Road Safety and Local Government

SEATS Meeting
19 May 2017

David McTiernan, Team Leader – Road Safety and Traffic Management
Australian Road Research Board (ARRB)

• Est. 1961 - Road pavement research
• Members
  – Federal Government
  – State/Territory road traffic agencies (Australia + NZ)
  – ALGA
• 2017 – Road Transport Research
  – Pavement technology
  – Road safety research
  – Road transport economics
  – Road asset management
  – Data collection – NSV, TSD
  – Practitioner guidance, tools and training
  – National Road Transport Library

ARRB Future Short Version - YouTube
Setting the scene - Summary

Every week:
- 25 deaths
- 700 serious injuries

Every year:
- $32 billion cost

...and rising

Source: Australasian College of Road Safety 2017
Setting the scene…fatalities

### 2016 ytd progress vs. 2015

<table>
<thead>
<tr>
<th>Region</th>
<th>2016 ytd</th>
<th>Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>869</td>
<td>+71</td>
<td>+8.9%</td>
</tr>
<tr>
<td>NSW</td>
<td>286</td>
<td>+37</td>
<td>+14.9%</td>
</tr>
<tr>
<td>Qld</td>
<td>170</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>SA</td>
<td>55</td>
<td>-8</td>
<td>-12.7%</td>
</tr>
<tr>
<td>Tas. (June 2016)</td>
<td>22</td>
<td>+7</td>
<td>+46.7%</td>
</tr>
<tr>
<td>Victoria</td>
<td>213</td>
<td>+33</td>
<td>+18.3%</td>
</tr>
<tr>
<td>WA</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NZ</td>
<td>232</td>
<td>+10</td>
<td>+4.5%</td>
</tr>
</tbody>
</table>

Source: Australasian College of Road Safety 2017
Setting the scene…hospitalisations

Source: Australasian College of Road Safety 2017
Why is road safety important to LG?

- LG road network
  - 82% of Australian roads
  - 24 – 30% of vehicle km travelled
  - 52% of casualty crashes, 40% of fatal crashes
  - 1.5 to 2 times crash risk

- ‘Last mile…’ in Local, State and National productivity
- Largest Council asset
- Community connectivity
- Community impact
Black spot programs

• Reactive approach
  – Treatment of Black Spot sites or road lengths, with a **proven history of crashes**.
  – Project proposals - benefit to cost ratio of at least 2:1.
  – Intersections, mid-block or short road sections - at least 3 casualty crashes over a five-year period.
  – Lengths of road - average 0.2 casualty crashes per kilometre per annum over the length over five years.

• Proactive approach
  – A portion of funding to road safety audit findings - 'accidents waiting to happen'.
iRAP and AusRAP – Network risk assessment
Modern road safety paradigm

- Manage crash energy
- Manage crash risk
- Prevent death and serious injury

Based on Wramborg, 2005
The Safe System Approach

The Safe System approach...
- Heard of...?
- Understanding of...?
- Adoption of...?
- Application of...?

SAFE TRAVEL
- No person should be killed or seriously injured on our roads (Australia)
- A safe road system increasingly free of death and serious injury (New Zealand)

Safe System principles:
- People make mistakes
- People are vulnerable
- Shared responsibility
- All parts of the system need strengthening
Contributions by LG to road safety

- Infrastructure
  - Planning
  - Design
  - Construction and maintenance
  - Primary
  - Supporting

- Community
  - Education and awareness

- Organisation
  - Policy
  - Legislation
  - Enforcement
**Contributions by LG to road safety**

<table>
<thead>
<tr>
<th>Safe System factor</th>
<th>Local government contribution</th>
</tr>
</thead>
</table>
| **Safe speeds**    | Where it is the responsibility of local government to manage speed limits on local roads:  
  - review limits in response to changing land use and traffic  
  - create low speed road environments  
  - initiate local speed reduction campaigns  
  - deploy movable vehicle speed feedback displays to reinforce speed limits  
  - evaluate and communicate benefits of low speed road environments.  
Where responsibility for setting speed limits is outside of the jurisdiction of local government:  
  - act as advocate to the relevant road authority for reduced speed limits. |
| **Safe roads and roadides** |  
  - provide appropriate roads and road lighting to fulfill traffic function  
  - conduct traffic and transport planning to manage infrastructure provision into the future, ensure adequate provision for vulnerable road users and heavy vehicles  
  - conduct road safety audits of new and existing facilities  
  - identify blackspots, problem routes and areas, and develop plans to eliminate them over time  
  - develop asset management plans to maintain safe conditions with regard to road surface, signs and delineation  
  - manage vegetation in the roadside environment  
  - develop pedestrian crossing management plans  
  - establish processes for reporting and acting on road safety hazards  
  - support older road users through attention to lighting, signage and delineation. |
| **Safe vehicles** | Council fleet:  
  - have a safe driving policy in place that covers purchase of vehicles with good safety characteristics, fitness to drive, work and driving hours, and driver training  
  - monitor fleet accident data; align safe driving with other OH&S policies.  
Local residents:  
  - distribute information about infant and child restraints through clinics and health centres  
  - distribute information about the safety benefits of buying cars with higher safety ratings and keeping cars well-maintained  
  - engage the community to take ownership of the problem and finding solutions. |

<table>
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</table>
| **Admittance to the system** | support programs to assist the disadvantaged obtain a full licence  
  - support the parents and mentors of learner drivers and learner drivers through a combination of education and practical experience. |
| **Education and information for road users** | identify road safety issues specific to the community and develop targeted education campaigns  
  - support alcohol, speed, and restraint and helmet use enforcement through media releases and education campaigns in partnership with the community  
  - ensure council staff are aware of road safety issues, blackspot locations and other local casualty crash location patterns  
  - educate the community about proposed road safety works and infrastructure changes. |
| **Understanding crashes and risks** | collate information on road safety hazards  
  - act as advocate for improvements on all roads affecting the community, especially local roads  
  - investigate accident locations in partnership with other stakeholders  
  - support direct action by community organisations to reduce high risk behaviours. |
| **Legislation and enforcement** | support and encourage enforcement activities through media releases and education campaigns  
  - develop enforcement programs using by-laws officers for high risk locations, e.g. parking at schools; coordinate enforcement with education and engineering programs. |
| **Planning** | include road safety requirements in guidelines for developments  
  - develop policies for cycle and pedestrian safety to ensure they will be considered in new developments or changes to land use  
  - use developer contributions to fund road safety projects  
  - include road safety in all council plans  
  - include road safety audit as part of the planning and approval process. |
Technical support for Local Government

Safe System Roads for Local Government

Safe System in the Planning Process

Australasian Pedestrian Selection Tool

Safe System Assessment Framework
Safe System Hierarchy of Control

- Risk management
  - LG familiar systems
- Safe System approach
  - Cover all pillars
- Broadest application in LG
  - All disciplines
  - Community
  - Elected
  - Management
- Usability
  - Field
  - Office
  - Reporting
  - Funding applications
## Risk management control hierarchy

<table>
<thead>
<tr>
<th>Hierarchy of Control level</th>
<th>Austroads (2006a)</th>
<th>ISO 31000:2009</th>
<th>Road safety Hierarchy of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Eliminate</td>
<td>Removing the risk source</td>
<td>Remove the risk</td>
</tr>
<tr>
<td>2</td>
<td>Substitute Isolate Engineer</td>
<td>Avoiding the risk by deciding not to start or continue with the activity that gives rise to the risk</td>
<td>Reduce the risk</td>
</tr>
<tr>
<td>3</td>
<td>Administration</td>
<td>Changing the likelihood</td>
<td>Change road user behaviour</td>
</tr>
<tr>
<td>4</td>
<td>Personal protective equipment</td>
<td>Changing the consequences</td>
<td>Protect the road user</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Taking or increasing the risk in order to pursue an opportunity</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sharing the risk with another party or parties (including contracts and risk financing)</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retaining the risk by informed decision</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
# Risk management control - examples

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Risk control method</th>
<th>Effect of control</th>
<th>Example(s)</th>
</tr>
</thead>
</table>
| 1.        | Remove the risk     | Remove the hazard from the road and traffic environment | - Remove a tree or utility pole from the roadside area  
- Grade separated pedestrian crossings  
- Fully separated cycleway. |
| 2.        | Reduce the risk     | Replace one hazard with another, less severe and more controllable, hazard  
Physically separate road users from the hazard to minimise road user interaction with it, or modify the design of the road infrastructure to reduce road user interaction with the hazard and/or assist road user control | - Road safety barrier  
- Roundabout (replacing priority controlled cross or T-intersection)  
- Wide median or verge area with or without a safety barrier  
- Traffic signal control pedestrian crossings  
- Off-road cycleway  
- Increase lane and sealed shoulder width  
- Improve delineation of the carriageway  
- Provide pedestrian crossing with refuge island  
- On-road cycleway and shared zones  
- Improve Australian New Car Assessment Program (ANCAP) rating of vehicle fleet. |
| 3.        | Change road user behaviour | Provide warning/advice to seek appropriate behaviour | - Curve warning/speed advisory signs  
- Reduced speed limit and school zone alert signing  
- Vehicle safety features such as speed alerts, lane departure warning, blind-spot monitoring, etc.  
- Enforcement, education and training. |
| 4.        | Protect the road user | Use equipment to protect road users from death/injury | - Seat belts, anti-lock braking system (ABS), electronic stability control (ESC), automatic emergency braking (AEB)  
- Pedestrian airbags and bonnet designs  
- Replace a rigid lighting pole with a frangible pole. |
# Safe System Hierarchy of Control - Proforma

**Site description (provide an outline of the current site configuration, key features of construction, traffic management, etc.)**

- Provide an outline of the road and traffic arrangements at the site, covering the geometry, speed limit, signing, delineation, condition, roadside, etc.
- Describe road user interactions and limitations of infrastructure to provide for all road users.
- If available, summarise the crash history of the site (three and five years, FSI outcomes, top three crash types, dominant road/weather conditions, etc.).

**Crash risk identification (briefly summarise the crash experience and/or type of road safety issue/s at the site)**

Outline the road safety concerns that are present at the site; cross-reference crash data, road safety audit issues, observations of contributing behaviour from assessors, and how issues under the Safe System pillars might contribute to crashes or safety concerns.

**Safe System pillar analysis (identify hazards and road safety issues grouped under the relevant pillar)**

<table>
<thead>
<tr>
<th>Safe roads:</th>
<th>Safe people:</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is it about the road that contributes to the safety concerns/problem?</td>
<td>What is it about road users and their behaviour that contributes to the safety concerns/problem?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safe speeds:</th>
<th>Safe vehicles:</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is it about the road speed environment that contributes to the safety concerns/problem and FSI severity of the crash?</td>
<td>What is it about the road/vehicle interaction that contributes to the safety concerns/problem?</td>
</tr>
</tbody>
</table>

**Site photographs (supplement the site description and problem definition using selected site photographs)**

- Provide a map or aerial image of the site/route.
- Provide images that highlight safety concerns, illustrate crash locations.
# Safe System Hierarchy of Control - Proforma

<table>
<thead>
<tr>
<th>Crash type</th>
<th>Cause/hazard</th>
<th>Control method</th>
<th>Safe System pillars</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remove the risk</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describe the particular type/s of road crashes under consideration.</td>
<td>Describe the contributing factors to the cause of the crash (or potential crash), or the type of hazard under consideration.</td>
<td>What mitigation measures could be adopted to remove the hazard, or the likelihood of the particular type of crash resulting in a fatal/serious injury outcome?</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Reduce the risk</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describe the particular type/s of road crashes under consideration.</td>
<td>Describe the contributing factors to the cause of the crash (or potential crash), or the type of hazard under consideration.</td>
<td>What range of control measures could be adopted to isolate/separate road users from the hazard, or the likelihood of the particular type of crash resulting in a fatal/serious injury outcome?</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td><strong>Change road user behaviour</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describe the particular type/s of road crashes under consideration.</td>
<td>Describe the contributing factors to the cause of crashes (or potential crashes), or the type of hazard under consideration.</td>
<td>What type of control measures could be adopted to inform and warn road users about the hazard, or the likelihood of the particular crash type fatal/serious injury outcome?</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td><strong>Protect the road user</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describe the particular type/s of road crashes under consideration.</td>
<td>Description of the type of hazard or particular crash type under consideration.</td>
<td>What type of measures could be adopted to protect road users from the hazard, or the likelihood of the particular type of crash resulting in a fatal/serious injury outcome?</td>
<td></td>
</tr>
</tbody>
</table>
Applications of the framework

• Site/route evaluation
• Form part of reports
  – Local Traffic Committee
  – Planning reports and DA assessments
  – Project design team
  – Council management/elected officials/community
  – Council insurers and legal representatives
• Brainstorming issues
  – Documenting site/issue reviews and potential actions
• Communication with government agencies, local community groups and residents
Conclusion

The purpose:
• A strategic tool to prompt Safe System thinking
• A framework to communicate Safe System potentials

The outcome:
• Systematically identify site/route problems
• Relate hazards and potential controls
• Highlight Safe System contributors
• High level options assessment
Thank you

David McTiernan
Team Leader – Road Safety and Traffic Management
ARRB Group NSW/ACT
p: 02 9282 4414
e: david.mctiernan@arrb.com.au