Today’s moderator

Eliz Esteban
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About Austroads

The peak organisation of Australasian road transport and traffic agencies

- Roads and Maritime Services New South Wales
- Roads Corporation Victoria
- Department of Transport and Main Roads Queensland
- Main Roads Western Australia
- Department of Planning, Transport and Infrastructure South Australia
- Department of State Growth Tasmania
- Department of Transport Northern Territory
- Transport Canberra and City Services Directorate, Australian Capital Territory
- Commonwealth Department of Infrastructure and Regional Development
- Australian Local Government Association
- New Zealand Transport Agency
Our structure
Housekeeping

Presentation = 35 mins
Question time = 15 mins

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Let us know the slide number your question relates to
Austroads report

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Today’s presenters

**Kenn Beer**  
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Australian Road Research Board (ARRB)  
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# Agenda

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Introduction and Project Background
Kenn Beer
Introduction and background

- Urban arterials account for a high number of serious injuries
- Routes with mixed use function of high concern
- Competing demands in these locations
- A need to identify Safe System solutions
- Austroads funded study to address this issue

See Section 1 and 3
Introduction and background

A reminder on the Safe System approach....

Key Principles:
• Aiming for no death or serious injury
• People make mistakes
• Shared responsibility
• People are vulnerable
Project Approach
Dr Blair Turner
Introduction to team

Project Team

Austroads Project Manager
• Kenn Beer

Project Leader, ARRB
• Blair Turner

ARRB Team Members
• Paul Hillier
• Lisa Steinmetz
• Phuong Chau

Team Members
• Rob Partridge, Shane Turner - Stantec
• Jeremy Woolley, Chris Stokes - CASR
• Jennifer Oxley, Karen Stephan - MUARC
• Bruce Corben - Corben Consulting

Review Team

Austroads Project Steering Group

Stakeholders-Road and Traffic Authorities

Austroads Road Safety Task Force

Austroads Road Design Task Force

Austroads Board
The Project Team

Austroads Project Steering Group

- Peter Ellis
  RMS NSW
- John Matta
  VicRoads
- Alex Duerden
  DPTI - SA
- David Moyses
  MR WA
- Neil Edgar
  TMR QLD
- Peter Ellis
  RMS NSW
- Geoffrey Davidson
  TCCS ACT
- Richard Fanning
  VicRoads
Identify case study locations
Identify issues through information gathering and workshops
Develop indicative solutions and estimate safety benefits
Discuss and refine solutions through workshops
Develop guidance highlighting options

See Section 3
Report Overview
Kenn Beer
Report overview and using the report

5. Information on Individual Safety Treatments

5.1 Raised Intersection
5.2 Roundabouts
5.3 Lower Speed Limits
5.4 Lane Narrowing
5.5 Road Diet (Median Turning Lanes)
5.6 Humps/Platforms
5.7 Wombat Crossing (Raised Pedestrian Crossing)
5.8 Gateway Treatments
5.1 Raised Intersections

Effectiveness
- 40% reduction in casualty crashes (CMF 0.60).
- 3 km/h reduction in mean speed.
- 8 km/h reduction in 85th percentile speed.

Cost: Medium to high
Treatment life: 20+ years

Description
- Raised intersections (also known as platform intersections, raised sections or plateaus) are a speed management device typically with the aim of reducing the speed of vehicles to 50 km/h or less. The entire intersection can be raised, with the pavement surface sometimes flush with the adjoining footpath. Alternatively, raised sections can be placed in advance of the intersection (sometimes referred to as raised step bars) in order to achieve a similar effect. Raised intersections can be painted or paved in a manner such that they serve to further increase driver awareness of the intersection.

Road user effect/s (delays, congestion, consistency of travel time)
- "Downgrading" of functionality of road - e.g. urban arterial potentially becomes a lower road.
- Inconvenience and delay to buses and emergency vehicles, although this can be addressed through appropriate consultation and design.
- Increased noise levels.
- Pedestrians confusing ramp markings for crossing facilities.

Applicability
- Opposed ramps are known to increase pedestrian access; however, raised ramps may need to be removed.

Implementation issues
- Increased ramp gradients may give rise to a greater level of speed reduction.
- Approaches to raised ramp gradients can be made more pedestrian friendly, but this may result in slower speeds for other vehicles.
- Need to consider the impact on drainage.
- Require appropriate delineation.
- Traffic volume, composition and geometry should be taken into consideration when determining the suitability of this treatment.

Key references and sources
- Gordon, G. 2008. "Culley Road, mixed priority route road safety demonstration project, WSP Development and Transportation, Birmingham, UK."
- Gordon, G. 2008. "Firth Road, Borough of Southwark, mixed priority route demonstration project, WSP Development and Transportation, Birmingham, UK."
- Gordon, G. 2008. "St Peter's Street, mixed priority route demonstration project, WSP Development and Transportation, Birmingham, UK."
- Gordon, G. 2008. "Engineerd Avenue, Kingston Upon Hill City Council, mixed priority route demonstration project, WSP Development and Transportation, Birmingham, UK."
### Report overview and using the report

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Appendix A: Grey Street, Hamilton
Appendix B: Glen Huntly Road, Melbourne
Appendix C: Unley Road, Adelaide
Appendix D: Bondi Road, Sydney
Appendix E: Melrose Drive, Canberra
Appendix F: York Street, Launceston
Appendix G: Function Road Classification and Movement and Place
Appendix H: Safe System Assessment Framework
Concept designs are for illustration purposes only. Designs do not necessarily reflect views of relevant road agencies.
Safe System Assessment Framework

Key Outcomes
Dr Blair Turner
Key outcomes

1. Recommended design approach
2. Functional classification/
   Movement and Place
3. Packages of treatments
4. Speed
5. Processes for risk assessment
6. Safety benefits of solutions and
   residual risk

See Section 4 and 6
**Recommended design approach**

See Section 4

### Network Planning
- Consult with stakeholders
- Use Movement and Place framework (or similar) to consider both movement and place on route (Section 6.1 and Appendix G)
- Reach common agreement on these priorities

### Identify Priority Routes
- Assess existing sources of data including crash data and proactive sources (Section 6.2) to identify high risk routes
- Analyse sources of data to identify key safety and other issues

### Select Safety Interventions
- Select appropriate safety interventions in light of movement and place priorities (Section 5)

### Design
- Produce concept designs and consult with stakeholders to get buy-in to Safe System objectives and solutions
- Assess likely safety benefits and other impacts
- Produce detailed designs working closely with stakeholders
- Refer back to Safe System objectives and recheck safety benefits/impacts

### Construct
- Construct designs

### Monitor and Evaluate
- Monitor project to assess whether desired impacts are realised
- Evaluate outcomes
- Share knowledge
Functional classification
Movement and Place

- Common understanding and agreement on intended use of routes within the broader urban context
- Identify different road user groups
- Consultation and agreement from stakeholder
- Movement and Place framework
- Impact on traffic operations

Download Austroads Guide to Traffic Management Part 5

Source: Austroads (2016a).
Packages of treatments

- Route/network perspective vs treating isolated sites
  → consistent approach
- Greater benefits likely when compatible combinations are used

### Table 4.1: Packages of treatment options for each route

<table>
<thead>
<tr>
<th>Route</th>
<th>Speed environment</th>
<th>Gateway</th>
<th>Intersection and/or midblock platform</th>
<th>Raised pedestrian crossing</th>
<th>Roundabout</th>
<th>Narrowing</th>
<th>Colour or texture surface</th>
<th>Cycle path (on or off road)</th>
<th>Access management</th>
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<tbody>
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Speed

• Safe System speeds required
• For pedestrians (Corben, D'Elia and Healy 2006):
  40 vs 50 km/h = 75% reduction in fatal risk
  30 vs 50 km/h = 95% reduction
• Higher speeds = need for better vulnerable road user facilities
• Infrastructure to support lower speed environments
Processes for risk assessment

• Importance and limitations of crash data
  - e.g. change in traffic use and roadside development

• Other risk assessment tools
  - Safe System Assessment Framework: potential fatal and serious injury risks
Safety benefits of solutions and residual risk

- Risk reduction around 40 – 70% maximum
- Substantial residual risk
- Addressing residual risk:
  - more substantive interventions
  - multiple pillar response required – vehicles / communications, education, publicity and enforcement / post crash care

Table 6.1: Expected fatal and serious injury risk reduction

<table>
<thead>
<tr>
<th>Route</th>
<th>Location</th>
<th>Expected FSI risk reduction – all road users</th>
<th>Expected FSI risk reduction – pedestrians and cyclists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey Street</td>
<td>Hamilton, New Zealand</td>
<td>55%</td>
<td>75%</td>
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<tr>
<td>Glen Huntly Road</td>
<td>Melbourne, Victoria</td>
<td>65%</td>
<td>55%</td>
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<tr>
<td>Unley Road</td>
<td>Adelaide, South Australia</td>
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<td>50%</td>
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<tr>
<td>Bondi Road</td>
<td>Sydney, New South Wales</td>
<td>40%</td>
<td>35%</td>
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<tr>
<td>Melrose Drive</td>
<td>Canberra, ACT</td>
<td>40%</td>
<td>35%</td>
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<tr>
<td>York Street</td>
<td>Launceston, Tasmania</td>
<td>55%</td>
<td>50%</td>
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Please type your questions here

Let us know the slide number your question relates to
### Safety solutions

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Raised intersections

Effectiveness

- 40% crash reduction
- 8 km/h reduction in 85th percentile speed

Source: VicRoads 2017, Raised safety platforms – Road Design Note 03-07
Roundabouts

Effectiveness

• 75% crash reduction
• 10 km/h reduction in 85th percentile speed

See Section 5.2
Speed limits

Effectiveness

- 25% crash reduction
- 6 km/h reduction in 85\textsuperscript{th} percentile speeds

See Section 5.3
Lane narrowing

Effectiveness

• 30% crash reduction
• 7 km/h reduction in 85th percentile speed

See Section 5.4
Road diets

Effectiveness

• 35% crash reduction
• 4 km/h reduction in 85th percentile speed

See Section 5.5
Humps/platforms

Effectiveness

• 40% crash reduction
• Up to 25 km/h 85\textsuperscript{th} percentile speed reduction
Raised pedestrian crossings

Effectiveness

• 40% crash reduction
• 9 km/h 85th percentile speed reduction
Gateway treatments

Effectiveness

• 25% crash reduction (rural)

• Up to 25 km/h reduction in 85th percentile speed (rural)

See Section 5.7
Conclusions
Kenn Beer
Conclusions

- High crash risk on mixed use arterial roads
- New Austroads document produced on effective solutions
- Movement and place key to making progress
- Speed management supported by appropriate infrastructure
- Packages of treatments
- All Safe System elements required to eliminate risk
Questions?

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## Upcoming Austroads webinars

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<td>13 February</td>
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<td>National Performance-based Asphalt Specification Framework</td>
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<tr>
<td>Pavement Design: Guide to Pavement Technology Parts 2 and 4C</td>
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Thank you for participating