National Road Trauma Review

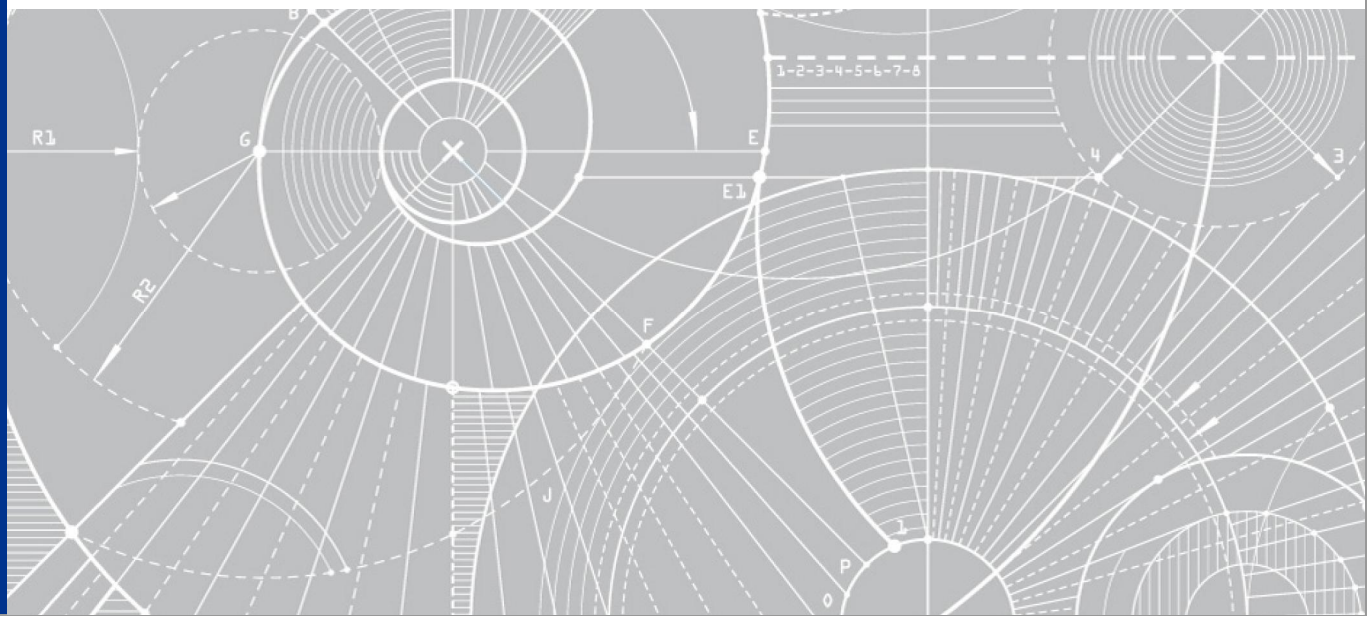
BUREAU OF INFRASTRUCTURE, TRANSPORT AND REGIONAL ECONOMICS

Analysis of Surveys and Workshop Outcomes

Final Report | V08 Final

SON1230552

27 June 2014



JACOBS®

JACOBS

National Road Trauma Review

Project no:	NB98105
Document title:	National Road Trauma Review – Surveys and Workshop Report
Document no:	Final Report
Revision:	V08 Final
Date:	27 June 2014
Client name:	Bureau of Infrastructure, Transport and Regional Economics
Client no:	SON1230552
Project manager:	David Lowe
Author:	Peter Hunkin / Michael McIvor / Peter Corrie
File name:	NB98105 National Road Trauma Review 2014 06 27 Final Report

Jacobs Group (Australia) Pty Ltd
ABN 37 001 024 095
100 Christie Street
St Leonards NSW 2065

www.jacobs.com

Document history and status

Revision	Date	Description	By	Review	Approved
V01	8 May 2014	Initial analysis of survey responses	P. Hunkin	D. Lowe	P. Hunkin
V03	9 May 2014	Updated to include BITRE comments Issued as Interim Report	P. Hunkin	D. Lowe	P. Hunkin
V05	17 June 2014	Updated to include Workshop Activities and Outputs Issued as Draft Final Report for BITRE comments	P. Corrie	P. Hunkin	P. Hunkin
V07	26 June 2014	Draft Final reviewed to incorporate BITRE comments	P. Corrie	P. Hunkin	P. Hunkin
V08 Final	27 June 2014	Final report issued	P. Corrie	P. Hunkin	P. Hunkin

JACOBS

Contents

Important note about your report

The sole purpose of this report and the associated services performed by Jacobs is to conduct a national investigation of potential road trauma measures, through a survey of nominated stakeholders, in accordance with the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs derived the data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context. The report is based entirely on the stakeholder responses to the survey.

This report has been prepared on behalf of, and for the exclusive use of, Jacobs's Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party

1. Introduction

Jacobs has been engaged by the Bureau of Infrastructure, Transport and Regional Economics, a division of the Department of Infrastructure and Regional Development to undertake an investigation of the potential measures or actions that could be implemented to achieve further gains in the reduction in road trauma across Australia.

The study brief outlined the background to the study as follows:

BITRE has been tasked by the Australian Government to undertake a review to evaluate the benefits and costs associated with the different road safety approaches adopted by jurisdictions, both domestically and internationally.

The review objective is to estimate both the benefits and costs of measures to encourage safer road users, build safer roads, drive safer vehicles, travel at safer speeds and develop safer systems, and provide a ranking of measures both in terms of expected outcomes (reduced fatalities and injuries) and net benefit–cost to the Australian community.

To ensure the analysis captures the current knowledge and expertise, BITRE will engage a consultant to interview key researchers and stakeholders in road safety and prepare a report of potential measures to further reduce road trauma. The consultant will then organise and facilitate a Canberra workshop of research experts and stakeholders to validate the measures in this report, and present the final written report to BITRE in Canberra.

The approach to the study was to engage with identified key stakeholders around the country (as well as selected stakeholders in New Zealand and the United Kingdom) to discuss views, research and issues that they believe could make a difference.

Stakeholders have also been invited to attend a workshop in Canberra on 16 May 2014 to discuss the outcomes of the survey and to consider the key measures for further investigation and analysis.

The following report outlines the process and outcomes of the study.

Initially a draft report (Chapters 1-3 together with the proposed agenda for the Workshop) was issued for the information of stakeholders that were planning to attend the workshop.

This report builds upon the Draft Report to include details of the workshop process and outcomes.

2. Survey Process

2.1 Study objectives

The objective of the interviews was outlined in the brief issued by BITRE. It states that:

The objective is to draw on the expertise of key Australian researchers and stakeholders to identify, define the scope of and (where possible) quantify expected outcomes and costs of measures that could be used to reduce road trauma on Australian roads.

This interview process will:

- *Define 'base case' expectations of future road trauma outcomes to 2020, and beyond.*
- *Identify measures that include new ideas, bringing forward measures, or increase the scope or breadth of existing actions.*
- *Define the scope of measures, impacts on deaths and injury, what would be needed to implement it, and implementation and other costs (e.g. reductions in travel time).*
- *Identify critical success factors – e.g. the need for community acceptance or development of new standards.*

The one-day workshop will:

- *Report back to participants on an initial list of potential measures drawn from consultations, the scope and expected trauma impacts, who would be responsible for implementation, and the expected costs.*
- *Based on feedback from participants, modify the scope of measures, expected impact on the number of road deaths and injuries, what would be needed to implement it, and the implementation and other costs.*
- *For each measure with a significant impact, identify critical factors – e.g. addressing community acceptance or the need for new standards.*
- *Rank measures in terms of expected effectiveness, likely cost, and feasibility.*
- *Seek affirmation/agreement of group and dissenting views, and if needed identify alternate impact/cost scenarios for specific measures.*

The workshop may have up to 30 participants.

The study process was designed to address these objectives and provide a sound understanding of the issues for further review and discussion at the Workshop in Canberra on 16 May 2014.

2.2 Areas for investigation

The survey process followed this outline and developed a survey method and analysis process specifically targeted at the five key areas for investigation identified by BITRE, namely:

- Safe people
- Safe vehicles
- Safe Roads and Roadsides
- Safer Speeds
- Safe Programs

2.3 Stakeholder nominees

The Jacobs team nominated a range of potential stakeholders in each of the jurisdictions and submitted that list to BITRE for review. BITRE reviewed and enhanced the list of nominees and the list was accepted as the target group of stakeholders to be contacted for interviews. The detailed contact list is included in **Appendix A**.

A summary of the Australian agencies contacted is set out below.

National bodies
- Australian Motorcycle Council
- Australian Automobile Association
- ANZPAA
- Institute of Public Works Engineering Australasia
- Royal Australasian College of Surgeons
- Australasian College of Road Safety
- St John Ambulance
- National Health and Medical Research Council
- The Georges Institute for Global Health
- ARRB

Western Australia
- West Cycle
- Curtin - Monash Accident Research Centre
- Chair - Road Safety Council
- Main Roads Western Australia
- Western Australia Police
- Office of Road Safety
- Insurance Commission of Western Australia
- Department of Transport WA

Victoria
- MUARC – Monash University Accident Research Centre
- VicRoads
- TAC
- Victorian Police
- Department of Transport, Planning and Local Infrastructure
- Bicycle Network Victoria

New South Wales
- Centre for Road Safety, Transport for NSW
- "Transport and Road Safety (TARS) Research University of NSW"
- Justice and Community Service Directorate ACT

Tasmania
- Department of Infrastructure, Energy and Resources TAS

South Australia
- Centre for Automotive Safety Research (University of SA)
- University of SA, Barbard Hardy Institute
- SA Police
- Motor Accident Commission
- Department of Planning, Transport & Infrastructure SA

Queensland
- TMR
- Queensland Police Service
- Centre for Accident Research and Road Safety

Northern Territory
- Department of Transport NT
- NT Police, Fire and Emergency Services
- Department of Transport NT

In addition Jacobs linked with our colleagues in new Zealand and the UK to identify some international inputs to the study. The international agencies contacted included:

New Zealand
- NZTA
- Waikato University
- Ministry of Transport
- New Zealand Police
- Automobile Association
- Auckland University
- Canterbury University
- Road Transport Association

United Kingdom
- CIHT
- TRL
- Highways Agency
- EuroRAP
- Transport Scotland

2.4 Survey process

The survey process involved:

- Identify stakeholders – as outlined above
- Mobilise team of interviewers from across the Jacobs business to undertake the surveys
- Team members contact nominated stakeholders to arrange time for a face-to-face interview
- Develop survey questionnaire tool to address required outcomes
- Meet with stakeholders and work through the survey tool and generate responses
- Consolidate and analyse survey responses to identify key issues and outcomes
- Prepare summary report (i.e. this report) to outline the survey process and results

In most cases the nominated contact was available for the interview, but in a number of instances an alternate interviewee(s) was necessary due to unavailability of the nominated individual.

In the case of ANZPAA, they considered it necessary to seek the views of their (or six of eight) representative organisations and offered to administer the survey on our behalf. The results were prepared in the same format as the Jacobs administered surveys and combined with the consolidated responses from all other stakeholders.

BITRE prepared a letter of introduction to support the interview team in making contact with the key personnel. While this was useful, it may have been unnecessary as most stakeholders were very keen to meet the team and present their views. A copy of the BITRE letter of introduction is included in **Appendix B**.

2.5 Survey tool

The brief from BITRE requested that responses be developed in the five areas outlined above and tabulated to address the following elements under each category (as shown in **Figure 1**):

- ***Measure*** – What are the key actions or initiatives under this policy area that are worthy of further investigation?
- ***Scope*** – What is the scope or extent, or scale of the action?
- ***Expected Safety Impact (Casualty accident reduction and timing)*** – How effective are these actions (or how effective are they likely to be?) What are you expecting to be the outcome?
- ***Who would be responsible*** – Can you identify who would/should be responsible for delivering this initiative?
- ***Costs*** – How much do the actions costs? What evidence do you have to support that view?
- ***Issues*** – What are the critical issues that you have (or need to overcome) for the initiative to be successful?

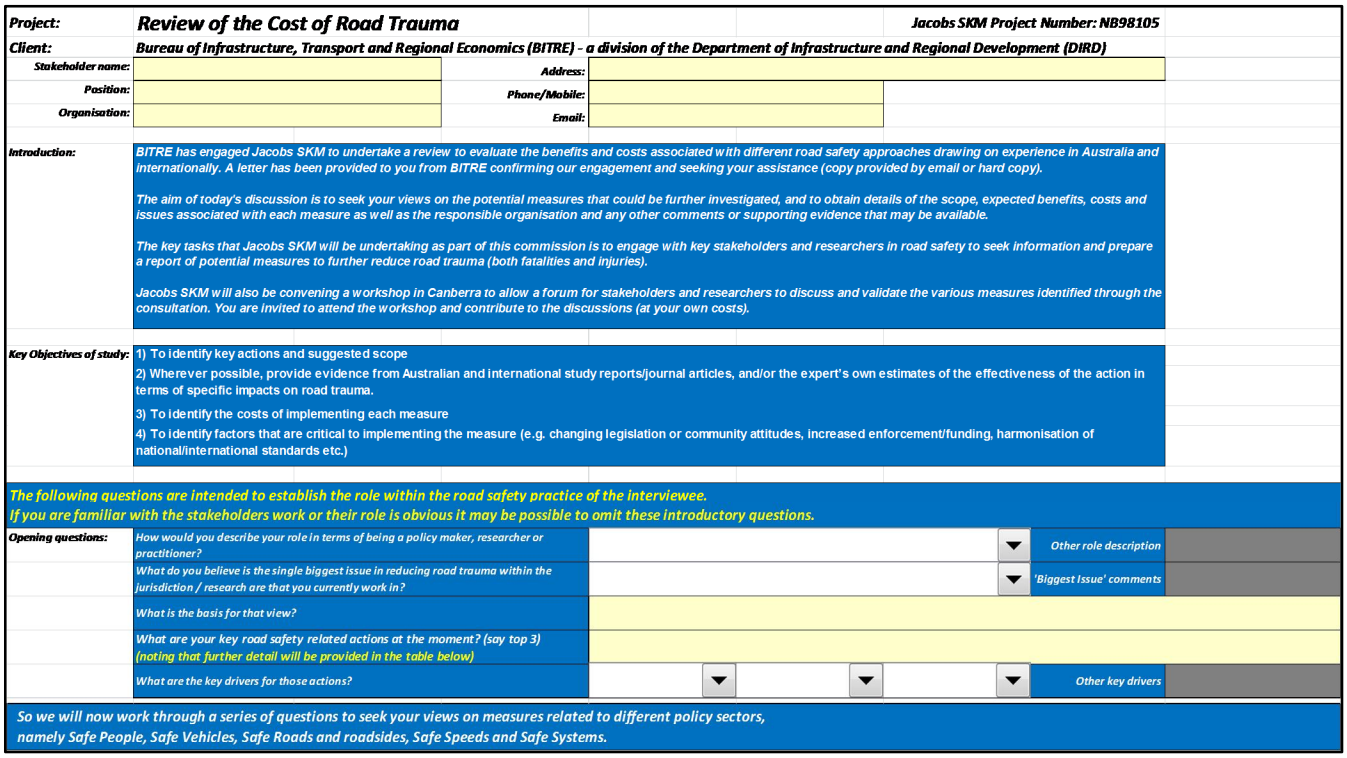
Safe people	Measure	Scope	Expected Safety impact (Casualty reductions and timing)	Who would be responsible	Costs	Issues
Action 1						
Action 2						
Action 3						
...						
Safe vehicles						
Action 1						
Action 2						
Action 3						
...						
Safe roads and roadsides						
Action 1						
Action 2						
Action 3						
Action 4						
...						
Safe speeds						
Action 1	Reduce speed limits in urban areas	To reduce posted speed limits of 50KM/hr or above on urban local roads by 10KM/hr.	Research studies (citatations) have found ... Experts have estimated that ...	State and Territory transport agencies	Increased enforcement by Police (cost is estimated at $50m per year)	Community acceptance
Action 2						
Action 3						
...						
Safe systems						
Action 1						
Action 2						
...						

Figure 1 – Table of measures – as outlined in study brief

Jacobs supplemented the table with several questions related to:

- Evidence – to allow opportunity to provide empirical evidence to support the views put forward
- Comments – to allow opportunity for further comments to be provided on the action/measure

An introduction and some supplementary questions were also added to the survey tool and it was prepared for release to the survey team members in each jurisdiction (shown in **Figure 2**).



Project:	**Review of the Cost of Road Trauma**		**Jacobs SKM Project Number: NB98105**
Client:	**Bureau of Infrastructure, Transport and Regional Economics (BITRE) - a division of the Department of Infrastructure and Regional Development (DIRD)**		
Stakeholder name:		**Address:**	
Position:		**Phone/Mobile:**	
Organisation:		**Email:**	

Introduction:

BITRE has engaged Jacobs SKM to undertake a review to evaluate the benefits and costs associated with different road safety approaches drawing on experience in Australia and internationally. A letter has been provided to you from BITRE confirming our engagement and seeking your assistance (copy provided by email or hard copy).

The aim of today's discussion is to seek your views on the potential measures that could be further investigated, and to obtain details of the scope, expected benefits, costs and issues associated with each measure as well as the responsible organisation and any other comments or supporting evidence that may be available.

The key tasks that Jacobs SKM will be undertaking as part of this commission is to engage with key stakeholders and researchers in road safety to seek information and prepare a report of potential measures to further reduce road trauma (both fatalities and injuries).

Jacobs SKM will also be convening a workshop in Canberra to allow a forum for stakeholders and researchers to discuss and validate the various measures identified through the consultation. You are invited to attend the workshop and contribute to the discussions (at your own costs).

Key Objectives of study:

1) To identify key actions and suggested scope
2) Wherever possible, provide evidence from Australian and international study reports/journal articles, and/or the expert's own estimates of the effectiveness of the action in terms of specific impacts on road trauma.
3) To identify the costs of implementing each measure
4) To identify factors that are critical to implementing the measure (e.g. changing legislation or community attitudes, increased enforcement/funding, harmonisation of national/international standards etc.)

The following questions are intended to establish the role within the road safety practice of the interviewee.
If you are familiar with the stakeholders work or their role is obvious it may be possible to omit these introductory questions.

Opening questions:

How would you describe your role in terms of being a policy maker, researcher or practitioner?		*Other role description*
What do you believe is the single biggest issue in reducing road trauma within the jurisdiction / research are that you currently work in?		*'Biggest Issue' comments*
What is the basis for that view?		
What are your key road safety related actions at the moment? (say top 3) (noting that further detail will be provided in the table below)		
What are the key drivers for those actions?		*Other key drivers*

So we will now work through a series of questions to seek your views on measures related to different policy sectors, namely Safe People, Safe Vehicles, Safe Roads and roadsides, Safe Speeds and Safe Systems.

Figure 2 – Survey instrument – introductory information

The introduction states:

> *BITRE has engaged Jacobs SKM to undertake a review to evaluate the benefits and costs associated with different road safety approaches drawing on experience in Australia and internationally. A letter has been provided to you from BITRE confirming our engagement and seeking your assistance (copy provided by email or hard copy).*
>
> *The aim of today's discussion is to seek your views on the potential measures that could be further investigated, and to obtain details of the scope, expected benefits, costs and issues associated with each measure as well as the responsible organisation and any other comments or supporting evidence that may be available.*
>
> *The key tasks that Jacobs SKM will be undertaking as part of this commission is to engage with key stakeholders and researchers in road safety to seek information and prepare a report of potential measures to further reduce road trauma (both fatalities and injuries).*
>
> *Jacobs SKM will also be convening a workshop in Canberra to allow a forum for stakeholders and researchers to discuss and validate the various measures identified through the consultation. You are invited to attend the workshop and contribute to the discussions (at your own costs).*

The survey instrument outlined the study objectives as:

> *1) To identify key actions and suggested scope*
>
> *2) Wherever possible, provide evidence from Australian and international study reports/journal articles, and/or the expert's own estimates of the effectiveness of the action in terms of specific impacts on road trauma*
>
> *3) To identify the costs of implementing each measure*
>
> *4) To identify factors that are critical to implementing the measure (e.g. changing legislation or community attitudes, increased enforcement/funding, harmonisation of national/international standards etc.)*

A series of introductory questions were asked to identify key areas of interest to the stakeholder:

How would you describe your role in terms of being a policy maker, researcher or practitioner?

What do you believe is the single biggest issue in reducing road trauma within the jurisdiction / research area that you currently work in?

What is the basis for that view?

What are your key road safety related actions at the moment? (say top 3)

What are the key drivers for those actions?

For a number of the introductory questions, a series of 'drop-down' options was available to the respondent as follows:

"How would you describe your role in terms of being a policy maker, researcher or practitioner?"

- Policy maker
- Researcher
- Practitioner/technical specialist
- Other?

"What do you believe is the single biggest issue in reducing road trauma within the jurisdiction / research area that you currently work in?"

- A. Safe people (i.e. measures to do with people behaviour)
- B. Safe vehicles (i.e. measures to do with vehicle enhancements)
- C. Safe roads and roadsides (i.e. measures to do with physical infrastructure)
- D. Safe speeds (i.e. measures to do with changes in speed controls)
- E. Safe systems (i.e. measures to do with technology measures, or education/training programmes, or safety campaigns etc.)
- Other?

"What are the key drivers for those actions?"

- Political decision
- Community feedback/pressure
- Accident statistics
- Technology
- Regulatory
- Economic
- Other?

The respondent was then asked to identify which of the five areas they are able to address with authority and were then only asked to respond to those areas in the detailed responses.

Those responses were also arranged in the survey instrument in a systematic way as shown in **Figure 3**.

Policy Sector (Item number)	Action/Measure	Scope	Expected Safety Impact (casualty reductions and timing)	Who would be responsible?	Costs?	Issues	Supporting Evidence	Comments
	What are the key actions or initiatives under this policy area that are worthy of further investigation?	What is the scope or extent, or scale of the action?	How effective are these actions (or how effective are they likely to be?) What are you expecting to be the outcome?	Can you identify who would/should be responsible for delivering this initiative?	How much do the actions costs? What evidence do you have to support that view?	What are the critical issues that you have (or need to overcome) for the initiative to be successful? (e.g. changing legislation or community attitudes, increased enforcement/funding, harmonisation of national/international standards etc.)	What evidence or research do you have to support your current actions? (i.e. references, research studies etc.)	Any other comments?
A. Safe people (i.e. measures to do with people behaviour)								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
B. Safe vehicles (i.e. measures to do with vehicle enhancements)								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
C. Safe roads and roadsides (i.e. measures to do with physical infrastructure)								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
D. Safe speeds (i.e. measures to do with changes in speed controls)								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
E. Safe systems (i.e. measures to do with technology measures, or education/training programmes, or safety campaigns etc.)								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Figure 3 – Survey instrument – main questionnaire table

The interview process was arranged to be as flexible or as rigid as the interviewers and respondents deemed appropriate. In many instances the discussion was allowed to 'flow' to enable the respondent to identify the measure/action as best as they were able. The respondent summarised the responses as deemed appropriate.

At the end of the survey the respondent was asked if they were interested and able to attend the workshop in Canberra on Friday 9th May 2014 (later changed to 16 May 2014).

Thank you for your time and your contribution to this study.
Are you interested and available to attend the workshop in Canberra on Friday 9th May 2014? (...noting that it will be at your own organisation's cost).
Yes

Figure 4 – Survey instrument – workshop attendance

The survey instrument was also the tool used to consolidate all of the survey responses into a single database. The database was then refined and interrogated to produce summary results as outlined in **Section 3**.

3. Survey Results

A total of 49 separate responses were received which included a total of 429 suggested measures across the five policy sectors, or *'cornerstone'* areas. The survey responses were reviewed and collated into common themes, as shown in **Table 1**. Note that several measures made reference to more than one cornerstone area, therefore the subtotals in **Table 1** add to more than 429.

Table 3.1 : Survey instrument – workshop attendance

Policy Sector	Response Theme	Count
Safe People	Enforcement	24
	Education	22
	Drink and Drug Driving	15
	Distraction and Fatigue	11
	Licencing System	10
	Older Drivers	8
	Research	7
	Driver Training	5
	National/State Strategies	3
	Funding	2
	Incentives	2
	Mode Shift	2
	Organisational Changes	2
	Other	5
	Subtotal	**118**
Safe Vehicles	Additional Technology	22
	Mandatory Technology	13
	Fleet Improvement	11
	Rating Systems	5
	Research	3
	Vehicle Standards	3
	Other	8
	Subtotal	**65**
Safe Roads and Roadside	Roadside Infrastructure	13
	Road Infrastructure	10
	Intersections	10
	Median Infrastructure	10
	Road Design	8
	Audible Lines	6
	Research	6
	Rating Systems	6
	Hazard Separation	5
	Blackspots	5
	Program Evaluation	5
	Cycling Infrastructure	4
	Intelligent Infrastructure	4
	Level Crossings	3
	Organisational Changes	3
	National/State Strategies	3
	Pedestrians	2
	Other	15
	Subtotal	**118**

Policy Sector	Response Theme	Count
Safe Speeds	Modify Speed Limits	26
	Enforcement	18
	Smart Speed Warnings	5
	Research	3
	Road Design	3
	Other	10
	Subtotal	**65**
Safe Systems	Education	17
	Additional Technology	8
	Organisational Changes	7
	Program Evaluation	5
	Enforcement	5
	Data Collection	4
	National/State Strategies	4
	Developments and Planning	3
	Drink and Drug Driving	3
	Motorcycle Strategy	3
	Research	3
	Road Design	3
	Licencing System	2
	Road Infrastructure	2
	Other	9
	Subtotal	**78**

Key points made by survey participants under the common themes have been summarised in **Table 2** to **Table 6** for each of the five areas. The level of detail in the responses (and the open structure of the questionnaire) has led to a wide range of responses that are challenging to summarise in a way that incorporates all views effectively. The following summary is intended to provide an overview of the **main** themes identified to assist the focus of the discussion at the workshop.

The responses in the tables have been listed in descending order of response frequency (i.e. most common issue is first). As noted above, this is not an exhaustive list of measures identified, but represents the most common themes arising from the surveys. Further details are provided in **Appendix D**.

Table 3.2 : Summary of responses – Safe People

Safe People	
Common Response Themes	**Key Response Issues**
Education	Building awareness in the community and road industry to create a positive culture about safety issues such as sharing road space with all users, speeding and seatbelts. Educating groups in the community (e.g. drivers, children, cyclists, motorcyclists, low socioeconomic groups) on managing and accessing risk on the roads, including targeted training where appropriate.
Enforcement	Continue to use enforcement of proven evidence-based strategies such as lower tolerances for speeding and drink driving. Ensure enforcement is seen as fair - to maintain legitimacy and support. Enhancement of enforcement for distracted driving, drug driving. May require more resources for drug testing. Targeting of high risk drivers, e.g. repeat offenders, unlicensed drivers.
Drink and Drug Driving	Expand alcohol interlock systems for repeat offenders. Continued effort on changing community attitudes towards drink driving, using both enforcement and education. Particular emphasis on changing attitudes towards drug driving as community thinking may not be as far progressed as with alcohol. Increase in data-capture of post mortem and crash blood samples.
Distraction and Fatigue	It was noted that these are difficult issues to enforce, although increased enforcement is required. Potentially an important topic area for further research. Professional drivers/heavy vehicle operators: smarter scheduling, electronic log books, in vehicle monitoring technology (could also be used in private vehicles). Electronic device use in vehicles an increasing cause of distraction.
Licensing System	Raise minimum ages of obtaining a driving licence. Further restrictions on graduated licensing system such as curfews, passenger numbers, speed limits, penalty regimes. Better medical checks prior to licensing.
Other	Concern about older drivers in light of an aging population: require more suitable infrastructure and better testing (performance, competency and medical). Research into distraction, social media, risk taking. Better driver training, including as part of licensing system, for professional drivers and motorcyclists.

Table 3.3 : Summary of responses – Safe Vehicles

Safe Vehicles	
Common Response Themes	**Key Response Issues**
Additional Technology	Autonomous vehicles and co-operative ITS systems were mentioned as something on the horizon which may lead to significant safety improvements. Driver assisting technology that could be implemented to improve safety included: as automatic braking, electronic stability control, intelligent speed adaption and GPS speed monitoring, blind spot protection and lane departure detection. Braking systems in motorcycles and heavy vehicles.
Mandatory Technology	Some of the above technology could be made compulsory to improve safety outcomes (also see fleet improvement below). Alcohol interlocks.
Fleet Improvement	Encouraging the exit of older/less safe vehicles. Heavy vehicles especially buses were noted. Incentives to get people into newer/safer cars. Increasing safety standard requirements. Also noted was legislative awareness and standards for second hand vehicle importation safety as well as using high productivity heavy vehicles.
Rating Systems	Further use of, legislative endorsement of, and funding for the ANCAP rating system. Better rating systems for used cars.
Other Themes	Research into various technological enhancements. Heavy vehicles could be first point of implementation for some technology e.g. vehicle black boxes?

Table 3.4 : Summary of responses – Safe Roads and Roadsides

Safe Roads and Roadsides	
Common Response Themes	**Key Response Issues**
Roadside Infrastructure	Concept of roadside hazard management was a common theme, including hazard separation and hazard removal. Extend clear zones adjacent to roads, extend shoulder sealing (particularly on rural and regional roads). Several responses were in favour of clear zones while others noted that they may not be effective or cost efficient. Provide audible lines on roadsides, edge marking on narrow roads and flexible barriers on roadsides.
Road Infrastructure	More comprehensive treatment of roads and roadsides, not just localised areas but the corridor/network as a whole. Many responses suggested audible lines for median or roadside implementation. Extending delimitation marking for merge lanes, low cost enhancements such as shoulder widening, U-turn bay and breakdown area maintenance. Focus on infrastructure in rural and regional areas. Heavy vehicle rest areas.
Intersections	More roundabouts, more control over right turning movements (i.e. signalised, banned – no filter turns). Focus on worst rated intersections.
Road Design	Look at geometrical design impact on heavy vehicle rollover. Skid resistance to be improved where appropriated, but may not be cost effective to maintain in all areas. Reduce mid-range curves.
Median Infrastructure	Median barriers are effective, expand wire rope barrier use. Some median barrier types are not motorcycle friendly. Barriers, both median and in the shoulders, provide worthwhile benefits. Widen centrelines/median strip, narrow traffic lanes if required. Audible lines in median for distraction and fatigue.
Other Themes	Research on road design encouraging drivers to travel at the appropriate speeds. Rating systems and hierarchies for road network, both in terms of function and safety. Use audits and a risk based approach to treatments. Blackspots – analysis of worst roads and intersections. Improved cycling infrastructure

Table 3.5 : Summary of responses – Safe Speeds

Safe Speeds	
Common Response Themes	**Key Response Issues**
Modify Speed Limits	Reduce limits: consider widespread lowering of limits, e.g. 40km/h in urban areas, 50km/h in urban areas. Should lower quality rural roads be 80km/h by default? Lower top speed limits (is a 110km/h appropriate) and maintain maximum speed limits cf. “no speed limit” on roads. Targeted Speed Reductions in cyclist/pedestrian areas, mixed zone areas and zones with mixed use in order to reduce exposure of vulnerable road users. Limits to better align to conditions and environment. This would enhance credibility and compliance. Also consider reducing limit variation along a road, and the number of varieties in use (e.g. 50, 60, 70, 80…).
Enforcement	Many respondents noted that enforcement is still the key to speed management. More point to point speed cameras, red light cameras, speed cameras. Upgrading police capabilities in this area. Setting appropriate speed enforcement tolerance levels with a national approach. Increased use of vehicle impoundment.
Smart Speed Warnings	Variable messaging - reminder messages, speed messages e.g. on freeways, tunnels and even at dangerous rural intersections/curves.
Other Themes	Road design – don’t design for speed limit plus 10km/h.

Table 3.6 : Summary of responses – Safe Systems

Safe Systems	
Common Response Themes	**Key Response Issues**
Education	Targeted road safety industry education e.g. for local government or police. Increased education systems and programs on key issues such as distraction or to key groups such as school children or cyclists. Community awareness and educational advertising campaigns to affect road safety perceptions in community. Are driver/public education programs effective, or should more competence based training be used?
Additional Technology	Improved police technology for example number plate recognition, provide smartphones/tablets to patrol cards to allow remote access to police systems. Support development of increased vehicle technology and systems (see additional technology in Safe Vehicles above).
Organisational Changes	Establish road safety intelligence organisations, enabling cross pollination and sharing of ideas from industry, police and government bodies. Dedicated body to oversee motorcycle safety. Better harmonisation between states, requiring more active participation in the issue at a federal level. Road safety to be viewed as a public health issue, could it be a component of the health budget?
Program Evaluation	Ensure road safety is evaluated in program funding decisions. Develop an accepted methodology to evaluate programs, this includes economic analysis and focuses on proven counter measures and the worst locations and routes.
Enforcement	Enforcement seen as a key issue, and noted by several responses as important and effective. increased officer commitment to traffic duties.
Other Themes	Data collection for cyclists and pedestrians. Create road trauma national database with links to medical centres and insurance companies. National/State Strategies, continue implementation of current strategies, development. Road safety not reflected well in ministerial responsibility.

These themes provide a good summary of issues for consideration and discussion at the workshop. There was a good level of commitment across the various organisations approached to participate, with senior representatives generally very keen to provide their time and effort to the survey. The level of interest in the workshop is also a strong indication of the eagerness of the organisations to support ongoing research into road trauma.

4. Stakeholder Workshop Overview

4.1 Workshop Objectives and Approach

The objective of the workshop was outlined in the brief issued by BITRE. It states that:

- *Report back to participants on an initial list of potential measures drawn from consultations, the scope and expected trauma impacts, who would be responsible for implementation, and the expected costs.*
- *Based on feedback from participants, modify the scope of measures, expected impact on the number of road deaths and injuries, what would be needed to implement it, and the implementation and other costs.*
- *For each measure with a significant impact, identify critical factors – e.g. addressing community acceptance or the need for new standards.*
- *Rank measures in terms of expected effectiveness, likely cost, and feasibility.*
- *Seek affirmation/agreement of group and dissenting views, and if needed identify alternate impact/cost scenarios for specific measures.*

The workshop agenda and process were developed to achieve these objectives and to build on the work undertaken during previous consultation and survey process. The agenda for the workshop is outlined in **Section 0**.

To enable workshop participants to prepare for the workshop the results of the consultation / survey were provided to workshop participants a week before to the workshop in the form of the Draft Report (Chapters 1-3 of this report and titled *"Initial Analysis of Surveys"*). A summary of the consultation outcomes from that report are included in **Appendix D** to this report.

4.2 Agenda

A workshop was held in Canberra on Friday 16 May 2014. The agenda for the workshop is as follows:

Item	Time
Tea and coffee on arrival	8:30am
Welcome	
Philippa Power, Executive Director, Policy & Research	9:00am
Introductions and Overview of agenda Gary Dolman, Head of Bureau	9:10am
Introductory speech, Australasian College of Road Safety Ladzchlan McIntosh, National President	9:20am
Jacobs SKM Workshop goals and process Survey: summary of measures by cornerstone	9:30-10:30am
MORNING TEA	10:30-10:45am
Parallel small group sessions by Cornerstone *Safe roads, Safe people, Safe vehicles, Safe speed, Safe systems* List top measures Group session report back by Cornerstone (approx. 10 minutes each)	10:45-11:30am 11:30am-12:30pm
LUNCH	12:30-1:30pm
More detailed group work on selected measures by Cornerstone Scope, evidence, costs, implementation, issues.	1:30-2:00pm
Second group session report back Group report, question and answer (approx. 10 minutes each)	2:00-3:00pm
AFTERNOON TEA	3:00-3:15pm
Combined listing, ranking	3:15-3:45pm
Meeting review, way forward Meeting review Actions and future process	3:45pm
Meeting close	4:00pm

4.3 Workshop Participants

Workshop participants were identified through the consultation process. All groups consulted were offered the opportunity to attend the workshop. The following is a list of the workshop attendees.

Organisation	Representative
Australia New Zealand Policing Advisory Agency	Melanie Atlee
ARRB	Gerald Waldron
ARRB	Blair Turner
Australasian College of Road Safety	Lauchlan McIntosh
Australian Trucking Association*	Ro Mueller*
Australian Automobile Association	Craig Newland
Australian Driver Trainers Association	Allan Porter
Australian Motorcycle Council (Motorcycle Riders Association)	Nicky Hussey
Bicycle Network Victoria	Garry Brennan
BITRE	Gary Dolman
BITRE	David Gargett
BITRE	Tim Risbey
Centre for Accident Research and Road Safety	Narelle Haworth
Centre for Road Safety, Transport for NSW	Bernard Carlon
Department of Infrastructure and Regional Development	Marcus James
Department of Infrastructure and Regional Development	John Goldsworthy
Department of Infrastructure and Regional Development	Olivia Sherwood
Department of Transport and Main Roads Queensland	Mike Stapleton
Federal Chamber of Automotive Industries (FCAI)	Tony Weber
Institute of Public Works Engineering Australasia	Mick Savage
Main Roads Western Australia	David Moyses
Martin Small Consulting	Martin Small
Monash University Accident Research Centre	Professor Mark Stevenson
Motor Accident Commission of South Australia*	Michael Cornish*
NRMA-ACT Road Safety Trust	Professor Don Aitkin for Linda Cooke
Queensland Police	Lisa-Marie O'Donnell
Queensland Police	Dale Pointon
St John Ambulance	Belinda Ding
VicRoads	Peter Schofield
* Accepted invitation but unable to attend on the day.	

5. Workshop Activities and Results

5.1 Workshop Introductory Remarks

5.1.1 Welcome by Philippa Power, Executive Director Policy & Research (DIRD)

Philippa Power opened the workshop with a welcome to participants and encouragement to be open and active in the workshop discussions.

5.1.2 Introduction to the Project - Gary Dolman – Head of Bureau, BITRE

Gary Dolman discussed the purpose and objectives of the study and how the workshop outcomes will feed into further analysis.

5.1.3 Lauchlan McIntosh – Introductory Speech

Lauchlan McIntosh, the National President of Australasian College of Road Safety provide an opening address which provided context for the study and the benefits that the study could bring and the need for participation and collaboration by the industry. A full transcript of the opening address is provided in **Appendix F**.

5.1.4 Summary of Consultation Themes and Outcomes

Peter Hunkin from Jacobs provided an overview of the results and key themes from the stakeholder consultation based on the information provided in Sections 2 and 3 of this reporting, including the following:

- Survey Tasks and Objective
- Areas for investigation
- Stakeholder groups contacted
- Survey process
- Survey tool

A description of the consultation process and outcomes can be found in **Appendix C** and **Appendix D**.

A copy of the Powerpoint slides presented at the Workshop is included in **Appendix E**.

5.2 Filtering Key Themes

Following the introductions and presentation of the survey results, workshop participants were divided into groups to review the key themes of the survey by cornerstone.

The purpose of the session was to review the list of “key themes” from the report and prioritise. The process used to help filter themes involved the groups doing the following:

- Review the key themes identified as part of the survey
- Identify any themes that might be missing
- Estimate the potential outcomes of responding to the key theme; and
- Identify likely level of resources to implement

The workshop working groups were asked to place the key themes on the matrix tool shown in **Figure 5.1** : Theme Prioritisation Matrix tool to identify key themes with the highest potential impact, and resources to implement.

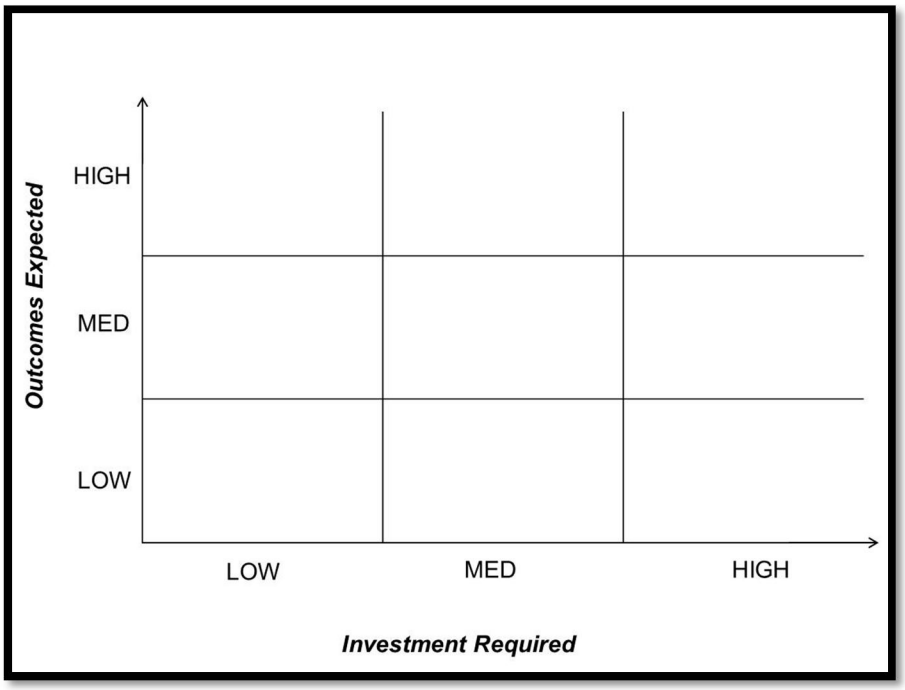


Figure 5.1 : Theme Prioritisation Matrix tool

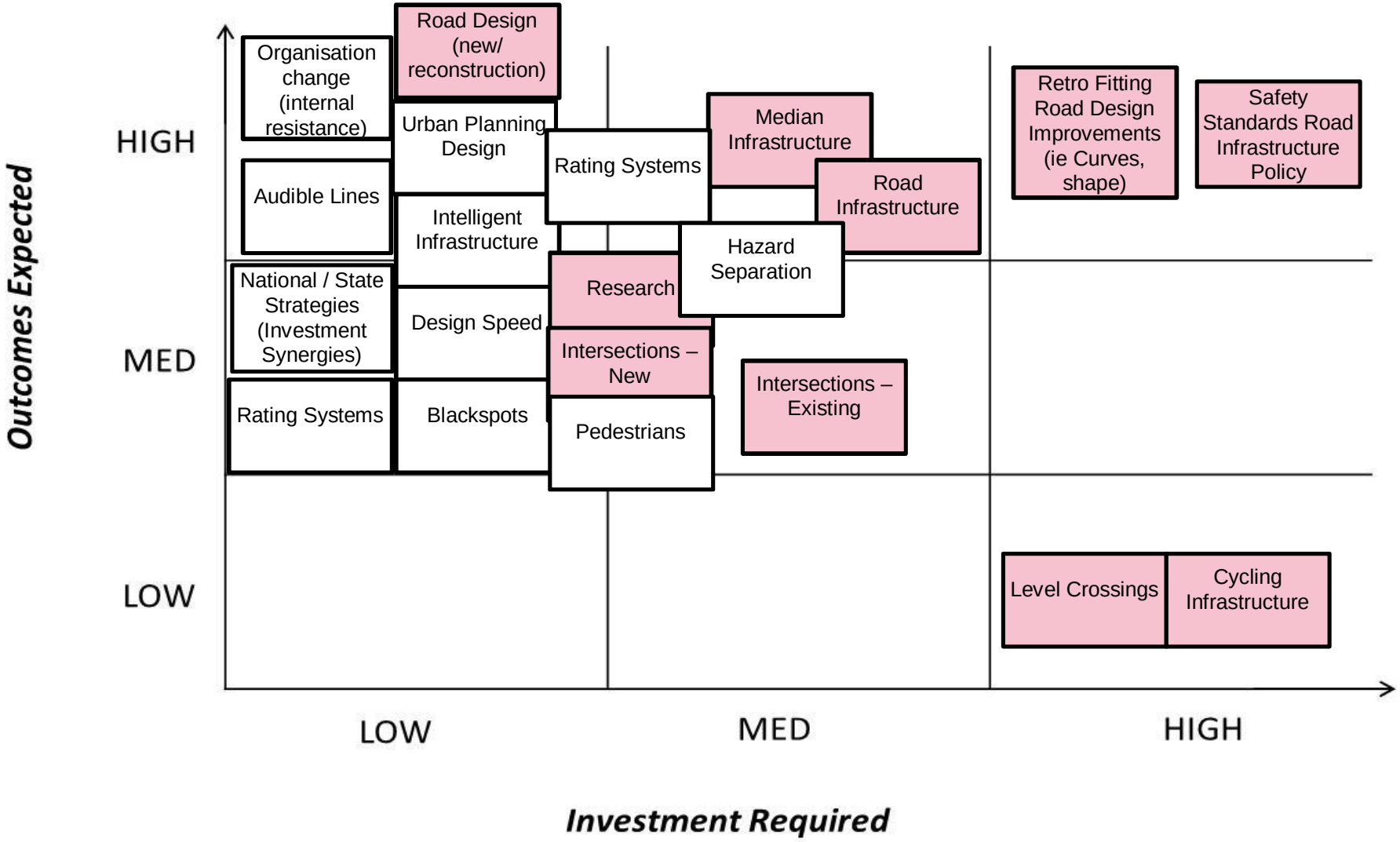
The session required the working groups to make an estimate of the outcomes expected and investment / resource required to implement each of the measures and to attach them to wall mounted matrices.

The groups were asked to identify the highest ranking themes within the cornerstone.

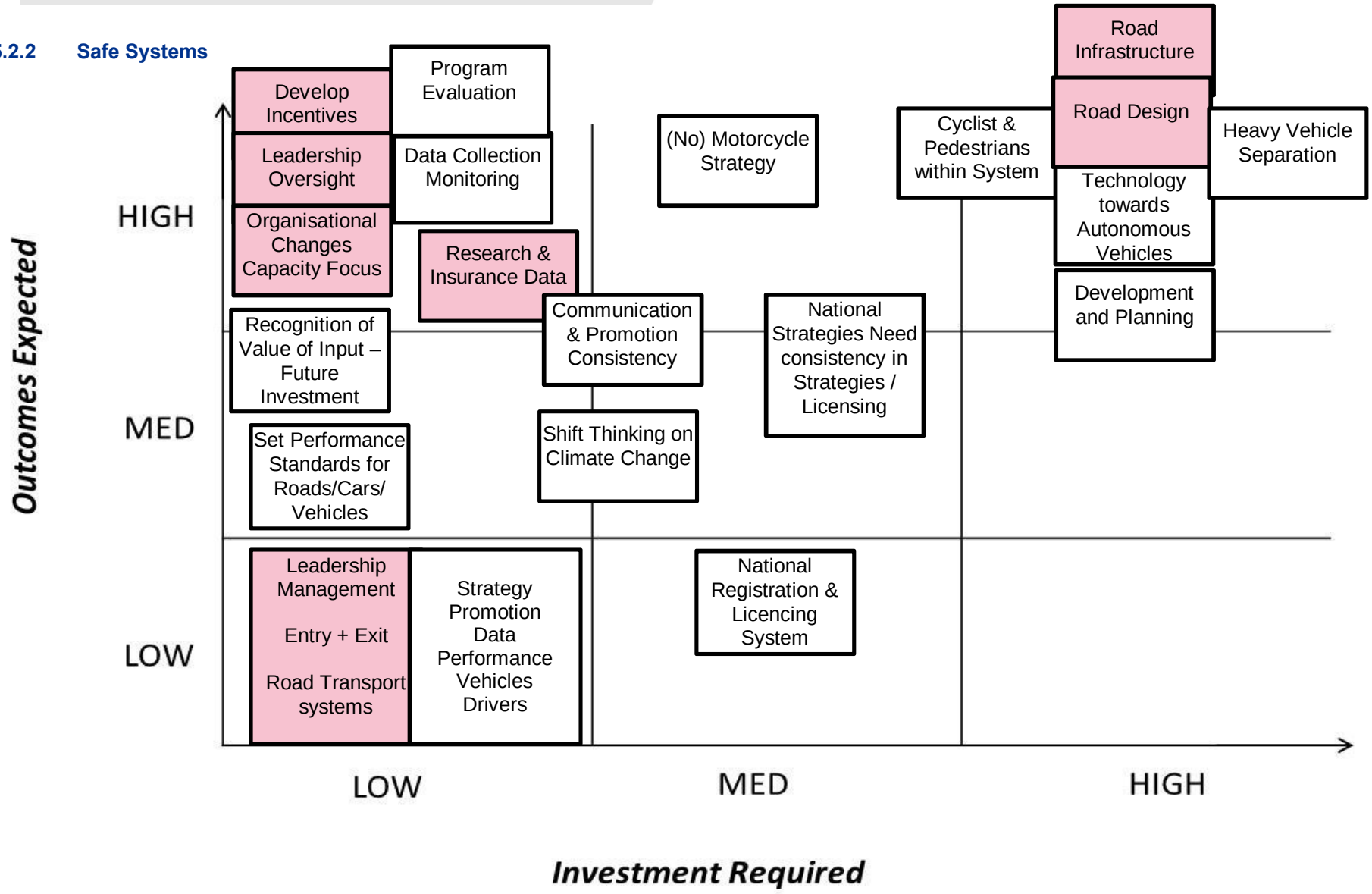
- Identify the highest ranking issues from those raised in consultation ()
- Review the specific initiatives identified within the report to identify initiatives of most value.

The results of the filtering and prioritisation from this process are outlined below.

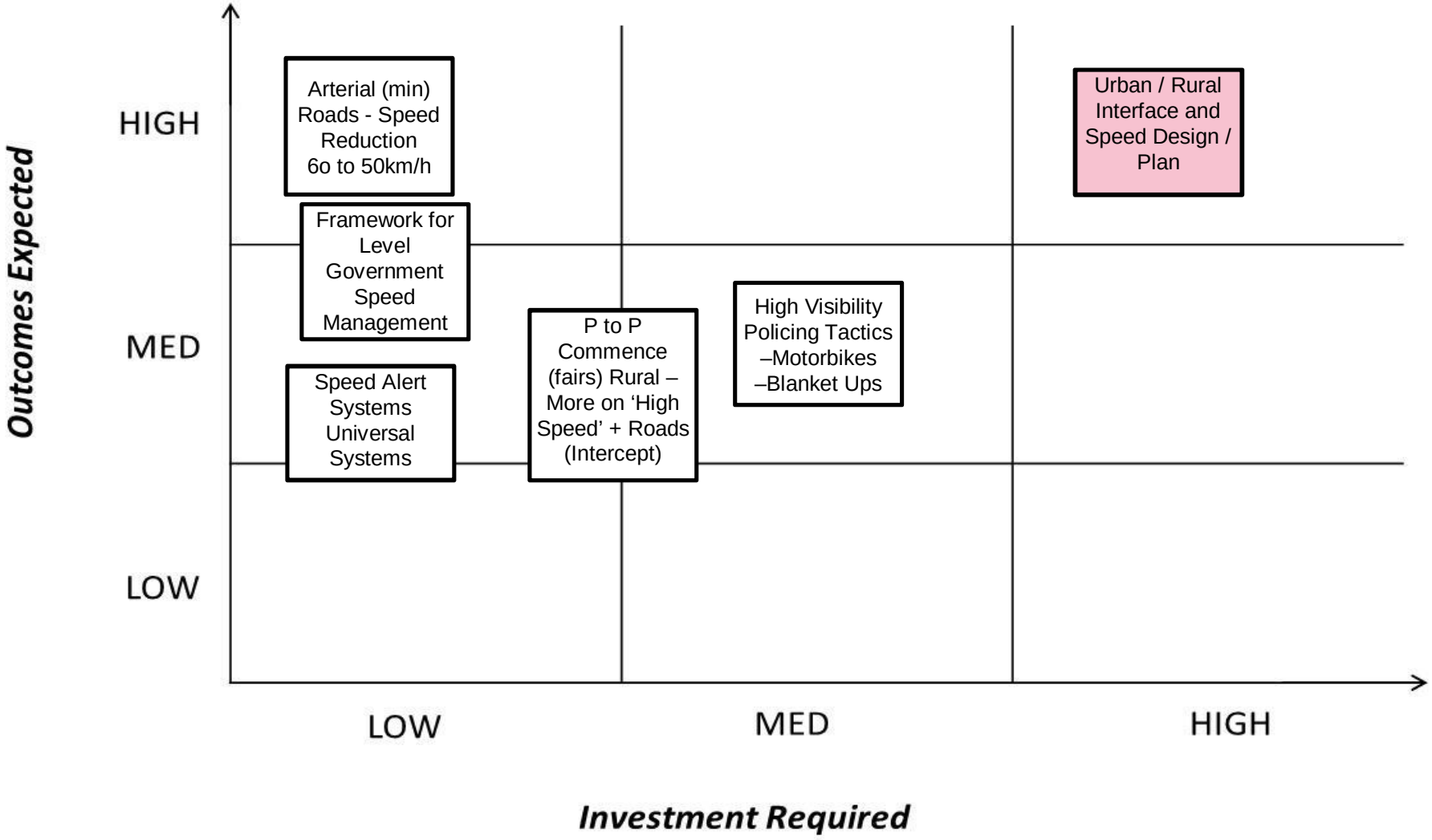
5.2.1 Safe Roads



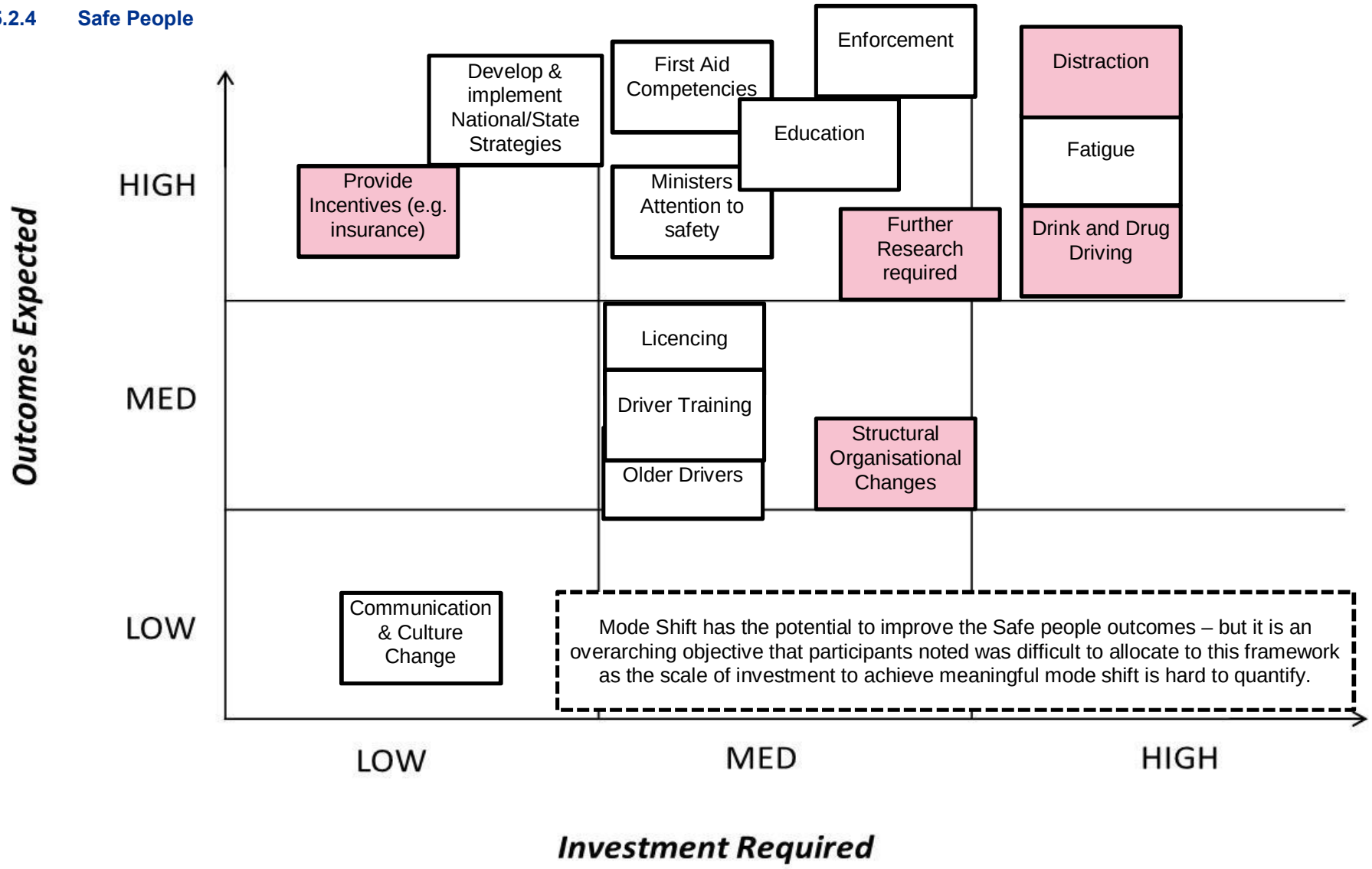
5.2.2 Safe Systems



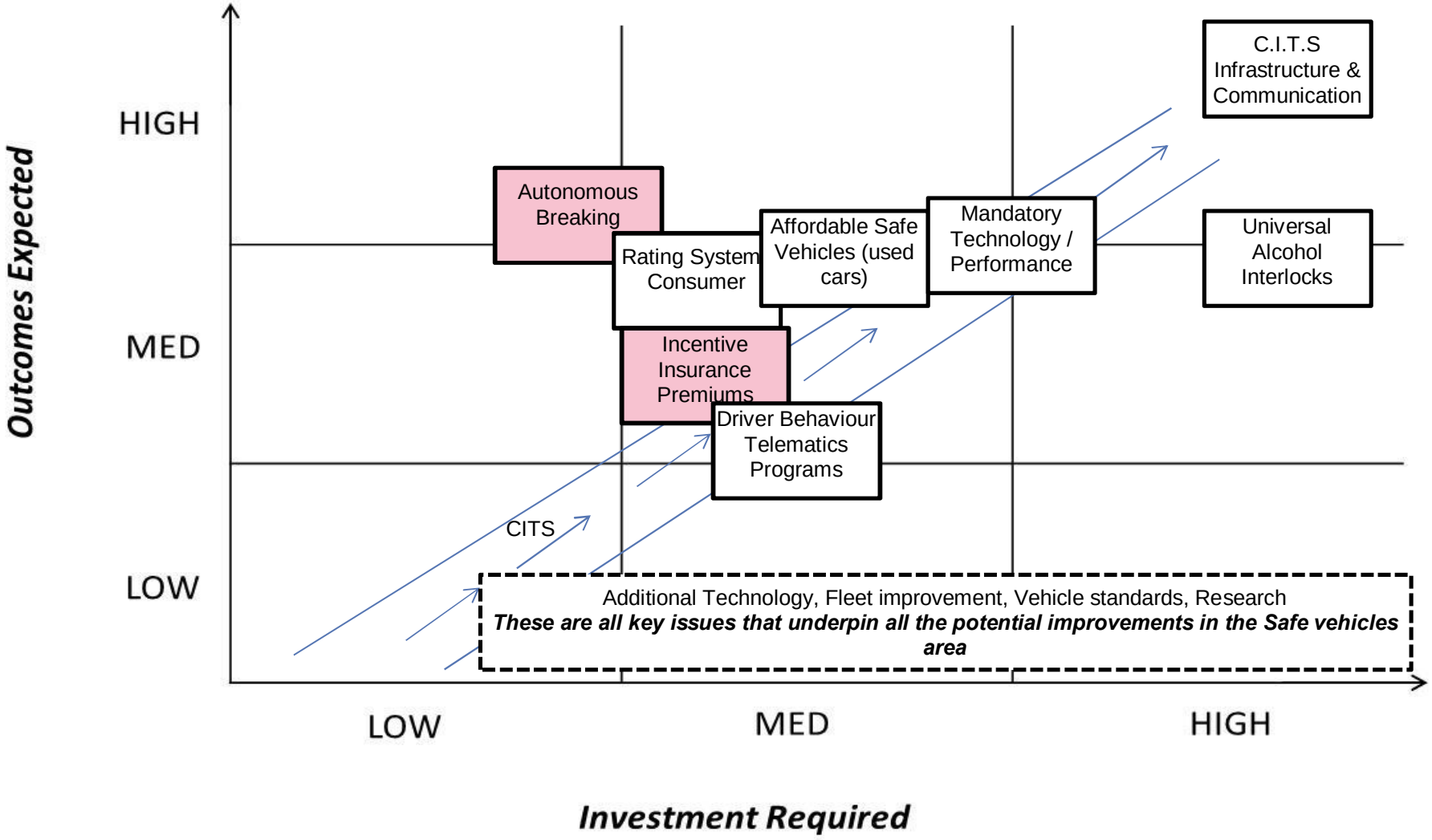
5.2.3 Safe Speeds



5.2.4 Safe People



5.2.5 Safe Vehicles



5.3 Key Initiatives Development

Following the completion of the working groups' review of key themes, each of the groups was asked to identify more detail around each of the specific initiatives raised in the consultation and assessed on the above matrix, or they were invited to raise additional initiatives if considered more relevant, or an enhancement on those already raised.

The purpose of the exercise was to further develop these specific initiatives and provide additional information regarding the benefits of the initiatives, resources required, evidence to support identified benefits and risks associated with implementation. The following template was provided to the groups to document the initiatives.

Specific Measure (Initiative)	
Outcomes / Benefits	
Resources Required	
Evidence	
Risks / Issues	

Figure 5.2 : Initiative Documentation Template

At intervals during the development of the initiatives within the cornerstone groups, initiatives were shared with the wider group to stimulate the development of additional initiatives. Workshop participants were also encouraged to move around and contribute to multiple working groups. The initiatives identified are outlined in **Appendix G** and summarised in the table below.

At the completion of the session, each of the workshop participants was given the opportunity to participate in "dotmocracy". Each participant was given 10 stickers to use for voting for each of the initiatives. The purpose of the voting exercise was to given an indication of the level of support for the initiatives within the group.

Each of the initiatives proposed and voting results of the voting are show in **Table 5.1**. The voting gives an indication of the perceived relative value of the initiatives (based on the views of the workshop participants).

Table 5.1 : Summary of Voting on Initiatives

Initiative	No. of Votes
1. Improved road infrastructure safety standards (26)	27
2. Safety in capital investment (1)	
3. Research Platform	19
4. Management capacity	13
5. Safer Intersections – new existing	13
6. Distraction (BAD) mobile phone etc. usage: enforcement	12
7. Police enforcement to maximise general deterrence	11
8. Autonomous braking vehicle based crash avoidance	11
9. Leadership	10
10. Drug driving initiatives	10
11. Insurance Incentives	10
12. Continuity & Advancement of ANCAP (UCSR)	9
13. 60's to 50's minor arterials	9
14. Fatigue (education & technology)	9
15. Incentives for collaboration	9
16. Roadside infrastructure	8
17. Cop ITS	6
18. Urban fringe / rural development speed management and road design	6
19. Consideration of reducing the BAC limit and associated national awareness campaign	5
20. End fault-based CTP insurance	5
21. Basic first aid training as a condition for obtaining a learner driver permit (licensing, education and response)	5
22. Education, Licencing, training and assessment (4)	5
23. Raising the minimum age for licensing (1)	
24. National registration and licensing system (0)	
25. Framework for local government speed management	4
26. Alcohol / interlocks mandatory	3
27. Mandate black boxes in motor vehicles	2
28. Safety in capital investment	1

6. Discussion of outcomes

The workshop identified a range of key themes and initiatives (supported by details developed in the workshop by the participants) developed specifically to achieve a reduction in road trauma.

Key themes that emerged from the discussion included specific initiatives such as:

- Enhancement of road infrastructure safety standards, including:
  - Intersections
  - Roadside Infrastructure
  - Integration of road safety features into capital programs
- Technology measures to modify driver behaviour including:
  - Autonomous braking / vehicle based crash avoidance
  - Alcohol interlocks
  - Blackbox
  - Fatigue identification
- The emergence and development of cooperative ITS (Intelligent Transport Systems)
- Enforcement initiatives included:
  - Distracted driving
  - General enforcement (speed, drugs, seat belts)
  - Reducing blood alcohol limit
- Insurance incentives
- Speed based initiatives including:
  - Reduction of speed from 60 km/h to 50 km/h on minor arterial roads
  - Frameworks for local government speed management
  - Road design on rural / urban fringe
- First aid training for drivers

In addition, a number of enabling activities were identified as important for reducing road trauma such as:

- A research platform to inform investment and initiatives
- Leadership in program development and implementation
- Management capacity to deliver programs
- Incentives for collaboration between agencies
- Continuity and advancement of ANCAP and Used Car Safety Ratings (UCSR);
- National licensing and training programs

In some instances these enabling activities may not necessarily contribute directly to road safety outcomes (and therefore they are not as easy to identify costs and benefits). However these were considered important in supporting decision making and investments. An example of this relates to the investment in research that has the potential to inform technological advancement of safety measures.

Key opportunities and challenges identified as part of the discussion included:

- The potential for greater national integration and cooperation, including national research programs to better inform future initiatives
- The challenge related to the disconnect between the investment and benefit achieved that impacts on investment decisions
- The lack of road maintenance has a greater ongoing cost to the community from road trauma than the investment involved - leading to higher potential benefits than assumed for these measures
- The trends regarding modal shift are real and tangible - including the opportunities and challenges such as holistic / health benefits
- The roles of policy and community action versus technology and the role of technology in supporting behaviour change.

The workshop participants worked together enthusiastically and interactively. They actively challenged each other on views and initiatives. The result was a thought provoking session that led to ‘thinking-outside-the-box’ and some very useful, forward looking initiatives.

Appendix A. Agreed Stakeholder Contact List

Name	Organisation	Role
National bodies		
Tony Ellis	Australian Motorcycle Council	Secretary
Andrew McKellar	Australian Automobile Association	Chief Executive
John White	ANZPAA	Chief Executive Officer
TBC	Institute of Public Works Engineering Australasia	IPWEA NSW Division Road Safety Panel
TBC	Royal Australasian College of Surgeons	
Claire Howe	Australasian College of Road Safety	Executive officer
TBC	St John Ambulance	National office
Professor Warwick Anderson AM	National Health and Medical Research Council	Chief Executive Officer
Professor Rebecca Ivers	The Georges Institute for Global Health	Director, Injury Division
Gerald Waldron	ARRB	Managing Director
Blair Turner	ARRB	Principal Research Scientist, Safe Systems
Western Australia		
Clint Shaw	West Cycle	CEO
Professor Lynn Meuleners	Curtin - Monash Accident Research Centre	Director, C-MARC Curtin Uni WA (Lynn is an injury epidemiologist specialising in road safety)
Prof Murray Lampard APM	Chair - Road Safety Council	Professor, Edith Cowan University
Des Snook	Main Roads Western Australia	Executive Director of Road Network Services
Nicholas Anticich APM	Western Australia Police	Assistant Commissioner, Traffic and Emergency Response
Iain Cameron	Office of Road Safety	of the Austroads Road Safety Task Force
Lew Watts	Insurance Commission of Western Australia	General Manager Insurance (third Party and Personal Injury)
Nina Lyhne (tbc)	Department of Transport	Acting Managing Director of Transport Services
Victoria		
Professor Mark Stevenson	MUARC – Monash University Accident Research Centre	Director
Professor Judith Charlton	MUARC – Monash University Accident Research Centre	Associate Director, Behavioural Safety Science (MUARC)
Professor Michael Lenne	MUARC – Monash University Accident Research Centre	Associate Director, Human Factors (MUARC)
Stewart Newstead	MUARC – Monash University Accident Research Centre	
Dave Shelton	VicRoads	Executive Director Strategy & Planning / Road Safety Coordinator
Janet Dore	TAC	Chief Executive Officer TAC
William Gibbons	Department of Justice - Infringement Management and Enforcement Services	Senior Policy Officer, Policy and Strategy
TBC	Victoria Police	General Manager Road Safety
TBC	Department of Transport, Planning and Local Infrastructure	Chief Investigator, Transport Safety
Bicycle Victoria	Bicycle Network Victoria	CEO Bicycle Network Victoria
New South Wales		
Marg Prendergast	Centre for Road Safety, Transport for NSW	General Manager
Liem Ngo	Centre for Road Safety, Transport for NSW	Manager, Road Safety Strategy
John Wall	Centre for Road Safety, Transport for NSW	Manager Road Safety Technology
Prof Ann Williamson	Transport and Road Safety (TARS) Research - University of NSW	Professor Ann Williamson's research is in the area of human factors, primarily focusing on two related areas; the effects of fatigue and the role of human error in injury and safety.
Lori Mooren	Transport and Road Safety (TARS) Research - University of NSW	Chair of the Fleet Safety Project Group of the United Nations Road Safety Collaboration
Australian Capital Territory		
Geoff Davidson	Justice and Community Service Directorate ACT	Manager, Road Safety
Tasmania		
Deb Davis	Department of Infrastructure, Energy and Resources TAS	Manager, Land Transport Safety Policy
South Australia		
Jeremy Woolley	Centre for Automative Safety Research (Uni SA)	Deputy Director
Mary Lydon	Centre for Automative Safety Research (Uni SA)	Director
Michael Taylor	Uni SA, Barbard Hardy Institute	Research Professor
Wen Long Yue	Uni SA, Barbard Hardy Institute	Senior Lecturer
Paul Warren	SA Police	Editor of Road Safety Newsletter
Michael Cornish	Motor Accident Commission	General Manager, Road Safety and Strategic Communicatio
Julie Holmes	Department of Planning, Transport & Infrastructure SA	Executive Director Road Safety, Registration & Licensing
Phil Allan	Department for Planning, Transport and Infrastructure (SA)	Safety and Regulation Division, Executive Director
Queensland		
Graham Fraine	TMR	GM Road Safety, Office of the Deputy Director-General (Transport Safety and Regulation)
Mike Stapleton	TMR	GM, Road Safety, Registration and Licensing
Jon Douglas	TMR	Director, Safer Roads
Ian Stewart	Queensland Police Service	Commissioner
Mike Keating	Queensland Police Service	Acting Assistant Commissioner, Road Policing Command
Ross Maltby	Queensland Police Service	Strategy and Performance Inspector, Road Policing and Command
Barry Watson	Centre for Accident Research and Road Safety	Director, CARRS-Q
Doug Brownlow	Centre for Accident Research and Road Safety	Education Development Associate, CARRS-Q
Simon Washington	Centre for Accident Research and Road Safety	Professor and TMR Chair
Northern Territory		
Ernie Wanka	Department of Transport NT	Director Roads
John McRoberts APM (TBC)	NT Police, Fire and Emergency Services	Commisioner
Nicholas Papandonakis	Department of Transport NT	Excutive Director, Transport Planning, Policy and Reform
New Zealand		
Colin Brodie	NZTA	Chief Advisor Safety, NZTA
Fergus Tate	NZTA	National Traffic and Safety Manager
James Hughes	NZTA	Principal Traffic and Safety Engineer
Sam Charlton	Waikato University	Associate Professor, involved in research involving road safety and transportation psychology; driver distraction; fatigue; road design
Leo Mortimer	Ministry of Transport	Team Leader of the Land Transport Safety Team - His team has been responsible for development of the current Safer Journeys strategy
Carey Griffiths	New Zealand Police	National Manager Road Policing
Liam Baldwin	Automobile Association	Public Affairs Manager
Roger Dunn	Auckland University	Professional Teaching Fellow
Alan Nicholson	Canterbury University	Professor, Transport Engineering Postgraduate Programme Director
Dennis Robertson	Road Transport Association	General Manager
United Kingdom		
Kate Carpenter	CIHT	Chair: Road Safety Panel
Dr Suzy Charman	TRL	Head of International Road Safety
Nicholas Bentall	Highways Agency	Senior Technical Advisor
Dr Steve Lawson	EuroRAP	Partnerships and Research Director
Stewart Leggett	Transport Scotland	Strategic Impacts Manager

Appendix B. BITRE letter of introduction

Australian Government

Department of Infrastructure and Regional Development

Bureau of Infrastructure, Transport and Regional Economics

File Reference: 13/8725
Contact: Tim Risbey

Dear Road Safety Stakeholder

Subject: Review of the Cost of Road Trauma

The Bureau of Infrastructure, Transport and Regional Economics has been tasked by the Australian Government to undertake a review to evaluate the benefits and costs associated with different road safety approaches drawing on experience in Australia and internationally.

The review objective is to estimate both the benefits and costs of measures that could reduce fatalities and injuries, and provide a ranking of measures both in terms of expected outcomes —the expected reduction in fatalities and injuries—and net benefit–cost to the Australian community.

To ensure the analysis captures the current knowledge and expertise, BITRE has engaged a consultant – Jacobs SKM – to interview key researchers and stakeholders in road safety and prepare a report of potential measures to further reduce road trauma.

Jacobs SKM will also organise and facilitate a Canberra workshop of experts and stakeholders to validate the measures indentified through this consultation.

David Lowe (Lead Transport Engineer and Planner, Jacobs SKM 61-2-9928 2136) is leading the team conducting the interviews on behalf of the BITRE.

I would greatly appreciate your assistance and participation in the interviews.

If you have any questions or queries, the Bureau contact is Tim Risbey (61-2-6274 6765, tim.risbey@infrastructure.gov.au).

Regards

Dr Gary Dolman
Head of Bureau
19 March 2014

111 Alinga Street, Canberra; GPO Box 501, Canberra ACT 2601 Australia
Telephone: +61 2 6274 7111 Facsimile: +61 2 6274 6855 E-mail: bitre@infrastructure.gov.au
http://www.bitre.gov.au ; ABN 86 267 354 017

Appendix C. Survey Instrument

Project: *Review of the Cost of Road Trauma* *Jacobs SKM Project Number: NB98105*

Client: *Bureau of Infrastructure, Transport and Regional Economics (BITRE) - a division of the Department of Infrastructure and Regional Development (DIRD)*

Stakeholder name:		*Address:*	
Position:		*Phone/Mobile:*	
Organisation:		*Email:*	

Introduction:

BITRE has engaged Jacobs SKM to undertake a review to evaluate the benefits and costs associated with different road safety approaches drawing on experience in Australia and internationally. A letter has been provided to you from BITRE confirming our engagement and seeking your assistance (copy provided by email or hard copy).

The aim of today's discussion is to seek your views on the potential measures that could be further investigated, and to obtain details of the scope, expected benefits, costs and issues associated with each measure as well as the responsible organisation and any other comments or supporting evidence that may be available.

The key tasks that Jacobs SKM will be undertaking as part of this commission is to engage with key stakeholders and researchers in road safety to seek information and prepare a report of potential measures to further reduce road trauma (both fatalities and injuries).

Jacobs SKM will also be convening a workshop in Canberra to allow a forum for stakeholders and researchers to discuss and validate the various measures identified through the consultation. You are invited to attend the workshop and contribute to the discussions (at your own costs).

Key Objectives of study:

1) To identify key actions and suggested scope

2) Wherever possible, provide evidence from Australian and international study reports/journal articles, and/or the expert's own estimates of the effectiveness of the action in terms of specific impacts on road trauma.

3) To identify the costs of implementing each measure

4) To identify factors that are critical to implementing the measure (e.g. changing legislation or community attitudes, increased enforcement/funding, harmonisation of national/international standards etc.)

The following questions are intended to establish the role within the road safety practice of the interviewee.
If you are familiar with the stakeholders work or their role is obvious it may be possible to omit these introductory questions.

Opening questions:

How would you describe your role in terms of being a policy maker, researcher or practitioner?		*Other role description*	
What do you believe is the single biggest issue in reducing road trauma within the jurisdiction / research are that you currently work in?		*'Biggest Issue' comments*	
What is the basis for that view?			
What are your key road safety related actions at the moment? (say top 3) *(noting that further detail will be provided in the table below)*			
What are the key drivers for those actions?		*Other key drivers*	

So we will now work through a series of questions to seek your views on measures related to different policy sectors, namely Safe People, Safe Vehicles, Safe Roads and roadsides, Safe Speeds and Safe Systems.

Which of these areas are you able to discuss (with authority):

A. Safe People	*If YES - go to Section A*	(i.e. measures to do with *people behaviour*)
B. Safe Vehicles	*If YES - go to Section B*	(i.e. measures to do with *vehicle enhancements*)
C. Safe Roads and Roadsides	*If YES - go to Section C*	(i.e. measures to do with *physical infrastructure*)
D. Safe Speeds	*If YES - go to Section D*	(i.e. measures to do with *changes in speed controls*)
E. Safe Systems	*If YES - go to Section E*	(i.e. measures to do with *technology measures* , or *education/training programmes* , or *safety campaigns* etc.)

Policy Sector (Item number)	Action/Measure What are the key actions or initiatives under this policy area that are worthy of further investigation?	Scope What is the scope or extent, or scale of the action?	Expected Safety Impact (casualty reductions and timing) How effective are these actions (or how effective are they likely to be?) What are you expecting to be the outcome?	Who would be responsible? Can you identify who would/should be responsible for delivering this initiative?	Costs? How much do the actions costs? What evidence do you have to support that view?	Issues What are the critical issues that you have (or need to overcome) for the initiative to be successful? (e.g. changing legislation or community attitudes, increased enforcement/funding, harmonisation of national/international standards etc.)	Supporting Evidence What evidence or research do you have to support your current actions? (i.e. references, research studies etc.)	Comments Any other comments?
A. Safe people (i.e. measures to do with people behaviour)								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
B. Safe vehicles (i.e. measures to do with vehicle enhancements)								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
C. Safe roads and roadsides (i.e. measures to do with physical infrastructure)								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
D. Safe speeds (i.e. measures to do with changes in speed controls)								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
E. Safe systems (i.e. measures to do with technology measures, or education/training programmes, or safety campaigns etc.)								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Thank you for your time and your contribution to this study.
Are you interested and available to attend the workshop in Canberra on Friday 9th May 2014? (...noting that it will be at your own organisation's cost).

Questionnaire Controls:	1	The current response is Not Saved	Total number of saved responses 0

Appendix D. Summary of results

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Data Collection	Cyclist/Pedestrian Accident Reporting	Active / vulnerable users (bikes & peds) not reported effectively	How to improve reporting?	Not discussed	Not discussed	Not discussed	0	Motorcycles represent 23% of TAC claim but only 3% of incidents	0
1. Safe People	Distraction and Fatigue	NA	Driver distraction and fatigue	Rural and urban roads are both important; different publicity and education packages targeted at holiday travel and work-related travel; tighter enforcement based on electronic log books and vehicle monitoring systems to detect violations in professional drivers; encourage development of technology to block calls during periods of high workload, or when vehicle is in motion.	5-10% reduction in heavy vehicle crashes.	States	Not discussed	Convincing public of the importance of the issue is critical; in the longer term, improvements to roads and port access could reduce some of the worst excesses.		
1. Safe People	Distraction and Fatigue	NA	Driver distraction and inattention	Increases minor run into rear crashes and serious implications in rural areas. Education programme focus because enforcement is difficult.	casualty reduction - number and severity	Office of Road Safety (ORS)	Not known	Current Govt seems reluctant to pay for education campaigns. Road Trauma Trust account has money but Govt doesn't want to spend - because of AAA rating and the ability for these funds to keep net debt down.	RAC has a simulator - to test Driver Distraction and it demonstrates how often distractions happen.	0
1. Safe People	Distraction and Fatigue	NA	Driver distraction needs more research	Phone and texting. Emerging issue as technology increase in vehicle distraction. Not sure what to do but this is an area that needs attention.	0	0	0	Very difficult to enforce	0	1/3 of crashes due to distraction
1. Safe People	Distraction and Fatigue	NA	Driver fatigue is important - especially in HCVs	Need to develop measures to address fatigue	Not discussed	Not discussed	Not discussed	0	MUARC studies - Michael Lenne Research Grant to characterise how humans interact with all elements of level crossings. Instrumented car, volunteers, rural and urban areas, cognitive work analysis, build model to test potential enhancements, support from PTV, VicRoads, VicTrack, TAC etc.	0
1. Safe People	Distraction and Fatigue	NA	Fatigue	Light vehicles	0	0	0	0	0	0
1. Safe People	Distraction and Fatigue	NA	Fatigue impairment	Technology to be used to address fatigue - eye movement sensors etc.	Not discussed	Not discussed	Not discussed	More prevalent in the run-off-road accidents Not enforceable	Not discussed	0
1. Safe People	Distraction and Fatigue	NA	Fatigue impairment	Enforcement is necessary to control	Not discussed	Not discussed	Not discussed	More prevalent in the run-off-road accidents	Not discussed	0
1. Safe People	Distraction and Fatigue	NA	Heavy vehicle driver fatigue	Smarter scheduling to eliminate long waiting times; wider use of fatigue management equipment	Not discussed	Sates/NTC	Not discussed	Doubling of heavy vehicle km travel in 10 years => will this lead to doubling of trauma events??? Driving hours / rest areas / fatigue monitoring devices		
1. Safe People	Distraction and Fatigue	NA	Need to address driver distractions, phone, radio, external stimuli etc.	0	Not discussed	Not discussed	Not discussed	Behaviour is the key	MUARC studies - Eric Wrigglesworth 'Accident Free Day' in USA not very successful - ALWAYS increases accidents. Need to be cautious on education campaigns. Refer to PTV website for study - Peter Nelson Furnel, Professor Jack Singh (Latrobe Uni)	0
1. Safe People	Distraction and Fatigue	NA	Sleep apnoea and fatigue	Sir Charles Gairdner (Dave Hillman) sleep centre. The research is linking sleep data with crash stats.	Better knowledge of the risk factors in crashes by people with fatigue. How does sleep apnoea impact on driving and does CPAP help and do they self regulate (avoid driving)	CMARC	Currently have $400k of funding.	Funding.	0	Sleep apnoea patients will be put on the simulator and have a black box before and after treatment and results be compared with control.

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Distraction and Fatigue	NA	Reduce distraction as a causal factor of road trauma	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	Behavioural approach solutions such as (appropriate) laws and educational programs must overcome the resistance of drivers (and other road users) who may not appreciate the risks associated with common and electronic distraction Review new technology relating to distracted driving Increase enforcement of these offences Incorporate data capture in Compstat and Scorecard reporting	Young, K, Regan, M. and Hammer, M 2003.Driver Distraction: A Review of the Literature. Melbourne: Cited in Monash University Accident Research Centre (MUARC), Report No. 206	N/A
1. Safe People	Drink and Drug Driving	Alcohol Interlocks	Alcohol / Justice system – There is a problem with recidivism in drinking and driving with 66% of people getting caught again in later life. Alcohol interlocks have an important part to play for repeat offenders, however in New Zealand they are only provided after a three month ban in driving. During that time people often drive anyway.	Ensure every person who is caught a second time for drinking and driving is provided with an interlock system immediately after they are caught, even if they are still banned from driving	0	The justice system, with Police enforcement	The interlock systems that are monitored each cost around $2500	Changes in attitude / Funding	0	0
1. Safe People	Drink and Drug Driving	Alcohol Interlocks	Alcohol interlock programme - This programme has been operating for 3 years, however the uptake hasn't been great as there is a cost to using it. The MOT are reviewing the programme to see if it can be altered slightly to obtain a better uptake.	0	Improve compliance with drink driving laws.	Ministry of Transport	0	0	0	0
1. Safe People	Drink and Drug Driving	Alcohol Interlocks	Alcohol interlocks	Recidivists only	Expect 60 -70% reduction	Needs a National approach	User / offender pays	Needs legislation changes which is currently going through parliament`	0	0
1. Safe People	Drink and Drug Driving	Alcohol Interlocks	Alcohol interlocks	more widely used; use evidence of end to alcohol dependency or period of alcohol-free attempted starts as criterion to come off alcolock rather than fixed time - break nexus with punishment	Effective while installed	States	Approx. cost equivalent to one drink per day-			
1. Safe People	Drink and Drug Driving	Alcohol Interlocks	Drink driving	Interlocks - repeat offenders	Limited impact. Small number of high risk people. Evidence shows high impact for small group over limited time. Doesn't sustain on-going behaviour change.	Minister for Police - ORS	Few million for admin and development	Currently being implemented	Repeat offenders go back to that behaviour once the autolocks are removed.	0
1. Safe People	Drink and Drug Driving	Enforcement	Drug enforcement	recreational and professional issue; equip more police forces to do roadside drug tests and increase testing; increased use of fitness for duty tests with professional drivers	Likely to have an impact; impact in proportion to extent of testing - note very high levels required to effect a change in behaviour (RBT precedent - 1/3 drivers tested in any one year).	States	Would be very expensive	Funding and developing business case that addressed the high costs of the program.		

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Drink and Drug Driving	Enforcement	Drugged driving - MOT is looking at what is being done in other overseas countries. The MOT may follow a different path from that of Australia. Norway uses limits for drugs rather that penalising anyone who has had even a small amount. In NZ you currently need to suspect someone before you can test for drugs.	0	Improve compliance with laws on drugged driving	Ministry of Transport	0	0	0	0
1. Safe People	Drink and Drug Driving	Enforcement	NOT BANG FOR BUCK	Increased drug and alcohol testing	0	0	0	0	0	Many of these items don't appear to have a significant expected impact on increasing safety due to high cost, isolated action or already reached saturation point.
1. Safe People	Drink and Drug Driving	Enforcement	Offences and penalties for Alcohol - A review is currently being undertaken in New Zealand	0	0	Ministry of Transport	0	0	0	0
1. Safe People	Drink and Drug Driving	Enforcement and Education	Drink and Drug Driving	Changing attitudes/enforcement	0	Local Authority	0	Community attitudes	Crash Statistics	Disproportionate number of crashes involve drugs or alcohol
1. Safe People	Drink and Drug Driving	Enforcement and Education	Drink Driving	Balance in education and enforcement. Target very specific behaviour. Smarter enforcement of drink driving. Police visibility. Interlocks	Didn't discuss these elements - believes we already know what to do and need to either keep doing it or do more of it. Key issues are politics, funding and behaviour.	0	0	0	0	0
1. Safe People	Drink and Drug Driving	Enforcement and Education	Drug driving	Enforcement and education. Message hasn't gotten through for drugs as it has for drink driving.	Reducing the number of casualties.	ORS in education and WA Police in enforcement	Not known	More difficult for conviction and more expensive and difficult testing. Not conclusive road-side.	Drink driving campaign success	0
1. Safe People	Drink and Drug Driving	Measurement and Enforcement	ILLICIT DRUG USE NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	The increase in data-capture of Post Mortem and Crash blood samples as well as the introduction of random roadside drug testing (RRDT) is leading to a better understanding of the scale of illicit drug use in the community and its impact on road safety.	Some studies have shown that 22% of drivers killed in fatal crashes had illicit drugs in their system. In addition to drug-related crash reductions, combating these drivers may reduce other risk taking behaviours that these people may be engaging in behind the wheel.	Government, Road Safety Agencies, Police. Road safety could benefit from high-profile "champions" that will be listened to by the public in regards to illicit drug use and driving. The recent TV and radio ads featuring boxer Danny Green combating one-punch assaults in NSW are an example of a well known identity being used to champion a public safety issue.	Current testing regimes for drug impaired driving run into the millions of dollars. Expanding the testing regime would involve significant costs but the Beneifit:Cost ratio is likely to be favourable in terms of reduced deaths, injuries, hospital admissions and family disruption.	In some jurisdictions, RRDT legislation is only a recent occurrence. The equipment in use is expensive and testing regime must be accompanied by rigorous quality assurance. Movies and TV shows now regularly depict illicit drug use and community-driven legislative changes in the US states of Washington and Colorado that now permit the use of cannabis has also taken place. It will be interesting to see how drug impairment impacts on the road toll in those states.	There is anecdotal evidence that young males (and probably females) will purchase ICE on Friday nights after work so they can stay awake and party for the whole weekend. On Monday morning, they are still awake and don't "come down" until Tuesday before repeating the process on Friday. In late 2013, a Police RRDT operation was held in adjacent small towns in southern NSW (populations 2000 and 8000). In two nights, 15 drivers (males 17-25) tested positive to illicit drugs including one male who had a loaded firearm in his car.	The Australian Crime Commission this week released the 2012-13 Illicit Drug Data Report which states that amphetamine-type substance seizures and arrest are now at record levels (www.crimecommission.gov.au) Illicit drugs can now be cheaper than alcohol (EG Hit of ICE Vs slab of beer). There are also Work health and safety implications associated with drug impaired workers. The presence of a loaded firearm in the accompanying example highlights the police role in drug driving detection. Smaller communities could also be at greater risk from drug impaired driving than capital cities
1. Safe People	Driver Training	NA	"First@Scene" - Improve driver and rider licensing arrangements: First aid training to be incorporated into learner driver permit	All states and territories	Current NT initiative is unable to be determined at this stage. Requires a longitudinal study. St John WA estimates that it may prevent 25 deaths per year (in WA)	States / Territories for regulation Federal government should provide leadership	e-learning website would cost approximately $150,000 with on-going maintenance costs of $15,000 to $30,000 per annum	Federal leadership to overcome resistance from road authorities (with the exception of the NT)	See attached notes	0
1. Safe People	Driver Training	NA	Australian Graduated Driver Training Licensing Programme	More resourcing and evaluation needed on the success of the programme	Casualty and serious injury reduction	Government - state	Not cheap but quantification unknown	Constant data collection is needed over period of time. Currently funding is sporadic.	0	Better education in schools early on - target an at risk group

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Driver Training	NA	Behavioural change in approach to driving to conditions	Scrap almost all existing programs and develop new programs that are soundly based on scientific behaviour change principles; trial extensively before introducing	No evidence to suggest that current programs are effective. Best practice programs have been shown to reduce re-offending, can't remember the extent 20-30%?	Role for Commonwealth perhaps to develop a model program in partnership with one or two Sates; implementation would be States' responsibility	$1 million to develop and trial each program	Properly skilled teams to develop the programs; willingness on part of states to embrace programs and penalise non-completion		
1. Safe People	Driver Training	NA	Better training	All professional drivers - retain existing time dependent process for casual HGV drivers	0	0	0	Competency based process for professional drivers - provides a broader set of skills creating better employees and safer drivers. Provides a pathway for accelerated progression to higher classes of licence	0	0
1. Safe People	Driver Training	NA	develop key criteria for national graduated training and licensing	Improving rider skill, including on-road skill. Developing higher-order cognitive skills to look out for and prevent potential accidents	State and Territory agencies, accredited training providers such as DECA, HART, Stay Upright	0	0	Motorcycle and Scooter Safety Summit: The Road Ahead 10–11 April 2008 Parliament of Victoria, Road Safety Committee, Inquiry into Motorcycle Safety	0	0
1. Safe People	Education	NA	Automated driver feedback	Early driver feedback app, opt in with the potential to regulate later on.	Post drive, every user would be provided a safety rating. Each drive score would contribute to an overall rating and feedback, information could pot be collated at a centralised level.	Transport agency for young drivers, fleet operators, insurance companies.	$500,000 to full commercialisation. Ongoing cost more critical.	The app allows for competition so that users can be judged against their peers. Privacy data and security is an issue. Getting the trial completed.	Ask to send to me.	0
1. Safe People	Education	NA	Bicycle, pedestrian and vehicle conflict	Education on sharing road space	0	ORS and lobby groups. RAC	Not known	0	High numbers of cycle accidents. High risk for serious injury.	Driver and cyclist attitudes. Cyclists taking up road space - potential education of cyclists as well.
1. Safe People	Education	NA	Cyclists ability to assess and manage risk	improve cyclists ability to manage and assess risk, such as not riding through water, when riding in groups being more careful when fatigues and in the last stretch of rides when they speed up)	0	0	0	Reaching a large number of people, challenging to do education with impact and being cost effective	0	0
1. Safe People	Education	NA	Developing a safety culture within road transport industry organisations - We seem to have moved away from this sort of initiative within the road safety field. Some companies in the road transport industry have a poor safety culture. There is a need for the government to encourage an improved culture within the road industry by showing how the safety culture can be improved and what benefits there may be (often in a company with a strong safety culture, people feel happy, and are then more productive.	There needs to be an education / support focus	Less risk taking and a reduced crash exposure	0	There would be some cost for the establishment of a community development project	Good companies would develop an improved safety culture while the poorly performing companies may not	A poor attitude to safety is seen on a daily basis within the industry	0
1. Safe People	Education	NA	Early childhood road safety education	Safer children, improved attitudes to traffic safety throughout the lifespan	Longitudinal studies to evaluate progress and fine-tune the approach	States with Federal leadership and support	Not discussed	Current initiatives have been hailed as game changers, particularly wrt future young adult safety - this needs to be closely monitored		

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Education	NA	Implement community policing campaigns (education and enforcement) aimed at educating other road users to be mindful of motorcyclists and for motorcyclists to be responsible for their own safety	0	0	0	0	Motorcycle and Scooter Safety Summit: The Road Ahead 10–11 April 2008 Parliament of Victoria, Road Safety Committee, Inquiry into Motorcycle Safety	0	0
1. Safe People	Education	NA	Implement education campaigns which acknowledge that riders must have high attention levels, manage risks in everyday riding and need to take responsibility for themselves and their rider groups by not engaging in unnecessarily risky behaviour.	riders taking greater responsibility for their own welfare	Motorcycle groups, state agencies	0	0	0	0	0
1. Safe People	Education	NA	Model safer driver course	All young drivers. In NSW this is comprised of 3 hours theory and 2 hours practical training. Completion results in a credit within the 120 hours of log book training.	Focusses on hazard awareness	State governments - has been available in NSW since 01/01/14	$140 for the learner driver, however, this amount is heavily subsidised in NSW. Actual cost per student closer to $500	Nationally consistent approach by all states - harmonisation	0	It can still be easier in some states / territories obtain a licence
1. Safe People	Education	NA	More effort needs to be targeted to lower socio-economic groups	Targeted programs	Not discussed	NRSS	Not discussed	Not discussed	0	0
1. Safe People	Education	NA	Motorcyclist behaviour	Commuter and recreational motorcycling (both growing travel modes)	Improve safety of motorcycle travel; reduction in speeding; better awareness if risks	States	Not discussed	Speed, thrill-seeking, alcohol and drugs, inexperience and over-confidence		
1. Safe People	Education	NA	Novice and pre-driver education	Educational program to encourage behaviour change from an early age, i.e. in car observation.	Diffuse, difficult to measure. Cultural shift- could be measured in survey form.	Mix of govt, police and schools- systems approach.	Unsure of costs, could be estimated through mentoring driver time cost, evaluation, campaign implementation, etc. Two stages: Pilot study in a few schools, then wider roll out if successful.	In accordance with peoples basic values, careful communication with targeted audience i.e. different message	1) An approach to novice driver training, 2) evaluating a novice driver and predriver trainee	0
1. Safe People	Education	NA	public education strategies for motorcycle and scooter safety include key messages for both riders and other road users	Improved awareness of motorcycles and danger. Improved attitude between drivers and motorcyclists. Improved interaction between motorists and motorcyclists, avoidance of SMIDSY (sorry mate I didn't see you) accidents	State and territory agencies (e.g. TAC and VicRoads in Victoria)	0	Reaching audiences and influencing behaviour, measuring impacts	Motorcycle and Scooter Safety Summit: The Road Ahead 10–11 April 2008 Parliament of Victoria, Road Safety Committee, Inquiry into Motorcycle Safety	0	0
1. Safe People	Education	NA	Seatbelts	Changing attitudes/enforcement	0	Local Authority	0	Community attitudes	Crash Statistics	Disproportionate number of crashes involve people not wearing a seatbelt
1. Safe People	Education	NA	Speed and Distraction and rural seatbelts	In interim before technology provides the solution. Need to educate that its not the hoon driver, but the every day driver that is 10km over.	Reduced number and severity of crashes	ORS and Police for enforcement	na	Funding. Believe penalties are sufficient. Politics around enforcement. Majority of people think speed is not an issue for the every day person (10km over versus 50km over) therefore politicians don't believe it's an issue.	School zone and 50km zones are evidential success stories.	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Education	NA	School curriculum (primary and secondary) which focuses on road safety and the ownership/buy-in required by the National Road Safety Strategy of the populace.	Standardised, consistent and age appropriate curriculum designed to amend attitudes and behaviour - year on year through the schooling years.	Accepted means of amending culture - referencing efforts from sun-safe policy through to environmental issues. Outcome is expected to be positive but perhaps not realised for decades if such a programme was sustained throughout.	Education Departments in consultation and company of road safety practitioners and SME's.	Unaware.	Funding of a program - writing, delivery and evaluation together with discerning how the same fits within the existing school curriculum bot philosophically and tangibly given other competing curriculum content.	Refer response to 'Expected Safety Impact'.	0
1. Safe People	Education	Speeding	Attitudes to Speed	Changing peoples attitude to speeding	0	Local Authority	0	Community attitude. People generally believe that they are good drivers and it is not their fault.	0	People are still happy to speed when overtaking or in a rush.
1. Safe People	Enforcement	NA	Community Support - Ensure all safety programmes are seen to be fair within the community so the public is supportive. For example, enforce speed limits in locations where there are speed issues rather than in areas where it is easy to find people that violate speed limits that don't meet speed limit warrants.	0	This could be very effective as ultimately road safety programmes rely on the behaviour/support of the general public for their success.	The Police	No real cost, just a slight change in attitude.	0	0	0
1. Safe People	Enforcement	NA	Consistent principles and criteria for managing problem road users	Better targeted use of technology, e.g. interlocks, speed limiters	Reduction in driving by unqualified persons or persons who have lost their licence	States	Not much - largely administrative changes			
1. Safe People	Enforcement	NA	Enforcement of distracted driving	Police enforcement of distracted driving e.g. mobile phone use	Enforcement will reduce the incidence o crashes associated with inattention	Police	0	0	Technology such as cars in cameras demonstrate levels of inattention. Evidence suggests that the crash rates reduces regarding distracted driving and stays down after a period of high enforcement	0
1. Safe People	Enforcement	NA	Enforcement Tolerance	Reducing the enforcement tolerance	>1-2%	Local authorities	Minimal	Before and after tolerance levels are not public knowledge	Unpublished CASR Report	0
1. Safe People	Enforcement	NA	Enhance licence enforcement	Interim measure until Smartcard licences become routine; increased roadside checks	Not discussed	Sates	Proportional to number of checks	Limited police resources is a challenge High profile issue => therefore effectiveness is high Continue to monitor and evaluate		MUARC has done research in this area
1. Safe People	Enforcement	NA	Have proven evidence-based strategies in enforcement and behaviours so will continue these.	Continue and do more speed enforcement.	Reduced number and severity of crashes	MRWA and Police	0	0	0	0
1. Safe People	Enforcement	NA	More covert operations on rural roads - unmarked cars aimed at high risk drivers	National	Improve the standard of driving	Police	0	0	0	0
1. Safe People	Enforcement	NA	Police enforcement	On-going and consistent enforcement of road rules is still the most effective means of reducing road trauma	0	0	0	0	0	Enhancements in ITS will significantly assist in the reinforcement of correct behaviour
1. Safe People	Enforcement	NA	Police Enforcement	All behaviour related programs - alcohol, drugs, distraction	Visibility is the key to effectiveness	Centre for Road safety fund all Police activity in this regard	Police funding - $24M / year	All activity supported by high impact media campaigns	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Enforcement	NA	Targeted Policing / Justice system - There is a relationship between risk behaviour, problems with driving and other criminal activity. Sometimes people will run up driving fines etc. and then end up in prison because of this. Sometimes the driving problems are not the only area that they display illegal/ antisocial behaviour. It is an indicator that there are other problems / issues that need to be addressed	Look at dealing holistically with people who are caught drinking and driving, or repeatedly commit other driving offences. There are often other issues in their lives that lead to this behaviour. Provide driver training for the young people who may not have the opportunity to learn without it.to ensure they do not drive down a path of repeat offending, ultimately ending up in more serious trouble.	Potentially behaviour could be changed before it becomes more ingrained. There could potentially be benefits not just to road safety but also from a reduction in other forms of crime if a more holistic view is taken.	The justice system, with Police enforcement	There could be additional costs from programmes to assist these people.	Change in attitude to Policing / Justice	0	0
1. Safe People	Enforcement	NA	Unlicensed drivers	Need better enforcement or control of unlicenced drivers - may need technology solutions	Not discussed	Not discussed	Not discussed	High risk behaviour	Not discussed	0
1. Safe People	Enforcement	NA	Continued Random Breath Testing Enforcement. Receipt of research outcomes in relation to enforcement approaches that can assist with enhancing capability to deter drink driving.	QLD undertook over 3.67 million RBTs in 2013, resulting in approx. 25,000 drink driving offences detected. Continued RBT recommended. Further research into the most effective balance of general versus specific deterrence methods in relation to RBT is recommended? 2. How large a proportion of the population needs to be targeted by RBT each year in order to achieve the optimum deterrent effect? 3. How can the experience of RBT as a police initiated encounter be further improved?	Expected Outcomes: More efficient and effective deployment of policing resources to deter drink driving; corresponding reduction in drink driving behaviour and related road trauma	Research body/institute A proposed Austroads project to develop 'Good Practice Enforcement Guidelines', currently under consideration, may also inform the implementation of this action (National Road Safety Strategy progress report, 2013: http://www.transportinfrastructurecouncil.gov.au/publications/files/National_Road_Safety_Strategy_progress_report_2013.pdf)	Funding for research is dependent on scale of project. Overall cost for RBT enforcement is unavailable (part of consolidated funds provided for enforcement). Note the following estimates have been reported: 12 million RBTs in Australia each year •Total annual cost of police doing RBTs in Australia estimated at = $71 million. Approx. $6 per test, and time taken = 20 seconds per encounter	Austroads project currently under consideration. Depending on outcomes of research and related policy and legislative implications of the recommendations made.	Australian Institute of Criminology (February 2014) "Effective drink driving prevention and enforcement strategies: Approaches to improving practice" in Trends and Issues in crime and criminal justice, Available online: www.aic.gov.au	0
1. Safe People	Enforcement	NA	Continued Roadside Drug Driving Enforcement and research into drug involvement in crashes	Continue Roadside Drug Testing Program in Queensland. Consideration of further analysis of blood samples taken as a result of intercepts to better understand the scale of illicit drug use in the community and its impact on road safety. QPS currently saliva tests for presence of 3 drugs: MDMA, THC and Meth.	From 1 July 2013 to 13 April 2014 17,513 roadside blood or saliva tests were undertaken in QLD, with 1,370 drug drivers testing positive (one offender per 13 tests) and 114 repeat offenders were detected. Removal of persons who engage in high risk road behaviour from the road network with the aim of reducing road trauma.	Enforcement agencies, Government, Research body/institute	Current testing regimes for drug impaired driving run into the millions of dollars. Expanding the testing regime would involve significant costs but the Beneifit:Cost ratio is likely to be favourable in terms of reduced deaths and injuries.	In some jurisdictions, RDT legislation is only a recent occurrence. The equipment in use as well as the cost of analysis is expensive and testing regime must be accompanied by rigorous quality assurance.	23.5% of the 3398 fatalities in NSW, VIC and WA between 1990 and 1999 involved a deceased vehicle controller who tested positive for drugs other than alcohol[1] The 2007 National Drug Strategy Household Survey found that 2.9% of the 23,256 survey respondents had driven while under the influence of an illicit drug in the past 12 months[2] SA: in 2004 cannabis or meth was present in 28% of fatality injured drivers (Transport SA, 2005) QLD 2012: Dept. of Transport and Main Roads survey data: 92% of persons surveyed (n=600) had total support for laws that allow police to stop and test drivers/riders at the roadside to see if they have drugs in their system. [1] Drummer et al (2004) The	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Enforcement	NA	No new suggestions. Continued focus is required on enforcement to provide specific and general deterrence. Speed, drink-driving and inattention should be major focuses.	0	Driver behaviour changes as a consequence of enforcement. There are both specific and general deterrence benefits.	Police.	Unable to provide an estimate at current time.	Resourcing/funding.	Is supported by crash statistics, previous enforcement activity, and research. Current resource/time constraints restrict my ability to more formally articulate the evidence basis at this time.	0
1. Safe People	Enforcement	NA	Point to Point Speed Cameras	On highways and freeways	Increased enforcement on regional roads where police are often restricted in policing due to distance - may change driver behaviour in relation to speed - the fear of being caught	Main Roads/Police	Unknown - dependant upon numbers	Additional back-end resources to accommodate infringement processing, maintenance of cameras etc.	WA Statistics. Speed fatalities on major arterial roads in regional WA - data to be obtained from Main Roads WA. http://www.ors.wa.gov.au/Documents/Speed/ors-speed-rsc-position-paper-speed-cameras.aspx	0
1. Safe People	Enforcement	NA	Unmarked enforcement	Focus on driver distraction - use of mobile phones	Increasing public perception of being caught.	Police	Cost of an unmarked fleet	Funding	Unmarked motorcycle trial in WA www.perthnow.com.au/.../police...police-motorcycle-trial.../story-fnhocxo3-1226813972463	0
1. Safe People	Enforcement/Drink and Drug Driving	NA	Increase drug enforcement	Limited reliable drug testing equipment	Currently many drug drivers go undetected. Many drivers believe that there was a very low chance of being tested for drugs while driving due to the lack of resources. There is also the perception that drivers will only be tested if visibly displaying signs of the effects of drug use.	Police	Depends on number of equipment and cost of consumables	Requirement for accurate drug testing technology. Currently required to be analysed by the Chemistry Centre in addition to the drug wipe analysis which becomes costly.	Owens K. P., Boorman, M., (2011). Evaluating the deterrent effect of random breath testing (RBT) and random drug testing (RDT)-The driver's perspective: Research findings. NDLERF: ACT.	0
1. Safe People	Enforcement/Drink and Drug Driving	NA	Roadside Drug Testing	Expansion of RDT capacity in the ACT	The 'hit rate' for drug impaired driving for both roadside police screening and that undertaken a s a result of mandatory blood sampling at hospitals for drivers involved in a collision exceeds the rate for alcohol impaired driving. The expectation is the expansion of capacity and public awareness of the same will (as it did with RBT) form a deterrent effect and (in time) reduce both prevalence of drug driving and subsequently collisions arising from the same.	ACT Policing in concert with JaCSD.	Significant - $5.2M budgeted by government over the next three years.	Evaluation of RDT capacity and effectiveness will likely be undertaken/required by government at some juncture, and accordingly a significant body of work will be required to depict the reach and effect of RDT. Consolidation of operational methodology and acquisition and funding of emerging technologies in this field. Expansion of capacity (in time) to be more broadly delivered by ACT Policing as opposed to the current model of a specialist team.	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Enforcement/Education	NA	Change road user behaviour to reduce impaired driving as a causal factor of road trauma: Drink, Drug and Fatigue Driving	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	Drink driving is a major factor in Victoria's road toll. It accounts for 25-30 percent of driver fatalities and 11 percent of serious injuries. Drink driving and speed are causal factors in over half of the fatalities on Victorian roads. To reduce this number, Victoria Police must focus on changing the attitude of drivers who continue to drink and drive. The focus of any enforcement or communication strategy must be to separate drinking from driving.	Australian Government. Department of Infrastructure, Transport, Regional Development and Local Government. Community Attitude to Road Safety – 2011 Survey Report Dec 2011. Homel, R. (1988). Policing and punishing the drinking driver: A study of general and specific deterrence, NY:Springer-Verlag. MUARC – Report No. 211. November 2003 "Involvement of 21-26 Year Olds In Drink-Driving Behaviour". (pg 21)	N/A
1. Safe People	Enforcement/Education	NA	Change Road user behaviour to reduce the involvement of recidivist offenders as a causal factor of road trauma	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	Unauthorised drivers account for approximately 5 per cent of all fatal collisions A recent study reports that 60 per cent of disqualified drivers resumed driving during the disqualification period. A driver's perception of detection plays a key role in their decision to drive while unlicensed.	Sentencing Advisory Council 2008 Driving while Disqualified or Suspended Discussion Paper	Insufficient time to locate supporting evidence
1. Safe People	Enforcement/Education	NA	Change Road user behaviour to reduce the level of road trauma associated with country roads	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	'Speed' was the predominant causal factor attributed to fatalities in both rural and metro areas. Community attitudes appear to still support speeding with 2013 data indicating that 'speeding' was the most likely dangerous driving behaviour engaged in by both communities. Not wearing a seatbelt contributes to a higher percentage of rural road trauma than metro. Road design/condition was a dominant factor in rural serious injury collisions however did not feature highly as a cause in metro regions.	0	Insufficient time to locate supporting evidence

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Enforcement/Education	NA	Change Road user behaviour to reduce the level so road trauma associated with vulnerable road users	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	Pedestrians: Having regards to the changing demographics in particular the ageing community "baby boomers', a focus on initiatives targeting older pedestrians is warranted. People aged over 70 years of age continue to be over represented in pedestrian road trauma. Bicyclists: Whilst it is important to ensure that lawful behaviours of bicycle riders are maintained through enforcement, other road users need to be vigilant in recognising cyclists as a legitimate and affiliate road user. Victoria Police targeted operations such as Halo should not only focus on vulnerable road users such as cyclists, but also other vehicles that commit offences against them and are central to the	Cairney, P. (1999) Pedestrian Safety in Australia Publication HHWA-RD-99-093 Breen, Jeanne European priorities for pedestrian safety Executive Director, European Transport Safety Council Corben (2011) The Critical Nature of Speed and Speeding Presentation to Road Policing Strategic Advisory Group Thursday 14 July 2011 Haigney D., & Westerman, 2001. Mobile phone use and driving, a critical review. Cited in Monash University Accident Research Centre Driver Distraction: A review of the literature, Young, Regan & Hammer. Report No. 206. Curnow, W. J. "Bicycle Helmets: A Scientific Evaluation" in Anton De Smet (2008). Transportation Accident Analysis and Prevention.	Vulnerable road users categorised to: Pedestrians; Bicyclists; Motorcyclists
1. Safe People	Enforcement/Education	NA	Change road user behaviour to reduce unauthorised driver/riders as a causal factor of road trauma	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	0	0	Insufficient time to locate supporting evidence or document critical issues
1. Safe People	Enforcement/Education	NA	Change road user behaviour to reduce unrestrained driver/passenger as a causal factor of road trauma	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	Not wearing a seatbelt contributes to a higher percentage of rural road trauma than metro.	0	Insufficient time to locate supporting evidence
1. Safe People	Funding	Community Programmes	Enhance community road safety partnerships	Establish a community road safety fund to allow community groups to apply for funding to assist with the operation of their local road safety education and awareness programs and road crash injury rehabilitations programs. - The QPS also collaborates with Suncorp Insurance through a Community Grants Scheme to improve road safety and reduce crime.	The role of reducing road trauma is a shared one. Strong community partnerships are critical for delivering positive road safety outcomes	Government, Community groups	$2m per year from CDOP for road safety fund;	0	Refer to action plan. http://tmr.qld.gov.au/Safety/Road-safety/Strategy-and-action-plans.aspx. Also links to National Road Safety Strategy.	0
1. Safe People	Funding	NA	Contestable fund to support initiatives in Districts - If you have a particular idea for a road safety initiative then you can apply for this funding	0	Allows people to address particular safety issues that they see in their district. Encourages thinking about the safety problems.	Police	0	0	0	0
1. Safe People	Incentives	NA	Motor vehicle insurance	Discounts to drive safer behaviour	0	0	Market based	Needs a National Systematic approach leverage off each road authorities current campaign priorities	0	0
1. Safe People	Incentives	NA	Rewards	Rewarding people for safe driving (app?)	Unlikely to have a significant impact	0	0	Main issues around self or parent monitoring.	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Level Crossings	NA	Trial innovative and cost-effective level crossing safety technologies to improve driver behaviour at rail level crossings (action from QLD Road Safety Action Plan)	0	Improving safety at level crossings and reducing crashes can save lives and avoid disruptions to rail passengers and freight associated with tracks being out of action for days at a time.	0	0	0	http://www.tracksafefoundation.com.au/site/level_crossing.php	0
1. Safe People	Licencing System	NA	Curfew	Introduction of a young driver curfew	>1-2%	Local authorities	Minimal	Changing legislation and community attitudes	0	Currently being implemented in SA
1. Safe People	Licencing System	NA	Fitness for duty of drivers - current medical checks are inadequate	All professional drivers	No current test for diabetes, high blood pressure or other cardiovascular issues	0	0	Needs regulatory reform - if fail no indefinite suspension	0	E.g. Sleep apnoea - licence suspended until fully diagnosed and treated (up to 3 months). This results in a lack of reporting
1. Safe People	Licencing System	NA	Formal research into pre-licence training and post licence outcomes	National study	Need a better understanding of what are the most effective training methods and assessment techniques	Federal or national body to undertake a comparative study of each state jurisdictions approach	?	In-vehicle cameras and GPS to monitor driver skill and performance. Would require changes to privacy legislation and community attitudes t on-going monitoring.	0	0
1. Safe People	Licencing System	NA	Graduated Licencing System	0	30% reduction in young driver casualties	Needs a National approach	0	0	0	0
1. Safe People	Licencing System	NA	Licence Age	Increasing the licence age from 16.5 to 18 years	>1-2%	Local authorities	Minimal	Changing legislation and community attitudes.	0	Currently achieved an increase to 17 years but not all the way to 18 years.
1. Safe People	Licencing System	NA	Licence Age	Increasing the licence age	0	Government	0	Community pushback, change in belief system (I need my car to do...).	0	A push at a national level may assist.
1. Safe People	Licencing System	NA	Outsource all driver licence training / testing	All levels of licence from light vehicles to heavy vehicles.	More consistent and potentially more stringent assessment of driving skills	Each state but with direction from the national level	All States currently run their licence testing programs at a loss.	NVEET to develop a national standard of training to run by RTOs in each state. (NSW - 50, Vic - 20)	0	0
1. Safe People	Licencing System	NA	Passenger Numbers	Introduction of a passenger number limit for young drivers	>1-2%	Local authorities	Minimal	Changing legislation and community attitudes	0	Currently being implemented in SA
1. Safe People	Licencing System	NA	Speed limit to manage P-platers better	Not discussed	Not discussed	Not discussed	Not discussed	Young people least able to afford 'smart' cars		
1. Safe People	Licencing System	NA	Strengthening & broadening of GLS including standardisation of the GLS components; licensing structure, curfews, vehicle platforms, passenger restrictions, sanction and penalty regimes, etc.	Consistent application of GLS initiatives across the Australian jurisdictions	Academic research depicts GLS is a very effective counter-measure. Outcome is expected to be positive.	In the ACT - Justice & Community Safety Directorate (JaCSD). Nationally - NTC and ARPF in conjunction with road safety academic bodies would be the key stakeholders/drivers of reform.	Unaware.	Legislative change, agreed nationwide GLS components	There are many published research papers from recognised road safety research institutions including MUARC, CARRS-Q, etc.	0
1. Safe People	Mode Shift	NA	Mode shift to PT and active modes (as per below)	High benefits to safety as less car travel means much lower crash outcomes	Very effective	State government	No costs provided	Major reductions in chronic disease can be expected But road trauma would increase if there are more vulnerable users on the road (bikes & peds) so better infrastructure is required	Plan Melbourne	CAVE (Computer Aided Virtual Environment) is useful - 3D presentation of data. Currently studying Melbourne and Perth.
1. Safe People	Mode Shift	NA	Pedestrian safety	major activity centres, urban arterials	Better understanding of risk, and better provision of pedestrian linkages to public transport	States with Federal leadership and support; metropolitan and regional centre local governments	Not discussed	Changing population distribution, modal choices and development priorities are leading to changing activity patterns - these need to be catered for		
1. Safe People	National/State Strategies	Implement Strategy	Actions listed in the QLD Road Safety Action Plan (2013-2015) under "Road Users" (Page 9)	- includes actions relating to licensing reforms, enforcement to target dangerous behaviours including fatal five, coordination of programs such as driver reviver and school crossing supervisor scheme.	Improve road user behaviour and compliance with road rules, reduce road trauma.	Queensland Government (DTMR and QPS - some combined actions, some individual)	examples: install flashing light signs at school zones - 300 schools over 4 years ($10m);	Different actions have varied issues in order to facilitate implementation.	Refer to action plan. http://tmr.qld.gov.au/Safety/Road-safety/Strategy-and-action-plans.aspx. Also links to National Road Safety Strategy.	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	National/State Strategies	Implement Strategy	Safer Journeys Strategy - This strategy seems to be working for reducing the road toll and improving safety	Safer journeys represents the core document driving road safety within New Zealand. The actions within this document cover all aspects of road safety.	To date, the Safer Journeys Strategy has been highly effective.	All organisations with an interest in road safety.	0	Political support	0	0
1. Safe People	National/State Strategies	Implement Strategy	As per QLD Road safety action plan, investigate short term interventions including immediate licence and registration suspensions for high risk offences such as distracted driving (e.g. using a mobile phone while driving) and non-restraint use	Review the potential of these measures to assist in reducing road trauma.	In 2013, there were 125 fatalities as a result of crashes involving speeding drivers/riders, drink drivers/riders or driver fatigue/fatigue related, unrestrained vehicle occupant fatalities or distracted drivers/riders, which represents 46.1% of the Queensland road toll. It is anticipated the deterrent effect of licence and registration suspensions for such offences would reduce road trauma.	This particular initiative is included as an action in the current QLD Road Safety Action Plan (2013-2015): http://tmr.qld.gov.au/Safety/Road-safety/Strategy-and-action-plans.aspx	??	Legislation, enforcement costing, procedural, training	Refer to action plan. Also links to National Road Safety Strategy.	0
1. Safe People	Older Drivers	NA	Ageing population	Older drivers	0	0	0	0	0	0
1. Safe People	Older Drivers	NA	Aging population	Need better 'protection' for elderly people	Not discussed	Not discussed	Not discussed	0	Not discussed	Often the severity of the injuries are higher in aged population for similar accidents
1. Safe People	Older Drivers	NA	Baby Boomer 'bulge' needs attention	Address intersection treatments - more of a challenge for older drivers	Not discussed	Not discussed	Not discussed	Aging drivers will increase likelihood and consequence of incidents	0	0
1. Safe People	Older Drivers	NA	Increasing proportion of older drivers in our community, and increasing representation in road trauma statistics	Need a combination of consistent messages delivered by a series of trusted professionals; tight partnerships with very consistent delivery; sustainable funding for these joint messages; and integration of associated messages (e.g. Cannot get kids in restraints if parents do not use seat belts).	0	0	0	0	See notes	0
1. Safe People	Older Drivers	NA	Older driver, performance based testing	Competency based testing for aging drivers (i.e. eye testing, cognitive ability/decision making, motor skills)	Well being impact (improving confidence and ability to maintain independence compared with cut off at 60, accident reduction (removing most at risk drivers), fewer aged care costs associated with people without access (i.e.. Less of a burden on society)	Govt, national level	Pilot level assessment.	Needs to be properly evaluated, CBA at an early stage. Small scale intervention and then gross costs to scale accordingly.	0	0
1. Safe People	Older Drivers	NA	Older drivers	Safety of older drivers on the road, given visual, physical and cognitive decline. At what point do you remove a drivers licence?	Clear guidelines in terms of when a license should be retracted. Standardised approach across states.	Research bodies and DoT through licencing	Research cost and then implementation cost. National level study so all states contribute.	Funding and interest.	High representation of older drivers in certain crash statistics.	Could follow up with Lynn for specific research data.
1. Safe People	Older Drivers	NA	Older drivers - vision	Testing the impact of first and second cataract surgery on crashes. Can be up to a year between surgery - so driving with one eye good and one eye bad.	Improved and safer driving and reduced crashes.	CMARC - ARC discovery grant funds	Currently funded for $350k. But could use more.	Funding.	Previous research done by CMARC on number of people with cataracts who had crashes. Big media in the US.	Recruiting about 350 people. Some from NSW (200 in WA and 150 in NSW). WA has simulator. Black box in car to see how they're driving over a week. Are they avoiding intersections and conflicts? Linked data in WA can link all cataract surgery with crashes at state level using Dept. of Health data.

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Older Drivers	NA	Same as above with glaucoma	Everyone is likely to get glaucoma. What level of glaucoma severity is threshold for increasing risk for crashes and at what point should patients be told not to drive	Improved and safer driving and reduced crashes.	CMARC in partnership with the eye vision epidemiology research (EVER), which is a virtual research group.	Currently funded for $350k	Funding. Need to check people used in control groups have licence - DoT holds this information but previously didn't provide licensing data. Now part of the govt "Linked data" so this issue has been overcome.	Previous research done by Joanne Woods. Existing linked data health network data.	Connect a WA eye surgeon's 15 years of visual field data with crash data. Will use simulator and black box to test.
1. Safe People	Organisational Changes	NA	Single voice within the media on road safety issues - Kiwirap, which has been implemented in New Zealand has won awards overseas. Part of its success relates to the lack of confrontation between the various interest groups that are involved in road safety. The AA and other groups have been part of a partnership. It is understood that in Australia interest groups can be quite confrontational in front of the media, which can hurt the overall message	Ensure every safety programme attempts to gain support from all interest groups to ensure there one voice within the media.	Improved support from the community for road safety messages and programmes	Funding bodies implementing road safety programmes should encourage this by being open with discussion and information, and also by bringing in other parties at the start of projects.	0	Change in attitude to implementing projects	0	0
1. Safe People	Organisational Changes	NA	TAC Symposium on 1-2 May 2014 - VicRoads and Councils involved	VicRoads and Councils involved	Not discussed	Not discussed	Not discussed	Proposed to be an annual event	Not discussed	Premier's "Call to Action" to address injuries and fatalities
1. Safe People	Other	NA	Social disadvantage	Social disadvantage in combination with remoteness is being identified by current research as a factors contributing to increased crash risk; programs should be developed or delivered to address these issues	Address crashes for population groups identified as having high crash rates	States, possibly with Federal leadership	Not discussed	Delivering programs in remote areas		
1. Safe People	Other	NA	Wider policy initiative around the supply chain within the road transport industry - In the road transport industry economics are vitally important, and companies contracting to freight companies will often cut down the price to the extent that it is uneconomic to work without speeding, working long hours or employing drivers that are not particularly skilled. While those companies who contract to freight companies do share some of the responsibly for safety, this is not enforced. To address this there is a need to look at wider policy initiatives around the supply chain within the road transport industry	Look at the total supply chain so all people are linked to the safety outcome you want to achieve	Reduced crashes	MOT, NZTA, Police, Industry at large	Minimal costs	Engaging with people within the supply chain so the understand the initiatives have economic implications	Look at crashes where fatigue has been involved.	0
1. Safe People	Pedestrians	NA	Paediatric pedestrians	Education based on rich history of data	Targeted campaigns have had a high order of success when applied to other forms of trauma (e.g. fall from windows)	Hospitals need to be part of the partnership	0	0	0	0
1. Safe People	Research	NA	Research on Acute Protracted Error - this research project relates to drivers continuing to get worse at driver over time as you sober up	Research - clinical and laboratory	Unknown safety impact	Researchers, insurers	$250,000 for laboratory research plus $300,000 for clinical research	0	Engleland 2007, Walsh 2010, Charlton and Starkey 2013, Kelly 2004	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Research	NA	Research on self paced versus continuous distraction in phone use by drivers - this relates to ensuring the type of conversation is not distracting (police and airline pilots use particular forms of communication so they are not distracted by the main task. Can this work for drivers or is there a technical aid that can ensure this?	0	0	could be funded by safety research funders, but could also be funded by employers.	Field and laboratory research	0	Briggs 2011, Morgan 2011, Eby 2011, Charlton 2009	0
1. Safe People	Research	NA	Social media	For time being at least, is a growing medium for conveying road safety messages, possibly with major potential ; Research needed to understand what is effective and how to get the most out of these media	more effective messages and targeting of messages via new media	States with Federal leadership and support; communications industry	Not discussed	Should lead to the development of guidelines		
1. Safe People	Research	NA	Enhance community road safety partnerships	New penalties came into effect on 1 Nov 2013 relating to vehicle impoundment for 'hooning' behaviours. People committing two serious type 1 hooning offences in five years eligible for car confiscated indefinitely. Persons committing four or more Type 2 offences within five years are also eligible for vehicle forfeiture. Further research could be considered to establish how the perceptions and motivations of recidivist traffic offenders can be used to influence their driving behaviour.	Expected Outcomes: A reduction in crashes and recidivist offending relating to the high risk behaviours targeted. Further research could consider establishing what the underlying causes of repeat offending are in order to inform effective treatment responses for recidivist offenders (e.g. rehabilitation programs for repeat drink drivers)	Research body/institute, Government (involvement of Health Department) NSW is currently developing a repeat offender strategy and will share the project work supporting this activity with other jurisdictions (refer to NRSS progress report 2013).	Specific costing not available.	Success would be dependent on funding to undertake research, and to implement any potential treatment responses.	NRSS : "Review international best practice and identify cost-effective interventions for dealing with high risk and repeat traffic offenders. " Australian Institute of Criminology (February 2014) "Effective drink driving prevention and enforcement strategies: Approaches to improving practice" in Trends and Issues in crime and criminal justice, Available online: www.aic.gov.au	Refer to Queensland Police Service Website for further information on Vehicle impoundment provisions: http://www.police.qld.gov.au/programs/roadSafety/vehimpound/
1. Safe People	Research	NA	Investigate why people choose to take risks on the road	Interview drivers/passengers seriously injured. Conduct a general survey on drivers.	Actually being able to identify why people behave the way they do. Is it because there is limited police enforcement where they live or is it because their dad uses his mobile while driving etc. etc.	A road safety group	Unknown	Once the underlying reasons for taking risky behaviour is identified, a possible focus on police enforcement in a particular area and specific education campaigns will be beneficial. If there is a significant issue identified, further legislative change may be required.	Crash cause fatalities in WA. Research on prior history of motorcyclists involved in fatal and serious injury crashes.	0
1. Safe People	Research	NA	Research and implement innovative enforcement and prevention methodologies for fatigue and distracted driving NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	Identify and trial of possible innovative enforcement methodologies. A prevention methodology for fatigue could be including location of rest areas in GPS navigator systems and an alarm every 2 hours to remind drivers to rest.	- Enhance enforcement capability - increase deterrence effect thereby improving road user compliance - reduce the number of casualty crashes related to driver distraction and fatigue	Research body/institute A proposed Austroads project to develop 'Good Practice Enforcement Guidelines', currently under consideration, may inform the implementation of this action. A planned Austroads project (commencing 2014-15) to review the evidence and options on driver distraction may also inform this action in the longer term (source: NRSS, progress report 2013).	Dependent on scale of research	Funding	http://www.infrastructure.gov.au/roads/safety/national_road_safety_strategy/files/NRSS_2011_2020_15Aug11.pdf	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
1. Safe People	Research	NA	Undertake research into driving at unsafe headway distances and tailgating, to develop possible enforcement activity to reduce the number of rear-end crashes	Aims to provide evidence-based info on the factors involved in rear-end crashes and tailgating with the aim of improving enforcement and awareness of safe following distances among the general motoring public.	Understanding the circumstances surrounding tailgating and the precursors of rear-end crashes will help to design engineering, education or enforcement interventions that could contribute to a reduction in the number of traffic crashes which is not only in line with QPS strategic direction but will also reduce police resources required to attend and investigate crashes.	Govt; MAIC, DTMR, QPS	Requested from Australian Research Council Linkage Grant Scheme ($585,000) and MAIC providing $337,000 cash plus $160,000 in-kind. TMR also providing $125,000 in-kind.	Funding approval (e.g. ARC grant). Accessibility of relevant data.	Rear-end crashes represent between 21% and 33% of reported crashes in Queensland [Schram, Mckenzie & Williamson, 2012]. Unsafe following distances have been identified as a contributing factor in between 10% [Knipling, Wang & Yin, 1993] and 66% [Michael, Lemming & Dwyer, 2000] of rear-end crashes internationally, and in Queensland, 11.4% of all crashes are associated with following too closely (tailgating).	0
1. Safe People	Reduce tailgating		Chevron markings on roads, 'count to two' rule education	Mostly rear end injury crashes		States				
2. Safe Vehicles	Additional Technology	Automatic Braking	Automatic Braking	0	0	Local Authority	0	Changing legislation and manufacture standards	0	0
2. Safe Vehicles	Additional Technology	Automatic Braking	Autonomous Electronic Breaking (AEB)	0	Large impact	0	0	Takes time to get into the market, sometimes only initially offered in the top model	0	Fleet purchasing and legislation are important
2. Safe Vehicles	Additional Technology	Autonomous Vehicles	Autonomous vehicles & Co-operative ITS	Not discussed	Not discussed	Not discussed	Trials expensive	Trials required, legislation required	Austroads study	Austroads investigation stage only - some time before implementation and roll out. Stewart Ballingal (ex VicRoads) seconded to Austroads for study
2. Safe Vehicles	Additional Technology	Autonomous Vehicles	Autonomous vehicles - or Cooperative ITS (as per below)	5% of vehicles give benefits in terms of crash mitigation and minimisation	5% of vehicles give benefits More of market will significantly increase benefits	Government - State and Feds	No costs provided	National standards and regulation required. Funding strategy needs to be developed	MUARC research	Australia doing research, but government not investing in trials and implementation. MUARC work and Australian 'smarts' are being used in overseas trials.
2. Safe Vehicles	Additional Technology	Autonomous Vehicles	V2I and V2V	Full network required	Not discussed	Not discussed	Not discussed	20 year horizon before effective Uptake rate is important to gain benefits Further research required to demonstrate benefits	Michigan demonstration project - Uni of Michigan Transport Research Institute (UMTRI)	0
2. Safe Vehicles	Additional Technology	Autonomous Vehicles	V2V ITS	Scope to eliminate most forms of vehicle to vehicle collisions, inc. rear end and right angle; potentially very large gains for motorcyclists	30% reduction in serious casualties	Federal govt to set standards, protocols; industry to make kit available	Difficult to estimate as technology is embedded in a system aimed at congestion avoidance and low environmental impact travel.	Community acceptance.	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
2. Safe Vehicles	Additional Technology	Black Boxes	VEHICLE BLACK BOXES NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	A conversation in Australia to clarify the use of this type of technology in this country and its use in crash reduction and impacting driver behaviour.	Vehicle management systems (computers) in Modern vehicles can provide crash investigators with evidence of manner of driving prior to a crash.	This subject involves the Australian Standards, Federal and State legislators, the Courts, Law Enforcement, community groups (e.g. Civil Liberties Council).	Unknown costs associated with system development, data capture, court convictions or lack thereof.	Electronic management systems (computers) in cars can show information such as the speed a vehicle was travelling and if brakes were applied. There is support within road safety advocates and insurers here and overseas for the increased use of this data to make cars safer and settle disputes. Privacy advocates are seeking limits on the use of this data and who can access it and there is extensive debate in US Congress on this issue at present.	Further information can be readily obtained from the internet. See link in next box from the Toronto Star, 18 April 2014 "Safety regulators pushing for mandatory black boxes in cars".	http://www.thestar.com/business/tech_news/2014/04/18/safety_regulators_pushing_for_mandatory_black_boxes_in_cars.html
2. Safe Vehicles	Additional Technology	Cooperative ITS	Add technology to vehicles to produce safer outcome	Cooperative ITS roll out	Not discussed	Not discussed	Not discussed	0	0	0
2. Safe Vehicles	Additional Technology	Cooperative ITS	Connected Vehicles (corporative ITS)	0	0	0	0	Takes time to get into the market, sometimes only initially offered in the top model	0	Fleet purchasing and legislation are important
2. Safe Vehicles	Additional Technology	Driver assisting technology	Any technology that stops someone from making a mistake - support driver behaviour	E.g.. electronic stability control, Seatbelt alarms, Reversing cameras	Reduced number and severity of crashes	Market driven	Varies depending on technology - but users will pay for this.	Believes this will just happen as it will be driven by the market and improving technology	0	0
2. Safe Vehicles	Additional Technology	Driver assisting technology	Electronic vehicle stability control	autonomous breaking	Reductionism crashes/severity by 40%-pedestrians/cyclists are especially vulnerable in 60k zones so huge benefit there	Commerciality driven, private enterprise however could be mandated	Depends on the vehicle, however safety pack can cost $3-5k per car	Only effective in low speed zones, but most crashes in 60k anyway - should be made mandatory	0	0
2. Safe Vehicles	Additional Technology	Driver assisting technology	Encourage development of drive assistance technology	Driver assistance technologies are evolving rapidly. There is a need to incentivise their development and adoption	Driver error is the key component of all road trauma	Commonwealth and state governments	Not discussed	0	0	0
2. Safe Vehicles	Additional Technology	Driver assisting technology	GPS Speed Monitoring	0	0	Local Authority	0	Changing legislation and manufacture standards	0	0
2. Safe Vehicles	Additional Technology	Driver assisting technology	Improved safety in cars has lead to improvements in motorcycle accidents	Improved blindspot protection, adaptive cruise control (if it picks up riders)	0	0	0	0	0	0
2. Safe Vehicles	Additional Technology	Driver assisting technology	Intelligent speed adaptation	Vehicles 'know' environment	Not discussed	Not discussed	Not discussed			
2. Safe Vehicles	Additional Technology	Driver assisting technology	Intelligent speed assist	Prevents inadvertent speeding.	19% reduction in serious crashes with a voluntary speed assist. GPS warning if gone over speed.	Industry driven by the manufacturers. Speed zone mapping info in a consistent format would make it easier.	Layer add into GPS. Can get Apps.	Given level of speed enforcement in Vic, this is largely consumer interest driven (wanting to avoid fines). ISA monitoring - insurance companies can use to reduce premiums if drivers don't speed.	WA trialled. NSW Illawarra large trial.	0
2. Safe Vehicles	Additional Technology	Driver assisting technology	In-vehicle ITS	Scope to eliminate run off road, excess speed crashes, deliver warning at high risk sites, prepare vehicle systems for impact	Considerable	vehicle industry	likely to be cost effective	Lane departure systems, braking systems, speed adaptation (active and passive) Fatigue monitoring (glasses, steering wheel movement, alcohol in cabin etc.)	0	0
2. Safe Vehicles	Additional Technology	Driver assisting technology	ISA speed assist	Not discussed	Not discussed	Not discussed	Not discussed	0	0	0
2. Safe Vehicles	Additional Technology	Driver assisting technology	ITS and remote vehicle control	not considered safe or effective for motorcycles	0	0	0	0	0	0
2. Safe Vehicles	Additional Technology	Driver assisting technology	Lane Departure Detection	0	0	Local Authority	0	Changing legislation and manufacture standards	0	0
2. Safe Vehicles	Additional Technology	Driver assisting technology	Stability Control	0	0	0	0	Takes time to get into the market	0	Early uptake

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
2. Safe Vehicles	Additional Technology	NA	Seat belt interlocks	Need to determine best approach - regulate?	Swedish studies showed difference between interlocks and buzzer (seat belt reminder).	Either industry (ancap) or regulation	BCR low. But could eliminate issue completely.	Economics modelling will not always help us get the best outcomes. Not sure when to regulate	Not specifically known.	0
2. Safe Vehicles	Drink and Drug Driving	Alcohol Interlocks	Wide spread application of alcohol interlocks	Focus could be on repeat offender. Needs to be combined with health treatment and counselling.	Highly effective - South Australia is leading this and would have evidence.	Not discussed.	Not known but referenced Victoria.	Legislative challenge. WA is going for an ultimate solution - other states have incrementally made the shift. This has made it a bigger challenge for WA and taken a significant period of time.	Refer to other states.	Everyone has this in some form except WA (ML). Been considered in WA for 10 years. Whilst we've run drink driving campaigns, there is no gauge to let people know where they are after a few drinks.
2. Safe Vehicles	Education	NA	Actions listed in the QLD Road Safety Action Plan (2013-2015) under "Vehicles" (Page 8)	Includes educating road users and car buyers to consider safety of a vehicle - public comms strategy to further increase consumer demand for vehicle safety - communicate importance of fleet safety and improve uptake of safer vehicles in Queensland's commercial fleet - review patterns of older vehicle occupant injury and vehicle crash test results to investigate vehicle safety features that benefit older drivers and passengers; Design and test a novel cross modal in-vehicle warning system in the CARRS-Q driving simulator	Outcomes: reducing the age of Queensland's vehicle fleet in order to reduce the number of serious casualties on our roads.	Queensland Government	0	0	0	0
2. Safe Vehicles	Fleet Improvement	High Productivity Vehicles	Higher productivity vehicles	this should be pursued as a safety reform	A lower number of higher standards of vehicles and drivers should result in a reduced number of crashes	0	0	Community perception that larger trucks are more dangerous needs to be overcome	B-doubles have a better safety record than standard articulated trucks	0
2. Safe Vehicles	Fleet Improvement	NA	Bus / HGV safety	Older fleet - can be 20 - 25 years old	0	0	0	National HV legislator	0	0
2. Safe Vehicles	Fleet Improvement	NA	Encouraging the exit of less safe vehicles - MOT is currently looking at methods which could be used to discouraging the use of less safe vehicles. They would like you to purchase the safest vehicle you can.	0	Improve the safety of vehicles on the road	Ministry of Transport	0	MOT are mindful that there could be social problems with just banning older cars from being used or having a very stringent warrant of fitness for older vehicles.	0	0
2. Safe Vehicles	Fleet Improvement	NA	Europe has cars that are much safer - for example they alert the driver when they're speeding.	0	0	0	0	0	0	Australia doesn't seem to be getting the same quality of vehicle as Europe and overseas. Not sure what is preventing access to the safer options.
2. Safe Vehicles	Fleet Improvement	NA	Incentive to get users into newer cars	National program based on information / education and pricing (below $60k)	Newer cars are inherently safer	ANCAP - needs on-going support to maintain integration with global system	0	get balance right between safety features and price point. Increase the features in each star rating category over time	0	0
2. Safe Vehicles	Fleet Improvement	NA	Incentivise vehicle turn-over to create a younger fleet	0	0	0	0	0	0	0
2. Safe Vehicles	Fleet Improvement	NA	NT approach to speeds and crashes needs to be improved - safer vehicles for aboriginal communities - update vehicles and enforce 5 star safety rating to better protect occupants in rollovers etc.	Require vehicles to be regularly upgraded and maintained - side airbags and curtain airbags etc.	Very effective	NT government	No costs provided	Recognition from NT government that there is an issue Currently not recognising the issue	MUARC study with Curtin Uni ARC and WA economic modelling study	0
2. Safe Vehicles	Fleet Improvement	NA	Removal of trade protection - With the reduction in motor industry in Australia, potentially they may soon remove trade protection on vehicles, allowing the importation of second hand vehicles. It is important that they import good vehicles. It should be mandatory for example that vehicles have stability control.	0	The outcome should be an overall improvement in the safety standard of vehicles on the roads.	Government	No cost	Political support	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
2. Safe Vehicles	Fleet Improvement	NA	Technology	Getting the newer vehicle technology into the vehicle fleet	0	Manufacturers	0	Old fleet age means it takes a long time to get changes to the masses.	0	May be difficulty in adopting overseas standards without modification as some aspects relating to safety standards/testing are considered better.
2. Safe Vehicles	Fleet Improvement	NA	Updates to Fleet	Getting these improvements into the vehicle fleet faster	0	Local Authority	0	Old vehicle fleet. Many manufacturers only include the advanced safety features in their top model	0	With prices coming down and more imported vehicles this may become easier, however need to get into the large government (approx. 20,000 vehicles) and company fleets
2. Safe Vehicles	Fleet Improvement	NA	Updates to Standards	Potentially adopting international standards for safety features.	0	Government	0	Changing legislation	0	0
2. Safe Vehicles	Incentives	NA	Link insurance premiums to compliance with road rules through link to in-vehicle computer	0	0	0	0	Privacy legislation would potentially need to be amended to allow access - voluntary participation to receive discounts	0	0
2. Safe Vehicles	Level Crossings	NA	Level crossings = HCV versus train collisions need to be addressed	All rail crossings currently untreated	Significant reduction in vehicle-train collisions	railways, road transport industry	Much more cost effective that apply active crossing equipment at all locations where it would be required - some locations are very remote.	Acceptance by railway signalling community as effective and the reasonable way to treat lower-volume crossings.	0	0
2. Safe Vehicles	Mandatory Technology	All Vehicles	Alcohol interlocks in vehicles	Not discussed	Not discussed	Not discussed	Not discussed	0	0	0
2. Safe Vehicles	Mandatory Technology	All Vehicles	Autolocks	For repeat offenders	Take a high risk category from the road.	Not discussed.	Not known.	None known	0	ICWA has right of recovery against repeat offenders - write-off tens of millions a year because people don't pay on policy breach. ICWA has to pay where fault can be proven so this group is high risk.
2. Safe Vehicles	Mandatory Technology	All Vehicles	Autonomous braking systems - mandatory in ADR	0	0	0	0	0	0	0
2. Safe Vehicles	Mandatory Technology	All Vehicles	Electronic Stability Control - NZ likely to mandate for this, initially on new vehicles but later on imported used vehicles	0	Improve the safety of vehicles on the road	Ministry of Transport	0	0	0	0
2. Safe Vehicles	Mandatory Technology	All Vehicles	mandate in vehicle technology e.g.. Speed barriers, alcohol testers	retrofit of car for offenders (e.g.. High alcohol, high speed, or repeat offenders)	Safety benefit is probably better targeted at rural communities with highest ratings of fatalities	Police and vehicle registration, consumer cost through fine component e.g. estimated speed governor tech installation at ~$800,this could be incorporated into first fine	$0 to govt if all pushed to offending consumers, some admin cost, installation $800-$2000, in a legislated environment cost per unit would be driven down	Police state argument of communities	0	0
2. Safe Vehicles	Mandatory Technology	All Vehicles	Regulation of In-vehicle systems	Regulate to 'enforce' X, Y, Z measures in all new vehicles and retrofit where possible	Expects that this would add significant value to road trauma relief	Government - State and Feds	No costs provided	Recognition of the flow-on benefits on emissions and climate change issues Regulation challenges, related to government ownership and political drivers	MUARC research	Australia is world leading on in-vehicle technology, but pilot study is being done in Michigan, USA. CODA wireless doing trials Regulation is lagging behind technology development
2. Safe Vehicles	Mandatory Technology	All Vehicles	Regulatory controls to be introduced in USA by 2017	Roll out in Australia as well Should be mandatory to install 'chips' in vehicles ASAP	Not discussed	Not discussed	Not discussed	Allocated frequency for transmission	0	0
2. Safe Vehicles	Mandatory Technology	Heavy Vehicles	HCV ITS	Give same attention as ITS in cars Alert in cabs, auto brakes when bells and lights flash at level crossings	Not discussed	Not discussed	Not discussed	Should be treated as a priority - HCVs and Level crossings	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
2. Safe Vehicles	Mandatory Technology	Heavy Vehicles	HGVs to be fitted with a 'black box' equivalent	All HGVs - but certainly higher productivity vehicles	0	0	Costs to be borne by operator	Some operators support this initiative, however, single vehicle operators may need financial support. Would need a national regulation to be effective.	0	0
2. Safe Vehicles	Mandatory Technology	Heavy Vehicles	National HV Braking Strategy: Electronic braking systems - now mandatory in NSW 010714 for all dangerous goods	This requirements should be extended nationally	0	0	Operators would be required to upgrade their fleet	0	0	0
2. Safe Vehicles	Mandatory Technology	Heavy Vehicles	Seatbelts in buses	low priority	Not discussed	Not discussed	Not discussed	Low priority as low likelihood and low consequence usually	0	0
2. Safe Vehicles	Mandatory Technology	Motorcycles	ABS	ABS in motorcycles traditionally not as effective, although improvements in technology, driving improvement	0	0	0	0	0	0
2. Safe Vehicles	Mandatory Technology	Motorcycles	ABS on motorcycles	Not discussed	Not discussed	Not discussed	Not discussed	Europe has mandated ABS on motorcycles	0	0
2. Safe Vehicles	Mode Shift	NA	Mode shift may assist	Not discussed	Not discussed	Not discussed	Not discussed	0	0	0
2. Safe Vehicles	Other	NA	Non-registrable vehicles	0	0	0	0	0	0	0
2. Safe Vehicles	Other	NA	NOT BANG FOR BUCK	Alcohol Interlocking Seatbelts in buses Child restraints >1 year Vehicle Inspections Bull bars	0	0	0	0	0	Many of these items don't appear to have a significant expected impact on increasing safety due to high cost, isolated action or already reached saturation point.
2. Safe Vehicles	Other	NA	Tram collisions	0	0	0	0	Low speed, low impact	0	0
2. Safe Vehicles	Rating Systems	NA	ANCAP - funding	Fleet enhancements can be directly linked to improved road safety outcomes	Headway being made on the back of fleet buyers e.g. BHP insisting on all 5 star vehicles used in its fleet	ANCAP - needs to on-going funding commitment	$5M over 5 years (existing)	Commonwealth funding boosted their ability to produce a vehicle rating system. Federal budget has no long term commitment to support ANCAP	Not discussed	0
2. Safe Vehicles	Rating Systems	NA	Ancap rating	Mandatory rating for used cars especially, but should be brought in for all cars. Especially FWD vehicles by mining companies - these firms have buying power and safety commitment.	Reduced severity of accidents	Legislation - govt	Not known but industry driven, similar to energy rating on appliances.	Some cars have never been tested. Political will unknown.	Good case study exists with white good appliance ratings.	ICWA don't change premiums based on rating or any other risk factors. Private insurers would consider star rating in premiums.
2. Safe Vehicles	Rating Systems	NA	Legislative endorsement for ancap five star rating system. Engagement with motor retail industry - marketing value or rating. Mandatory rating	Australia has poorer access to cars with high safety features compared to Europe. Why is Aus. not getting those safer vehicles? Should get better without local manufacturers. It should be that the bar keeps lifting to get 5 stars. Compare to 5 star criteria in Europe.	No evidence. Market demand now. Ancap can't test all vehicles - e.g. light commercial. If we could test more vehicles the market demand might increase more quickly. Industry wants this to cut out cheap importers - they are even donating cars for testing. Should be mandatory at point of sale.	Govt wants to engage industry to self-regulate - encourage car industry to advertise at point of sale. Murray Lampard comment - Govt not showing the leadership we want because of trade agreements with Asia (ML).	Not known	What are the strengths of various rating systems - standards, star rating, when do you use which tool? Compare relative merits of current Australian design rules versus effectiveness of Ancap. Reduction in death over last 10 years has largely been effected by vehicle improvements - air bags and steering column collapse as examples. Ancap research shows manufacturers have improved significantly. Ancap sets the safety rating bar with dialogue with industry	0	Iain wanted his role as a Director of Ancap to be noted to avoid any perceived COI.
2. Safe Vehicles	Rating Systems	NA	Used car safety rating	Review of crash performance of used vehicles	60% reduction where young people are in the safest vehicle for their price point	0	0	0	California eliminated older vehicles "cash for clunkers" for environmental reasons have observed a significant reduction in casualties as a consequence	0
2. Safe Vehicles	Rating Systems	NA	Crash Worthiness	0	Good safety improvement	0	0	Takes time to get into the market	0	Starting to see results from 10-12 years ago coming through
2. Safe Vehicles	Research	NA	Ensure there is good evidence around all the various enhancements	Federal govt role for setting rules around technology	Improved safety	Federal role - consistent between states	NA	Potential is in new fleet. Current age of fleet is 11 years. Must be consistent between states. Very important that it's evidence and research driven.	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
2. Safe Vehicles	Research	NA	Motorbikes	No innovation has occurred wrt safety features on motorbikes. Growth category of drivers and high risk - 31 times riskier on a motorbike.	Reduced severity of accidents	Not discussed.	Not known.	It's a problem but don't know the answer. People don't wear the right clothes (jeans etc.). Fright campaigns may play a role.	0	6 motorcycle deaths in last 10 days
2. Safe Vehicles	Research	Telematics in Vehicles	Explore the use of telematics in vehicles to measure road user behaviour and potential enforcement benefits NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	Telematics applied to motor vehicles can allow remote, real-time (or retrospective) monitoring of a vehicle's locations and movements by the vehicle owner or other parties. Vehicle telematics units today can not only provide accurate, continuous vehicle speed and location data but also straight line acceleration, angular acceleration and deceleration data. This enables a far more complete understanding of vehicle usage. Recommend a discussion amongst jurisdictional representatives in Australia to clarify the use of this type of technology and its use in crash reduction and impacting driver behaviour.	In addition to flexible car insurance charges, the system offers breakdown assistance, stolen vehicle tracking and recovery, and emergency/accident assistance. The European Commission's announcement of the new eCall requirements cited an estimated improvement in emergency response times of 40% in urban areas and 50% in the countryside, potentially saving up to 2500 lives a year. In addition, significant reductions in secondary accidents at unsecured accident sites as well as a reduction in traffic accident related congestion is expected.	? Dependent on funding. Would suggest a national approach would be best.	Unknown	Funding source would need to be identified, industry participation, community acceptance and attitudes	http://www.allianz.com.au/car-insurance/news/use-of-telematics-in-vehicles	0
2. Safe Vehicles	Vehicle Standards	NA	0	0	"if all young drivers involved in crashes were driving the safest car available, rather than the cars they usually drove, the road fatality and serious injury rate could be reduced by more than 80 per cent." (MUARC 2009 - 4 out of 5 would not have died).	0	0	0	See notes	0
2. Safe Vehicles	Vehicle Standards	NA	Bus fires	Address issues with low emission buses - improve standards	Not discussed	Not discussed	Not discussed	Typically engine start issues, more prevalent in low emission buses	4 in Melbourne in past 12 months	0
2. Safe Vehicles	Vehicle Standards	NA	Imported vehicle design safety standards need improvement	Improve regulation of ADR	Not discussed	Not discussed	Not discussed	Local industries	0	Protection of local industries - by all closing down
3. Safe Roads and Roadsides	Additional Technology	Autonomous Vehicles	Vehicle to Infrastructure (V2I)	All of road network	Not discussed	Not discussed	Not discussed	0	0	0
3. Safe Roads and Roadsides	Audible Lines	NA	Audible edge line	Project was undertaken to evaluate effectiveness of lines they've put in the south-west of WA. Compared against more expensive treatment from Europe.	Reduced crashed by substantial amount and was very cost effective.	CMARC with MRWA	Less than $50k	0	0	0
3. Safe Roads and Roadsides	Audible Lines	NA	Audible edge line and tactile surfaces	More evaluation needed of their effectiveness and cost effectiveness.	Reduce number of crashes.	CMARC with partner	Funding for trials	Evaluation not that expensive but trailing new treatments can be expensive. Can trial on simulator	Not discussed.	0
3. Safe Roads and Roadsides	Audible Lines	NA	Audible, centre line markings for fatigue	Hwy treatment, similar to above	Audible and Physical signal- anytime where you are distracted	TMR and commonwealth	10m low cost as simple line marking exercise	Cant be applied in residential areas	0	0
3. Safe Roads and Roadsides	Audible Lines	NA	Rumble Strips - to assist with keeping drivers in lanes. Assists with addressing inattention and fatigue. Long journeys. Can place on roadside as well as in the centreline	Long journeys, particularly where flows are in excess of 2000vpd	20% reduction in all crashes	Road controlling authority, NZTA	$15,000-$20,000 per km. Has a 4-6 year life	Ongoing maintenance costs are high. Noise on neighbouring properties (even in rural areas there have been noise concerns)	There are lots of references on this. A TERNZ report for example. NZTA Guidelines for using audio tactile profiled (ATP) road markings	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	Audible Lines/Medians	NA	RMS put in painted median separation with audible lining to address a head-on crash problem.	steal shoulder space to median.	RMS Centre for Road Safety trialled this treatment on a highway (maybe Pacific). There were also side benefits for single vehicle run off road crashes as head-ons often start as run-off-road into on-coming traffic.	MRWA	Not known	More research needed on benefits.	Comes Job research paper presented at Aus. College for Road Safety Conference 2 years ago.	0
3. Safe Roads and Roadsides	Audible Lines/Roadside	NA	Current Initiative: as an interim measure for roads with high density of crashes, widening, addition of sealed shoulders and audible edge lines	Widening a road to add sealed shoulders and audible edge lines is a medium cost measure. It's been used on a number of identified regional roads with high run-off road crashes. Progress is to be monitored and mwah may follow up with additional more costly action such as crash barriers if crashes not reduced sufficiently by this measure.	Research report done by CMARC showed 60% crash reductions based on Albany Hwy trail. Other research from ARRB using eastern states data showed similar reductions.	MRWA	$250,000 per km but actual cost more depending on fill requirements.	Environmental challenges associated with remnant vegetation. There was some resistance to vegetation clearing to do widening. Impact on wildlife also a concern. This is largely because in these rural areas, all other vegetation had already been lost to farm clearing. Challenge with Standards Team, because the treatment is above min standard for a normal road and this has been challenged by people who own the standards - they don't think the additional cost is justified. They also appear concerned with the potential need to use this treatment along the entire length of road. Consistency- want whole road to look the same - concern if they have to fund from internal budgets to upgrade rest of road.	See column D.	More research needed on widths of sealed shoulder versus unsealed and the safety benefits for that type of crash. More conclusive evidence on the reduction expected from varied widths of shoulder. Research need on the placement of barriers, barrier currently needs to be off-set, however may be ways to use barriers without widening the road, for example, it's thought that other states are putting barriers on embankments. This could help address to cost prohibitive nature of crash barriers. Can we convince standards people its a worthy treatment. Other States are able to proceed on worthiness based on ability to affect 80% of people; feeling that WA needs to demonstrate 100% effectiveness. .
3. Safe Roads and Roadsides	Blackspots	NA	100 Worst intersections - looking at addressing the 100 worst performing intersections within the country. In many cases the long term solution at these intersections will be to provide a rural roundabout, however in the short term other measures are likely. For example, we are currently piloting a scheme where on rural intersections with low side road flows, vehicle movement is detected on the side road approach which then triggers a reduction in the State highway speed limit.	Targeted improvements to worst performing intersections	0	Road controlling authority	For a rural intersection triggered reduction in speed limit, the cost of implementing this is generally $NZ200-250,000. Other long term improvements such as rural roundabouts are far more expensive.	0	0	0
3. Safe Roads and Roadsides	Blackspots	NA	Black Spot programs - federal and state	0	0	0	0	Not targeted to reduce trauma - rather targets reducing the number of crashes which means that some solutions fix the wrong problem but have improved statistics	e.g. Intersection safety works reduced the overall number of crashes but did not rectify the problem that generated the most casualties	0
3. Safe Roads and Roadsides	Blackspots	NA	Blackspot Improvements	Continue to fund black spots that have been identified through crash statistics	Reduction in severity and number of accidents at a particular location	Local Authorities	Check previous Blackspots funding/outcomes	Large number of Blackspots with a limited number of funds. Funds directed to political projects.	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	Blackspots	NA	Motorcycle Blackspots	Continue to identify and treat motorcycle Blackspots, especially along high risk and popular motorcycle routes.	A range of treatments have already been trialled and implemented on Victorian roads under the Motorcycle Blackspot Program, funded by the Motorcycle Safety Levy. Treatments have included better signage on curves, enhanced delineation, improvements to road surfaces and the use of new products, such as more PTW friendly barriers and other roadside furniture. An evaluation of the effectiveness of the Motorcycle Blackspot Program has shown very positive results following treatments at the fi rst 85 sites, with a 24 per cent reduction in PTW casualty crashes. This	Road agencies and councils	0	0	Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers	0
3. Safe Roads and Roadsides	Cycling Infrastructure	Cycling	Improved on-road cycle facilities	Create improved cycle facilities across network Options being developed for testing in MUARC simulator	Potentially big gains, though on a small user group	State government	Extensive retrofit would incur significant costs	Identification and testing of preferred options Government funding - extensive	Current research project	Can use DALY tool (Disability Adjusted Light Year)
3. Safe Roads and Roadsides	Cycling Infrastructure	Cycling	improved standard of cycling infrastructure	for example more separated lanes, more visible lanes (e.g. green paint) improved visual design to improve recognition	The perspicuity of cycling infrastructure will change driver behaviour and patterns of behaviour, it also attracts more cyclists contributing to "safety in numbers" on these routes	State and Local Government	0	Funding?, Road Standards	International experience and studies e.g. Denmark, Netherlands where such infrastructure exists	0
3. Safe Roads and Roadsides	Cycling Infrastructure	Cycling	Off road bicycle paths	Not discussed	Not discussed	Not discussed	Not discussed	0	0	0
3. Safe Roads and Roadsides	Cycling Infrastructure	Cycling	Motorcyclists and cyclists	Ways to improve the cycling environment to reduce cyclist injury and death - how to change road environment to reduce conflict.	Casualty and serious injury reduction for cyclists	CMARC and MUARC. ARC funded.	Current have $1M in funding	0	Natural follow up to previous research on behavioural responses (risks and way they respond), which identified the high number of conflicts	Naturalistic bike study in collaboration with Monash Uni Accident Research Centre (MUARC). Injured cyclists to be recruited form hospitals and video surveys undertaken of conflicts at the crash site. Then effort will be made to design-out the conflicts and the success of these design measures will be tested using a simulator. Study results will be taken to road safety community - mwah, ores etc.
3. Safe Roads and Roadsides	Data Collection	Community Reporting	Road Infrastructure and Roadside Hazards	Develop an Australia-wide website for reporting local road hazards which allows for uploading data and photos and includes details of treated hazards.	0	Road agencies and councils	0	0	Motorcycle and Scooter Safety Summit: The Road Ahead 10–11 April 2008 Parliament of Victoria, Road Safety Committee, Inquiry into Motorcycle Safety	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	Education	NA	Training of road engineers	Educate and encourage those involved in the design, construction and maintenance of the road environment to be more aware of the specific c needs of motorcycles and to adopt more PTW friendly engineering products, practices and maintenance procedures.	The engineering of the road surface and environment can have a signifi cant impact on the likelihood of a crash, the ability of a rider to recover and avoid a crash	0	0	0	Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers	0
3. Safe Roads and Roadsides	Enforcement	NA	Red light cameras	Red light and speed cameras at intersections	More compliance at intersections	Government currently dictating	Unknown	0	None offered	0
3. Safe Roads and Roadsides	Enforcement	NA	Red light speed cameras	Installation of red light cameras	Reduction in red light running, speeding and crashes.	Police. MRWA provide hard stand and data on red light runners from light loops (SCATS) for the Police to determine at which intersections cameras should be located.	$150k per site per camera install. Maintenance costs additional. BCA being undertaken by MRWA and shows a BCR of about 4+ (not including revenue, just crash saving) based on top 20 sites.	Revenue raising pressure. Sites identified based on safety so Police are able to say that MRWA identify the sites from a safety and crash concern. Negative media portrayal.	A CMARC report showed 50% - 60% reduction of either crashes or red light running (not sure which). There were sites with red light cameras and a report by Max Cameron (Cmarc will have a copy) Max's BCR was a lot less than MRWA's +4, because different costs were used on severity - MRWA use willingness to pay).	0
3. Safe Roads and Roadsides	Funding	NA	In many respect it is known what needs doing - just seems to take a very long time to implement anything of any real significance.	0	0	0	0	Political will and willingness to spend money that's in the Trust.	0	0
3. Safe Roads and Roadsides	Funding	NA	We have many effective measures - sealed shoulders, wire ropes, rumble strips.	Better implementation of what we know. Biggest gains are to be made here - infra that allows human beings to make errors.	Good evidence of effectiveness	MRWA for the infrastructure but the Ministers and elected members responsible for allocation of funds and setting the direction (amount and priority)	NA	Competing political priorities. Politics may choose a different solution rather than the best technical outcome.	Have the evidence. Not good at converting evidence to a political imperative. Have to work the politics. Gap between research and politics.	0
3. Safe Roads and Roadsides	Hazard Separation	NA	Barrier end treatments	2600 unprotected barriers to be fixed up with protected ends	Reduction in fatal crashes, impalement an issue with barrier endings	TMR, local govt, and commonwealth	$4-5m annual budgets, $16-$24k per treatment	Not funding source for local roads. Black spot funding could be used. Need to reprioritise the order.	0	0
3. Safe Roads and Roadsides	Hazard Separation	NA	Duplication and separation of hazards - e.g. level crossings	Not discussed	Not discussed	Not discussed	Not discussed	0	0	0
3. Safe Roads and Roadsides	Hazard Separation	NA	Roadside hazards	Stobie (power) poles are a significant roadside hazard	0	0	0	Cultural issues around the placement of pole in some states. Easy to reduce for new infrastructure, there is a lot of existing infrastructure that are considered roadside hazards.	Check with the Power Lines Advisory Committee (PLEC) through DPTI	0
3. Safe Roads and Roadsides	Hazard Separation	NA	Roadside Hazards	Reduce the placement of hazards (power poles) in the clear zone.	High	Local Authorities	High cost	Funding for some of these road safety initiatives is sometimes misspent on urban design e.g. undergrounding power instead of safe placement	0	There is a weak link between utilities companies and road authorities (particularly in SA). Power to control the corridor is not enforced.
3. Safe Roads and Roadsides	Hazard Separation	NA	Road side hazards	Tree removal, installation of guard rails, etc.	Crash reduction, change in severity	TMR	$10m annual, usually overspent	road side clearing- pressure from interest groups/residents- barrier intervention sometimes used in conjunction/as alternative. Expensive, obviously hazard removal is cheaper.	0	0
3. Safe Roads and Roadsides	Incentives	NA	Road pricing	Remove fuel excise and directly charge road users.	Dedicated pool of funds for road upgrades - incorporating reduce road safety risk outcomes	Commonwealth and state governments	Not discussed	Would require a new legislative framework around road funding and charging	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	Intelligent Infrastructure	Intelligent Infrastructure	IT Solutions	Looking forward to more rural applications. Remote variable message signs for people to make informed decisions. GIS related - in car warning systems (e.g. road train approaching), and emergency response (e.g. remote roll-over)	Unknown	Car industry	Unknown	Availability of technology to implement it	None offered	0
3. Safe Roads and Roadsides	Intelligent Infrastructure	Intelligent Infrastructure	Roadside infrastructure to support Cooperative ITS (as per above)	5% of vehicles give benefits in terms of crash mitigation and minimisation	5% of vehicles give benefits More of market will significantly increase benefits	Government - State and Feds	No costs provided	National standards and regulation required. Funding strategy needs to be developed	MUARC research	Australia doing research, but government not investing in trials and implementation. MUARC work and Australian 'smarts' are being used in overseas trials.
3. Safe Roads and Roadsides	Intelligent Infrastructure	Intelligent Infrastructure	Rural intersection vehicle actuated signs - Used to reduce the speed limit along the highway at times when vehicles are approaching from the side road.	Can be applied at any intersection. Volumes don't really matter	20% to 30% reduction in all crashes	0	Around $150,000 per site	Reliability is important (maintenance)	Vehicle actuate electronic signs - 5 years on - a case study, R Gardener, P Koregast	0
3. Safe Roads and Roadsides	Intelligent Infrastructure	Intelligent Infrastructure	Video technology at intersections	Automated video time to collision evaluation which allows intersections to be monitored and that info to feed back into collision statistics.	Intersections account for 60% of accidents. The video can monitor the movements of vehicles, developing statistics for the risk factors. Moving the requirement for a road intervention to take place pre-crashes rather then after a number of fatalities.	Govt intervention	No understanding of the cost	Funding, open-mindedness of govt, willingness to trial a new technology.	send me some	0
3. Safe Roads and Roadsides	Intersections	NA	Full Intersection Control	Removal of filter right turning movements	0	Local authorities	0	Intersection capacity often is considered a higher priority than safety.	0	0
3. Safe Roads and Roadsides	Intersections	NA	Increasing roundabouts	0	0	Local authorities	0	0	0	0
3. Safe Roads and Roadsides	Intersections	NA	Mid Range intersection treatment	Research or ideas wanted on what treatment can be done for a mid-range cost. MRWA has upgrade intersections to signals and implemented all the cheaper actions but next step is $50M at grade sep. Looking for treatment ideas between signalised and grade sep?	Na	MRWA	Na - actions not identified	Seems to be a big gap in potential actions for intersections once they are already signalised and where the cost is not justified for grade separation	Na	Na
3. Safe Roads and Roadsides	Intersections	NA	Protected right turn channel bays	High volume roads, reaching capacity, need to provide right turn lanes as road capacity cant be increased in all areas	Fatalities	0	$250-$350k to implement. $10m to implement.	0	0	0
3. Safe Roads and Roadsides	Intersections	NA	Reduction of movements	Removal of turning movements at intersections e.g. left in/out only	0	Local authorities	0	Needs large scale funding to make a significant difference	0	0
3. Safe Roads and Roadsides	Intersections	NA	Right turn- CHR treatment	Thousands of potential areas to be applied- Series of intersections on Mt. Lindsey, trialling on Bruce as well	Removal of crash type if implemented correctly 303, 80% crash reduction for right turning vehicles	TMR	$350-$400 per treatment in a 90k environment	Funding- always have to widen the lane. Right lane vs. left - tends to have better crash reduction rates	0	0
3. Safe Roads and Roadsides	Intersections	NA	Roundabouts installed at selected locations	Not discussed	up to 70% reduction in accidents	Not discussed	Not discussed	What else needs to be done to address the 'new' accidents at treated sites?	0	0
3. Safe Roads and Roadsides	Intersections	NA	Something in between traditional intersections and grade separation - more Safe Systems design solutions	There are few options available to designers between a signalised intersection and grade sep. What can be done between these two options?	Monash study.	Industry driven	Max Cameron research on optimal operating speeds. Between 10 and 20km lower than what we have is optimal speed based on economics - fuel, env, safety, driving time etc.	Competing priorities in terms of what is good for safety versus efficiency. If safer, slow down traffic. Travel time reliability and efficiency. A reduction in posted speed limit of 5km less will save drivers only 1 minute so the impact is distorted. Design is expected to not trade too much time for safety and many other limitations such as land etc. More pressure to get there faster.	0	trucking company between Hume Melb and Sydney has set 90km/hr. driving limit. Black boxes in car to monitor.

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	Intersections	NA	Turning Movements	Controlled turning movements i.e. no filter turns	0	Local Authority	0	Community and designer attitude	0	There needs to be some research into the benefit of uncontrolled turns in terms of capacity. The benefits may not be as high as expected.
3. Safe Roads and Roadsides	Intersections/Blackspots	NA	High risk intersections retrofitting - New Zealand has just published a list of the top 100 intersections in terms of crash numbers. Will look at retrofitting improvements	0	No reason why you cant reduce crashes by 30%	Road controlling authority, NZTA	varies	There could in some cases be a capacity trade off	variety	0
3. Safe Roads and Roadsides	Level Crossings	NA	Low cost level crossing treatment for rural level crossings	Target $50k to $100k per site	Not discussed	Not discussed	Not discussed	VIC/NSW/QLD trials by Uni of Central Queensland	Chris Wullams study Phone +61 7 3138 0395 Email c.wullems@qut.edu.au	0
3. Safe Roads and Roadsides	Level Crossings	NA	Rail level crossings - HCV versus train collisions	0	Not discussed	Not discussed	Not discussed	Low frequency but HIGH COST/consequence	e.g. Kerang, Trewalla accidents. Coroner website report on Kerang and 23 other sites - PhD on biological science as drivers are "looking but not seeing" lights at crossings	0
3. Safe Roads and Roadsides	Level Crossings	NA	LEVEL CROSSING WARNING DEVICES NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	In NSW alone, there are 1400 public road level crossings, most of which are use what are known as "passive" controls, i.e., stop signs. Crashes involving a road vehicle and train usually involve death or injury and can cause millions of dollars in damage to road and rail infrastructure.	Improving safety at level crossings and reducing crashes can save lives and avoid disruptions to rail passengers and freight associated with tracks being out of action for days at a time.	Road agencies, Rail agencies, legislators, the technology sector, police	The cost of upgrading a "passive" crossing to "active" (lights/bells/booms) runs into hundreds of thousands of dollars. New technologies could prove to be much cheaper and provide similar benefits.	Level Crossing Safety is as much an issue for road safety agencies as it is for rail safety. Level crossing warning devices in use today are basically the same as those used 100 years ago. Given the high and arguably prohibitive costs associated with installing flashing lights and booms, can lower cost devices be devised that could be supplement existing warnings. Examples include advance warnings at STOP sign locations.	The 2013 Australasian Road Safety Research, Policing and Education Conference heard from a number of presenters regarding level crossing safety. Driver behaviour at different types of level crossings is an area of on-going study.	http://www.tracksafefoundation.com.au/site/level_crossing.php
3. Safe Roads and Roadsides	Median Infrastructure	NA	Fast moving cars on single lane, head-on. Lake Clifton road house example - solution is putting separation	Crash barrier is 93% effective	0	0	0	0	0	0
3. Safe Roads and Roadsides	Median Infrastructure	NA	Implement barriers as last resort - if hazards unable to be removed - centre of road wire rope effective	Centre of road wire rope barriers (only 1.5m space required) and very effective	Not discussed	Not discussed	Not discussed	0	0	0
3. Safe Roads and Roadsides	Median Infrastructure	NA	Increased median barriers	Roads with 80+ km/h, relatively high traffic areas, outskirts of cities- where the role of the road is changing	Reduction in head on collisions, speed reduction, attention to driving task	State govt with some local	Costs are higher due to infrastructure requirements however outweighed by fatality reduction	Sometimes push back from access reduction i.e. driveways, businesses etc.	0	0
3. Safe Roads and Roadsides	Median Infrastructure	NA	Narrow median retrofit - installing a wire rope barrier to a narrow median to address head on crashes.	Retrofit as many roads as you can where flow are above 8,000 to 10,000 Vapid	90% reduction in head on casualties. A 50% reduction in all casualties including head on.	Road controlling authority, NZTA	$NZ1.5 million per km (including road widening)	Maintenance costs. Restricts access to properties	Longsswamp to Rangiriri wire rope barrier project. Narrow median wire rope barrier installation on Centennial Highway, New Zealand (see Journal of the Australasian college of Road Safety May 2010 Vol 21 No 2)	0
3. Safe Roads and Roadsides	Median Infrastructure	NA	Wide centre lines	Applicable to urban and rural, best applied in high speed zones, could be used on Warrego Focus on Bruce why	Fatigue, improved response times due to increased distance	TMR and commonwealth	$10m low cost as simple line marking exercise (300km for $6.5m)	to apply, the road needs to be at least 10m preferably 11m. Limits to where you can use it.	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	Median Infrastructure	NA	Wide centrelines - this essentially provides two centreline markings approx. 1m apart. Typically there is no seal widening. Traffic lanes are narrowed down to 3.25m	Use on roads 5,000-10,000vpd	40% reduction in all injury crashes	Road controlling authority, NZTA	Coasts are around $100,000 to $300,000 per km. There is a need to remove existing markings and sometimes you reseal. Ongoing costs are low, except where rumble strips are also used	There has been concern that it may take space from cyclists although drivers are able to pass using the 1m area in the centre of the road. Cost of removing the existing markings is also an issue	Australasian Road Safety Research, Policing and Education Conference 2012, The NZ Transport Agency Highway and Network Operations Traffic Control Devices Trials Update, Mark Lilley	0
3. Safe Roads and Roadsides	Median Infrastructure	NA	Wire Rope	Median wire rope barriers	0	Local Authority	High, but coming down due to economies of scale	0	0	Technology also exists to trigger emergency services/maintenance crews when struck.
3. Safe Roads and Roadsides	Median Infrastructure	NA	Wire rope and rumble strips - should implement on higher volume two to three star roads (kiwirap rating) to reduce the incidence of head on crashes and run off road crashes	Implement on higher volume two star and three star rural roads.	Reduction in the number of head on and run off crashes.	0	NZTA has information on the cost and effectiveness of wire rope barriers and rumble strips.	Funding	0	0
3. Safe Roads and Roadsides	Median Infrastructure/Research	NA	Motorcycle friendly safety barriers	Assessing different safety barrier types to determine the system that generates better motorcycle ride outcomes	0	0	0	under-run protection on w-beam type systems is the critical area of focus	0	0
3. Safe Roads and Roadsides	Mode Shift	NA	Increasing rider numbers. "Normalising" cycling	Improved cycling infrastructure, visibility of cycling infrastructure	crash data suggests that increasing rider numbers will increase number of crashes but the rate will reduce, drivers increased exposure to cyclists is expected to lead to adaptation of drivers behaviour	Local and state government	0	0	Own crash data such as studies on key routes (on St Kilda Road a five fold increase in cyclist has lead to a doubling of number of crashes)	0
3. Safe Roads and Roadsides	Mode Shift	NA	Pedestrian, cycle and motorcycles - either have to separate or slow them down - speed differential between users and their mass is too great.	Either separate or adjust speed where we mix them.	0	0	0	0	0	0
3. Safe Roads and Roadsides	Modify Speed Limits	Limits Align to Conditions	Review of the speed limit framework - Framework for setting speeds is likely to be altered to better reflect risk. Possible increase in speed limit on some roads (to 110km/h) while the speed limit of others would be reduced to reflect risk.	Comprehensive review across the entire State highway network	0	Road controlling authority	0	Some road controlling authorities set speed limits based on political pressure as opposed which can result in problems with roads being self explaining. This is particularly a problem where a road passes from one authority to another	0	0
3. Safe Roads and Roadsides	National/State Strategies	Implement Strategy	Actions listed in the QLD Road Safety Action Plan (2013-2015) under "Roads and Roadsides" (Page 6)	- Increase funds to Safer Roads sooner program to fast track engineering treatments at high risk sites on state-controlled road network; Bruce why Action Plan; VMS messages display safety messages; line marking program; increase visibility of road markings; roads alliance partnership; roadside rest areas to encourage improved fatigue management; expansion of cycle network in south east QLD.	General investment in roads improves the overall quality of the road network, resulting in indirect safety benefits. Expenditure on safety-focussed improvements directly reduces road trauma by creating infrastructure that is more forgiving of human error.	Qld Government (DTMR)	In 2013-14, over $3.9 billion will be invested on QLD roads, including funding towards targeted safety improvements. (Safer Roads Sooner program - primarily funded through QLD Camera Detected Offence Program). Some further breakdowns included in the action plan document available online.	0	Refer to action plan. http://tmr.qld.gov.au/Safety/Road-safety/Strategy-and-action-plans.aspx. Also links to National Road Safety Strategy.	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	National/State Strategies	Implement Strategy	MRWA has already evaluated different types of treatments, red light speed cameras and black spot program	Need to keep doing this	Reduce number and severity of crashes.	MRWA led	Na	Responds to political pressure and provides community education.	0	0
3. Safe Roads and Roadsides	National/State Strategies	Implement Strategy	VicRoads Road Safety Strategy & Action Plan	Roll out strategy and Action Plan	Considerable	Refer to documents	Refer to documents	Liked to Austroads Task Force - funding and National Road Safety strategy	VicRoads Road Safety Strategy 2013-2022 VicRoads Road Safety Action Plan 2013-2016 (hard copies provided)	0
3. Safe Roads and Roadsides	Organisational Changes	NA	Allocation of road reserve to users based on strategy/policy	All of road network	Not discussed	Not discussed	Not discussed	0	0	0
3. Safe Roads and Roadsides	Organisational Changes	NA	Maintenance contracts	Need to integrate road safety into assessment criteria for maintenance.	0	Contract manager	No incremental cost	Some maintenance activity can make road safety worse because the road safety issues are not currently considered - difference skid resistance	0	0
3. Safe Roads and Roadsides	Organisational Changes	NA	Road Safety outcome tied to asset maintenance outcome	Apply same risk assessment process in all funding applications	Reduced risk would equate to lives saved	National and state road authorities	Not discussed	0	0	0
3. Safe Roads and Roadsides	Other	NA	NOT BANG FOR BUCK	Sealing all road shoulders Upgrading black spots Variable messaging signs Removal of roadside hazards Pedestrian crossing locations More overtaking lanes	0	0	0	0	0	Many of these items don't appear to have a significant expected impact on increasing safety due to high cost, isolated action or already reached saturation point.
3. Safe Roads and Roadsides	Other	NA	Road treatment types	Reviewing if more appropriate local treatments and application to the broader network.	Falling in line with existing treatment benefits - adopting treatments that have already demonstrated / recognised benefits	Dept. of Transport	Ongoing - embedded in annual works programme	Community engagement. Broader acceptance of the effectiveness of the engineering. Some see it as a waste of money.	Existing road safety literature and guidance.	0
3. Safe Roads and Roadsides	Pedestrians	NA	Cycle Times	Lowering cycle times	Reduction in pedestrian accidents due to a reduction in frustration or illegal crossing	Local Authorities	Low cost.	Can lead to reduced traffic capacity at the intersection and more road congestion	Research in the late 80's/early 90's	0
3. Safe Roads and Roadsides	Pedestrians/Road Geometry	NA	Left Turn Slip Lanes	Removal of left turn slip lanes in high pedestrian areas	Removes a conflict point	Local Authorities	0	Can reduce intersection capacity	0	0
3. Safe Roads and Roadsides	Program Evaluation	NA	Risk based approach to treatments	Not discussed	Not discussed	Not discussed	Not discussed	Traffic volumes, accident history, RSA assessments etc. all input to risk analysis and prioritisation	0	0
3. Safe Roads and Roadsides	Program Evaluation	NA	Using simulator to trial new treatments	0	0	0	0	0	0	Just a broad option for testing new treatments before more costly on-ground trials.
3. Safe Roads and Roadsides	Program Evaluation	Road Safety Audits	Road safety audits	Detailed design RSA as a minimum on all capital works projects	Better product. Very difficult to quantify.	DoT	Cost per project - as part of design fees	How do we assess risk. Harmonisation of risk assessment methods.	None offered	0
3. Safe Roads and Roadsides	Program Evaluation	Road Safety Audits	Road Safety Audits/Inspections to be used to influence investment more	Consider all risk issues in prioritisation of treatments etc.	Not discussed	Not discussed	Not discussed	0	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	Rating Systems	Infrastructure	Targeting treatment on state highway to personal and collective risk - There is a need to work out what treatments are appropriate to particular personal and collective risks on sections of State highway. In New Zealand some work on this has already been done for intersections, however more work away from intersections is required. In the future it is unlikely that the old practice will continue of undertaking isolated improvements when adjacent sections of highway which are substandard will be left untouched. Instead treatments are more likely to focus on a corridor.	Treatment will need to match with its one network classification, rather than rigidly apply standards across all highways.	Better targeting of funding of roading improvements	Road controlling authority	0	0	0	0
3. Safe Roads and Roadsides	Rating Systems	NA	Develop a road Hierarchy for all modes of transport and make drivers aware of the function of the roads. Need to tell people what the function is of roads so they use them appropriately and they understand the limitations of roads.	0	For vulnerable road users this would reduce crashes	NZTA and local authorities	should be cost neutral	0	0	0
3. Safe Roads and Roadsides	Rating Systems	NA	Route risk assessment - Star rating for routes - Targeted safety works	route evaluation - select candidates with potential for run-off / head-on type crashes	Modelling to ensure most cost effective treatment	State road authority	0	Not crash history rather risk assessment	Northern Europeans have been using this method for over 10 years	0
3. Safe Roads and Roadsides	Rating Systems	NA	Undertake ausrap/anram assessment	Target highest 10% of roads, set policy target to eliminate 1/2 star, bring high volume strategic routes to 4 star e.g.. Greater than 50% of vkt on 4 star or better	more than 60% of fatal crashes would happen on those 10% of roads, if raising the level of safety 1 star that's the equivalent of reducing the death rate by half	Feds setting policy and funding target- states delivering	$300-$400k per kilometre, urban areas higher and some nothing	Biggest barrier is current road design standards- they have allowed infrastructure failings because standards aren't being questioned or updated. No pass mark for safety. All crash data seems to point the finger of blame at the road users, which essentially absolves the authority but also the road design of any accountability.	AU, EU, NZ, US research demonstrates crash costs per kilometre travelled are halved per star rating increase	0
3. Safe Roads and Roadsides	Rating Systems	NA	Road Hierarchy	Consideration of a clear road hierarchy should be made for all road projects	People should then use the correct road for the correct purpose, reducing incidents due to rat running	Local Authorities	Project by project	Difficult to include in all projects and to make major changes to the existing network	0	0
3. Safe Roads and Roadsides	Rating Systems/Program Evaluation	NA	Implement star rating system for all roads - build in safety analysis for road funding	All new roads to be 4 Star as a minimum - only National Highways evaluated so far. Star rating system should be applied across all roads	Reduced risk would equate to lives saved	National and state road authorities	Not discussed	0	0	This approach works for all road users groups: car occupants, motorcycle riders, cyclists and pedestrians
3. Safe Roads and Roadsides	Research	NA	How to apply treatments to long road lengths	How and where we apply the treatments to best deal with risk	Not known	MRWA	$250k a km just to seal a meter either side of the shoulder.	Wire rope example - standard required 2.5 m between rope and shoulder, which can make it expensive . Risk of gold plating infrastructure - trying to move beyond standards. How much to do when you're above standard.	Not known	0
3. Safe Roads and Roadsides	Research	NA	Research on delineation for DWA (driving without awareness) - This research project is to identify delineation treatments which can be used to make drivers aware of the speed environment even if they are not paying attention.	0	There could potentially be a 20% reduction in crashes and also possibly an increase in the homogeneity of travel speeds	0	200000	0	Stelling Konzac et al 2011	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	Research	NA	Research on risk targeting for infrastructure improvements - Research to show what drivers risk estimates are. Where perceived risk departs from actual risk, you would expect to find crashes. This is where you would want to do your treatments. Of importance the targeting is then not based on crashes.	Research modelling and archival research	0	0	200000	0	Charlton et al 2011, Mackie et al 2013	0
3. Safe Roads and Roadsides	Research	NA	Research on Safety speeds field trial - this project would look at speed homogeneity within a trip and travel time within a trip. Sometimes where you have speed along a highway increase and decrease along its length you can bet turbulence in flow which can increase travel times when flows are reasonably high. If you were to make the speed limit more homogeneous then this may reduce travel times. If you get it right there may also be a reduction in crashes.	0	0	0	$300,000 for field trial	0	Lave 1985, Goldenbed and Van Schagen 2011	0
3. Safe Roads and Roadsides	Research	NA	Research on self explaining roads - this project would install measures to see how good they are encouraging drivers to drive at an appropriate speed.	0	To date, only one field trial has been undertaken to completion. This resulted in a 30% decrease in crashes and an 86% decrease in crash costs	Researchers, road controlling authorities and road safety funds	The main cost is the cost of monitoring	0	Charlton et al 2011, Mackie et al 2013	0
3. Safe Roads and Roadsides	Road Design	NA	Maintenance of "fit for purpose" road conditions	Crash statistics indicate that the condition of the road affects the number of crashes. Focus on fitness for purpose and maintenance of standards e.g. better condition roads for high cycle volumes would decrease crashes from poor road conditions	Improved road conditions on well used cycle routes will decrease crashes associated with road conditions	state and Local Government, roads agencies	0	Funding, maintenance approaches	0	0
3. Safe Roads and Roadsides	Road Design	NA	Geometry	Improvement to road geometry and increased use of roundabouts	Reduction in speed and change of impact angle should reduce severity of accidents	Local Authorities	Project by project	0	0	0
3. Safe Roads and Roadsides	Road Design	NA	Radius of curves - removing mid-range radii.	There is MRS research on asymmetrical radii that showed certain range tight radii are not as hazardous as mid range radii and that mid range radii are also more hazardous than large radii. People expect and can see it's tight and take appropriate action. Mid range radii; people can't identify risk. 300-600m radii are mid range and roads with curves in this range would be targeted as a priority.	0	MRWA would be responsible for changing radii. Might apply through road trauma trust account - then LGAs can apply. Funding comes from photographic infringements - as of 2011, 100% of red light and camera infringements goes into road safety and the fund is managed by ORS.	Not known	Not specifically discussed as this action isn't currently being considered in earnest.	MRS research - but more research needed to back up action on this.	0
3. Safe Roads and Roadsides	Road Design	NA	Reduce HCV roll over crashes - Roll over crashes within the industry are rife. This is due to high speeds as well as geometry. Roundabouts are a particular problem due to adverse camber	Investigate standards	0	NZTA and local authorities	Low cost	0	Look at crash data	0
3. Safe Roads and Roadsides	Road Design	NA	Improved skid resistance	Not discussed	Not discussed	Not discussed	Not discussed	0	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	Road Design	NA	Need to consider whether SCRIM (skid resistance) can be maintained on some roads, as there is a cost to this. It may be preferable to reduce the speed limit on some roads rather than maintain high levels of skid resistances.	Applied to lower volume State highways	No overall effect on safety likely	Road controlling authority	Will be implemented to reduced costs	The public understanding the reason for a reduction in the speed limit	0	0
3. Safe Roads and Roadsides	Road Design	Standards	Trials on treatment below/above standards	In some circumstances a better outcome can be achieved by going outside standards, even below standards.	Site specific	MRWA	NA	Not aware of risk cover/ insurance issue	0	Example of NZ constructing a centre wire rope on a winding road with cliff on one side and water the other - calculated risk but doesn't meet standard for separation because there was no option to widen the road. MRWA approach to no emergency lane in Graham Farmer Freeway Tunnel - reality showed gains in terms of congestion and flow outweigh having the emergency lane. Need trials on above standards.
3. Safe Roads and Roadsides	Road Design	Standards	Value engineering design standards to deliver a safety outcome, optimum designs to deliver productivity and safety gains	Highest volume 10% to deliver the engineering outcomes eg.1 Narrow median with wide road barrier vs. 20m wide median w/associated land acq, bridge and drainage, eg.2 steep embankments with high standard barriers vs. 2to1 batters requiring additional earthworks and acq eg3. intersections, protected turn lanes/rationalisation of # of intersections	25 to 50% safety benefits, main streams are: ability to do more with the same amount of money and increased safety rating per kilometre- perhaps extra 50% safety dividend on high volume roads	Mostly state govt, fed contribution funding	No additional cost, its focused optimising a existing upgrade opportunity to achieve greater productivity and efficiency	Strict adherence to historical design standards and competitive tendering environment	"Transport and health" -world bank, overseas development inst.	Strategy to have all roads greater than 80k with safe road sides, wide centre lines at least, and barriers as economic, turning lanes for all intersections- top three killers.
3. Safe Roads and Roadsides	Road Infrastructure	Aboriginal Communities	Aboriginal communities have the worst roads and high rates of casualty as a consequence	Poor infrastructure in	0	0	0	0	0	0
3. Safe Roads and Roadsides	Road Infrastructure	Highway	More comprehensive treatment of highways e.g. Hume freeway	Treat full road, not just localised areas	Expect 80% to 100% reduction in fatalities and catastrophic severity incidents for roads treated	Not discussed	High cost	TAC has allocated $1 billion to infrastructure improvements over the next decade - big commitment to infrastructure improvements and V2I	0	0
3. Safe Roads and Roadsides	Road Infrastructure	NA	Extending delimitation marking for merge lanes	Currently being put on the ground and tested on simulator. Some concern extending line marking may reduce merge ability.	Checking impact - e.g. on increased rear end crashes.	CMARC with MRWA	Currently funded to 60k	Funding	Unknown. Believe it's been put on the ground because it's been seen done elsewhere.	0
3. Safe Roads and Roadsides	Road Infrastructure	NA	Median and shoulder treatments - Recent research has suggested clear zones are reasonably ineffective as during crashes vehicles oven travel past the edge of clear zones. Treatments (possibly staged) used in the future for medians and shoulders could include ATP (audio tactile profile) markings, wide centrelines (two painted lines approx. 1m apart), narrower traffic lanes and barriers. Barriers, both median and in the shoulders provide worthwhile benefits.	Target to risk appropriate to road hierarchy and crash history	Wide centreline treatments provide a 30% reduction in crashes. Median barriers provide a 100% reduction in head on crashes, however vehicles do strike the barriers on occasions. Research is currently being undertaken to determine the prevalence of this for various road cross sections.	Road controlling authority	0	Motor cyclists have been vocal in their opposition to wire rope barriers	0	0
3. Safe Roads and Roadsides	Road Infrastructure	NA	More low cost safety enhancements e.g. shoulder widening and audio tactile line marking	National and state road networks	reduction in run-off road type crashes	National strategy - state implementation	0	policy decision - target funding to low cost safety works	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	Road Infrastructure	NA	Safe System Roads needs to be rolled out on all roads	All of road network	Not discussed	Not discussed	Not discussed	$100m TAC funding for safety infrastructure improvements	Hume Hwy has shown good improvement where treated Parliament of Victoria Road Safety Inquiry into Serious Injury - to determining what has the greatest positive impact	0
3. Safe Roads and Roadsides	Road Infrastructure	Rest Areas	heavy vehicle rest areas	National and state road networks	reduction in fatigue related crashes	National strategy - state implementation	0	Set guidelines for rest area spacing	0	0
3. Safe Roads and Roadsides	Road Infrastructure	Rural and Regional	Rural and regional road improvement program	All regional and rural roads	0	Federal Government through revised funding model	$6 - $10B, $6B backlog of work just to keep pace with change	New policy framework around rural road funding - untenable for Local Government to continue to fund from rate revenues NTC and Austroads looking a direct user cost charging - to be effective would require hypothecation	Motor Vehicle Crashes: Injury Costs to the Community and a Methodology for Local Government to reduce this burden of injury, Riley, P for IPWEA	0
3. Safe Roads and Roadsides	Road Infrastructure	Rural and Regional	Rural road accident reductions via rumble strips, lane departure technology etc.	MUARC looking for the 'random breath test equivalent' for fatigue...	More extensive use of rumble strips and fatigue detection technology	State government	No costs provided	Funding, funding, funding...	0	0
3. Safe Roads and Roadsides	Road Infrastructure	U-turn Bays and Breakdown Lanes	MAINTAINANCE OF U-TURN BAYS AND BREAKDOWN LANES. NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	Freeways, highways and other roads with these features require pro-active maintenance. These areas can be prone to the collection of various debris and vegetation which can cause punctures and pose a fire hazard as seen during the 2013/14 fire season where fire was able to jump major freeways in NSW with heavily vegetated median strips coming under ember attack.	Police and lawful users of these areas need to be able to enter them without fear of puncturing ($300) tyres in order to perform duties such as stationary speed enforcement. Safer U-turn bays/crossovers would assist in implementing contra-flows for traffic incident management and reduce fire risks.	Road authorities	Although road authorities and their contractors bear costs pertaining to maintenance, other legitimate road users are from time to time impacted by the lack of maintenance of these areas. NSW Highway Patrol officers in two different parts of the state recently reported punctures resulting from a build up of sharp debris in U-turn bays and locations used for stationary speed enforcement.	Whilst seasonal and weather factors can impact on the growth of grass and shrubbery, the build up of debris away from the running lanes also needs to be considered. The maintenance of these areas could also serve to reassure road users that the road environment is safe and well maintained.	NSW Highway Patrol officers in two different parts of the state recently reported punctures resulting from a build up of sharp debris in U-turn bays and locations used for stationary speed enforcement.	Safer roads includes a sound maintenance regime.
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Clear zones	0	Might not be as beneficial as first thought.	Local authorities	May get a saving form the narrower road corridor	Cars don't necessarily recover and are likely to roll over. Difficult to obtain the required clear zone and other constrains normally rule.	Research underway however cost/benefit analysis have not yet happened.	Likely to be better off with barriers close to the edge of the road.
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Duplication	0	Might not be as beneficial as first thought.	Local authorities	May get a saving form the narrower road corridor	0	TAC may have some results from their funder wire rope program	Painted medians or central barriers may be more effective.
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Retrofitting roadsides with flexible barriers - Clear zones have not been found to be a cost effective solution, so cost effective compared with clear zones.	Could be considered for any flow	60-70% reduction in run off crashes	NZTA, but also local authorities as well	If no widening is required then $150,000 per km per side of road, otherwise if widening is required the costs increase to $300,00 per km	Maintenance costs. Restricts access to properties	Austroads Guide to Road Design Part 6: Roadside Design, Safety and Barriers	0
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Sealed Shoulders	Sealing shoulders on the outside of curves	>1-2%	Local authorities	0	Each treatment only covers an isolated location	0	Full sealing of shoulders would obviously be a better solution, however the cost is prohibitive.

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Delineation and roadside hazard management, shoulder sealing, removal of hazards (trees, poles, embankments etc.)	Improve consistency of application	Not discussed	Not discussed	Not discussed	0	0	0
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Edge Marking	Providing edge marking on narrow roads	0	0	0	Research is needed to ensure that people don't drive faster as a result.	0	0
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Less push back on removal of trees road side	Standard for clearing should be wider and approval made easier.	Severity of crash	MRWA standards and LGA standards and approvals	Na	MRWA has to get approval to remove trees. Safety should come before conservation etc.	Much evidence exists around the impact on severity due to collision with trees.	0
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Local roads - education for road safety staff at Council	Trade off between clear zone and speed zoning	0	0	0	0	0	0
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Maintain a minimum clear zone adjacent to road carriageways	All regional and rural roads	30% of all fatality crashes relate to single vehicles running of the road and hitting hazards within the clear zone	Local government with appropriate funding and policy support	0	70% of all remnant vegetation exists in the road reserve. Consequently, significant community support, policy change and increased funding would be required	"Clear Zones and Environmental Wealth - the Asset Manager's Dilemma", Savage, M.F. IPWEA (NSW) "Motor Vehicle Crashes: Injury Costs to the Community and a Methodology for Local Government to reduce this burden of injury", Riley, P for IPWEA	Reduction of speed limits to a level appropriate for the available clear zone would be unacceptable to the wider community due to a lack of awareness of the hazard
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Road side infrastructure	Gradual replacement of chevron signs and white posts with flexible / frangible equivalents. Appropriate use of best practice barriers (smooth concrete vs wire barriers)	Reduce consequences of motorcyclists collision with signs and posts	Road agencies and councils, engineers Australia, universities	0	Costs	Motorcycle and Scooter Safety Summit: The Road Ahead 10–11 April 2008 Parliament of Victoria, Road Safety Committee, Inquiry into Motorcycle Safety	0
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Shoulder Sealing	Sealing of unsealed shoulder on rural roads	Significant reduction in single vehicle crashes in rural locations	Local Authority	High	There is still a large number of kms that require treatment	0	0
3. Safe Roads and Roadsides	Roadside Infrastructure	NA	Shoulder Sealing	Increased shoulder sealing on rural roads	0	Local Authority	0	Large number of unsealed sections	0	0
4. Safe Speeds	Data Collection	Speed Maps	National speed zone map	National database required to feed apps and ultimately automatous speed control in vehicles	18% reduction in fatalities	0	0	0	0	0
4. Safe Speeds	Education	NA	Working collaboratively with our road safety partners, the community and the media to reduce average speed and promote speed compliance.	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	0	0	Insufficient time to locate supporting evidence or document critical issues
4. Safe Speeds	Enforcement	NA	Enforcement is key to speed management	Overt and covert mobile cameras, point to point cameras etc.	Not discussed	Not discussed	Not discussed	Maintain level of enforcement key to consider time of day and day of week to be most effective	0	0
4. Safe Speeds	Enforcement	NA	Enforcement is the key (still)	Continue doing same and increasing 'net' for covert and non-covert enforcement	Significant improvements already achieved - how much more can be done?	State government (funding) and Police (enforcement)	No costs provided	0	0	Vic Police are terrific but somewhat constrained by resources etc.
4. Safe Speeds	Enforcement	NA	Need to look at point to point speed cameras	Evaluate the effectiveness of this option.	Reduce speed and high speed crashes	MUARC has done it interstate.	Relatively expensive.	Funding and political will. WA lacking political will. WA take softer measures compared to overseas.	0	Max Cameron has supported the point to point camera approach.
4. Safe Speeds	Enforcement	NA	NOT BANG FOR BUCK	More speed and red light cameras Point to point speed cameras	0	0	0	0	0	Many of these items don't appear to have a significant expected impact on increasing safety due to high cost, isolated action or already reached saturation point.
4. Safe Speeds	Enforcement	NA	Point to point speed cameras	More effective control of speed limits	Up to 100% reduction in speed infringements...	Not discussed	Not discussed	0	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
4. Safe Speeds	Enforcement	NA	Red light speed cameras	More of this - combined red light and speed camera.	Very effective in combination.	Police and MRWA as implementer. Minister for Police and Cabinet	CBA understood to be good.	Political	Exists.	0
4. Safe Speeds	Enforcement	NA	Speed and red light cameras at vulnerable sites	Increased application	Not discussed	Not discussed	Not discussed	0	0	0
4. Safe Speeds	Enforcement	NA	Speed enforcement	What is the best type to use in various situations	To be tested	MRWA and Police	Not known	What is the most efficient mix and level of enforcement? What is the point of diminishing returns?	0	0
4. Safe Speeds	Enforcement	NA	Camera program	Always deployed in areas with speed/crash history	Speed behaviour change, crash reduction, tolerance levels	TMR	0	majority of crash risk in urban/high speed zones, managing perceptions i.e. acceptable levels of speeding- a 5k increase in an urban area can increase crash due to complexity, 10k increase in why can increase crash due to high speed zone	0	0
4. Safe Speeds	Enforcement	NA	Safe summer campaign - based on a behavioural model where you try to increase the perceived risk of sanction. The tolerance for speeding was dropped down to 4km/h (any driver caught driving at 4km/h over the speed limit was ticketed). Advertising was increased to drive the behaviour change.	0	This correlated with a 25% drop in deaths. Decrease between 36% to 50% in drivers exceeding 100km/h, decrease between 47% to 62% in drivers exceeding 100km/h, decrease between 43%-60% in drivers exceeding 110km/h.	Police	The advertising cost $350,000	Public acceptance. The public understand the risk of high end speed but not of lower speeds.	MOT social cost of motor vehicle crashes in NZ. There is a lot of research out there. There are a number of references related to the link between mean speed and safety.	0
4. Safe Speeds	Enforcement	NA	Better speed management through better enforcement	Point to point speed monitoring of light vehicles as well as heavy vehicles	Overall reduction in the number of crashes / road trauma	Harmonised approach through road authorities	0	0	0	0
4. Safe Speeds	Enforcement	NA	Aligning our enforcement with speed-related road trauma	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	0	0	Insufficient time to locate supporting evidence or document critical issues
4. Safe Speeds	Enforcement	NA	Enhancing our application of the vehicle impoundment provisions	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	0	0	Insufficient time to locate supporting evidence or document critical issues
4. Safe Speeds	Enforcement	NA	progressively expanding the road safety camera program in relation to fixed cameras	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	0	0	Insufficient time to locate supporting evidence or document critical issues

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
4. Safe Speeds	Enforcement	NA	Speed Tolerance Enforcement Program	State-wide implementation	Likely to be very effective. A 3km/hr. reduction in average speed: 130-135 Fatalities, 1950-2200 serious injuries over 10 years.	Victoria Police	Cost Neutral	Changing Culture of members to alter their enforcement practices. Changing Community attitudes to low level speeding.	The Impact of Lowered Speed Limits in Urban and Metropolitan Areas, MUARC (Archer et al) 2008 VAGO Report into Safety Cameras – 2011 Velocity Series Discussion Paper 4: Factors Influencing Travel Speed, MUARC (Corben et al) 2012 MUARC's Speed Enforcement Research: Principles Learnt and Implications for Practice, MUARC (Cameron et al) 2003 Traffic Law Enforcement: A review of the Literature (Zaal) 1994 MUARC (METs) Modelling, (Dr Bruce Corben and Dr David Logan) 2013	Further Research: Handbook of Road Safety Measures (Elvik et al 2004) in the Impact of Lowered Speed Limits in Urban and Metropolitan Areas, MUARC (Archer et al) 2008 MUARC (METs) Modelling, (Dr Bruce Corben and Dr David Logan) 2013 Internal papers quoted in compilation, presentation and review of STEP Speeds in Crashes 2003, Sgt Peter Bellion, MCIU Fatal and Serious Injury Collisions Reconstructed by MCIU between 1 January 2007 and 31 October, 2008. L/S/C Mehegan and Cuthbert.
4. Safe Speeds	Enforcement	NA	Targeting High Risk recidivist speeding offenders	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	0	0	Insufficient time to locate supporting evidence or document critical issues
4. Safe Speeds	Enforcement	Police Technology	Upgrading our mobile speed camera technology to give us broader enforcement capability	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	0	0	Insufficient time to locate supporting evidence or document critical issues
4. Safe Speeds	Enforcement	Speed Detection	Enhancing our mobile speed camera deployment	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	0	0	Insufficient time to locate supporting evidence or document critical issues
4. Safe Speeds	Heavy Vehicle Infringement Notification	NA	Heavy vehicle operators advised of speed infringements by one of their fleet	Change to privacy legislation nationally	better management of fleet operators staff	Harmonised approach through road authorities	0	Currently fleet operators are not advised of on the spot infringement notices to driver. Need changes to privacy laws to permit vehicle owner to be advised.	0	0
4. Safe Speeds	Incident Response	NA	Enhancing our intelligence process to more effectively identify speed related road trauma	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	0	Auditor General's Report (2011: xiv) notes there is no research in Victoria to determine whether 'the current approach for siting mobile cameras is optimal' and makes a number of recommendations to determine the optimal deployment approach for mobile cameras and to increase the effectiveness of this program.	Victorian Auditor General's Report (August, 2011). Road Safety Camera Program. 2011-12:3. Melbourne: Victorian Government Printer.	Insufficient time to locate supporting evidence or document critical issues
4. Safe Speeds	Licencing System	NA	Provisional Speed Limit	Limiting the maximum speed of provisional drivers to 80km/hr.	0	Local authorities	0	changing legislation	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
4. Safe Speeds	Modify Speed Limits	Limits Align to Conditions	"Self-explaining" speed limits	Limits should relate to environment and local conditions	Not discussed	Not discussed	Not discussed	0	0	0
4. Safe Speeds	Modify Speed Limits	Limits Align to Conditions	Consistent speed limit application - need to be 'credible'	Not discussed	Not discussed	Not discussed	Not discussed	Anomalies are problematic - be consistent and credible - enforcement issue	0	0
4. Safe Speeds	Modify Speed Limits	Limits Align to Conditions	In terms of evaluations and in keeping with the Safe System philosophy, there needs to be a realistic assessment of the value of reducing speed limits,	in the first instance, on lower standard rural roads to 80 km/h whereas many are currently posted at a default 100 km/h would be valuable.	0	0	0	0	See notes	0
4. Safe Speeds	Modify Speed Limits	Limits Align to Conditions	Reduce 'open' speed limits on gravel roads	Allocate speed limits and enforce/educate to improve adherence	Not discussed	Not discussed	Not discussed	Roads not suitable for 100km/h speed limits Challenge is limited enforcement is practical	0	0
4. Safe Speeds	Modify Speed Limits	Limits Align to Conditions	Reduce 'open' speed limits on low standard and non-treated roads	Allocate speed limits and enforce/educate to improve adherence	Not discussed	Not discussed	Not discussed	Roads not suitable for 100km/h speed limits Gravel shoulders, maintenance issues, narrow lanes , untreated clear zone issues etc. Challenge is limited enforcement is practical	0	0
4. Safe Speeds	Modify Speed Limits	Limits Align to Conditions	Review and setting of safe speed	100 key roads within QLD based on public perception and crash data	Public perception, speed camera program need to have public confidence, congestion, crash severity,	TMR	$2m budget for whole program, $10k $30k per speed zone	Which zones are prioritised, political pressures	0	0
4. Safe Speeds	Modify Speed Limits	Lower top Speed Limit	Default speed limit should be lower than 110km/h	Reduce upper default limit	Evidence exists on the reduced severity based on incremental speed reductions.	MRWA	0	Political and community	0	BITRE to do a CBA on reduction on speed limits in Aus.?
4. Safe Speeds	Modify Speed Limits	Maintain Limits	MAXIMUM SPEED LIMITS ON OPEN ROADS NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	The Northern Territory government trial of an "open speed limit" on a section of the Sturt Highway has commenced. Critics of this trial include the Australasian College of Road Safety. In 2013, Wheels magazine featured a series of articles advocating 130km/h speed limits on roads such as the Hume Highway.	Speeding continues to be a leading factor in road trauma. This discussion point relates to changing attitudes towards speeding with a view to reducing speed-related crashes.	Legislators, road authorities, vehicle manufacturers, Police, Education Departments. This is another issue that could benefit from road safety champions.	Unlike high cost road construction, costs for this item would related to media and marketing.	Speeding continues to be a leading factor in crashes and road trauma, but more work needs to be done within "Safe Speeds" to convince more road users. Strategies to encourage greater acceptance and compliance with all speed limits could include common messaging to once-and-for-all repudiate clichés such as "revenue raising".	Speeding continues to be a problem with thousands of motorists reported each month. Crash data also points to the involvement of speeding in road trauma. At the same time, there are groups advocating higher speed limits. There is an accompanying belief that higher speed limits will help reduce driver fatigue.	http://www.caradvice.com.au/252046/car-magazine-drives-130kmh-campaign-raise-speed-limits/
4. Safe Speeds	Modify Speed Limits	Reduce Limit Varieties	Too many speed limits.	Take out some speed categories - reduce number of categories. Rationalise. Would allow drivers to have a better chance of knowing speed limit in different environments if they couldn't see a sign.	High speed crashes	MRWA	Not known	Regulation/ legislation	Not known but anecdotal evidence around frustration and driver behaviour for frequent and incremental speed zone changes	Some sections of road are posted for incremental increase - 60km to 70km to 80km and so on. Suggest rationalise the number of speed limit categories.
4. Safe Speeds	Modify Speed Limits	Reduce Limits	Reducing Speed	Reducing speed limits	Changing speed limits can reduce the severity of accidents but not the number	Local Authorities	Low cost	Community attitudes	0	0
4. Safe Speeds	Modify Speed Limits	Reduce Limits	Review of network speed controls - rural	Review of 100km/h default speeds - considered too high on many roads - needs better correlation to road conditions, such as low speed bends	Not discussed	Not discussed	Not discussed	Australia has one of the highest (default) rural speed limits in the world Sweden has a focus on safety - 'Primary Safety Culture' Political risk Freight and travel time impacts is a challenge	Europe has better structure of speed hierarchy that suits road conditions better	0
4. Safe Speeds	Modify Speed Limits	Reduce Limits	Review of network speed controls - urban	Considering 40km/h in built up areas to reduce severity of collisions and 60km/h to be reduced to 50km/h as maximum speed in urban areas	Not discussed	Not discussed	Not discussed	40km/h to be considered more broadly Current 60km/h to be reduced to 50km/h on local streets Political risk	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
4. Safe Speeds	Modify Speed Limits	Reduce Limits	Speed Limits	Lowering speed limits	High	Government	Low	Community attitudes are the biggest issue. More of a push at a national level may assist.	CASR Research	Needs to be undertaken with improvements to road hierarchy.
4. Safe Speeds	Modify Speed Limits	Reduce Limits	Speed Reduction	Reducing speed limits	High	Local Authority	Low	Requires a sustained public education program to encourage behaviours change. There is currently a very poor community attitude relating to this issue.	CASR Research Publications	0
4. Safe Speeds	Modify Speed Limits	Reduce Limits	Speed Reduction (100-90)	0	0	Local authorities	0	Changing legislation and community attitudes	0	0
4. Safe Speeds	Modify Speed Limits	Reduce Limits	Speed Reduction (110-100)	Reduction of the speed limit from 110km/hr. to 100km/hr. on major rural roads	20% Reduction in injury crashes, 2-3km/hr. average speed drop	Local authorities	0	Changing community attitudes	CASR Report	0
4. Safe Speeds	Modify Speed Limits	Reduce Limits	Speed Reduction (60-50)	Reduction of the speed limit from 60km/hr. to 50km/hr. on urban non arterial roads	20% Reduction in injury crashes, 2-3km/hr. average speed drop	Local authorities	0	Changing community attitudes	CASR Report	0
4. Safe Speeds	Modify Speed Limits	Reduce Limits	Speed Reduction (80-70)	0	0	Local authorities	0	Changing legislation and community attitudes	0	0
4. Safe Speeds	Modify Speed Limits	Reduce Limits	Toojay Road - lowered speed from 110km to 100km	Just posted speed limit change	lower speed limit by 10% you can reduce high case crashes by nearly 40% (fatal crashes) and achieve a 20% reduction in all crashes	MRWA	minimal	Media hype around reduction in speed limits, especially in rural areas. MRWA had to respond to Ministerials, media. Local newspaper ran a story.	Went in two weeks ago. No results yet. Will do a before and after study. 12 month 'after' study and perhaps follow up another 12 months again, depending on infra changes	Interim step. Road qualifies for funding from RTTA for sealed shoulders and line marking
4. Safe Speeds	Modify Speed Limits	Reduce Limits	Trialled lowering the speed limit by static signs to reduce number of crashes	High prevalence of crashes by older drivers at certain intersections with curves on lead in road segments. They found NEWARCH research that older drivers have difficulty determining speed on horizontal curve. Reduce speed so if misjudged they had more time to get across intersection.	No formal before and after study. This was done on the intersection of Old Coast Road and Perth Bunbury Hwy. Before was 8 crashes and double fatality - all right turn through on high speed env, treatment was for north-bound approach to have a 500m section reduced to 80km/hr. along with rumble strips and line marking to narrow visual width. In 2-3 year following treatment its believed there have been no crashes. Looking at doing this at other sites with high speed curves into intersections.	State road - MRWA	Low cost - $20k line mark, rumble and speed signs	Some push back from the regional office because didn't want to lower speed limit on a brand new road due to travel time impact. Demonstrated 7 seconds of time impact only. Concern was over media response - but it didn't play out	NEWARCH research	Public perception on lowered speeds. Political.
4. Safe Speeds	Modify Speed Limits	Targeted Speed Reductions	Lower speeds in cyclist/pedestrian areas	Similar to a black spot treatment, targeted, less locations - mostly CBD areas	Vulnerable road users i.e.. Cyclists, pedestrians, reduction in accident severity, relevant for off peak	Local govt	Less infrastructure cost	Perception of increased congestion, but not that much b/c area already congested	0	0
4. Safe Speeds	Modify Speed Limits	Targeted Speed Reductions	Speed management in mixed zone areas	Limits to be more aligned to dominant use (e.g. peds & bikes etc.)	Not discussed	Not discussed	Not discussed	refer to US standards	0	0
4. Safe Speeds	Modify Speed Limits	Targeted Speed Reductions	Targeted reduction in speeds	At high pedestrian and cyclist activity areas or where you can't improve the infrastructure.	Evidence would be available.	MRWA	Available	0	0	0
4. Safe Speeds	Modify Speed Limits	Targeted Speed Reductions	Vulnerable users - reduce exposure	Not discussed	Not discussed	Not discussed	Not discussed	0	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
4. Safe Speeds	Modify Speed Limits	Targeted Speed Reductions	Wider use of 50k speed zones	Residential streets and some arterial could be applied to with limited impact on travel times. Best injury reduction in these areas.	Vulnerable road users i.e.. Cyclists, pedestrians, elderly, reduction in accident severity	TMR and local govt	little cost, no signage required if 50, some signage removal	Political costs- lobby groups would not like the implications for fines, travel time changes	going to email	0
4. Safe Speeds	Modify Speed Limits	Tolerance	Setting appropriate speed enforcement tolerance levels from a national approach for consistency and conduct research into the effectiveness of the approach NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	The initiative would require all jurisdictions to review their policy and procedures for camera and non camera operations for speed enforcement to establish appropriate speed tolerance levels. System changes may be required and would require a lead time in some cases.	Reducing the enforcement level to a narrow margin of the posted speed limit may lead to significant crash reductions through reduced vehicle speeds on the road network. Research in this area is limited although there is research that has looked at reducing travel speeds does reduce the frequency and severity of crashes. Reduced frequency and severity of road crashes.	Enforcement agencies responsible for camera and non camera speed management strategies.	N/A System changes may be required in some jurisdictions.	National consistency	0	Contact: Inspector Allan Hales
4. Safe Speeds	National/State Strategies	Implement Strategy	Actions listed in the QLD Road Safety Action Plan (2013-2015) under "Speeds" (Page 7)	includes increased mobile speed camera hours; speed limit review; install more dual purpose cameras at intersections; review speed camera scheduling method for mobile cameras; annual state-wide speed survey; annual review of program efficiency; upgrade existing wet film mobile and fixed camera locations to digital technology; trial innovative practices at roadwork sites; joint research into reduce speeds at roadwork sites.	Reducing QLD's road toll through reducing risk of crashes - reduced speeds result in shortening stopping distances, reducing the risk of losing control on curves or emergency situations, increasing vehicle stability. Reduces crash severity by reducing physical forces of the impact.	QLD Government (DTMR and QPS)	??	??	Refer to action plan. http://tmr.qld.gov.au/Safety/Road-safety/Strategy-and-action-plans.aspx. Also links to National Road Safety Strategy.	0
4. Safe Speeds	Other	Congestion	Reduce Congestion	Reducing road congestion will lead to a more efficient network and reduce driver frustration	Less inattentive drivers and more focus	Local Authorities	High cost	0	0	Can be used in conjunction with the improved road hierarchy to stop rat running and reduce incidents on local streets
4. Safe Speeds	Other	NA	NT approach to speeds and crashes needs to be improved - urban areas are still over-represented c.f. other major cities.	Engage NT government to address high relative safety record	Very effective	NT government	No costs provided	Recognition from NT government that there is an issue Currently not recognising the issue	MUARC study with Curtin Uni ARC and WA economic modelling study	0
4. Safe Speeds	Other	NA	Travelling speed signs	use signage to buy safety benefits until can afford to do safety treatment	30% crash reduction	0	0	0	0	0
4. Safe Speeds	Program Evaluation	NA	Developing a toolbox of ways of dealing with speed issues - The MOT does not believe there should be a reduction of the speed limit on most rural roads within New Zealand. This was tried in Tasmania, but had political issues. Instead they want to develop a tool box of ideas on what could be done to address a particular speed issue.	0	Fewer crashes being a result of speed.	Ministry of Transport	0	Need to ensure methods of dealing with speed are able to receive political support. Otherwise they will not be implemented.	0	0
4. Safe Speeds	Research	NA	Literature Review on Driver Behaviour - MOT are currently doing a literature review on how you change driver behaviour in relation to speed. Why do drivers drive at a particular speed?	Initially a literature review will be undertaken. After that research may be undertaken. The findings will then lead to an understanding of what policies and actions should be introduced to reduce the incidence of speeding	0	Ministry of Transport	0	0	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
4. Safe Speeds	Research	NA	Systems approach - BITRE strength	More research on the Safe Systems approach: -CBA on Safe Systems approach on key arterials out of key populations centres and key routes. -change in funding for black spot or major roads. What criteria should be used to encourage Safe Systems approach on new infrastructure funding requests -Assess the merit of black spot continuation -what are state authorities requiring from LGAs in terms of safety in requesting funds - standards is not enough any more. Economic analysis needed. Best done nationally not in each state to save money and demonstrate value for investment.	To be tested	BITRE?	Not known	National approach needed. Fundamental shift away from standards alone - behaviour change.	0	0
4. Safe Speeds	Research	Speed Detection	Explore new equipment & technology in relation to speed detection & speed measurement	State-wide implementation	This strategy implementation is expected to contribute to the delivery of less than 200 fatalities and 3,850 serious injuries on our roads by 2022.	Victoria Police	Evidence supported by external research	0	0	Insufficient time to locate supporting evidence or document critical issues
4. Safe Speeds	Road Design	Increased Speed Signage	Spacing of speed signs	Study based on spacing of repeater signs for speed limits. Wanneroo Road through national park speed zoned at 90km/hr. Standard spacing for 90km/hr. is about 1.5km apart. David put 90km speed signs every 500m (tripled number).	Reduction in crashes and speeding. 45% reduction in all crashes (60 down 33) and 41% reduction in casualties. 100% decrease in serious injury (8 to 0). On a 6.5km section of road. Data was measured two years previous and two years after treatment using several weeks of survey strip counts.	MRWA	minimal - just signs	none	Significant reduction in speed. Reduction in causality crashes, measured two year's after. Also trialled in low speed urban env but no result. No previous supporting evidence - based on David's own experience.	Not suitable in all cases Only relevant in 80 - 100km zones in rural and semi-rural, where people may think it's 110km/hr.
4. Safe Speeds	Road Design	NA	Change approach to road design - don't design for speed limit plus 10km/h	Not discussed	Not discussed	Not discussed	Not discussed	This 'encourages' higher speed travel	0	0
4. Safe Speeds	Road Design	NA	Rural road design <100km/h	Not discussed	Not discussed	Not discussed	Not discussed	0	0	0
4. Safe Speeds	Smart Speed Warnings	NA	Activated speed warning signs at rural intersections and curves and HV rollover sites	Not discussed	70% accident reduction	Not discussed	Not discussed	0	0	0
4. Safe Speeds	Smart Speed Warnings	NA	Austroads report on measures to reduce arterial speeds. ARRB - Blair Turner	Vehicles are rewarded with a green light if travelling at right speed and red light if speeding	Not known	MRWA (signals)	Not known	Not discussed	Used elsewhere in the world	Austroads (Blaire Turner) coming to MRWA in a few weeks to discuss speed treatments on specific road types in urban arterial roads.
4. Safe Speeds	Smart Speed Warnings	NA	Tunnel Variable messaging	Despite being there when the tunnel was built, it wasn't in use until it went to three lanes last year	Ability to alert drivers to changed conditions - such as crash in the tunnel	MRWA traffic operations branch	school zone signs cost about $10k per sign and are solar panelled. Would want to hard-wire and this would be more expensive - to avoid vandal and caravan crime	on-going maintenance costs of electronic versus status sign. Potential reliability issues - though not a big concern	0	Some consideration of variable message signs in the managed motorways study, which has halted due to funding. On and off ramps were being considered. Ian Tompson or Tom McKew (sp) would know about this. Project development branch of MRWA considering pedestrian message signs - Garry Manning
4. Safe Speeds	Smart Speed Warnings	NA	Variable messaging - reminder messages, speed messages	Road-side - permanent and mobile.	Much evidence exists around impact on reduced speed	MRWA	Not known specifically	Our posted speed limits, in terms of quality, are high by international and harm minimisation standards.	0	Much work been done but message is not consistent between states on slowing down. E.g. NT unposted limits.
4. Safe Speeds	Smart Speed Warnings	NA	Variable speed signs on fwy network to reduce high speed crashes	Can change limits depending on weather or congestion.	Addresses end of queue crashes - so at congested spots. High speed	MRWA	Not known	0	Used elsewhere - for example in France	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
5. Safe Systems	Additional Technology	NA	Electronic Systems that measure on road behaviour of HGV drivers - A number companies area collecting data on road behaviour such as g forces, times and speed. While companies tend to use information on the location of their vehicles, they don't seem to be using other data from within the systems. The reason for this is that they are unsure what the data is telling them. It is suggested that support be provided to provide guidance to the companies on what the data is saying and also on how they should deal with problems that area identified	Support focus	0	0	There would be some cost for establishing the support system	0	0	0
5. Safe Systems	Additional Technology	NA	Support development of increased vehicle technology	Lane following Advanced cruise control Collision avoidance / speed reduction	Significant benefits in casualty reduction	ANCAP	Market driven if an encouraging environment is provided	Government needs to provide a framework for the development and adoption of new technologies	0	0
5. Safe Systems	Additional Technology	NA	Technology will solve a lot of our problems.	E.g. cars that speed limit regulate and manage distance between cars.	Didn't have specifics to discuss under each heading but believes this will be market driven.	0	0	0	0	0
5. Safe Systems	Additional Technology	NA	New vehicle technologies - push for safety technologies to be standard rather than optional	Support for research that looks into the effectiveness of new technologies and safety improvements on road trauma reductions.	0	0	0	An increase in the number of new technologies across all areas of road safety, and their acceptance/rejection by the community. This includes increases in technology in vehicles, on roads, in hospitals, as part of driver education, and in our police services to name a few	0	0
5. Safe Systems	Additional Technology	Police Technology	All Police officers to have their own iPad . Vehicles to have mobile terminals.	Allows real time access to numerous Police databases, can check motor vehicle and driver registration. Police must me in NextG area. Crash / incident reporting app on iPad so can complete reports in field (just like taking notes) rather than come back to office and write up report.	Real time power to address road safety issues through on the spot enforcement and education. Reduces timeframes.	NT Police	Currently out to tender but in area of $1-2million	Security concerns but has been addressed (noted that two had been lost during the trial)	Trial was done	0
5. Safe Systems	Additional Technology	Police Technology	Automatic Number Plate Recognition	Eventually all patrol cars to have.	Real time checking of number plate registrations. Can also enter registration and will flash up if passed (e.g. look for a certain vehicle). Can be used to check for unregistered / uninsured vehicles.	NT Police	Unknown	Funding	13% of vehicles unregistered in the NT	0
5. Safe Systems	Additional Technology	Police Technology	Number plate recognition cameras on patrol cars.	0	Improved ability to pick up motorists that have committed an offence.	Police	0	0	0	0
5. Safe Systems	Additional Technology	Police Technology	Providing information to Police on the street based on an system which uses Phones and IPad.	0	More efficient use of the Police as they can spend more time on the streets	Police	0	0	0	0
5. Safe Systems	Data Collection	Cyclist/Pedestrian Accident Reporting	Accident Reporting	Cyclists in particular may be underrepresented in road safety statistics.	Increased level of recorded incidents. Cyclist safety not getting the attention it may warrant.	0	0	Data for accident injuries is typically not accurate as not all cyclist accidents are recorded. Hospital data may be an alternative source, however there are large gaps to overcome in the areas of data accuracy, limited information is 2 way gaps.	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
5. Safe Systems	Data Collection	Monitoring Treatments	Accident investigation monitoring system - New Zealand has in the past used a monitoring system to check the effectiveness of safety measures that were implemented. The system entered information on the treatments and the date of implementation so an evaluation of their effectiveness could be undertaken at a later date based on the number of crashes before and after the treatment.	It is recommended that all safety treatments are monitored to determine their effectiveness. It may be found that some treatments are not as effective as was predicted	Allows for better targeting of funds to particular treatments. Allows analysis of the effects undertaking more than one safety measure at a site.	Road controlling authority	Minimal costs	0	0	0
5. Safe Systems	Data Collection	Overarching Strategies	Improvements in data collection	develop an information strategy to define data needs in the short, medium and long term	Improved collection of data leading to insight and enhanced analysis of trauma / accidents, undertaking contributions to accidents and make better decisions regarding	State and territory agency Information could be sourced from insurers	0	Greater focus on the specific requirements of motorcyclists. Collection of the detailed data The requirement for cross-agency data collecting	Motorcycle and Scooter Safety Summit: The Road Ahead 10–11 April 2008 Parliament of Victoria, Road Safety Committee, Inquiry into Motorcycle Safety	0
5. Safe Systems	Data Collection	Road Trauma Database	Develop national database with link to insurance companies and hospitals to get a better understanding of road trauma using ISS.	National	Hospitals and insurance companies are a rich source of data which is currently untapped	Needs a level of commitment at the National Level	0	Prevention programs need a rich source of data in order to be able to target the root cause of issues.	0	0
5. Safe Systems	Developments and Planning	NA	Higher density land use development	Need to focus future urban development on higher densities and improved transport systems	Very effective	State government	No costs provided	Plan Melbourne - 20 minute city - would be great outcome Requires application to new development and retrofit of existing urban fabric Major reductions in chronic disease can be expected	Plan Melbourne	CAVE (Computer Aided Virtual Environment) is useful - 3D presentation of data. Currently studying Melbourne and Perth.
5. Safe Systems	Developments and Planning	NA	Improved city wide planning and optimisation of travel behaviour	Need to focus future urban development on higher densities and improved transport systems	Very effective	State government	No costs provided	Benefits can be enormous - chronic disease is not incorporated very effectively at present. MUARC economic investment models provide better understanding of these issues Vulnerable users (peds and cyclists) are also not well considered in the overall safety analysis	No evidence provided	LANCIT modelling review
5. Safe Systems	Developments and Planning	NA	Developers and designers to improve design elements for new infrastructure in growth areas	Not discussed	Not discussed	Not discussed	Not discussed	New infrastructure in urban growth areas		
5. Safe Systems	Drink and Drug Driving	Alcohol Interlocks	Use of speed interlock systems for repeat offenders NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	Provides an alternative to vehicle confiscation/impoundment for repeat speed offending. Speeding by repeat offenders or high level speeding should be targeted to reduce the risk to all road users.	Driver interlocks provides an alternative for repeat drink drivers and this model could be replicated for speed offenders. Remove the opportunity for repeat offenders to re-offend and to reduce the social impacts upon removing a driver's privilege to drive or access to a vehicle.	Road Safety authorities.	Refer to drink driver interlock programs and evaluations	Legislation; Cost can be borne by the applicant; Cost in monitoring compliance; Creating a down load facility and case management system/process.	Refer to NRSS action: "Undertake research on options to extend alcohol interlock applications to other high-risk road user groups and potentially to the broader driver population." NSW has completed a major evaluation of its interlock program and is now scoping new policy positions as part of a Repeat Offender Strategy. Austroads research will also inform this action.	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
5. Safe Systems	Drink and Drug Driving	Wider Justice System	Alcohol / Justice system – There is a problem with recidivism in drinking and driving with 66% of people who are caught getting caught again in later life. Also, there is a relationship between risk behaviour and problems with driving and other criminal activity. Sometimes people will run up driving fines etc. and then end up in prison because of this. Sometimes the driving problems are not the only area that they display illegal/ antisocial behaviours. Alcohol interlocks have an important part to play for repeat offenders, however in New Zealand they are only provided after a three month ban in driving. During that time people often drive anyway.	Ensure every person who is caught a second time for drinking and driving is provided with an interlock system.	0	0	The interlock systems that are monitored each cost around $2500	0	0	0
5. Safe Systems	Drink and Drug Driving	Wider Justice System	Alcohol / Justice system – There is a relationship between risk behaviour and problems with driving and other criminal activity. There needs to be a holistic approach to dealing with offenders to stop them from reoffending.	Look at dealing holistically with people who are caught drinking and driving, particularly second offenders. There are often other issues in their lives	0	0	0	0	0	0
5. Safe Systems	Driver Reviver	NA	DRIVER REVIVER PROGRAMS NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	A review of driver reviver programs may provide recommendations to improve the take-up rate of these facilities.	The "Don't Trust Your Tired Self" public awareness campaign in NSW builds on previous messaging regarding "fatigue". About 80 Driver Reviver locations operate in NSW. Increasing visitation to these sites could make a contribution to reducing crashes associated with tired driving.	Road authorities	There would be cost associated but sponsorship currently offsets Driver Reviver programs	Questions to be examined could include whether the services provided are now inadequate and if in fact there are too many locations within close distance to one-another. In New Zealand for example, there are only 5 locations but they offer barista-style coffee compared to instant. The NZ locations also provide services such as Wi-Fi. Although driver reviver is much larger in Australia, could the program benefit from the establishment of a handful of "premium" driver reviver sites that offered better coffee, Wi-Fi, phone/iPad charging stations, live traffic condition updates and other features that are expected in 2014 that did not exist 20-30 years ago when these sites began.	On 4 April 2014, the RACQ warned that just 9% of ling distance drivers are using driver reviver locations (see accompanying link). This supports anecdotal evidence that motorists are increasingly shunning traditional driver reviver locations, preferring instead to stop at cafes and locations that have better quality food/beverage and modern conveniences such as Wi-Fi hotspots. Costs (of better coffee for example) does not appear to be an issue for many people.	http://www.racq.com.au/about_us/news_and_community/news_and_media/stories/motorists_bypass_driver_reviver_stops
5. Safe Systems	Education	Industry	Holding Safe Systems workshops - Holding workshops where people in the industry are told what a safe system approach. Generally they are two day courses. The courses are held for all in the industry including road safety coordinators, engineers etc.	0	0	Ministry of Transport	0	0	0	0
5. Safe Systems	Education	Industry	Local government officer training	Infrastructure and speed management etc.	Not discussed	Not discussed	Not discussed	up to 30% of fatalities are on local roads!!!		
5. Safe Systems	Education	Industry	Safe system training for local government officers	0	0	0	0	0	0	0
5. Safe Systems	Education	Industry	National Road Safety Strategy Partnership Programme	Target 30% reduction in accidents	Not discussed	Involve corporations	Not discussed	Initiated by NTC - 15% of road deaths are work related		To be released 5 May by NTC (and ARRB)

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
5. Safe Systems	Education	Industry	National Skills Council to develop Safe Systems training and accreditation	0	0	0	0	0	0	0
5. Safe Systems	Education	NA	Advertising Campaigns	Use to change public perception of certain issues	0	Government	0	Very hard to measure the direct benefits from advertising campaigns	Past campaigns for drink driving.	0
5. Safe Systems	Education	NA	Community awareness	Targeted areas of road safety - changes from year to year. As directed by politicians, or to coincide with new reforms. Some repeat annually e.g. drink driving and tourists. Leaflets, appearances at fairs, Road Safety Band.	Not evaluated.	DoT	Campaigns cost $5k to $40k. Road safety band is $50k. Film festival ($tbc). TV campaigns paid for by TIO ($40-50k typically)	Over representation of indigenous people in crash statistics. It is more than just road safety it is a health and social issue. There are communication barriers - indigenous languages to cover. Cost of going to remote locations. Higher costs means that cost - benefit ratio should NOT be considered. Limited resources (people) to cover such a vast area. Issues are different for remote rural areas compared to whole of Australia so guidance / best practice isn't always applicable.	Rely on national research. Don't have budget or resources to look into themselves.	0
5. Safe Systems	Education	NA	Education (cyclists)	Education of cyclists and drivers around sharing the road.	Increased road sharing. May be a minor impact to overall numbers	Local Authorities	Advertising costs	May only work for some people	0	0
5. Safe Systems	Education	NA	Education (facilities)	Education of road users about how to use new traffic facilities or upgrades	People will more effectively navigate new or unfamiliar infrastructure	Project Delivery	Advertising costs. Could build this cost into new infrastructure budgets	Increased initial cost for new projects. Will need to be a sustained educations program to have an effect.	Roundabout advertising in QLD	Example: Britannia Roundabout
5. Safe Systems	Education	NA	Education (inattention)	Education for inattentive drivers	Big impact, particularly on country roads	Local Authorities	Advertising costs	Difficult to apply legislation and enforcement or measure how this is working. Will need to get in early e.g. primary school	0	Traffic engineering is half engineering and half social science. More work is needed to link the road user to the road infrastructure.
5. Safe Systems	Education	NA	Education programs	Use of education to assist in changing community attitudes	0	Government	0	Very difficult to measure, particularly in regard to how successful one particular initiative has been	0	0
5. Safe Systems	Education	NA	School education programmes	Sessions cover childcare age to high schools. Go to every school in NT. Done April to October. Includes bicycle education centres at Parap and Alice Springs.	Expecting to be effective in the long term	DoT & NT Police	Out of $1.4million pot	Cost of going to remote locations. Higher costs means that cost - benefit ratio should NOT be considered. Limited resources (people) to cover such a vast area. Issues are different for remote rural areas compared to whole of Australia so guidance / best practice isn't always applicable.	Rely on national research. Don't have budget or resources to look into themselves.	0
5. Safe Systems	Education	NA	TAC education	Continue strong commitment to education	Not discussed	Not discussed	Not discussed	0	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
5. Safe Systems	Education	NA	SHOULD WE BE TARGETING GENERATION Z? NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	For this conversation, Generation Z is the group of people born in the mid 2000's and are currently in primary school or pre-school age.	Distracted driving is of increasing concern to road safety agencies and Police. This discussion relates to the impact on distracted driving related crashes on the road toll from mid 2020's onwards and ensuring that people safely use electronic devices.	Legislators, road authorities, vehicle manufacturers, Police, Education Departments. This is another issue that could benefit from road safety champions that are known and looked up to by Gen Z children.	Difficult to say. Vehicles currently in production are now fully integrated with mobile phones and "aps" that allow drivers perform a variety of tasks via those devices. Given the age of Australians private vehicle fleet, a child that is 8 years old today will be driving todays cars with today's features.	Gen Z is the first generation to group up with a myriad of electronic devices that include mobile phones, tablet PC's/IPad, as well as the newest generation of electronic gaming consoles. The use of headphones by vulnerable road users which is a safety issue today is also likely to be continue to be problematic into the future. Other issues relating to technology that could become apparent in future years include the use of very young children playing video games rated for adults, often involving driving at high speed and crashing (and walking away).	NSW Office of State Revenue figures indicate that in the last 3 financial years, more than 100,000 motorists were fined by NSW Police for using hand held mobile phones whilst driving (Baby Boomers, Gen X, Gen Y). What impact will Gen Z have on distracted driving behaviour?	Given the high numbers of today's drivers being reported for mobile phone use, it could be argued that Gen X and Gen Y are is it now time to focus on Gen Z. Can children apply pressure on their parents to stop using hand held phones much the same as some children have taken to seat belt use?
5. Safe Systems	Education	Police Training	Safe Systems training for Police Managers involved in road safety	0	Ensures officers understand policies so they are better able to enforce them.	Police	0	0	0	0
5. Safe Systems	Education	Police Training	Consideration of benefits of implementing a professional training course or School for Road Policing	- Develop and professionalise road policing. - Assess and develop competency based skill sets for road policing practitioners to meet current and future service delivery requirements - Continue to develop and enhance foundation level training. · Improve the standard of collision investigations and confidence of members in investigating collisions and charging offenders with serious offences.	Enhance training and capability of personnel in Road Policing Command. Will assist officers in confidence and capability due to the increased complexity of legislation and operational knowledge required of road policing officers.	Govt; input from research bodies	? Consult with other states who currently undertake this.	Funding	Refer to National Road Safety Strategy: "Review the training of road safety specialists and the value of offering more formal training/education opportunities in road safety. The NRSC provided funding support for a national training program to build road safety skills and capacity among practitioners. Some jurisdictions have reviewed or are currently reviewing training opportunities for road safety specialists.	0
5. Safe Systems	Education/Enforcement	NA	Education/Enforcement	A combination of education and enforcement should be used to reduce trauma	Greater improvement compared to just education or just enforcement	Policy makers / Police	Advertising costs	Can only address road safety issues where enforcement can occur i.e. difficult to enforce inattentive drivers. Increased enforcement during the peak times may cause more congestion and have an negative effect on drivers.	Previous improvements with drink driving and speeding	0
5. Safe Systems	Education/Training	NA	NOT BANG FOR BUCK	Driver/public education programs Move to competence based training	0	0	0	0	0	Many of these items don't appear to have a significant expected impact on increasing safety due to high cost, isolated action or already reached saturation point.
5. Safe Systems	Enforcement	NA	Enforcement is the key issue - improvement required	Greater visibility will assist	Not discussed	Not discussed	Not discussed	Key issue	Netherlands has 'zero' tolerance to road trauma	0
5. Safe Systems	Enforcement	NA	Increase Officer commitment to traffic duties - Officers focusing on traffic duties rather than diverted to other non-urgent police duties. Focus on activities where the greatest benefits will occur. Answerable to NZTA for provision of traffic services.	0	0	Police	Time cost of staff	Internal commitment to managing staff in this way	0	0
5. Safe Systems	Enforcement	NA	Police enforcement	Increased enforcement is very important and effective	0	0	0	0	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
5. Safe Systems	Enforcement	NA	Potential use of video technology to detect 'Hoon' behaviour. NB: This item has been included to generate further discussion on this issue and does not necessarily advocate a position	Example of previous success: Frankston city Council in Victoria use of CCTV cameras placed at areas of complaint and images then given to police for investigation. Options: 1. having 'Hooning' type offences declared Camera Detected Offences and then included in the CDOP; 2. A model whereby Police have responsibility for purchasing, installing and maintaining mobile CCTV units is a further option. This could be carried out by sworn officers, civilians or private contractors. Option 3: An amended model such as that utilised by the Frankston City Council. Council administers the scheme utilising its own staff or contractors and acting on information provided by the public in consultation with police.	Police in Frankston advised that that the use of the portable cameras was well received and that a number of successful operations and prosecutions were conducted. Victorian Police advised that whilst they did not have owner onus provisions whilst their programme was running this did not unduly affect them. They advised that the majority of offenders when presented with the CCTV evidence admitted their actions	Depending on option adopted and available funding. Trial of technology should be undertaken.	Refer to Issues column	Legislation, Funding, retraining, community attitudes/acceptance, privacy concerns.	0	Contact: Inspector Ray Roheweder
5. Safe Systems	Funding	NA	Cross government commitment to funding and long term strategy	How to gain bipartisan acceptance and drive for 'joint' safety strategy/programme	Very effective	Government - State and Feds	Ongoing programme could optimise costs	Need to demonstrate benefits Loss of manufacturing in Australia means that we must focus on technology - where we are leaders	No evidence provided	Changes of government and strategy impacts on innovation and outcomes
5. Safe Systems	Heavy Vehicle Maintenance Responsibility	NA	Chain of responsibility laws extended to vehicle maintenance	All HGVs	Increased operator accountability	0	0	0	0	0
5. Safe Systems	Incident Response	NA	Post crash response	Police motorcycle response team in Sydney CBD - targets congestion and rapid response to incidents	0	0	0	0	0	0
5. Safe Systems	Licencing System	NA	Increased focus on "fitness to drive" e.g. reduce the incidence of drivers with reduced / impaired capability such as eyesight, macular degeneration or prescription drugs	More enforcement of fitness to drive	Decrease numbers of crashes	Police, Doctors, (families?)	0	Change perception of "right to drive" vs responsibilities of drivers to other road users	0	0
5. Safe Systems	Licencing System	NA	Smartcard licences	Likely to emerge as key technology for preventing or restricting access	Complex and far-reaching, but can't quantify at this stage	States	Not discussed			
5. Safe Systems	Mode Shift	NA	Mode shift to PT and active modes (as per above)	High benefits to safety as less car travel means much lower crash outcomes	Very effective	State government	No costs provided	Major reductions in chronic disease can be expected But road trauma would increase if there are more vulnerable users on the road (bikes & peds) so better infrastructure is required	Plan Melbourne	CAVE (Computer Aided Virtual Environment) is useful - 3D presentation of data. Currently studying Melbourne and Perth.
5. Safe Systems	Motorcycle Strategy	NA	Development of a National Motorcycle safety strategy	Development of a safety strategy specifically for motorcycles which takes advantage of motorcycles unique advantages and disadvantages with respect to safety	0	0	0	0	0	0
5. Safe Systems	Motorcycle Strategy	NA	Motorcycle Helmet Standards	currently only motorcycle helmets that meet Australian standard (multiple impact) are acceptable to be used, this limits availability of better helmet technology due to the cost / requirements of getting certified. If CE (Europe) Japanese and US standards were acceptable a range of new safer helmets would be available	improved head injury outcomes for motorcyclists in accidents	ACCC, product safety Australia	Low cost	Getting agreement to use international standards	0	0
5. Safe Systems	Motorcycle Strategy	NA	Motorcyclist protection		reduced injury and injury severity	Not discussed	Not discussed	Motorcycling is increasing quite markedly, but there are currently few options for improving their safety - major treat to the achievement of road safety goals. little		
5. Safe Systems	National/State Strategies	Develop Strategy	ITS - Developing a strategy action plan	0	Initiatives will provide information to drivers to allow them to drive more safely	Ministry of Transport	0	0	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
5. Safe Systems	National/State Strategies	Develop Strategy	Signature Projects - Using a safe system approach to solve an area wide issue. For example on the East coast there is a problem with drivers not having a warrant, bad roads unemployment. Forestry traffic will expand in the next few years leading do greater demands on the roads. What to do about this problem. How do you use the safe system approach to this issue.	0	0	Ministry of Transport and other organisations involved with road safety	0	0	0	0
5. Safe Systems	National/State Strategies	Develop Strategy	ACT Road Safety Strategy 2011-2020 and resultant ACT Road Safety Action Plans	The ACT RSS and RSAP require (rightfully) a collegiate and collaborative approach to achieving road safety outcomes in the ACT - reduction by 30% of fatalities and injuries by the year 2020. This policy affords ACT Policing with a voice and leverage towards the raft of RS initiatives.	Reduction in fatalities and injuries (30%) by 2020.	JaCSD chair ACT RSS initiatives but they are fed into by ACT Policing, ACT Health, ACT Education, Roads ACT, ACT RTA, act Traffic Camera Office, and NGO's via a Road Safety Working Group (NGO's include ACRS, Pedal Power, MRA, Pedestrian Council as examples).	The ACT RSS was modelled from the Swiss 'Safe Systems' and 'Vision Zero' policy. The NRSS was subsequently modelled from the ACT RSS and is nowadays an accepted as a contemporary, well based and effective RS policy doctrine.	Placing more meaningful means and measures into the RSAP which emanate from the RSS - the initial RSAP (2011-2013) was an aspirational document in terms of targets and means but lacked definitive commentary as to programs and initiatives - essentially it contained largely 'motherhood' statements. The RSAP 2014-2017 is a significantly more dynamic policy which better directs initiatives, operations and philosophy and in also assists in securing funding and implementation of the policy components - ACT Policing had a voice in the flavour, scope and content of the new RSAP; an outcome which was testing but very positive and has better set the scene for a more collaborative approach to RS policy in the ACT.	The ACT RSS and RSAP cite the basis for effectiveness and I would draw your attention to the same in response to this question.	0
5. Safe Systems	National/State Strategies	Review Strategy	Review of NZ Strategy for Road Safety - Need to see where we have got to and what is left to do.	0	0	Ministry of Transport	0	0	0	0
5. Safe Systems	Organisational Changes	NA	Endorse and promote national recognition of road trauma as an extensive public health issue	0	0	0	0	0	See notes	0
5. Safe Systems	Organisational Changes	NA	Establish and operate a cross-sector Centre for Road Safety Intelligence (CRSI) -brings together the expertise of intelligence staff from four agencies: Police, ACC, Ministry of Transport and the NZ Transport Agency. The CRSI, located at Police National Headquarters in Wellington, is managed by Tim Haughey, a police officer who's worked in the intelligence arena for many years. "Each agency has its own perspective on road safety," he says. "The centre means we can share information, intelligence and ideas, and work together to ultimately create safer roads."	0	Ensure efficient use of information to ensure resources are best directed towards issues.	Police	0	Requires commitment from a number of parties.	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
5. Safe Systems	Organisational Changes	NA	Governance of motorcycle safety	Establishment of a dedicated body to oversee motorcycle safety (not TAC). Some of the consultation bodies not used. The federal motorcycle safety consultative committee has not met in recent years Victorian Ministerial Advisory Council downgraded to a VicRoads advisor.	0	0	0	departments and road safety agencies appear to lack a coherent approach to tackling motorcycle trauma benefits that could be realised from sharing funding, resources and data are not realised because there is no single co-ordinating body	Parliament of Victoria, Road Safety Committee, Inquiry into Motorcycle Safety	0
5. Safe Systems	Organisational Changes	NA	Harmonisation - "not what it is cracked up to be" in current form	National policy	0	Federal Government lead	0	States with larger populations brought down by smaller states - lowest common denominator	0	0
5. Safe Systems	Organisational Changes	NA	National Trauma System	One dedicated trauma centre per state	US found that this arrangement saves money and the costs to establish are not enormous	Needs a level of commitment at the National Level	One Director of Trauma and one fellow - senior trainee	Acceptance by individual hospitals of a centralised trauma centre	0	0
5. Safe Systems	Organisational Changes	NA	Road safety as a component of the health budget	Funding should cross all sectors	0	0	0	Link Police incident records to health data	Soames Job identified a higher BCR - larger benefits from a relatively smaller investment	0
5. Safe Systems	Organisational Changes	NA	Road Safety Executive Group	Quarterly meeting of Chief Executives to coordinate approach in road safety and to Government	Not evaluated.	DoT, Police, TIO	Unknown	None	None	0
5. Safe Systems	Other	NA	"Vision Zero" - "Safe Systems"	Drive towards target	Not discussed	Not discussed	Not discussed	Government long term mission of "zero" for 14-day plus hospitalisation - definition of serious injury But length of stay is a poor measure of severity - especially for elderly	Parliamentary Road Safety Committee - current enquiry 'Value' of serious injury is an issue - BITRE/TAC value trauma "coarsely" What does that mean for road trauma? Greatly reduced 'catastrophic' injuries, which is key target group (average 'cost' is over $8m per person)	0
5. Safe Systems	Other	NA	ATSB mandate extended to road transport	Road transport industry	0	0	0	0	0	0
5. Safe Systems	Other	NA	Beyond zero strategy is excellent, we know what to do, we have money but can't seem to implement. Govt can be biggest inhibitors through process and political. ML- urgently need more improved strategic leadership by both fed and state Govt to reduce road toll. Fed Govt particularly as they pay lip service to road safety. Profile of road safety is not reflected in Ministerial responsibility Need to pick up Ancap at federal level.	0	0	0	0	0	0	0
5. Safe Systems	Other	NA	NZTA led safety projects - For example there is currently a problem with tourists in parts of the south island, particularly from China. Some are very inexperienced in driving, and this has resulted in crashes. The project to deal with this issue has involved ACC (Accident compensation), Police, local authorities and other interest groups.	0	0	Ministry of Transport and other organisations involved with road safety	0	For the problem with tourist drivers, some possible solutions could result in diplomatic issues	0	0
5. Safe Systems	Program Evaluation	NA	BCR allocation of funds based on need	BCR target now 1.5 or above	Not discussed	Not discussed	Not discussed	0	0	0

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
5. Safe Systems	Program Evaluation	NA	Develop an accepted methodology to evaluate programs	Commonly agreed definitions - framework to evaluate	Need more research into road safety	Not discussed	Not discussed	0	0	0
5. Safe Systems	Program Evaluation	NA	Investment Logic Mapping - Using this took for making decisions. Support the development of the case for an individual investment.	0	Improved efficiency of policing	Police	0	0	0	0
5. Safe Systems	Program Evaluation	NA	Mass action measures	Implement proven counter-measures - focus on particular types of crash targeted at locations routes and specific accident types	Not discussed	Not discussed	Not discussed			
5. Safe Systems	Program Evaluation	NA	Tie road funding to road safety outcomes	Both upgrade and maintenance funding	0	0	0	0	0	0
5. Safe Systems	Research	NA	Baseline research programme with MUARC	Gap analysis	Not discussed	Not discussed	Not discussed	Road safety partners	0	0
5. Safe Systems	Research	NA	Commission a study by the Productivity Commission in the full impacts of road trauma	0	0	0	0	0	See notes	0
5. Safe Systems	Research	NA	Compatibility assessment between higher productivity vehicles and greener / smaller light vehicles	0	0	0	0	0	0	0
5. Safe Systems	Road Design	NA	Safe Systems - this takes us beyond set standards and there is no guide at the moment. If you do x, you can expect this result. There is need for a Field Guide. MRWA build very few roads, more an owner operator. Outdated standards have resulted in unsafe network - how do we retrofit existing infrastructure. If you have 7m of seal, if you expand by x you'll get result y.	0	0	0	0	0	0	Standards are a big problem. Standards are developed for efficiency, cost effectiveness and many reasons and not just safety. Standards are a bare minimum, something can meet the standard but still not provide the best safety outcome. Deliberate violators are not the recurrent crash statistic, a standard-compliant road won't save people who just make mistakes How do you apply cost effective measures to 18,000km of roads? RTA rolling programme as an example of a cost effective balanced measure (incremental measure) - If come back and the result is not what was wanted, then will go up to a more expensive treatment.
5. Safe Systems	Road Design	Standards	ISO uptake	rollout and uptake of approach towards certification is critical - but is NOT CHEAP, so there will be some reluctance				Safe Systems ISO39001 released end 2012 Traffic Management Safety Plan Relevant to HV operators Procedures for training and addressing fatigue Car safety standards and routes etc.		Panel involved Mary Lydon (CASR), Michael Tziotis (ARRB), Martin Small and Geoff Potter (NTC)
5. Safe Systems	Road Design	Standards	Road safety management system based on ISO1301	To ensure road safety outcomes on projects. Internal quality, audit where projects will have to go through this system. Covers planning through operation - auditable on all levels.	Current project and expected completion first quarter 2015. Workshop in May.	Documentation, process and policies, not necessarily software	Resourcing plan being done atm. May require additional resources.	Action identified in the MRWA Road Safety Strategy - needed governance and assurance framework for road safety outcomes. Most agencies follow the state strategy because it's such a huge shift from building roads to standards to Safe Systems (don't blame road user, make inherently safe road). Onus shifts to road agencies.	Driven by Managing Director. High level support is strong. Expect Standards People to push back. Not on-board with that fundamental shift in thinking.	Austroads research project is developing a model road safety management system

Response Area	Response Theme	Response Subtheme	Measure	Scope	Expected Safety Impact	Responsibility	Costs	Issues	Supporting Evidence	Comments
5. Safe Systems	Road Infrastructure	NA	Don't just treat Blackspots - treat clusters as well	and 'grey' spots and SRIP	Not discussed	Not discussed	Not discussed	Risk based approach, proactive treatment Road Safety Risk management		
5. Safe Systems	Road Infrastructure	NA	More systematic treatment of roads - see Safe Roads above	0	Not discussed	Not discussed	Not discussed	0	0	0
5. Safe Systems	Incidence response	NA	Improve incident response by enabling ambulance attendants to administer blood clotting drugs	Reduce potentially life threatening injuries involving internal bleeding		Ambulance authorities	Low cost	Legislation; training	0	0

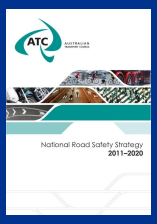
Appendix E. Workshop Powerpoint Presentation Slides

National Road Trauma Review

CANBERRA WORKSHOP – 16 MAY 2014

JACOBS SKM

Gary Dolman, Head of BITRE



PURPOSE AND STUDY OBJECTIVES

JACOBS SKM

www.jacobsskm.com | worldwide

Agenda

1. Introduction & context: ***Philippa Power***, Exec Director Policy & Research
2. Purpose and study objectives - ***Gary Dolman***, Head of BITRE
3. Introductory speech - ***Lauchlan McIntosh***, National President ACRS
4. Workshop goals and process - ***Peter Corrie*** Jacobs
5. Summary of Process and Outcomes of surveys - ***Peter Hunkin*** Jacobs

MORNING TEA

6. Parallel small group sessions by Cornerstone

LUNCH

7. More detailed group work on selected measures by Cornerstone

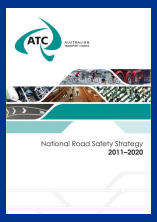
AFTERNOON TEA

8. Combined listing, ranking
9. Meeting review, way forward

MEETING CLOSE

JACOBS SKM

Lauchlan McIntosh, National President, ACRS

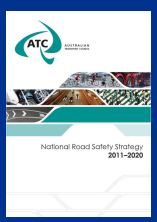


INTRODUCTORY SPEECH
AUSTRALASIAN COLLEGE OF ROAD SAFETY

JACOBS SKM

www.jacobsskm.com | worldwide

Philippa Power, Executive Director, Policy & Research

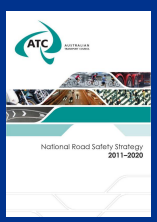


INTRODUCTIONS AND CONTEXT

JACOBS SKM

www.jacobsskm.com | worldwide

Peter Corrie, Workshop Facilitator, Jacobs SKM



WORKSHOP GOALS AND PROCESS FOR THE DAY

JACOBS SKM

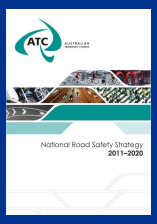
www.jacobsskm.com | worldwide

Workshop Objectives

- *Report back to participants on an initial list of potential measures drawn from consultations*
- *Modify the scope of measures, expected impact on the number of road deaths and injuries.*
- *Identify critical factors for each measure with a significant impact*
- *Rank measures in terms of expected effectiveness, likely cost, and feasibility.*
- *Seek affirmation/agreement of group and dissenting views, and if needed identify alternate impact/cost scenarios for specific measures.*

JACOBS SKM

Peter Hunkin, Transport Advisory, Jacobs SKM



OVERVIEW OF WORK TO DATE
SURVEY PROCESS AND INTERIM OUTCOMES

JACOBS SKM
www.jacobsskm.com | worldwide

Agenda

Study Presentation Peter Hunkin • Overview of the Study and Objectives • Process for Study • Findings of the Consultation • Relevance to Workshop Q&A
MORNING TEA
Parallel small group sessions by Cornerstone Safe roads, Safe people, Safe vehicles, Safe speed, Safe systems Goal: Review the list of "key themes" from the report and prioritise.
LUNCH
More detailed group work on selected measures by Cornerstone Scope, evidence, costs, implementation, issues. Goal: Flesh out the details, risks, resources and evidence
AFTERNOON TEA
Combined listing, ranking Goal: Group to prioritise the initiatives deemed to be of most value to the community
Meeting review, way forward Meeting review Actions and future process
Meeting close

JACOBS SKM

Overview of work to date

- Study objectives – *already covered by Philippa and Gary*
- Survey process
- Areas for investigation
- Stakeholder groups contacted
- Survey process
- Survey tool
- ***Survey results***

JACOBS SKM

Principles of Engagement

- Participants should respect contribution from all members
- We are looking for balanced perspective from all participants
- We will need to be pragmatic in assessments and documentation
- We need your help to identify supporting evidence

JACOBS SKM

Survey objectives – as per Study Brief (covered already)

- *BITRE has been tasked by the Australian Government to undertake a review to evaluate the benefits and costs associated with the different road safety approaches adopted by jurisdictions, both domestically and internationally.*
- *The review objective is to estimate both the benefits and costs of measures to encourage safer road users, build safer roads, drive safer vehicles, travel at safer speeds and develop safer systems, and provide a ranking of measures both in terms of expected outcomes (reduced fatalities and injuries) and net benefit–cost to the Australian community.*
- *To ensure the analysis captures the current knowledge and expertise, BITRE will engage a consultant to interview key researchers and stakeholders in road safety and prepare a report of potential measures to further reduce road trauma. The consultant will then organise and facilitate a Canberra workshop of research experts and stakeholders to validate the measures in this report, and present the final written report to BITRE in Canberra.*

JACOBS SKM

Survey process – objectives and tasks

The objective is to draw on the expertise of key Australian researchers and stakeholders to identify, define the scope of and (where possible) quantify expected outcomes and costs of measures that could be used to reduce road trauma on Australian roads.

The required tasks comprised:

- *Define 'base case' expectations of future road trauma outcomes to 2020, and beyond.*
- *Identify measures that include new ideas, bringing forward measures, or increase the scope or breadth of existing actions.*
- *Define the scope of measures, impacts on deaths and injury, what would be needed to implement it, and implementation and other costs (e.g. reductions in travel time).*
- *Identify critical success factors – e.g. the need for community acceptance or development of new standards.*

JACOBS SKM

Stakeholder groups contacted – International

New Zealand
- NZTA
- Waikato University
- Ministry of Transport
- New Zealand Police
- Automobile Association
- Auckland University
- Canterbury University
- Road Transport Association

United Kingdom
- CIHT
- TRL
- Highways Agency
- EuroRAP
- Transport Scotland

JACOBS SKM

Areas for investigation

- Safe people
- Safe vehicles
- Safe Roads and Roadsides
- Safer Speeds
- Safe Programs

JACOBS SKM

Survey process

- Identify stakeholders – as outlined above
- Mobilise team of interviewers from across the Jacobs business to undertake the surveys
- Team members contact nominated stakeholders to arrange time for a face-to-face interview
- Develop survey questionnaire tool to address required outcomes
- Meet with stakeholders and work through the survey tool and generate responses
- Consolidate and analyse survey responses to identify key issues and outcomes
- Prepare summary report (i.e. this report) to outline the survey process and results

JACOBS SKM

Stakeholder groups contacted - Australia

National bodies
- Australian Motorcycle Council
- Australian Automobile Association
- ANZPAA
- Institute of Public Works Engineering Australasia
- Royal Australasian College of Surgeons
- Australasian College of Road Safety
- St John Ambulance
- National Health and Medical Research Council
- The Georges Institute for Global Health
- ARRB

Western Australia
- West Cycle
- Curtin - Monash Accident Research Centre
- Chair - Road Safety Council
- Main Roads Western Australia
- Western Australia Police
- Office of Road Safety
- Insurance Commission of Western Australia
- Department of Transport WA

Victoria
- MUARC
- VicRoads
- TAC
- Victorian Police
- Dept of Transport, Planning & Local Infrastructure
- Bicycle Network Victoria

New South Wales
- Centre for Road Safety, Transport for NSW
- "Transport and Road Safety (TARS) Research University of NSW"
- Justice and Community Service Directorate ACT

Tasmania
- Department of Infrastructure, Energy and Resources TAS

South Australia
- Centre for Automotive Safety Research (University of SA)
- University of SA, Barbard Hardy Institute
- SA Police
- Motor Accident Commission
- Department of Planning, Transport & Infrastructure SA

Queensland
- TMR
- Queensland Police Service
- Centre for Accident Research and Road Safety

Northern Territory
- Department of Transport NT
- NT Police, Fire and Emergency Services
- Department of Transport NT

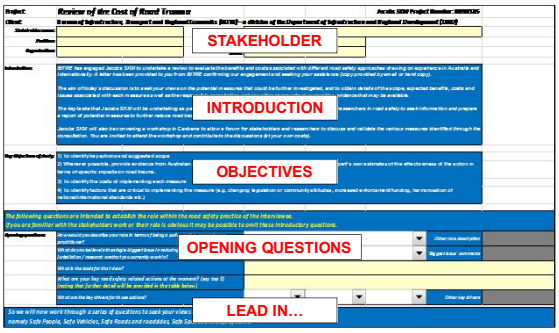
JACOBS SKM

Survey tool – questions to be asked

- ***Measure*** – What are the key actions or initiatives under this policy area that are worthy of further investigation?
- ***Scope*** – What is the scope or extent, or scale of the action?
- ***Expected Safety Impact (Casualty accident reduction and timing)*** – How effective are these actions (or how effective are they likely to be?) What are you expecting to be the outcome?
- ***Who would be responsible*** – Can you identify who would/should be responsible for delivering this initiative?
- ***Costs*** – How much do the actions costs? What evidence do you have to support that view?
- ***Issues*** – What are the critical issues that you have (or need to overcome) for the initiative to be successful?

JACOBS SKM

Survey tool – questions to be asked



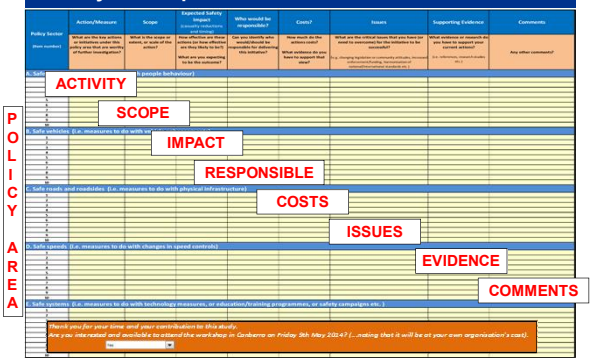
JACOBS SKM

Survey results – Safe People

Education	• Building awareness in the community and road industry to create a positive culture about safety issues such as sharing road space with all users, speeding and seatbelts. • Educating groups in the community (e.g. drivers, children, cyclists, motorcyclists, low socioeconomic groups) on managing and accessing risk on the roads, including targeted training where appropriate.
Enforcement	• Continue to use enforcement of proven evidence-based strategies such as lower tolerances for speeding and drink driving. • Ensure enforcement is seen as fair within community to maintain legitimacy and support. • Enhancement of enforcement for distracted driving, drug driving. May require more resources for drug testing. • Targeting of high risk drivers, e.g. repeat offenders, unlicensed drivers.
Drink and Drug Driving	• Expand alcohol interlock systems for repeat offenders. • Continued effort on changing community attitudes towards drink driving, using both enforcement and education. • Particular emphasis on changing attitudes towards drug driving as community thinking may not be as far progressed as with alcohol. Increase in data-capture of post mortem and crash blood samples.
Distraction and Fatigue	• It was noted that these are difficult issues to enforce, although increased enforcement is required. Potentially an important topic area for further research. • Professional drivers/heavy vehicle operators: smarter scheduling, electronic log books, in vehicle monitoring technology (could also be used in private vehicles). • Electronic device use in vehicles an increasing cause of distraction.
Licensing System	• Raise minimum ages of obtaining a driving licence. • Further restrictions on graduated licensing system such as curfews, passenger numbers, speed limits, penalty regimes. • Better medical checks prior to licensing.
Other	• Concern about older drivers in light of an aging population: require more suitable infrastructure and better testing (performance, competency and medical). • Research into distraction, social media, risk taking. • Better driver training, including as part of licensing system, for professional drivers and motorcyclists.

JACOBS SKM

Survey tool – questions to be asked



JACOBS SKM

Survey results – Safe Vehicles

Policy Sector	Response Theme	Count
Safe Vehicles	Additional Technology	22
	Mandatory Technology	13
	Fleet Improvement	11
	Rating Systems	5
	Research	3
	Vehicle Standards	3
	Other	8
	Subtotal	**65**

JACOBS SKM

Survey results – Safe People

Policy Sector	Response Theme	Count
Safe People	Enforcement	24
	Education	22
	Drink and Drug Driving	15
	Distraction and Fatigue	11
	Licencing System	10
	Older Drivers	8
	Research	7
	Driver Training	5
	National/State Strategies	3
	Funding	2
	Incentives	2
	Mode Shift	2
	Organisational Changes	2
	Other	5
	Subtotal	**118**

JACOBS SKM

Survey results – Safe Vehicles

Additional Technology	• Autonomous vehicles and co-operative ITS systems were mentioned as something on the horizon which may lead to significant safety improvements. • Driver assisting technology that could be implemented to improve safety included: as automatic braking, electronic stability control, intelligent speed adaption and GPS speed monitoring, blind spot protection and lane departure detection. Braking systems in motorcycles and heavy vehicles.
Mandatory Technology	• Some of the above technology could be made compulsory to improve safety outcomes (also see fleet improvement below). • Alcohol interlocks.
Fleet Improvement	• Encouraging the exit of older/less safe vehicles. Heavy vehicles especially buses were noted. • Incentives to get people into newer/safer cars. • Increasing safety standard requirements. • Also noted was legislative awareness and standards for second hand vehicle importation safety as well as using high productivity heavy vehicles.
Rating Systems	• Further use of, legislative endorsement of, and funding for the ANCAP rating system. • Better rating systems for used cars.
Other Themes	• Research into various technological enhancements. • Heavy vehicles could be first point of implementation for some technology e.g. vehicle black boxes?

JACOBS SKM

Survey results – Safe Roads and Roadsides

Policy Sector	Response Theme	Count
Safe Roads and Roadside	Roadside Infrastructure	13
	Road Infrastructure	10
	Intersections	10
	Median Infrastructure	10
	Road Design	8
	Audible Lines	6
	Research	6
	Rating Systems	6
	Hazard Separation	5
	Blackspots	5
	Program Evaluation	5
	Cycling Infrastructure	4
	Intelligent Infrastructure	4
	Level Crossings	3
	Organisational Changes	3
	National/State Strategies	3
	Pedestrians	2
	Other	15
	Subtotal	**118**

JACOBS SKM

Survey results – Safe Speeds

Modify Speed Limits	Reduce limits: consider widespread lowering of limits, e.g. 40km/h in urban areas, 50km/h in urban areas. Should lower quality rural roads be 80km/h by default? Lower top speed limits (is a 110km/h appropriate) and maintain maximum speed limits cf. "no speed limit" on roads. Targeted Speed Reductions in cyclist/pedestrian areas, mixed zone areas and zones with mixed use in order to reduce exposure of vulnerable road users. Limits to better align to conditions and environment. This would enhance credibility and compliance. Also consider reducing limit variation along a road, and the number of varieties in use (e.g. 50, 60, 70, 80…).
Enforcement	Many respondents noted that enforcement is still the key to speed management. More point to point speed cameras, red light cameras, speed cameras. Upgrading police capabilities in this area. Setting appropriate speed enforcement tolerance levels with a national approach. Increased use of vehicle impoundment.
Smart Speed Warnings	Variable messaging - reminder messages, speed messages e.g. on freeways, tunnels and even at dangerous rural intersections/curves.
Other Themes	Road design – don't design for speed limit plus 10km/h.

JACOBS SKM

Survey results – Safe Roads and Roadsides

Roadside Infrastructure	Concept of roadside hazard management was a common theme, including hazard separation and hazard removal. Extend clear zones adjacent to roads, extend shoulder sealing (particularly on rural and regional roads). Several responses were in favour of clear zones while others noted that they may not be effective or cost efficient. Provide audible lines on roadsides, edge marking on narrow roads and flexible barriers on roadsides.
Road Infrastructure	More comprehensive treatment of roads and roadsides, not just localised areas but the corridor/network as a whole. Many responses suggested audible lines for median or roadside implementation. Extending delimitation marking for merge lanes, low cost enhancements such as shoulder widening, U-turn bay and breakdown area maintenance. Focus on infrastructure in rural and regional areas. Heavy vehicle rest areas.
Intersections	More roundabouts, more control over right turning movements (i.e. signalised, banned – no filter turns). Focus on worst rated intersections.
Road Design	Look at geometrical design impact on heavy vehicle rollover. Skid resistance to be improved where appropriated, but may not be cost effective to maintain in all areas. Reduce mid-range curves.
Median Infrastructure	Median barriers are effective, expand wire rope barrier use. Some median barrier types are not motorcycle friendly. Barriers, both median and in the shoulders, provide worthwhile benefits. Widen centrelines/median strip, narrow traffic lanes if required. Audible lines in median for distraction and fatigue.
Other Themes	Research on road design encouraging drivers to travel at the appropriate speeds. Rating systems and hierarchies for road network, both in terms of function and safety. Use audits and a risk based approach to treatments. Blackspots – analysis of worst roads and intersections. Improved cycling infrastructure

JACOBS SKM

Survey results – Safe Systems (or Programs)

Policy Sector	Response Theme	Count
Safe Systems	Education	17
	Additional Technology	8
	Organisational Changes	7
	Program Evaluation	5
	Enforcement	5
	Data Collection	4
	National/State Strategies	4
	Developments and Planning	3
	Drink and Drug Driving	3
	Motorcycle Strategy	3
	Research	3
	Road Design	3
	Licencing System	2
	Road Infrastructure	2
	Other	9
	Subtotal	**78**

JACOBS SKM

Survey results – Safe Speeds

Policy Sector	Response Theme	Count
Safe Speeds	Modify Speed Limits	26
	Enforcement	18
	Smart Speed Warnings	5
	Research	3
	Road Design	3
	Other	10
	Subtotal	**65**

JACOBS SKM

Survey results – Safe Systems (or Programs)

Education	Targeted road safety industry education e.g. for local government or police. Increased education systems and programs on key issues such as distraction or to key groups such as school children or cyclists. Community awareness and educational advertising campaigns to affect road safety perceptions in community. Are driver/public education programs effective, or should more competence based training be used?
Additional Technology	Improved police technology for example number plate recognition, provide smartphones/tablets to patrol cards to allow remote access to police systems. Support development of increased vehicle technology and systems (see additional technology in Safe Vehicles above).
Organisational Changes	Establish road safety intelligence organisations, enabling cross pollination and sharing of ideas from industry, police and government bodies. Dedicated body to oversee motorcycle safety. Better harmonisation between states, requiring more active participation in the issue at a federal level. Road safety to be viewed as a public health issue, could it be a component of the health budget?
Program Evaluation	Ensure road safety is evaluated in program funding decisions. Develop an accepted methodology to evaluate programs, this includes economic analysis and focuses on proven counter measures and the worst locations and routes.
Enforcement	Enforcement seen as a key issue, and noted by several responses as important and effective. increased officer commitment to traffic duties.
Other Themes	Data collection for cyclists and pedestrians. Create road trauma national database with links to medical centres and insurance companies. National/State Strategies, continue implementation of current strategies, development. Road safety not reflected well in ministerial responsibility.

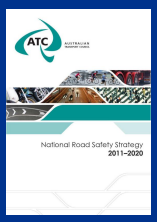
JACOBS SKM

Workshop objectives (from Study Brief):

- *Report back to participants on an initial list of potential measures drawn from consultations, the scope and expected trauma impacts, who would be responsible for implementation, and the expected costs.*
- *Based on feedback from participants, modify the scope of measures, expected impact on the number of road deaths and injuries, what would be needed to implement it, and the implementation and other costs.*
- *For each measure with a significant impact, identify critical factors – e.g. addressing community acceptance or the need for new standards.*
- *Rank measures in terms of expected effectiveness, likely cost, and feasibility.*
- *Seek affirmation/agreement of group and dissenting views, and if needed identify alternate impact/cost scenarios for specific measures.*

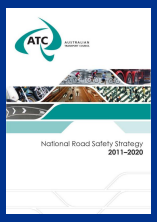
JACOBS SKM

LUNCH



JACOBS SKM
www.jacobsskm.com | worldwide

MORNING TEA



JACOBS SKM
www.jacobsskm.com | worldwide

Detailed group work on selected measures by Cornerstone

- Goal: Flesh out the details, risks, resources.
- Tasks:
  - Provide details on each of the "packages" of initiatives

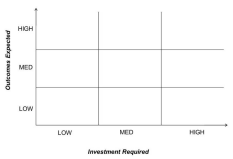
Specific Initiatives	Outcomes / Benefits	Resources Required	Evidence	Risks / Issues	Timing* (H1, H2, H3)

Session Wrap-up: Reporting back

JACOBS SKM

Parallel small group sessions by Cornerstone

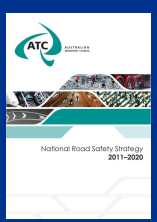
- Session Purpose: Review the list of "key themes" from the report and prioritise.
- Tasks:
  - Review key themes identified
  - ID What's missing if anything Estimate anticipated outcomes
  - Identify resources to implement
  - ID highest ranking within the group
  - Review the initiatives from the report and for the key themes identify specific initiatives of most value for each key theme



Session Wrap-up: Reporting back

JACOBS SKM

AFTERNOON TEA



JACOBS SKM
www.jacobsskm.com | worldwide

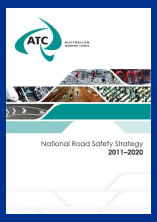
Combined listing, ranking

- Goal: Group to prioritise the initiatives deemed to be of most value to the community
- Task – "Dotmocracy":
  - Group votes with Sticky Dots on the initiative they think has the most value (outcomes for cost)
  - 10 dots for your own group
  - 10 dots for all other groups.
  - Any trends or observations?

Session Wrap-up: Reporting back

JACOBS SKM

Workshop review, way forward

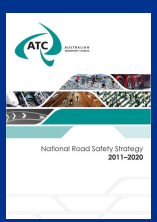


ACTION PLAN AND TIMELINES

JACOBS SKM

www.jacobsskm.com | worldwide

CLOSE



THANK YOU FOR YOUR CONTRIBUTIONS

JACOBS SKM

www.jacobsskm.com | worldwide

Appendix F. Lauchlan McIntosh - Opening Remarks

Lauchlan McIntosh - Opening Remarks

Earlier this month many of you and others met in Melbourne to discuss the Towards Zero Vision of Victorian Road Safety Partnership, consisting of the Transport Accident Commission (TAC), VicRoads, Victoria Police and the Department of Justice. That was followed by a three day symposium involving the FIA Commission for Road Safety, Global NCAP and iRAP. The Prince Michael of Kent International Road Safety awards were made to several organisations including the Victorian Government, and the Prince also officiated at the Global NCAP Awards, one of which was to BHP Billiton and the launch of a new Australian National Road Safety Partnership.

Partnerships in road safety efforts were very much on show. With the heavy Press coverage of the Victorian State Budget and the then upcoming Federal Budget, road safety, or should I say saving lives and injuries associated with road crashes didn't rate much press. As I looked through the pages of commentary on the Federal Budget this week, I didn't find any mention of the benefits anticipated in the forward estimates of the vast sums being spent which will improve road safety. There was a commitment of an additional AU$11.6 billion for an "infrastructure growth package", which is "heavy on roads", to boost spending by 2020. The benefits of that spending, which I do not need to remind you, are, in terms of reducing deaths and injuries, likely to be substantial. iRAP reported last week in Melbourne that crash costs are halved for every star rating level of improvement.

AusRAP analysis indicates that an investment of approximately $4.7 billion would bring 85 per cent of the national highway network to a standard of star or above with only 15 per cent comprising 1 or 2-star rated roads. The improved road conditions are estimated to prevent more than 36,000 fatalities and serious injuries nationally over a 20-year period.

To be fair, there were additional funds for Black Spots and also remedial treatments on the national highway network. But in the Budget papers there was no acknowledgement, no recognition of the potential reduction in health costs, social services costs, improved productivity in workplaces from this huge investment; nothing. You know the numbers; 33,900 killed and seriously injured on our roads every year; at a cost of $27 billion dollars year in, year out to the nation. Philippa Power has outlined the specifics of the Department of Infrastructure very welcome commitment to road safety programs. Four years ago the College, after discussion with the Productivity Commission and the Treasury, suggested to the then Government that the Commission undertake a broad ranging review of the full impacts of road safety across the economy. We made a comprehensive case. The then Federal Government almost agreed but unfortunately changed Ministers responsible for the Productivity Commission and the last Labor Minister responsible, Bill Shorten, rejected the proposal.

We still believe the full costs of road crashes are not recognised nor are the full benefits of reducing trauma reflected in the national accounts. We were delighted with the announcement of the Coalition road safety policy prior to the last election which included the following statement. "The Coalition will task the Bureau of Infrastructure, Transport and Regional Economics (BITRE) with undertaking a review of the full impacts of road trauma. The review will evaluate the benefits and costs associated with the different road safety approaches adopted by various jurisdictions, both domestically and internationally. The review will include an examination of the whole road safety system, including the benefits and costs of measures designed to encourage safer drivers, build safer roads and drive safer cars.

The review will help to inform further policy development and a collaborative approach to reducing road trauma. The review is a necessary precursor to developing more effective and more targeted approaches to improving road safety." We were also pleased that the Coalition recognised the value of collaboration and cooperation with bodies such as the ACRS, the NHIVIRC, the ARC and many others to build scale in research and the development of road safety initiatives. We do need to determine the overall extent of the current economic burden of road trauma, so we have a clear baseline for measuring progress and of course the real benefit to the economy from killing and injuring less from road crashes.

The BITRE study needs to capture the full cost of road trauma across the economy. This has to be more rigorous than any previous study. It can build on them, but it needs to take in world best practice measurement for assessment and comparison. It must identify gaps and highlight weak data. The study needs to specifically

address the ripple effects (or the multiplier effect) across the whole economy and set up a model which will help prioritise and or demonstrate the impacts of reducing trauma in different ways. Costing benefits will of course be problematic as there are many unknowns, but we must use the most up to date data. Many of these may be outside the current "road safety" portfolios...ie post trauma care and rehab, insurance (pay as you drive), safer and connected cars, trucks and buses...all road vehicles, innovative and driverless and assisted driver vehicles, enhanced enforcement , and of course alternative modal transport encompassing new methods. This work will be difficult Without a nationally agreed definition of serious injuries, and an accurate data base for serious injuries, but we must make the best assessment we can.

There is evidence of a rise in the number of serious injuries. In fact BITRE has modelled a scenario of road crash injuries increasing from around 33,000p.a. today to 45,000p.a. in 2030. This number and the impact on the economy seems to have escaped the attention of the Treasurer in framing the recent Budget. We must ensure we look beyond solutions which "blame the driver ". The systems approach must be at the forefront of this analysis. This does not mean ignoring driver behaviour, but it has to be put in the context of a safe system; safe roads, safe vehicles, safe people and safe speeds. Road trauma must be adequately highlighted as an extensive public health issue. We should see greater recognition of the impacts across all portfolios and those of us here today in my view reflects our limited ability to look out for the ripple effects beyond the road safety sector. Most of you and l are what I might call direct participants, part of the regular "road safety establishment".

The detailed survey undertaken prior to the workshop today has a list of well know road safety issues and solutions but I notice in so many areas the costs and benefits are listed as , unknown, not discussed or it all depends. We have to do better than that!. We need to reach out to bring in other partners, to hear how road crash outcomes affect them. Remember the task is to identify costs and benefits. There is a raft of new technologies and personal transport systems already being introduced which will be commonplace in less than a decade. As the President of ITS America Scott Belcher said in Melbourne last week we are at a transformation in transport, led by the communications innovations which are changing driving needs and habits as well as transport itself. Safety management and impacts will be radically different from now on. Where are our business bodies, our chambers of commerce, our unions, the trucking industry, our insurers? They have with a direct interest in reducing the impacts of road trauma.

Where are the Institute for Health and Welfare, the AMA, tourism promoters, our workplace safety authorities, the legal profession, trauma support groups, the CSIRO? They also have a direct interest in contributing to the assessment of What the Coalition called "the full impacts of road trauma" A recent UN Declaration on road safety as part of the Decade of Action included this component "Reiterates its invitation to Governments to take a leading role in implementing the activities of the Decade of Action, While fostering a multi- sectoral collaboration of efforts that includes academia, the private sector, professional associations, non-governmental organisation and civil society including national Red Cross and Red Crescent: Societies, victims' organizations and youth @organizations, and the media".

This BlTRE review can foster such collaboration. It must not be a desk review of known work using just the regular establishment; it has to drill down into the real costs, the real benefits of saving lives and injuries across the economy, not just today, but for the transformation ahead. It can foster new multi-sector collaboration or partnerships. As I noted earlier the new Government has a clear policy to encourage this, and it is up to us to help in making them and also making them work. I believe from what transpired in Melbourne last week a new and emerging interest across a Wider section of interests in the costs and burdens of unnecessary road trauma.

The announcement this week of a Parliamentary Friends of Road Safety with 44 members already also demonstrates a new, wider interest. I hope this will include cross bench members including the new Motorists Enthusiasts Party. We have been calling for political leadership; here it comes; so we will need to learn to work with this new and welcome initiative. Let us use today as a step to begin a new, effective, economic process. Remember, costs and benefits. Perhaps we will be able to demonstrate success with a mention in next year's Federal Budget the real economic benefits of improving road safety results. In the longer term, the lives saved and the injuries avoided will be a greater measure of success. I urge you all to work constructively on this vital project.

Appendix G. Workshop Initiatives Identified

Specific Measure (Initiative)	**1. Improved road infrastructure safety standards**
Outcomes / Benefits	• 5 star safety rated roads over 15 years • All new roads 4+ star • All maintenance raises at least 1 star • No user group less than 3 star
Resources Required	• $4.7bm to get 85% to 3 star or above • Speed limit adjustment • Incentives for demonstration projects
Evidence	AusRAP / AMRAM
Risks and issues	Some demonstration projects may under deliver
No of votes	26

Specific Measure (Initiative)	**3. Research platform**
Outcomes / Benefits	• Rapid translation into policy & practice • Directs investment
Resources Required	Skills / capacity
Evidence	• Generates evidence • Embraces science
Risks and issues	• Continuity in funding • engagement
No of votes	19

Specific Measure (Initiative)	**4. Management capacity**
Outcomes / Benefits	A systematic response to trauma • Strategy • Promotion • Monitoring • Coordinating • Knowledge transfer • Funding
Resources Required	National $ required Leverage of current institutions and organisations Generate external focussed grouping related to leadership forum
Evidence	Lead agency model
Risks and issues	Difficult, need to learn lessons of national road safety council
No of votes	13

Specific Measure (Initiative)	**5. Safer Intersections – new & existing**
Outcomes / Benefits	• Reduced crash energy • Reduced KSI's • Potentially greater efficiency • Some low cost options – ITS solutions
Resources Required	• Organisational will • Understanding from designers / discussion makers • $ Big • Political will
Evidence	• Overseas & local studies • Road authorities • Crash reduction factors • Risks
Risks and issues	• Benefit cost analysis may be low in a lot of cases • Land requirements\ • Challenging reception of designers • Efficiency transfer flow congestion
No of votes	13

Specific Measure (Initiative)	**6. Distraction (BAD) mobile phone etc. usage: enforcement**
Outcomes / Benefits	Reduced crashes
Resources Required	More traffic police on road Improved technology to detect usage (remotely) Prevent device usage Immediate licence/registration suspension – vehicle impounding
Evidence	Like drink-driving, seatbelt use etc. campaigns (+ QLD hooning enforcement)
Risks and issues	Low risk
No of votes	12

Specific Measure (Initiative)	**7. Police enforcement to maximise general deterrence**
Outcomes / Benefits	• High visibility, tolerance, compounding vehicles • Better compliance with speed, drugs, seatbelts • Perceived risk • Links to crime detection / enforcement
Resources Required	• High visibility policing tactics • National operations (ANZPAA), targeted coordination • More shiny things
Evidence	ANZPAA analysis of previous campaigns
Risks and issues	• Public pushback • Police pushback • Change police culture • Police resources directed to other areas / sustainability of current policy models
No of votes	11

Specific Measure (Initiative)	**8. Autonomous braking vehicle based crash avoidance**
Outcomes / Benefits	• Prevention / reduction of incidence and severity
Resources Required	Research, ANCAP, crashes
Evidence	Mercedes (Germany) National Road Safety Strategy (NRSS) 2013
Risks and issues	Varying technologies
No of votes	11

Specific Measure (Initiative)	**9. Leadership**
Outcomes / Benefits	Leadership forum exercising influence common societal vision
Resources Required	$250K p.a. additional to NRSS associate of roads Australia and like
Evidence	• Chirac – political decision – action • TAC - $1b investment 10 years • BHP – global 5* fleet decision
Risks and issues	• Politicians • Agency CEs • Corporate CEs } 3 components needing to coalesce
No of votes	10

Specific Measure (Initiative)	10. Drug driving initiatives
Outcomes / Benefits	• Reduced deaths, injuries • Moving away from research into just prevalence and look at concentrations • Expand drugs we test for based on analysis
Resources Required	• Drug testing expansion costly • Money for improved technology (ultimately have savings in longer term with improved process)
Evidence	• Australian literature indicates 3-35% of fatal and non-fatal traffic crashes • Illicit drugs can now be cheaper than alcohol
Risks and issues	• Enhanced testing capability • Increased research into effects or pharms / synthetic drugs • Research into underlying causes of repeat offending to inform effective treatment responses (e.g. rehab programs) • Public health funding!
No of votes	10

Specific Measure (Initiative)	11. Insurance Incentives
Outcomes / Benefits	• Driving related behaviours • Crash reduction? • Reduced premiums
Resources Required	Low cost
Evidence	• Stephen Greaves (ITLS) • MUARC pilot
Risks and issues	• Younger drivers • Systems revamps • Re-insurance
No of votes	10

Specific Measure (Initiative)	**12. Continuity & Advancement of ANCAP (UCSR)**
Outcomes / Benefits	• Moves pop in to safer cars • Crashes based on projections of star ratings • Reports – feedback - published
Resources Required	• Marketing – Fleet buying policy • Ongoing development of ratings • IS groups x $25 (Used Car Safety Ratings)
Evidence	• Crash data from police • MUARC - reports
Risks and issues	Used car lacks marketing / coordination
No of votes	9

Specific Measure (Initiative)	**13. 60's to 50's minor arterials**
Outcomes / Benefits	10% reduction in both fatals + Serious Injury incidents on minor arterials
Resources Required	• Changing signage / local roads authority • Public education
Evidence	Road Information System done for National Transport Commission
Risks and issues	• Political risk / will (motoring organisations, others) • Enablers (schools, ??, walking / cycling ??)
No of votes	9

Specific Measure (Initiative)	14. Fatigue (education & technology)
Outcomes / Benefits	• More aware of fatigue issues • Safer road users • Safer people • Navigation system – ID rest stops + 2hr alert
Resources Required	• Curriculum & program development • Promotion • Awareness of dangers • Monitor development of fatigue detecting technology • On road strategies (e.g. powernaps, breaks)
Evidence	Centre for accident research & road safety – Queensland (Associate Professor Simon Smith)
Risks and issues	Issue : Funding Education – Low Risk: high benefit! (from awareness activities) Technical – Risk: costly technology (lack of uptake) Technical – Risk: acceptance / implementation, consumer resistance
No of votes	9

Specific Measure (Initiative)	15. Incentives for collaboration
Outcomes / Benefits	Something done that wouldn't be done otherwise
Resources Required	A funder contributes 25% of cost or an agreed collaborative RS initiative
Evidence	CFI (Canada) uses this model for investment in future of Canada
Risks and issues	Who is to be the funder?
No of votes	9

Specific Measure (Initiative)	**16. Roadside infrastructure**
Outcomes / Benefits	Improve investment effectiveness vs % production in KSI's rolling staged approaches, tied to volumes
Resources Required	• Organisational will • Policy adoption • Change to technical design guides • Training
Evidence	• State road authorities, research, (ARRB, MUARC, etc) • Overseas – NZ etc • Crash reduction • Costs – State Authorities
Risks and issues	<u>OF NOT DOING IT</u> • Environmental issues • Maintenance programs (roadside barriers etc) • Redundant in future • Occupational Safety Hazard risk for maintenance of barriers
No of votes	8

Specific Measure (Initiative)	**17. Cop ITS**
Outcomes / Benefits	• Crash avoidance • Reduced emissions • Efficiencies e.g. congestion
Resources Required	
Evidence	• Coop ITS trails • RITA, Intell. Access Prog (Citi)
Risks and issues	• Privacy issues • Liabilities • Ensure safety inclusion
No of votes	6

Specific Measure (Initiative)	18. Urban fringe / rural development speed management and road design
Outcomes / Benefits	• Designing roads for actual use, feeder roads speed management • Preventative / pro-active design / speed management
Resources Required	Assessment process • Signage • Road measures
Evidence	• Lots • Elbert (2009) LAR model
Risks and issues	• Public acceptance • Developers resistance
No of votes	6

Specific Measure (Initiative)	19. Consideration of reducing the BAC limit and associated national awareness campaign
Outcomes / Benefits	• Reduction in drink driving related road trauma • Drivers not having to rely on their own perception of how much alcohol they can consume
Resources Required	Legislative changes, national consistency / approach, marketing / public awareness campaign costs. Announce 3 years in advance.
Evidence	NRSS refers to benefits from reduction in BAC in Sweden – moved to a 0.02 limit and led to 10% reduction in fatal crashes related to drink driving after the change.
Risks and issues	Balance between social values and public safety RE: alcohol use
No of votes	5

Specific Measure (Initiative)	20. End fault-based CTP insurance
Outcomes / Benefits	Better health, lower premiums, fewer lawyers
Resources Required	Political will – F/S collaboration
Evidence	NZ – some US States
Risks and issues	Opposition from Law Council, political opposition will side-track
No of votes	5

Specific Measure (Initiative)	21. Basic first aid training as a condition for obtaining a learner driver permit (licensing, education and response)
Outcomes / Benefits	• Reduced fatalities (up to 28 lives in WA alone per annum) • Reduced injury / permanent disablement • Reduced risk taking behaviour
Resources Required (per initiative)	• Approx. $150,000 per state / territory (development)* • Approx. $15,000 - $30,000 p/a/ (ongoing management)* *estimate only N.b if states / territories collaborated, costs could be reduced
Evidence	• Global road safety partnership (first aid: it saves lives on the road (2003) • British Red Cross. Anyone can save a life: road accidents and first aid (2001) • EU directive 2001/56/EC (requires member countries to ensure applicants for learner driver licenses have basic first aid qualifications • World report on road traffic injury prevention (2004)
Risks and issues	• Lack of uptake / resistance of state / territory transport authorities / departments • Lack of leadership federally • Must be compulsory to ensure uptake (if a condition of licensing, is an incentive for participation)
No of votes	5

Specific Measure (Initiative)	22. Education, Licencing, training and assessment
Outcomes / Benefits	An aware, informed road user – responsibility
Resources Required	Programs, Curriculum amended to incorporate research and incentives. Licensing assessment
Evidence	Offences reduced. Improved road safety statistical outcomes
Risks and issues	Low risk in providing benefit or young and older drivers. Cooperation between educators and licensing
No of votes	4

Specific Measure (Initiative)	25. Framework for local government speed management
Outcomes / Benefits	17% reduction in all crashes (22% for ped) - approx
Resources Required	• Time based variable speed limits (min) $ 300K per section • Considering road signs
Evidence	• MUARC evaluation done (Vic) • Dutch evidence
Risks and issues	• BP funding criteria – risk people rather than accident people • Sells well because it is tie based (targeted to busy times)
No of votes	4

Specific Measure (Initiative)	26. Alcohol / interlocks mandatory
Outcomes / Benefits	*No details provided by participants*
Resources Required	
Evidence	
Risks and issues	
No of votes	3

Specific Measure (Initiative)	27. Mandate black boxes in motor vehicles
Outcomes / Benefits	• More knowledge or crash causes • Lower premiums • Improve enforcement capacity
Resources Required	Political will
Evidence	Black boxes in existence now – evidence will be impressive in a few years
Risks and issues	Too hard basket, as with so many good road safety initiatives
No of votes	2

Specific Measure (Initiative)	23. Raising the minimum age for licensing
Outcomes / Benefits	
Resources Required	
Evidence	Research shows a more mature new drivers is a safer driver
Risks and issues	
No of votes	1

Specific Measure (Initiative)	29. Safety in capital investment - Requiring road safety benefits be identified and delivered as part of the capital investment decision
Outcomes / Benefits	• Would ensure some level of the range of safety treatments are identified and programmed to the constrictions program for all funded project. • Benefit would be measurable safer infrastructure being constructed
Resources Required	Policy works required & political acceptance. Linkage to AusRAP assessment would assist
Evidence	Strong evidence that treatment is effective in areas such as: • Roadside safety treatments • Speed limit adjustment Incentives for demonstration projects
Risks and issues	Some demonstration projects may under deliver
No of votes	1

Specific Measure (Initiative)	2. National registration and licensing system
Outcomes / Benefits	• System costs and effectiveness • compliance
Resources Required	• significant upfront investment • manage immigration over 10 years
Evidence	High capital and operating costs of 8 different regulators
Risks and issues	Learn lessons of National Heavy Vehicle Regulator
No of votes	0