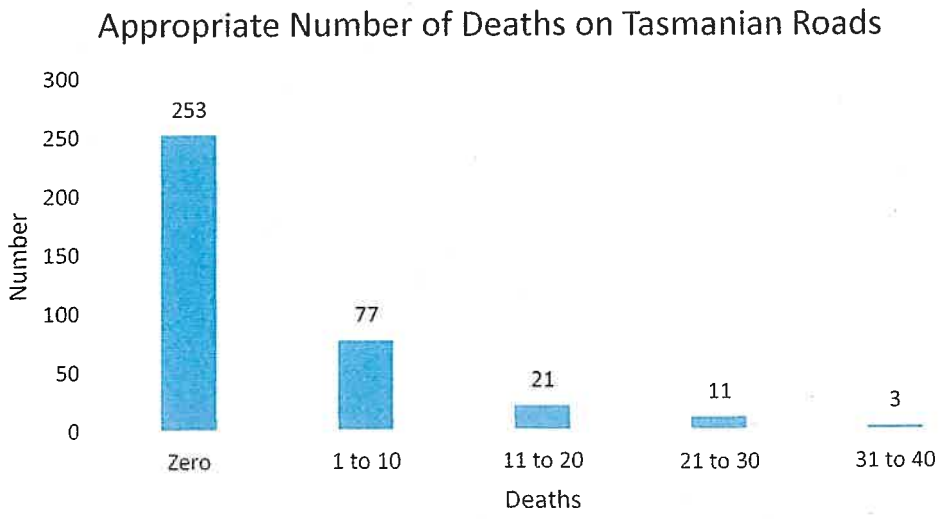


Map 1: Frequency distribution of online survey respondents

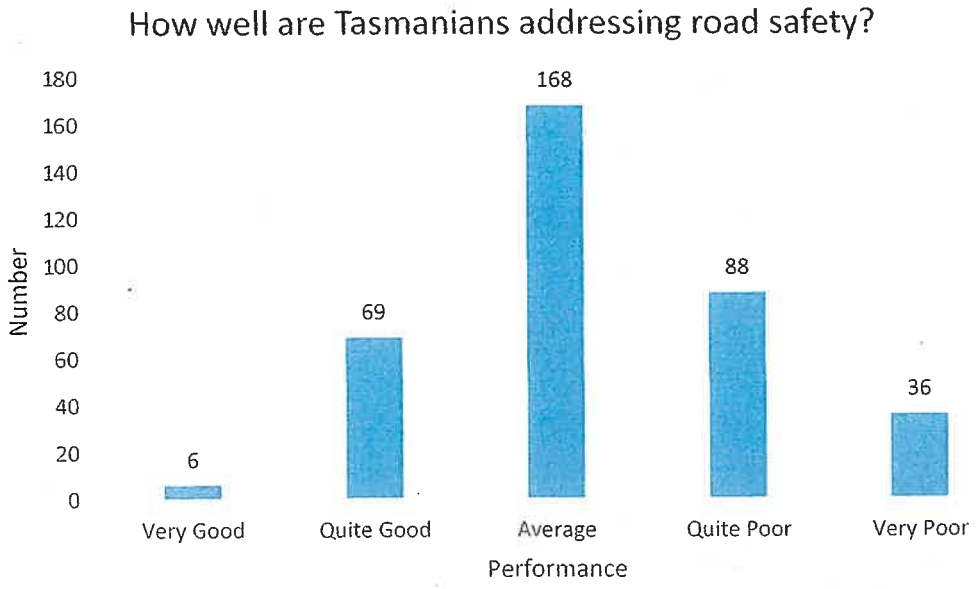
5.6. Results

5.6.1 Vision and road safety performance

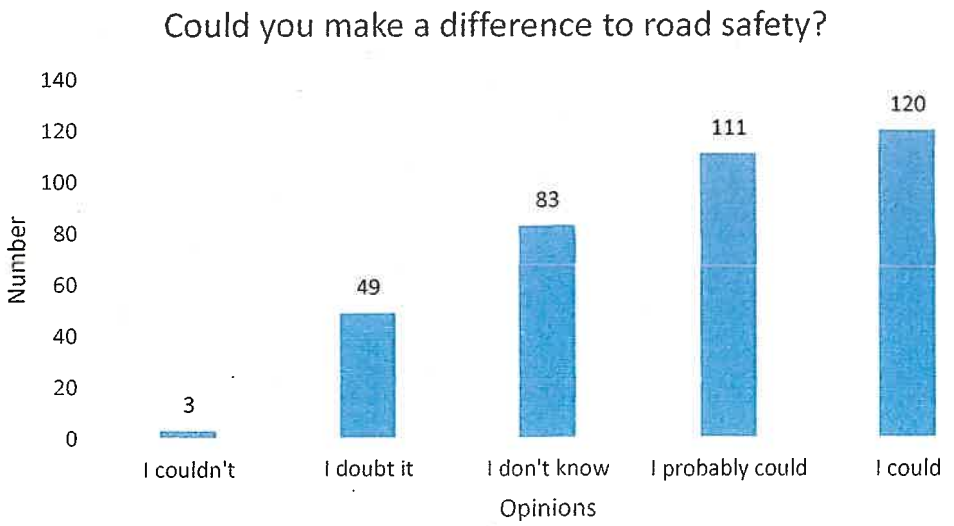
The Towards Zero Strategy will be based on the long-term aspirational vision that no one will be killed or seriously injured on Tasmanian roads. When respondents were asked what an appropriate number of deaths would be on Tasmanian roads, the majority (69%) answered zero.



The majority of respondents (46%) felt that the Tasmanian community is doing an average job addressing the problem of road safety.



The majority of respondents (33%) felt that they could definitely do something to make a difference to road safety.



When asked what they could do to make a difference to road safety, there were two major themes which included driving behaviour and lobbying, educating and reporting. Setting an example themselves by making appropriate driving decisions and encouraging others to drive safer were popular answers.

Theme		**Frequency**
Driving Behaviour	Drive safely/decision making	37
	Obey road rules	21
	Be courteous/responsible	21
	Keep attentive/aware	17
	Drive to conditions	16
	Slow down	9
	Undertake further driver training	6
	Set an example	5
	Wear appropriate safety gear	3
Lobby/educate/report	Educate/talk with others (family, friends)	37
	Lobby government	20
	Advocate for road user groups	16
	Report bad/illegal driving behaviour	12
	Complete survey/attend forum	6
	Report poor roads	4
Other	Use public transport/walk	7
	Maintain safe vehicle	2

5.6.2 Crash Causes

When asked to select which three factors most often lead to road crashes, respondents selected the following (in descending order):

Crash Factor/Cause	Frequency
Carelessness/negligent driving	165
Inattention/lack of concentration	160
Driver distraction/driving while on mobile	137
Driver attitudes/impatience/aggressive behaviour/road rage	135
Drink driving	131
Speed/excessive speed/inappropriate speed	120
Disregarding of road rules	77
Driver fatigue	73
Incompetent driving	66
Road design/poor design/poor road signs	63
Driving too close to other vehicles	62
Drugs (other than alcohol)	55
Ignorance of road rules	52
Lack of driver training/insufficient training	50
Driver inexperience/young drivers	41
Weather conditions	40
Too few police on road/lack of police enforcement	37
Louts/showing off	35
Failing to maintain vehicle/lack of maintenance	27
Road conditions/traffic congestion	24
Other	19
Older drivers	14
Vehicle design	9

The top responses were carelessness, inattention and bad attitudes. Although many factors can contribute to a crash, it is clear that the community feel that the main cause of road crashes can be attributed to the driver themselves.

5.6.3 Improving Road Safety

Respondents were also asked what they thought was the single biggest thing that could be done to improve road safety in Tasmania. There were four major themes in responses, being improved education/training, increased enforcement, speed limits and improved roads/roadsides.

Theme		Frequency
Education/Training	Improve driver attitudes	32
	Improve road rules education	30
	Mandate defensive driving training	19
	Improve novice training	15
	Regular testing of licence holders	13
	Primary/High School education	9
Enforcement	More police/speed cameras	46
	Increase penalties	27
	Zero BAC/alcohol interlocks	15
	Block mobile phone signals	12
Speed	Reduce speed limits	23
Roads/Roadsides	Improve roads/roadsides/signage	46
Other	Increase vehicle inspections	3
	Increase novice restrictions	3
	Better public transport	3
	Introduce driverless cars	2
	Increase visibility of motorcyclists	2

Following on from the 'Crash Causes' question, it is no surprise that improving driver attitudes and road rules education were popular responses. Many respondents also felt that an increased police presence on the roads would encourage compliance with road rules, and that improved roads/roadsides would assist in reducing road crashes.

These themes and sub-themes were frequently raised throughout the survey. Respondents elaborated on their responses in each specific section of the survey relating to each cornerstone of the Safe System.

5.6.4 The Safe System

The Towards Zero Strategy will be based on the Safe System approach, which aims to improve road safety through four cornerstones: safe road use; safe roads and roadsides; safe speeds; and safe vehicles.

The Safe System approach is based on the following principles:

- **People make mistakes:** We're only human. We need to accept that people make mistakes and that crashes will continue to occur. However, we do not need to accept that a crash will result in death or serious injury.
- **People are vulnerable:** The human body is frail and can only withstand a certain level of force before sustaining serious injuries.
- **We need to create a more forgiving road transport system:** All components of the road system – roads and roadsides; speeds; vehicles; and road use – need to be improved so that when a crash occurs, the forces in the crash do not exceed the limits of human tolerance.

- **We need to share responsibility for road safety:** Responsibility for road safety is shared by everyone. Everybody has a role to play in creating a safe road system: including road designers, policy makers, vehicle manufacturers, governments and individual road users.

Table 1
Respondents were asked a series of questions relating to general Safe System principles. This table shows their responses and gives an indication of community attitudes towards the Safe System approach.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
People make mistakes and we need to develop a road system that allows for human error.	178	62	65	40	20
It is possible to design a road system which is inherently safe so when crashes do happen, death and serious injury can be avoided.	49	151	86	70	11
Our road transport system needs to reduce crash impact forces so people can survive.	62	181	82	35	5
Everybody has a role to play in creating a safe road system including: road designers, policy makers, vehicle manufacturers, governments and individual road users.	222	122	15	2	3

Overall, the majority of respondents agreed or strongly agreed with the Safe System principles. This shows that the community have a level of belief in the Safe System, and believe that they also have a part to play in improving road safety.

Table 2
Respondents were asked if they believed the following factors to be a problem in regard to the Safe System. This table shows their responses and gives an indication of the areas which the community believe need improvement.

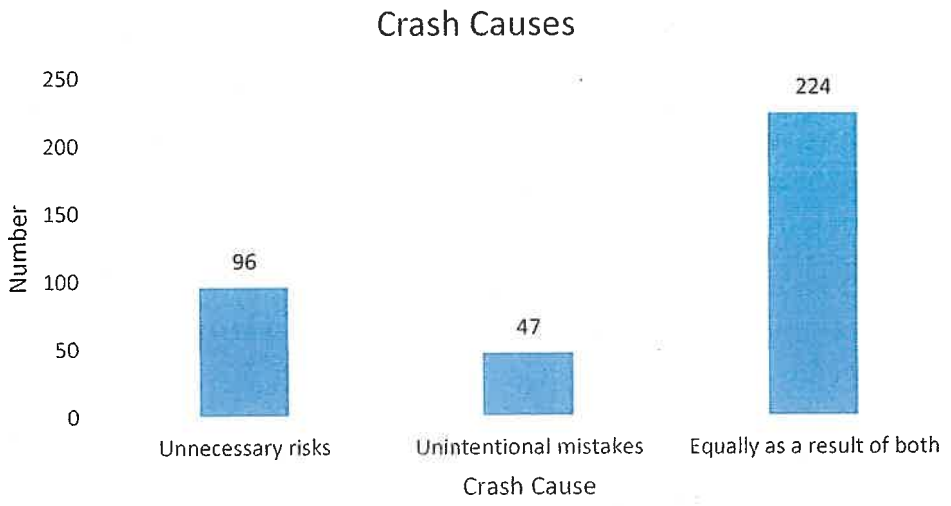
	Not a problem	Somewhat of a problem	A problem	A major Problem
Inappropriate speed limits (too high)	80	191	48	48
Safety of vehicles on our roads	93	174	74	24
Road design and maintenance	38	142	94	89
Travel speeds (drivers not driving at appropriate speeds for the conditions)	14	96	128	127
Driver behaviour on our roads	3	54	143	167

Based on the above responses, it is clear that the community believe that driver attitudes (especially regarding behaviour on the roads and driving at inappropriate speeds for the conditions) are major problems in regard to the Safe System.

Road design and maintenance was also identified by respondents to be a problem. Weighing up effectiveness and life-cycle costs of road treatments is a significant task. The Safe System will aim to improve our roads to benefit all road users, including reducing the chance of death and serious injury in the event of a crash.

Vehicle safety and high speed limits were also considered to be problems, but weren't considered as problematic as road design or driver attitudes.

Respondents were also asked if they believed that most crashes occur as a result of people making unintentional mistakes or taking unnecessary risks. The majority (61%) felt that crashes occurred equally as a result of both these factors.

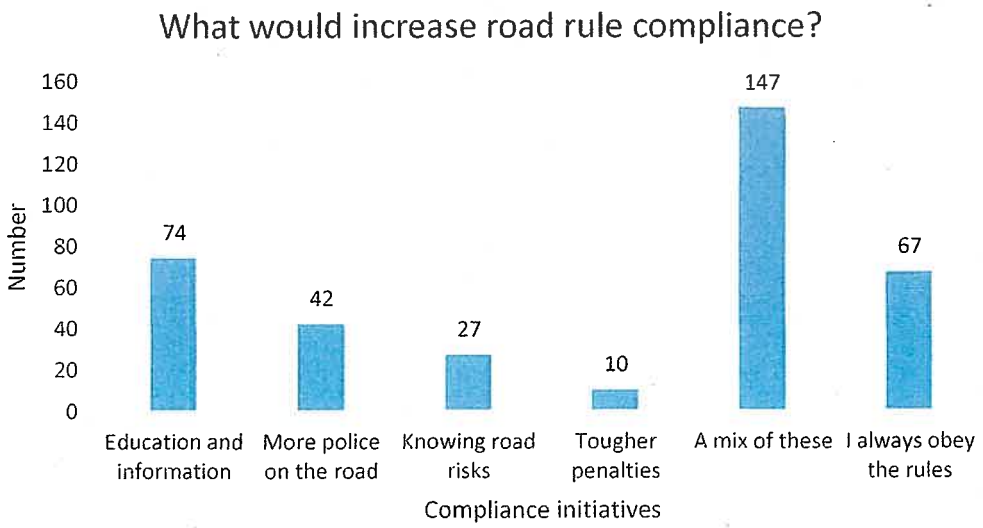


The majority (88%) also admitted that they have made a mistake while driving on the road – this reinforces the principle that we are only human, and a system needs to be created to mitigate serious injury and death.

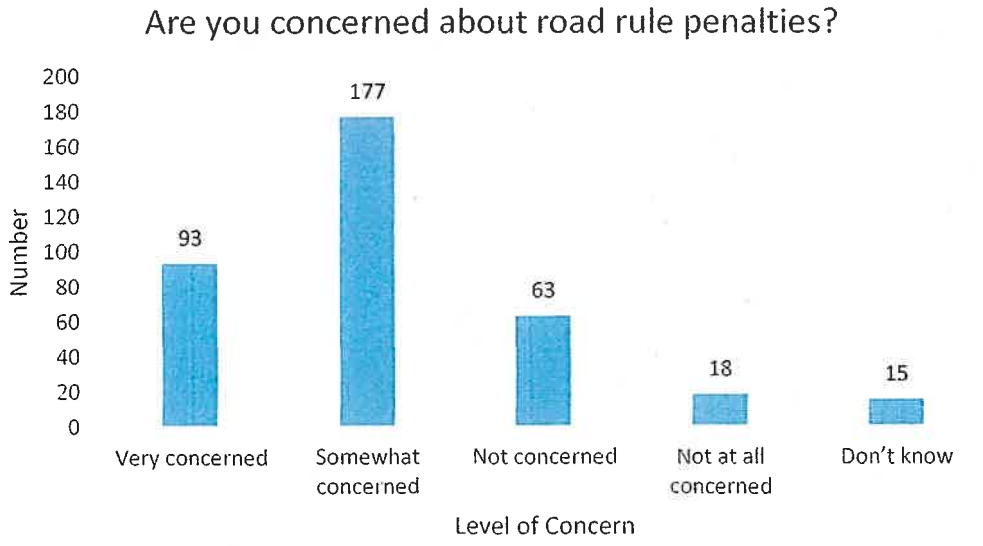
5.6.5 Safe Road Users

Under a Safe System, the role of road users is to be skilled, competent, alert, to follow the rules and drive or ride to the conditions. Most people already obey the road rules and even those who do obey the rules can (and do) make mistakes. Respondents were asked 13 questions on this part of the Safe System, and were given opportunity to provide further comments on how the safety of road users can be improved.

When asked what factors would increase their compliance with road rules, many respondents (20%) felt that more education and information would be beneficial. However, compliance through a mix of initiatives was considered to be the most practical tool, with the majority of respondents (40%) selecting this answer.



Respondents were also asked if they believed it would be likely they would be caught if they broke a road rule. The majority (42%) thought it fairly unlikely, with 30% believing it very unlikely. This is a high percentage of people who believe it possible to 'get away with' breaking the law. However, respondents did indicate concern about the penalties and implications of breaking road rules, with 73% answering that they were either 'very' or 'somewhat' concerned about the consequences.

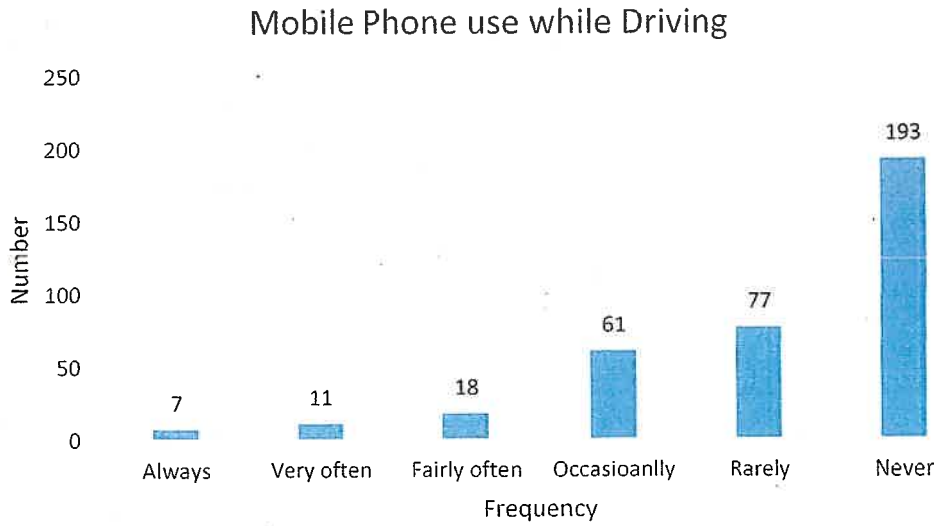


Motorcycle and bicycle riders were also asked to indicate how often they wear the necessary riding safety gear (eg. protective clothing, helmet).

Only 30% of respondents to this question were motorcycle riders, with the large majority (93%) answering they always wore their safety gear. 63% of respondents were bicycle riders, with 85% indicating they always wear a helmet whilst riding.

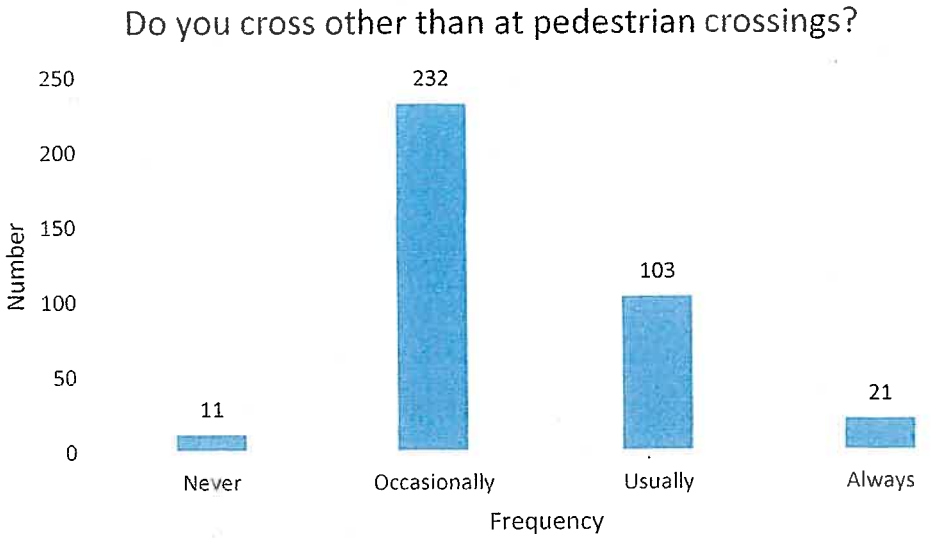
98% of respondents also indicated that they always wore a seatbelt whilst in a moving vehicle.

When asked how often people use their mobile phones to make or receive calls whilst driving (both hand-held and hands-free), the majority of respondents (53%) answered 'never'.



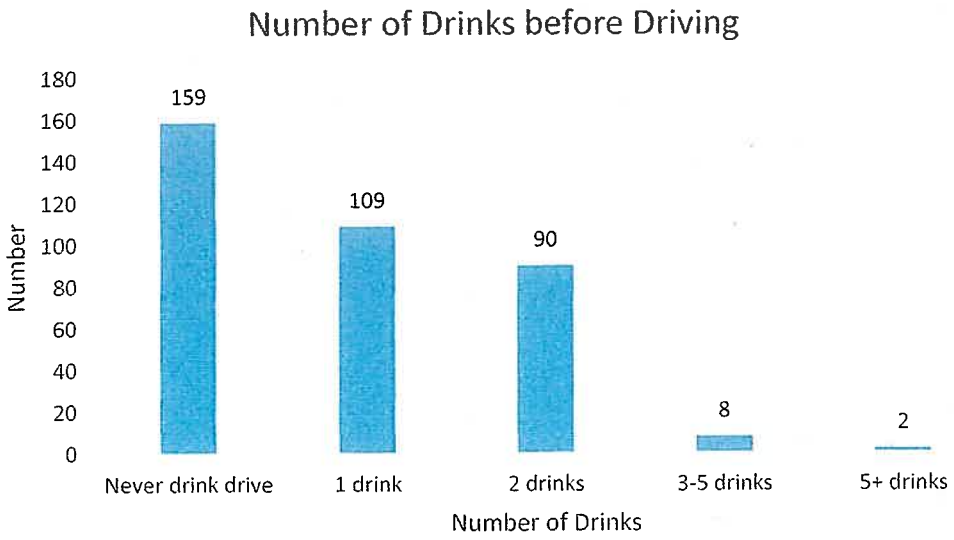
For those who admitted to using their phone whilst driving, only 7% indicated that they text and drive, and 9% indicated that they do not use a hands-free device when making a call.

Respondents were also asked about pedestrian safety, in particular, whether they tended to cross the road at places other than pedestrian crossings. The majority (63%) answered 'occasionally', with only 3% answering 'never'. With such a high number of respondents indicating that they often do this, it is apparent that the community have quite a relaxed attitude towards 'J-walking' and crossing the road where they choose to.



Drink driving and drug driving are also contentious road safety issues. When asked how many standard drinks they would normally have before driving, the majority of respondents (43%) indicated that they

never drink and drive, with 54% indicating that they would allow themselves one or two drinks before getting behind the wheel.



Respondents were also asked about drug use and driving. When asked how often they had driven under the influence of drugs in the last 12 months, the majority of respondents (94%) answered 'never', with less than 1% indicating that it is a frequent habit.

Furthermore, 79% of respondents indicated they had never fallen asleep while driving, with 15% admitting that they had.

In the last part of this section, respondents were asked for any additional comments on how the safety of road users could be improved. Six main themes arose out of these comments, being improved education/training, better enforcement, improved safety for vulnerable road users, safer vehicles, safer roads and focus on inattention.

Additional Comments – Improving the Safety of Road Users

Theme		Frequency
Education/Training	Improve driver attitudes/awareness	16
	Periodic re-training of all drivers	13
	Road rules education/TV and radio ads	7
	Tourist education	7
	'Drive to Conditions' education	5
	Improve novice driver training	3
	Primary/High School education	2
	Defensive driver training	2
Enforcement	More police/better enforcement	15
	Alcohol interlocks/tougher drink drive penalties	11
	Block phone signals/tougher penalties	7
	Promote 'dangerous driver' hotline	1

Vulnerable Road Users	Cyclists/pedestrians considered in road design	12
	Separate bicycle lanes	7
	Enforce 1.5m cyclist overtaking rule	3
	Enforce wearing helmets	2
	Mandate cyclist registration	1
Vehicles	Power restrictions for novice drivers	3
	Annual vehicle inspections	2
	Headlights on at all times	1
	Increase roadside vehicle checks	1
	In-car cameras	1
Roads	Safer road conditions (eg. no gravel)	8
	Better road design	4
Speed	Reduce focus on speed, with tougher penalties on attitudes and inattentiveness	7
	Reduce speed limits	1
Other	State and local Government collaboration	1
	Improve public transport	1

Again, improving driver attitudes through an education/awareness campaign featured heavily in the comments from respondents. Many respondents also believe that enforcement should focus more on driver attentiveness/attitude, rather than focus on speed.

"... It is important that enforcement focuses on dangerous driving rather than minor speeding infringements that involve no danger. While the law should be obeyed, police should focus on the real problem of unsafe driving. Speed is too quickly blamed..."

"... Problems are often caused by drivers driving too slow without good reason. This can cause frustration which becomes the real road safety hazard..."

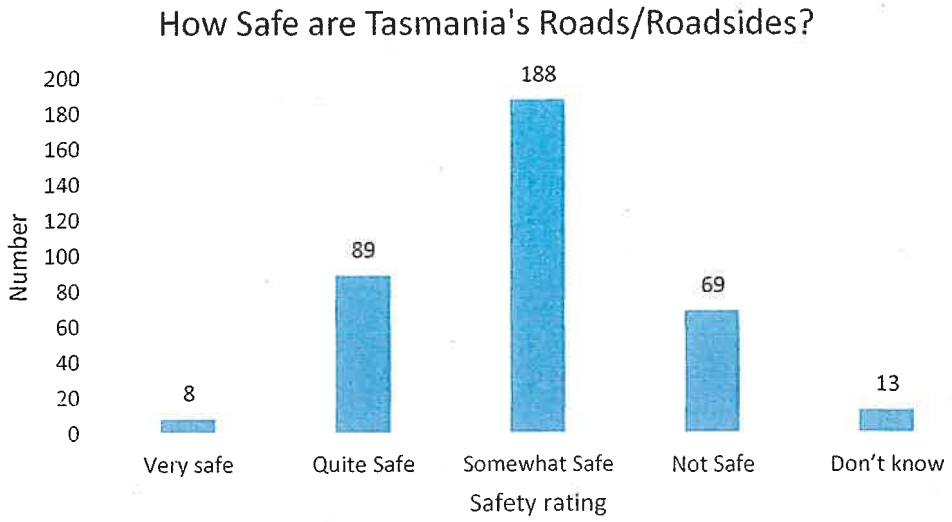
Many respondents also felt that compulsory periodic driver training needs to be considered, with continuous education campaigns around commonly broken and confusing road rules. Having short television commercials illustrating certain road rules, or explaining a road rule in a weekly segment of a newspaper/radio station, were some of the suggestions raised.

Many respondents also gave a voice to vulnerable road users, namely pedestrians and cyclists. To improve the road safety of these groups, many felt that there needs to be more consideration of pedestrians and cyclists in road design, with motorists being more aware of their presence.

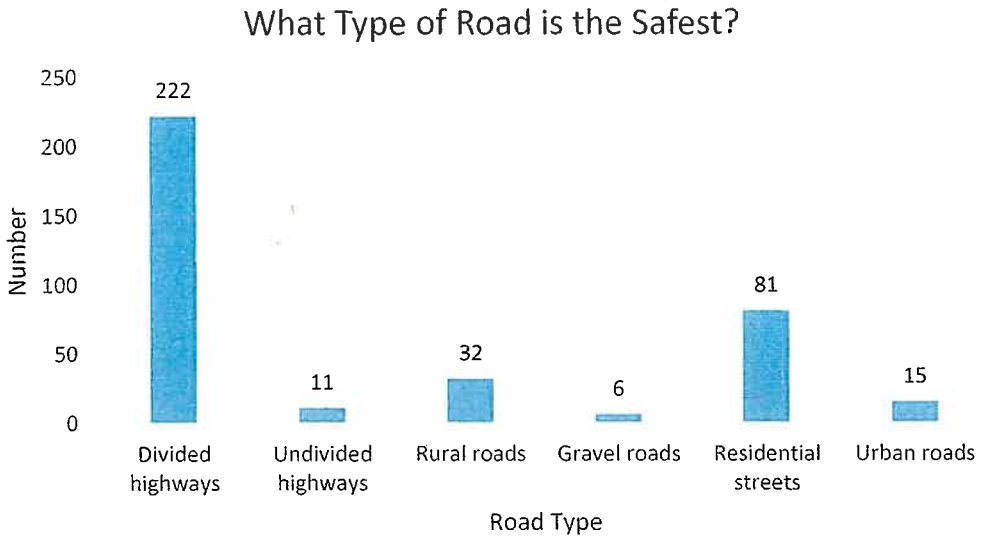
5.6.6 Safe Roads and Roadsides

Under a Safe System, roads and roadsides are safer, as planning and design make them more forgiving of errors. Surfaces are improved, roadside hazards removed and barriers installed. Respondents were asked three questions on this part of the Safe System, and were given opportunity to provide further comments on how Tasmania's roads and roadsides could be improved.

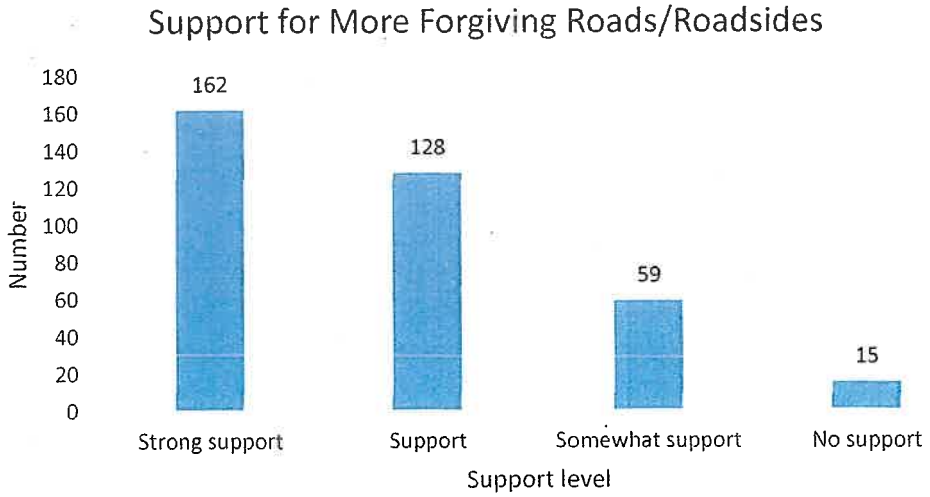
When asked how safe they believed Tasmania's roads and roadsides were, the majority (51%) felt they were adequate or 'somewhat safe', however, nearly a fifth (18%) felt they were not safe at all. This shows that the community believes there is room for improvement in our road system.



Respondents were also asked what type of road they find safest to drive on. The majority (60%) answered 'divided highways', with gravel roads (unsurprisingly) only accounting for 2% of answers.



When asked if they supported roads and roadsides being designed to be more forgiving of mistakes made by responsible road users, 96% of respondents offered some level of support.



In the last part of this section, respondents were asked for any additional comments on how Tasmania's roads and roadsides could be improved. Four main themes arose out of these comments, being improvement of the roads themselves, appropriate road treatments, improved roadsides and education/training issues.

Additional Comments – Improving Tasmania's Roads and Roadsides

Theme		Frequency
Roads	More consideration for cyclists/pedestrians (widen roads, lane separation)	25
	Safe, sealed road shoulders	11
	More overtaking lanes/wider roads	8
	Divided highways/separation of traffic at high speeds	7
	Fix pot holes	5
	Better maintenance of road surfaces	5
	Better road upgrade program	3
	Maintain gravel on roads	3
	No parking on narrow roads	1
Treatments	Remove wire rope barriers	13
	More safety barriers	6
	Consistency of treatments	4
	Less roundabouts/more traffic lights	3
	More audible edge lines	2
	Arrows on highways/popular tourist roads	2
	Illuminated speed signs at night	2
	More roundabouts	1

Roadsides	Maintain vegetation on roadsides	10
	More pull-over bays/rest areas	9
	Better signage (speed, road conditions, tourists)	9
	Remove hazards	4
	Better street lighting at night	1
	More speedometers on roadside	1
Education/Training	Driver behaviour/driving to conditions	24
	Defensive driver training	1
Other	Greater police presence	3
	Reduce rural speed limits	3
	Annual vehicle inspections	1
	More time for pedestrians to cross	1

The additional comments were quite varied. There are many ways that roads and roadsides can be improved, with many areas needing unique and specific treatments.

Many respondents were of the view that even the best roads and roadsides would not prevent serious injury or death, if driver attitudes were still poor.

"... While I strongly support road improvements, it will take decades to improve the whole road network. The only thing that will prevent road accidents is improving driver awareness, as road builders cannot control the attitudes of drivers. Money would be better spent on teaching people not to crash, instead of giving them something soft to crash into..."

Motorcycle licence holders who completed the survey were very concerned with wire rope 'cheese cutter' barriers. These respondents believed the barriers to be very dangerous, and felt that more consideration needed to be given to all road users when installing treatments and designing roads.

"... Barriers are a hazard in themselves. They should only be installed if they present a lesser hazard, taking into consideration all road user groups..."

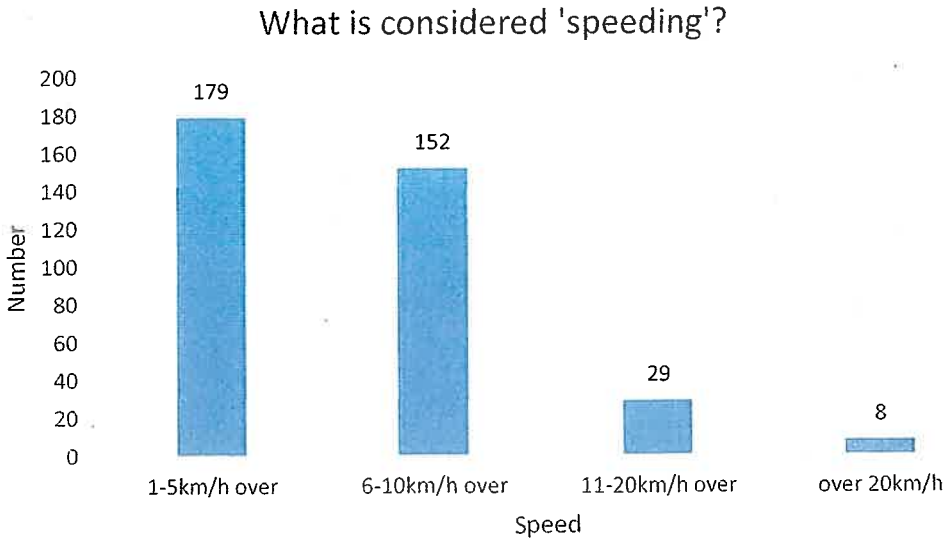
Creating more overtaking lanes and pull-over bays was also a commonly raised issue. Many respondents felt that being stuck in a line of traffic creates frustration, which ultimately leads to risk-taking behaviour at high speeds. With these situations usually involving heavy vehicles, this creates an even bigger road safety risk.

5.6.7 Safe Speeds

Under a Safe System, speed will be managed to survivable levels through a wide range of techniques, such as greater use of technology and speed limits that are appropriate for the road.

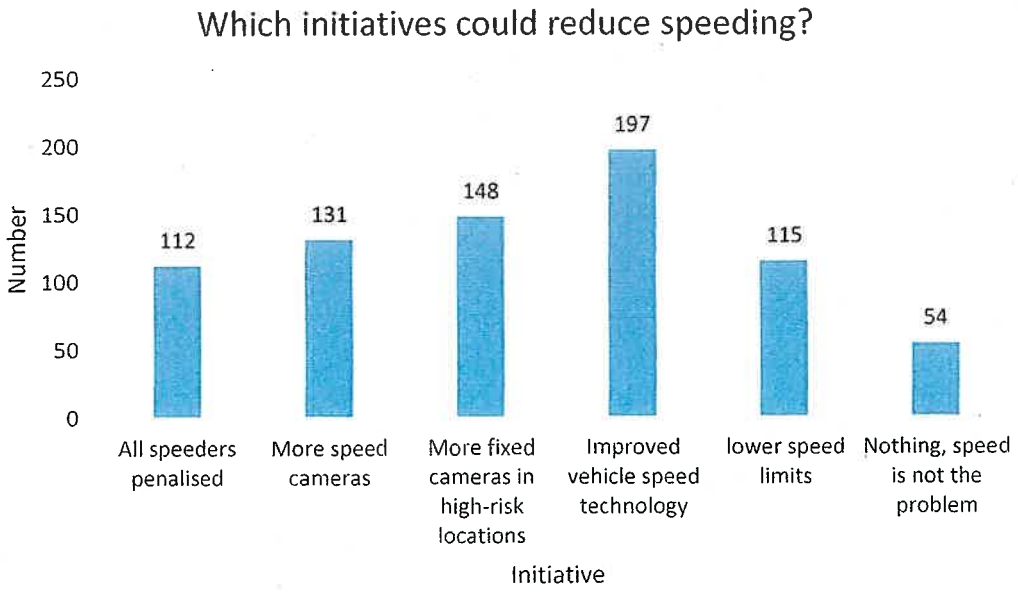
The majority of respondents (94%) indicated that they believed speed to be a factor in causing crashes – 68% also agreed that speed affects the outcome of a crash even if it is not the cause.

When asked what is considered 'speeding' on a 50km/h road, the majority of respondents (51%) answered that driving 1-5km/h over the speed limit was not speeding. These results were also very similar when asked what was considered 'speeding' on a 100km/h road.



Some people believe that revenue raising is the main reason for targeting speeding motorists. When asked if they believed this was true, the majority of respondents (48%) answered 'no'. 33% of people did believe this statement, with 19% being unsure. The community seems to be divided on this issue, perhaps indicating that there needs to be more education on why police patrol certain areas.

Respondents were also asked what initiatives they believe would reduce the impact of speed on crashes. A list of six initiatives were given, with respondents able to select all which they thought applied. The majority (26%) believed that if vehicle technology improved to alert drivers/passengers of excessive speed, this may play a part in reducing speed and crash risk. 37% also felt that introducing more speed cameras (both mobile and fixed in high-risk locations) would make a difference.



In the last part of this section, respondents were asked for any additional comments on how road safety can be improved by managing speeds. Five main themes arose out of these comments, being tougher penalties/enforcement, more appropriate speed limits, better signage, improved education and safer vehicles.

Additional Comments – Managing Speeds

Theme		Frequency
Penalties/Enforcement	Greater police presence	11
	More mobile speed cameras in high risk locations	9
	No fines for small breach of speed limit	5
	Fine motorists going too slow	3
	Tougher speeding penalties	3
	Block phone signals/tougher penalties	1
Speed Limits	Reduce speed limits overall	8
	Speed limits too low, causes frustration	8
	Reduce rural speed limits	2
	Less speed changes on same piece of road	2
	No speed restrictions for novice drivers	1
	No speed limits at all – responsibility on drivers	1
	Reduce speed limits on cycling routes	1
Signage	Ensure speed signage is correct	3
	Ensure speed signs are visible	2
	Warning signs of speed changes	2
	Speedometers on roadsides	1

Education	Speed not a problem – attitudes/skill/education are	37
	Education on break times/distance	3
Vehicles	Install speed limiters to stop speeding	6
	Ban high powered vehicles	3
	Introduce driverless cars	1
Other	Better roads	1
	Register cyclists	1

Respondents had differing opinions on speed which supported both sides of the spectrum. Some respondents felt that reducing speed limits overall would significantly contribute to road safety. Many others felt that speed is not the problem, it is driver awareness of how fast to drive in certain conditions.

"...Some drivers believe that if they are not exceeding the speed limit, they are driving safely. Too much emphasis is placed on speed, as technology allows it to be measured. Far more focus needs to be put on 'driving to the conditions', however this is much harder to police than simply setting up a speed camera..."

Many respondents also felt that a greater police presence on our roads would result in people slowing down and being more focused. If speed cameras are going to be utilised, they should be in high-risk locations, rather than urban areas that are simply traffic dense. Only imposing fines for excessive speeding (e.g. more than 15km/h over the limit), as opposed to a small breach, was also raised.

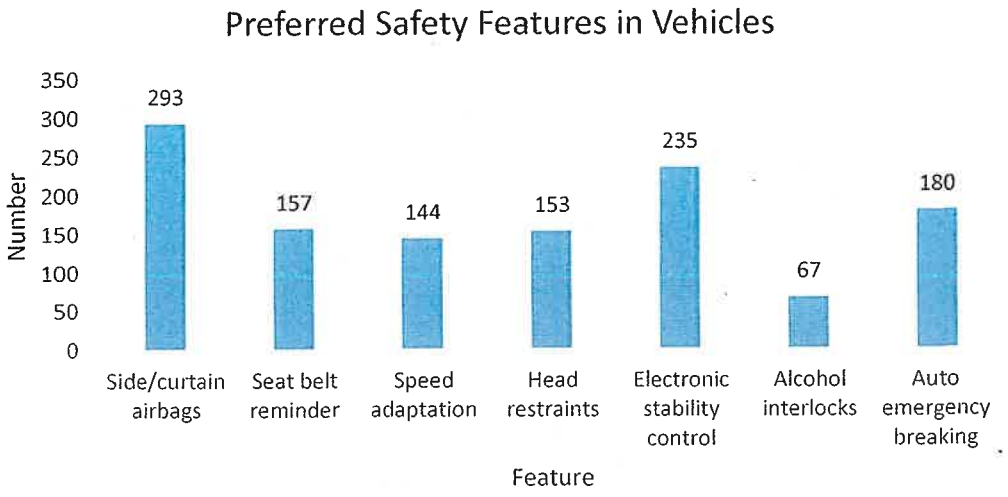
Comments were made on some speed limits being too slow, which also creates a road safety hazard.

"... Some drivers become frustrated by inappropriately low speeds, which makes them have less respect for that same limit in a high-risk location. Unreasonably low limits can also encourage bad driving and cause drivers to become frustrated and more prone to road-rage and risk taking..."

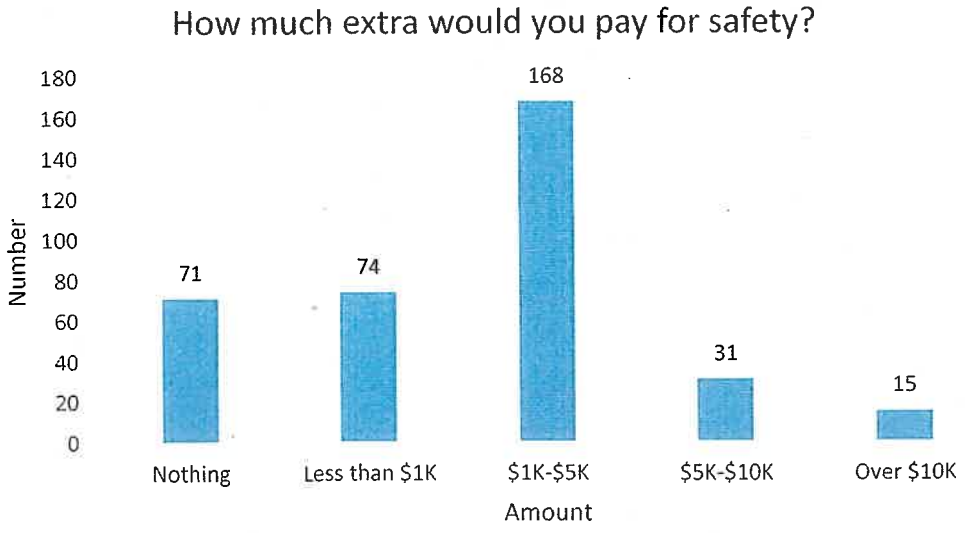
5.6.8 Safe Vehicles

Under a Safe System, everyone will ideally drive vehicles that are properly maintained and that contain the latest safety features, such as electronic stability control and curtain airbags. Increasingly, this will involve vehicles that communicate with roads and other vehicles, while automating protective systems when crash risk is elevated. Respondents were asked three questions on this part of the Safe System, and were given opportunity to provide further comments on how vehicle safety could be improved.

The majority of respondents (65%) indicated that vehicle safety ratings and safety features would be of major consideration when purchasing their next vehicle. A list of features were also provided, with respondents asked to select the features they would most like in their vehicle. Side and curtain airbags (24%) and electronic stability control (19%) were the most popular choices.



Respondents were also asked how much extra they would be prepared to pay for a vehicle that has the safety features they desire. The majority (47%) indicated they would be willing to pay an extra $1,000-$5,000 for a vehicle with their preferred safety features.



In the last part of this section, respondents were asked for any additional comments on how vehicle safety could be improved. Three main themes arose out of these comments, being vehicle technology/features, improved enforcement regarding vehicle safety and improved education.

Additional Comments – Vehicle Safety

Theme		Frequency
Technology/Features	Less technology – distracting/makes drivers 'lazy'	8
	Speed alarm/limiters	5
	Mobile phone blocking	4
	Minimum safety standards raised	4
	Introduce driverless cars	3
	Vehicle design to consider outside road users	3
	Mandate alcohol interlocks	2
	Ban bull bars	1
	Blind spot detection	1
	Indicators to be more visible	1
	Technology to detect fatigue	1
	Detection of external objects	1
	Polarised lights	1
Enforcement	Periodic roadworthy checks/remove old vehicles	16
	Power restrictions on young drivers	4
	Ban vehicle modifications	3
	Increase random roadside checks	1
	Enforce headlights 24/7	1
	Tougher penalties on overloaded trailers	1
Education/Attitudes	Focus on driving skills, not vehicle safety	18
	Education on vehicle maintenance	1
Other	Safety features to be cheaper	6
	Ads to focus on safety, not performance	2
	More involvement with vehicle industry	1
	Mandate car 'helmets'	1
	Incentives to buy safer cars	1

Vehicle technology is expanding quickly and significantly. Some people believe this is a positive thing, others believe it presents dangers. The issue of technology was raised by many respondents, with varied suggestions as to what could be introduced to make driving a vehicle safer. However, ultimately, a large number of respondents felt that any vehicle is only as safe as the driver operating it.

"...Safer driving is the key, not the safety features of a car. The best safety feature is a driver who is competent and drives to the conditions. Safety features in cars should not take the place of good roads and education..."

"...Modern technology in cars is a distraction and makes drivers complacent. Each device removes some responsibility from the driver, resulting in a false sense of security and more risk taking. Vehicles should be made simpler - the entertainment gadgets in cars are completely unnecessary and distracts the driver from properly operating the vehicle..."

Mandating periodic roadworthy checks was also commonly raised. With many other States requiring either an annual or five-yearly vehicle inspection upon registration renewal, a number of respondents were of the view that this system should also be introduced in Tasmania.

5.6.9 Additional Comments

At the conclusion of the survey, respondents were asked if they would like to make any additional comments regarding road safety in Tasmania and the development of the Towards Zero Strategy. Respondents largely elaborated on the points they had raised in previous questions, with a few different ideas being raised which were not covered in the survey.

Theme		Frequency
Education/Training	Focus on cultural change/driver attitudes	18
	Improve driver training (harder tests, awareness focus)	17
	Education on 'drive to conditions'	9
	Better campaigns for tourist drivers	8
	Mandate/encourage defensive driver training	5
	Wider education on road rule changes	5
	Education focus at young drivers	5
	Safety messages to come from those affected	1
Enforcement/ Penalties	Greater police presence/harsher penalties	10
	Periodic vehicle inspections	4
	24/7 headlights	3
	Reduce speed limits	3
	Zero BAC/more interlocks	2
	Impound vehicles as a penalty	1
Vulnerable Road Users	Separate lanes/better conditions for cyclists	16
	Enforce 1.5m overtaking rule for cyclists	7
	Better public transport system	5
	Improved safety for pedestrians	5
	Lane filtering for motorcycles	2
Strategy Governance	More diversity in RSAC representation	2
	Better leadership from Government	1
	Pressure media to use 'crash' not 'accident'	1

	Emphasise long-term crash costs	1
	Make crash data more available	1
	More information on what Road Safety Levy is used for	1
Roads/Roadsides	Better road infrastructure/maintenance	12
	Better signage	2
	Safety around road works	2
	Remove road side hazards	1
	Longer merge lanes	1

Again, education and training have been a dominant theme among these comments. Many respondents believe that providing proper training at the outset (which includes a focus on driver attitudes, courtesy, anticipation and awareness of all vehicle types) will provide an essential building block to achieving a safer road system.

Additional comments also largely focused on vulnerable road users, and the importance for all road users to be treated and considered equally in road safety. These include cyclists, motorcyclists, pedestrians and users of alternative vehicles. Considering how we can improve public transport also came into the debate.

Some different suggestions also emerged around strategy governance, with respondents providing comments on how RSAC could be improved and types of information that should be made more accessible to the public.

5.7 Key findings

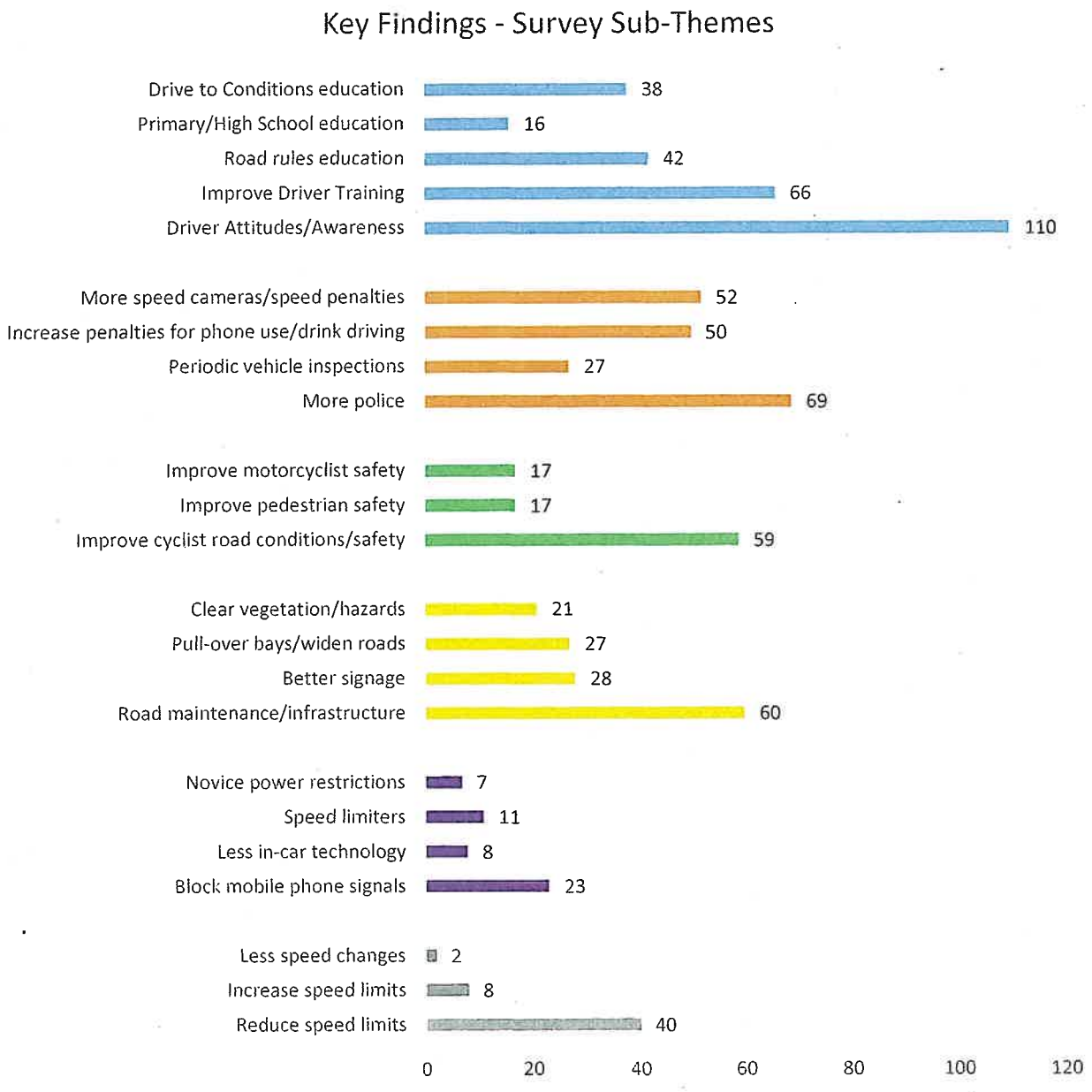
The key points from the survey results include:

- The community believe Tasmanians are doing an 'average' job in addressing road safety, with 33% believing they could personally make a difference by improving their decision making, obeying the road rules and setting an example for family/friends.
- The community largely agree with the Safe System principles, as a system needs to be developed to provide for human error.
- The community believe that a mix of initiatives may improve road rule compliance, with the majority 'somewhat concerned' about penalties.
- 53% said they never answer their phone while driving, with 7% admitting they text and drive.
- 63% admitted that they will occasionally cross the road where there is no pedestrian crossing.
- 43% said they never drink and drive, with 54% admitting they will allow themselves 1-2 drinks before driving.
- 51% believe Tasmania has 'somewhat safe' roads, with the majority feeling that divided highways are the safest, and gravel roads the most dangerous.
- 94% believe that speed is a factor in most crashes.
- 49% feel that driving 1-5km/h over the speed limit is considered as speeding, and a mix of initiatives is needed to effectively enforce speed laws.
- 65% indicated that vehicle safety ratings will definitely impact on their next vehicle purchase.

A number of interesting and insightful comments were also made in each section of the survey. Among these comments were six main themes:

- Education/Training
- Enforcement/Penalties
- Vulnerable Road User Safety
- Roads/Roadsides
- Vehicle Safety
- Speed

The following chart shows the most commonly raised issues under each of these themes:



Many respondents are of the view that poor driver attitudes and lack of awareness/skill are the key factors which are compromising road safety in Tasmania. These respondents believe that positive driving attitudes and awareness of the road environment should be a focus in novice driver training, with messages continuing to be reinforced through general public campaigns.

A greater police presence on our roads was also believed to be a contributing factor to improving road behaviour, with many respondents believing that there should be tougher penalties for speeding, drink driving and mobile phone use.

The need to improve road design to better provide for all road users, and adequately maintain those roads (and roadsides) was also considered a very important issue to be addressed in the new Strategy.

6. Written Submissions

People who were unable to attend a forum, or who wished to expand upon points raised at a forum or in the online survey, were welcome to put forward a written submission. A total of 17 submissions were received from both stakeholders and community members.

Four stakeholders put forward a written submission – Deakin University, North-West Car Club, Bicycle Network Tasmania and Ambulance Tasmania. 13 submissions were from concerned community members (7 from males, 5 from females, 1 a joint submission) and covered topics such as speed limits and enforcement, pedestrian safety, drag racing, road maintenance and infrastructure, cyclist safety and the importance of addressing poor driver attitudes.

Details of the submissions are provided in Appendix D.

The following table gives a summary of the key themes that were raised in the submissions.

Theme		Frequency
Education/Training	More road rules education	1
	Better pre-licence driver training	4
	Driver attitudes (courtesy, attention)	3
	Education in Primary/High School	1
	Improved education for tourists	1
	Periodic re-testing of road rules/driving	2
Vulnerable Road Users	Protective clothing for motorcyclists	1
	Better infrastructure for cyclists	3
	Bicycles to have better lighting	1
	Pedestrian safety	2
Enforcement/Penalties	More red light cameras/speed cameras/police	4
	Mandate headlights in all conditions	1
	Novice restrictions	3
	Focus on behaviour/excessive speeding	1
	Impound vehicles for dangerous driving	1
	Harsher penalties for drink driving, phone use	1
Roads/Roadsides	Common application of signage across States	1
	Road maintenance	3
	Better access for emergency vehicles	1
	Greater vehicle separation	2
	Wire rope barrier covers	1
	More rumble strips	1
	Less roundabouts, more traffic lights	3
	More 'rest areas' on highways	1

Vehicle Safety	Vehicles to meet set visibility/safety requirements	1
	Heavy vehicles too large	1
	In-car technology to control speeding/distance	1
	Regulation of driverless cars	1
Other	Review all speed limits	2
	Better control of peak hour traffic flow	1
	Free breath testing facilities at bars	1
	Common application of novice rules across States	1
	Encourage participation in motorsports for 'at risk' drivers	1

The submissions covered various road safety topics. Some submissions focused solely on one or two issues and were thoroughly researched and detailed. Others were more widespread, offering numerous suggestions on how road safety could be improved under the new Strategy.

Driver training, driver attitudes, improved infrastructure and better enforcement methods were the most common topics raised in the submissions received.

7. Conclusion

Over 650 community members and stakeholders participated in the Towards Zero Strategy consultation process. Community members were representative of all major regions of the State, with stakeholder representation being diverse across State and local government, industry and special interest groups. When grouped broadly, the common themes that arose throughout the whole consultation process included driver education, driver training, law enforcement, improved roads/roadsides, vehicle safety, speed and safety for vulnerable road users.

Improving driver education was the most common theme raised at both the forums and in the online survey. There was concurrence among participants that beginning road safety education in school and putting more emphasis on driver behaviour in novice training would be essential if road safety is to be improved. Furthermore, maintaining road safety by continuing to reinforce behavioural messages, providing more information on changed/confusing road rules and re-testing all drivers periodically were believed to be equally as important.

However, even if we are able to improve driver behaviour and increase attentiveness and awareness on our roads, it is not possible to completely eliminate human error. Focusing on driver behaviour only addresses one of the four cornerstones of creating a Safe System. We must create a system that mitigates crash risk and is tolerant of road users making unintentional mistakes. Maintaining sound roads and infrastructure (which benefits all road user groups), setting appropriate speed limits and encouraging the use of safe vehicles are the key factors which need to work together to ensure human error can be forgiven.

Many suggestions were made as to how each cornerstone of the Safe System can be improved to increase road safety. All of these comments will be evaluated in conjunction with crash analysis and best practice, and will inform the development of the Towards Zero Strategy.

Safe Road Users	Safe Roads/Roadsides	Safe Speeds	Safe Vehicles
Improve driver attitudes (courtesy, attention)	More consideration of cyclists/pedestrians in road design	More police	Block mobile phone signals
Improve driver training	Better maintenance	Reduce speed limits	Periodic vehicle inspections
More police	Better signage	More speed cameras (fixed and moving)	Speed limiters
Drive to Conditions	More pull over bays/overtaking lanes	Increase speed penalties	Alcohol interlocks
Education	Remove overgrown vegetation on roadsides	No penalties for minor breaches	Less in-car technology
Road rules education (intersections; roundabouts; merging; updates of changes)	Wire rope barriers	Less speed zones/changes	Novice power restrictions
Ongoing driver training and assessment	Separation of traffic at high speeds	Uniform, sensible speed limits	Incentives to drive safer vehicles
Increase penalties			Ban vehicle modifications
Primary/High School education			

APPENDIX A – EXTERNAL STAKEHOLDER FORUM ISSUES/COMMENTS

Hobart Stakeholder Forum – 16 November 2015, Rydges Hotel, North Hobart
Attendance: 20

Attendees: Glenorchy City Council, Clarence City Council, Brain Injury Association Tasmania, RACT, Cycling South, Huon Valley Council, Metro Tasmania, Bicycle Network Tasmania, Kingborough Council, Australian Institute of Advanced Motorists, Kidsafe Tasmania, Tasmanian Forest Contractors Association, Occupational Therapy Driving, Headway Tasmania

- Road safety education for children – this needs to start earlier in schools, and be a continuous campaign.
- Education around misunderstood road rules - eg. intersections, J-walking, road works, speed limits. This needs to be accessible to all community members.
- Mobile phones – use in cars should be eliminated.
- Child restraints – increase education on their correct fitting.
- Infrastructure – the safety of all road users need to be considered in installation.
- Working with Industry – engage insurers to give a cheaper premium to law-abiding drivers and consider auditing Councils to ensure they are meeting Strategy requirements.
- Vehicle safety – not economically viable for everyone to have the safest car. Car advertisements also need more of a road safety focus.

Circular Head Stakeholder Forum – 24 November 2015, Circular Head Council
Attendance: 12

Attendees: Circular Head Council Road Safety Committee members, including the State Emergency Service, police, local bus driver, Councillors, Mayor and General Manager.

- Inattentiveness/complacency on familiar routes an issue, especially an issue for motorcyclists.
- Tourists - Sections of Bass Highway between Wiltshire and Rocky Cape; and Montumana and Sisters Creek; high fatality areas. Need more signs to alert drivers of risks and reduced speed limits. Stanley Main road also an issue, with lots of wildlife and scenic views.
- Roads - Audible Line Marking might be good to warn people they are drifting from their lane.
- Heavy vehicles - Lack of overtaking opportunities. Roads are too slim, which results in risky behaviour.
- Improving novice training – P plater refresher courses to be considered including driver ergonomics, vision, being aware of inside and outside the car.
- Need more education in schools.
- Unlicensed drivers and unregistered cars an issue in the area.
- 'Real Mates' program is working well in the area.

Burnie Stakeholder Forum – 8 December 2015, Burnie Club, Burnie
Attendance: 6

Attendees: Australian Driver Trainers Association, Devonport City Council, Burnie City Council, Central Coast Council

- Driver training/education – needs to be more affordable, with road safety education starting in early childhood. The whole GLS needs reviewing, with mentoring introduced. There also needs to be a whole public education process.
- Rural speed limits reduced – but only those in appropriate areas.
- Crash investigations – Councils should be more involved in this process.
- Attitudes – awareness of other road users' needs to increase
- Visiting drivers – drivers who work in the area, but do not live locally, are a hazard.

Launceston Stakeholder Forum – 9 December 2015, Tramsheds, Launceston
Attendance: 19

Attendees: George Town Council, TMC, Tasmanian Bus Association, Launceston City Council, Road Trauma Support Tasmania, Meander Valley Council, Motorcycle Riders Association, Northern Midlands Council, MAIB, Driver Education Centre of Australia

- Motorcyclists – lane filtering should be introduced, along with a better education program for interstate motorcyclists.
- Vehicle safety – roadworthiness certificates should be introduced.
- Child restraints – education increased on correct fitting.
- Buses – 40km/h speed limit around buses to be enforced.
- Drug driving – need to realise this as an emerging issue.
- Technology – auto-breaking technology should be introduced, and mobile phone use banned. Display screens in new cars are also a distraction.
- Education – should start in schools, and be carried right through. Need more education on misunderstood road rules.
- Infrastructure – there should be less roundabouts, and greater mandatory distance from other vehicles. Roadside hazards needs to be removed.
- Local Government – more support is needed at local level for infrastructure funding and setting speed limits.
- Driver Training – needs to start from pre-licence and carry right through their lifetime.

APPENDIX B – GOVERNMENT STAKEHOLDER FORUM ISSUES/COMMENTS

Internal State Growth Representatives
Attendance: 125

- Consider the mix of vehicles on high speed roads.
- Crash statistics - look at these with a socio-economic overlay.
- Fitness to Drive - driving with an unknown medical condition an emerging issue
- Education around confusing road rules – eg. Flashing amber lights.
- Improve hire-car accreditation standards to mandate 5 star safety features and consider how alternative vehicles (eg. Segways) will be regulated.
- Lower speeds at road works.
- Consideration of power to weight restrictions for young drivers, and encourage young drivers to drive safer vehicles (eg. consider reduction in duty transfer when registering)
- Safer bus pick up zones at schools and enforcing the 40km/h speed limit around buses.
- Encourage the use of public transport/walking as opposed to cars.
- Tap into 'at risk youth' programs to educate about road safety, as this group may be a problem (especially with youth being over represented in crash statistics).
- Discussion about the delivery of driver assessments.
- Education around setting a good example for other drivers (especially learners), explanation of why speed limits are what they are on certain roads, and how to approach roundabouts.
- Introduce a knowledge refresher test before licence can be renewed or consider how else we can create conversation in the community.
- Need to consider the aging population, and the increase of overseas drivers.
- Target dormant motorcycle licences to assist with reducing high crash rates.
- Consider removing licence fees to encourage people to stay within the licensing system, and the impact of MPES fees on licensing.
- Fewer speed zones, with roads rated by stars and speed limits set accordingly.
- Need to look at site deficiencies when there is a crash and determine what needs to be done in terms of infrastructure to improve that piece of road.
- Consider who is best able to determine whether road deficiencies contribute to a crash eg. engineers, police.
- On lower volume roads, where there is risk, use lower cost treatments such as wider edge-line. Wider edge-lines are also effective for older drivers.
- Should consider different types of aggregates to increase skid resistance at certain spots, however, some surfaces are worse for cyclists.
- Safety is a major consideration when new roads are being designed. Older roads are more difficult to address, therefore speed management and signage should be utilised.
- Look at making infringements automatic for speeding and have a device in cars that displays speed to passengers.
- With driverless cars imminent, our current treatments may become obsolete, eg. edge lines.
- Engage more with youth and children about road safety.
- Driver training – mandate training on different road types, eg. rural roads with no shoulders. Consider use of simulators/defensive driving. Also, education on what to expect on different types of roads and how to drive them.
- Need to consider life cycle costs of infrastructure. Community needs to understand that there will be trade-offs with limited funding.

External Government Agencies
Attendance: 11 (Premier and Cabinet, Ambulance Tasmania, Education, Police)

- Consider having road safety messages come from people involved in accidents who have become permanently incapacitated – tap into the message of 'it won't happen to me'.
- Tourists on our roads an increasing problem.

- Target drug driving and 'peer pressure' education at schools and youth.
- Consider increasing the number of minimum driving hours for learners.
- All road speed limits should be reflective of road conditions.
- Public attitudes towards breaking certain road rules need to be addressed (eg. driving 5-10km/h over speed limit). The public need a better understanding of why police are patrolling speed in certain areas and not others (eg. high crash rates).
- Constant changing of speed limits on the same road leads to confusion. People need to understand how fast they should drive at certain times. Giving a caution notice is becoming ineffective - need stronger deterrent.
- Drug driving is a whole-of-government issue which must be combatted. May not necessarily be a 'new' issue, but as we can now test for drugs it is revealing that this is increasing.
- Start teaching road safety earlier, but this will need to be reinforced throughout high school.
- Councils need to champion plans, take action and assist in improving road safety.
- International workers are an emerging problem, as they have no knowledge of the road environment and driving experience in another country may be very different. However mutual recognition laws are a federal issue.
- Consider the best timeframe for a road safety strategy.

APPENDIX C – PUBLIC FORUM ISSUES/COMMENTS

Hobart Public Forum – 16 November 2015, Rydges Hotel, North Hobart.
Attendance: 18

- Tourists – road safety videos should be shown on incoming flights/sailings, with hire car companies playing more of a role.
- Motorcyclists – attitudes need to be addressed, and high visibility clothing made mandatory.
- Cyclists – consider mandating rider registration and have rules surrounding riding two abreast.
- Roads/Roadsides – more signage for pull-over bays and make roadsides clearer.
- Education – start road safety education in early childhood; more education on road rules.
- Attitudes – create rewards system/campaign for courteous driving.

Queenstown Public/Stakeholder Forum – 19 November 2015, West Coast Council Chambers, Queenstown.
Attendance: 12 (*Stakeholder attendance: West Coast Council, Performance Driving Australia)*

- Roads – certain West Coast roads are slim and windy, making it dangerous when heavy vehicles are approaching. There needs to be more pull-over bays for safe overtaking.
- Tourists – need to be appropriately managed; more signage and road markings.
- Roadsides – edge maintenance and vegetation an issue.
- Driver Training – mandate training in emergency breaking and promotion of driver training.
- Drug Driving – testing to be increased.

Burnie Public Forum – 7 December 2015, Burnie Club, Burnie.
Attendance: 10

- Driver Training – more training on different road surfaces, merging and reversing.
- Education – misunderstood road rules; driver attitudes.
- Technology – more policing of mobile phone use in cars, also apple watches.
- Vehicle Safety – mandatory inspections upon change of ownership; young drivers restricted to certain engine capacity.
- Local traffic issues – encourage people to feedback issues to Council.
- Mix of vehicles – ensure the safety of smaller vehicles when large trucks are using the same piece of road.
- Signage – consider a four-way stop sign. But this would need a big education campaign.
- Roadsides – some confronting signage/statues/features are too big of a distraction, even if they are designed to keep drivers awake.

Launceston Public Forum – 8 December 2015, Tramsheds, Launceston.
Attendance: 18

- Cyclists – more consideration for cyclist safety when designing roads.
- Fitness to Drive – involve medical profession to deliver messages, and increase public education on certain conditions. Address the issue of fatigue.
- Technology – mobile phone and smart watch use; speed limiting technology.
- Roadsides – consideration of effectiveness/visibility of signage.
- Tourists – how tourists can be managed.
- Attitudes – address inattention and impatience issues.
- Vehicle Safety – affordability of safer cars is an issue. Consider 'cash for clunkers' campaign.
- Driver Training – review the GLS and make training more structured.
- Education – misunderstood road rules (roundabouts and zip lanes especially).
- Motorcyclists – wire rope barriers a hazard for motorcycles. As use is usually seasonal, could send out reminder information to riders and ensure roads are swept of debris.

St Helens Public/Stakeholder Forum – 10 December 2015, Bayside Inn, St Helens.
Attendance: 6 (*Stakeholder attendance: Break'O'Day Council)*

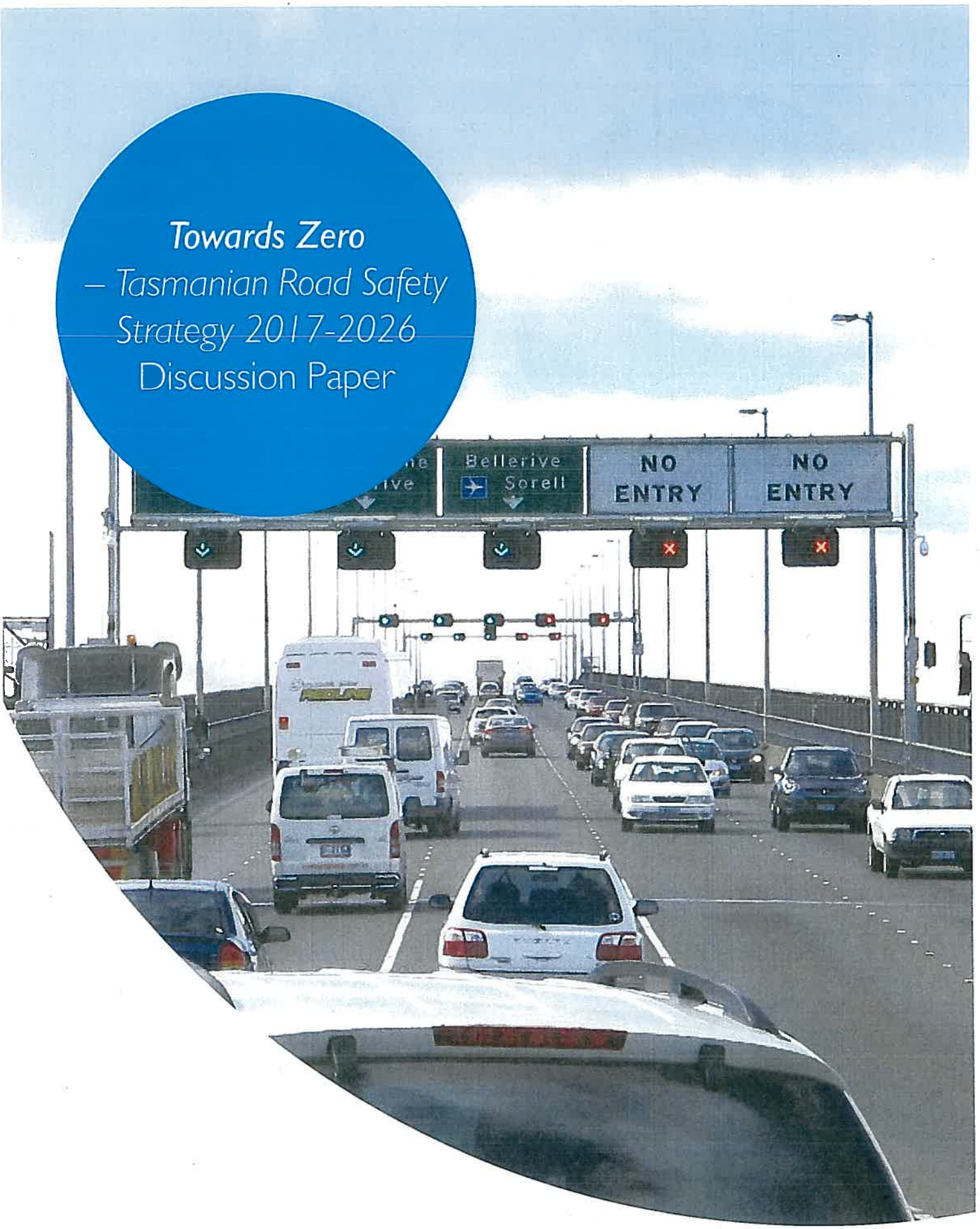
- Tourists – more signage and education needed; licensing processes to be looked at.
- Cyclists – new roads should allow for cyclists; unsealed shoulders are an issue, especially along Great Eastern Drive.
- Driver Training – training on gravel should be compulsory; simulators may not be effective.
- Vehicle Safety – affordability an issue. Consider 'cash for clunkers' campaign.
- Education – general education on sharing the road and expanding into schools. Messages coming from people directly affected by road trauma most effective.

APPENDIX D – SUMMARY OF WRITTEN SUBMISSIONS

Who	Issue	Comments
Institute for Frontier Materials, Deakin University	Protective clothing for motorcyclists	Riders uninformed of garment protection levels; there is currently no measurement system for clothing protection in Australia. Suggested this can be achieved by adopting an ANCAP style star rating system to inform rider of abrasion resistance and thermal comfort.
North-West Car Club	Driver Training	Pre-licence training and early driver skills development is crucial. Skilful driving is teachable and a better training culture needs to be developed.
Bicycle Network Tasmania	Cycling infrastructure	Take steps to separate bicycles from motor traffic, with infrastructure to be developed to allow for this.
Ambulance Tasmania	Various	• Light standards for bicycles and improved cycle ways in the inner city; better education on attitudes between cyclists/motorists. • Improved education for children; tourists • Pre-licence driver training focusing on observation, anticipation and risk assessment. • Re-testing of road rules throughout driving life. • Use of variable speed signs; red light cameras. • Common application of P-plate rules and signage across states. • Maintenance of road markings; provide access cut overs for emergency vehicles on roads with barriers. • Greater vehicle separation on roads.
Community members (13)	Various	• Encourage headlights in all weather conditions; require all vehicles to meet set visibility/safety requirements. • Encourage participation by 'at risk' motorists in drag racing sports at a responsible venue to discourage reckless driving on our roads; ban alcohol consumption at motor sport events. • Wire rope barrier covers to protect motorcyclists. • Mandate driving tests every 5 years to ensure all drivers know road rules; TV campaign on basic road rules. • Revert P-platers back to L's if they break the law; more novice restrictions; novices not to drive vehicles over 5 years old. • Improve driver training to include a variety of conditions; only allow training to be conducted by a qualified person. • Driver behaviour/attitudes/culture needs to be addressed. Establish rewards system for good driving eg. reduced registration fees. • More proper 'rest areas' on highways; double lanes continuously; more rumble strips and speed signage. • Focus enforcement of excessive speeding/dangerous driving, not minor speed breaches. • Free breath testing facilities at bars. • Give police power to impound vehicles; harsher penalties for drink driving, phone use, dangerous driving; more 'secret' speed cameras and red light cameras. • Lyell highway to undergo road shoulder seal widening. • Better control of peak hour traffic flow. • Pedestrian safety education (especially in Bellerive area). • One authority for all transport issues.

		• Reconsider roundabout design; less roundabouts, more lights. • Heavy vehicles should be smaller and more nimble. • Automatic speeding infringement in-car technology; distance management technology; regulation of driverless cars. • Review speed limits in the Huon-Kingborough region, especially along high use cyclist routes. Increase police presence in the region to monitor and enforce.

Towards Zero
– *Tasmanian Road Safety Strategy 2017-2026*
Discussion Paper



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ROAD SAFETY ADVISORY COUNCIL
TOWARDS ZERO

Contents

Foreword

Road safety affects us all.

Whether it's the shock of a near miss, a small prang, sustaining a serious injury or losing someone we love, everybody is likely to be affected by road safety at some point in their life.

Over the past ten years, almost 3,500 people have been killed or seriously injured on Tasmanian roads. This is totally unacceptable – every life is precious and we must do everything we can to minimise the risk of using our road system.

People may find it easier to talk about road safety in an impersonal way by referring to statistics, trends and the road toll. This makes road trauma easier for us to accept – even the word 'toll' implies that it's a price we are willing to pay. But road safety is so much more than just a number – imagine the grief of losing a child, or sustaining an injury and being unable to play your favourite sport or provide for your family. Not only are the outcomes devastating, but they can also have a lasting impact on those involved – emotionally and financially.

To reduce the level of road trauma in Tasmania, the Road Safety Advisory Council (RSAC) is developing the *Towards Zero – Tasmanian Road Safety Strategy 2017-2026.*

The role of RSAC is to oversee the promotion and delivery of road safety initiatives in Tasmania and make recommendations to government about road safety policy. The Towards Zero Strategy will continue to be based on the 'Safe System' approach to road safety, which involves four essential elements working together to benefit road users – safe road user behaviour, safe roads and roadsides, safe vehicles and safe travel speeds. The Safe System recognises that people make mistakes and considers how we can make the whole system more forgiving, so that these mistakes don't cost lives.

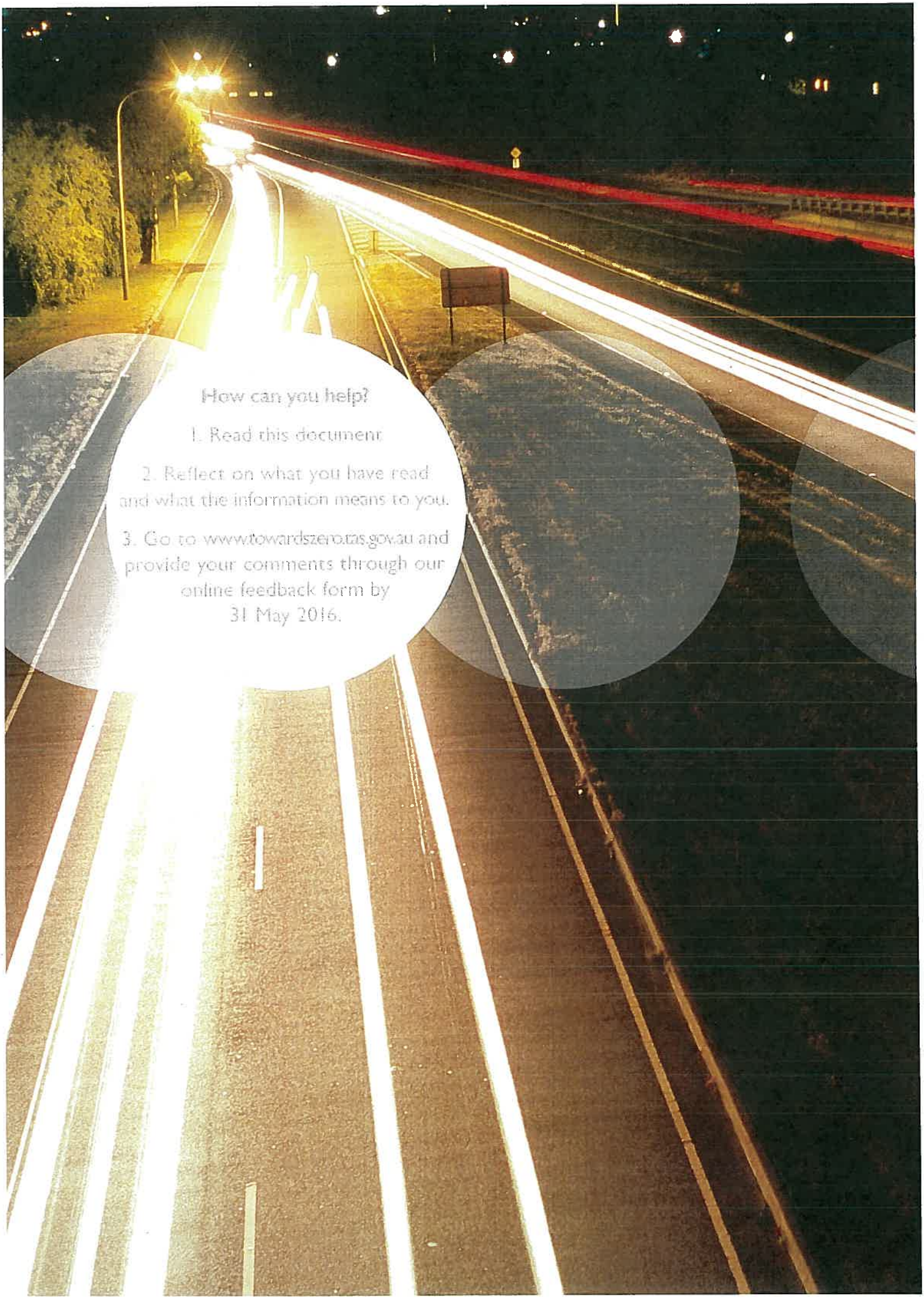
The purpose of this Discussion Paper is to put forward options for inclusion in the Towards Zero Strategy. These options are based on community views, lessons learned from our current strategy and independent research.

To ensure the success of the Towards Zero Strategy, we need your help.

Road safety is everyone's responsibility and your input into the Strategy will be crucial. Let us create the safest road system we can – one that forgives our mistakes and works "towards zero" deaths and serious injuries on Tasmanian roads.

Jim Cox

Chair, Road Safety Advisory Council



How can you help?

1. Read this document

2. Reflect on what you have read and what the information means to you.

3. Go to www.towardszero.tas.gov.au and provide your comments through our online feedback form by 31 May 2016.

1. Developing the *Towards Zero – Tasmanian Road Safety Strategy 2017-2026*

The current *Tasmanian Road Safety Strategy 2007-2016* is nearing the end of its life.

Over the past ten years nearly 3,500 people have been killed or seriously injured on Tasmanian roads. This is totally unacceptable – although mistakes and crashes are inevitable, death and serious injury are not.

The Towards Zero Strategy will set the direction for road safety in Tasmania over the next ten years, with the long-term vision of zero deaths and serious injuries on our roads.

What will inform the Towards Zero Strategy?

The Towards Zero Strategy will be informed by research and best practice advice, which has been provided by road safety experts from the Centre of Automotive Safety Research (CASR) at the University of Adelaide.

The Strategy must also take into account the attitudes and viewpoints of community members and key stakeholders. With this in mind, RSAC undertook an extensive consultation process to ensure that community members and key stakeholders had the opportunity for input right from the very start.

What are the next steps?

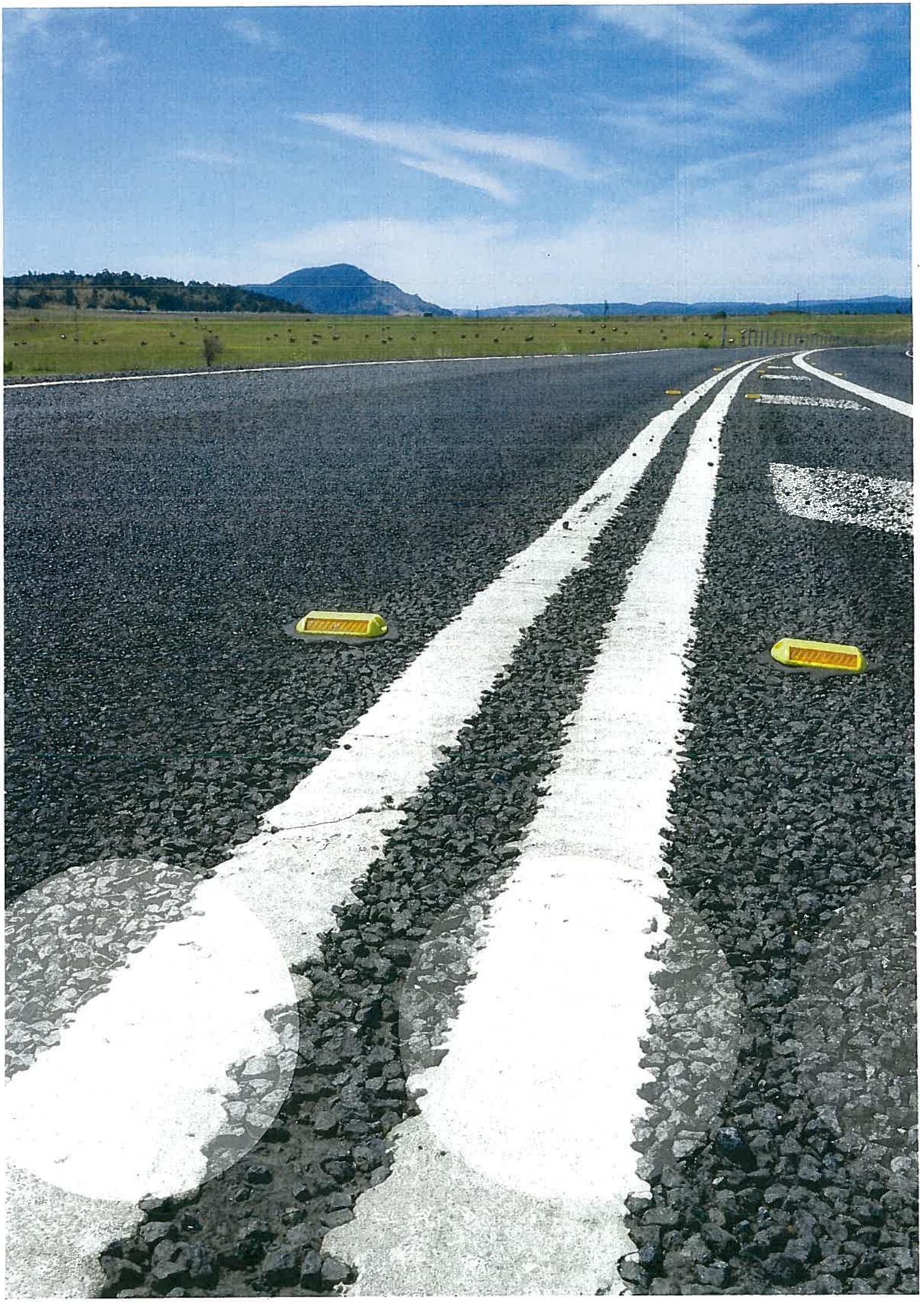
This Discussion Paper is not the Towards Zero Strategy – it is a summary of findings from community and stakeholder consultation, and the expert recommendations made by CASR.

Before RSAC finalises the Strategy and makes recommendations to Government, we are seeking your views on our findings, and what we propose.

Over the life of the Towards Zero Strategy (from 2017-2026), action plans will be developed to identify which practical actions will be implemented and the timeframes needed to achieve serious casualty reductions and address problem areas.

Our goal

The long-term vision of the Towards Zero Strategy is to achieve zero deaths and serious injuries on Tasmania's roads.



2. Overview of the current *Tasmanian Road Safety Strategy 2007-2016*

The *Tasmanian Road Safety Strategy 2007-2016* has focused on reducing serious casualties (see page 51, Glossary of Terms), and has achieved a steady reduction.

However, to achieve our long-term goal of zero deaths and serious injuries on our roads, we need to build on our achievements and continue to address areas which have high priority.

What have we done over the last 10 years?

Over the last 10 years we have introduced a range of measures to help reduce serious casualties on our roads. Following are just a few examples of the types of measures we have introduced.

To encourage safer travel speeds, we now have electronic speed limit signs at schools, variable speed limit signs on the Tasman Highway, changing road conditions signage on roads with a rural default speed limit of 100km/h and fixed speed cameras at seven locations. Speed limits on gravel roads have also reduced from 100km/h to 80 km/h.

Around three quarters of road safety funding has been used to install best practice infrastructure. This includes 2+1 road design (see glossary) at Symmons Plains on the Midland Highway and Gannons Hill on the Bass Highway, median flexible safety barriers, edge barriers, shoulder widening and audible edge and centrelines. It also includes motorcycle safety treatments such as stack cushions, collapsible chevron alignment markers, rub rail and wet and icy traffic systems. Cycling warning signage on popular cycling routes and a Vulnerable Road User Program to minimise conflict between vehicles and pedestrians, cyclists and motorcyclists, are also initiatives which have been introduced.

To enhance vehicle safety we have supported the Australasian New Car Assessment Program (ANCAP), introduced a minimum five-star safety rating for the Government car fleet, developed the 'How safe is your car' campaign to encourage Tasmanians to buy the safest car they can afford and we've promoted how to maintain your car to make it safer.

Many campaigns have also been launched to encourage road users to be safer on our roads. These include a campaign to encourage drivers to leave a minimum passing distance when passing cyclists, a tourist strategy to raise awareness of international visitors and interstate motorcyclists, and a 'share the road' campaign for all road users.

In addition to campaigns, we have also encouraged road users to be safer through the introduction of alcohol interlocks for repeat and high level drink driving offences, by reviewing the graduated licensing system, and by changing the law to allow motorists to cross a centreline to pass cyclists safely. We have also developed a Community Road Safety Grants Program to support communities to address local road safety issues at the grass roots level.

Funding road safety initiatives

Road safety initiatives in Tasmania are largely funded by the Road Safety Levy. The Road Safety Levy was introduced in 2007 to fund the *Tasmanian Road Safety Strategy 2007-2016*. A levy of $25 per annum (concession $15) is payable on the registration of all vehicles that have broad access to the road network. This raises around $12.6 million per year. The RSAC oversees the expenditure of the Levy. The Levy is crucial to the delivery of initiatives developed in accordance with the Strategy and its action plans. New road safety measures must be considered and prioritised within the context of available funding.

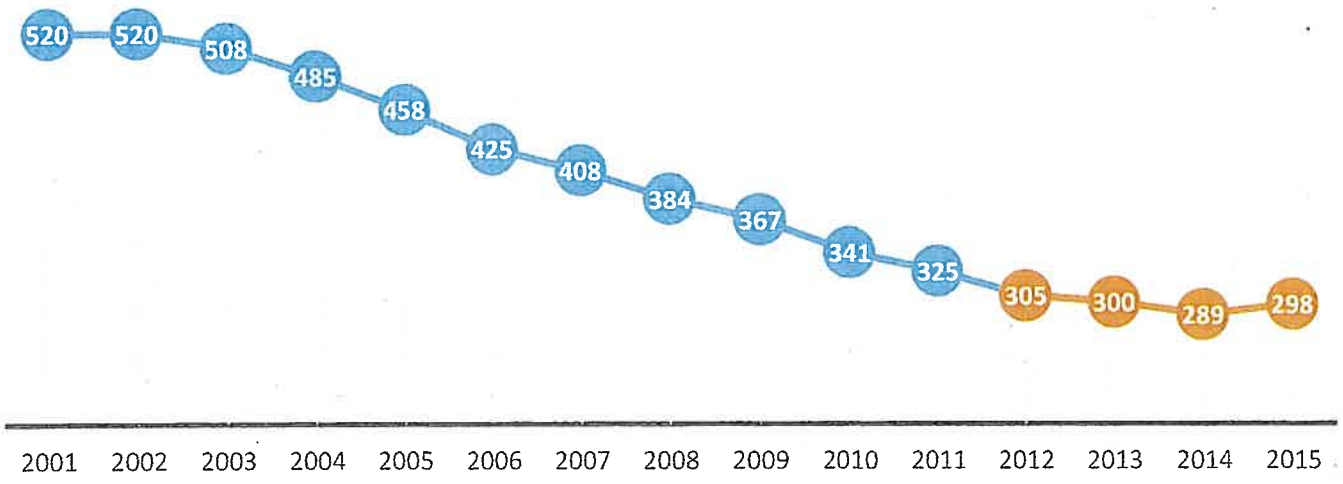
What results have we seen?

For the 10 year period 1995 to 2004, just over 5,000 people were seriously injured or killed on Tasmanian roads. For the period 2005 to 2014, coinciding with the introduction of the *Tasmanian Road Safety Strategy 2007-2016*, there were almost 3,500 deaths and serious injuries on Tasmanian roads.

In the current Strategy, a target was set which would see serious casualties almost halved between 2005 and 2020.

As can be seen from the graph below, looking at the 15 year period from 2001 to 2015, reductions in serious casualties are starting to plateau. Although our road trauma level has been decreasing, it is highly unlikely that our ambitious target will be achieved if we don't implement new measures.

Tasmanian Serious Casualties (5 year averages)

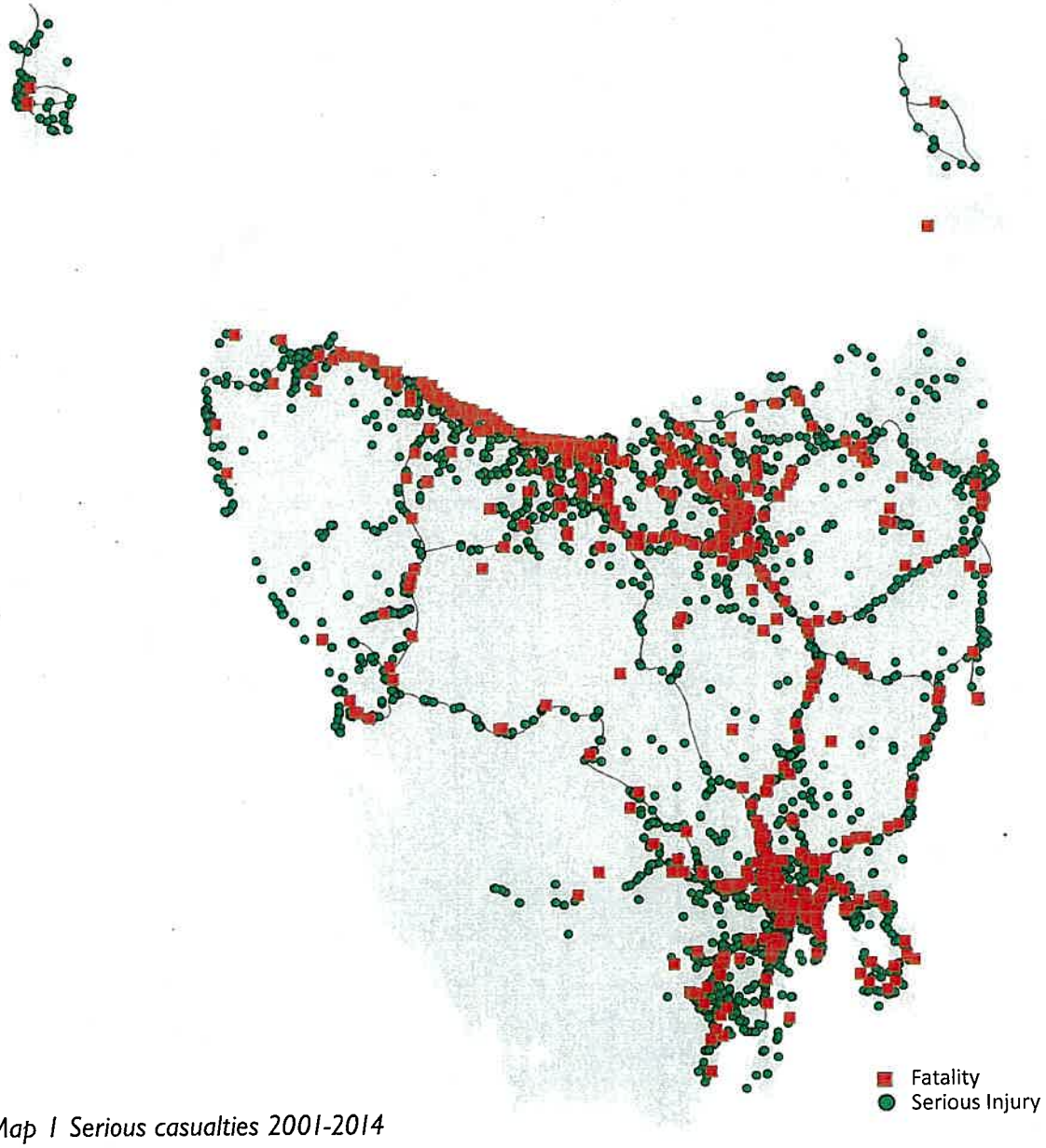


Serious casualty statistics at a glance 2001-2014

Annual average number of fatal and serious casualties for various target areas during the three periods 2001-2006, 2007-2010, and 2011-2014.

Target Area	Annual average in period		
	2001-2006	2007-2010	2011-2014
All crashes	442	332	290
Rural crashes	260	216	181
High speed crashes (80 km/h and above)	267	210	173
Night time crashes (8pm-6am)	94	68	46
Run off road crashes (straight alignment)	73	64	50
Run off road crashes (curved alignment)	128	94	83
Crashes at intersections	68	43	39
Hit fixed object crashes	128	109	73
Head on crashes	79	61	49
Crashes involving young drivers (<25 years old)	132	86	57
Crashes involving novice drivers (L or P licence)	79	65	41
Crashes involving older drivers (>65 years old)	49	38	43
Crashes involving pedestrians	44	30	33
Crashes involving pedal cycles	14	10	12
Crashes involving motorcycles	86	81	76
Crashes involving trucks	39	29	19

As can be seen from the map below, most serious casualty crashes occurred around Tasmania's larger cities, and on the highways that connect these metropolitan centres. However, as serious casualties occur across the whole network, we need to implement countermeasures that will address issues State-wide.



Map 1 Serious casualties 2001-2014

3. The Safe System Approach

The Towards Zero Strategy will be based on the 'Safe System' approach to road safety. The Safe System approach benefits all road users and is considered worldwide as best practice in road safety.

A Safe System has four essential elements:

- **Safe Road Users** – encouraging safe, compliant behaviour through education, enforcement and regulation.
- **Safe Roads and Roadsides** – designing and maintaining roads to reduce the risk and severity of crashes.
- **Safe Speeds** – setting appropriate speed limits that complement the road environment.
- **Safe Vehicles** – designing vehicles that protect occupants, lessen the likelihood of a crash and simplify the driving task.

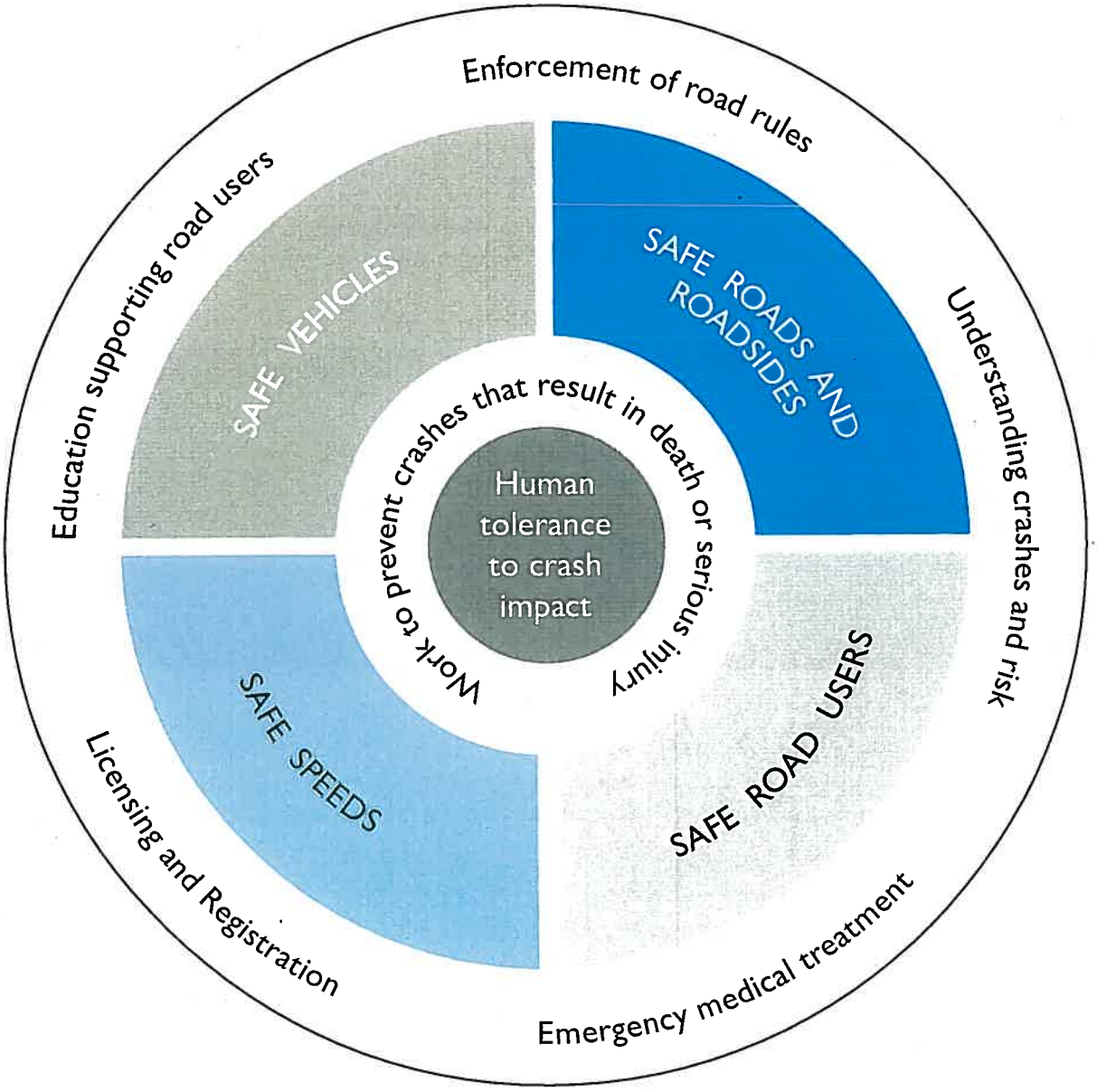
To prevent death or serious injury on our roads, all four elements of the Safe System must work together and continue to be improved. If a crash occurs as a result of a specific weakness of one element, the other three elements should be strong enough to counteract the effects of the crash.

New road safety measures must be considered as part of a whole system to tackle a particular issue. For example, if we know that young drivers are overrepresented in crashes, we must look at ways to change their behaviour on the roads, how the roads might be improved to reduce the impact of them crashing, how speed management might improve their safety and how safer vehicles might better protect them.

The Safe System approach acknowledges that we are all human and we can all make mistakes on the road. Therefore, human frailty is placed at the centre of the System design, so that mistakes don't result in serious injury or death.

Achieving our long term vision of zero deaths and serious injuries on Tasmania's roads will not be easy, but we must work towards it. Responsibility for road safety is shared by everyone, with road users, road designers, vehicle manufacturers and policy makers all having a role to play.

If you haven't yet seen our Safe System video, go to www.towardszero.tas.gov.au



Safe System Principles

1. People make mistakes.
2. People are fragile.
3. We need to create a more forgiving road system.
4. We need to share responsibility for road safety.

What does a Safe System look like?

A successful Safe System will protect people from crash forces if all four of its elements work together to forgive human error.

Safe Road Users

Everyone can make mistakes and get distracted while driving. Under a Safe System, road users must focus on following the road rules, driving to the conditions and being alert and attentive.

Distracted driver

Driver focused on driving task

Safe Roads and Roadsides

Road infrastructure plays a vital role in helping to reduce crashes and minimises the extent of injury in the event of a crash.

In the example provided, the road has a loose gravel shoulder rather than being paved, which is less safe in the event that a vehicle veers from the road. Treatments to address this include sealing the shoulder making it easier to stop and/or steer back onto the road. Audio tactile line markings could also be installed – these produce noise and vibration when struck by car tyres which alerts the driver they are leaving the road, generally due to distraction or drowsiness.

Unsealed road shoulder

Sealed shoulder provided with audio tactile edge line

Safe Speeds

Under a Safe System, speed limits are set at survivable levels that are appropriate for the road type. Road users will also travel at speeds that are suitable for the conditions.

If speed limits are set appropriately and road users travel at speeds appropriate for the conditions, the effectiveness of road infrastructure and vehicle safety initiatives are enhanced.

Under a Safe System, if a road does not have safety features, the speed limit should be lower. Speed management has an important place in improving the risk profile of our infrastructure where roads cannot be upgraded due to physical constraints, or as an interim measure until infrastructure treatments can be undertaken.

Higher travel speeds

Lower, more appropriate travel speeds

Safe Vehicles

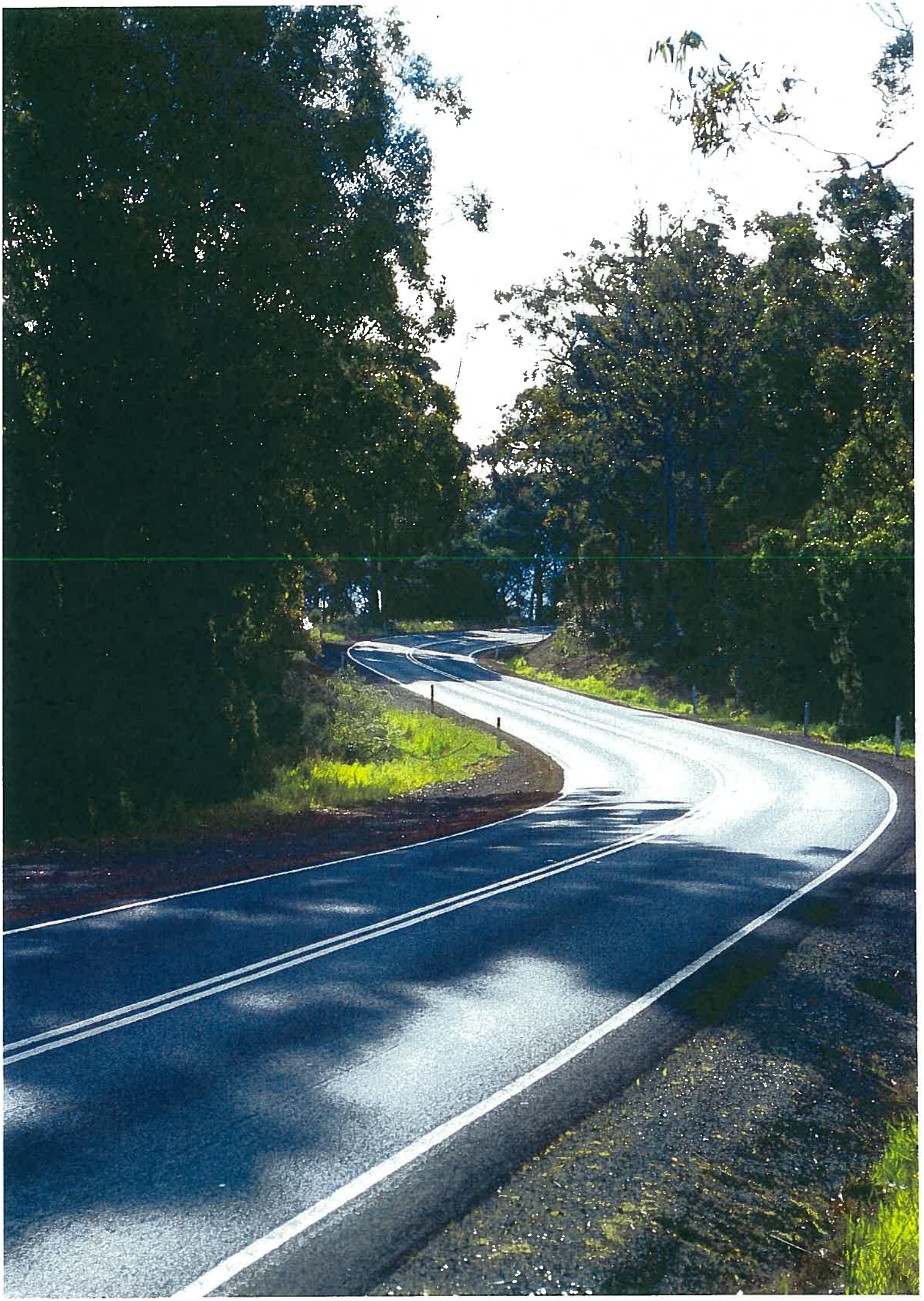
Vehicles that are designed well for safety can either prevent a crash from happening or help absorb the energy in the event of a crash. Under a Safe System, everyone will be encouraged to drive the safest vehicle they can afford. Ideally, this will be a five star safety rated vehicle.

The first vehicle shown is a car with a three star safety rating. In the frontal offset collision test (conducted at 64km/h) the passenger compartment has started to collapse and the dashboard has been forced into the passenger space putting occupants at risk of severe chest and leg injuries. The test also showed that there would be a high risk of life-threatening chest injuries to vehicle occupants in a side impact. This vehicle also does not have electronic stability control (ESC).

Compare this to a five star car in the same tests. In the frontal offset collision (again conducted at 64km/h) the passenger compartment held its shape well and dashboard displacement was well controlled. Side impact testing showed that the vehicle provided adequate chest protection. ESC comes as standard in this vehicle.

3 star safety rated vehicle

5 star safety rated vehicle



4. Community and Stakeholder Consultation – Tasmanians have their say

Why are community and stakeholder views important?

Effective community and stakeholder consultation is critical in the development of the Towards Zero Strategy. Without strong community and stakeholder support, our vision of zero deaths and serious injuries cannot be achieved.

We are all road users and all have our part to play in achieving a Safe System. Therefore, for the Strategy to be successful, it is important that we listen to community and stakeholder views on how road safety can be improved in Tasmania and value those perspectives.

So far around 650 people have joined the conversation.

Forums were held through October-December 2015 for community members, external stakeholders and state government stakeholders. The aim of the forums was to provide information about the development of the Strategy, explain the road safety problem, and give participants an opportunity to put forward their ideas.

An online survey was also developed, and written submissions welcomed.

The comments we heard were diverse and insightful, offering numerous (and differing) suggestions on road safety improvements.

This is where research can help guide us – by sharing what we know through crash data analysis and modelling and comparing this to community and stakeholder views, we can begin to identify solutions that are evidence based and have community support.

"The public forum presented some very interesting and thought-provoking information. I look forward to continuing to be part of the process throughout 2016."

Community Forum Participant, Burnie

How did we gather comments?

Community forums

hearing community concerns

We went to five key regions across Tasmania to find out first-hand what the communities' views were and why. Around 70 people participated in these forums, with the discussion being diverse and thought-provoking. Forums were held in the following locations:

- South (Hobart)
- West (Queenstown)
- North-West (Burnie)
- North (Launceston)
- East (St Helens)

State Government stakeholder forums

an internal perspective

We met with around 125 government stakeholders and Members of Parliament to gather their views from an internal working perspective.

This included representatives from Police, Ambulance Tasmania, and the Transport Services Division of the Department of State Growth.

Each group had their own specific road safety concerns which were unique to their particular area of work.

Written submissions

research and additional comments

In addition to the forums and survey, community members and stakeholders were invited to make a written submission.

A total of 17 submissions were received, many of which were thoroughly researched and highly detailed.

Online survey

getting input online

Not everyone was able to attend a forum, so we created a survey which could be completed online.

370 people responded to the survey over a period of 11 weeks.

Respondents had a lot to say about road safety, with most people taking the opportunity to provide additional detailed comments where possible.

External stakeholder forums

local government, industry, special interest groups

We met with around 60 key stakeholders to gather a more varied road safety perspective. These stakeholders were from diverse groups who had varying priorities in terms of key challenges and how they could be addressed. Participants included:

- Motoring organisations
- Bicycle user groups
- Motorcycle associations
- Local government
- Public transport associations
- Driver training associations
- Road trauma support services
- Road accident insurers
- Child safety associations

What did we hear?

We asked for community and stakeholder views on numerous road safety issues. As a result, we heard various concerns, opinions and suggestions for improvement. The full report detailing the results from consultation can be found at www.towardszero.tas.gov.au.

Key messages from online survey

Can you make a difference to road safety? If so, how?

63% of respondents believed that they could do something to make a difference to road safety.

The majority said that improving their decision making, being more courteous and encouraging others to do the same could help to make our roads safer.

Do you agree with the Safe System principles? What is the biggest threat to achieving a Safe System?

The large majority of respondents agreed with the Safe System principles, and believed that driver behaviour and driving at excessive speeds for the conditions were factors which could cause a problem within the System.

What is the biggest thing that can be done to improve road safety?

The majority of respondents believed that focusing on education and driver training is critical to improving road safety.

Increased police presence on our roads and better road maintenance were also frequent responses.

Key observations from consultation

The table below shows the most frequent comments from the consultation process and where they fit within the Safe System framework. Each element of the Safe System will be discussed separately in this paper.

Safe Road Users	Safe Roads/ Roadsides	Safe Speeds	Safe Vehicles
Improve driver attitudes (courtesy, attention)	More consideration of cyclists/pedestrians in road design	More police	Block mobile phone signals
Improve driver training	Better maintenance	Reduce speed limits	Periodic vehicle inspections
More police	Better signage	More speed cameras (fixed and moving)	Speed limiters
Drive to conditions education	More pull over bays/ overtaking lanes	Increase speed penalties	Alcohol interlocks
Road rules education (intersections; roundabouts; merging; tailgating; regular updates of changes)	Remove overgrown vegetation on roadsides	No penalties for minor breaches	Less distracting in-car technology
Ongoing driver training and assessment	Wire rope barriers	Fewer speed zones/ changes	Novice power restrictions
Increase penalties	Separation of traffic at high speeds	Uniform, sensible speed limits	Incentives to drive safer vehicles
Primary/high school education			Ban vehicle modifications

How will we use these comments?

From consultation, it is clear that many Tasmanians are concerned about the need to improve driver behaviour and bad attitudes on our roads. We recognise that road user behaviour is crucial, and that it is important to continue to improve driver attitudes and reinforce education on road rules and the significance of driving to the conditions.

Road user behaviour is central to the 'Safe Road Users' part of the Safe System. We will continue to work towards improving driver behaviour, but we must also acknowledge that even if we all obeyed the rules all of the time, we would still make mistakes, leading to crashes. We therefore need to also think about how we can improve the other parts of the road system – speed, roads and vehicles – to ensure that if a crash does occur, the chance of serious injury and death is eliminated.

So how do we do this? To help us find the answers, we have looked to the research for guidance.

Myth: Allowing for mistakes means drivers are let off the hook.

This is not the case....

A Safe System critically depends on road users obeying the rules and being alert. Road safety education, training and enforcement remain very important.

5. Independent Crash Research – What the experts tell us

To assist in the development of the Towards Zero Strategy, the Centre of Automotive Safety Research (CASR) at the University of Adelaide has taken an in-depth look at Tasmania's crash statistics, undertaken extensive research and provided advice on best practice initiatives for Tasmania.

Who is CASR?

CASR is an internationally recognised, leading research organisation that has been at the forefront of road safety analysis for over 30 years. The Centre provides professional advice to various organisations worldwide, and focuses on conducting high quality, independent crash research to enable organisations to make well-informed decisions to reduce road trauma. For more information, visit http://casr.adelaide.edu.au/.

How will the research help us?

CASR's research identified, described and recommended proven safety measures to help us save lives and prevent serious casualties on our roads. This will help us to understand the evidence and make informed choices about which safety measures to put into action.

How did CASR approach the research?

CASR approached the research in four steps:

Firstly, CASR gathered data on our crash statistics, road environment, treatment costs, our commitment to invest and many other factors that will have an effect on the new Strategy.

Secondly, CASR reviewed the performance of the *Tasmanian Road Safety Strategy 2007-2016* to determine what measures were successful and priorities for improvement.

Thirdly, CASR developed a method for modelling fatal and serious road injuries in Tasmania. This modelling involved using road transport data (including crash data, traffic growth and the impact of previous road safety changes) from past years to predict the number of serious casualties in future years. The effects of possible future changes were also modelled to determine their possible effect on the number of serious casualties. Forecasting future road trauma is a challenge, but by using a proven model we can reduce the potential for error as far as possible.

Lastly, CASR identified and discussed a range of potential countermeasures which could decrease serious casualties and move Tasmania's road network further towards Safe System performance. Targets for the new Strategy were proposed and best-practice options recommended.

What did the research say?

The team at CASR has undertaken extensive research on Tasmania's road environment and provided us with specific, best practice initiatives for each element of the Safe System. This combination of initiatives is considered by CASR as the best return on investment, with the ability to save the most lives and serious injuries on our roads. CASR has also identified how many serious casualties may be risked if we delay implementation or decide to go down a different path.

CASR's full report can be viewed at www.towardszero.tas.gov.au.

We want to hear from you.

The next section outlines each of the four elements of the Safe System – it includes what we heard from the community and stakeholders, what the experts tell us, and what our options are.

This is where we need your help. We want the community to understand and engage with the Strategy to ensure we can continue to work towards meeting our goal of zero deaths and serious injuries on Tasmania's roads. That's why we have developed an online feedback form for you to complete once you have read and considered the options for each Safe System element.

All comments and possible measures will continue to be considered to ensure we have a robust and sustainable road safety strategy for the next ten years.

The online feedback form is available at www.towardszero.tas.gov.au – please have your say!

Myth: It's mostly the young, inexperienced drivers that we have to worry about.

While it's true that young drivers are over-represented in crash statistics, almost half of serious casualty crashes involve a driver aged 35 or over.

Tasmania's crash data shows that the following are priority areas we need to address:

- Run-off road crashes
- Head-on crashes
- Motorcyclists
- Novice drivers
- Excessive speed
- Inattention and inexperience
- Cyclists
- Drink driving
- Pedestrians
- Older drivers

5.1 Safe Road Users

What did we hear from the community and stakeholders?

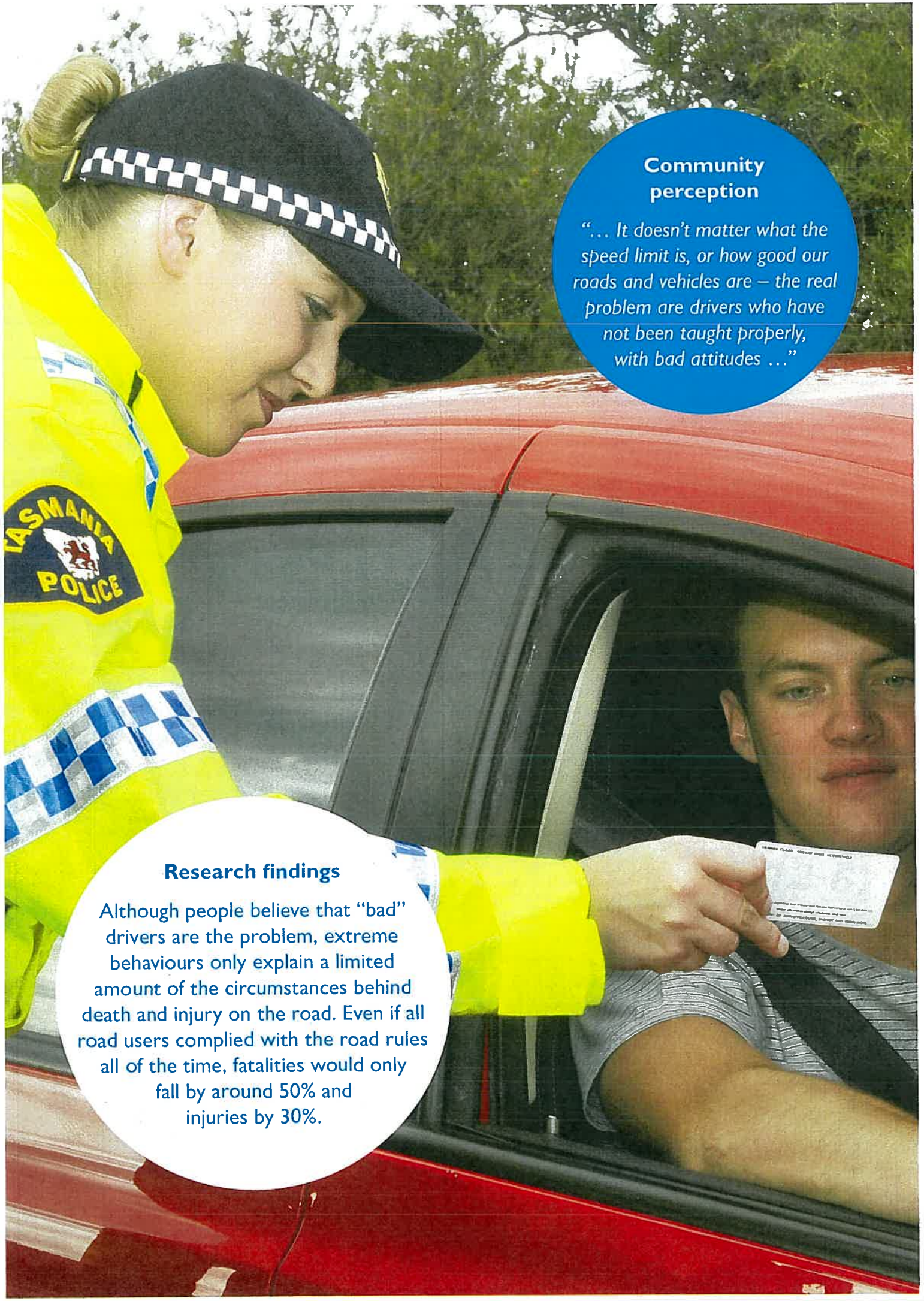
- Most survey respondents believed it unlikely they would be caught if they broke a road rule, but were concerned with the penalties of doing so.
- Most survey respondents told us that they never use their mobile phone whilst driving and, if they did, they used a hands-free device.
- Improving driver attitudes, driver training, road rules education and road safety education in schools were common issues raised in consultation.

Australia has been one of the most successful countries in achieving crash reductions from driver education. Education works best when integrated with regulation and enforcement. Educating people on appropriate driver behaviours such as road rules, courtesy and driving to the conditions is important, with various campaigns being implemented in the last ten years to address these issues. However, we must also remember that no matter how well trained and educated people are, mistakes and crashes will still continue to occur. Educating road users definitely has its benefits, but we need to realise that additional effective solutions could lie within other areas of the Safe System.

Myth: Road crashes will only decrease if we improve driver training and retest drivers regularly.

Not the only answer...

Improving driver skills does not always lead to a change in driver behaviour. In fact, research shows that driver training only plays a small role in reducing crash risk for drivers of all ages and experience, as even the most well-trained driver can still make a mistake.



Community perception

"... It doesn't matter what the speed limit is, or how good our roads and vehicles are – the real problem are drivers who have not been taught properly, with bad attitudes ..."

Research findings

Although people believe that "bad" drivers are the problem, extreme behaviours only explain a limited amount of the circumstances behind death and injury on the road. Even if all road users complied with the road rules all of the time, fatalities would only fall by around 50% and injuries by 30%.

What do the experts think we should prioritise?

Continue with the current level of driver education and enhance the Graduated Licensing System (GLS)

The current level of road user education and enforcement on our roads should continue in order to prevent regression in road safety performance. However, we need to have realistic expectations on what can be achieved through behavioural approaches when compared to other options.

A well designed GLS has been proven to be a highly successful approach in achieving safer road use. The GLS governs how novice drivers will progress from a learner through to a fully licensed driver, with rules and restrictions in place to enhance road safety.

Significant casualty reductions can be achieved over the next ten years if we make certain changes to our current GLS to reduce risk, for example, increasing the age at which a driver can attain their PI licence, introducing passenger restrictions and introducing a late-night curfew. These changes would assist novice drivers with concentration levels, but still allow experience to be developed in a safe environment. Impacts of these measures on employment and mobility will need to be taken into consideration.

What are the other options to make road users safe?

Increase driver education

To improve the safety of road users we could make more information available about misunderstood road rules and driver attitudes, as well as improve education for tourists and school children. Programs supporting safer road use can be effective[2], however, researchers have generally struggled to demonstrate the effectiveness of these programs. It must therefore be acknowledged that other approaches under the Safe System may be more beneficial and cost-effective.

1 This figure is an estimated reduction if GLS changes are implemented in 2017 and includes the effects of other intangibles. It is based on a compliance rate of 80%, assuming that some novice drivers may not comply with restrictions or have a work exemption.

2 Highly successful initiatives in Tasmania which have improved road user behaviour include the adoption of Graduated Licensing Systems, greater speed enforcement with mass media coverage and random breath testing.

Increase the enforcement level on our roads

Studies have shown that more speed cameras and increased, well-managed police enforcement can improve compliance with road rules and result in crash reductions of around 30%. However, police resources are limited and cover a wide range of activities. To increase effectiveness, enforcement should also be backed up with mass media campaigns.

Lower Blood Alcohol Content (BAC)

Studies have shown that any decrease in the legal BAC limit is associated with significant crash reductions. Currently, even a BAC below the legal limit (0.05) can impair a driver's decision making and reaction time. Decreasing the current legal BAC level to 0.02 may be an option to consider.

Promote protective clothing for motorcyclists

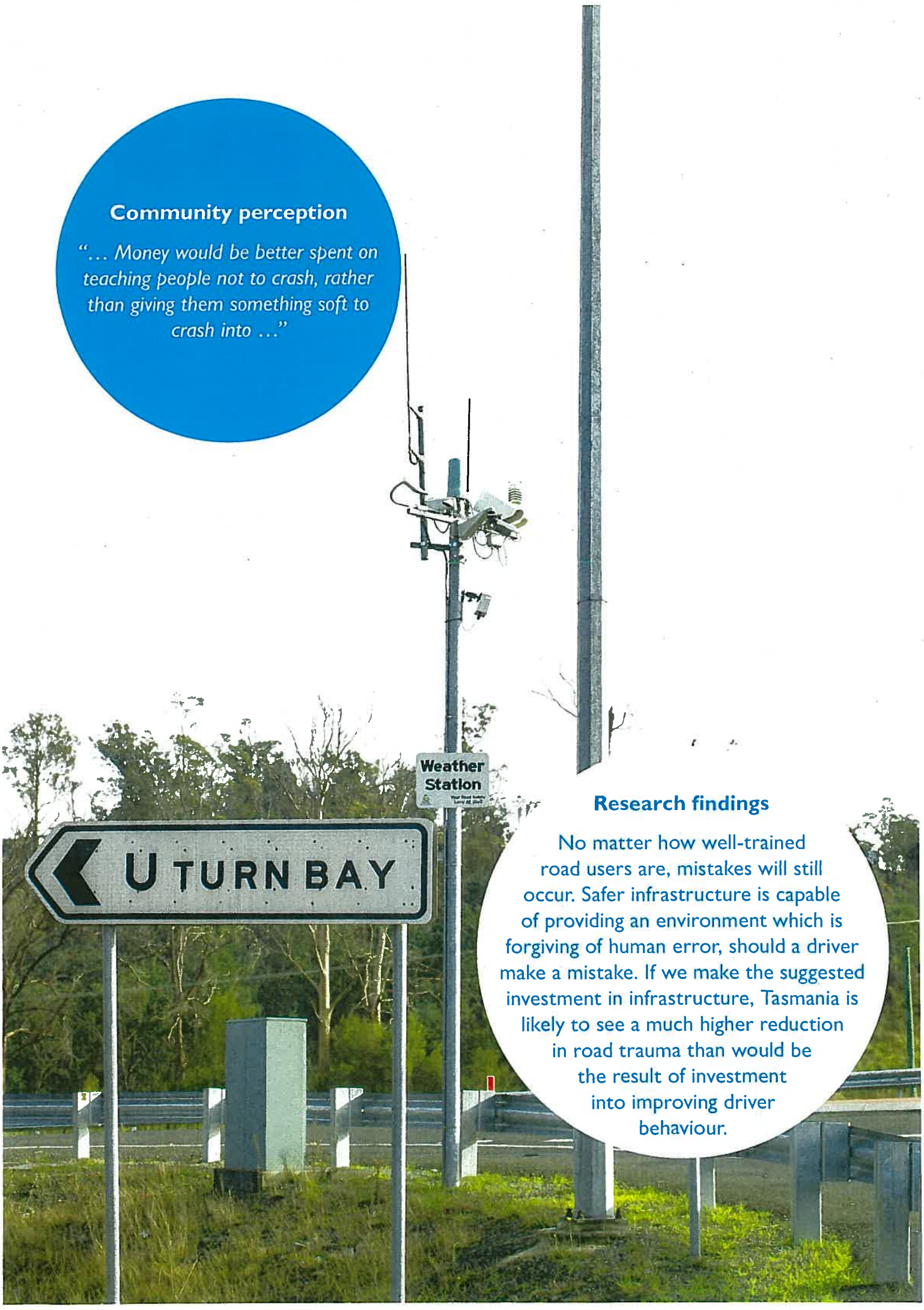
Motorcyclists are a specific road user group that are more at risk of injury in the event of a crash. Studies have shown that wearing protective motorcycle jackets and pants can reduce the likelihood of a motorcyclist being admitted to hospital by around 50%. Promotion of the wearing of protective clothing has clear benefit in reducing injuries for motorcyclists.

What do you think we should do?

Complete the online questionnaire to provide your feedback.

Community perception

"... Money would be better spent on teaching people not to crash, rather than giving them something soft to crash into ..."



Research findings

No matter how well-trained road users are, mistakes will still occur. Safer infrastructure is capable of providing an environment which is forgiving of human error, should a driver make a mistake. If we make the suggested investment in infrastructure, Tasmania is likely to see a much higher reduction in road trauma than would be the result of investment into improving driver behaviour.

5.2 Safe Roads and Roadsides

What did we hear from the community and stakeholders?

- Most survey respondents felt that Tasmania's roads are 'somewhat' safe, with divided highways being the safest, and gravel roads the most dangerous.
- Many people believe that our roads and roadsides need to be better maintained.
- Many people, namely cyclists, pedestrians and motorcyclists, believe there needs to be more consideration of ALL road users in road design.
- Many people believe that more overtaking lanes and pull-over bays on high volume roads would decrease frustration.

We all deserve to drive on safe roads, and to know that if we do crash, we can expect the best outcome. Many people feel that Tasmania's roads and roadsides can be improved to maximise safety, whether it be by increasing maintenance, creating more pull-over bays or improving infrastructure for cyclists. On the other hand, some community members believe that our roads are safe enough, and money would be better spent elsewhere – but research from around the world has shown that reductions in road trauma can be largely attributed to investment in safer roads and roadsides.

Myth: We already have safe roads.

Tasmania has a large road network – more than 18,000 kilometres of State-owned and local roads cover a wide geographical area. As many of these roads were built more than a hundred years ago, our roads can be safer. Road standards change over time, so we must continue to install safety treatments that are proven to reduce the likelihood and severity of crashes.

What do the experts think we should prioritise?

Target run-off road, head-on and intersection crashes

CASR recommended that if funding were available, 2+1 and 2+2 road configurations with centreline barriers would be the most preferable treatment to reduce run-off road and head-on crashes. We are progressively rolling out such treatments on our high volume, higher risk routes.

High reductions in fatal and serious crashes expected if appropriate infrastructure treatments are implemented.

While 2+1 configuration roads would have the highest safety return, they are also the most expensive treatment considered. The creation of a safe road environment using barriers in the centre of the road and on the roadsides in a 2+1 configuration will cost around $730 million on trunk roads alone. It is evident that achieving a Safe System compliant network using 2+1 roads is cost prohibitive. But we can implement a program that prioritises installation of such treatments on higher risk roads, as funds permit.

In relation to intersection crashes, CASR acknowledge that grade separation represents the most effective way of eliminating this type of crash, but it is expensive. Upgrading of intersections by installing roundabouts on trunk roads where injury crashes have occurred, would cost in the order of $2.1 billion. The cost of applying such an approach to all intersections across the network would be extremely cost prohibitive. Grade separation though could still be considered at intersections on strategically important high volume roads and high risk locations, as funds permit.

CASR recommended that other low cost measures should be considered, in terms of their potential to reduce overall death and injury. These include:

- Audio tactile line markings (see glossary)
- Centreline barriers
- Wide centrelines (where centreline barriers are not feasible)
- Sealed shoulders

At intersections, CASR also recommended that right turns should be eliminated where possible on the entire network. This would reduce the potential for high speed, right-angle crashes. If this is not viable, plateaus (raised platforms) should be utilised.

Midland Highway - Symmons Plains 2+1 Installation

Between 2005 and 2009, four people died, three were seriously injured and 14 suffered minor injuries on the Midland Highway, near Symmons Plains. The crashes involved out-of-control vehicles that crossed into the path of oncoming traffic.

Separating vehicles travelling in opposite directions has been highly successful in reducing head-on collisions. Research shows that flexible median barriers can reduce head-on crashes by up to 90%.

To address the crash problem on this 5km stretch of highway, a '2+1' configuration road with median flexible safety barriers was installed. The cost of the project was $7.5 million, which was funded from the Tasmanian Road Safety Levy.

The works conducted at this site included widening the highway to allow for the installation of flexible safety barriers along the median strip, and incorporating a 2+1 road configuration. This provides two lanes in one direction and one lane in the opposite direction. This is alternated so vehicles travelling in either direction have overtaking opportunities.

Costs and benefits?

Accurately modelling the effects of introducing widespread, large scale infrastructure treatments is extremely difficult. Table 1 however summarises the potential benefits and costs of different infrastructure treatments. It also provides a guide as to where treatments might be applied on the network:

Countermeasure	Expected Benefit	Expected Cost	Where
2+1 configuration	★★★	$$$	Highest volume, strategically important roads
Centreline barrier	★★★	$$$	Highest volume, trunk, freight and regional access routes
Wide centreline	★★	$$	Highest volume, trunk, freight and regional access routes where centreline barrier not feasible
Sealed shoulders	★★	$$	Highest volume, trunk, freight and regional access routes where above treatments not possible
Audio tactile line marking	★	$	Highest volume, trunk, freight and regional access routes where above treatments not possible
Grade separation*	★★★	$$$	Highest volume, trunk, freight and regional access routes
Roundabouts*	★	$$	Highest volume, trunk, freight and regional access routes Discrete sites if warranted on lower order roads
No right turn*	★★	$	Where viable
Right turn lanes*	★	$	Entire network
Plateaus*	★	$	Highest volume, trunk, freight and regional access routes Any road types in a built up area if warranted

* *Intersection treatments*

Table 1 Effectiveness and cost of Safe System infrastructure treatments in reducing serious casualties in Tasmania and recommended locations for infrastructure treatments[3]

3 Based on CASR modelling

What are the other options?

Develop more overtaking lanes

Despite an assumption that overtaking lanes improve safety, CASR noted there are very few studies that actually prove that this is the case. This suggests that the safety effect is likely to be influenced by many other factors. Traditionally, overtaking lanes were implemented on the basis of traffic efficiency with safety as an assumed benefit. It is worthwhile noting that the greatest reductions in injury crashes were associated with the use of overtaking lanes with additional centreline treatments (either wide centrelines or centreline barriers).

Safety for cyclists

CASR also considered infrastructure measures to improve safety for cyclists and acknowledged the significant difficulties in such an approach. The task of retrofitting the road system to improve cyclist safety is difficult as the system is inherently unsafe for this group in most locations and there is community resistance to giving up car space for cyclists. From a theoretical perspective the solution is simple: where speeds cannot be managed to safe levels, segregation should occur. It may be easier to provide separate safe corridors as viable alternatives for cyclists to access different areas, particularly cities, backed up by appropriate infrastructure treatments.

Safety for pedestrians

CASR considered infrastructure measures to address pedestrian safety. Due to the highly random nature of pedestrian collisions in built up areas of Tasmania, an infrastructure response is difficult. However, CASR suggested that it would be desirable to install raised platforms at dedicated pedestrian crossing facilities to slow down vehicles to safe speeds.

What do you think we should do?

Complete the online questionnaire to provide your feedback.

5.3 Safe Speeds

What did we hear from the community and stakeholders?

- Most survey respondents felt that speed is a factor in causing crashes.
- Many people believe that improved in-car speed technology and more speed cameras would help to reduce speeding.
- The community were divided on the issue of whether speed limits should be reduced.

While most respondents believe that speed is a factor in causing crashes, there are concerns that there is too much emphasis on penalising speed and not enough on penalising bad behaviours. While bad behaviour should indeed be penalised, what must be acknowledged is that **the higher the speed, the greater the chance of being in a crash and the more severe the consequences will be.** Speed limits need to be set at appropriate levels and road users need to travel at speeds that are suitable for the conditions. At current travelling speeds, in many cases, vehicles are unable to protect occupants and other road users when crashes occur. Add to this the complexity of children, the elderly, motorcycles and heavy vehicles, and it becomes apparent that our speed limits are not always appropriate in a Safe System context.

Myth: Reducing speed limits won't save lives, it will just take me longer to get anywhere.

Travelling time does not increase by the same proportion as a speed reduction. For example, reducing the speed limit by 10% does not result in a 10% increase in travel time. Research shows that the effect on travel time can actually be as low as 4% - this is a good compromise considering the number of lives and serious injuries which could be saved by driving that little bit slower.

Community perception

"... There needs to be less emphasis on penalising minor speed breaches, and more emphasis on addressing bad driver attitudes and lack of skill..."

Research findings

Speeds at which vehicles can prevent injury are generally much lower than the posted speed limits on the network. Establishing appropriate travelling speeds and enforcing those speeds remains one of the most effective ways to reduce death and serious injury on any road network.

165[5] fewer people killed or seriously injured on our roads if all 110km/h roads were reduced to 100km/h; and 100km/h speed limits on minor roads were reduced to 90km/h (i.e. feeder roads, other state-controlled roads and non-state controlled roads).

What do the experts think we should prioritise?

Reduce speed limits

Establishing appropriate travelling speeds that are safe remains one the most effective ways of reducing serious casualties on the road network. Even small changes in travelling speed across the network can lead to large reductions in road trauma. This is supported internationally, but much of the research has actually originated in studies on Australian roads.

Of all the interventions modelled, CASR has indicated that speed reductions of just 10km/h would have the biggest effects in reducing road trauma. The following options were considered by CASR:

- Reducing all 110km/h speed limit to 100km/h on state-controlled roads
- Reducing 100km/h speed limits on minor road categories to 90km/h (i.e. feeder roads, other state-controlled roads, and non-state controlled roads)
- Reducing all 60km/h roads to 50km/h.

CASR considers that these speed limit reductions could be introduced relatively quickly early in the Strategy, and would cost less than $1 million to implement.

205[4] fewer people killed or seriously injured on our roads if all 110km/h speed limits were reduced to 100km/h on state-controlled roads; 100km/h speed limits on minor roads were reduced to 90km/h (i.e. feeder roads, other state-controlled roads and non-state controlled roads), and 60km/h speed limits were reduced to 50km/h.

The Effects of Speed	
Crash type	Speed at which likelihood of death increases dramatically
Head on collision (cars)	70km/h
Right angle impact (cars)	50km/h
Side impact of car into a tree or pole	30km/h
Collision between car and pedestrian	30km/h

What are the other options?

CASR acknowledges that the implementation of lower speed limits remains a contentious issue in the Tasmanian community. Current practice is to examine speed limits to ensure they complement road infrastructure on a case by case basis. Community engagement in changes to speed limits is critical. Speed limits need to be credible to ensure drivers comply with the limits.

Therefore, instead of the options considered above, we could look at some alternatives:

- Implement lower speed limits on specific road corridors or in certain geographical areas rather than over the whole state.
- Undertake an assessment of speed limits on 100km/h roads, on a case by case basis, taking into account crash risk and road features, such as shoulder and lane width.

Reducing speed across the network also represents the best option for reducing death and serious injury of our most vulnerable road users, pedestrians, cyclists and motorcyclists. While some treatments can be developed specific to these groups, reducing speed is sufficiently broad to assist these types of road users, and the driving population as a whole. Reducing the speed limit to 40km/h in high-activity areas such as carparks and high pedestrian and cyclist areas with numerous road user types, is also considered beneficial. This would be accompanied by gateway infrastructure treatments and traffic calming measures.

Reducing speed limits is complex – we know people don't like too much 'chop and change', so we also need to reduce the number of speed limit changes which occur.

What do you think we should do?

Complete the online questionnaire to provide your feedback.

4 This figure is an estimated reduction if implemented in 2017 and includes the effects of other intangibles.
5 This figure is an estimated reduction if implemented in 2017 and includes the effects of other intangibles.

5.4 Safe Vehicles

What did we hear from the community and stakeholders?

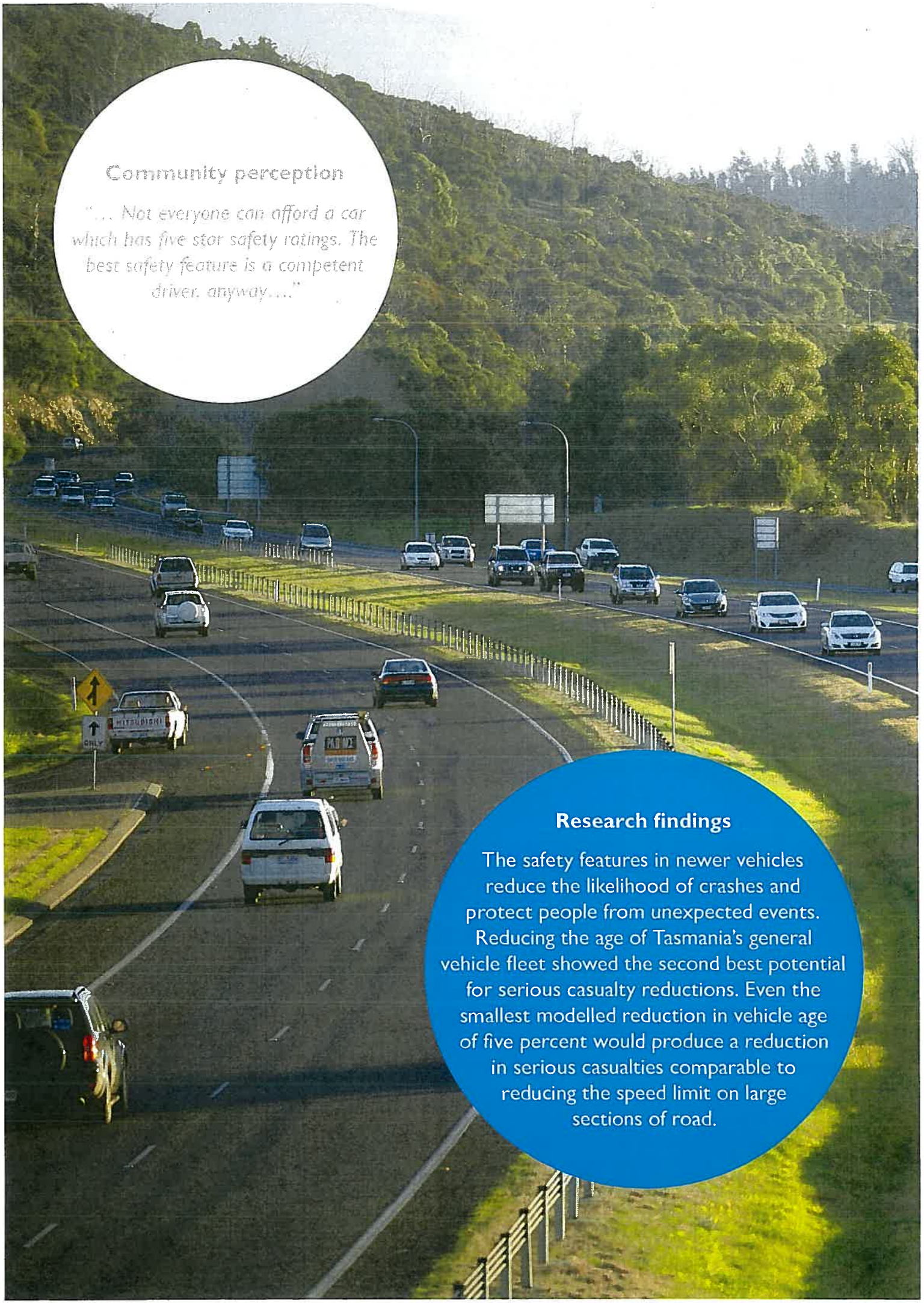
- Most survey respondents indicated that vehicle safety ratings will be of major consideration when purchasing their next vehicle.
- Most survey respondents felt that the most important safety vehicle features are electronic stability control and side and curtain airbags.
- Many people believe that there would be benefit in introducing periodic roadworthy vehicle checks.
- The community were divided on whether vehicle safety technology is helping or hindering drivers.

In-car technology, and the ability for a vehicle to protect occupants, has improved dramatically over past decades. Some people believe this is a positive thing, while others believe that certain safety features may result in drivers becoming 'lazy'. However, it must be acknowledged that vehicle safety features have proven performance when it comes to preventing serious casualties, and the sooner new vehicles (with advanced safety technologies) can be introduced into the fleet, the sooner we will see the maximum safety benefits.

Myth: Annual vehicle inspections need to be introduced to get unsafe cars off the roads.

Not the only way....

Current crash studies have shown minimal association between crash rates and the roadworthiness of a vehicle. Without a compelling road safety benefit, it may be hard to justify a reason to impose the cost associated with periodic light vehicle inspections. In fact, evidence suggests that improving the safety features of vehicles is a more effective means of reducing road trauma.



Community perception

"... Not everyone can afford a car which has five star safety ratings. The best safety feature is a competent driver, anyway...."

Research findings

The safety features in newer vehicles reduce the likelihood of crashes and protect people from unexpected events. Reducing the age of Tasmania's general vehicle fleet showed the second best potential for serious casualty reductions. Even the smallest modelled reduction in vehicle age of five percent would produce a reduction in serious casualties comparable to reducing the speed limit on large sections of road.

What do the experts think we should prioritise?

Focus on reducing the age of Tasmania's vehicle fleet

Tasmania currently has an average vehicle fleet age of 12 years – this is the oldest in the country. **If the vehicle fleet age in Tasmania can be reduced in the next ten years, we are likely to see a reduction in road trauma.**

There is not one obvious method to reduce the age of Tasmania's vehicle fleet, and the process can take many years. However, CASR considers that one of the most effective ways to speed up the process is for Government and industry to purchase new and safe vehicles for their fleets. This is the current Government policy and should be extended to industry. The effects will then flow-on to the broader community when vehicles are sold at a later date to replace older, less safe vehicles.

Promoting new vehicle safety should also remain a priority, however, the impacts on those in lower socio-economic areas must be considered. Various methods such as "cash for clunkers" schemes, introducing incentives for drivers to buy newer vehicles or mandating a maximum vehicle age are all options to consider. Drivers at greater risk (eg. young drivers) should also be encouraged to drive newer, safer cars, as opposed to older vehicles.

Efforts to increase the amount of motorcycles in Tasmania with antilock braking systems (ABS) is considered by CASR as highly worthwhile. Mandating ABS technology on new motorcycles is also currently being considered at the federal level.

As it can take many years to improve and change over vehicles, CASR recommends that initiatives to reduce the age of the vehicle fleet should commence early in the life of the Strategy.

What are the other options?

Mandating vehicle safety features that encourage (or force) safer behaviours from drivers could also be considered, however, it must be noted that vehicle standards in Australia are largely a federal responsibility. The community may also want to consider putting more pressure on vehicle manufacturers to include more 'standard' safety features in new vehicles, without the additional cost.

The effectiveness of features such as intelligent speed adaptation (ISA) and broader use of alcohol interlocks was discussed by CASR. Alcohol interlocks are very effective when fitted, however, they are time consuming to operate and there is little known about how effective they might be if used by drivers who have not committed a drink driving offence.

ISA technology is a system that aids the driver in observing the posted speed limit. ISA technology can either provide a warning to the driver when they travel over the speed limit, provide resistance on the accelerator pedal or totally prevent the driver from speeding. Studies have shown that ISA systems can reduce serious casualty crashes by up to 30%.

Myth: We can't prevent traffic crashes altogether.

This is true. BUT it is possible to prevent many crashes that result in death or serious injury. This is the basis of creating a Safe System.

What do you think we should do?

Complete the online questionnaire to provide your feedback.

6 This figure is based on a vehicle age reduction of 5% by the year 2020, and includes the effects of other intangibles.

6. Summary of CASR Research Findings

The current level of road trauma in Tasmania is unacceptable, and our system must be improved – we all have a role to play in reducing the amount of people who lose their lives or are seriously injured on our roads.

To achieve a safer road system, a number of options have been put forward – below is a summary of the initiatives that have been recommended and discussed by CASR.

These initiatives are what the experts think we should prioritise and will be taken into account when developing the Towards Zero Strategy and action plans.

Safe Road Users				
Considered by CASR		**When should it be implemented**	**Serious casualty savings 2017-2026**	**Cost**
Key initiatives	Enhance the GLS by introducing the following novice restrictions: • Making 18 the minimum age to obtain a driver licence • One passenger limitation • Curfew – prohibiting driving between 12am-6am.	Year 1	55 (if implemented in 2017)	$3 million
	Continue with current level of driver behaviour education and enforcement.	Ongoing from Year 1	Not modelled	Unknown
Other identified initiatives	Significantly increase driver education and behavioural programs.	-	Not modelled but expected to be low	Unknown
	Increase speed camera use and enforcement levels.	-	Not modelled but studies show up to 30% reduction in crashes	Unknown
	Lower BAC to 0.02	-	Not modelled but studies show up to 10% reduction in crashes	Unknown but expected to be low
	Promote protective clothing for motorcyclists	-	Not modelled but studies show can reduce hospital admissions by up to 50%	Unknown but expected to be low

Safe Roads and Roadsides				
Considered by CASR		When should it be implemented	Serious casualty savings 2017-2026	Cost
Key initiatives[7]	2+1 configuration with centreline barrier	When feasible	125	$730 million
	Audio tactile line markings	When feasible	22	$8 million
	Centreline barriers	When feasible	103	$54 million
	Wide centrelines (where centreline barriers are not feasible)	When feasible	82	$60 million
	Sealed shoulders	When feasible	66	$200 million
	Grade separation	When feasible	36	$2,130 million
	Roundabouts	When feasible	26	$280 million
	Eliminate right turns	When feasible	16	$17 million
	Intersection plateaus	When feasible	17	$20 million
Other identified initiatives	Overtaking lanes with additional centreline treatments.	When feasible	Unknown but outcomes are best when centreline barrier or wide centreline are in place	Not modelled but expected to be high
	Provide safe corridors as viable alternatives for cyclists	When feasible	Unknown	Unknown
	Install raised platforms at dedicated pedestrian crossing facilities	When feasible	Not modelled but expected to be high if speeds are well managed	Unknown

7 Costs and serious casualty savings for infrastructure treatments are based on application on all trunk roads and all initiatives being implemented in 2017. This scenario is unrealistic but it provides scenario to compare the cost and benefits of treatment options on a broad basis.

Safe Speeds				
Considered by CASR		When should it be implemented	Serious casualty savings 2017-2026	Cost
Key initiatives	Reducing all 110km/h speed limit to 100km/h. Reducing 100km/h speed limits on minor road categories to 90km/h (i.e. feeder roads, other state-controlled roads, and no-state controlled roads). Reducing all 60km/h roads to 50km/h.	Year 1	205 (if implemented in 2017)	Less than $1 million for each speed change.
Other identified initiatives	Implement lower speed limits on specific road corridors or in certain geographical areas rather than over the whole state.	-	Not modelled but any reductions in travelling speed that can be achieved are considered worthwhile.	Unknown but expected to be low
	Reduce speed limits in high-activity areas with numerous road user types to 40km/h.	-	Not modelled but any reductions in travelling speed that can be achieved are considered worthwhile.	Unknown but expected to be low

Safe Vehicles				
Considered by CASR		When should it be implemented	Serious casualty savings 2017-2026	Cost
Key initiatives	Reducing the average age of the vehicle fleet. Options include: • encouraging Government and industry to purchase new and safe vehicles for their fleets • promoting new vehicle safety should also remain a priority • "cash for clunkers" schemes • introducing incentives for drivers to buy newer vehicles • mandating a maximum vehicle age	Year 1	30 if reduction in age of 5% 59 if reduction in age of 10% 86 if reduction in age of 15%[8]	It is likely that the cost of implementation could be relatively low or even neutral.
Other identified initiatives	Increase the amount of motorcycles in Tasmania with antilock braking systems (ABS)	-	Not modelled but studies show up to 37% reduction in fatal motorcycle crashes.	Unknown

How do the numbers stack up?

Over the last ten years there have been almost 3,500 deaths and serious injuries on Tasmanian roads. While our road trauma level has been decreasing due to current Strategy initiatives, changes in vehicle technology and the road system, reductions in serious casualties are starting to plateau.

If we continue with our current programs and treatments and nothing further is implemented, we could hopefully expect a small continuing decrease in serious casualties over the 10 year period to 2026. However, NO level of road trauma is acceptable – we have to determine what we can do to keep working towards zero road trauma.

In order to achieve a more significant decrease, we must determine which safety initiatives we can introduce that would have the greatest effect. If we continue with what we are doing and also introduce the new measures modelled as early as we can, we have the potential to reduce serious casualties by 2026 to little more than 150 per year.

It must be accepted that delaying new initiatives or implementing options which have a low level of effectiveness may lead to poorer outcomes. Therefore we must weigh-up the effectiveness of potential initiatives against implementation challenges and prioritise them accordingly. Ideally, we need to adopt measures that will have a significant, positive impact and will be broadly supported by the community.

8 If changes implemented by 2020

What are the benefits to each road user group?

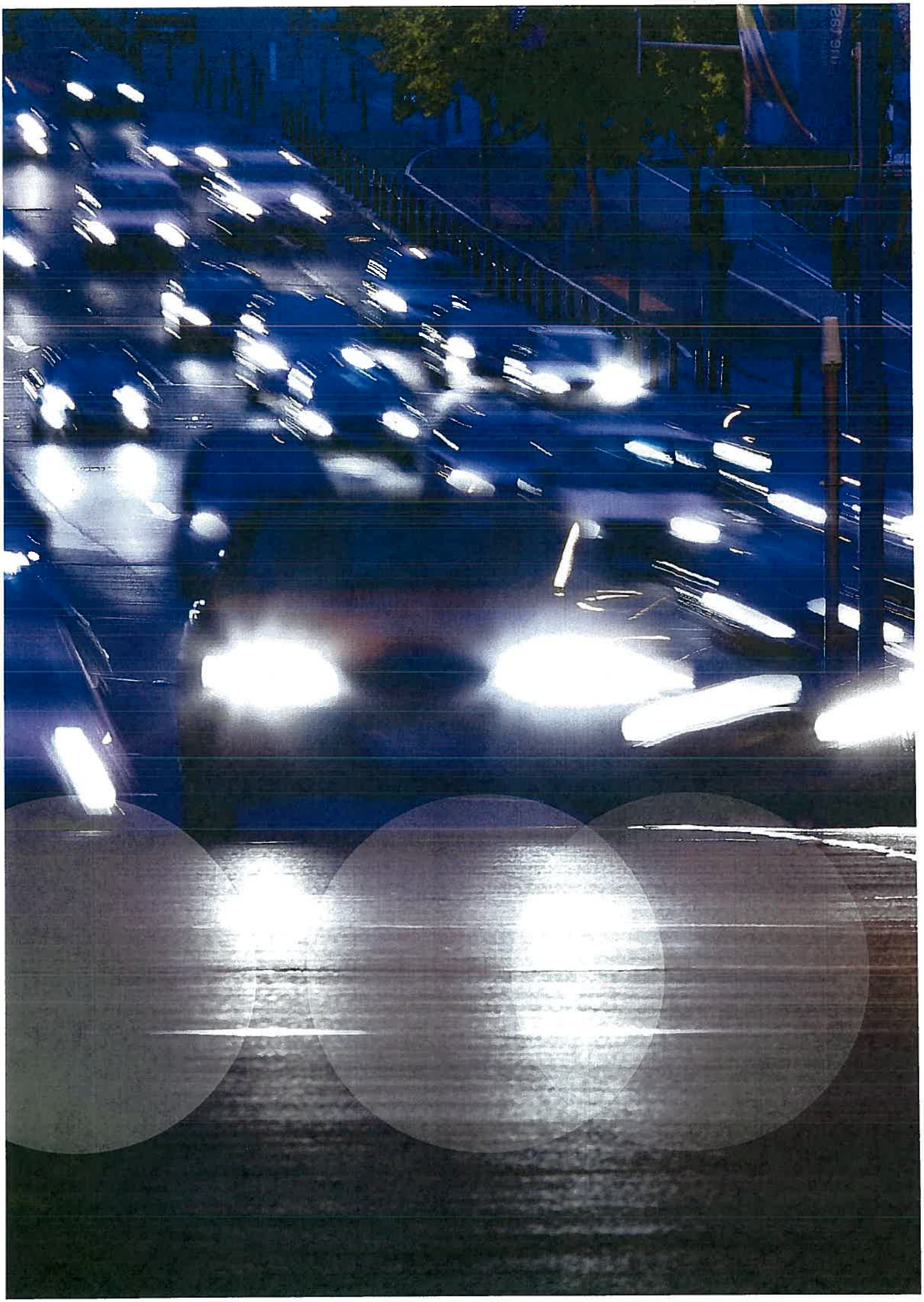
The following chart illustrates the benefits each road user group gains from each cornerstone of the Safe System. The more stars, the more benefits expected for the return on investment.

Road User Group	Safe Road Use	Safe Roads and Roadsides	Safe Speeds	Safe Vehicles
Motorcyclists	★	★★	★★★	★★
Cyclists	★	★★	★★★	★★
Pedestrians	★	★★	★★★	★★
Drivers	★	★★★	★★★	★★★
Novice Drivers	★★★	★★★	★★★	★★★
Older Drivers	★	★★★	★★★	★★★
Rural Drivers	★	★★	★★★	★★★
Children	★	★★	★★★	★★

☆☆☆ Direct benefit to the target area

☆☆ Not a direct benefit, but some significant benefit still expected.

☆ Little benefit expected



7. Next Steps

It is important to remember that this document is not the Towards Zero Strategy. We have taken comments from consultation, and the expert's advice, and presented options for improving road safety in Tasmania. In doing this, we are seeking to stimulate discussion that considers the potential benefits of measures, their cost and the level of community support received.

Now you have seen these options, we want to know what your thoughts are. **Your feedback will be crucial to the Strategy's success.**

When we receive your feedback we will analyse your comments, make improvements where necessary, and create a draft Strategy for the next ten years. We will continue to work with the community, other government agencies, stakeholders and Members of Parliament to determine the best way forward in achieving our goal.

Thank you for your contribution. Everyone has a role to play in improving road safety – it will be essential for all of us to work together to achieve our long-term vision of zero deaths and serious injuries on Tasmania's roads.

Myth: It won't happen to me.

Although most of us have driven for years without incident, road safety affects us all. It's easy to become complacent, but how many people do you personally know that have been affected by a road crash? A friend, family member, someone from work, from your sports club? We are all at risk every time we use our roads.

To let us know what you think please complete the online questionnaire at www.towardszero.tas.gov.au

Glossary of Terms

'2+1' configuration	A three-lane road with the provision of alternating lanes and a flexible safety barrier located in the narrow median.*
'2+2' configuration	A four-lane road with a flexible safety barrier located in the narrow median.*
Audio tactile line markings	Raised or specifically textured strips typically installed on the edge line (or in some cases centreline), generating noise and vibrations through vehicles in order to alert drivers that they are leaving their lane, and encouraging them to return to their lane. ‡
Centreline barrier	A device used on multilane roads to keep opposing traffic in prescribed carriageways. ‡
Delineation	Treatments that enhance the selection of the appropriate path and speed, or position, to allow a manoeuvre to be carried out safely and efficiently, e.g. line marking, raised pavement markers, traffic cones and flaps and post-mounted reflectors. ‡
Fatality	Where a person was dead before a report was made by Tasmania Police or died up to 30 days after the crash.
Feeder road	Roads allowing safe travel between towns, major tourist destinations and industrial areas.
Flexible safety barrier	A road safety barrier system consisting of wire rope cables under high tension that are supported on posts and anchored at the ends. ‡
Grade separation	The separation of road, rail or other traffic so that crossing movements, which would otherwise conflict, are at different elevations.
Motorcycle anti-lock braking system (ABS)	System which prevents the wheels from locking up by automatically modulating the brake pressure when the rider brakes hard. By preventing the wheels from locking, the system aids riders to maintain steering control which may reduce stopping distances in certain situations.†
Plateaus	Flat top speed humps moderating speeds through the intersection, increasing the visibility of the intersection and raising awareness, specifically at intersections that are on the boundary of different speed zones, and at intersections that are dangerous or potentially dangerous.
Sealed shoulder	The sealed edge of roads outside of the travelled carriageway (the shoulder) of roads. Sometimes it is delineated by an edge line applied between the sealed shoulder and the travelled section of a carriageway. The treatment is almost invariably associated with unkerbed roads, and is often applicable to rural roads.‡
Serious casualties	Include fatalities and serious injuries.
Serious injury	Refers to a person being admitted to hospital for 24 hours or more.
Trunk road	Primary freight and passenger roads connecting Tasmania.
Wide centrelines (painted median)	Two parallel painted centrelines, often with audio tactile surfaces, which provide separation of opposing traffic.*

* Jurewicz, C Aumann, P Bradshaw, C Beesley, R Lim, A (2015), Road Geometry Study for Improved Rural Safety, Austroads Ltd, Sydney.

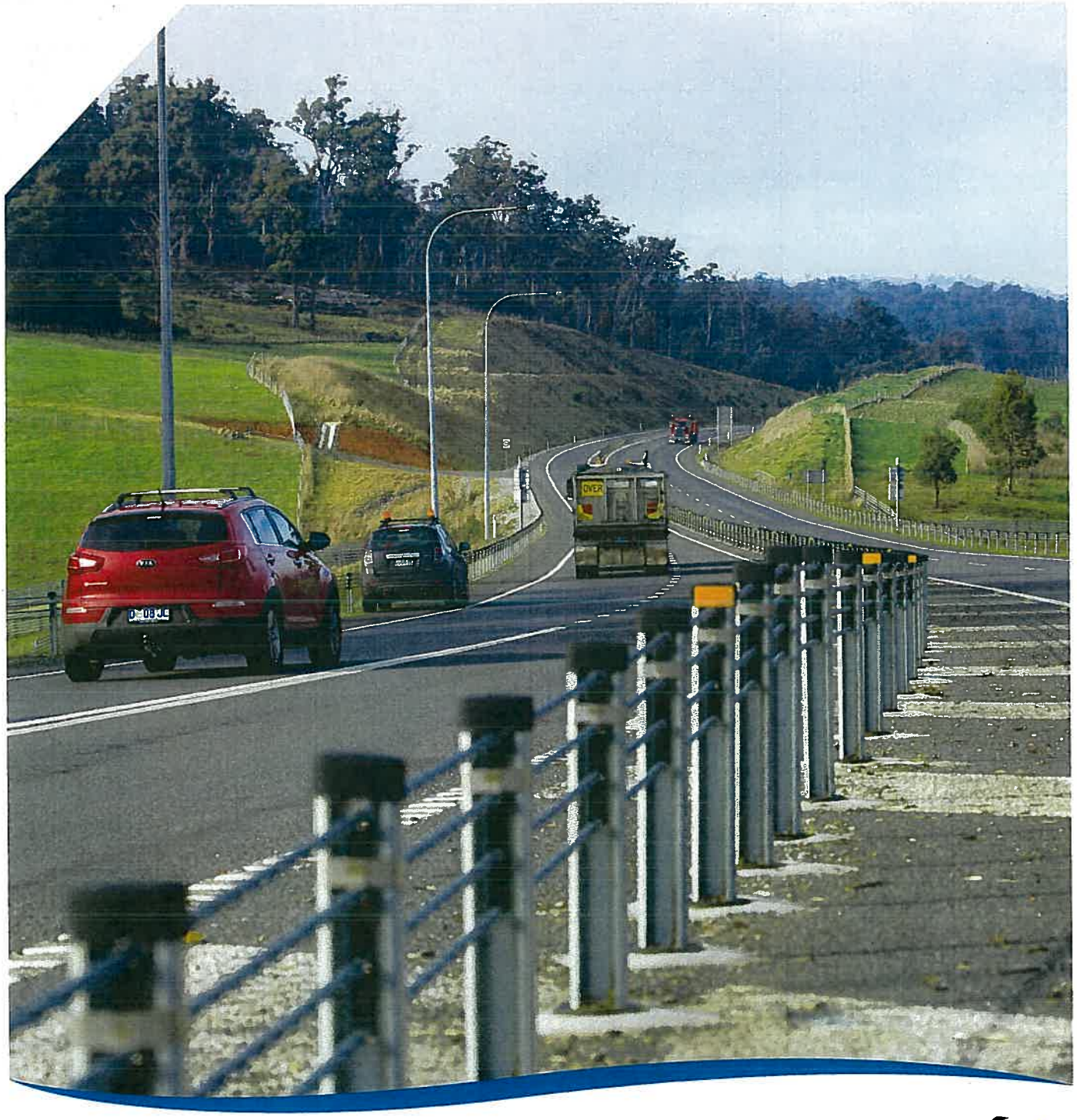
† OECD and ITF. (2015), Improving Safety for Motorcycle, Scooter and Moped Riders, OECD Publishing, Paris

‡ Austroads (2015) Glossary of Terms (2015 Edition), Austroads Ltd. Sydney

Department of State Growth
Road Safety Branch
Towards Zero Strategy
GPO Box 536
Hobart TAS 7001 Australia
Phone: 03 6166 3239
Email: towardszero@stategrowth.tas.gov.au
Web: www.towardszero.tas.gov.au

Fewer than 200 serious injuries and deaths on our roads by 2026

Towards Zero Action Plan 2017-2019



Department of State Growth

Tasmanian Government

Photo credits
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Minister's foreword

The *Towards Zero Action Plan 2017-2019* (Action Plan 2017-2019) lists a number of priority actions that will see Tasmania move closer to realising the short-term target and long-term vision of the *Towards Zero - Tasmanian Road Safety Strategy 2017-2026* (Towards Zero Strategy).

This is the first of three Action Plans that will support the Strategy over the next 10 years.

The Strategy and Action Plan targets our highest risk areas and deliberately focuses on those initiatives that will gain the greatest reductions in serious injuries and deaths. The Government will also continue to undertake a broader range of road safety initiatives for vulnerable road users such as tourists, cyclists and pedestrians. These are outlined in our *Road Safety Work Program 2017-2019.*

Importantly, during the life of the Strategy our initiatives will be revised and improved to address emerging issues. Education and enforcement will remain at the core of our Strategy.

Our vision

Driving the Towards Zero Strategy, is the long-term vision of a Tasmania where **no one is seriously injured or killed as a result of a crash on our roads.**

Achieving this vision will only happen if everyone accepts responsibility for road safety on our roads.

We know that our vision will not be easy to achieve and it will not happen overnight. We must continue to take incremental steps, look for innovative solutions, address our crash problem areas and build upon our road safety achievements in order to realise our vision.

Our target

To work towards our long-term vision, the key target for the Towards Zero Strategy is to reduce the number of annual serious injuries and deaths on Tasmanian roads to **fewer than 200 by 2026**. We will be working towards reducing the number of serious injuries and deaths on our roads by at least 100 over current levels (annual average). This is deliberately ambitious and we will need to embrace our vision, be guided by the Towards Zero Strategy and implement our Action Plans to accomplish this level of safety improvement.

The Towards Zero Strategy will focus our road safety efforts over the next decade on 13 key directions that will help us to reach our short-term target and move closer to our long-term goal of zero.

We will review progress towards our target at the end of each Action Plan and use the results to inform our future actions.

Our approach

The long-term goal for road safety in Tasmania is to have a 'Safe System' where there are zero serious injuries or deaths on our roads. The Towards Zero Strategy will help us on our journey.

A Safe System is a more forgiving road system that reduces the price we pay for human error. In a Safe System, although crashes are inevitable, serious injury and death are not. Most crashes are the result of ordinary people making ordinary mistakes. Research shows that even if everyone obeyed all of the road rules all of the time fatalities would only be reduced by 50 per cent [1]. The Safe System approach looks beyond the driver. It identifies and addresses all of the causes of road trauma because serious crashes are considered system failures.

The Safe System approach places human frailty at the centre of system design. The human body can only withstand a certain amount of force before sustaining serious injuries. The road transport system needs to be designed to be forgiving so that forces in crashes do not exceed the limits of human tolerance.

Under the Safe System approach we must design the whole transport system to protect people from serious injury and death if they do crash. This means improving all parts of the system – including safer road users, safer roads and roadsides, safer vehicles and safer speeds – so that if one part of the system fails, the other parts will still protect people involved in a crash. A Safe System has:

Safe Road Users – encouraging safe, compliant behaviour through education, enforcement and regulation.

Safe Roads and Roadsides – designing and maintaining roads to reduce the risk and severity of crashes.

Safe Vehicles – designing vehicles that protect occupants, lessen the likelihood of a crash and simplify the driving task.

Safe Speeds – establish speed limits that are more appropriate to the safety features of individual roads.

1. Elvik,. R. and Vaa., T. (2004). Road Safety Handbook. Elsevier. Amsterdam.

Key directions

Thirteen key directions support the Towards Zero Strategy.

Safe Road Users

1. Improve the Graduated Licensing System to reduce serious casualties for 17-25 year olds.
2. Introduce safety initiatives to reduce motorcyclist serious casualties.
3. Encourage safer road user behaviour through education and enforcement.
4. Reduce driver inattention and distraction to reduce serious casualties.

Safe Roads and Roadsides

5. Reduce run-off-road and head-on crashes through improved infrastructure.
6. Reduce the severity of intersection crashes through improved infrastructure treatments.
7. Encourage the latest thinking in safe road design (the Safe System approach).
8. Monitor latest innovations in Safe System infrastructure treatments and trial in Tasmania.
9. Reduce serious casualties through improved delineation (e.g. line marking).

Safe Vehicles

10. Improve the star rating of Tasmania's vehicle fleet to include vehicles with better safety features.
11. Increase the number of motorcycles with ABS.

Safe Speeds

12. Establish speed limits that are more appropriate to the safety features of individual roads.
13. Increase enforcement through technology to reduce speed related serious casualty crashes.

Road safety actions

Safe Road Users

What we know:

- Young drivers and motorcyclists are at the most risk of being seriously injured or killed in a crash on Tasmanian roads.
- Young road users (17-25) are particularly at risk during their first year of solo driving (P1) and when carrying passengers.
- Motorcyclists are extremely vulnerable in the road environment as there is very little protecting them from injury should something goes wrong.
- No matter how well trained or experienced we are, we will make mistakes and crashes will occur.

Key directions	Priority actions 2017-2019
Improve the Graduated Licensing System to reduce serious casualties for young road users (17-25 year olds).	Review a range of options under the Australian Graduated Licensing System Policy Framework to improve the Graduated Licensing System for novice drivers.
Introduce safety initiatives to reduce motorcyclist serious casualties.	Introduce a new pre-learner motorcycle training course including an on-road component at the commencement of the course.
	Introduce initiatives to increase the use of protective clothing.
	Introduce greater use of rear-facing automated speed cameras.
	Increase motorcycle-focused enforcement.
Promote safer road user behaviour through education and enforcement.	Promote safe behaviours through media campaigns.
	Improved enforcement of high-risk road behaviours.

Safe Roads and Roadsides

What we know:

- Our two biggest challenges for making our roads and roadsides safer are managing road lane departures and collisions at intersections.
- We know that the infrastructure required to keep people safe and minimise risk on our roads is costly, but this can be justified by the number of serious injuries prevented and lives that can be saved.
- We can work towards increasing the level of safety by ensuring we are guided by best practice in road design, retrofitting safety features on existing lengths of road and using evidence to target our most unsafe roads.
- Although 2+1 and 2+2 road configurations with centreline barriers are the most effective option in terms of reducing the number of serious casualties, we know that they are an expensive option.
- Funding is limited, so we must prioritise installation of high cost treatments on high risk roads and implement lower cost, but effective treatments more broadly across the road network.

Key directions	Priority actions 2017-2019
Reduce run-off-road and head-on crashes through improved infrastructure.	Accelerate installation of flexible safety barrier based on crash risk.
	Expand the audio-tactile line marking program.
	Undertake shoulder sealing where a known crash problem exists.
Reduce the severity of intersection crashes through improved infrastructure treatments.	Investigate and implement innovative intersection treatments.
Encourage Safe System thinking in road design.	Develop a program for building Safe System knowledge of state, local and industry engineers.
Reduce serious casualties through improved delineation (e.g. line marking).	Improve levels of delineation on high risk roads to reduce run-off-road and head-on crashes.

Safe Vehicles

What we know:

- With Tasmania having the oldest vehicle fleet in Australia, we know many Tasmanians are not benefiting from the improved safety features of new vehicles.
- It is important to get as many 5 star vehicles as possible into the Tasmanian vehicle fleet so that maximum safety benefits can be realised.
- Antilock Braking Systems (ABS) for motorcycles have significant safety benefits.

Key directions	Priority actions 2017-2019
Improve the star rating of Tasmania's vehicle fleet to include vehicles with better safety features.	Ensure high minimum safety specifications for all new passenger and light commercial vehicles in the Tasmanian Government fleet.
	Actively promote vehicle fleet safety standards for commercial fleets.
Increase the number of motorcycles with ABS.	Introduce measures to promote or incentivise the uptake of motorcycle ABS.

Safe Speeds

What we know:

- The higher the travel speed, the greater the chance of being involved in a crash and the more severe the consequences will be if a crash occurs.
- Some speed limits may currently be set at a higher level than our bodies can tolerate should a crash occur. It is important that we understand the benefits of having speed limits appropriate to the safety features on our roads.

Key directions	Priority actions 2017-2019
Establish speed limits that are more appropriate to the safety features of individual roads.	Improve speed limit setting guidelines to promote uniform, sensible speed limits based on infrastructure standards and safety features and have fewer speed zone changes.
	Undertake an assessment of speed limits on individual 100 km/h roads, taking into account crash risk and road features.
Increase enforcement through technology to reduce speed related serious casualty crashes.	Introduce point to point speed cameras on high risk rural roads.
	Increase the number of fixed speed cameras in urban areas.

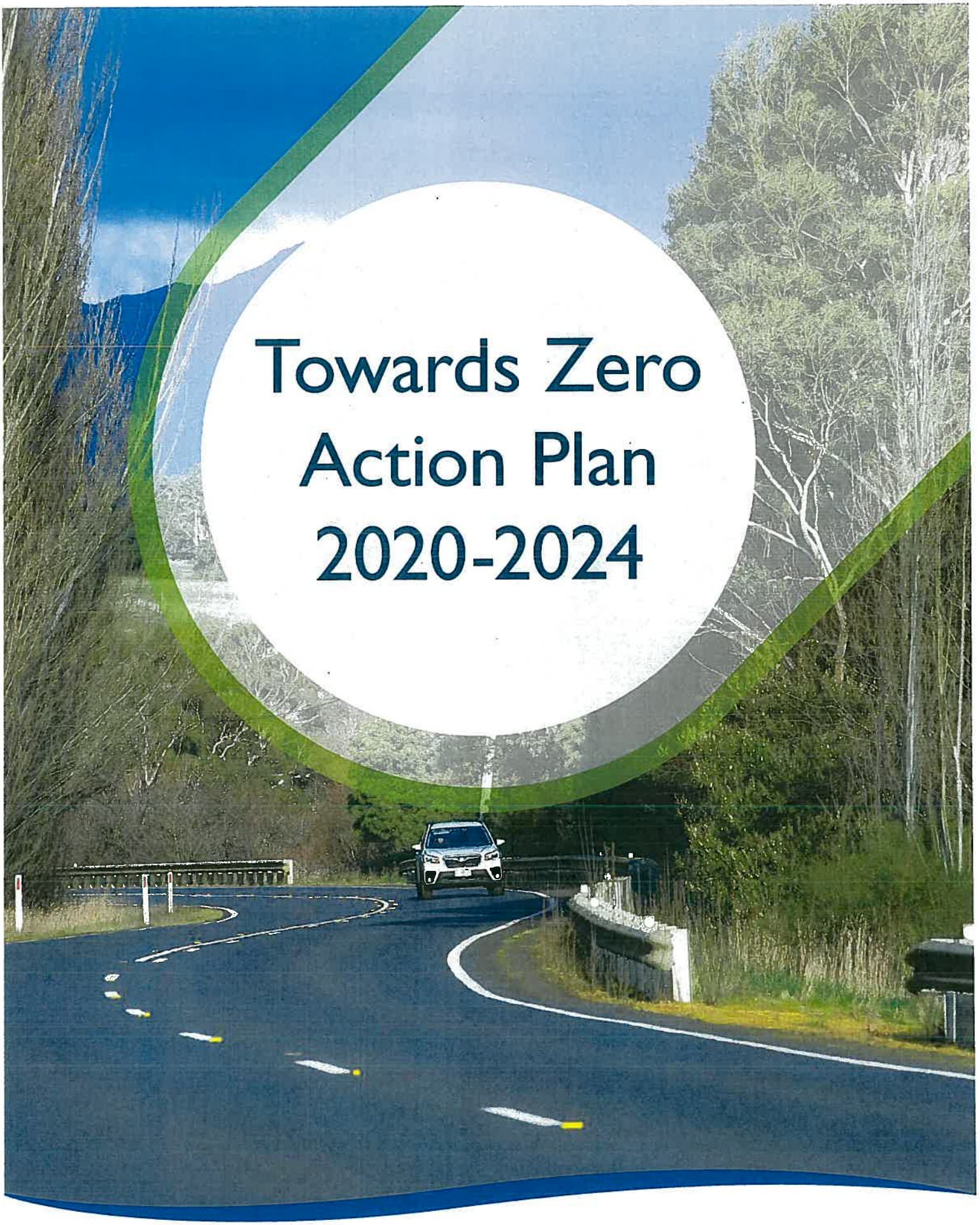
Department of State Growth

Road Safety Branch

Towards Zero Action Plan 2017-2019

GPO Box 536
Hobart TAS 7001 Australia

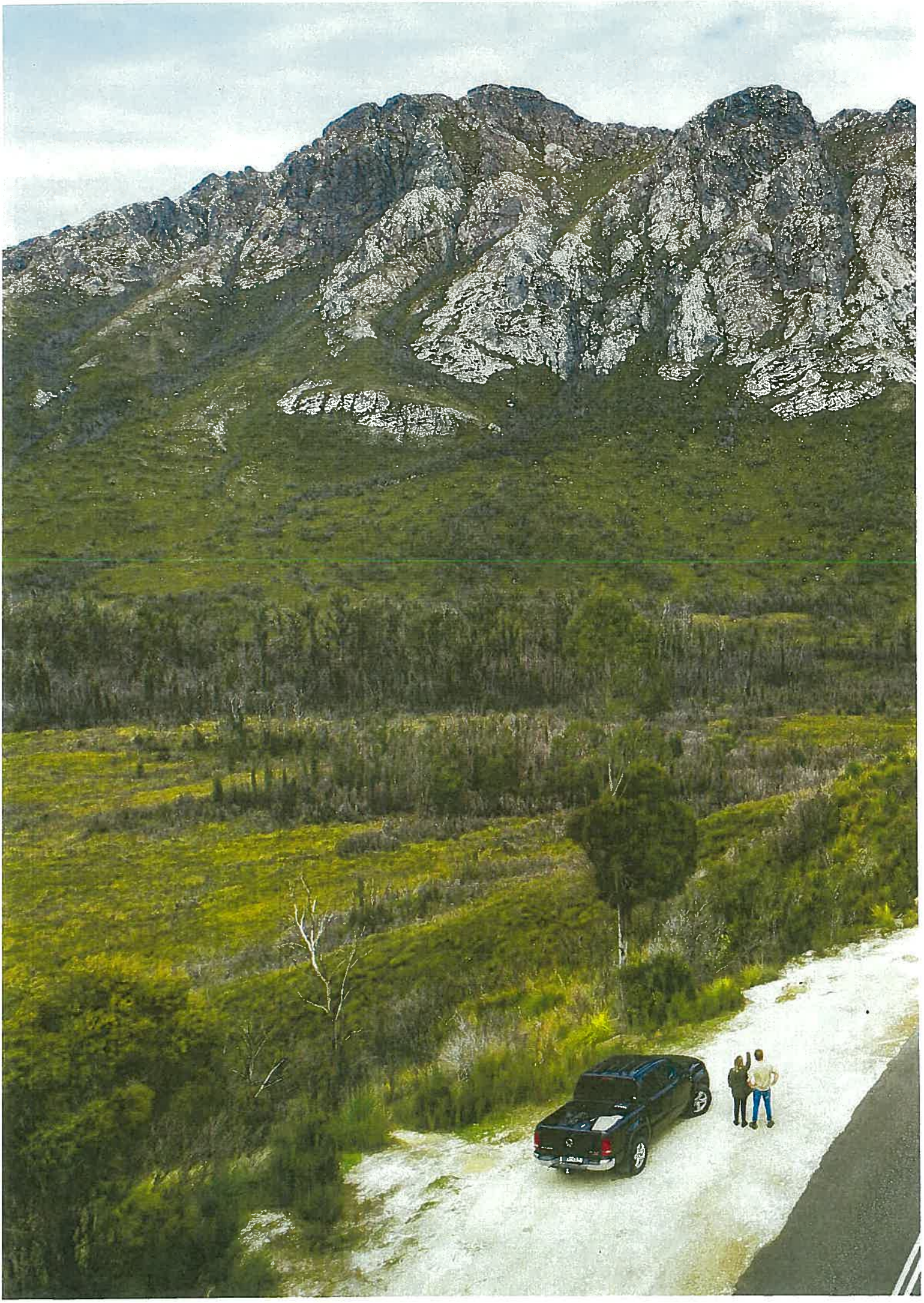
Phone: 03 6166 3239
Email: towardszero@stategrowth.tas.gov.au
Web: www.towardszero.tas.gov.au

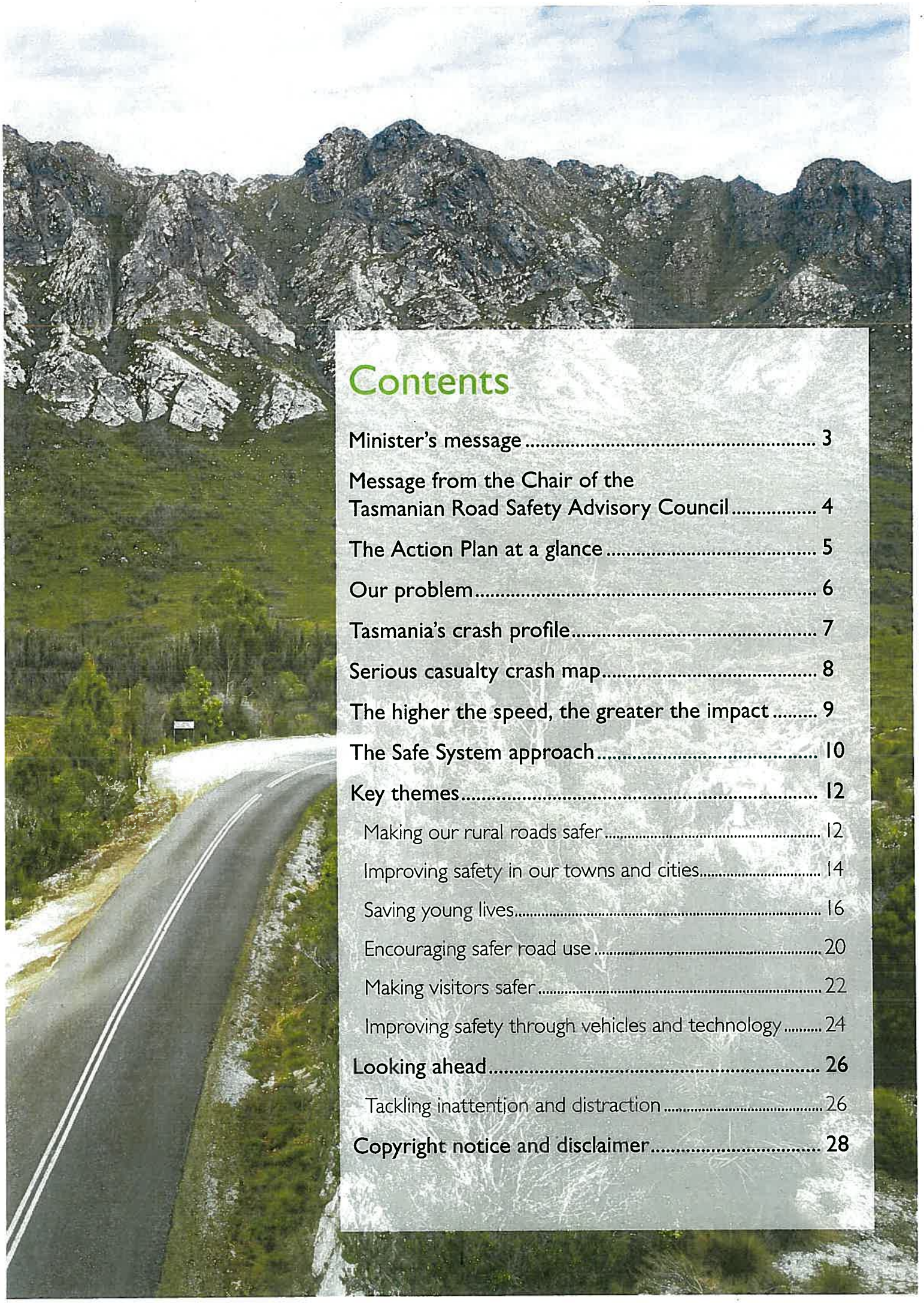


Towards Zero Action Plan 2020-2024

Department of State Growth

Tasmanian Government



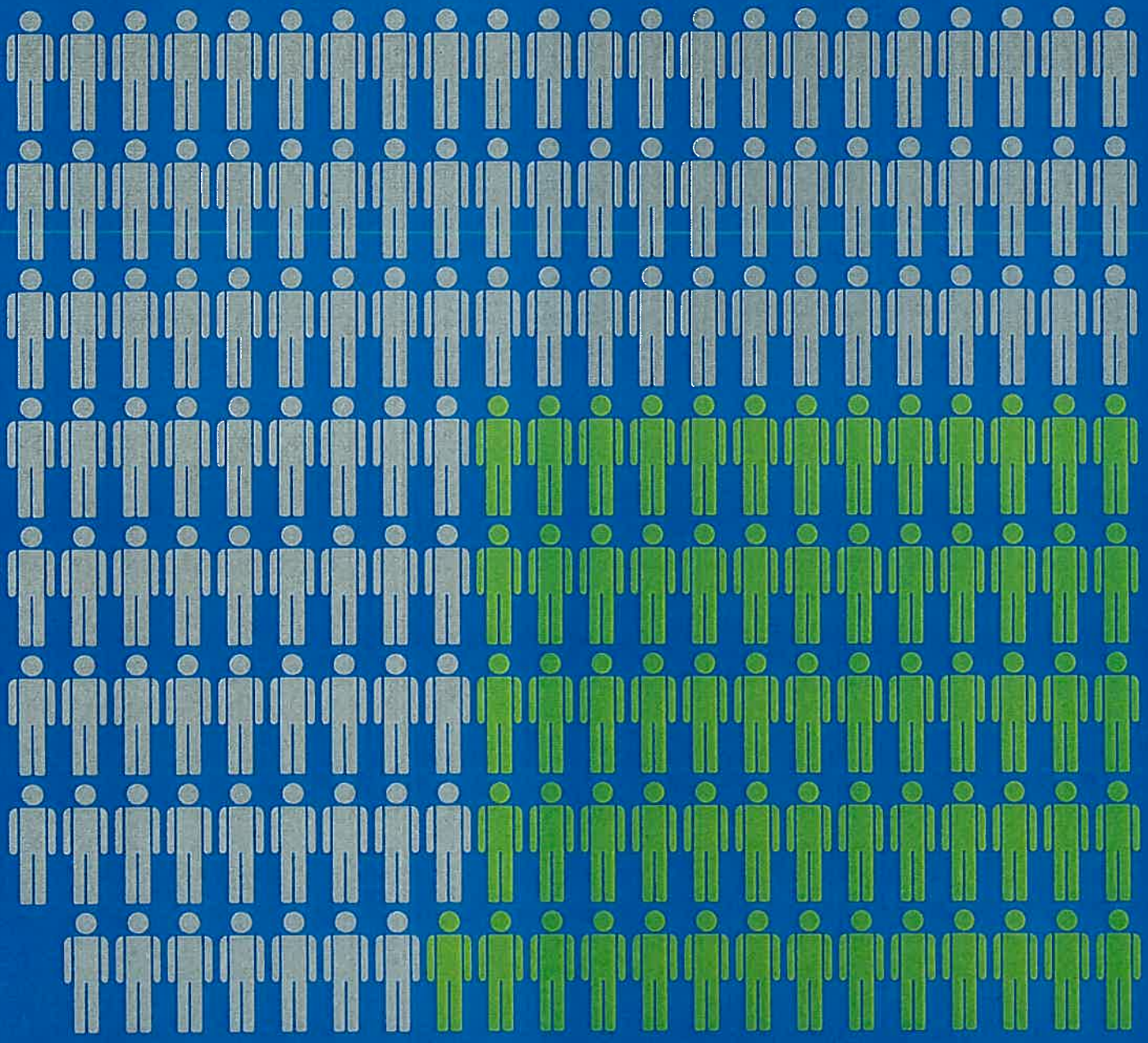


Contents

If nothing changes, we can expect 175 people to be killed on Tasmania's roads over the next five years.*

BUT If Tasmania's road safety performance matches the best in the nation, we can save

66 lives.



* No one can predict the future. But, based on the number of lives lost over the past five years, these are the numbers we are likely to be faced with.

Minister's message

I am pleased to release the *Towards Zero Action Plan 2020-2024* (Action Plan), the State's new road safety plan that outlines the Tasmanian Government's commitment to improving safety on our roads over the next five years.

This Action Plan is the second under the *Towards Zero – Tasmanian Road Safety Strategy 2017-2026.*

Supporting our targeted road safety efforts, the Tasmanian and Australian Governments will invest $1.5 billion on major state road construction projects to improve efficiency and safety for all road users over the life of this Action Plan.

The Action Plan supplements this significant investment in road infrastructure and commits $75 million to support road safety policy and programs, public education, and safety improvements for all road users across all of our roads.

This is funded by the Road Safety Levy and by the Motor Accidents Insurance Board's commitment to public education.

I acknowledge the work of the Road Safety Advisory Council in developing the new Action Plan.

The Council provides the Government with advice about best practice initiatives proven to save lives and recommends how the Road Safety Levy should be used to reduce serious casualties on our roads.

We have made steady progress in reducing road trauma in Tasmania, from record highs of more than 1 400 serious casualties annually in the 1970s to the current rate of around 310 serious casualties per year.

As Minister, I don't accept any level of road trauma in our state and ask all Tasmanians to recommit ourselves to doing even better.

Under the 10 year Strategy, we outlined our long-term vision of zero serious injuries and deaths on our roads.

This is what we aspire to. Our shorter-term target is for fewer than 200 serious casualties on our roads by 2026.

Our 2026 target is ambitious and will not be easy to accomplish. Achieving this goal will require all of us to be responsible, intelligent and considerate road users.

We will also need to heed the messages of road safety education campaigns and, where necessary, modify our behaviour.

Over the first twelve months of this Action Plan, we will be making every effort to improve road safety for our young road users. We will be taking action to improve driver licensing, supporting young people to gain a licence, and investing in road safety education campaigns and programs.

Gaining a licence is an important step in a young person's life. It offers new freedoms, independence and can expand the opportunity for gaining employment. The improvements we are making strive to create a safer system for young drivers without creating unnecessary barriers.

Our other key priorities include:

- Making our rural roads safer – by targeting our rural roads through infrastructure safety improvements, capacity building, speed moderation and enforcement.
- Improving safety in our towns and cities – focusing on vulnerable road user safety, trialling new technologies, and community road safety.
- Encouraging safer road use – through public education to encourage safer driving, and enforcement and penalties to deter illegal and unsafe behaviours.
- Improving safety through vehicles and technology – supporting vehicle safety testing and encouraging all Tasmanians to drive the safest vehicle they can afford.

We will also continue to focus on the road safety of visitors to Tasmania.

It's not possible to design our transport systems to prevent every crash, so we must work together as a community to improve driver abilities and ensure safest possible habits to get all road users safely to their destination.

If we all do that, we will achieve our target of saving lives.

Hon Michael Ferguson MP
Minister for Infrastructure and Transport

Message from the Chair of the Tasmanian Road Safety Advisory Council

Around 170 Tasmanians could die on our roads over the next five years and more than 1 500 could be seriously injured.

That's the unfortunate reality. That's what the averages tell us from the past five years. After decades of falling rates of road trauma, this avoidable national tragedy is threatening to get worse, not better.

We have the tools to save more lives every year. What we need is the wider community to fully understand the problem, to understand the overwhelming weight of evidence behind the solutions to this crisis, and to support necessary and bold actions to stop the pain and suffering associated with road trauma.

Tasmania is striving to lift its performance in areas such as health outcomes, educational attainment and economic performance. We want to be the nation's leader – we want to match or better the best performing Australian states.

The same should apply to road safety. Today, in terms of road fatalities per 100 000 population, we are lagging behind our national counterparts.

Our results are significantly above the national average and more than 60 per cent higher than Victoria, our closest neighbour and, on average, the best performing state.

We must aspire to be the best, but it will take every Tasmanian, including the 400 000 licensed drivers, to embrace the cause.

Road safety has come a long way but, year after year, we continue to face the same issues. Young drivers and males are still significantly over-represented in road trauma, as are motorcyclists.

Most of our road trauma continues to occur in higher speed zones and lane departure crashes (head-on and run-off-road crashes) are still the prevalent crash type.

High risk behaviours such as drink driving and speeding continue to put people at risk.

But we are also facing new challenges such as mobile phone distraction and drug driving.

Too many Tasmanians think that because we have made significant inroads into the "road toll" in the past 40 years that we should be happy with our progress.

Would the families and friends of the 33 Tasmanians who died in 2018 feel that way? Would the families and friends of the 288 seriously injured on our roads last year feel that way? These people's lives have changed forever, in many cases catastrophically.

Death and injury is not the price anyone should pay for getting from A to B more quickly or more efficiently. That's why we're working towards zero road trauma.

It's time our community confronted the tragic facts. It's time for broad community support that's committed to ending trauma on our roads and it's my job to work closely with the community to realise our vision.

The Road Safety Advisory Council is proud to have contributed to the Tasmanian Government's *Towards Zero Action Plan 2020-2024*.

We see it as an opportunity to build on what we have done successfully and as a blueprint for change, not just to meet the challenge of saving lives but to excel at doing so.

We believe this Action Plan is a fundamental building block in getting to a point where Tasmania can lead the nation.

Garry Bailey

Chair of the Tasmanian Road Safety Advisory Council

The Action Plan at a glance

Over the next five years, the Tasmanian Government will invest more than $75 million in road safety improvements in six key areas.[1]

Over $20 million

Making our rural roads safer

60 per cent of fatalities occur in rural areas.

- Engage with the community, decision-makers and industry practitioners to increase road safety knowledge and build support for speed moderation.
- Reduce the risk of run-off road and head-on crashes on high speed rural roads with cost effective, mass action infrastructure treatments.
- Conduct motorcycle road safety audits and consult with the motorcycling community to identify innovative safety solutions on popular touring routes.

Over $31 million

Improving safety in our towns and cities

Pedestrians and cyclists represent one in four serious casualties in our major towns and cities.

- Deliver targeted infrastructure upgrades at high traffic areas to reduce serious crashes in urban areas and to improve safety for vulnerable road user groups.
- Support community involvement in road safety through the Community Road Safety Grants Program.
- Investigate emerging technologies and demonstrate innovative low-cost infrastructure treatments in urban areas.

Over $12 million

Saving young lives

92 young people are seriously injured or killed on our roads every year.

- Implement changes to the Graduated Licensing System for drivers and investigate improvements to motorcyclist training and licensing.
- Keep young children safe with child-restraint checks, school crossing patrol officers, road safety education programs in primary schools, and media campaigns.
- Support education and training initiatives to teach young people the right skills and attitudes, and assist disadvantaged young people to enter the licensing system.

Over $4 million

Encouraging safer road use

We all have a responsibility to use the roads in ways that are safe for those around us.

- Investigate and implement enforcement strategies to reduce speeding, inattention, distraction and other high-risk driving behaviours.
- Ensure participation in the Mandatory Alcohol Interlock Program to prevent repeat offenders from driving while intoxicated.
- Improve motorcyclist safety by promoting protective clothing and increasing motorcycle-focused enforcement measures.

$2 million

Making visitors safer

11 per cent of all serious casualties on our roads are non-Tasmanian residents.

- Inform visitors of important road safety messages using strategically placed signs and trial the use of electronic signage to communicate in real-time.
- Utilise Tasmania's limited entry points to distribute key road safety materials in multiple languages to visitors upon arrival.
- Secure and maintain strategic partnerships with relevant tourist industries, businesses and other stakeholders to better reach visitors.

Over $3 million

Improving safety through vehicles and technology

The rate of fatal crashes is four times higher for vehicles 15+ years old than for vehicles made in the last five years.

- Develop a Light Vehicle Safety Strategy to ensure all vehicles on our roads meet required safety standards.
- Investigate actions to improve safety for vehicles used as a workplace and ensure that the government vehicle fleet meets the highest safety standards.
- Continue to support vehicle safety testing, monitor new technological developments, and support all Tasmanians to purchase the safest vehicle they can afford.

1. This figure includes funding for the delivery and administration of projects and to provide secretariat support to the Road Safety Advisory Council.

Our problem

Around 300 people are seriously injured or killed on Tasmanian roads every year.

From the horrific days at the start of the 1970s, when the annual total was almost 1 500, we have steadily reduced serious injuries and deaths. But the lack of reductions in the last 10 years sounds warning bells.

While casualties per head of population and per registered vehicle continue to fall as more and more people use the roads, the total number of casualties has plateaued.

The current numbers of Tasmanians killed or seriously injured in their daily travel is totally unacceptable.

The Towards Zero Strategy establishes a road trauma target of fewer than 200 serious casualties by 2026.[2] This target was informed by historical road trauma, crash data modelling, and the application of recommended road safety measures.

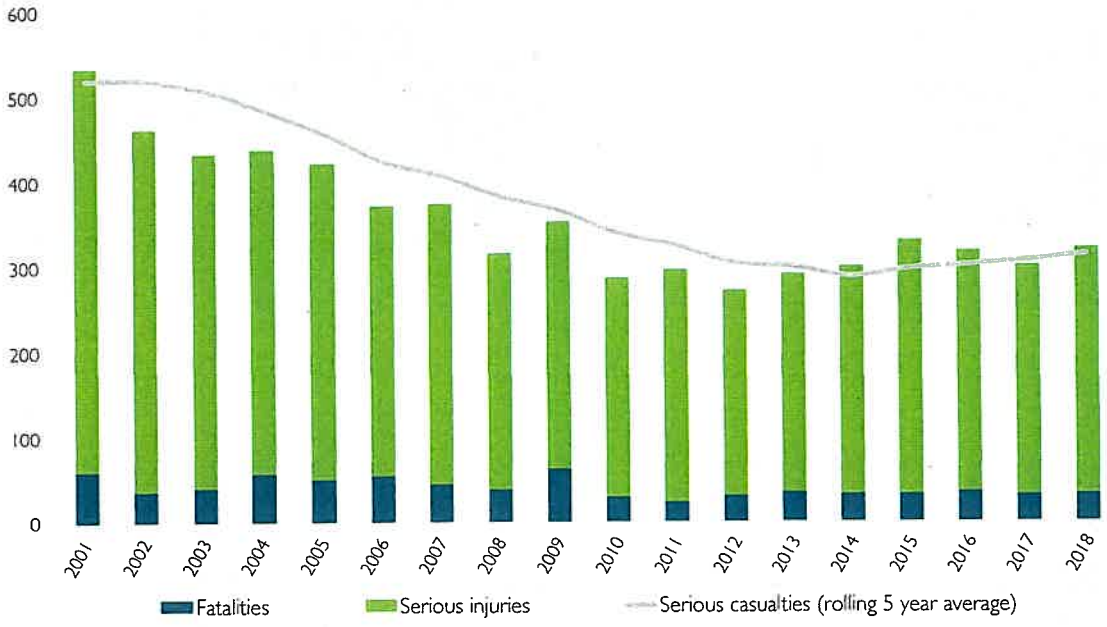
The road safety measures outlined in this Action Plan are underpinned by the 13 key directions identified in the Towards Zero Strategy.

They are based on community consultation undertaken in the development of the Towards Zero Strategy, road safety expert advice, and review of the current Strategy and Action Plan 2017–2019 by the Road Safety Advisory Council.

Our target remains unchanged to reduce serious injuries and fatalities to fewer than 200 by 2026.

Annual number of serious casualties (five year averages) in Tasmania since 1999 and our future targets.

Tasmanian serious casualties 2001– 2018 and Towards Zero target

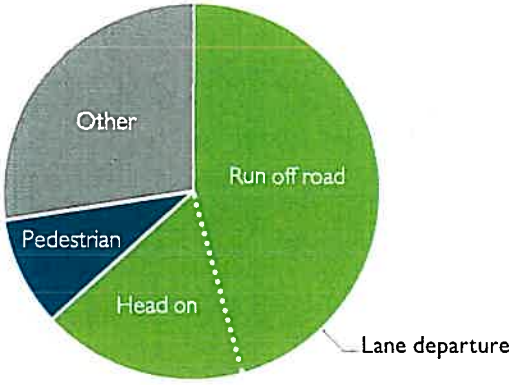


2. A 'serious casualty' collectively describes fatalities and serious injuries as the result of a crash. A fatality is where a person dies up to 30 days after the crash. A serious injury involves a person being admitted to hospital for 24 hours or more after the crash.

Tasmania's crash profile

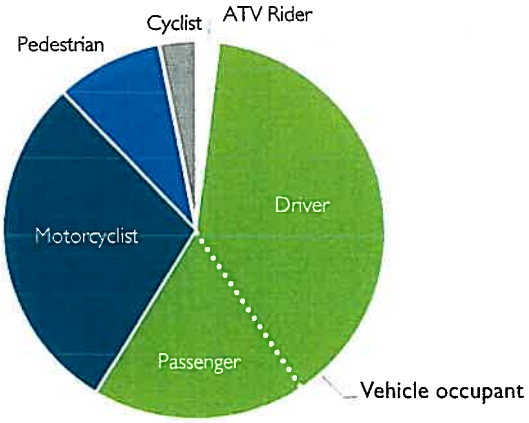
Between 2014 and 2018, an average of 281 people were seriously injured and 34 people killed on our roads. This equates to an annual fatality rate of 6.6 per 100 000 population, which is significantly higher than the national average of 5.0 during the same period. The best performing countries in road safety are achieving rates as low as 2.5, which demonstrates the potential improvements that we aspire to.

Crash type

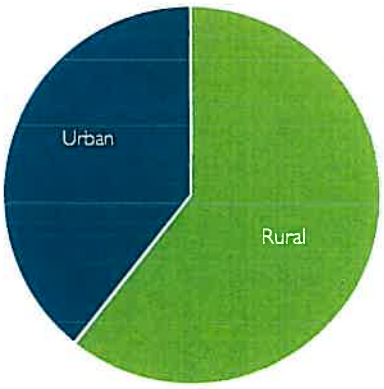


Speed zone

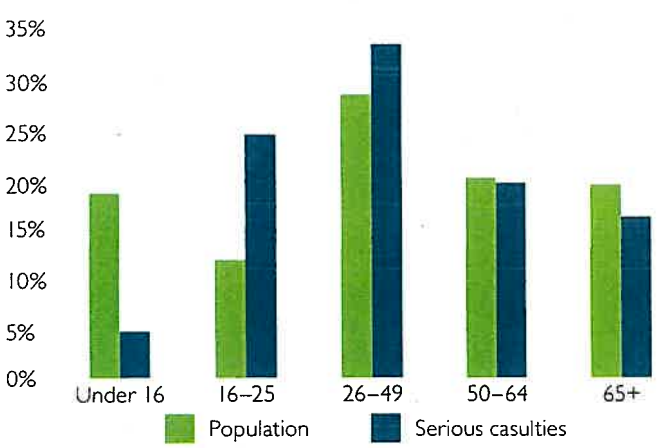
Road user type



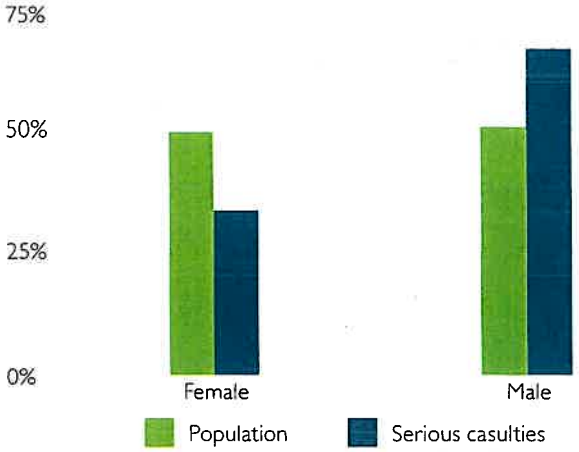
Urbanisation



Age



Gender

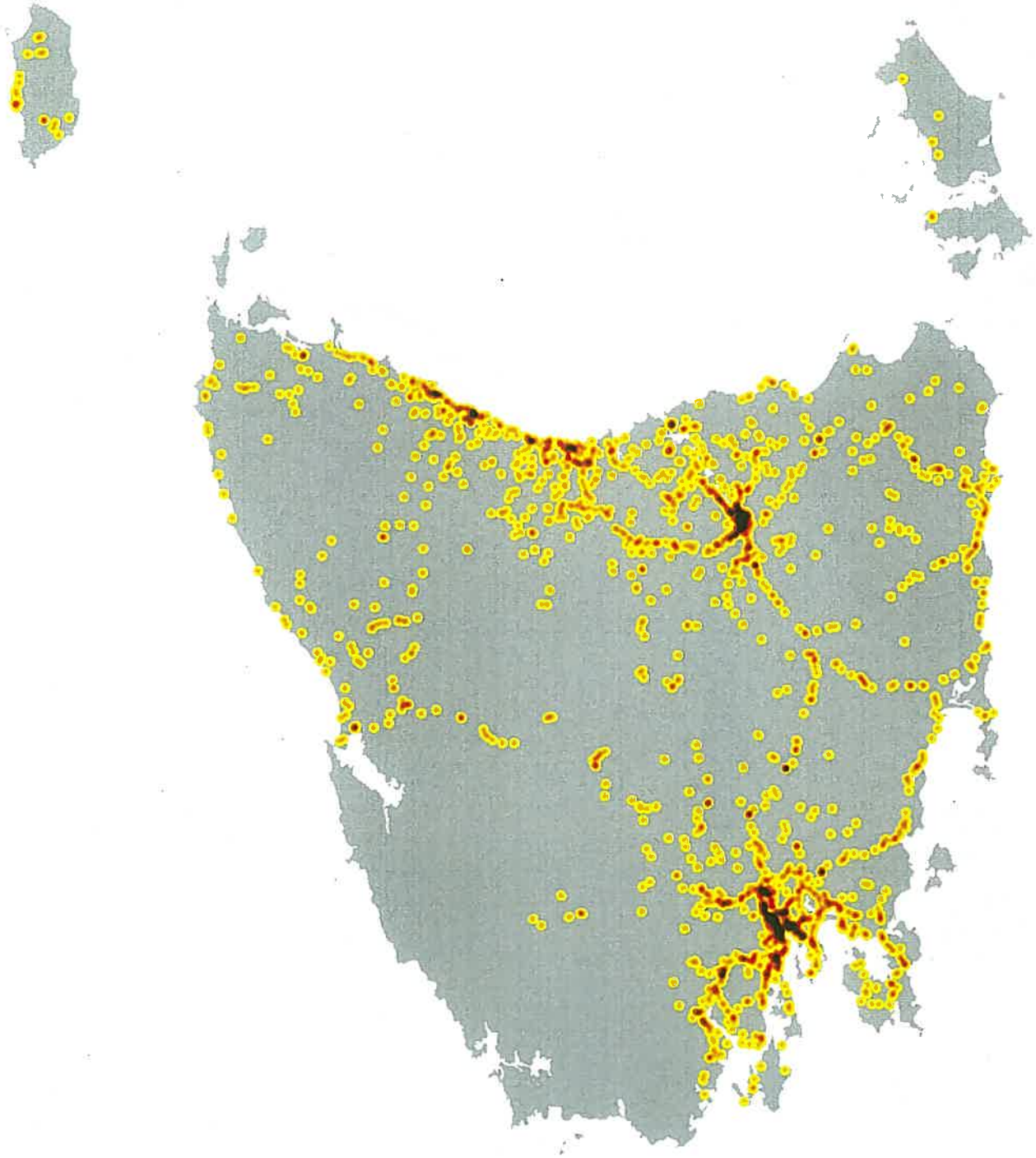


Serious casualty crash map

As can be seen from the heat map below, serious casualties crashes are a state-wide issue. No longer can we target individual blackspots.

We must now be proactive and deliver mass action road safety treatments to improve our road network.

Mass action countermeasures include lane separation, improved delineation, audible edge lines, shoulder sealing, removal of roadside hazards, improved skid resistance, and improved junctions.



The higher the speed, the greater the impact

Speeding includes travelling above the speed limit as well as driving too fast for the conditions, and these are major contributors to both the number and severity of crashes in Tasmania.

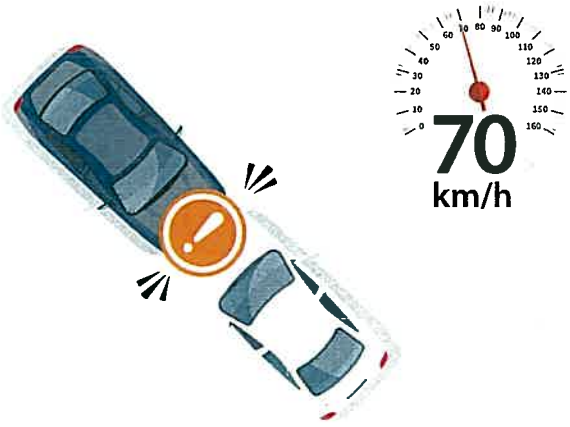
As a vehicle's speed increases, so does the time it takes for the vehicle to come to a stop.

A small increase in speed can make a big difference in the likelihood of crashing and the seriousness of a crash.

Although vehicles are increasingly becoming safer, with better occupant protection, our bodies can only tolerate so much. It's simple physics.

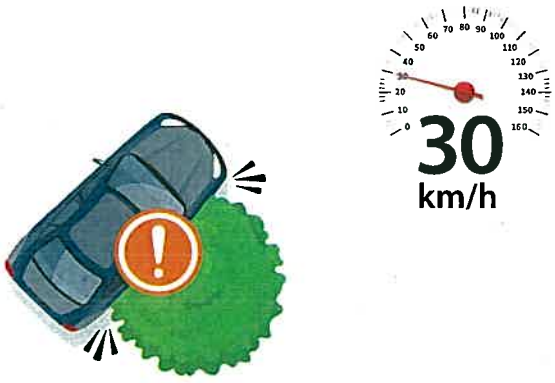
We will develop and implement a speed moderation strategy that combines public education campaigns, a review of speed related penalties, a new speed enforcement strategy, enhancing the automated speed enforcement program and establishment of speed limits that are more appropriate to the safety features of individual roads.

Human tolerance in crash situations

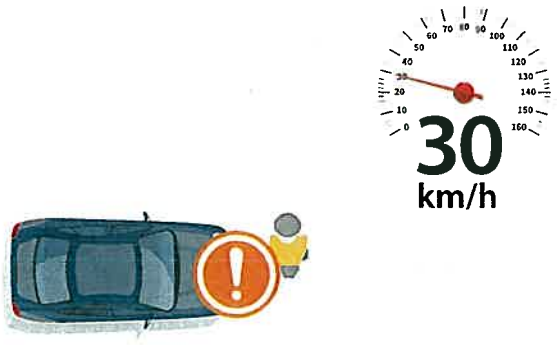


Head-on 70km/h

Side impact 50km/h



Side impact with tree 30km/h



Impact with pedestrian 30km/h

The Safe System approach

We believe that no Tasmanian should be seriously injured or killed as a result of their daily travel on our roads.

Our vision is of a future with zero deaths and serious injuries. To get there we know we have to think and act differently.

We have adopted the European model of creating a Safe System by focusing squarely on safer infrastructure and traffic management, as well as continuing to seek safer vehicles and extensive behavioural change.

A lot of our gains to date have come from protecting people when a crash occurs - seat belts, air bags, a raft of changes improving vehicle crashworthiness, motorcycle and bicycle helmets, reduced speed limits around schools and shopping strips, and so on. More recently, wire rope barrier has been introduced to minimise crash severity when a vehicle, for whatever reason, leaves the roadway.

These are applications of the first Safe System principle - as we are vulnerable beings, we can reduce casualties by reducing crash forces on the human body. Making our infrastructure safer is costly, but in the interim we can reduce crash forces by ensuring travel speeds do not exceed the level of safety inherent in our various roads.

For a very long time we have also focused our efforts on reducing the prevalence of high-risk behaviours by road users: risks such as speeding, drink and drug driving, driving fatigued, and so on. We have made gains in this area. For example, high intensity Random Breath Testing has substantially reduced the role of alcohol in serious crashes.

While we must continue our efforts to limit high risk and irresponsible behaviours, we must also look for other ways to supplement these efforts.

Extensive research has clearly demonstrated that much of the behaviour contributing to crashes is not irresponsible or negligent but the result of imperfect humans making everyday mistakes.

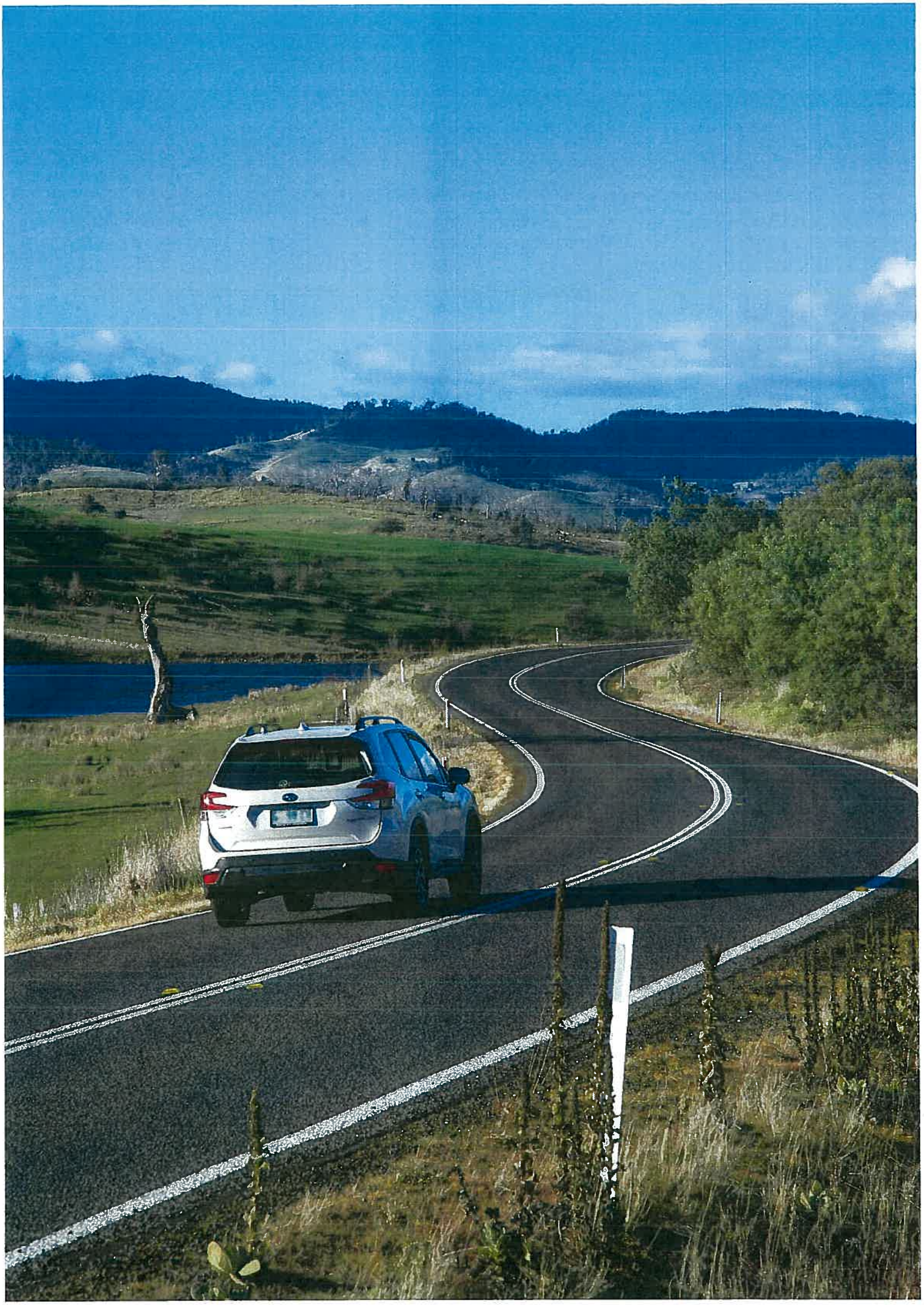
This is the second Safe System principle - we can change the design and operation of our system to reduce the likelihood of mistakes leading to serious crashes. Sealing gravel shoulders, improving sight distances, re-designing critical intersections, and tactile line markings are just some of the tools we have.

Our strategy has a target of reducing serious injuries and deaths to less than 200 by 2026. This is a big challenge and requires all of us to play our part.

Applying the principles of the Safe System means our approach to infrastructure has to continue to change, and we must redouble our efforts to achieve a moderation of travel speeds to match the level of safety built-in at present.

We must achieve all of this while engaging the community to play its part through responsible behaviour and consideration of all fellow road users.

This Action Plan outlines our journey and deserves everyone's full support.



MAKING OUR RURAL ROADS SAFER

60 per cent of fatalities in Tasmania occur in rural areas. We are investing over $20 million to improve the safety of our rural roads.

Tasmania's population is spread across the state and much of our travel necessarily occurs on high speed rural roads.

These roads connect us with our family and friends, provide access to sporting, social and economic activities.

Our rural roads are twisty and hilly. The frequent advisory sign warning us to slow down for an oncoming corner highlights the challenges of driving in Tasmania.

Misjudging a corner, or veering onto a gravel road shoulder can easily result in loss of control and collision with a roadside hazard or an oncoming vehicle.

The twists and turns also attract recreational motorcyclists, and sadly riders represent one in three of those seriously injured or killed on these roads.

Infrastructure treatments can help reduce the likelihood of these crashes and reduce crash harm. Much has been done to treat 'blackspots' and credit must go to the Australian Government for funding this program, and to state and local government traffic engineers for their work in reducing road trauma.

To be most effective, complete road corridors need to be improved to provide a consistent and predictable road environment. However, infrastructure works are expensive and our rural roads don't often attract priority funding due to their low traffic volumes.

We are establishing a new grants program to work collaboratively with councils on local roads. Funding will help councils assess and install low cost safety infrastructure solutions.

Nine out of 10 of those killed on rural roads are Tasmanian residents.

Simple delineation treatments, such as line marking, reflective pavement markers, guideposts, speed and curve warning advisory signage, all help to alert drivers about the road conditions ahead, day and night.

Removal of roadside hazards and the installation of safety barriers can also reduce the severity of run-off road crashes.

We will continue to engage our motorcycling community to address safety on popular touring routes.

Our plan is to conduct Safe System road safety audits and work with the motorcycling community and other stakeholders to identify innovative treatment options.

Ultimately, we must also tackle the issue of safe speeds on our roads. Travel speeds need to be aligned with the inherent safety features of the road, what we know about safe travel speeds, and traffic mix.

Enforcement and public education will play a key role in moderating travel speeds and help us arrive home safely.

"Tasmania's rural road network is vast and links our communities. They also lead to some of the most popular destinations for visitors to the State. Many rural roads don't have the safety features of higher volume roads. All too often we see both locals and visitors to the State run off the road and crash. These crashes have a significant impact on local towns and improved roads with more safety treatments will go a long way to reducing road trauma."

Mick Tucker
Mayor, Break O'Day Council

What we will do

Establish a rural roads grants program for local government

This program will fund councils to implement mass action infrastructure treatments on their high speed rural roads.

The aim of this program is to significantly reduce lane departure crashes and lessen their harm when they do occur.

Conduct infrastructure upgrades on low volume State roads

We will continue to invest in State roads that have lower traffic volumes, where cost effective treatments such as shoulder sealing, pavement markings, curve warnings, road side hazard removal and safety barriers will achieve maximum value for money.

Improve motorcyclist safety on rural roads

To improve safety for all motorcyclists, we will conduct road safety audits on high risk touring routes across Tasmania. A Safe System approach will inform these audits, where local motorcyclists are integral to the process of assessing the design and risks of a road. Audit findings will be shared with stakeholders to identify countermeasures that often go beyond typical infrastructure solutions.

Develop a speed moderation and community engagement strategy

We will engage with the community to inform and build support for action on safer speeds. As part of this process, we will consider how enforcement can more effectively increase compliance with speed limits.

Expand Safe System knowledge and skills

We will continue to facilitate training sessions, workshops and forums across Tasmania to improve the Safe System knowledge of all those in a position to influence road safety outcomes. This will increase the capacity of our state to build safety-improving road infrastructure that benefits everyone.

IMPROVING SAFETY IN OUR TOWNS AND CITIES

Tasmania's population is growing and our towns and cities are busier than ever. We are investing over $31 million in projects and programs to improve road safety in our towns and cities.

Almost one quarter of all serious injuries and deaths happen on city and local streets with a speed limit of 50km/h or less.

Over the last 20 years, the number of people seriously injured and killed on local and city streets has steadily declined. This achievement is the result of lowering the default urban speed limit to 50km/h in 2002, safer vehicles, and the progressive installation of safer road infrastructure.

In a crash, the human body can only tolerate a certain level of physical force before serious injury or death is inevitable. This is especially true for pedestrians and cyclists who have little or no protection in the event of a crash with a motor vehicle. That's why setting safe speed limits, as well as ensuring drivers comply with these, is critical.

Cost-effective, small scale infrastructure treatments such as wombat crossings, pedestrian refuges, safety barrier, and kerb outstands can also significantly improve vulnerable road user safety. Such treatments slow traffic, make pedestrians and cyclists more visible, and allow for staged crossing of roads.

We will continue to support local government with funding to provide infrastructure improvements to keep people safe around our schools, shopping centres, sporting facilities, and recreational areas, as well as on our local streets.

Councils are to be congratulated for their work in keeping road users safe in our towns and cities.

Pedestrians and cyclists are at high risk of serious injury or death if hit at speeds above 30km/h. In our major towns and cities, pedestrians and cyclists represent one in four serious casualties.

On busy State highways and arterial routes, we also know that shoulder sealing, safety barriers, line marking and signage can reduce the likelihood of lane departure crashes occurring and reduce their severity when they do.

This type of crash represents 40 per cent of serious casualty crashes in urban areas. Safer infrastructure can also help to reduce the 10 per cent of serious casualty crashes that occur at intersections.

We also need to encourage our community to take a strong lead in achieving our vision of zero road trauma on Tasmania's roads. We will continue to support councils and community groups to deliver road safety education and programs at the local level.

"In small regional towns we encounter many different conditions and a variety of vehicles that travel our roads. It's important to protect all road users especially those who are more vulnerable. Our "Look Out for Your Mates" road safety program is a huge part of keeping our community safe."

Deb Mainwaring
Manager Connected Communities, Circular Head Council

What we will do

Deliver targeted safety improvements for state roads

We will deliver a range of infrastructure upgrades to make our towns and cities safer to live, walk and drive in.

This will include shoulder sealing, intersection improvements, safety barriers and pavement markings at high traffic areas.

By targeting high volume roads that are not planned for major investment in the short term, we can achieve the maximum road safety benefit from the available funds.

Expand the Vulnerable Road User Program

Under this infrastructure program we will expand investment in road safety for pedestrians, cyclists and motorcyclists.

This annual grants program offers funding to councils to complete small-scale infrastructure treatments such as pedestrian crossings, dedicated bike lanes, upgraded footpaths, wombat crossings and other traffic calming measures.

These improvements make towns and cities across Tasmania safer and more accessible for all types of road users.

Expand the Community Road Safety Grants Program

We will continue to support community involvement in road safety through the Community Road Safety Grants Program.

This program supports local schools, community groups, councils, research institutions and charity organisations to promote and address road safety issues, making everyone more aware and involved in using our roads safely.

Investigate emerging technologies

New technological solutions can reduce the likelihood of crashes involving pedestrians and cyclists in our urban areas. We will monitor emerging technologies for suitability in the Tasmanian context and conduct trials where possible.

Demonstrate emerging infrastructure treatments

We will investigate opportunities to demonstrate innovative infrastructure treatments that can improve road safety in our urban areas. In cooperation with local councils, we want to show how Tasmania's towns and cities can be transformed for the benefit of all road users, especially pedestrians and cyclists.

KEY THEME

SAVING YOUNG LIVES

On average, 92 young Tasmanians aged 25 or below are seriously injured or killed on our roads every year. This is 92 too many. We are investing over $12 million in programs and projects designed to reduce this harm.

Too many young Tasmanians die or suffer life changing injuries on our roads. They are being seriously injured and killed at a higher rate than any other age group.

This needs to change. To achieve this, we will make necessary reforms and continue to deliver programs that will improve road safety at every stage of young people's lives. Our youngest Tasmanians, those in early childhood and primary school, are extremely vulnerable when using our roads.

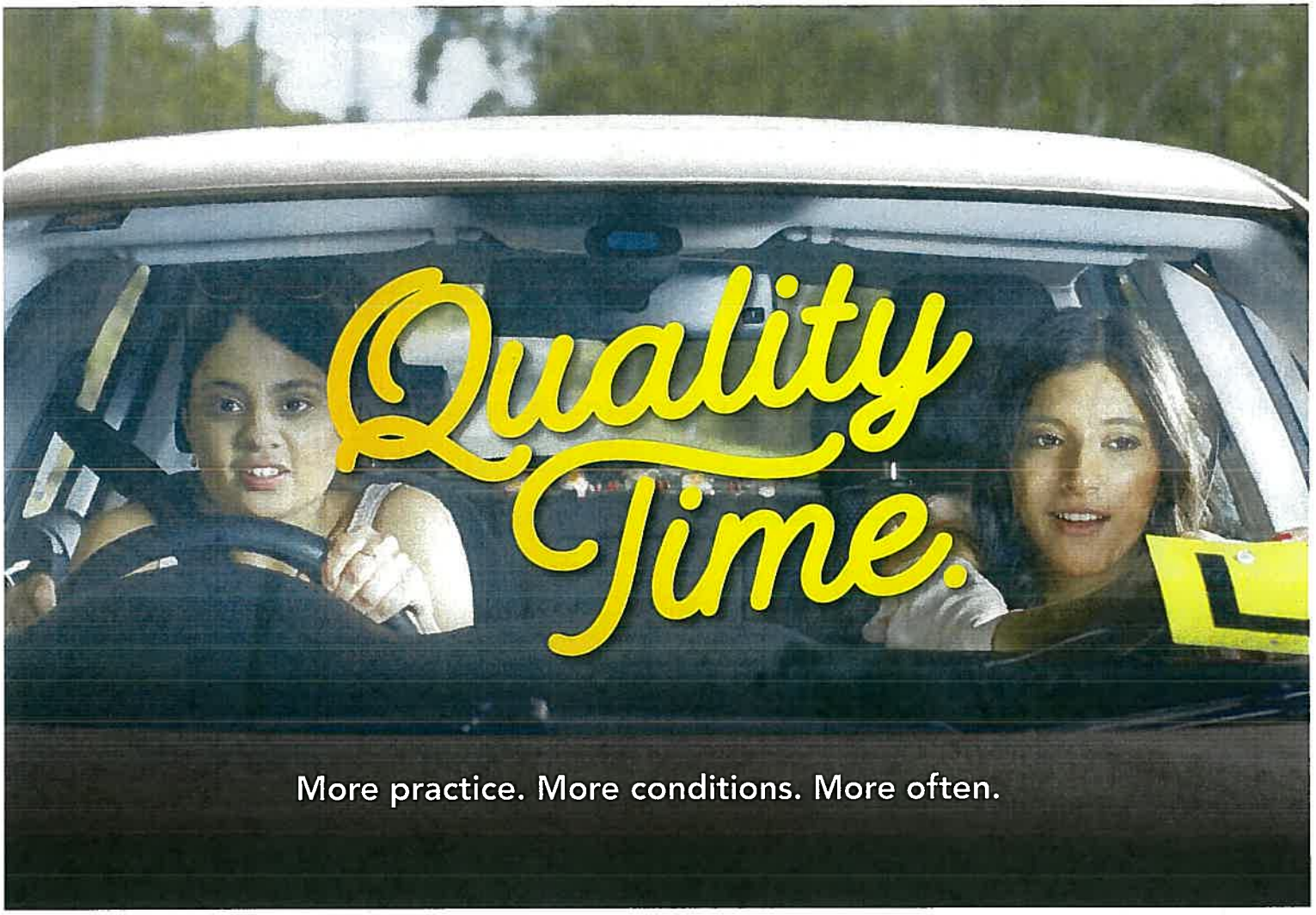
This is especially true when not properly restrained in the car, when walking or riding a bike and when getting on and off the school bus.

We have a number of programs to help keep children safe, including the provision of school crossing patrol officers and campaigns to encourage lower speeds around schools and school buses.

Tragically, road trauma is the second leading cause of death for young Tasmanians aged 17 to 25.

We also provide support to community organisations to deliver bike and road safety education programs in schools and free child restraint checks across the State.

Later, as young people approach the age when they can get a licence, we support them through a range of programs to educate them about safe driving and to assist them to progress through the licensing system.



Education and training initiatives such as the Rotary Youth Driver Awareness Program, the Royal Automobile Club of Tasmania's (RACT) Ready for the Road course and the Full Gear motorcycle safety project will help to develop the skills of young road users and teach them how to use the road with the right attitude and sense of shared responsibility.

Gaining a provisional driver licence is a huge achievement in the life of a young person, offering them greater independence and improved access to social and economic opportunities. Enabling young people to take this important step is one of our major priorities.

Sadly though, it's at this time in their lives, having just graduated from their period of supervised learning, that they are at the greatest risk of being involved in a crash.

There are a number of reasons for this and, consequently, no single solution that will prevent it. That's why we are pursuing a range of evidence-based policy changes. We are also investing in targeted training and assistance programs all around the State.

The implementation of an enhanced Graduated Licensing System (GLS) will support young people to become safer drivers by making sure they get more on-road supervised driving experience in a wider range of conditions and that they demonstrate the right skills before being allowed to drive without supervision.

The enhanced GLS will better protect provisional licence holders from distractions such as mobile phones and peer aged passengers.

A high percentage of Tasmania's young people are already entering the licensing system. To further support young people, we will improve the tools and resources that drivers use to learn the Road Rules and track their progress through the GLS.

Importantly, we will also expand our support to disadvantaged young people through the Driving for Jobs and Learner Driver Mentor Programs.

For novice motorcyclists, recently introduced training requirements will equip young riders with improved skills and an awareness of their vulnerability on the road.

We will continue to monitor the outcomes of these changes while also exploring opportunities to improve the GLS for motorcyclists.

These ongoing initiatives and policy reforms aim to give all Tasmanians the opportunity to gain their licence with the right level of guidance and training to become safer drivers.

What we will do

Expand the Learner Driver Mentor Program

We will continue to support disadvantaged learner drivers under the Learner Driver Mentor Program. This program helps fund community organisations across the state to match volunteer mentors with learner drivers who do not have access to a supervisor, a suitable car and the means to afford professional lessons.

Assisting these young people to meet their required supervised driving hours decreases the risk that they will drive without a licence, helps them connect with their community and improves their job prospects.

Improve the Graduated Licensing System

The Graduated Licensing System (GLS) will be enhanced to reduce crashes among young people and improve the pathway to a provisional driver licence.

A new digital learning platform will make it easier to learn the Road Rules and make getting a licence simpler. Learners will now get more experience in different environments before they graduate to their provisional licence, which is when they are at greatest risk. New safeguards will help protect provisional drivers from dangerous distractions.

Develop an improved GLS for motorcyclists

We will assess the options for a GLS for motorcyclists to ensure they are appropriately experienced and capable before they are granted a full licence. Greater safety is achieved by placing restrictions on learners that are gradually lifted as the rider gains experience and acquires skills under conditions of reduced risk.

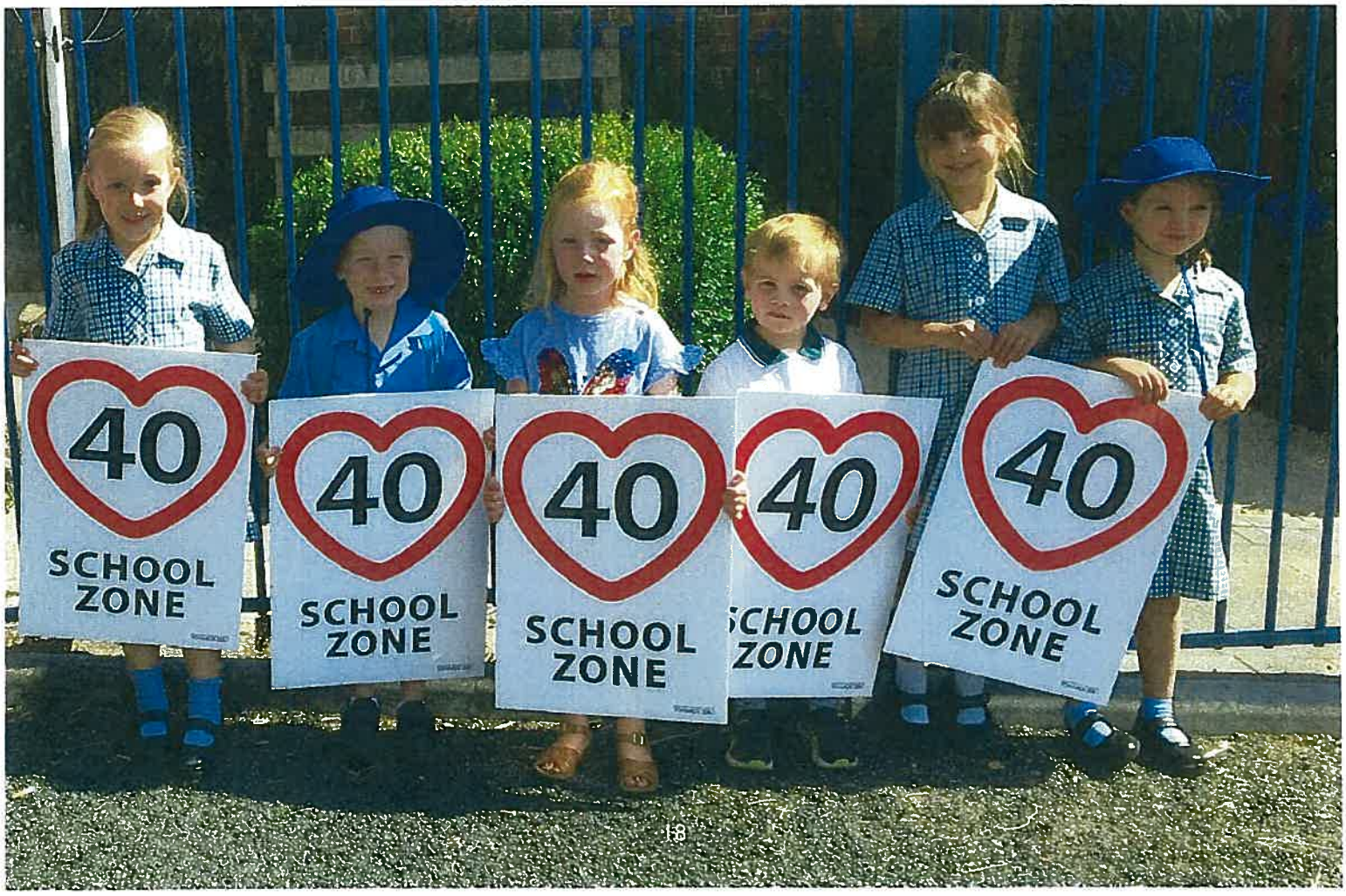
Continue to support the Rotary Youth Driver Awareness Program (RYDA)

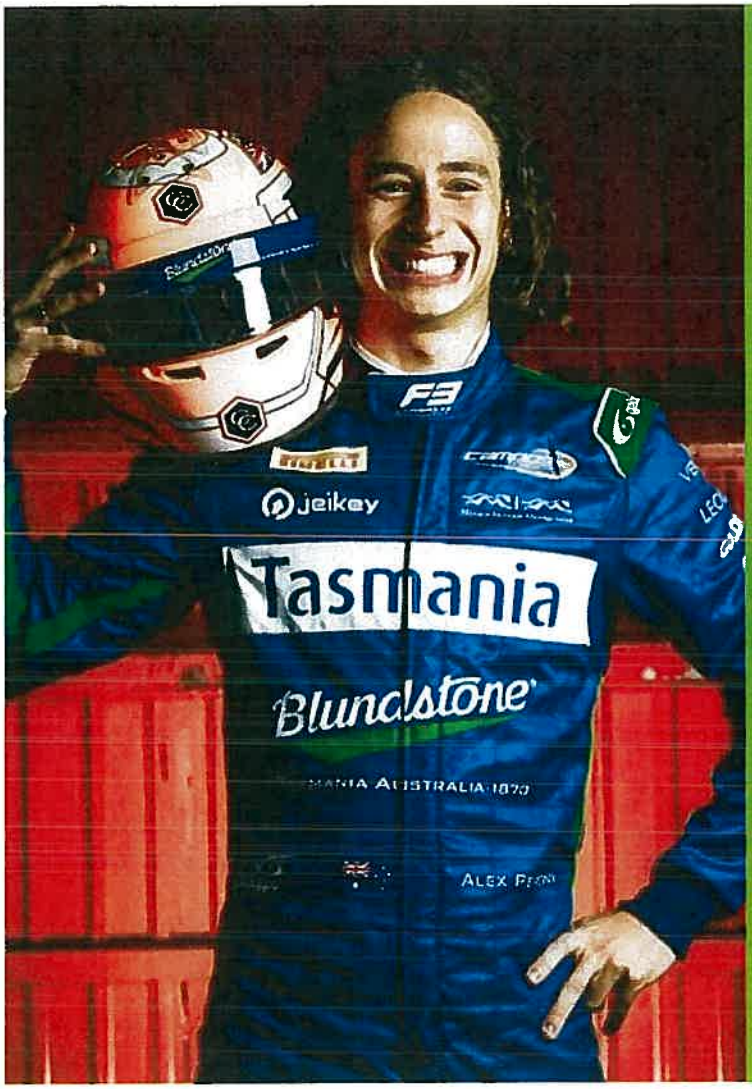
The RYDA program will continue to make students aware of the significant responsibility that comes with being a driver or passenger. Every year, more than 4 000 students in grades 10-12 take part in practical demonstrations and learn valuable road safety lessons from expert presenters and volunteers.

Continue the Driving for Jobs Program

The Driving for Jobs program will support students from highly disadvantaged areas to progress through the GLS and gain a greater awareness of road safety while also improving their job prospects.

Students undertake a personalised, intensive program with a strong road safety focus including professional on-road lessons and participation in RYDA.





"Learning to drive on the road was one of the most challenging things I've ever done. In fact, I found it more difficult than driving on the racetrack. It took lots of practice and a couple of failed tests, but eventually I gained enough experience to get my licence and learned an important lesson – nobody is invincible on the road."

Alex Peroni
FIA Formula 3 Driver

Provide funding for RACT education initiatives

RACT will be supported to deliver a number of road safety education initiatives. This includes a program for years 10 to 12 students that focuses on the dangers of distraction and inattention.

In a controlled environment, students can drive through a course of traffic cones while attempting to send a text message or while wearing "beer goggles".

The program also includes an in-class component that teaches students how to progress through the GLS and about the specific rules that apply to L and P plate drivers.

Continue the Real Mates media campaign

The Motor Accident Insurance Board-funded Real Mates campaign will continue to use humour to engage with young men and encourage them to avoid the risks of drink driving.

This successful campaign aims to empower young men to speak up and stop a mate from driving after drinking.

Support Bicycle Network Tasmania

The Bicycle Network will continue to promote bike education, road safety and positive road sharing behaviour to school students across Tasmania.

Keep school children safe on the roads

Over 100 school crossing patrol officers assist children and other pedestrians to safely cross the road at schools all around the State.

The Safety Around Schools project, including the Love 40 campaign, will also encourage drivers to lower their speed and keep a look out for children in school zones and around buses.

Support Kidsafe child restraint checks

Kidsafe Tasmania will continue to conduct free child restraint checking sessions to ensure that young children are safely and lawfully seated and restrained in cars. Kidsafe also distribute and promote educational material informing the public of the correct child restraint type for a child's age and size.

Encourage safe and legal motorcycle riding

We will continue to support Glenorchy City Council, in partnership with Bucaan House, to deliver its successful Full Gear motorcycle safety project.

This program helps young motorcycle riders enter the licensing system and adopt safe riding practices.

KEY THEME

ENCOURAGING SAFER ROAD USE

We all have a responsibility to use the roads in ways that are safe for those around us. We are committing over $4 million to improve the way we behave on our roads.

To encourage everyone to use our roads safely, we will strike the right balance between education and enforcement.

This means supporting people to drive safely, ensuring we all understand the harm that can result from breaking the road rules, and addressing high-risk and illegal behaviour through an effective deterrence regime.

While most crashes are the result of a simple mistake, we all have the opportunity to make safer choices to reduce our risk of crashing and injuring or killing innocent road users.

Purchasing the safest vehicle you can afford, driving to the road and weather conditions, obeying the speed limit, only driving while alert, and giving full attention to the road are all effective ways of improving the safety of yourself and those around you on the road.

Unfortunately, a number of serious casualty crashes are due to high risk and illegal behaviours such as speeding, inattention, mobile phone use, and driving under the influence of drugs or alcohol.

For some drivers, the most effective way of deterring extreme and illegal road use is through high visibility policing and enforcement backed by appropriate sanctions.

The Fatal Five – speeding, driving under the influence of drugs or alcohol, inattention, fatigue and failure to wear seatbelts – will continue to be a focus of road safety enforcement.

We will continue with a strong on road enforcement presence and, where possible, trial and implement new means of detecting illegal driving.

No one is a perfect driver. Every one of us will make mistakes on the road. We will keep improving our transport system so that serious injuries and fatalities are reduced. But to achieve our vision of a zero road toll, we need all road users to play their part, to follow the rules and consider their own safety and the safety of others.

Serious casualties attributed to the Fatal Five

What we will do

Investigate strategies to address inattention and distraction

Inattention and distraction are concerning causes of serious casualty crashes. Strategies to address this growing issue, such as technologies that can detect the use of mobile phones by drivers, will be investigated and implemented.

Promote safe behaviours through campaigns

We will continue to educate and encourage people to use our roads safely through targeted media campaigns. This will include campaigns like Love 40, which reminds drivers of their responsibility to slow down in school zones and around buses to protect children.

Promote protective clothing for motorcyclists

Motorcyclists are significantly over-represented in Tasmania's road trauma figures. One of the reasons for this is that riders are more likely to be injured in a crash due to a lack of physical protection. We will continue to work to reduce the risks to motorcyclists through a range of actions, including supporting the work of MotoCAP to promote the use of protective clothing.

Ensure participation in the Mandatory Alcohol Interlock Program

Drink driving is a significant factor in serious casualty crashes on our roads. We will introduce supporting measures to increase participation in the Mandatory Alcohol Interlock Program. This will mean that more drink driving offenders will be required to demonstrate that they can separate their drinking from their driving, reducing the chance of alcohol related crashes.

Review the penalties for putting others at risk

For enforcement activities to improve safety on our roads, they need to be backed up with the right penalties. Tasmania's road safety focused penalties will be reviewed to ensure they are up–to–date and provide an appropriate deterrence to those who break the rules.

Implement a new speed enforcement strategy

Tasmania Police will enact new speed enforcement techniques to increase the rate of detection and enforcement and increase the perception that offending drivers and motorcyclists will be caught.

Improve enforcement of high–risk behaviours

Following a successful and widely supported trial, Tasmania Police will expand its use of unmarked motorcycles to detect and intercept high-risk traffic offences in busy areas across the State. Helmet mounted cameras assist to capture evidence of illegal mobile phone use, speeding, blocking of intersections, failure to wear seatbelts and failure to comply with red and amber traffic signals. We will continue to investigate innovative new ways of detecting and enforcing these kinds of high-risk and inattention-type offences.

Investigate an enhanced automated speed enforcement program

Speed cameras are relatively underutilised as a deterrence and enforcement mechanism in Tasmania. In other states and territories, enhanced speed camera programs have resulted in significant reductions in serious injuries and fatalities on the road. We will investigate a range of proven and emerging speed camera technologies and assess their potential to reduce speeding and save lives at high–risk locations and across the entire road network.

Improve enforcement of high–risk riding

Speed is a factor in at least one quarter of motorcyclist serious casualties. Unfortunately, our speed cameras are only equipped to capture the number plates of oncoming traffic. This means that our speed cameras offer no deterrence to motorcyclists, whose number plates are mounted only on the back. We will introduce rear-facing speed cameras to address this issue and investigate other techniques for enforcing speed and other high–risk behaviours for motorcyclists.

Continue to promote the Road Rules

The Road Rules are designed to make our roads safe. Compliance with the Rules makes our behaviour on the roads predictable, improving safety for all road users. We will continue to develop user-friendly and tailored information resources so that the Road Rules are easily understood and adhered to by all road users.

"Tasmania Police recently trialled the use of unmarked motorcycles within the Hobart CBD. In just three months, we detected over 1 000 high-risk traffic offences including 246 people using their phone while driving. We will now be using unmarked motorcycles state-wide to reduce serious injuries and fatalities caused by these behaviours."

Inspector John Ward
Tasmania Police

MAKING VISITORS SAFER

168 visitors to Tasmania have been seriously injured or killed on our roads in the past five years. We are investing $2 million in initiatives to support the education and safety of visiting drivers and motorcyclists.

To encourage the growth of our visitor economy, the Tasmanian Government has set a goal of attracting 1.5 million visitors to Tasmania annually by 2020.

New strategies have been introduced to encourage visitors to travel outside of traditional peak seasons, stay longer and travel further into regional areas.

One outcome resulting from this growth is an increasing number of visitors on Tasmanian roads.

Targeted road safety education is essential for visiting drivers and motorcyclists, and those who are new to Tasmania (seasonal workers, international students and new migrants).

These groups tend to have a higher crash risk or low awareness of driving conditions and our road rules.

Tasmania is a destination of choice for those who enjoy exploring at their own pace on self-drive holidays.

A growing number of these visitors are from left-hand drive countries and are unfamiliar with our road rules and roads, particularly gravel and rural roads.

In motorcycling circles, Tasmania is known for having some of the best touring roads in the world. Sadly, visiting motorcyclists represent nearly 50 per cent of non-Tasmanian serious causalities on our roads.

11 per cent of all serious casualties on our roads are non-Tasmanian residents.

The majority of visiting motorcyclists who crash are from interstate and crashes tend to happen on our scenic touring routes.Seasonal workers, migrants, and international students, attracted by the lifestyle, employment and educational opportunities Tasmania offers, are also at risk from being unfamiliar with our road environment.

We will continue to build on the work already delivered through the Tourist Road Safety Strategy to improve safety for visitors to our state.

New initiatives will be developed, taking an evidence-based practical approach, in consultation and collaboration with a wide range of stakeholders.

"As an industry, we take driver safety very seriously. It is important that we do everything we can to ensure our visitors have a safe and enjoyable journey whilst in Tasmania. Together, we can do this by providing up-to-date and consistent messaging around the Road Rules and how to be safe whilst driving in Tasmania."

Brigitte Schroeder
State Operations Manager, Europcar

What we will do

Complete installation of the tourist road safety signage network

We will install tourist road safety signage across the road network. These strategically placed signs provide road users with important road safety information relevant to the area they are travelling in.

Messaging and placement of the signs will be determined in collaboration with stakeholders, local government and State Roads.

Trial responsive electronic signage

We will trial responsive electronic signage at a regional tourism gateway. This technology provides the opportunity to present a variety of real time road safety messages to travellers.

It also allows them to alter their route due to weather conditions, fires or other situations if necessary.

Develop effective and engaging education materials

We will develop education materials using imagery, symbols and multi-lingual material (written and audio translations) to promote important road safety messages through targeted communication channels.

Education materials include hangers in vehicles, keep left stickers, road safety maps, posters, brochures, a webpage, film clips, roadside signs, editorial content, digital material, print and online advertising along with billboards and LED screens.

Secure strategic partnerships

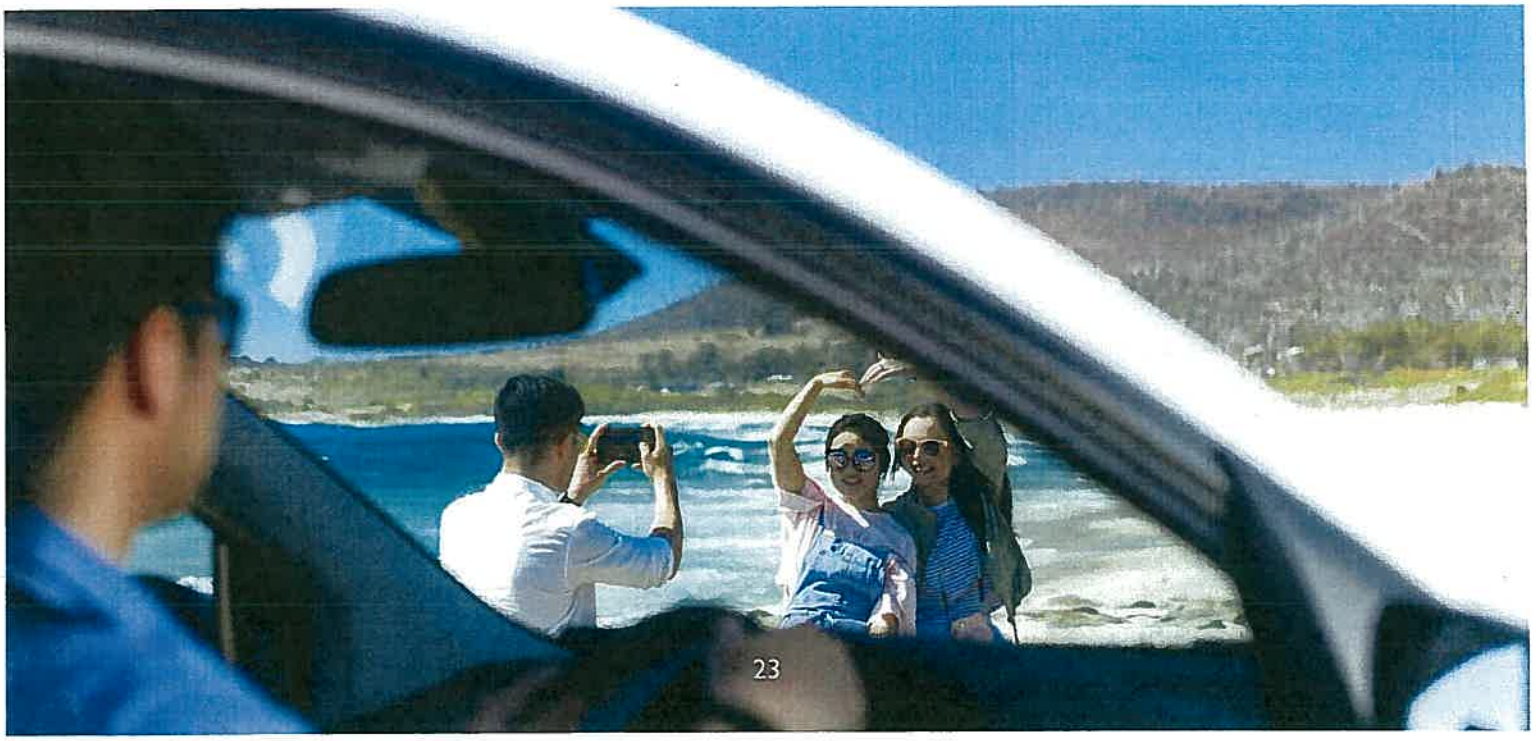
Securing strategic partnerships is crucial in ensuring that we can provide reach of message, create original promotional opportunities and strengthen our distribution network. Organisations and groups such as the Tasmanian hire and drive industry, the Tasmanian Visitor Information Network, the Spirit of Tasmania and airports play a crucial role in enabling us to effectively reach visiting drivers and motorcyclists. We will also actively seek out non-traditional partnerships, based on synergies with our target audiences to create appealing and creative ways to promote road safety messages.

Attract visitors' attention by focusing activity on gateway entry points

The benefit of being an island state is that visitors must enter through our airports and sea ports. This provides the perfect opportunity to reach them with important road safety messages on arrival to the State. Commercial distribution channels, hire and drive companies, the Spirit of Tasmania, visitor networks, airports and tourism operators are key to the successful distribution of materials and the promotion of important road safety messages to visitors.

Build stakeholder alliances

Stakeholders are key to improving safety for visiting drivers. We can achieve much more if we cooperate with stakeholders, providing education about road safety issues, encouraging their input and creating opportunities to deliver joint initiatives. We will continue to collaborate with our national and international road safety colleagues, sharing insights and information while contributing to the development of effective strategies and tools to address road safety issues relating to visiting drivers and motorcyclists. We value the diversity of our stakeholders, their opinions, and the central role they play in helping make our roads safer.



KEY THEME

IMPROVING SAFETY THROUGH VEHICLES AND TECHNOLOGY

Advances in vehicle design and technology are helping to prevent crashes from occurring and better protecting all road users in Tasmania. We are committing over $3 million to support and encourage Tasmanians to drive safer vehicles.

Under the Safe System approach, we know that we will make mistakes – it is a part of being human. To achieve our vision of zero road trauma, we must take advantage of the latest vehicle and crash avoidance technologies and ensure that more Tasmanians are travelling in safer vehicles.

New vehicles are increasingly becoming safer with ongoing improvements in minimum safety standards. Modern vehicles provide superior occupant protection in crashes and are increasingly equipped with active collision avoidance technologies.

A challenge for Tasmania is that it has the oldest vehicle fleet in the country with an average age of 12.8 years. This means more time and resources must be expended maintaining the roadworthiness of Tasmania's older vehicles. This means that many Tasmanians are not benefiting from the latest safety features.

Active collision avoidance technologies are now recognised in the ANCAP vehicle safety testing. These technologies alert the driver to potential hazards, give the driver more control in emergency situations and act autonomously to prevent a collision. New features also help drivers to adhere to the speed limit, minimise blind spots, reduce distraction and monitor signs of driver fatigue.

We will continue to support ANCAP in its work, crash testing and publishing new vehicle safety ratings. ANCAP plays an important role in influencing manufacturers to build safer vehicles, while also informing consumer choices both online and at the point of sale.

The rate of fatal crashes per registered vehicle is four times higher for vehicles aged 15 years or older than for vehicles aged five years old or less.

Many Tasmanians purchase their vehicles second hand. Like ANCAP, the Used Car Safety Ratings website helps consumers to choose the safest vehicle within their budget.

The majority of new cars are purchased by fleet buyers. We know that we can improve road safety by ensuring that fleet managers, both in government and the private sector, buy vehicles with the highest safety ratings.

Not only will this improve the safety of people who use the roads for work, it also introduces a greater number of safer vehicles into the second hand market.

Automating the driving task and collision avoidance technologies are in their infancy, but they are evolving rapidly and have enormous potential to reduce road trauma.

"Always choose the safest car available within your budget. Explore the Used Car Safety Ratings website to compare makes and models by price range. And if you have a newer car let your son or daughter borrow it. Don't think about the extra insurance cost. Your children will be far better protected in a crash."

Ian Johnston
Road Safety Expert, Tasmanian Road Safety Advisory Council

The image above shows the Toyota Hilux, Australia's highest selling vehicle, undergoing ANCAP testing of its Autonomous Emergency Braking (AEB). AEB is a crash avoidance technology that enables the vehicle to constantly monitor the road environment and independently apply the brakes if it detects an oncoming collision with another vehicle, pedestrian or cyclist.

These types of 'safety assist' technologies, which are becoming increasingly commonplace in new vehicles, have the potential to deliver significant road trauma reductions for both vehicle occupants and vulnerable road users.

What we will do

Ensure that the vehicles on our roads are roadworthy

The Transport Safety and Investigation Unit will perform a range of important road safety roles, including public education on vehicle usage and public passenger vehicle compliance and enforcement. We will develop a Light Vehicle Safety Strategy to improve road safety by ensuring all vehicles in use on our roads meet required safety standards.

Continue to support ANCAP

We will continue to provide funding to the Australasian New Car Assessment Program (ANCAP) and assist in the promotion of its work testing and advocating for the purchase of safer vehicles.

Assist young drivers to buy safer vehicles

Young drivers are one of the highest risk groups on our roads, yet they often drive older and less safe vehicles. We will investigate and implement ways of assisting young drivers to buy the safest vehicle they can afford.

Improve safety for workplace drivers

We will investigate opportunities to improve the safety of the large number of Tasmanians whose work involves driving on our roads.

This includes implementing higher standards for government fleets and encouraging the private sector to purchase safer vehicles.

Monitor developments in vehicle technology

We will monitor autonomous vehicle and crash avoidance readiness in Tasmania to make sure that our infrastructure, communication devices and laws are compatible with emerging technologies.

TACKLING INATTENTION AND DISTRACTION

The community is becoming increasingly concerned about driver inattention and distraction, especially from mobile phone use. Although not a key theme, we recognise the need for action and are undertaking a number of programs and projects designed to reduce this problem and protect drivers and passengers in the event of a crash.

Driving is a complex task and one that demands our full attention. However, keeping drivers' minds on the job is easier said than done.

All drivers engage in distracting activities while they are driving. Changing a song, drinking a coffee, refereeing the kids in the backseat or checking your mobile phone – these are all activities that distract us and interfere with safe driving.

Distraction occurs when a driver, either willingly or unwillingly, engages in a secondary activity that interferes with performance of the primary task of driving the vehicle.

Distraction can be visual (taking your eyes off the road), physical (taking your hands off the steering wheel) or cognitive (taking your mind off the driving task), or a combination of these.

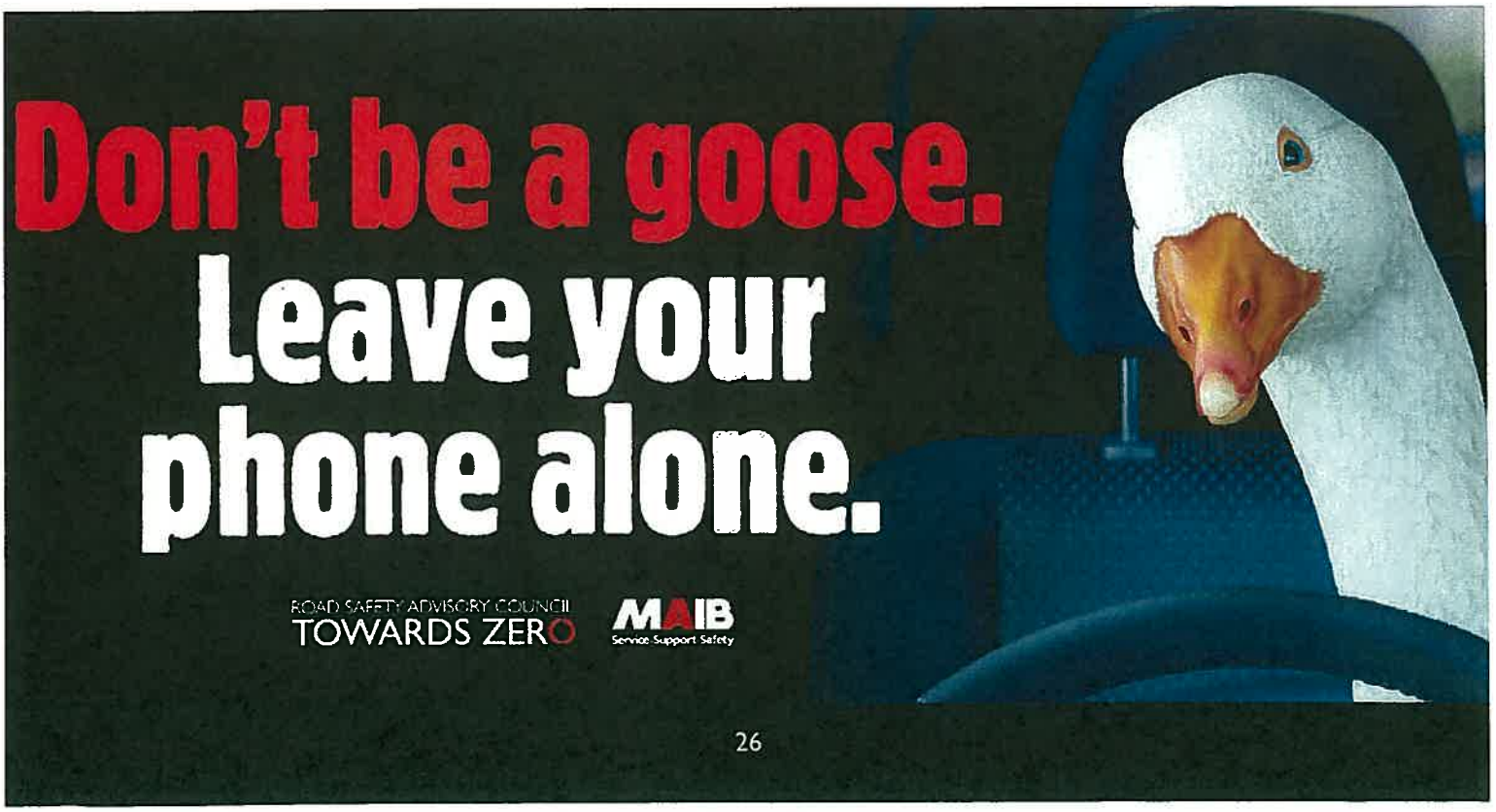
Addressing inattention and distraction is a challenge for authorities.

There are two main things we can do – try to stop the behaviour and reduce the harm if the behaviour causes a crash.

We try to reduce the incidence of distraction through public education and enforcement. Increasingly, new technologies are also helping to tackle the problem.

In addition, infrastructure safety improvements described under key themes in the Action Plan help alert the driver to focus on driving (audible line marking) and reduce the injuries sustained if a crash does occur (wire rope barrier).

Distraction affects driver performance and safety. It decreases our ability to control speed and following distance, makes it difficult to maintain our position on the road, reduces our awareness of surrounding traffic, events, traffic signals and signs, and makes our responses to hazards slower.



What we will do

Unmarked motorcycle enforcement

In 2019 Tasmania Police trialled the use of unmarked motorcycles in urban areas around the State to allow police to use lane filtering in traffic and increase the detection of mobile phone use.

The immediacy of detection, with drivers being caught in the act and the evidence recorded by a helmet mounted camera, is a powerful deterrent to both the driver and other drivers in the vicinity. The use of unmarked motorcycles will be expanded to tackle distraction and inattention in urban areas.

Trial mobile phone use detection technology

New technologies are being developed all the time. We will trial new camera technologies that can detect mobile phone use to increase enforcement of inattention and to deter people from using their mobile phone while driving.

Mobile phone ban for L and P platers

Changes to the Graduated Licensing System (GLS) mean that all learner (L1 and L2) and provisional (P1 and P2) licence holders will be banned from any mobile phone use, including hands-free and speaker mode.

Young drivers have limited experience and need to devote their attention to driving. Removing distractions like mobile phones is a proven way to help reduce distractions and protect new drivers.

Continue to support the Rotary Youth Driver Awareness Program (RYDA)

The RYDA program will continue to make students aware of the significant responsibility of being a driver or passenger and help them to have an appropriate attitude when they're in a vehicle.

The program promotes the importance of concentrating on the driving task and the dangers of distraction.

Develop inattention/distraction campaigns

Building on the success of the 'Don't be a goose - leave your phone alone' campaign, we will continue to develop new inattention/distraction campaigns to educate the public about the dangers of driving distracted and using a mobile phone while driving.

As well as using television, radio, print and digital media channels, we will use signage and billboards to remind drivers when they are on the road and undertaking the driving task.

Infrastructure safety improvements

The majority of our serious injuries and deaths are due to lane departures resulting in head on and run-off road crashes. Safety treatments such as audio tactile line marking (rumble strips) help to alert the motorist when they are straying off their path and get them back on track before a crash occurs. Signage can advise of the need for caution and to reduce speed.

Sealing road shoulders gives drivers more leeway to correct if they find themselves distracted and reduces the likelihood of loss of control. Installation of centre and side barriers and hazard removal will help to reduce the severity of crashes and keep vehicles from colliding with other vehicles, trees and other solid objects.

Under the themes of Making our Rural Roads Safer and Improving Safety in our Towns and Cities, we have allocated around $50 million over five years to install infrastructure safety improvements and, in doing so, will help to combat inattention and distraction.

Vehicle Technologies

We will encourage Tasmanians to buy the safest car they can afford. Safety features such as crumple zones and airbags reduce the severity of injury when a crash occurs.

Active safety assist technologies like biometric sensors, blind spot sensors, lane-keep technology and emergency braking help drivers to avoid crashes. The majority of crashes involve human error. Vehicle technologies will help to reduce both the incidence and severity of crashes.

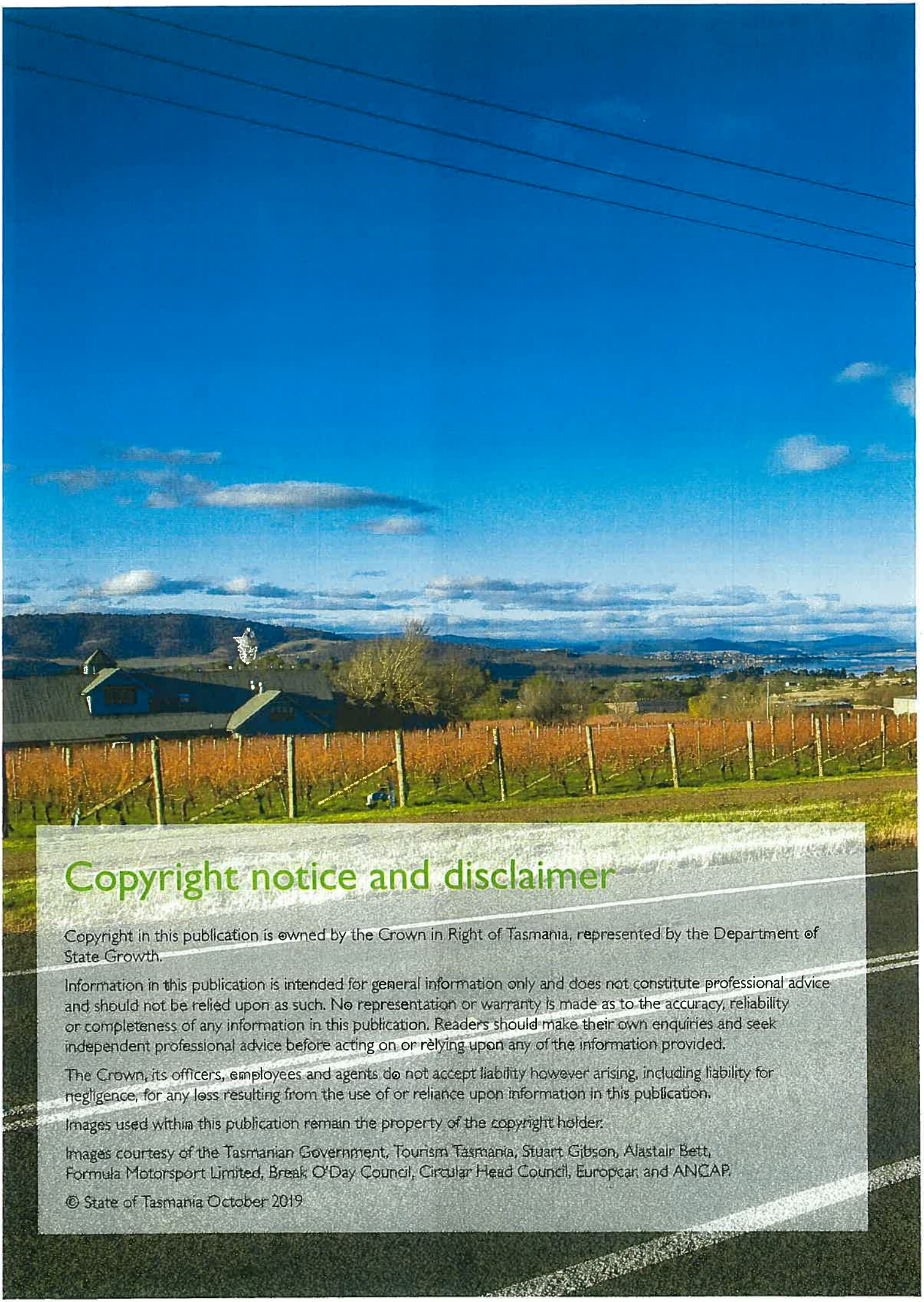
ACT CANdrive trial

We are actively monitoring developments in automated vehicle technology which has the potential to remove the human error element on our roads.

More than 30 Canberra drivers are participating in a world first trial to improve safety in automated vehicles using Seeing Machines' driver monitoring technology. Vehicle automation is progressing rapidly and promises many benefits for road users.

The increase of automation in cars promises increased levels of safety, but a key identified risk is driver inattention. The ACT Government CANdrive automated vehicle trial has been designed to collect driver engagement data in both automated and non–automated driving conditions.

The project has helped Seeing Machines develop and validate its algorithms related to driver engagement and has demonstrated that driver monitoring can help mitigate the risk of driver inattention.



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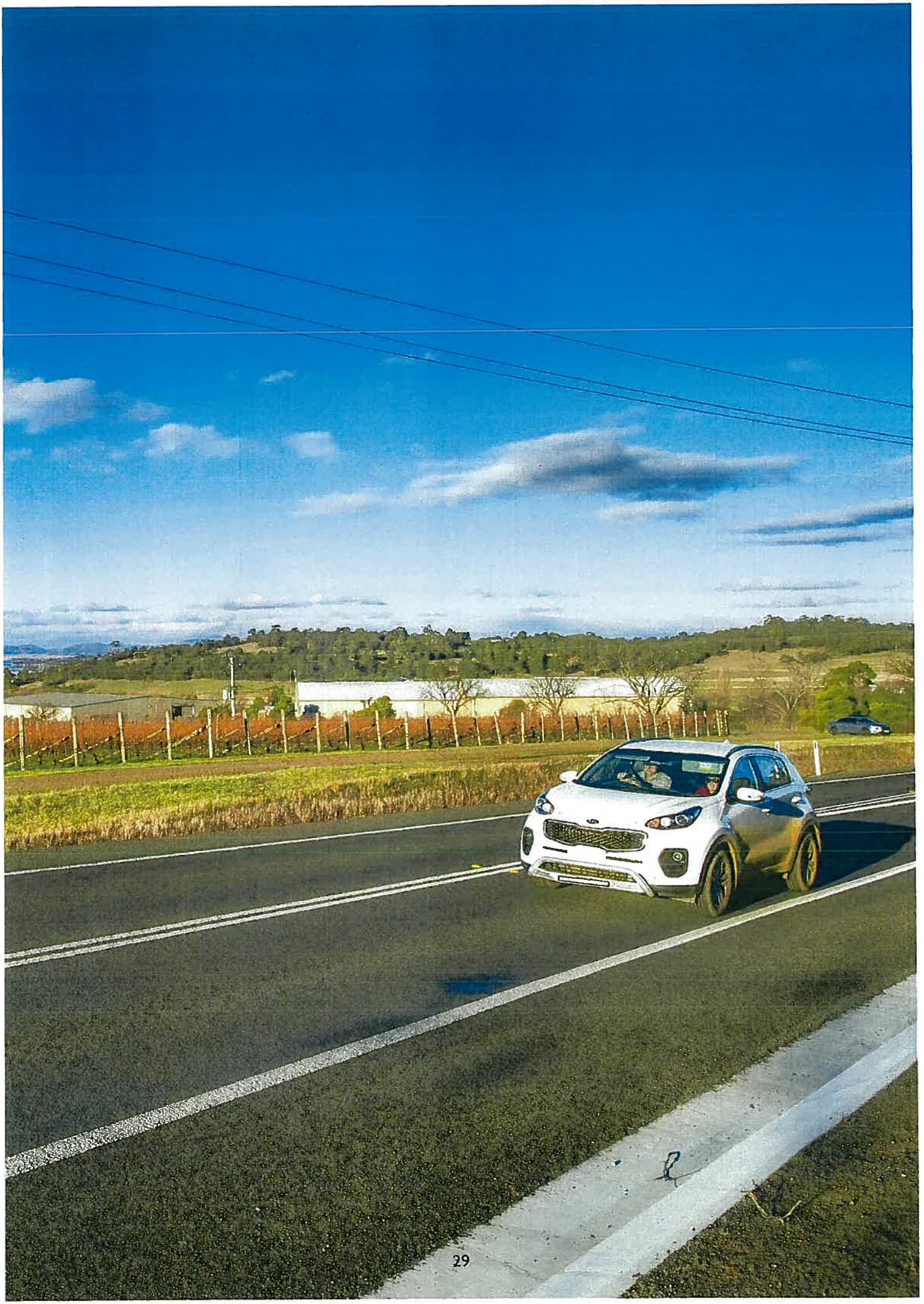

Department of State Growth

Road Safety Branch
Towards Zero Action Plan 2020-2024

GPO Box 536
Hobart TAS 7001 Australia

Phone: 1300 135 513

Email: rsac@stategrowth.tas.gov.au

Web: www.towardszero.tas.gov.au

INFRASTRUCTURE AND TRANSPORT MINISTERS

National Road Safety Strategy

National Road Safety Strategy 2021–30

Consultation Draft
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Director - Publishing and Communications
Communications Branch
Department of Infrastructure, Transport, Regional Development and Communications
GPO Box 594
Canberra ACT 2601
Australia

Email: publishing@infrastructure.gov.au

Website: www.infrastructure.gov.au

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Further information

National Road Safety Strategy website
www.officeofroadsafety.gov.au/nrss

An ongoing series of fact sheets
www.officeofroadsafety.gov.au/nrss/resources-fact-sheets

Foreword

A foreword will be included in the final Strategy

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Strategy at a glance

Targets by 2030

Fatalities per capita reduced by **50%**

Serious injury per capita reduced by **30%**

THEMES

- Safe Roads
- Safe Vehicles
- Safe Road Use

PRIORITIES

- Infrastructure planning & investment
- Vehicle safety
- Indigenous Australians
- Regional road safety
- Heavy vehicle safety
- Vulnerable road users
- Remote road safety
- Workplace road safety
- Risky road use

National Road Safety Action Plan

ENSURING IMPLEMENTATION

- Clear governance arrangements
- Evidence-based policy and programs
- Transparency and accountability: external advisory reference group may conduct reviews
- Published dashboards showing rate of change
- Performance Framework: outcome indicators and safety performance indicators, regularly assessed and published
- Investment tied to improved road safety outcomes
- Future focused research and development

Implementation

Where we want to be

- As a community we no longer accept a transport system that results in death and serious injury to Australians on a daily basis.
- Over ten years, we expect a significantly reduced burden on our economy and society from road crashes – in terms of deaths, life-changing injuries, costs on the health sector, and trauma for families, first responders and communities, including mental health impacts.
- We will have safe transport options for all ages and abilities, including the most vulnerable in our communities.

Long term directions

This Strategy primarily focuses on the next ten years but in the context of the drive torwards Vision Zero there are longer term directions which guide us and may require enabling actions.

Measure transformation of the transport system

Address disproportionate impact on Indigenous Australians

Local Government supported to embed road safety in business as usual

Cultural change for acceptance of road safety solutions

Reduce the age of the fleet and ensure modern safety features in all vehicles

Adoption of the social model to influence prioritising road safety

Why do we need action?

1,200
people **die on Australia's roads** every year

OVER **3,000**
people are recorded on the Australian Trauma Registry every year with **very severe injuries**

9% OVER 2011-20 TARGET

1,427 DEATHS
(2011 baseline)

1121 DEATHS
Actual achieved by mid 2020

998 DEATHS
Target to reach by 2020

HOSPITALISED INJURIES ARE INCREASING

Almost **40,000**
Hospitalised in 2017

Increase of 3.3% per annum from 2013

25% hospitalised had high **threat to life injuries**

AS A PROPORTION PER POPULATION, WE ARE MAKING PROGRESS

28.8%
Reduction

* **6.6** (2011 baseline) to **4.7** (2019) deaths per 100,000 population
* **15.1%** population increase over the decade

MAJOR CITY

2.2 Road Deaths per 100,000 (2018)
148.7 Hospitalised Injuries per 100,000 (2017)

REGIONAL

10.9 Road Deaths per 100,000 (2018)
171.4 Hospitalised Injuries per 100,000 (2017)

REMOTE

23.6 Road Deaths per 100,000 (2018)
213.8 Hospitalised Injuries per 100,000 (2017)

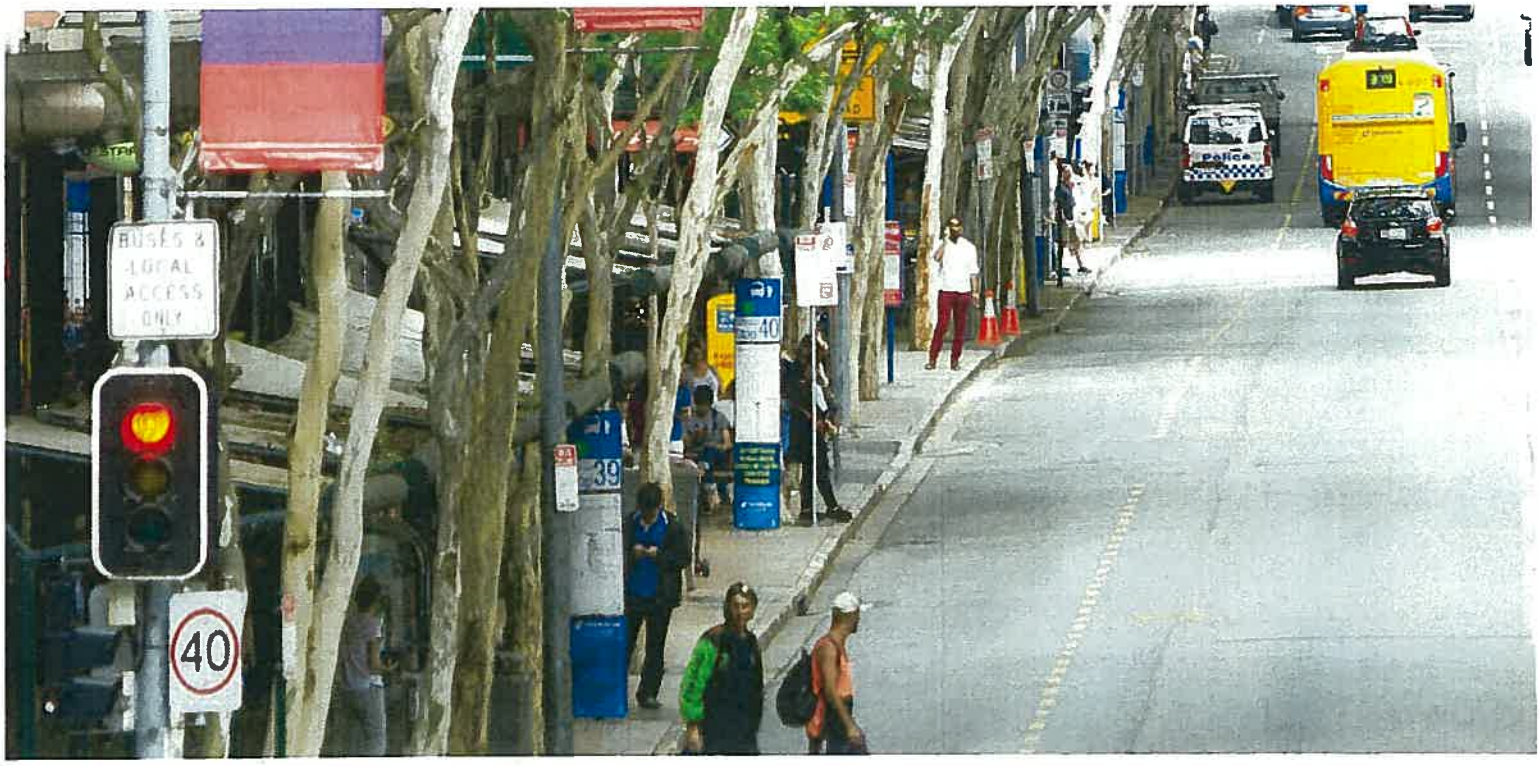
$30 BILLION
ANNUAL COST TO THE NATIONAL ECONOMY

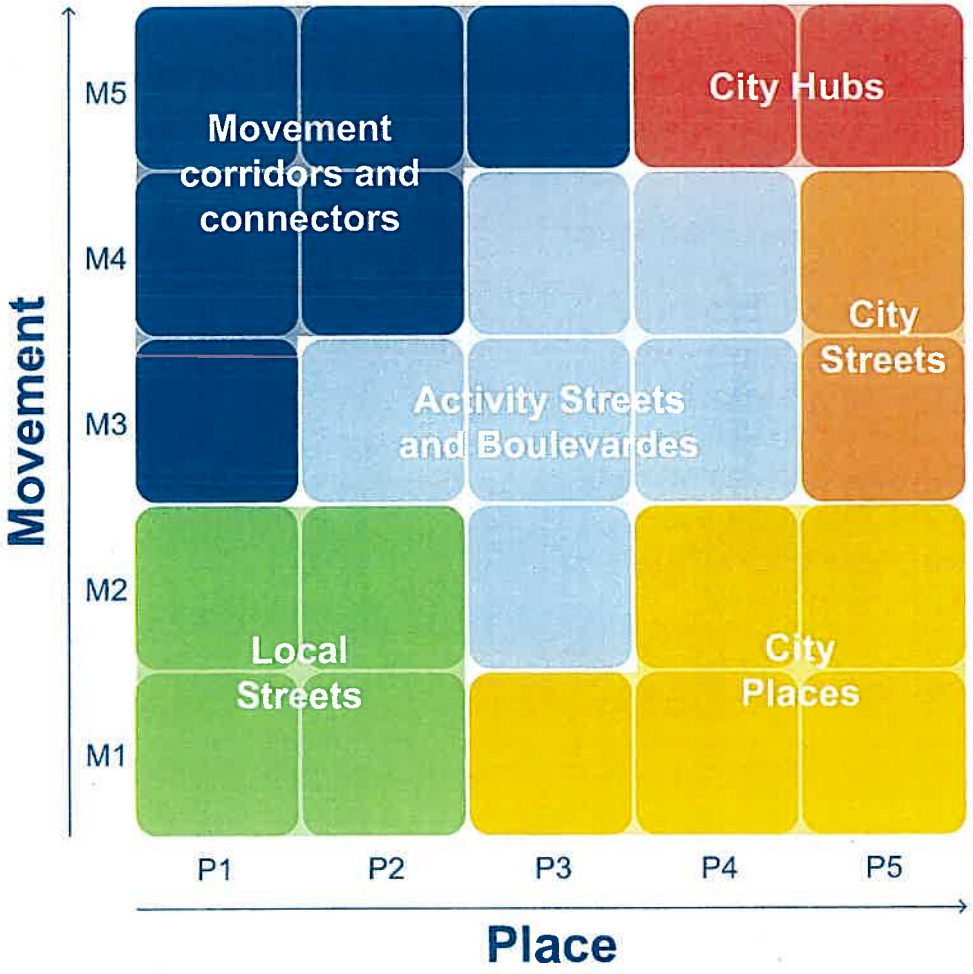
Driving and road use is a significant part of the Australian way of life and business. Australia is a large country and many of us rely on private road transport to get to work or play, and on trucks to deliver our produce and consumer goods. However, this road use currently does not occur without causing considerable harm.

While much was achieved under the previous strategy, we are still seeing increases in serious injuries, significant costs to the economy from road crashes, and significant impacts on disadvantaged groups.

The way we move both people and goods; and where we live, work and socialise, affects the use of roads and how we prioritise their different functions. A planning approach based on Movement and Place shows how the different functions of roads can be met to varying degrees. Motorways and movement corridors provide for fast movement with little or no 'place' function, whereas in vibrant streets, local streets, and places for people (e.g. shared zones) the emphasis is on slow movement, and place is the primary consideration.

This approach informs road design and is critical to the decisions we make, including those on speed management to ensure that we can drive down road trauma in urban, regional and remote communities.





Source: Austroads, 2020. Research Report AP-R611-20 Integrating Safe Systems with Movement and Place for Vulnerable Road Users.

What can we achieve?

This Strategy aims to reduce the rates of death and serious injury from road crashes over the next ten years, and to support our long term vision of zero by 2050.

Targets by 2030

Fatalities per capita reduced by **50%**

Serious injury per capita reduced by **30%** (interim target)

Long term goal: zero deaths by 2050 and zero serious injuries by 2050

These target reductions are relative to the average rates per capita of deaths and serious injuries in the baseline period, 2018-2020 [TBC for serious injuries].

A 50% reduction in deaths per 100,000 population by 2030 will represent approximately a 41% reduction in deaths, to 689.

A 30% reduction in serious injuries per 100,000 will represent approximately a 18% reduction in serious injuries, to 33,373.

A person is considered to be seriously injured in a road crash if they are admitted to hospital, irrespective of the length of stay.

Achieving these targets, particularly for serious injury, will be difficult. Driving down serious injuries from road crashes will take time and our efforts and assessment of progress will be better informed by a new national data series.

Our ultimate goal is to reduce deaths and serious injuries to zero by 2050 – not a rate relative to population.

This Strategy has adopted per capita rates for the headline targets because they better show progress in the intervening decades, allowing for disruptions and variations in population growth between jurisdictions, regions, age groups and road user groups. Per capita rates also allows us to compare our progress with leading international jurisdictions, and also highlight which groups are disproportionately affected by road trauma and where things are going well.

Principles

Under this Strategy we have adopted these important guiding principles for the next decade.

A long-term vision

- Zero deaths and serious injuries by 2050: a safe system in which a mistake does not cost a person's life or health.

Safe System approach

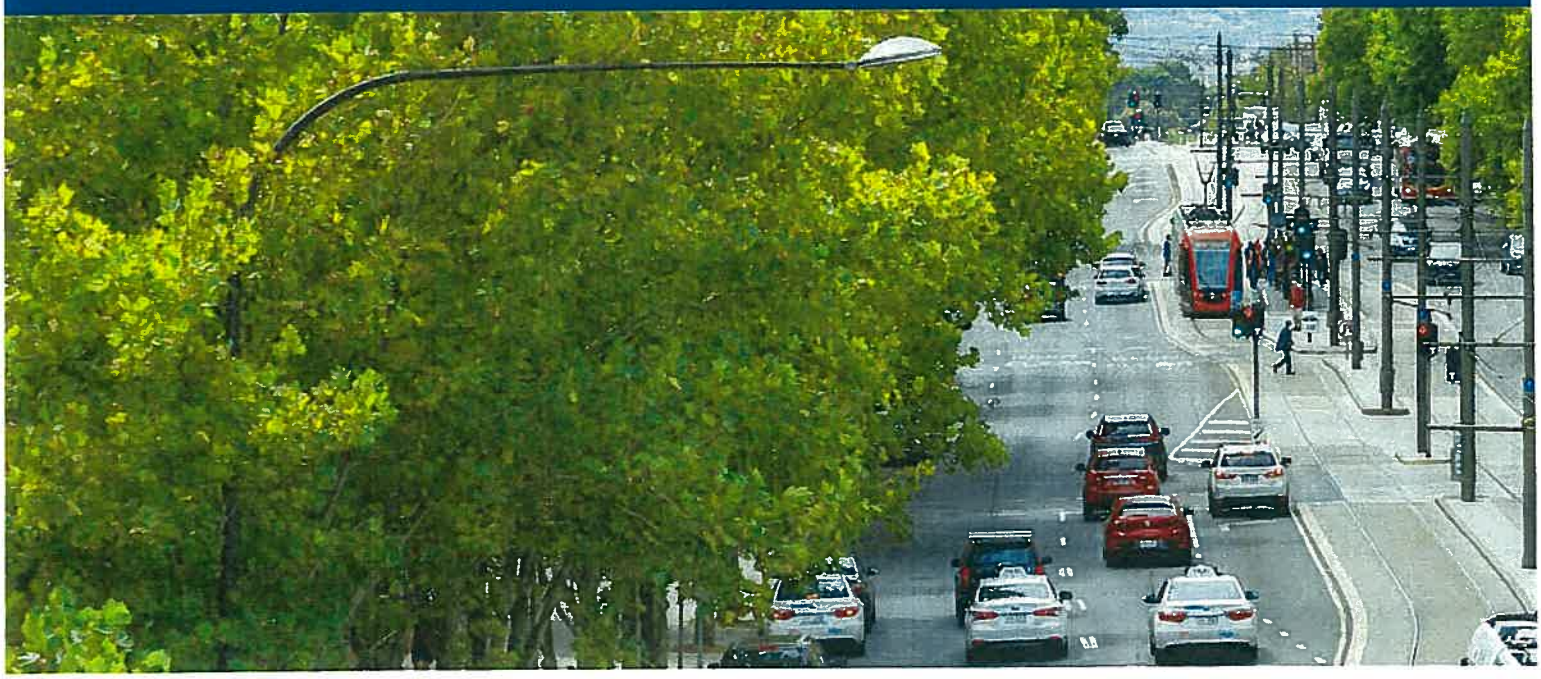
- This is in step with the United Nations approach to global road safety through its Sustainable Development Goals and the second Decade of Action on Road Safety.

Ten-year targets

- To reduce the rate of deaths from road crashes per 100,000 population by at least 50% by 2030: to 689.
- To reduce the rate of serious injuries from road crashes per 100,000 population by at least 30% by 2030: to 33,373.

Evidence-based approach

- National priority actions will be selected on the basis of evidence and effectiveness, enabled by a National Data Hub.



Clear governance arrangements

- Responsibility for actions will be clear.

Transparency

- Progress on implementation, towards targets, and safety performance indicators will be published regularly, enabled by a National Data Hub.

Strong accountability mechanisms

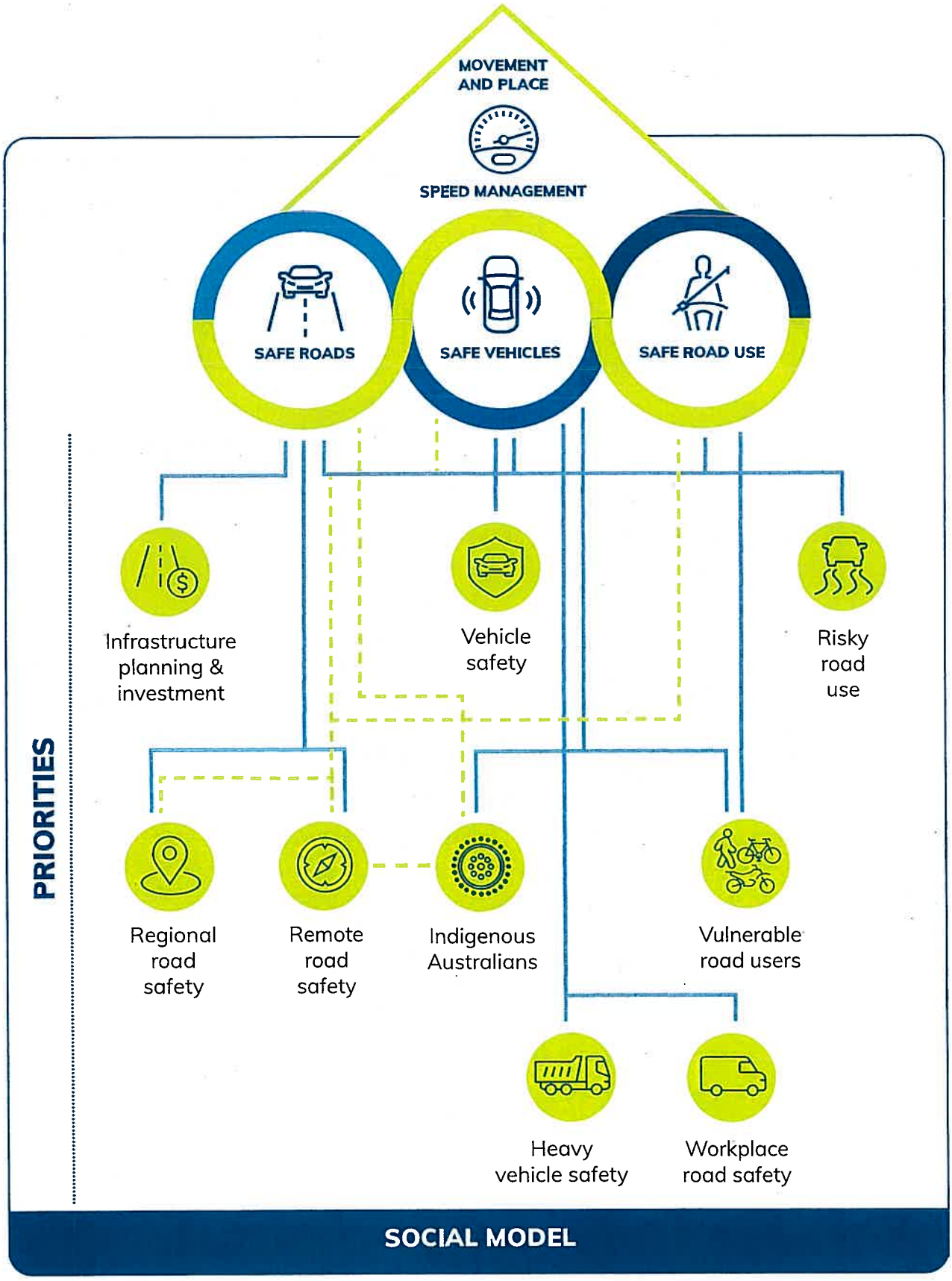
- Continuation of the Office of Road Safety, establishment of a National Data Hub and consideration of an external advisory group to monitor progress under the Strategy and Action Plan.

Broad and shared responsibility

- We will continually reach out beyond the transport sector to find new partners to achieve change.

What will we do?

Improving road safety is challenging and complex It requires a system view, with an understanding of how different elements interact. Each of the three main themes for this Strategy has a role to play in addressing each of the priorities, and often they are connected in multiple ways.



Following the 2018 *Inquiry into the effectiveness of the National Road Safety Strategy 2011-2020*, Australian Governments have responded to the key findings, adopting:

- a long term goal of zero deaths and injuries from road crashes by 2050
- a focused set of key priorities for action
- safety performance indicators focused on how harm can be eliminated in the system
- better targeted road safety investment backed up by better data and analysis
- better whole-of-government coordination across portfolios.

Across Australia different solutions are needed to support improved safety outcomes in our road systems, which vary widely.

To help position Australia to reach Vision Zero by 2050 we need cultural change. To meet this challenge, all tiers of government will work together to deliver effective policy and programs.

Different solutions are needed to achieve change across the road transport system

Australia has long adopted the safe system approach to road safety, and this Strategy continues following this internationally recognised approach. In this Strategy the focus is on three main themes: Safe Roads, Safe Vehicles and Safe Road Users.

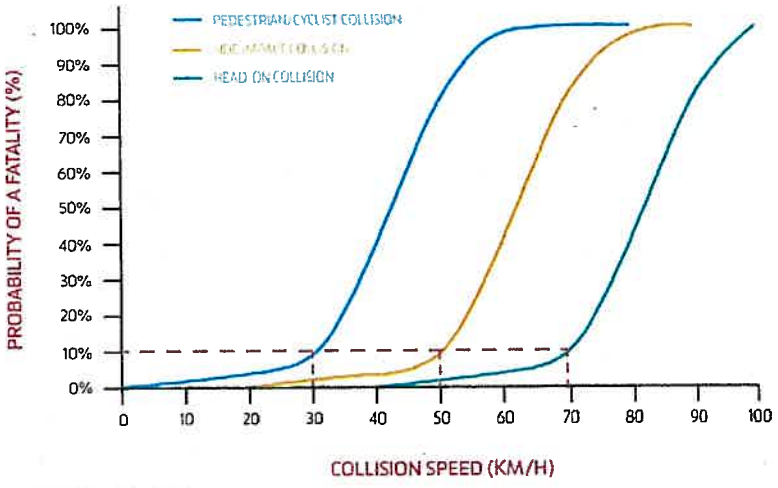
Speed management is critical

Supported by the Movement and Place approach, speed management is critically important: it will underpin all of the themes and be part of addressing the priority areas for this Strategy.

Speed management is a critical factor in managing the physical forces to which human bodies are subjected in any crash. The risk of death or injury increases markedly and at different speeds depending on the type of collision, as can be seen in the diagram below.

The previous strategy presented four separate cornerstone areas (also referred to as 'pillars'). While it is not the intention under the safe system approach, there has sometimes been a siloed approach to implementation. This Strategy aims to integrate the safe system cornerstones and show the safe system in a holistic manner focusing on the interactions and layers of protection essential to the safe system.

Wramborg's model for fatality probability vs vehicle collision speeds



Nine priorities- where we can reduce harm and head towards Vision Zero

Roads, roadsides, travel speeds and vehicles should be designed to avoid crashes or reduce their impact, but much of the system is not built this way. Solutions are continually being developed and refined to improve our legacy road network. Given the size of the task, we must prioritise the changes that will achieve the greatest reductions in trauma.

The nine priority areas were identified through a process which included analysis of the available data on road crash deaths and serious injuries, taking into account expert views on how best to respond to the greatest road safety challenges over the next decade. The presentation of the priorities was refined after discussion with a wide range of stakeholders.

Infrastructure planning and investment

Governments will focus on designing a safe system that is future focused.

Even relatively low speeds can kill or seriously injure unless the vehicle and the road and roadside environment take account of the physical vulnerability of all road users. In urban areas there are many serious injuries to vehicle occupants and vulnerable road users, which can be prevented. Movement and Place frameworks inform infrastructure planning to manage the risk of conflict.

Actions:

- Infrastructure funding at all levels will be linked to measureable improvements in safety.
- Deliver systematic safety improvements on a corridor basis.
- Manage speeds where conflicts between vehicles and road users with infrastructure and roadside hazards cannot be avoided, to avoid crashes resulting in death or serious injury.

Regional roads

Governments at all levels will plan and implement network-wide safety improvements.

Around 55% of road crash deaths are in regional areas (Australian Bureau of Statistics (ABS) Inner and Outer Regional Areas) – with the majority of people killed on these roads from regional areas.

The majority of these deaths result from lane departure crashes (run-off road and head-on crashes).

Actions:

- Development of network safety plans, to prioritise road safety treatments where they will have the most impact.
- For roads with higher traffic volumes: staged safe system treatments including median and roadside flexible safety barriers.
- For roads with moderate to high traffic volumes: staged implementation of risk reduction treatments including audio-tactile line markings (rumble strips), median treatments, targeted stretches of barrier treatment, shoulder widening and sealing, intersection treatments, and protection on curves and from roadside hazards.
- Speed limits reduced for some roads where infrastructure improvements are not foreseen within the life of the Strategy.
- Development of a Regulation Impact Statement on reducing the open road default speed limit.

Remote areas

Better transport options and assistance.

Based on the rate of deaths per 100,000 people, the risk to an individual of being killed on a road in a remote area (ABS Remote and Very Remote Australia) is eight times the risk of living in a major city. Of the 1,136 people killed in 2018, 116 were in remote areas of Australia. There is a greater proportion of unsealed roads and other lower quality roads with lower traffic volumes and relatively high speed limits.

Actions:

- Safe system treatments on roads with higher volumes of traffic and comprehensive risk reduction on roads with moderate volumes, in line with network safety plans and priorities.
- Explore options to address the sustainability of community transport for remote communities.
- Improve access to driver licensing programs and other transport assistance.

Vehicle Safety

Pursue technological improvements and uptake of safer vehicles.

Vehicle technology developments and safety systems are increasingly focused on crash avoidance, such as lane keeping support, adaptive cruise control and blind spot detection. Recently introduced Australian Design Rules are collectively estimated to save almost 850 lives over the next 15 years. Vehicle safety systems will also reduce serious injuries to vehicle occupants and vulnerable road users in urban areas.

Over the longer term, automated vehicles have the potential to substantially improve road safety outcomes by reducing the number of crashes caused by human error.

Actions:

- Prioritise and adopt proven technological improvements for all vehicle types through new Australian Design Rules as quickly as possible (e.g. systems assisting drivers to stay in their lane, and systems that provide warnings when drivers are drowsy or distracted).
- Encourage and promote voluntary uptake of vehicle safety technologies ahead of regulation, including through ongoing support of the Australasian New Car Assessment Program (ANCAP) and through fleet purchasing policies.
- Implement new regulatory requirements for vehicles with automated driving systems, to facilitate the safe deployment of these vehicles.

Heavy vehicle safety

Support safe movement of freight and passengers and reduce harm to all road users.

Around 15% of all road crash deaths involve a heavy vehicle. Buses represent only a very small proportion of these deaths. While heavy vehicles crash less often than other vehicles, these crashes are more likely to result in a death or serious injury. Regardless of fault, the greater mass of these vehicles contributes a considerable amount of kinetic energy to a crash, with the other vehicle or vulnerable road user in the collision often enduring the worst of the impact.

Actions:

- regulate for and promote heavy vehicle safety technologies.
- Strengthen national heavy vehicle operational regulation.
- Promote and reduce barriers to the uptake of safe new heavy vehicles.
- Protect all road users from conflicts with construction vehicles through state/territory government construction contract requirements such as requiring inclusion of safety technologies.

Workplace road safety

Enable safety culture in organisations to take responsibility for vehicles and roads as a workplace.

In 2018, there were 144 fatalities reported as a result of injuries sustained in the course of work-related activity. In total 44 of these (31%) were the result of vehicle collisions and a further 45 were related to vehicles in other ways, for example, falling from vehicles or being injured while loading vehicles, meaning that a total of 89 fatalities (or 62% of all work fatalities) were related to vehicles.

Actions:

- Ensure organisations are aware of their WHS duties in relation to vehicles and road safety.
- Encourage and support organisations to take responsibility for road and vehicle safety across their operation by taking actions and setting policies that support and enhance the individual responsibility of workers and create a road safety culture.
- With the increase in cycling and other vulnerable road users including through 'gig economy' delivery work, support the safety of delivery workers for example by provision of separated bike lanes.

Indigenous Australians

Address the overrepresentation of Indigenous Australians in road trauma.

Indigenous Australians bear a higher burden of road trauma; Australian Institute of Health and Welfare data shows Indigenous Australians are nearly three times more likely to die in road crashes than non-Indigenous Australians.

There is a growing evidence base supporting community-led programs as the most successful approach for health improvement. Child seat restraint programs, alternative community based transport, targeted approaches and human centred design have led to improved road safety outcomes.

Actions:

- The challenges faced by Indigenous Australians will be addressed in reference to Closing the Gap in conjunction with reform priorities, formal partnerships and community control to capitalise on synergies created through shared goals.
- An enabling action will be to partner with Indigenous Australians on the best way forward.

Vulnerable road users

Provide safe access for all road users.

Roads are shared by many types of road users. Travelling as pedestrians; bike, scooter, or e-bike riders; or motorbike riders, gives minimal physical protection in the event of a crash, making us more vulnerable than when we are inside a vehicle. The probability of death or serious injury for unprotected road users like pedestrians and riders in a crash increases exponentially with increasing vehicle speed: there is an estimated 10% probability of being killed if struck at 30 km/h, but this rises to over 90% at 50 km/h, the default speed limit in built-up areas. In urban areas, almost one third of all road crash deaths are pedestrians.

Actions:

- Implement Movement and Place frameworks to support best practice speed management and tailored safe system road treatments
- Strengthen graduated licensing arrangements for motorbike riders.
- Promote consumer information about protective clothing and helmets.
- Adopt best practice coordinated enforcement of key behavioural issues including speed limits and drug and alcohol laws.

Risky road use

Increase community understanding of risky road use and address through education and enforcement.

Risky road use includes actions that are explicitly illegal, including speeding, drink or drug driving, illegal mobile phone use, not wearing a seat-belt or helmet, running a red light, unlicensed driving, and 'hoon' driving. Other high-risk behaviours include driving at inappropriate speeds for conditions, driving while fatigued, distracted or inattentive, overcrowding vehicles and walking near or on roads after drinking alcohol or taking illegal drugs.

The difficulty conveying this issue is that it is largely unintentional and unconscious actions that are normalised, and apply to us all – the average driver and the person with a good driving record. The challenge is to shift the culture to re-evaluate what is felt to be acceptable.

Road use also needs to be seen in a broader context as the way people live their lives affects use of the roads. Under the social model this Strategy recognises that other preventative health work, for example focusing on mental and physical health, will also impact road safety.

A focus on reducing high-risk behaviour is needed as part of a safe system approach, as are improvements to the road transport system to address compliant road users making unintentional mistakes that result in crashes.

Actions:

- Increase community understanding of what risky behaviours are, and how much they can increase road trauma.
- Apply best practice coordinated enforcement, education, new technology and road treatments.
- Work towards the notion of 'self-explaining' roads leading road users into compliance.

Enabling actions

Three key broad enabling actions will need to be delivered across the life of the Strategy.

Transformation of the system

This Strategy adopts an enhanced governance framework, and performance management and reporting system. A key element is the focus on safety performance indicators, closely tied to the National Road Safety Action Plan to indicate the extent to which we have transformed the road transport system to be safer overall. This will ensure we are implementing the measures that will make a difference and can adjust plans in response to changes in priority and emerging issues based on results and evidence.

Data

Better national data and monitoring of road safety across the whole of the system will be key to the success of this Strategy. Currently we have reasonably good national data on crashes resulting in fatalities, but there are many other areas where there is scope for better data collection and coordination, evaluation of interventions and wider sharing of best practice. There are known gaps such as in work-related driving, but improved data and identification of new sources will also shed light on previously unknown system issues.

Regarding serious injury data, progress is being made to bring together a national picture of serious injuries from road crashes by mid-2021. With a national dataset we will be able to better target the types of interventions needed to prevent the most serious injuries and measure the effectiveness of those treatments. We will work with data custodians across sectors to create a framework to support a timely ongoing data series. Security and privacy, along with the optimisation of releases and permission flows require a robust framework to ensure all concerns are addressed and results in the regular release of national serious injury data.

Although this Strategy has been developed with the benefit of individual states' and territories' knowledge about serious injury crashes and trends, once we have a national picture, there will be a need to review and potentially adjust the priorities and actions.

Cultural change

We have had successful cultural change in road safety in the past. Measures that may at first seem extreme, over time become normalised. For most people, wearing motorbike helmets and seatbelts is now automatic, though this was not always the case. Mainstream attitudes to drinking and driving have changed markedly over time, with changes in the law supported by strong education and enforcement campaigns; in particular the introduction of random breath testing.

A key challenge for embedding a safe system approach is speed management. Community attitude surveys show a level of understanding of how speed relates to risk on the roads and good general support for speed enforcement; however many also think speed enforcement (particularly speed cameras) is as much about revenue-raising as safety, and do not appreciate how crash risks compound with even small increases in speed. Continuing work to change the culture on speed is an immediate priority, but also one that will take time to reach its full potential.

Australia has large road networks, and any infrastructure treatments proposed will not be able to be applied to all roads. Speed limit reviews are a key element of the comprehensive network-wide safety planning approach under this Strategy, especially to support vulnerable road users.

Through the social model we will work over the decade and beyond to increase the range of organisations and sectors where road safety becomes a key part of the way they operate. There are so many parties which can influence trauma outcomes, and the social model approach means being open to constantly exploring and finding different levers for change, and expanding the understanding of the safe system across the community. The aim is for road safety to be at the core of every club, business and organisation to influence individuals and achieve cultural change. For example, a starting point could be to work with a high-profile sporting club to establish a strong road safety policy across all of its operations and be a champion for cultural change.

Some of the first steps governments will take to enable the social model approach will be to broaden engagement across portfolios to find opportunities to work together and to influence other strategies, such as the National Injury Prevention Strategy.

For some of the priorities enabling action is needed first, particularly to work out how to address some longer term problems and to be able to develop future actions.

Upskilling Local Government

A large part of the road network is under local government control. There is a need to build and retain road safety engineering capability, secure stronger engagement between state governments and their local government cohorts, and work towards embedding road safety as a key reporting requirement for the sector. Review of each state's requirements for local governments may be required in order to establish the clear link of responsibility for the design, safety and maintenance of each local government controlled road network. An initial enabling action will be for each local council to undertake a road safety risk assessment (such as a road network safety plan). The framework for these reviews provided by Austroads is an accessible, low cost method. This will give councils the information they need for the life of the Strategy to prioritise infrastructure investment (within their available resources) to improve road safety outcomes and manage network safety gaps across their road assets.

Indigenous Australians

Early work shows we need to have better insight from Indigenous Australians to understand the complex interaction of social, cultural, safety and justice issues more fully before we can proceed with solution-oriented interventions to address road safety.

The Australian Government will lead work, in close consultation across its portfolios and with state, territory and local governments, to build an understanding of the authorising environments and the interaction of government policies aimed at closing the gap for Indigenous Australians.

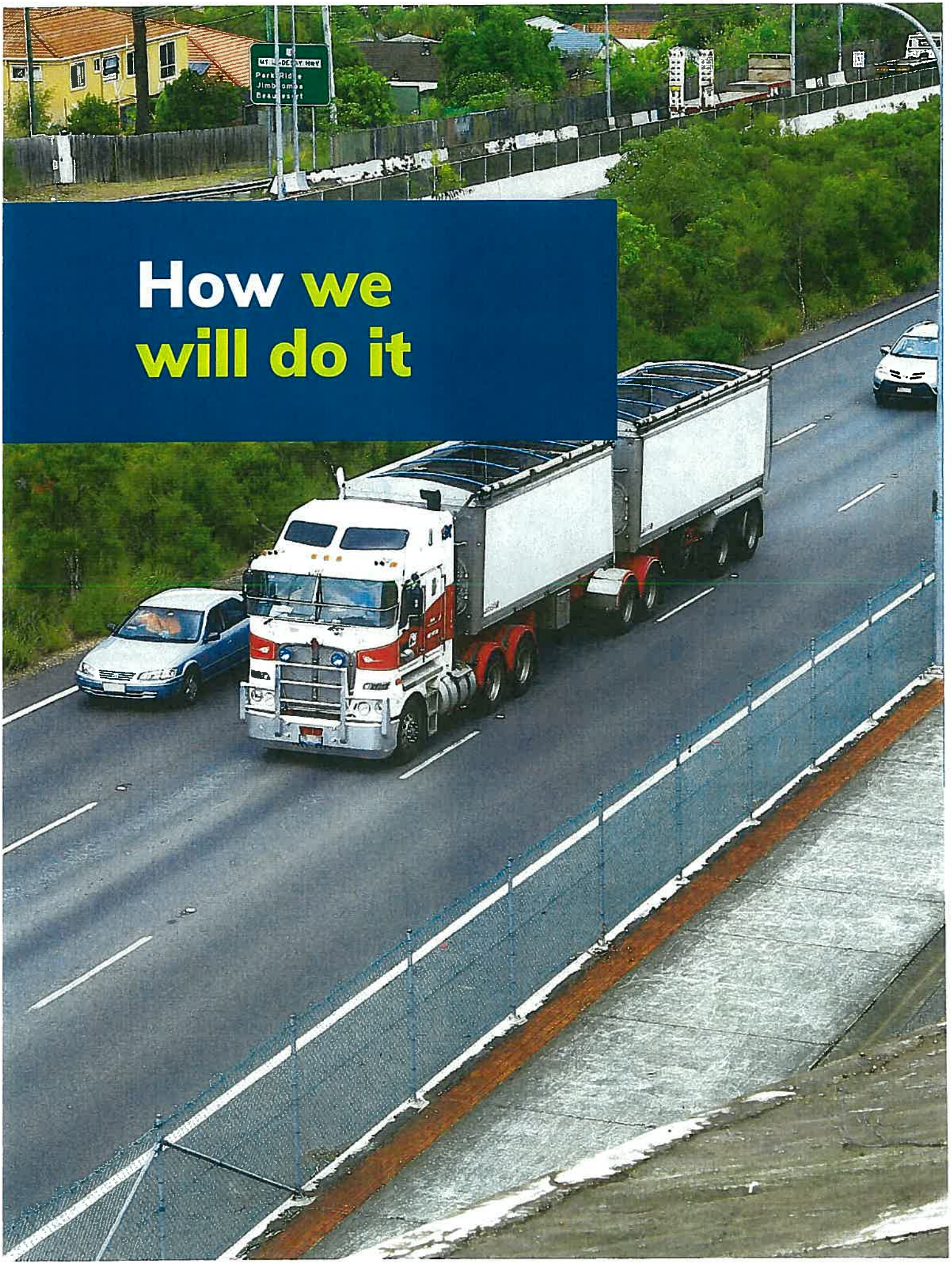
Reduction in age of the fleet

Many Australians drive vehicles over ten years old. These older vehicles often lack newer safety features, are more likely to be involved in crashes, and provide less protection for the occupants and others involved. The Australasian New Car Assessment Program reported in 2017 that vehicles built before 2000 made up 20% of the fleet but featured in 33% of fatal crashes. Newer vehicles built between 2011 and 2016 made up 31% of the fleet, yet were involved in only 13% of fatal crashes.

The Australian heavy vehicle fleet also includes many older vehicles. The benefits of safer vehicle design and safety technologies for new vehicles are only realised to the extent that these vehicles enter the fleet and replace older, less safe vehicles.

We did not see any reductions in the age of the vehicle fleets under the previous strategy. This is an area where research and development is needed to underpin policy development.

How we will do it



What is different about this Strategy?

Following on from the findings of the 2018 Inquiry into the National Road Safety Strategy 2011-2020 and the 2019 Review of National Road Safety Governance Arrangements, this Strategy adopts an enhanced governance framework and performance management and reporting system. This will ensure that all parties to the Strategy are accountable for implementing it, including through establishing clear rigorous performance measures.

Australia has long had a strong evidence-based approach to road safety. Improved performance monitoring will allow closer analysis of what is working and for corrections to be made as soon as possible. In particular, the progress of this Strategy will be closely monitored through a priority set of safety performance indicators. These provide an understanding of the extent to which the work being undertaken is transforming the system – not just roads but all elements of the safe system – showing whether intervention measures are effective, and whether the Strategy has set the right directions.

During the life of the Strategy a National Data Hub will guide evidence-based national policy and decision-making, focusing on the implementation of safe system treatments to progress to a safer network, where the roads are more forgiving.

This Strategy remains firmly based on the internationally recognised Safe System approach.

With this Strategy, we are adopting the social model approach to road safety, reaching beyond the traditional transport sector to achieve cultural change. This will require ongoing engagement with different sectors, to identify fruitful areas for collaboration and novel and creative ways to improve safety.

Embedding the social model approach will take time and will build over the life of this Strategy.

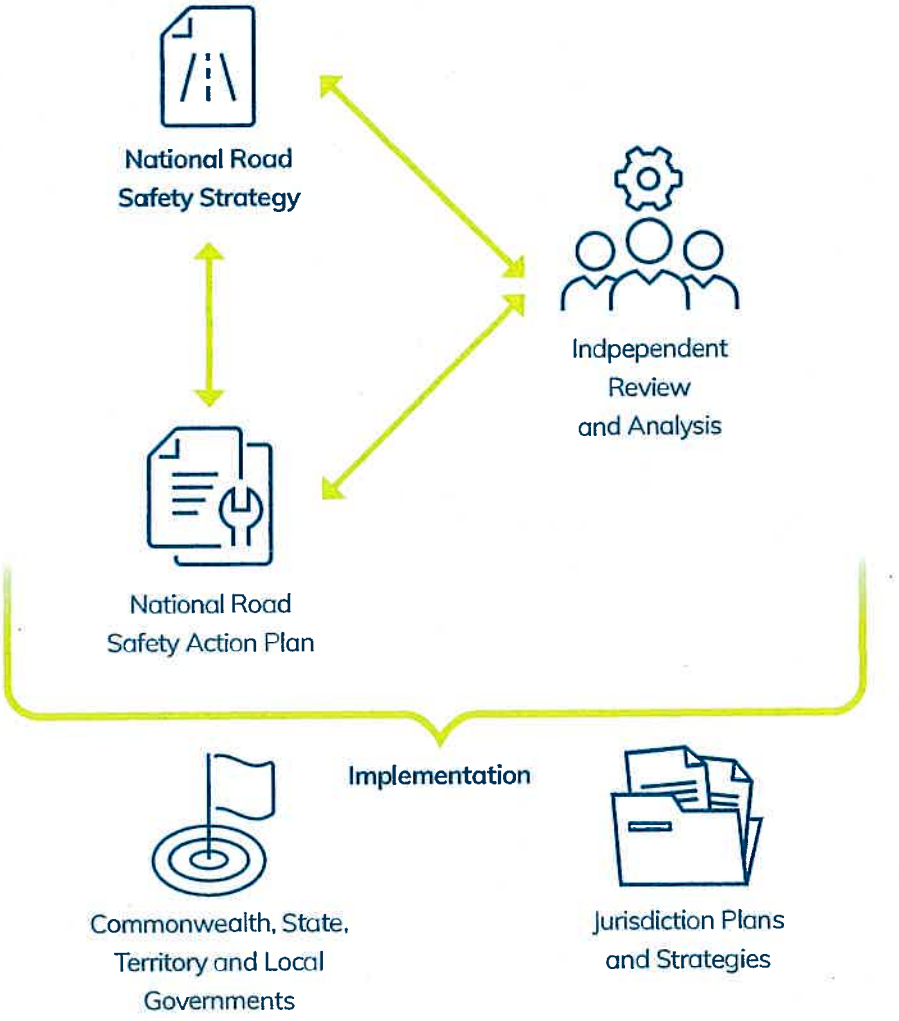
We will explore with multiple sectors and the broader community how we can all influence road safety outcomes.

This might be through community clubs, workplaces, organisations, and government agencies.

There is not a single correct approach: we need a greater application of niche solutions, the need to build change management into acceptance of those solutions and take into account the the length of time it takes to achieve change.

The Strategy will only be successful if all tiers of government take action and our partners and the broader community become part of the changing culture to accept road safety solutions.

How we will work



This Strategy will only be successful if we see change and acceptance adopted outside of traditional government road agencies. All tiers of government and the community must take action.

National Road Safety Action Plan 2021-2025

The nine priority areas will be supported by a rolling 5-year Action Plan, with agreed national actions underpinned by safety performance indicators.

Supporting the three themes and the nine priorities of this Strategy is an enhanced governance framework and performance management and reporting system. This will ensure we are implementing the measures that will make a difference and can adjust plans in response to changes in priority and emerging issues.

Accountability

This is a Strategy owned by Infrastructure and Transport Ministers, representing all jurisdictions together with the Australian Local Government Association (ALGA) representing the local government sector.

Each jurisdiction is accountable for the delivery of the national actions in the Action Plan. The Infrastructure and Transport Senior Officials' Committee is accountable for monitoring the implementation of agreed actions and managing the process for adjustments in actions where the evidence points to a need for change.

The Office of Road Safety, in the Australian Government Department of Infrastructure, Transport, Regional Development and Communications is coordinating work with states and territories and ALGA on the implementation of the Strategy, including progress reporting on the fatality and serious injury reduction outcome targets under the Strategy and Action Plans.

Independent review and analysis will be a key feature, such as through an external advisory group, to provide an annual report to the Infrastructure and Transport Ministers Meeting.

Reporting on implementation

We will monitor progress towards several types of measures:

- the headline trauma reduction targets
- a series of outcome indicators showing progress in reducing key crash types and reducing trauma in particular road user groups
- safety performance indicators which show transformation and incremental improvements of the system. [A set of Safety Performance Indicators will be finalised with the Strategy, and Actions identified in the National Road Safety Action Plan for 2021-25 will focus primarily on achieving improvements in these indicators.]

A new National Data Hub will focus on how effective infrastructure investment and other countermeasures are in delivering reductions in deaths and serious injuries. It will also help us to understand the national picture of what needs to be focused on, especially in areas where currently insight is limited.

The Office of Road Safety, together with states and territories, will report annually on the progress of priorities outlined in this Strategy and Action Plan.

Keeping the Strategy relevant

We will conduct a mid-term review of the Strategy and redirect or refine the priorities to make sure the focus is where it needs to be.

The first Action Plan is for a five year term. This will allow funding commitments to be made towards concrete and deliverable actions with safety performance indicators. It will be important to keep all our national road safety efforts aligned with changes to the environment and technologies, the specific priorities in each state and territory strategy and action plan while remaining alert to emerging issues.

Roles and responsibilities

All levels of government in Australia have responsibilities for road safety, both within the transport sector and more broadly in other sectors that influence safety outcomes:

Infrastructure and Transport Ministers, together with the Australian Local Government Association, have oversight of this Strategy.

- Cabinet ministers are responsible for reaching across portfolios so that governments take a holistic approach to achieving better road safety outcomes.
- Infrastructure and Transport Ministers have oversight of a number of other important related national initiatives:
  - the National Policy Framework for Land Transport Technology and Action Plan
  - the Freight and Supply Chain Strategy and Action Plan
  - the Freight Data Hub
  - the National Remote and Regional Transport Strategy.

All tiers of government to work together to deliver a national approach to road safety that transcends borders and modes of travel.

The Australian Government regulates safety standards for new vehicles and allocates infrastructure resources across the national highway and local road networks.

- The Office of Road Safety has a national coordination role for road safety.
- In allocating infrastructure resources, the Australian Government ensures that all investments in road infrastructure planning, design and construction have as an objective: infrastructure that is safer, by having regard for safe system principles and treatments, and align with this Strategy.
- In addition to investing in road infrastructure, the Australian Government also has a role investing in targeted road safety programs including the Road Safety Innovation Fund, the Road Safety Awareness and Enablers Fund, and the Australasian New Car Assessment Program.
- The Australian Government regulates safety standards for new vehicles through the Australian Design Rules, harmonising those with international vehicle regulations where possible and gives consideration to the adoption of international vehicle regulations of the United Nations World Forum for Harmonization of Vehicle Regulations.
- The Australian Government also has a national coordination role in relation to the health system. This Strategy is aligned with the National Injury Prevention Strategy which seeks to prevent all forms of injury to Australians, including from road crashes.

State and territory governments invest in and operate the road networks.

- State and territory governments are responsible for funding, planning, designing and operating safe road networks, including setting speed limits. They are responsible for implementing the guidelines set by Austroads, and maintenance of their road networks.
- State and territory governments manage vehicle registration and driver licensing systems, set the road rules, and are responsible for police enforcement and compliance.
- State and territory governments also regulate work health and safety in their jurisdictions and have responsibilities in the health sector for public hospitals and emergency services.

Local governments are responsible for funding, planning, designing and operating the road networks and footpaths in their local areas.

- Local governments are responsible for funding, planning, designing and operating safe road networks and footpaths in their local areas, and they engage closely with their communities on the use and design of roads and public spaces.
- Local governments also develop planning and local law regulations for local areas (such as local area speed limits and path use rules) and pursue community health and wellbeing programs/initiatives, linked to state and national initiatives.

National bodies supported collectively by governments also have responsibilities for road safety.

- The National Heavy Vehicle Regulator is Australia's independent regulator for all vehicles over 4.5 tonnes gross vehicle mass, delivering a comprehensive range of services under a consistent regulatory framework.
- The National Transport Commission leads national transport reform in support of Australian Governments to improve safety, productivity, environmental outcomes and regulatory efficiency, for example the Australian Road Rules model legislation.
- The Australia New Zealand Policing Advisory Agency is responsible for providing advice on current and emerging policing priorities and cross-jurisdictional coordination, for example through co-Chairing the National Drug Driving Working Group.
- Austroads is responsible for conducting research and providing advice, information, tools and services to assist in delivery of safe, efficient and reliable mobility. These include national guidelines for the design, building and maintenance of road networks. Austroads also provides national services that help transport agencies to operate seamlessly across state borders and bring national efficiencies to their operations.

National Road Safety Strategy
2021–30