

2<sup>nd</sup> September 2021

The Committee Secretariat  
Department of the Senate  
PO Box 6021  
CANBERRA ACT 2000

Dear Joint Select Committee on Road Safety

**iRAP Submission to Joint Select Committee on Road Safety**

The International Road Assessment Programme (iRAP) is a global charity with the vision for a world free of high-risk roads. iRAP is the umbrella organisation supporting RAP activity in over 100 countries worldwide. We welcome the opportunity to provide this detailed submission on the Joint Select Committee on Road Safety Terms of Reference. The recommendations build on iRAP's submission to the 2020 Inquiry and my appearance at the hearings on Tuesday 21 July, 2020.

Within Australia the programme is known as AusRAP. I am pleased to advise that Austroads, representing all of the national, state and local government agencies in Australia, has now formally agreed to be the AusRAP Lead Agency in Australia. This development reflects the widespread adoption and use of AusRAP by Australian agencies and provides the foundation for the life-saving partnerships with all infrastructure and road safety stakeholders including AAA, ARRB, Roads Australia, Department of Infrastructure, Transport, Regional Development and Communications, ACRS and others over the next Decade.

450,000 Australians will be killed and injured in road crashes between now and 2030 based on current trends. Every community and every electorate will share that tragedy. The cost to the Australian economy, business and families will be more than \$300 billion. The solutions are both cost effective and proven and an urgency and scale to our response remains essential.

As one of the Special Advisors to the Inquiry into the National Road Safety Strategy 2011-2020 led by Dr Crozier and Dr Wooley I congratulate the Government on the actions so far. I also note that many of the actions outlined underneath each of the recommendations have yet to be implemented at the scale and speed required to make a difference.

As always, iRAP stands ready to partner with the Australian Government to unlock the full potential of safer roads and safer speeds to save lives and reduce injuries across every corner of Australia and play a valuable international road safety leadership role in our region.

Yours sincerely

Rob McInerney

The Select Committee's attention is drawn to the 2020 Inquiry Submission that has been provided as an appendix to this 2021 Inquiry submission. Specific recommendations in regard to the current Terms of Reference are provided below. It is noted that many of these recommendations will directly support the outcomes from the 2020 Inquiry and the urgency of their implementation.

## Terms of Reference A

### **(a) measures to support the Australian Parliament's ongoing resolve to eliminate road crash fatal and serious injuries with a focus on ways to achieving Vision Zero by 2050;**

With Austroads assuming the AusRAP Programme Leadership role there is a great opportunity to formalise and fund institutional support for AusRAP in the same way the Federal Government supports ANCAP (the sister programme focussed on vehicle safety). An outline of this structure is presented in Appendix A). This will support the Federal Government Office of Road Safety, BITRE and Major Transport and Infrastructure Investment priorities. Key outcomes that the Austroads led AusRAP programme can support include:

#### **Governance**

- Convening the AusRAP Steering Committee and governance of the programme at the national level and providing oversight for associated State and Territory leadership.
- Convening the AusRAP Technical Working Group to support investment optimisation, quality assurance, model innovation and harmonisation of AusRAP reporting standards across all levels of road agencies.

#### **Assessments**

- Produce and publish the **AusRAP Crash Risk Maps** on an annual basis for all National Highways and ideally State- and Territory controlled networks - (refer [UK example](#)). **Ensure 2018-2020 results are generated and published before the end of 2021.**
- Produce and publish **AusRAP Star Rating** assessments on the National Highway network **before the end of 2021** to provide an immediate baseline for the current strategy and commit to re-assessments every 3-5 years to monitor performance and set the investment priorities for the following 5 years (refer EU "RISM" legislation).
- Set **ambitious and achievable % of travel Star Rating targets** for 2025 and 2030 for the National Highway network (e.g. 50% of travel on 4-star or better and 100% 3-star or better) and associated State targets (e.g. 90% of travel at 3-star or better by 2030) that are included in the National Road Safety Strategy (to be published later this year).
- Development of a **long-term results-based Investment Plan for the National Highway** network that optimises the investment in infrastructure solutions and associated speed management activities (e.g. point to point cameras) to reach the Star Rating targets by 2025 and 2030.

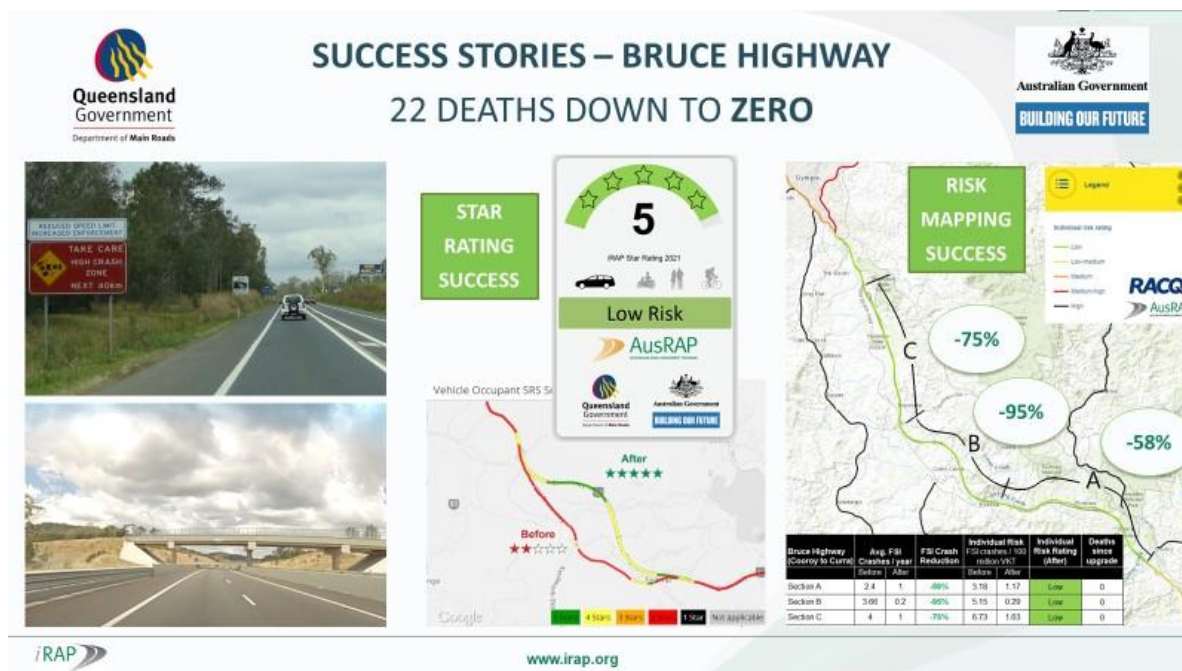
- Set appropriate **Star Rating performance targets for all new and upgraded road and transport infrastructure** using Federal Government funds (e.g. 4-star or better for National Highways; 4-star or better for pedestrians and cyclists around public transport hubs, schools, town centres).
- Require the **before and after Star Rating** of all new road and transport infrastructure to be reported along with an estimate of the deaths and injuries and associated costs likely over the effective life of the investment.
- **Support Local Government** with AusRAP Risk Mapping of Local Government higher-order roads on an annual basis, and target Star Rating assessments on high-risk sections with associated Investment Plans to upgrade the worst 100+ road sections every year to the UN recommended 3-star or better standard for all road users.
- Work with State and Territory agencies to ensure **Spot Star Ratings are completed and reported at all fatal (and serious injury) crash scenes** to better inform safe system outcomes and discussions with Treasury, Police, politicians and the community to reinforce that some roads are safer than others.

## Innovation

- Building on the established iRAP Innovation Partnerships at the global level (<https://irap.org/innovation/>) continue to **invest in road safety innovation projects** direct via the Road Safety Innovation Fund, Austroads, ARRB and other partners. Existing iMOVE and [Federal Government Entrepreneurs' Programme](#) partnerships provide current examples to expand on.
- Develop market-led innovative results-based financing partnerships to raise roads to 3, 4 and 5-star level for all road users that build on iRAP's global work with the World Bank to develop a "Saving Lives Bond" and associated investments with road concessionaires and city administrations (e.g. [Brazil](#), [India](#)). This approach also provides important road pricing opportunities that reflect reduced fuel excise and the increased uptake of electric vehicles.
- In support of the Government's targets for Vision Zero in cities by 2030 invest in a **CBD-level 5-star city partnership** to create 5-star mobility options on 5-star city streets with 5-star road users. An initial priority could be Brisbane as a lead in to the Olympic Games that will provide great outcomes for the city, for the attendees and also great marketing options to showcase Australian ingenuity, technology and exports to the world.
- Building on the iRAP and TAC partnership that has quantified the **true cost of road trauma in terms of injury, health-care and insurance costs** (<https://www.vaccinesforroads.org/global-impact-of-injuries/>) refine the analysis for all Australian States and Territories and incorporate in Treasury, Transport and Health economic modelling as well as Infrastructure Australia audits and analysis.

## Celebration

- Each and every 3-star or better road funded by the current stimulus package and major transport projects should be ribbon-cut and celebrated by the local Member for Parliament, local Mayor, road agency and construction staff. Signage similar to Blackspot funding signs can be erected highlighting another “3-star or better investment for Australia” or actual ratings as per the Bruce Highway example below.



## Terms of Reference B

**(b) the effectiveness of existing road safety programs across Australia; opportunities to improve them and encourage broader take-up of effective approaches;**

The Australian Government road safety stimulus programme is to be applauded. It will save lives, save money and create jobs as highlighted in iRAP briefing papers shared with the Deputy Prime Minister prior to the programme announcement.

- The scale of investment must be continued on an annual basis with long-term commitments of \$2-3 billion per year in a Federal Road Safety Fund to support effective planning, assessment, monitoring and resourcing of the investments by the relevant agencies. Linked to the routine risk mapping, star rating and investment planning assessments recommended in Terms of Reference A, this approach will provide a transparent and well-governed and effective use of public funds linked to the AusRAP programme overseen by Austroads and the Federal Department as appropriate.
- Local Government, particularly in rural and remote areas, have resourcing challenges in prioritising road safety against other local issues. This is particularly the case as they are not the beneficiary of any reductions in road trauma with most of the costs of trauma borne by State or Federal Government entities or insurers. Systematic central support for Local Government road safety action remains a priority.

## Terms of Reference C

### **(c) opportunities for government policy in health, education, industry, transport and other areas to contribute to road trauma elimination, integrating Safe System principles;**

With 450,000 Australians likely to be killed or injured on our roads over the next ten years there are a wide range of ways in which government policy can support action. First and foremost the Federal Government must ensure key road safety figures are published in a routine and timely fashion as outlined in the response to Terms of Reference A including:

- **Daily Fatality and Serious Injury updates** similar to COVID-19 reporting. The fact Australia is still unable to report timely serious injury data at all is why we continue to miss opportunities to influence policy and investment outcomes by other stakeholders. With 45,000 new cases a year we must do better immediately.
- Understanding the impact of **unpredictable road trauma demands on scheduled health services** and the well-being of first responders and medical experts is critical. Sharing more details on the human impact of road trauma is also required (e.g. <https://www.vaccinesforroads.org/human-impact/>)
- The use of this **AusRAP and Office of Road Safety data in HSE plans within all agencies** with exposure to travel on road networks will create locally owned solutions and a sense of the scale of impact of road trauma across all Government agencies and therefore the need for an enhanced and permanent Treasury response until trauma levels are significantly reduced.

## Terms of Reference D

### **(d) opportunities to embed road trauma prevention across Australian Government portfolios and agencies; and**

Australia is a leader in road safety, despite our tragic levels of trauma. Our neighbours including Indonesia, India and the Pacific Nations are all reeling from per population road trauma levels 3-5+ times those seen in Australia.

- Australia has already positioned itself for positive partnerships with India in this regard (<https://irap.org/2020/08/ausrap-and-indiarap-twinning-success-profiled-by-countries-top-ministers/>) and those commitments must now be followed up with real action.
- As part of the Build Back Better World [B3W](#) initiative, Australia has a great opportunity to leverage the local stimulus funding in 3-star or better roads across Australia to similar global investments as part of B3W.
- These investment and development partnerships can also be linked with the World Bank and iRAP “Saving Lives Bonds”, our shareholding with Multi-lateral Development Banks (e.g. Asian Development Bank) or the United States, Japan and Australia tri-lateral partnerships for infrastructure in the Indo-Pacific.
- The partnerships can be centred on results-based financing partnerships to help each country achieve 75% of travel on 3-star or better roads for all road users by 2030 in accordance with the UN targets and the iRAP business case for safer roads (<https://www.vaccinesforroads.org/business-case-for-safer-roads/>).

## Terms of Reference E

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

**Australia's roads do not provide a safe workplace.** 132 out of 183 workplace fatalities in 2019 (72%) were related to vehicles.

- The annual publication of AusRAP Risk Maps (and Star Ratings on a 3-5 year basis) will provide essential data to allow all **Australian employers and fleet operators** to incorporate the geo-spatial data in their route planning and workplace health and safety action plans.
- Incorporating AusRAP crash risk maps for all road users / modes of transport will also ensure the **gig economy is informed and able to consider the risks of each mode of transport** (e.g. moped delivery services vs car; light truck safety levels) in managing their business and their HSE responsibilities.
- A **Productivity Commission review** on the economic and social impact of road trauma is essential. The \$30 billion annual costs quoted currently in most documents is an extrapolation of data many years out of date. The cost to industry is significant and it is noted that iRAP's experience with risk aware companies like BHP demonstrate a proactive and rapid response to risks that does not exist within Government or the broader industry and this leadership should be recognised and learnt from.
- The **accountability for the safety performance of our road networks is minimal** and legal protection encourages an ongoing willingness to shift the blame for road trauma on to the road users. While adopting a "polluter pays" approach to addressing road trauma may be considered extreme, some form of financial accountability must fall on the agencies and companies with the solutions if they are to be incentivised. We should not have any zero and one-star vehicles; zero or one-star roads or zero and one-star road users in the country.

## Appendix A – AusRAP Partnership Model

### AusRAP Partnership to Save Lives

*Concept Paper based on consultation with AusRAP national partners*

**Vision: Create an Australia free of high-risk roads**

**Goal – Target and optimise road infrastructure investment to meet national and jurisdiction targets that saves lives, saves money, and creates jobs.**

#### National Programme Leadership



#### Key Programme Stakeholders



### Austroads & AusRAP – Australia free of high-risk roads

Maximising the life-saving potential of Australia's \$30 billion+ per year investment in road infrastructure for the benefit of all Australians



### Programme Leadership



- Chair National AusRAP Steering Committee
- Support application of iRAP global standard by Australian transport agencies
- Inform National Policy Coordination in support of Vision Zero 2050 target
- National guides, products and research for road safety, design & construction
- Accreditation of agency staff and supplier networks
- Collation and monitoring of infrastructure-related KPIs
- Provide AusRAP related advice, tools and services that support safe mobility

### AusRAP – Implementation



- Investment Planning / Optimisation
- Construction and Maintenance
- Collection and Provision of Data
- Before and After Measurement
- Innovation Partnerships

### Infrastructure Funding and Reporting



- Infrastructure and road safety funding
- National data hub reporting
- Coordination with ORS and BITRE

### AusRAP – Global Support



- Provide and maintain global iRAP tools
- Global Policy, Programme, Technical Product, Innovation and Event Support
- Support international opportunities.

### AusRAP – Centre of Excellence



- Global Technical Committee
- Deployment activities
- Training and Accreditation services
- Quality Assurance / Certification services
- Infrastructure Australia Audit
- Evaluation Studies
- Integration with asset management
- Innovation Partnerships

### AusRAP – Communications & Events

All partners +



- Coordinated communication of results
- Ribbon Cutting Project Success
- Media and Events Coordination

## Appendix B: iRAP's 2020 Inquiry Submission

### **iRAP Opening Statement to the Joint Select Committee on Road Safety**

Good afternoon Honourable Ministers and Senators. My name is Rob McInerney and I am the Chief Executive Officer of iRAP, the International Road Assessment Programme, a global charity that is working in partnership with governments, the road industry and NGO partners in over 100 countries around the world. This includes EuroRAP, usRAP, BrasilRAP, ChinaRAP, IndiaRAP and KiwiRAP amongst others.

As an Australian I would like the AusRAP programme here in Australia to be the best! There are some great things happening here with over 200,000km of star rating data already available as part of the existing partnerships between Austroads, ARRB, AAA and iRAP. This includes:

- the TIC approved national targets for 90% of travel on the National Highway to be 3-star or better by 2020;
- The Midlands Highway, Bruce Highway and Princes Highway investment that is delivering 3, 4 and 5-star performance levels and an 80%+ reduction in road trauma in some cases;
- the BHP led upgrades to public roads in Queensland (and around the world) to reduce risk to their staff;
- the AAA and state-club advocacy, Risk Mapping and Star Rating for Schools work;
- the local government investment partnerships like Eurobodalla Shire and the local roads of regional significance
- the TAC / iRAP Injury Dashboard and Impact Investment work that is shining a light on the true human impact and cost to the health system of road trauma, and
- international partnerships like the AusRAP and IndiaRAP twinning and work to support the new Australia-India Infrastructure Council discussed recently by Prime Minister Modi and Morrison.

But as with many road safety initiatives in this country we lack coordination, are duplicating effort, being more protective of our political image than the humans who use the roads, and simply not doing enough of the proven things that work. We still lack the urgency and scale of response that is needed – but we can fix that.

In simple terms 400,000 Australians will be killed and injured on our roads over the next 10 years. Based on analysis we have completed in partnership with the TAC in Victoria 27,000 people will suffer brain injuries; 85,000 will suffer severe bone fractures and over 100,000 will suffer soft tissue injuries.

So, what would applying the best-in the world look like for AusRAP. Building on what we have done already there would be:

- An AusRAP hub (similar to ANCAP) to coordinate national partnerships, data, innovation, communications, and reporting
- AusRAP Crash Risk Maps of the National Highway and major state networks would be published every year like the UK and Spain have done for 20 years and we'd have urban risk mapping for pedestrians and cyclists like KiwiRAP
- Proactive Star Rating and Investment Plan assessments of the National and State Highway network systematically every 3-5 years that measure progress against the targets and shapes the investment pipeline for the future as completed by Mexico, China and is now specified by the European Union.
- A large-scale Safer Roads Fund would be mobilised like the “Highway Safety to Cherish Life” programme in China, DoT investment for county roads in the UK, and the new private sector partnerships in Brazil that are taking existing roads and upgrading them to 3-star or better performance levels.
- Kids would be provided with 4 and 5-star journeys to school like those happening in Vietnam, USA, Uruguay, and Zambia to name a few.
- The before and after star rating and fatality estimates would be routinely reported for all road upgrades – like the 3, 4 and 5-star targets being applied by Highways England and the Multi-lateral Development Banks are doing from Fiji to El Salvador and India to Ethiopia.

- And we would celebrate success..... with you and your Ministerial colleagues, ribbon cutting every upgraded 3-star or better road like the urban roads in Shanghai that achieved 5-star for pedestrians and cyclists through to the rural roads in India that have hit the minimum 3-star global targets

Throughout the Covid-19 crisis I have heard commentators talk about the trade-off between Protecting Lives and Protecting Livelihoods. When investing in road trauma reduction there is no trade-off.

Systematic investment in 3-star or better roads for all road users will save lives, save money, and create jobs in every corner of this country. We can Protect Lives and Protect Livelihoods. We must Protect Lives and Protect Livelihoods.

## Introduction and background

iRAP is a UK registered global charity with the vision for a world free of high-risk roads. The charity provides the global standard for infrastructure safety performance monitoring as recommended by WHO Member States, UN agencies, the International Transport Forum of the OECD, Global Infrastructure Hub, the World Bank, PIARC (the World Road Association), European Investment Bank and other national governments and multi-lateral development agencies. The specifications, systems and supporting software are provided in a free-to-air environment for all partners to use. Global partners contribute to the continuous enhancement and improvement of the programme for the mutual benefit of all partners.

The AusRAP programme in Australia has been active since 2004 and was the first RAP programme outside Europe. The programme is currently governed by an MOU agreement between the Australian State, Territory and Local Government road agencies represented by Austroads, ARRB, AAA and iRAP. Austroads research has helped underpin the global evidence base used in the models. The associated ANRAM metrics and theory are based on the iRAP methodology, coding manual, star rating, fatality estimation, investment planning and attribute specifications that form the basis of infrastructure KPI reporting globally. It is noted that many practitioners have major misunderstandings of this link and do not appreciate the significant iRAP intellectual property and partnership that is provided for free that supports the integrated AusRAP/ANRAM solutions.

Australian experts have also helped shape the global programme that now reaches 100+ countries, 1,000,000km+ of roads and has made over \$100 billion of road investment safer worldwide from school entrances to major freeways and toll-roads.

An approximate estimate of work already completed by the partners in Australia is provided below:

| STATE                        | STAR RATING &<br>INVESTMENT PLANS<br>(since 2012) | RISK MAPPING<br>(crash maps) | STAR RATING OF<br>ROAD DESIGNS<br>(new since 2019) |
|------------------------------|---------------------------------------------------|------------------------------|----------------------------------------------------|
| Australian Capital Territory | 1,000km+                                          | 40,000km+                    | 350km+                                             |
| New South Wales              | 24,000km+                                         |                              |                                                    |
| Northern Territory           | 2,000km+                                          |                              |                                                    |
| Queensland                   | 50,000km+                                         |                              |                                                    |
| South Australia              | 13,000km+                                         |                              |                                                    |
| Tasmania                     | 800km+                                            |                              |                                                    |
| Victoria                     | 28,000km+                                         |                              |                                                    |
| Western Australia            | 40,000km+ (light data)                            |                              |                                                    |

## Australian Road Assessment Programme – Example Outputs & Partnerships

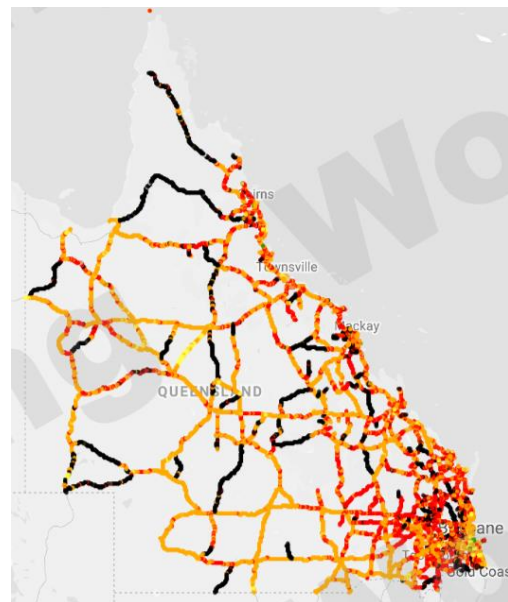
The AusRAP Hub will build on an extensive platform of local experience and application by State and Local Government Agencies, Motoring Clubs, Austroads and ARRB. The partnership benefits from, and contributes to, the global iRAP partnerships that are in place in over 100 countries worldwide. Examples of AusRAP partner activity in Australia are provided below.



### NATIONAL ROAD SAFETY ACTION PLAN 2018–2020

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                     |                                                            |         |
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| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Target infrastructure funding towards safety-focused initiatives to reduce trauma on regional roads | Commonwealth<br>States and territories<br>Local government | 3, A, B |
| <p><b>Why</b><br/>Australia has many high speed regional roads that are key routes and where crash risk is high. There were 843 people killed on regional and remote roads in 2016, representing 65% of all road crash deaths.</p> <p><b>Outcome by 2020</b><br/>Increase safety treatments on roads with highest risk of death and injury. Actions 2 and 3 (together with A and B) collectively aim to improve the star ratings across the whole road network, with the aim to achieve 3-star AusRAP ratings or better for 80% of travel on state roads, including a minimum of 90% of travel on national highways.</p> <p><b>Implementation</b><br/>The Commonwealth, states and territories, and local governments will work together to develop and deliver regional road safety initiatives within infrastructure investment frameworks.</p> <ul style="list-style-type: none"> <li>Upgrades to start with corridors/routes with the highest death and serious injury risk.</li> <li>Apply mass action treatments (e.g. barriers, wide medians, audio-tactile line markings) for state and local roads with the highest risk of fatality and serious injury.</li> <li>Accelerate and/or redirect funding to focus on highly beneficial mass action treatments as part of the delivery of funded infrastructure programs/projects, and use pilot projects to demonstrate the benefits to the community.</li> </ul> |                                                                                                     |                                                            |         |

6 NATIONAL ROAD SAFETY ACTION PLAN 2018–2020



National Star Rating Policy Targets – TIC

Statewide Vehicle Star Ratings – TMR

| Safer Roads Investment Plan                  |                             |                |                       |                |                    |             |
|----------------------------------------------|-----------------------------|----------------|-----------------------|----------------|--------------------|-------------|
| Currency: \$ AUD - Analysis Period: 20 years |                             |                |                       |                |                    |             |
| Total FSLs Saved                             | Total PV of Safety Benefits | Estimated Cost | Cost per FSL saved    | Program BCR    |                    |             |
| 2,081                                        | 1,188,575,999               | 545,419,954    | 262,081               | 2              |                    |             |
| Countermeasure                               | Length / Sites              | FSLs saved     | PV of safety benefits | Estimated Cost | Cost per FSL saved | Program BCR |
| • Road resistance (gravel) roads             | 350.00 km                   | 685            | 285,521,677           | 88,391,771     | 180,126            | 3           |
| • Roadside barriers - driver side            | 517.00 km                   | 440            | 254,839,467           | 154,119,857    | 343,353            | 2           |
| • Clear roadside hazards - driver side       | 1,051.00 km                 | 365            | 151,258,133           | 48,177,539     | 151,704            | 4           |
| • Clear roadside hazards - passenger side    | 1,000.00 km                 | 285            | 132,216,551           | 59,213,879     | 165,835            | 3           |
| • Roadside barriers - passenger side         | 551.00 km                   | 251            | 131,038,019           | 106,211,814    | 434,120            | 1           |
| • Central median barrier (no duplication)    | 10.00 km                    | 72             | 41,221,727            | 9,729,297      | 92,110             | 9           |
| • Central median barrier (duplication)       | 150.00 km                   | 65             | 30,815,005            | 30,815,086     | 335,694            | 2           |
| • Shoulder rumble strips                     | 123.00 km                   | 48             | 20,221,819            | 18,809,322     | 402,426            | 1           |
| • Central median barrier (P+V)               | 15.00 km                    | 46             | 26,151,749            | 16,076,064     | 364,000            | 2           |
| • Traffic calming                            | 47.00 km                    | 45             | 25,198,373            | 12,219,589     | 270,801            | 2           |
| • Protected turn lane (ungrated) - left      | 72 sites                    | 36             | 20,596,835            | 6,425,092      | 178,185            | 3           |
| • Improve delineation                        | 156.50 km                   | 34             | 19,828,995            | 7,518,728      | 218,707            | 2           |
| • Roundabouts (driver side adjacent to road) | 48.20 km                    | 18             | 10,104,759            | 6,505,884      | 367,770            | 2           |

### Safer Road Investment Plan – TAC

#### Anglesea Road



Before and After Star Ratings – VicRoads



AusRAP Crash Risk Maps – AAA / RACQ



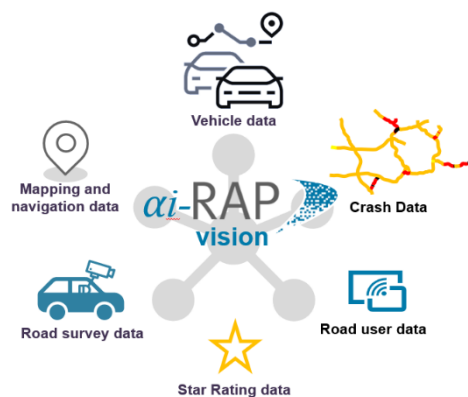


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## Midland Highway 10 Year Action Plan

About the action plan



### We're taking action to improve safety on the Midland Highway

The Midland Highway 10 Year Action Plan sets out the Australian and Tasmanian governments' key priorities for investing \$500 million over 10 years to upgrade the highway and improve road safety and save lives on Tasmania's key north-south freight route. We will improve road safety and decrease driver frustration by providing a safer road with more overtaking opportunities.

### We'll do this by delivering a 3-star safety rating for the Midland Highway

The objective of our 10 year investment in the Midland Highway is to deliver a minimum 3-star rating for the highway's entire length. The Australian Road Assessment Program (AusRAP) is part of the International Road Assessment Program (iRAP) that uses star ratings to measure the safety of a road's infrastructure. Each road is assigned a star rating which tells us how safe the



Global first Ai-RAP Partnership to use big data and artificial intelligence to generate low-cost, scalable RAP data underway with MRWA, Transport for NSW and the iMove CRC will support AusRAP KPI measures

[https://www.midlandhighway.tas.gov.au/about the action plan](https://www.midlandhighway.tas.gov.au/about_the_action_plan)



## BRUCE HIGHWAY COOROY TO CURRA SECTION B, QUEENSLAND, AUSTRALIA

### CASE STUDY

## RAP PARTNERSHIPS SAVING LIVES

# Bruce Highway Cooroy to Curra B






Safety jump from 2-stars to 4 & 5-stars (20% 5-star)

82% reduction in fatal and serious injuries

Reduction in head-on, run-off-road and intersection crashes

Risk of death and serious injury more than halved

AUD\$1.43+ billion invested in safety

<https://www.vaccinesforroads.org/case-studies-of-success/>

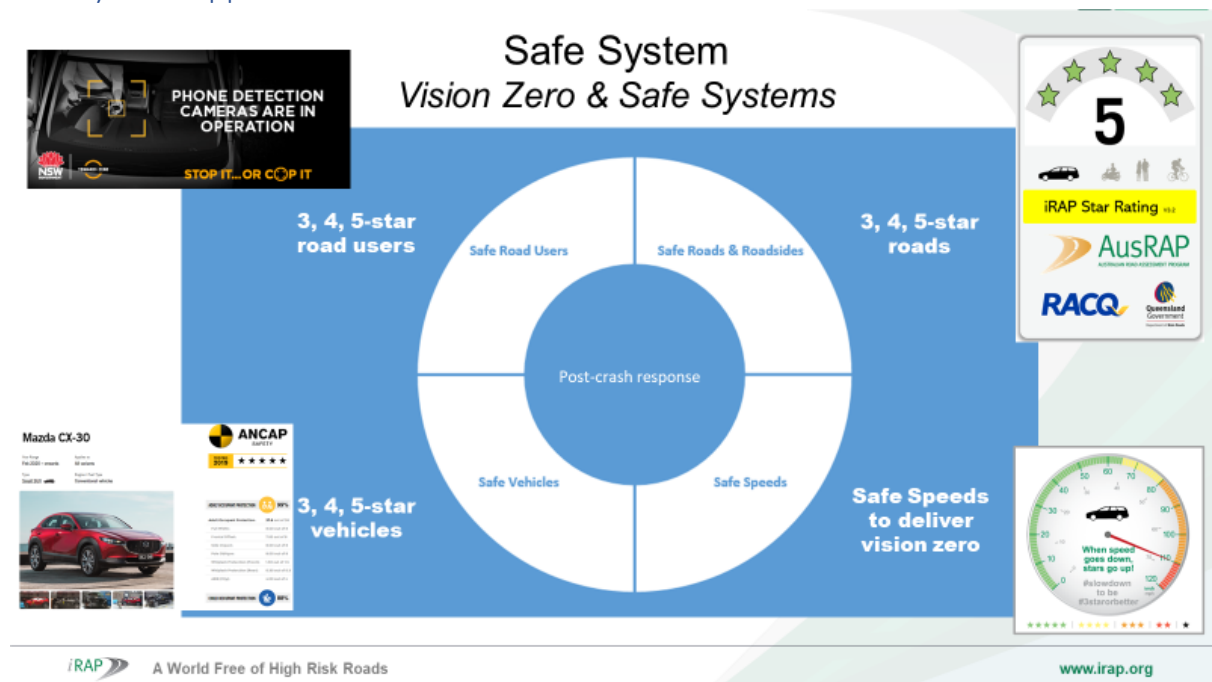
## TOR a. Effectiveness of existing programs and Safe System Opportunities

### Response to the Inquiry into the National Road Safety Strategy

While slow, we are pleased to see positive progress on some of the Inquiry Recommendations however there are a few major areas to address:

- Recommendation 3 with the commitment to the minimum \$3 billion a year road safety fund
- Recommendation 5 with the commitment to the key performance indicators – that should as a minimum align with the [Global Road Safety Performance Targets](#) agreed by WHO Member States including Australia – with baseline assessments completed this year; along with the establishment and resourcing of a national road safety observatory
- Recommendation 8 for speed management initiatives that support harm elimination (e.g. [Auckland Transport recent activity](#))
- Recommendation 9 for all new roads to be 3-star or better for all road users; include the AusRAP data in the Infrastructure Australia audit; establish a long-term Safer Roads Fund and establish a national AusRAP programme/hub to complement the ANCAP partnership that already exists.
- Recommendation 12 to elevate and coordinate DFAT aid and trade partnerships with a focus on road safety outcomes in the Indo-Pacific Region, support for global initiatives including the Global Road Safety Facility, UN Road Safety Fund and key enablers like the multi-lateral development banks, Global Network for Road Safety Legislators, iRAP and Global NCAP.

## Safe System Opportunities



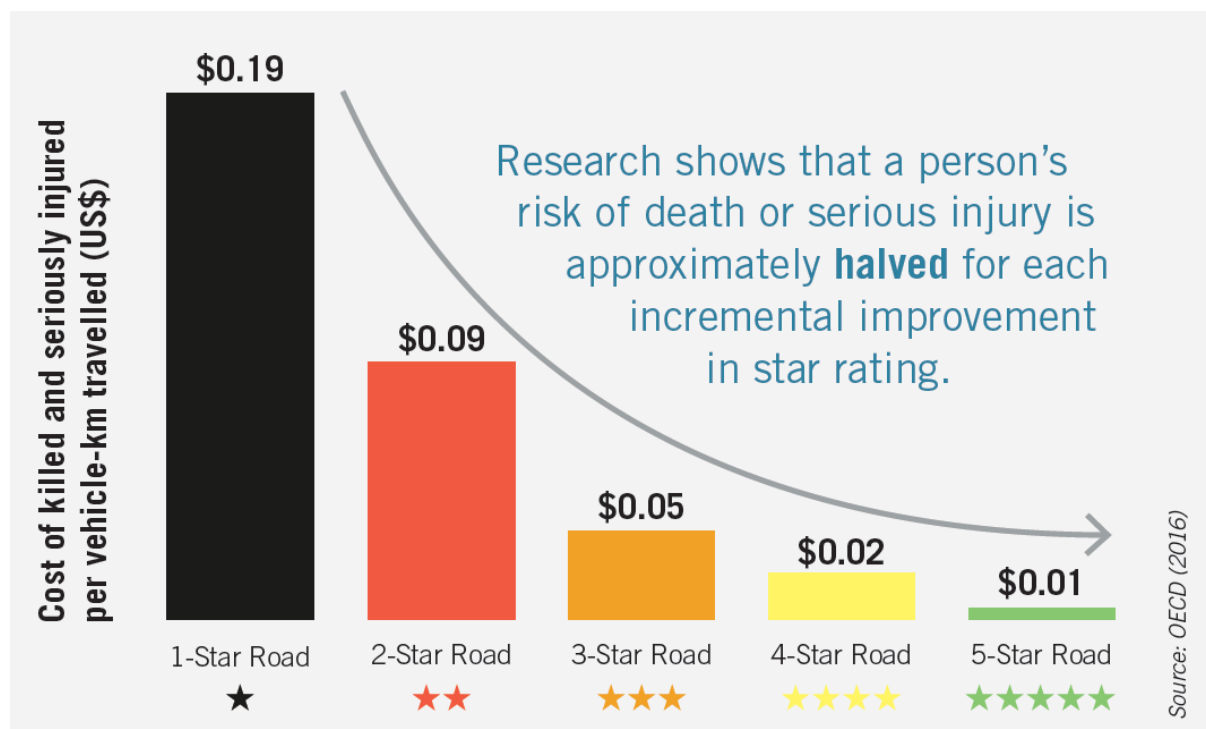
In simple terms, Vision Zero and Safe System outcomes will be achieved when we have 5-star road users, in 5-star vehicles on 5-star roads and the safe speeds to ensure no one is killed or injured.

From an iRAP perspective, key areas to integrate these safe system principles include:

- Corporate, industry and community use and access to AusRAP Risk Mapping and Star Rating Data to provide the safest route and mode-choice for their journeys (as suggested by Hon Minister Thistlethwaite).
- Spot star ratings completed at fatal and serious injury crash scenes and routinely reported to the Standing Committee, Office of Road Safety and in the public domain to support discussions like those mentioned by Ms Bird on Picton Road. "The crash happened on a 1-star road and the driver in the 5-star car survived and the 3 occupants in the 3-star vehicle were killed. None of the fatal five behaviours were evident."
- Design for outcomes not a design to 'standards'. This would involve a new approach where the starting point for designs is a 5-star performance level and design teams and funding agencies must then justify anything less than 5-star highlighting any 'cost savings' associated with the increased death and injury expected over 20 years and why it is the design recommended.

- Integration of Safe System and AusRAP data and knowledge in the education system (e.g. a driver is 6 times more likely to crash on a sharp curve; crash risk is halved for each incremental improvement in road star rating)
- Building on [TAC / iRAP Injury Dashboard](#) engage health Ministers and professionals to understand lifetime cost of road trauma and impact on resources.

### The relationship between Star Ratings and crash costs per kilometre travelled



<https://www.oecd.org/publications/zero-road-deaths-and-serious-injuries-9789282108055-en.htm>

## TOR b. Impact of road trauma on the nation – including remote and regional areas

iRAP believe that a lack of visibility of the true human impact of road crashes has created the apathy and under-investment we have seen to date. Shining a spotlight on the true impact of road trauma has been a focus of the charity, and partnerships with organisations like TAC have enabled that to happen.

The [Vaccines for Roads](https://www.vaccinesforroads.org) resource has been designed to support this discussion.

### The Human Impact in Australia

| The Human Impact of Road Injuries every year |                                      |                      |
|----------------------------------------------|--------------------------------------|----------------------|
| NEW VICTIMS EVERY YEAR                       | HUMAN IMPACT                         | NEW COSTS EVERY YEAR |
| 1,351                                        | Lives Lost                           | \$ 4.9 billion       |
| 299                                          | Severe Acquired Brain Injury         | \$ 3.3 billion       |
| 5,923                                        | Fractures - Limb                     | \$ 2.1 billion       |
| 3,599                                        | Internal Injuries                    | \$ 1.7 billion       |
| 2,484                                        | Brain Injury (Mild) / Head Injury    | \$ 1.3 billion       |
| 10,349                                       | Soft Tissue (Neck / Back) / Whiplash | \$ 974 million       |
| 19                                           | Quadriplegia                         | \$ 599 million       |
| 2,632                                        | Fractures - Other                    | \$ 591 million       |
| 7,500                                        | Contusion / Abrasion Laceration      | \$ 341 million       |
| 827                                          | Dislocations                         | \$ 307 million       |
| 447                                          | Other Spinal                         | \$ 279 million       |
| 29                                           | Paraplegia                           | \$ 257 million       |
| 3,642                                        | Other Injuries                       | \$ 178 million       |
| 321                                          | Degloving                            | \$ 162 million       |
| 1,449                                        | Sprains / Strains                    | \$ 109 million       |
| 894                                          | Concussion                           | \$ 68 million        |
| 43                                           | Amputations                          | \$ 40 million        |
| 55                                           | Burns (Severe / Moderate)            | \$ 16 million        |
| 13                                           | Nerve Damage                         | \$ 4 million         |
| 5                                            | Lost Of Sight / Eyes                 | \$ 1 million         |
| 41,881                                       | TOTAL                                | \$ 17.2 billion      |

<https://www.vaccinesforroads.org/global-impact-of-injuries/>

The human impact of road trauma is also personal.....

**Limb Fractures**

**Julie**

"I don't mind if I can't move it that well I just want to keep my leg", Julie was in an induced coma for eight days after her head-on crash left her trapped in the vehicle. "Every part of my limb has been rebuilt"



**How Safe?**  
 ...are undivided roads and provision for active road users.

**Bridget**

"...who is going to take care of my family? My children need me. How will I go to work?" Bridget was run over trying to cross the road as a pedestrian.



**7,620,000 Limb Fractures a year worldwide.**  
 How many in your country?

**Ken**

"Why did it happen to me?" Ken considered self-harm after being struck by a car while on his bicycle crash on a rural road. With help, he is positive and things are working again.

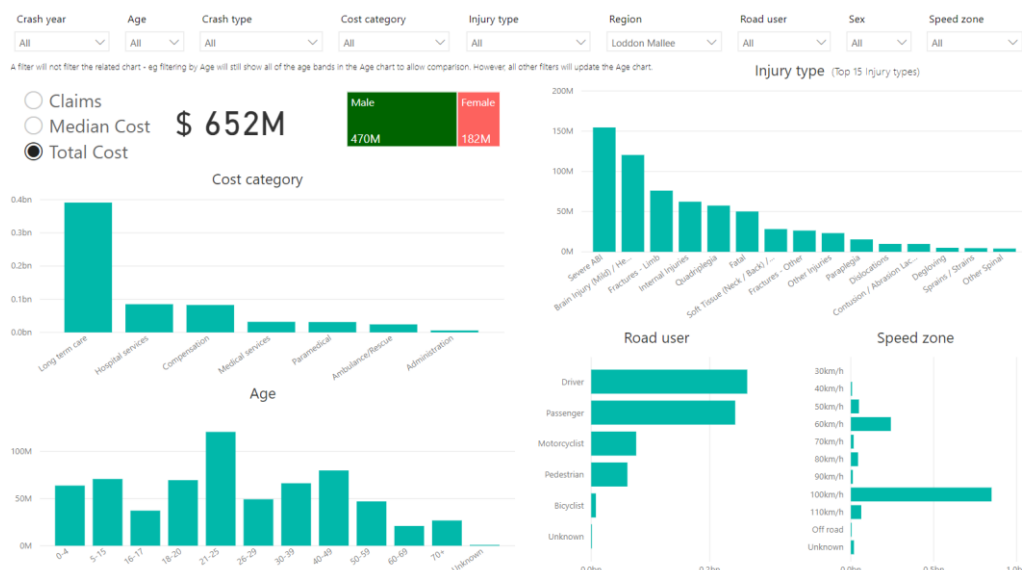


**Business Case -**  
 The win-win investment in divided roads and cycle lanes.

<https://www.vaccinesforroads.org/human-impact/>

## The Impact in Rural and Remote Regions

The public version of the TAC iRAP Injury Dashboard allows the human and financial impact of road crashes to be explored by region. The example below shows the rural region of Loddon Mallee and highlights severe brain injuries are the largest costs, more than half of the claim costs happen more than 2 years after the crash as part of long term care of the crash victims and 21-25 year olds are the most impacted. More detailed dashboards linking the AusRAP data and claim costs are used for internal planning and programme management.



<http://www.tac.vic.gov.au/road-safety/statistics/online-crash-database/irap-road-injury-dashboard>

## TOR c. Parliamentary Standing Committee on Road Safety and its functions

The measurement and accountability for the achievement of key road safety KPIs over the next ten years is critical to ensuring that 400,000 Australians are not killed and injured during that period. Ensuring that accountability is set at the right level of Government and related stakeholders requires good governance, transparency of reporting, resourcing, action, and measurement of success.

iRAP support the establishment of a Parliamentary Standing Committee on Road Safety to perform this function as it relates to the Federal leadership responsibilities agreed nationally. This will also help ensure that the right level of financial and human resources are mobilised to this preventable problem that will cost our economy more than \$300 billion over the next ten years.

An important part of this function is to make sure that the 2021-2030 National Road Safety Strategy currently under development includes clear accountability, well defined and measurable targets, and a commitment to measure and report on progress. Soft language, unambitious targets and blurred accountabilities must be avoided in the next Strategy. This will simplify the role of the Standing Committee in providing the necessary leadership and oversight of Australia's performance, sharing of success and refocussed action and learnings when performance is poor.

## TOR d. Measures to ensure government road infrastructure investment incorporates safe system principles

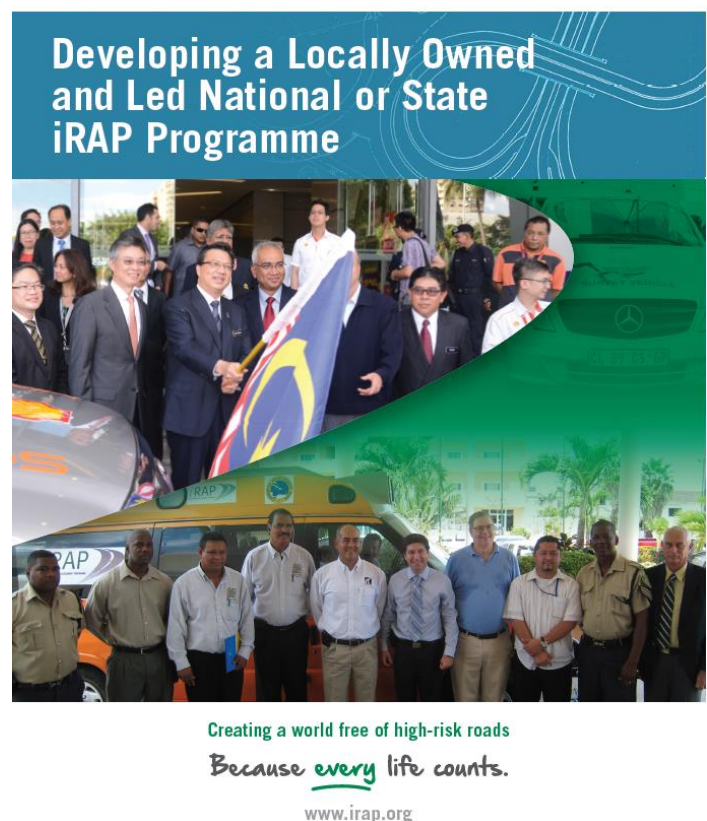
The Actions associated with the Inquiry Recommendations 3, 4, 5, 8 and in particular Recommendation 9 are reinforced.

### AusRAP Hub

The establishment of an AusRAP hub within the Office of Road Safety, or supported as a separate entity like ANCAP, has the support of all of the existing local AusRAP partners including Austroads, AAA and ARRB.

The process by which this can happen is straight forward and follows well-established [global guidance by iRAP](#). Local ownership and leadership by relevant government, research and consumer partners is encouraged in all countries and supports the transparent reporting of infrastructure safety performance and the important optimisation of investment to maximise lives saved.

Concept papers on how AusRAP can be structured have been shared with the Australian Government and Office of Road Safety teams (refer excerpt on following page). Other key stakeholders including Roads Australia, Infrastructure Australia and ACRS could also play important roles.



Some recent examples from the [UK](#) and [Brazil](#) show how this can be undertaken and launched as a positive initiative for road safety.

Other ORS/ BITRE  
Safe System KPI's and  
Performance Management

## AusRAP Hub - Infrastructure Safety Concept Paper

Other ORS  
Responsibilities

**Office of Road Safety & AusRAP – Australia free of high-risk roads**  
Maximising the life-saving potential of Australia's \$30 billion+ per year investment in road infrastructure for the benefit of all Australians

### Programme Leadership



- National Policy Coordination in support of Vision Zero target
- Coordinate and monitor infrastructure-related KPIs for safety
- Collate national road network risk assessment data
- Secure and Deploy Federal Infrastructure Funding to eliminate high-risk roads
- National Performance Tracking

### AusRAP – Implementation Leadership



- Investment Planning / Optimisation
- Construction and Maintenance
- Collection and Provision of Data
- Before and After Measurement



- National Research
- National Policy Advice
- National Guidelines on design, construction, and management

### AusRAP – Global Support



- Global Policy, Programme, Technical Product, Innovation and Event Support

### AusRAP – Communications Leadership



- Ribbon Cutting Project Success
- Results – Internal
- Results – External
- Media and Events Coordination
- Star Rating for Schools

### AusRAP – Technical Leadership



- Global Technical Committee
- Training and Accreditation
- Quality Assurance / Certification
- Infrastructure Australia Audit
- Star Rating for Designs
- Evaluation Studies
- Data Cleansing / Calibration
- Innovation (e.g. AI, Smart Motorways, Urban, Safe System)

## Minimum Star Rating Standards for new roads

BITRE reports as early as 2014 propose the use of the Star Rating global standard as a simple and immediate evidence-based measure to apply to road infrastructure investment. This includes the concept that road funding would be subject to meeting a minimum 3, 4 or 5-star standard as required. It is noted that significant Australian research underpins the global RAP models that form the basis of the global Star Rating standard used in over 100 countries worldwide.

Road agencies have already applied the star rating standard on new projects (e.g. Midlands Highway, Prices Highway) and Austroads has included the star rating standard in a number of their peak guidance documents.

It is noted that the Star Rating standard for pedestrians, cyclists and motorcyclists is available and in wide use around the world but has had limited application by key agencies so far in Australia. While a lot of safe system work and discussions in Australia is focussed on passenger vehicles, the inclusion of the 3, 4 and 5-star performance targets for vulnerable road users is a simple and immediately available solution for enhanced outcomes for all road users in Australian infrastructure investment. **For example, any new Metro public transport projects could include a requirement that the 1km radius around the passenger stations are 5-star for pedestrians and cyclists.**

Together with the World Bank and FIA Foundation, iRAP developed the dedicated and freely available Star Rating for Designs software solution that allows road designs to be assessed in a simple and systematic way (<https://www.irap.org/star-rating-for-designs/>).

Safe system can be characterised as 5-star users, in 5-star vehicles on 5-star roads. Speed is a key component of each part of the system. In terms of road design, Government can specify that a 5-star facility must be designed and any departure from that 5-star standard must be justified along with the associated trauma levels expected. Australian state road agencies are already working with iRAP to integrate the safe system reporting of both star rating and key attribute reporting (e.g. protected roadsides for run-off road crashes, protected medians for head-on crash risk) in their road projects.

The key elements for success to ensure government road infrastructure investment incorporates safe system principles include:

- A national policy target for the % of travel on 3-star or better road infrastructure that will support the setting of star rating targets for all road infrastructure investment
- Associated targets for travel on 5-star roads that supports full safe system outcomes on high-volume strategic roads where Vision Zero outcomes are desired by 2030, on the journey to Vision Zero everywhere by 2050 (refer Recommendation 4 of the Inquiry).

As an example, the following clause can be added to all Federal road funding allocations for both major projects and road safety targeted funding. Similar approaches are being adopted by high-income governments and low and middle-income country governments via the multi-lateral development banks.

“The new road shall be built to an ‘x’-star standard for all road users. This includes for pedestrians, cyclists, motorcyclists, and vehicle occupants where present. The before and after star rating and the before and after fatality and serious injury estimates shall be reported.

#### Before Star Ratings and Fatal and Serious Injury Estimate

| Road User                                                                           | ★ | ★★ | ★★★ | ★★★★ | ★★★★★ | FSI Estimate |
|-------------------------------------------------------------------------------------|---|----|-----|------|-------|--------------|
|  |   |    |     |      |       |              |
|  |   |    |     |      |       |              |
|  |   |    |     |      |       |              |
|  |   |    |     |      |       |              |

#### After Star Ratings and Fatal and Serious Injury Estimate

| Road User                                                                           | ★ | ★★ | ★★★ | ★★★★ | ★★★★★ | FSI Estimate |
|-------------------------------------------------------------------------------------|---|----|-----|------|-------|--------------|
|  |   |    |     |      |       |              |
|  |   |    |     |      |       |              |
|  |   |    |     |      |       |              |
|  |   |    |     |      |       |              |

The Federal Department and the Standing Committee could then have simple annual reports detailing the length of road and kilometres of travel moved to a 3, 4 and 5-star standard across the entire funding portfolio. This will provide good governance and reporting supportive of the current national targets agreed by Ministers for increasing the percent of travel on 3-star or better roads across Australia.

Within the safe system context iRAP is working with the European Union and other partners to ensure the combined performance of new driver assistance technologies, vehicle safety standards, road design standards and technology / ITS deployment are implemented to minimise the occurrence of death and injury. For further details see <https://eurorap.org/slain-project/> and <https://www.irap.org/2017/12/event-snapshot-innovation-2017/>. As part of the global programme all AusRAP partners will immediately benefit from any breakthroughs and methodologies and global partners will benefit from Australian ingenuity.

While not the core expertise of iRAP, the approaches for the other elements of the safe system can be easily included. For example:

- All Federal Government National Highway investment shall include point to point speed cameras, distraction and seat-belt monitoring and rest areas to support safe user behaviour.
- In line with Federal Government leadership of vehicle safety (refer Recommendation 7 of the Inquiry Recommendations) to support ANCAP, Heavy Vehicle Regulation and rapid adoption and alignment with minimum European vehicle standards all major projects can include targeted communications with communities along new corridors about vehicle safety standards and potential incentives for after-market retrofit technologies.

## TOR e. road trauma and incident data collection and coordination

### Annual Risk Maps and Performance Tracking

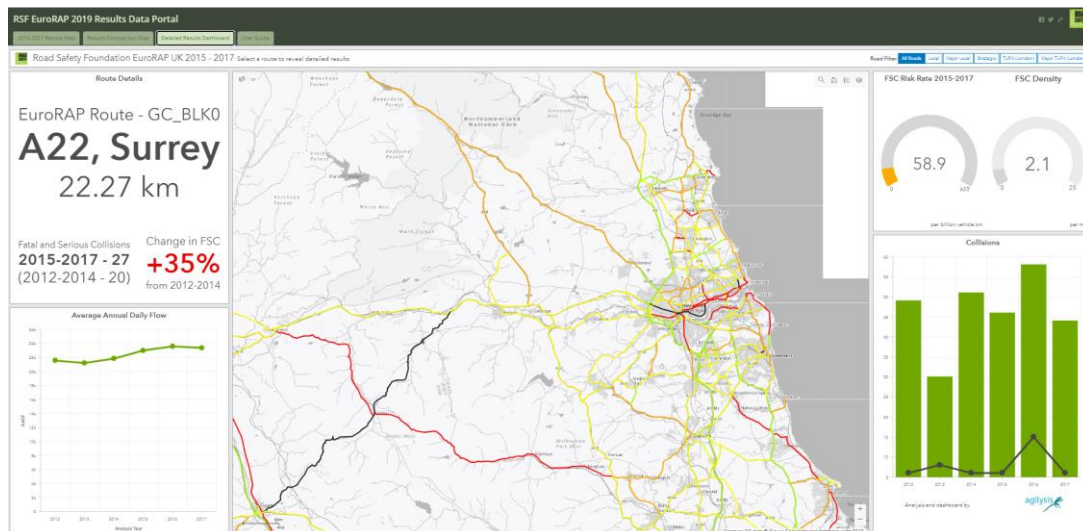
The use of the AusRAP Risk Maps as an annual reporting tool to provide crash data in a map-based format will provide high-value for all Australians. This includes the new Office of Road Safety and potential Standing Committee in measuring performance of the Australian National Road Safety Strategy. The risk maps – prepared in accordance with the iRAP global standard - will provide the ultimate measure of success in reducing crash rates over time from all action areas and allow benchmarking within Australia and across other leading countries in Europe.

The Risk Maps will also benefit fleet managers, companies, and community members in understanding some roads are safer than others. As mentioned by Minister Thistlethwaite this can ultimately support the introduction of apps to allow the safest route and mode choice from A to B to be mapped for all journeys for all Australians.

Ready examples of this annual risk mapping approach are available from countries like the UK and Spain and highlight the potential of this approach to support transparent performance tracking. This can ensure success can be celebrated when high -risk roads become low-risk – and also to continuously target any persistently high-risk roads.

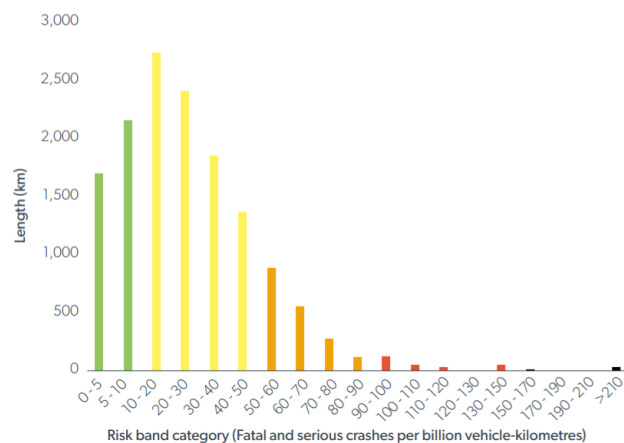
Refer to the following overseas examples for more information:

- <https://roadsafetyfoundation.org/project/how-safe-are-you-on-britains-main-road-networks-eurorap-results-2019/>
- <https://eurorap.org/wp-content/uploads/2020/01/20170608-5-EuroRAP-in-Spain-L-Puerto.pdf>
- [http://www.kiwirap.org.nz/risk\\_maps.html](http://www.kiwirap.org.nz/risk_maps.html)



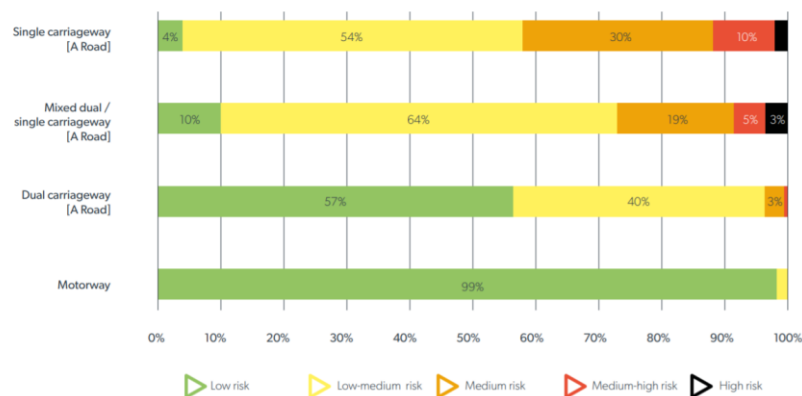
### [EuroRAP UK Risk Mapping Dashboard](#)

**FIGURE 1: RISK RATE DISTRIBUTION FOR ENGLISH SRN AND MRN COMBINED (TOP), SCOTTISH STRATEGIC ROADS (MIDDLE) AND WELSH STRATEGIC ROADS (BOTTOM)<sup>7</sup>**



### Risk Distribution per billion kilometre travelled ([UK](#))

**FIGURE 3: PERCENTAGE OF TRAVEL ON SECTIONS WITH HIGH-LOW RISK BANDINGS BY ROAD TYPE**

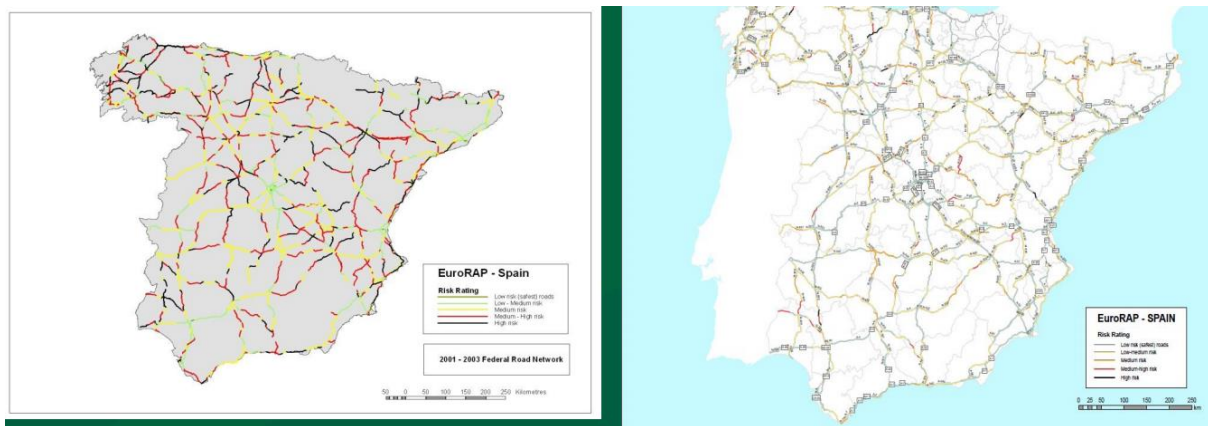


### % of travel on low to high crash rates by road type ([UK](#))

**Table 1:** Most improved road links

| Site Name                           | Region                             | 07-11 Crashes |         |     |                      |                    | 12-16 Crashes |         |     |                      |                    | Difference in F+S |
|-------------------------------------|------------------------------------|---------------|---------|-----|----------------------|--------------------|---------------|---------|-----|----------------------|--------------------|-------------------|
|                                     |                                    | Fatal         | Serious | F+S | Collective Risk Band | Personal Risk Band | Fatal         | Serious | F+S | Collective Risk Band | Personal Risk Band |                   |
| SH 1 from Kaikoura to Waipara       | Canterbury                         | 5             | 46      | 51  | Medium               | Medium-High        | 7             | 23      | 30  | Low-Medium           | Low-Medium         | -21               |
| SH 77 from Ashburton to Darfield    | Canterbury                         | 6             | 21      | 27  | Low-Medium           | High               | 1             | 5       | 6   | Low                  | Low                | -21               |
| SH 2 from Takapau to Hastings       | Hawke's Bay/<br>Manawatu-Whanganui | 10            | 29      | 39  | Medium-High          | Medium             | 6             | 13      | 19  | Low-Medium           | Low                | -20               |
| SH 2 from Featherston to Upper Hutt | Wellington                         | 2             | 32      | 34  | High                 | High               | 3             | 13      | 16  | Medium-High          | Medium             | -18               |
| SH 2 from Takapau to Woodville      | Manawatu-Whanganui                 | 6             | 20      | 26  | Medium               | Medium             | 1             | 10      | 11  | Low-Medium           | Low                | -15               |
| SH 1 from Timaru to Oamaru          | Canterbury/Otago                   | 10            | 20      | 30  | Medium               | Low-Medium         | 6             | 9       | 15  | Low-Medium           | Low                | -15               |
| SH 1 from Warkworth to Wellsford    | Auckland                           | 9             | 17      | 26  | High                 | Medium-High        | 2             | 11      | 13  | Medium-High          | Low-Medium         | -13               |

## Performance Tracking ([KiwiRAP](#))



## [Spanish Risk Maps](#) – the improvement from 2004 – 2014

## Harmonisation, detail, and timeliness of injury data

iRAP fully support the harmonisation of injury data collection and the essential work of Austroads, RACS and other partners in enabling this work.

In addition, it is very important that the Human Impact of Road Trauma is adequately communicated with the Australian population. The accountability, scale, and urgency of our response – from politicians to business, from road agencies to road users – requires a much better understanding that deaths are just the tip of the iceberg.

The TAC and iRAP has already completed world-leading work to shine a spotlight on the human impact of road trauma as detailed in the images below.

### The Australian Impact of Road Injuries every year (projected)

| The Human Impact of Road Injuries every year |                                      |                      |
|----------------------------------------------|--------------------------------------|----------------------|
| NEW VICTIMS EVERY YEAR                       | HUMAN IMPACT                         | NEW COSTS EVERY YEAR |
| 1,351                                        | Lives Lost                           | \$ 4.9 billion       |
| 299                                          | Severe Acquired Brain Injury         | \$ 3.3 billion       |
| 5,923                                        | Fractures - Limb                     | \$ 2.1 billion       |
| 3,599                                        | Internal Injuries                    | \$ 1.7 billion       |
| 2,484                                        | Brain Injury (Mild) / Head Injury    | \$ 1.3 billion       |
| 10,349                                       | Soft Tissue (Neck / Back) / Whiplash | \$ 974 million       |
| 19                                           | Quadriplegia                         | \$ 599 million       |
| 2,632                                        | Fractures - Other                    | \$ 591 million       |
| 7,500                                        | Contusion / Abrasion Laceration      | \$ 341 million       |
| 827                                          | Dislocations                         | \$ 307 million       |
| 447                                          | Other Spinal                         | \$ 279 million       |
| 29                                           | Paraplegia                           | \$ 257 million       |
| 3,642                                        | Other Injuries                       | \$ 178 million       |
| 321                                          | Degloving                            | \$ 162 million       |
| 1,449                                        | Sprains / Strains                    | \$ 109 million       |
| 894                                          | Concussion                           | \$ 68 million        |
| 43                                           | Amputations                          | \$ 40 million        |
| 55                                           | Burns (Severe / Moderate)            | \$ 16 million        |
| 13                                           | Nerve Damage                         | \$ 4 million         |
| 5                                            | Lost Of Sight / Eyes                 | \$ 1 million         |
| 41,881                                       | TOTAL                                | \$ 17.2 billion      |

<https://www.vaccinesforroads.org/global-impact-of-injuries/>

In addition to the public projections more detailed analysis and dashboards have been developed for the public to access (<http://www.tac.vic.gov.au/road-safety/statistics/online-crash-database/irap-road-injury-dashboard>) and also for TAC internal use.

Individual human impact stories have also been shared to demonstrate the personal impact of every crash one by one.



Home How Safe? Human Impact Global Impact Case Studies Business Case About Take Action

Big Data Tool

## A world free of high-risk roads THE HUMAN IMPACT OF INJURIES

*"Statistics are people with the tears wiped away"*

Dr. Irving Selikoff, public health clinician

Micaela, Chelsea, Julie, Bridget, Ken, Antonio, Daniela, Josh, Joel, Hilary, Simon, Pariyada, Anthony, David, Guido, Sarah, Angela, Dita, Anariá, Scott, Victor.



<https://www.vaccinesforroads.org/human-impact/>

In addition to the TAC work in Victoria, the extensive work of Transport for NSW, Centre for Road Safety in providing valuable road safety data and performance metrics for the benefit of all NSW stakeholders is a great example of best practice in Australia.

## TOR f. recommended strategies, performance measures and targets for next Strategy

First and foremost, the new Strategy must implement the 12 Inquiry Recommendations and associated actions in full and the key elements of the many submissions and consultations that have occurred over recent years. **Accountability and Action, Urgency and Scale are the key themes that must drive action.**

The core elements of Road Safety Management, Safe Speeds, Safe Roads, Safe Vehicles, Safe Road Users, and Improved Post Crash Care are globally accepted and aligning with this proven structure is essential. This will also align with State-level strategies and also allow global best practice to be mobilised here also.

Within the Road Safety Management action area it is essential that the new strategy is very clear on accountabilities. As a special advisor to the National Inquiry we recommended a national governance review. What we expected was a simple outline of where the Federal Government should lead – and where the established expertise and ownership of actions at a State, local and non-government area are clearly articulated and understood.

As an example, the Federal Government should lead on:

- Owning the National Road Safety Strategy and accountabilities.
- Owning KPI reporting through national road safety observatory functions and harmonised data reporting and incentivising data collection and reporting from other relevant stakeholders
- Supporting safe system national coordination through ANCAP, AusRAP, National Road Rules and Trauma Registry hubs / functions
- Leading on vehicle standards and vehicle import requirements and the accelerated uptake of new technologies
- Providing enabling funds (Recommendation 3 – the \$3 bn a year road safety fund) for National Highway 5-star investments and for local government to bring roads to 3-star or better standards. This can be targeted using the annual Risk Maps and Star Rating benchmarks every 3-5 years as mandated in Europe.
- Supporting initiatives for research, capacity development / efficient delivery mechanisms for local government in particular, innovation and key enablers.

Importantly the National Strategy should recognise the state-level leadership and strategies in their areas of clear accountability – and not try and duplicate or cross-over those issues. The well-set, ambitious, optimised, and resourced work to achieve the key performance indicators will provide the ultimate coordinating function for national action and accountability.

### Road Infrastructure Key Performance Indicators using the iRAP Global Standard

The following pages outline the global Safer Roads / Road Infrastructure KPIs recommended for use globally as part of the iRAP Global Standard and the Global Road Safety Performance Targets. This work is informing target and KPI setting across Europe and worldwide through the Regional Road Safety Observatories in Latin America, Africa, and Asia. Global alignment on these KPIs will also ensure Ai-RAP initiatives to ensure big-data approaches to streamline data collection is immediately available for all partners to benefit from in Australia.

Australian adoption of these targets as a minimum requirement will ensure the significant investment in AusRAP data collection nationally already (100,000km+) provides a great starting point for performance tracking across Australia. The approach will also allow simple benchmarking with other countries (e.g. performance of Australian motorways versus French, Spanish and UK Motorways; pedestrian star ratings in inner CBD areas comparing Stockholm versus Sydney).

It is worth noting that the Federal Government may choose to undertake independent measurement of National Highway performance but in most cases all data collection will be undertaken by States using full, high tech Ai-RAP or light data AusRAP methodologies as required. The same data is the basis for any ANRAM crash FSI data estimates.

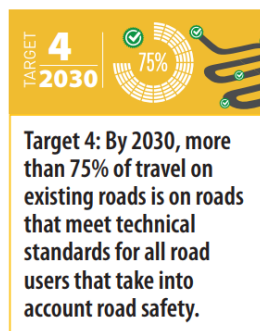
Given the \$100 billion investment in infrastructure by the Federal Government over the next ten years ensuring good road safety data drives investment decisions and measurement of success is a very small element when considered as an integral part of each multi-million dollar project and funding allocation.

## Road Infrastructure Key Performance Indicators using the iRAP Global Standard

Harmonisation of road safety data is a major focus of all stakeholders across the world. This includes fatality and injury data; road infrastructure performance data; vehicle performance data; road user behaviour data; and post-crash response data.

The recommended road infrastructure Key Performance Indicators (KPI's) will ensure harmonised collection of data in support of the following:

- the [United Nations Sustainable Development Goals](#)
- the [12 Global Road Safety Performance Targets](#) agreed by Member States;
- the [EU RISM Directive](#);
- the [Regional Road Safety Observatories](#);
- [WHO Global Status Report on Road Safety](#);
- the [Sum4All initiative](#); and
- policies and strategies set by Governments, development organisations, donors, and NGOs worldwide.



[Member State agreed Global Road Safety Performance Targets](#)

<https://www.who.int/roadsafety/publications/en/>

### About iRAP

iRAP is a registered charity. The iRAP specifications, methodologies and software provide the global standard with all resources published in the public domain for free use by partners globally (<https://www.irap.org/resources/>). The iRAP methodologies are overseen by an independent [Global Policy Advisory Committee and Global Technical Committee](#), and are supported with training courses and an accreditation scheme for partners and suppliers worldwide.

## The iRAP Global Standard

iRAP methodologies have been applied by partners in more than 100 countries across more than 1 million kilometres of road. These safety assessments are informing more than US\$75 billion of road investment and provide harmonised road infrastructure KPI's for the mutual benefit of all stakeholders worldwide. Local ownership and application of the iRAP Global Standard is encouraged and supported in every country. To date, more than 25,000 people have participated in training, workshops, and presentations on iRAP content.

The global iRAP standard provides numerous benefits including:

- an objective, evidence-based approach to assessing infrastructure related risk that all jurisdictions and stakeholders can access;
- a way to benchmark performance between jurisdictions and road classes;
- a mechanism to fast-track safety assessments through innovative initiatives such as linkages to road asset data; [Ai-RAP](#) and the [light data methodology](#); and
- alignment with the UN, WHO, EU, PIARC and multi-lateral development bank policies and recommendations.

### Achieving UN Targets 3 and 4 by 2030 will mean



To understand what achieving the KPIs would mean for your country, see iRAP's [Business Case for Safer Roads](#).

## For more information

- To learn more about iRAP and its global programmes and activities, visit [irap.org](http://irap.org)
- To apply the Step by Step Approach to Safer Roads with the KPIs providing the confidence to invest and the metrics to measure success, visit [vaccinesforroads.org/take-action/](http://vaccinesforroads.org/take-action/)
- To understand the human impact of road crashes, how safe the world's roads are and what is possible for your country – in terms of fatal and serious injuries prevented and economic savings that could be achieved by maximising the percentage of travel on 3-star or better roads by 2030 - explore iRAP's Big Data Tool at [vaccinesforroads.org](http://vaccinesforroads.org)
- To learn about or establish an iRAP programme in your country or state, contact your local representative by visiting the where we work map at [irap.org/about-us/](http://irap.org/about-us/)
- For details on iRAP's protocols and how to apply them to your infrastructure projects, visit [irap.org/how-we-can-help/](http://irap.org/how-we-can-help/)
- For training to support achieving the KPIs, visit [irap.org/training/](http://irap.org/training/)



## GLOBAL ROAD INFRASTRUCTURE KEY PERFORMANCE INDICATORS (KPI'S) – EXISTING ROADS

### Crash Data

| iRAP Global Standard               | Protocol / Attribute       | Primary KPI                                                                                             | Current Global Performance | 2030 Target               | Extended Metrics (with primary performance measure in bold)                       |
|------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------|----------------------------|---------------------------|-----------------------------------------------------------------------------------|
| <a href="#">Crash Risk Mapping</a> | Collective Crash Risk Maps | Percentage of road length with < XXX fatal and serious crashes per kilometre per year                   |                            | To be set by jurisdiction | % in each category ( <b>low, low-medium</b> , medium, medium-high, and high risk) |
| <a href="#">Crash Risk Mapping</a> | Individual Crash Risk Maps | Percentage of road length with < XXX fatal and serious crashes per billion vehicle kilometres travelled |                            | To be set by jurisdiction | % in each category ( <b>low, low-medium</b> , medium, medium-high, and high risk) |

### Infrastructure and Speed Management for existing roads ([Global Road Safety Performance Target 4](#))

| iRAP Global Standard        | Protocol / Attribute         | Primary KPI (Refer <a href="https://www.vaccinesforroads.org/">https://www.vaccinesforroads.org/</a> for sample of global and national performance) | Current Global Performance | 2030 Target | Extended Metrics (with primary performance measure in bold)                                    |
|-----------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------|------------------------------------------------------------------------------------------------|
| <a href="#">Star Rating</a> | Pedestrian Star Rating       | Percentage of travel on 3-star or better roads for pedestrians                                                                                      | 12 %                       | >75%        | % of length and % of travel in each category ( <b>5-star, 4-star, 3-star</b> , 2-star, 1-star) |
| <a href="#">Star Rating</a> | Bicyclist Star Rating        | Percentage of travel on 3-star or better roads for cyclists                                                                                         | 14 %                       | >75%        | % of length and % of travel in each category ( <b>5-star, 4-star, 3-star</b> , 2-star, 1-star) |
| <a href="#">Star Rating</a> | Motorcyclist Star Rating     | Percentage of travel on 3-star or better roads for motorcyclists                                                                                    | 33 %                       | >75%        | % of length and % of travel in each category ( <b>5-star, 4-star, 3-star</b> , 2-star, 1-star) |
| <a href="#">Star Rating</a> | Vehicle Occupant Star Rating | Percentage of travel on 3-star or better roads for vehicle occupants                                                                                | 56 %                       | >75%        | % of length and % of travel in each category ( <b>5-star, 4-star, 3-star</b> , 2-star, 1-star) |



## INFRASTRUCTURE ATTRIBUTE PERFORMANCE KPIS – BY ROAD LENGTH\*

| iRAP Global Standard                    | Protocol / Attribute                                   | Primary KPI (Refer <a href="https://www.vaccinesforroads.org/">https://www.vaccinesforroads.org/</a> for sample of global and national performance) | Current Global Performance | 2030 Target                |
|-----------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|
| <a href="#">iRAP Coding Manual</a>      | Sidewalk; Operating Speed                              | Percentage of roads where pedestrians are present and traffic flows at 40km/h (25mph) or more <b>have formal footpaths or sidewalks</b>             | 15%                        | To be set by jurisdictions |
| <a href="#">iRAP Coding Manual</a>      | Pedestrian crossing – inspected road; Operating Speed  | Percentage of roads where pedestrians cross and traffic flows at 40km/h (25mph) or more <b>have pedestrian crossing facilities</b>                  | 8%                         |                            |
| <a href="#">iRAP Coding Manual</a>      | Pedestrian crossing quality; Operating Speed           | Percentage of pedestrian crossings that <b>are adequately signed or maintained</b>                                                                  | 88%                        |                            |
| <a href="#">iRAP Coding Manual</a>      | Facilities for motorised two wheelers; Operating Speed | Percentage of roads where motorcyclists are present and traffic flows at 60km/h (40mph) or more <b>have dedicated motorcycle facilities</b>         | 1%                         |                            |
| <a href="#">iRAP Coding Manual</a>      | Bicycle facility; Operating Speed                      | Percentage of roads where bicyclists are present and traffic flows at 40km/h (25mph) or more <b>have dedicated bicycle facilities</b>               | 9%                         |                            |
| <a href="#">iRAP Coding Manual</a>      | Median Type; Operating Speed                           | Percentage of roads where traffic flows at 80km/h (50mph) or more <b>have divided carriageways</b>                                                  | 19%                        |                            |
| <a href="#">iRAP Coding Manual</a>      | Roadside severity (object & distance); Operating Speed | Percentage of roads where traffic flows at 80km/h (50mph) or more <b>have low-risk roadsides</b>                                                    | 21%                        |                            |
| <a href="#">iRAP Coding Manual</a>      | Curvature; Operating Speed                             | Percentage of roads where traffic flows at 80km/h (50mph) or more <b>do not have sharp curves</b>                                                   | 97%                        |                            |
| <a href="#">iRAP Coding Manual</a>      | Intersection Type; Operating Speed                     | Percentage of intersections where traffic flows at 60km/h (40mph) or more <b>have turning provision</b>                                             | 27%                        |                            |
| <a href="#">iRAP Coding Manual</a>      | Intersection Type; Operating Speed                     | Percentage of railway crossings where traffic flows at 60km/h (40mph) or more <b>have active protection</b>                                         | 47%                        |                            |
| <a href="#">iRAP Coding Manual</a>      | Number of lanes; Operating Speed                       | Percentage of roads where traffic flows at 80km/h (50mph) or more <b>have dedicated overtaking provision</b>                                        | 35%                        |                            |
| <a href="#">Star Rating for Schools</a> | Pedestrian Star Rating                                 | Percentage of school star rating data points that are <b>3-star or better for children</b>                                                          | ? %                        |                            |

\* potential to present by % of travel where volume data is available and reliable.



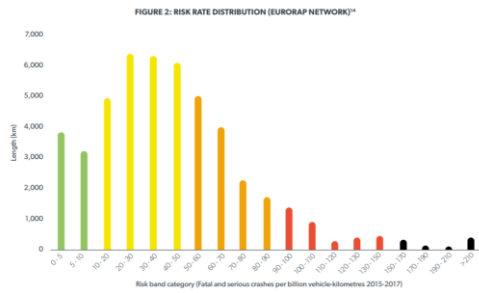
## GLOBAL ROAD INFRASTRUCTURE KEY PERFORMANCE INDICATORS – NEW AND UPGRADED ROADS

### Infrastructure and Speed Management for New and Upgraded Roads ([Global Road Safety Performance Target 3](#))

| iRAP Global Standard        | Protocol / Attribute         | Primary KPI (Refer <a href="https://www.vaccinesforroads.org/">https://www.vaccinesforroads.org/</a> for sample of global and national performance) | Current Global Performance* | 2030 Target | Extended Metrics (with primary performance measure in bold)                                                    |
|-----------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------|----------------------------------------------------------------------------------------------------------------|
| <a href="#">Star Rating</a> | Pedestrian Star Rating       | <b>Percentage</b> of travel on new or upgraded roads that are 3-star or better roads for pedestrians                                                | ? %                         | 100%        | % of length and % of travel in each category ( <b>5-star</b> , <b>4-star</b> , <b>3-star</b> , 2-star, 1-star) |
| <a href="#">Star Rating</a> | Bicyclist Star Rating        | <b>Percentage</b> of travel on new or upgraded roads that are 3-star or better roads for cyclists                                                   | ? %                         | 100%        | % of length and % of travel in each category ( <b>5-star</b> , <b>4-star</b> , <b>3-star</b> , 2-star, 1-star) |
| <a href="#">Star Rating</a> | Motorcyclist Star Rating     | <b>Percentage</b> of travel on new or upgraded roads that are 3-star or better roads for motorcyclists                                              | ? %                         | 100%        | % of length and % of travel in each category ( <b>5-star</b> , <b>4-star</b> , <b>3-star</b> , 2-star, 1-star) |
| <a href="#">Star Rating</a> | Vehicle Occupant Star Rating | <b>Percentage</b> of travel on new or upgraded roads that are 3-star or better roads for vehicle occupants                                          | ? %                         | 100%        | % of length and % of travel in each category ( <b>5-star</b> , <b>4-star</b> , <b>3-star</b> , 2-star, 1-star) |

\* Regular measurement of existing road networks (e.g. every 5 years as legislated in Europe) will provide an opportunity to measure progress; World Bank GRSF is currently undertaking a worldwide project measuring progress; The recently launched Star Rating for Designs tool supports performance tracking.

## Risk Mapping Examples



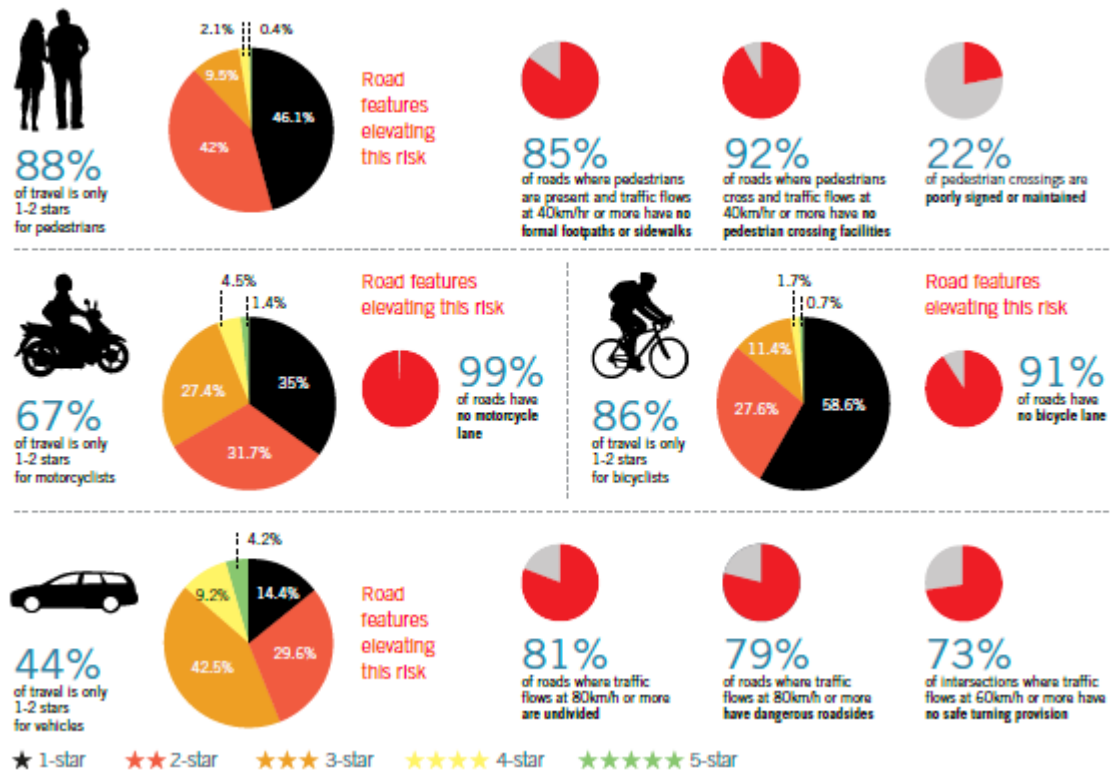
## EuroRAP UK Risk Mapping

| Period    |             | High | Medium-High | Medium | Low-Medium | Low | Total |
|-----------|-------------|------|-------------|--------|------------|-----|-------|
| 2002-2006 | Percentage  | 29%  | 12%         | 22%    | 18%        | 20% | 100%  |
|           | Length (km) | 339  | 136         | 254    | 217        | 233 | 1,179 |
| 2007-2011 | Percentage  | 10%  | 22%         | 28%    | 25%        | 15% | 100%  |
|           | Length (km) | 118  | 270         | 332    | 306        | 178 | 1,204 |

## KiwiRAP Risk Mapping

## Star Rating and iRAP Attribute Data Examples

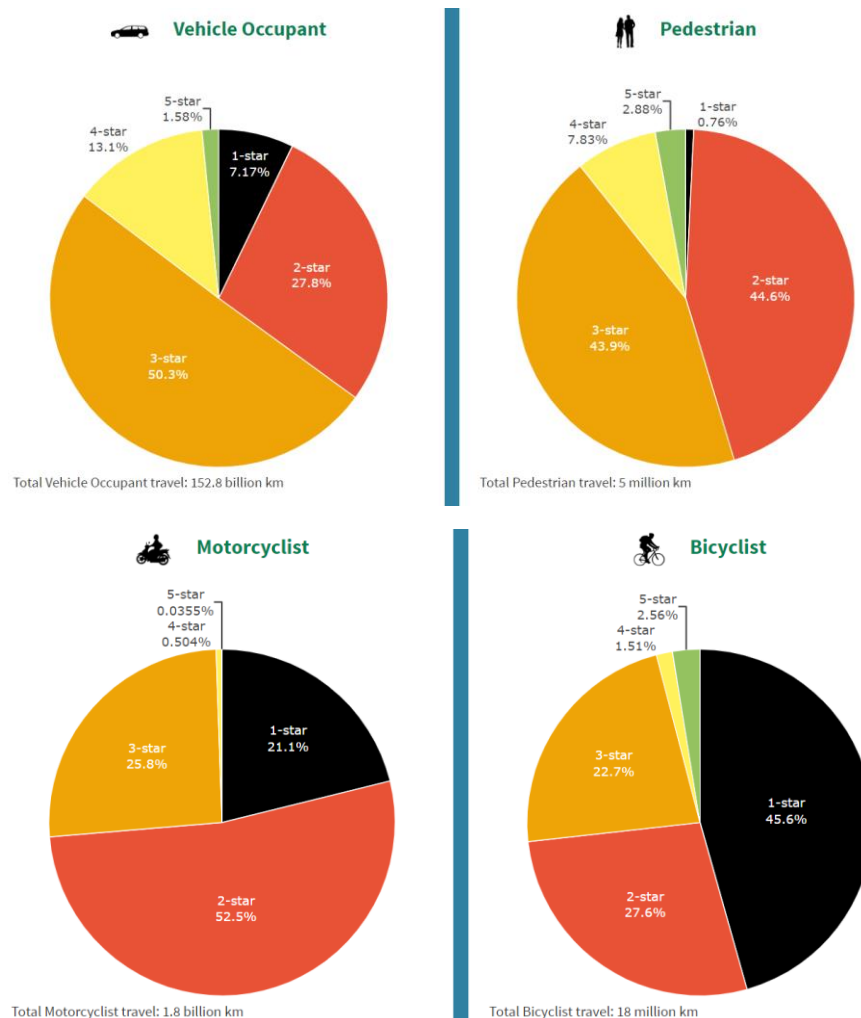
**BASED ON 358,000KM OF ROADS ACROSS 54 COUNTRIES:**



[vaccinesforroads.org/how-safe-are-the-worlds-roads/](https://vaccinesforroads.org/how-safe-are-the-worlds-roads/)

## Australian Infrastructure Safety KPI Data Snapshot

In general, many of our roads do not provide a safe workplace for Australians who use the roads each and every day. As an example (noting that the source data is a sample only of AusRAP data collected up to 2018), the Australian Star Rating and KPI attribute data performance is provided below.



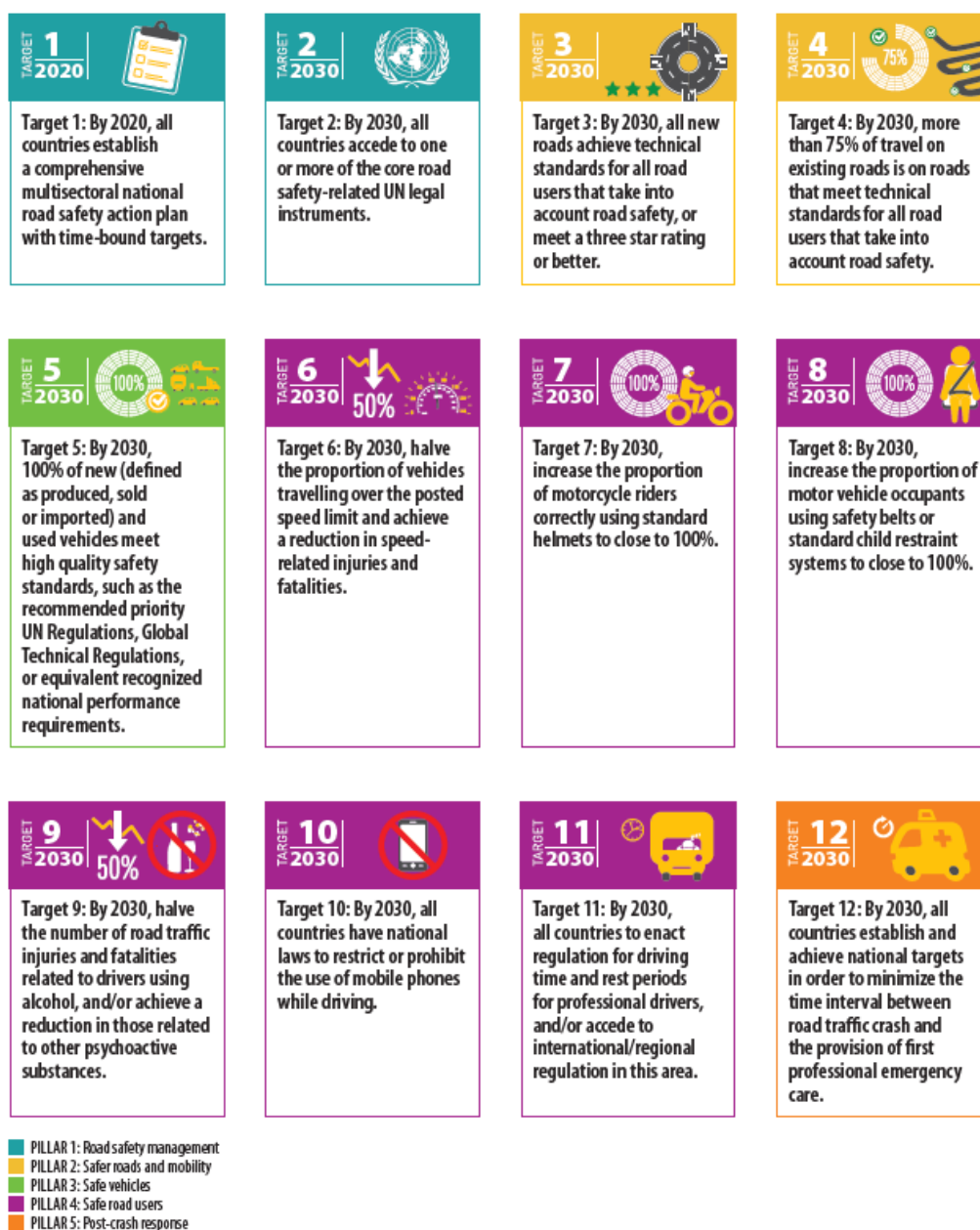
- 73% of the high-speed roads assessed have dangerous roadsides - typically 30% of deaths in Australia come from run-off road crashes
- 91% of the high-speed roads assessed are undivided - typically 20% of deaths in Australia are head-on crashes
- 62% of intersection have no safe turning provision - typically 20% of fatal crashes happen at intersections
- 15% of roads have no footpaths and 76% of the road length provides no facility for a pedestrian to cross the road safely - typically 10% of fatalities are pedestrians
- 91% of roads assessed where bicycles are present have no dedicated bicycle facilities - the June data published by BITRE highlights an 83% increase in bicycle fatalities this year.

## Global Road Safety Performance Targets

In terms of all safe system activities the performance targets should, at a very minimum, allow Australia to systematically report against the Global Road Safety Performance Targets agreed by Member States at the global level – including Australia – and the WHO Global Status Report on Road Safety.

See <https://www.who.int/roadsafety/publications/en/> for further details.

### GLOBAL ROAD SAFETY PERFORMANCE TARGETS



Following the request of the United Nations General Assembly, on November 22, 2017 Member States reached consensus on 12 global road safety performance targets. For more information: [http://www.who.int/violence\\_injury\\_prevention/road\\_traffic/road-safety-targets/en/](http://www.who.int/violence_injury_prevention/road_traffic/road-safety-targets/en/)

## TOR g. recommendations for Office of Road Safety role

The Office of Road Safety role must be elevated within the Department. Without the authority to convene and support a potential Standing Committee for Road Safety the desired impact of national leadership and governance will not be achieved.

A number of key initiatives have been enacted by the Federal Government already in relation to the Inquiry Recommendations. In many cases the scale of the individual elements are not yet at the level envisioned as part of the Inquiry Recommendations.

While the Inquiry authors did not specifically prescribe where and how budgets should be allocated for the \$3 billion Road Safety Fund, seeing this an important function of the new national leadership team, high-level work was done to consider where funding should be allocated and is provided below for information.

### How to mobilise the \$3bn Road Safety Fund

| <b>Pillar</b>          | <b>Per annum budget</b> | <b>Areas of investment</b>                                                                                                                                                                                         |
|------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Road Safety Management | \$ 500 million          | ORS (\$50m), National Road Safety Observatory (\$50m), Trauma Registry (\$50m) Baseline Data and KPI measurement and incentives (\$50m), R&D Innovation (\$150m) and Enablers / Capacity Development Fund (\$150m) |
| Safer Roads            | \$ 2 billion            | AusRAP hub; National Highways Safety enhancement (\$1 billion on top of existing commitments); Local Government Safer Roads Fund to raise roads to 3-star or better (\$1 billion).                                 |
| Safer Vehicles         | \$ 300 million          | ANCAP, Vehicle Regulations (\$100 million); ADVI, coordinated trials and new technologies (\$100 million); Accelerated deployments incentives (\$100 million)                                                      |
| Safer Road Users       | \$ 50 million           | Funds to support road user behaviour technology trials, speed management on National Highway; research and sharing between jurisdictions (\$50 million)                                                            |
| Safer Speeds           | \$ 50 million           | Incentive funding for State-based acceleration of safe system speed management initiatives across all roads                                                                                                        |
| Post Crash Care        | \$ 100 million          | Trauma Centre; TAC / T4NSW data extension Australia wide; NDIS links; Insurance reform (\$100 million)                                                                                                             |

As highlighted in the previous sections on the strategy development the Office of Road Safety role should include:

- Accountability for the national road safety strategy and the setting of ambitious targets
- Accountability for the management of the \$3 billion a year funding and the associated governance and performance of outcomes supported with that funding
- Setting and monitoring national KPIs and ensuring accountability for the achievement of those KPI targets across all jurisdictions and annual reporting on progress
- Accountability for vehicle safety – of all vehicle types
- Establishing funding criteria with star rating and safety performance outcomes for the infrastructure funding support for States, Territories and Local Government
- Accountability for convening the multi-stakeholder forums within the Federal Government including Transport, Health, Education and DFAT portfolios.
- Coordinating international engagement and support for our neighbours in the Pacific and Asian regions who can benefit from Australian road safety expertise, aid, and trade opportunities.

## TOR h. other measures with a focus on the Inquiry Recommendations

iRAP is already actively supporting the Global Infrastructure Hub and also DFAT with positive economic, aid and trade related activities including but not limited to:

- The G20 Quality Infrastructure guidance
- The Australia-India Infrastructure Council
- Road infrastructure safety in Vietnam
- AusRAP and IndiaRAP twinning partnerships

This could be actively expanded with PacificRAP and AusRAP partnerships to deliver 3-star and better roads across the Pacific; Integrating the IndonesiaRAP development in Indonesia with the KIAT activities and the IndiaRAP and AusRAP twinning expansion for industry level cooperation and partnerships.

The Australia Government should recommit/commit to important global initiatives including the World Bank Road Safety Facility and the UN Road Safety Fund.

The Australian Government should also ensure, as a shareholder of the multi-lateral development banks, that their investment is in line with the Global Road Safety Performance Targets.

Long term, results-based financing partnerships with low and middle-income countries to bring their roads to 75% of travel at the 3-star or better global standard will be a win for health, for transport, for poverty alleviation and government to government relationships. Both aid and trade outcomes can be significant if managed with the focus on win-win outcomes for all.

The recommended actions from the Inquiry Recommendations are reproduced here for information.

- » Establish an international road safety consultative committee that draws on the expertise of numerous Australian and international road safety specialists. The committee would inform DFAT of road safety priorities and strategies.
- » Continue to support the United Nations Decade of Action for Road Safety and the Sustainable Development Goals with particular focus on the Indo-Pacific.
- » Ensure all development projects using Australian finance and capital include minimum standards and outcomes that support the UN Global Road Safety Targets. Importantly, these must not increase death and injury on affected roads.
- » Provide seed funding for targeted international road safety collaboration, research and demonstration programs and partnerships. These include the Global Road Safety Facility, Global Network for Road Safety Legislators, iRAP, GNCAP and the UN Road Safety Fund.