



**AusRAP**  
Australian Road Assessment Program



**Victorian Parliamentary Road Safety Committee**

**Mike Harris, Chief Executive**

**Australian Automobile Association, 17 March 2010**

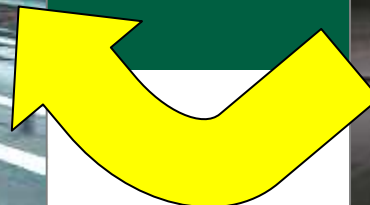
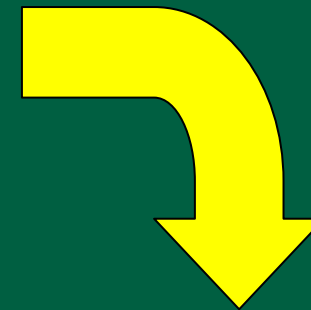
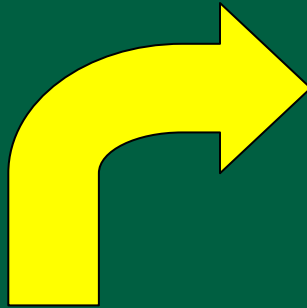
# Overview

1. Background
2. Risk maps
3. Star ratings
4. Research
5. RACQ trial
6. Media and presentations
7. Where to from here?
8. Funding



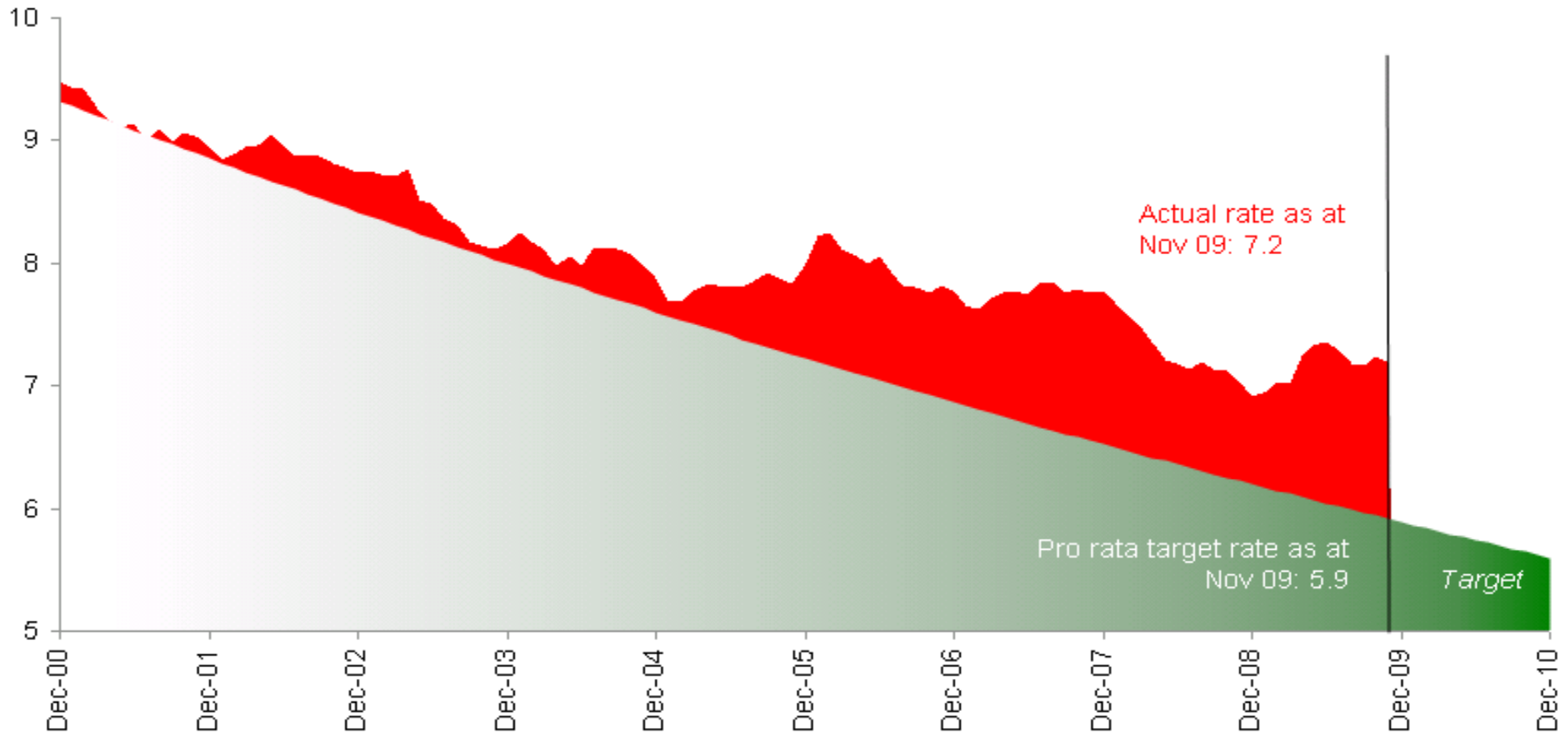
# A safe system:

*Safer drivers in safer cars on safer roads*



# How safe are our roads?

Road Death Rate Against National Road Safety Strategy Target  
(Deaths per 100,000 population)



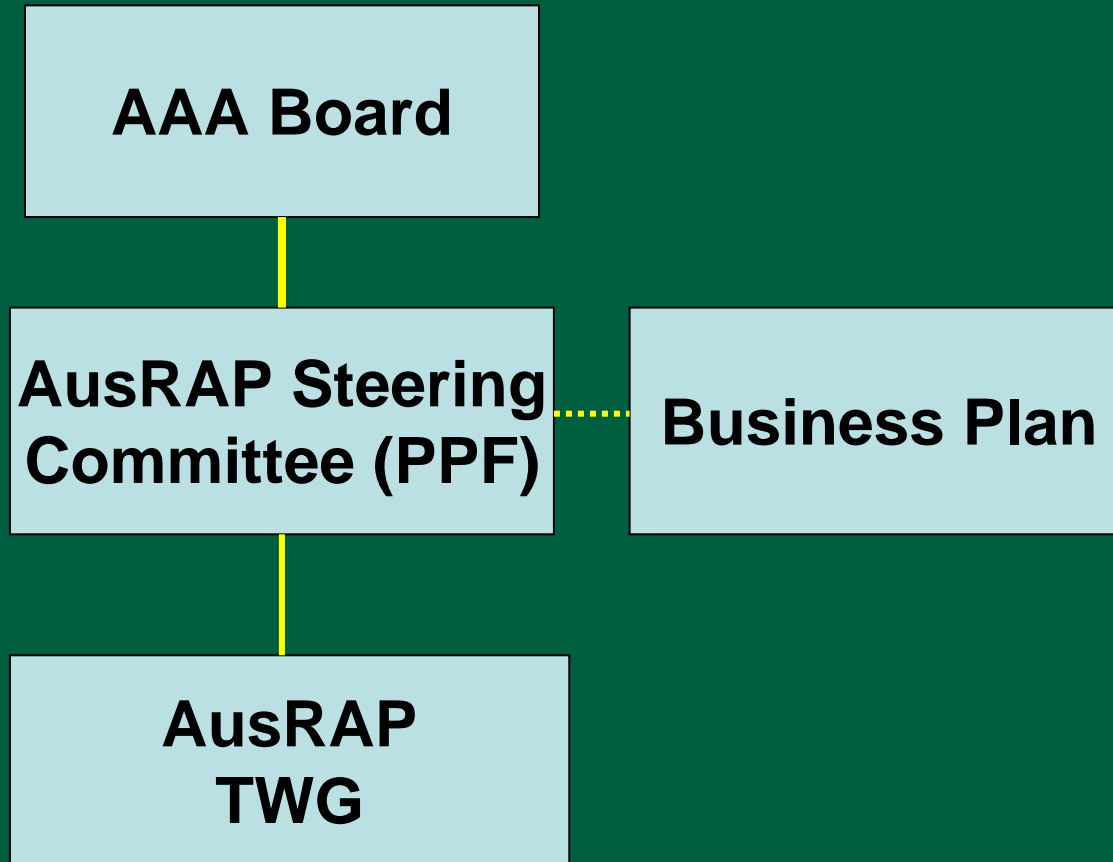
Source: AAA analysis of Australian Transport Safety Bureau and Australia Bureau of Statistics data



AAA  
AUSTRALIAN  
ASSOCIATION



# AusRAP Structure



FOR THE  
BY THE  
ASSOCIATION





# iRAP



ROAD & TRANSPORT BUILDERS ASSOCIATION



# iRAP

- Mike Harris: member of Board
- Peter Daly (RACV): member of Global Technical Committee
- \$50K offered as seed funding
- Consultation paper on membership



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# iRAP

- Methodology builds on AusRAP
  - car occupants, motorcyclists, cyclists and pedestrians
  - countermeasures
  - urban areas





# Two types of risk maps

- **Collective risk maps** show the total number of casualty crashes over a given length
- **Individual risk maps** show casualty crash rates per vehicle kilometre travelled. This is the risk rate for individual drivers



# Collective Risk Ratings, Australia, 2000-2004

Average annual casualty crashes per km



Risk Rating	Percentage
Low	39%
Low-medium	26%
Medium	11%
Medium-high	11%
High	12%



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# How does AusRAP star-rate roads?

- Star-ratings measure the safety that is *built-in* to the road
- They enable sections of road that are likely to be risky to be identified before a crash occurs
  - In NZ in 2004, 54% of fatal crashes occurred where there had been no other injury crashes in the previous 4 years
- Measures *likelihood* and *severity*
- Method developed with ARRB Consulting



# How is the data collected?



Point #	Description	Change Int.
0	Start	0.000
1	Start Divided Cusp	0.000
2	Rosebery Rd	6.235
3	1111 St Anthonys/Convent Rd	5.506
4	Hughes Rd	2.118
5	King St	2.962
6	2312 Hughes Way	2.895
7	Castle St	4.500
8	Marion Rd	4.174
9	Home Rd	6.029
10	Stables Rd	1.642
11	Edgar Rd	12.205
12	End Divided Cusp	12.636
13	Stop	12.625



ROADS  
BY  
ROBUST  
TECHNOLOGY



# Road Protection Score (RPS)

- Star-ratings are based on a RPS
- Crash risk 'score' can be assigned to each of the road's design elements
- Eg: crash risk on road with narrow lanes (<2.8m) 50% higher than wide lanes (3.6m)
- RPS combines these scores to form a star-rating
- AAA Board decision: <4 star unacceptable for national network





# What elements are inspected?

- For run-off road and head-on crashes:
  - divided or undivided
  - lane width
  - sealed shoulder width
  - alignment
  - terrain
  - line marking
  - roadsides
  - traffic speeds
  - overtaking provision



ROADS  
AND  
TRAFFIC  
AUTHORITY





# Bruce Highway, QLD



Severe roadside

Narrow  
shoulders

Bad overtaking

Curves

Undivided

Great Eastern Hwy, WA



Straight

Moderate roadside

Moderate shoulders

Good overtaking

Good lines

Undivided



# Pacific Hwy, NSW



Straight

Severe roadside

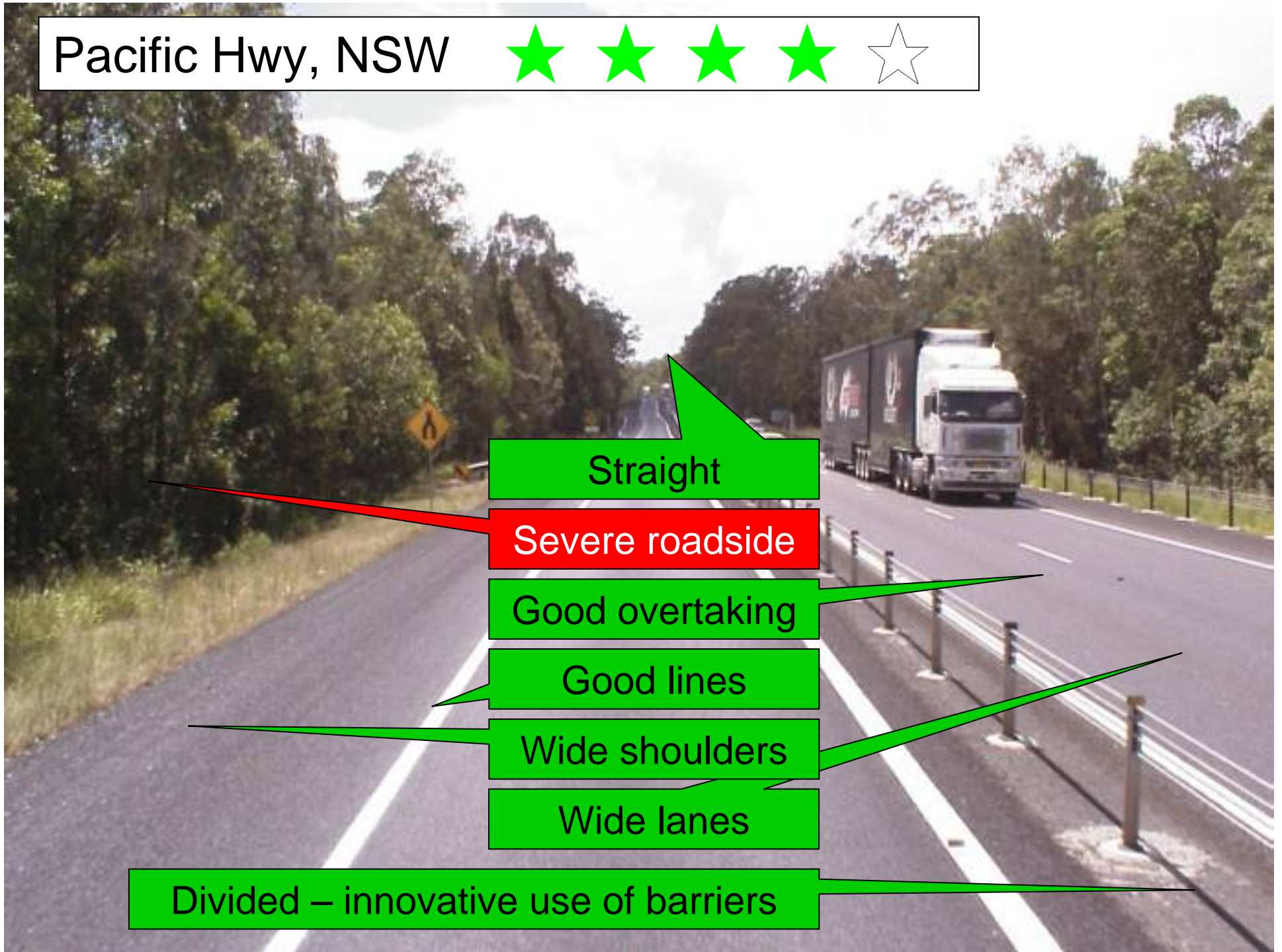
Good overtaking

Good lines

Wide shoulders

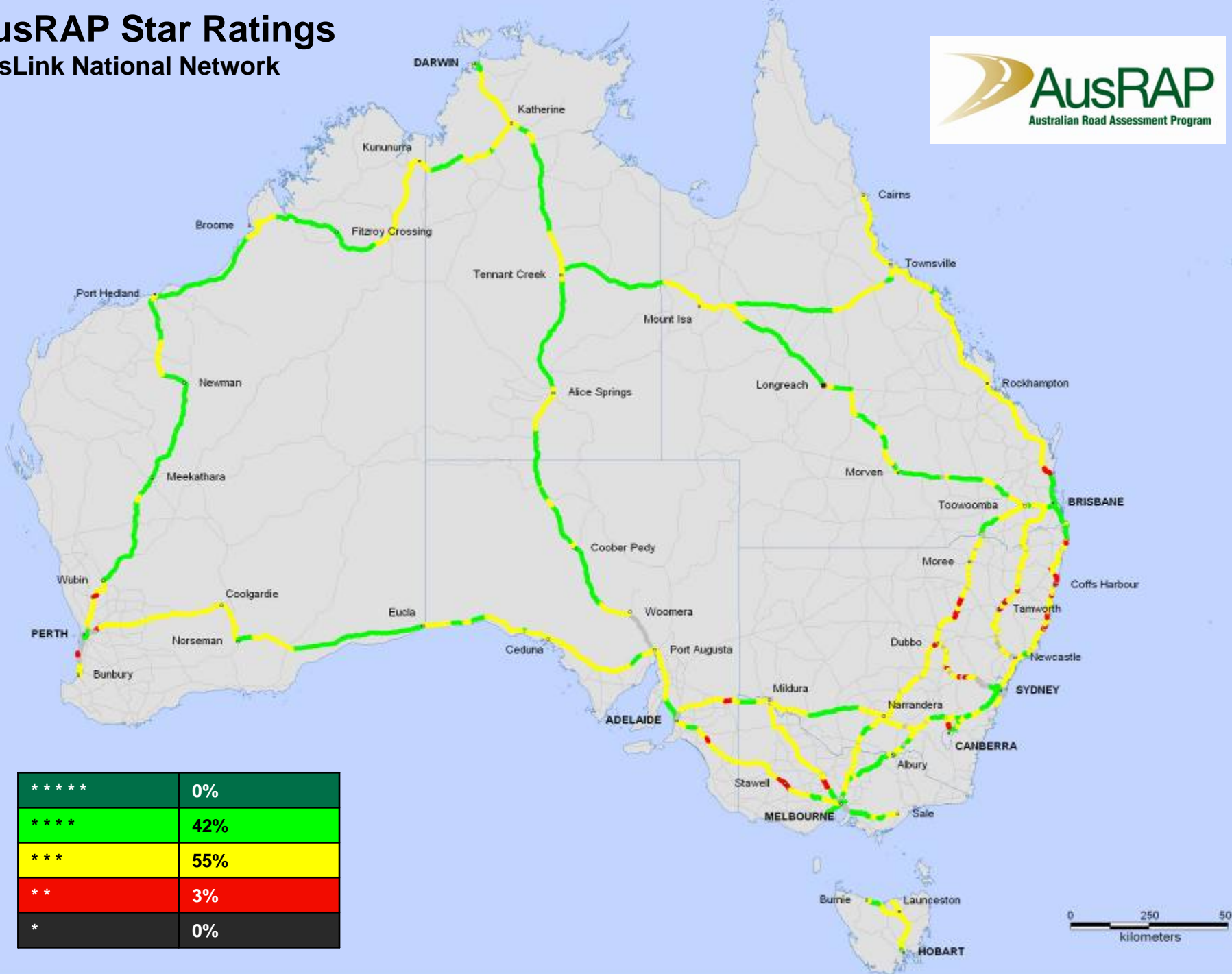
Wide lanes

Divided – innovative use of barriers

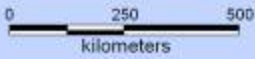


# AusRAP Star Ratings

## AusLink National Network



*****	0%
****	42%
***	55%
**	3%
*	0%



**Table 1** Snapshot of the AusLink National Network

State	Length (km)	++	+++	****	Divided	Good alignment	Safe roadside	Intersections
NSW	4637	8%	68%	24%	43%	96%	22%	1 every 3km
VIC	2303	4%	52%	44%	58%	95%	31%	1 every 3km
QLD	5206	1%	59%	40%	13%	99%	63%	1 every 4km
SA	2721	2%	63%	35%	14%	99%	51%	1 every 4km
WA	4874	3%	42%	55%	4%	91%	63%	1 every 7km
TAS	473	0%	75%	25%	37%	100%	43%	1 every 3km
NT	2738	0%	37%	63%	3%	100%	63%	1 every 9km
ACT	17	0%	16%	84%	100%	12%	44%	1 every 2km
<b>Total</b>	<b>22969</b>	<b>3%</b>	<b>55%</b>	<b>42%</b>	<b>21%</b>	<b>96%</b>	<b>50%</b>	<b>1 every 4 km</b>

Source: AAA research

More detail can be found at [www.ausrap.org](http://www.ausrap.org)





# Star Ratings



HOME | FAQs | Links

You are logged in.

Log out

#### Data Management

- o State List
- o Import Data
- o Adjust Bandings

#### Reports

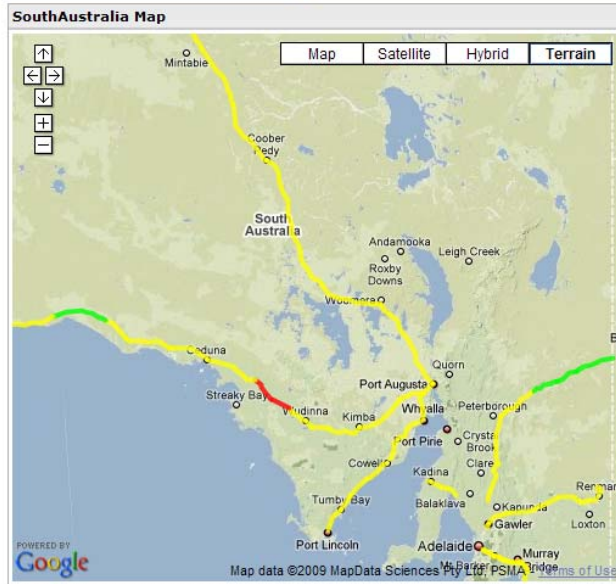
- o Star Rating
- o Detailed Road Condition
- o Snapshot of Safety Features
- o Snapshot of Safety Features by Sections
- o Risk Worms
- o Data Downloads

#### Security/ Admin

- o Users Admin
- o Organisations
- o Adjust Content

### AusRAP SouthAustralia Star Rating Map

Select a road... | Select sections...



SouthAustralia Fast Facts	
Population	2,000,000
Land area	1230000.00 0
Fatalities per year	100.00
Surveyed Length	3282km

Star Ratings		
★★★★★	0 km	0%
★★★★	241.3km	7.35%
★★★	2,962.5km	90.28%
★★	77.79km	2.37%
★	0 km	0%

Speed Environment		
60 km/h	0 km	0 km
80 km/h	0 km	0%
100 km/h	3,281.59km	100%

Terrain		
Flat	2,786.27km	84.91%
Undulating / Rolling	469.33km	14.3%
Mountainous	25.99km	.79%

Road Section Type

Delineation

## Features:

- Linked to Google Earth
- Zoom-in and out capabilities
- 4 view options
  - terrain
  - hybrid
  - satellite
  - map





# Star Ratings – Query capabilities

**AusRAP SouthAustralia Star Rating Map**

Select a road... | Select sections...

**SouthAustralia Map**

Map | Satellite | Hybrid | Terrain

**Eyre Hwy - 4 stars**  
from chainage 663.96km to 758.47km

- \* 100% Flat (Terrain)
- \* 100% Good (Delineation)
- \* 100% 0 - 1.2 m (Sealed shoulder)
- \* 100% Undivided major road (Road section type)
- \* 97% 2.8 - 3.2 m (Lane width)

**SouthAustralia Fast Facts**

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Land area	1230000.00 0
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Surveyed Length	3282km

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**Road Section Type**

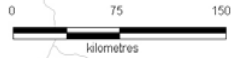
**Delineation**

Click on any star rated section to display main safety features

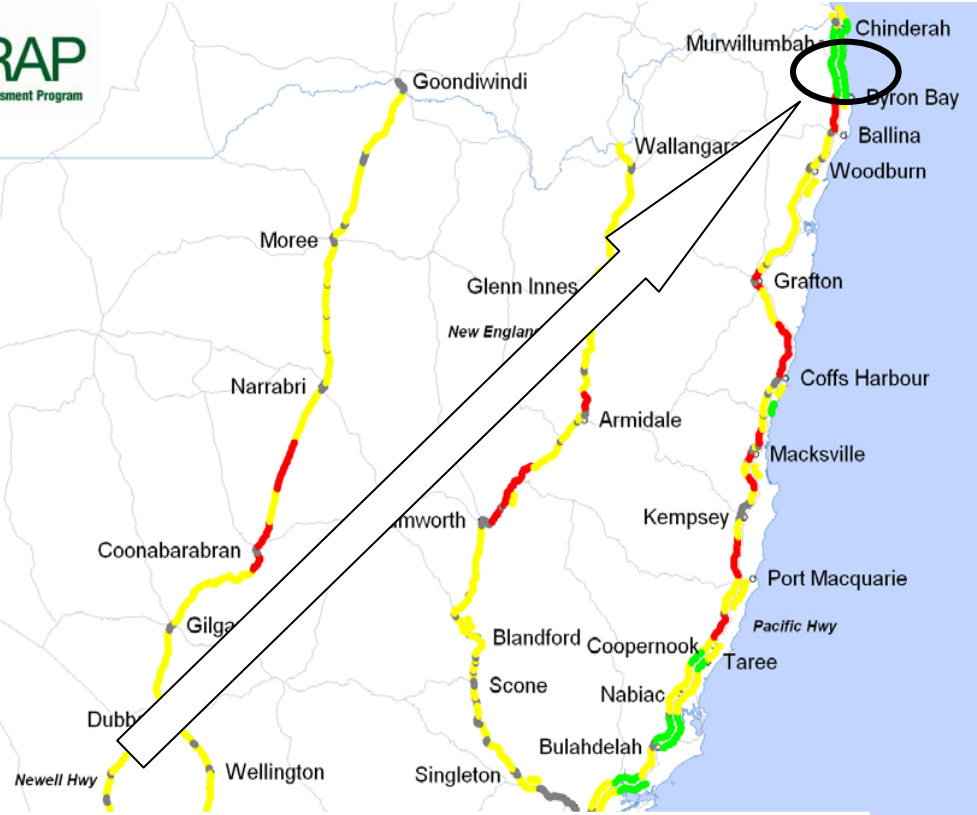


# AusRAP Star Ratings

## AusLink National Network in NSW



*****	0%
****	24%
***	68%
**	8%
*	0%



Before ★ ★ ☆ ☆ ☆

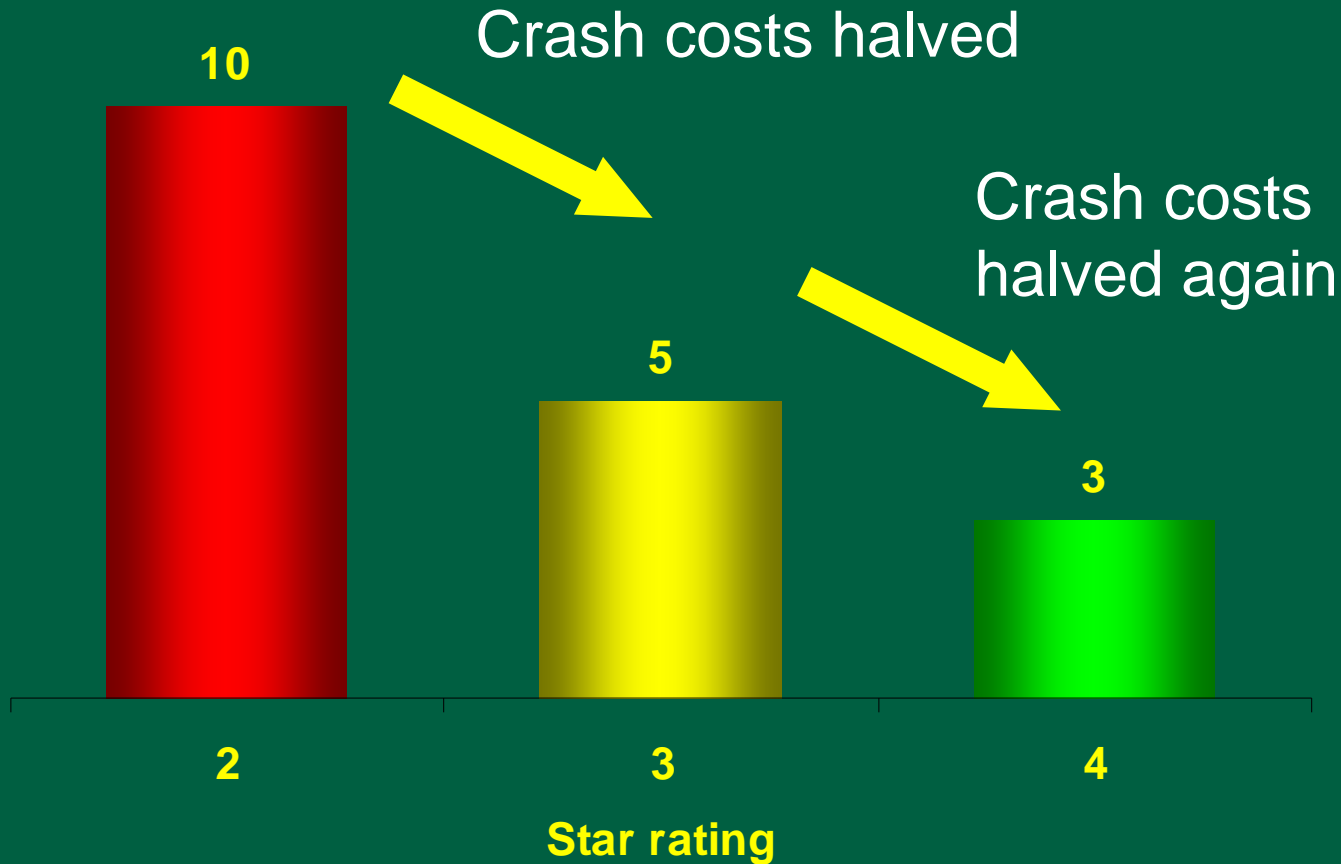
After ★ ★ ★ ★ ☆



Albury

# Crash costs by star rating

(cents per kilometre travelled)



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# Lifting the Network to 4 stars

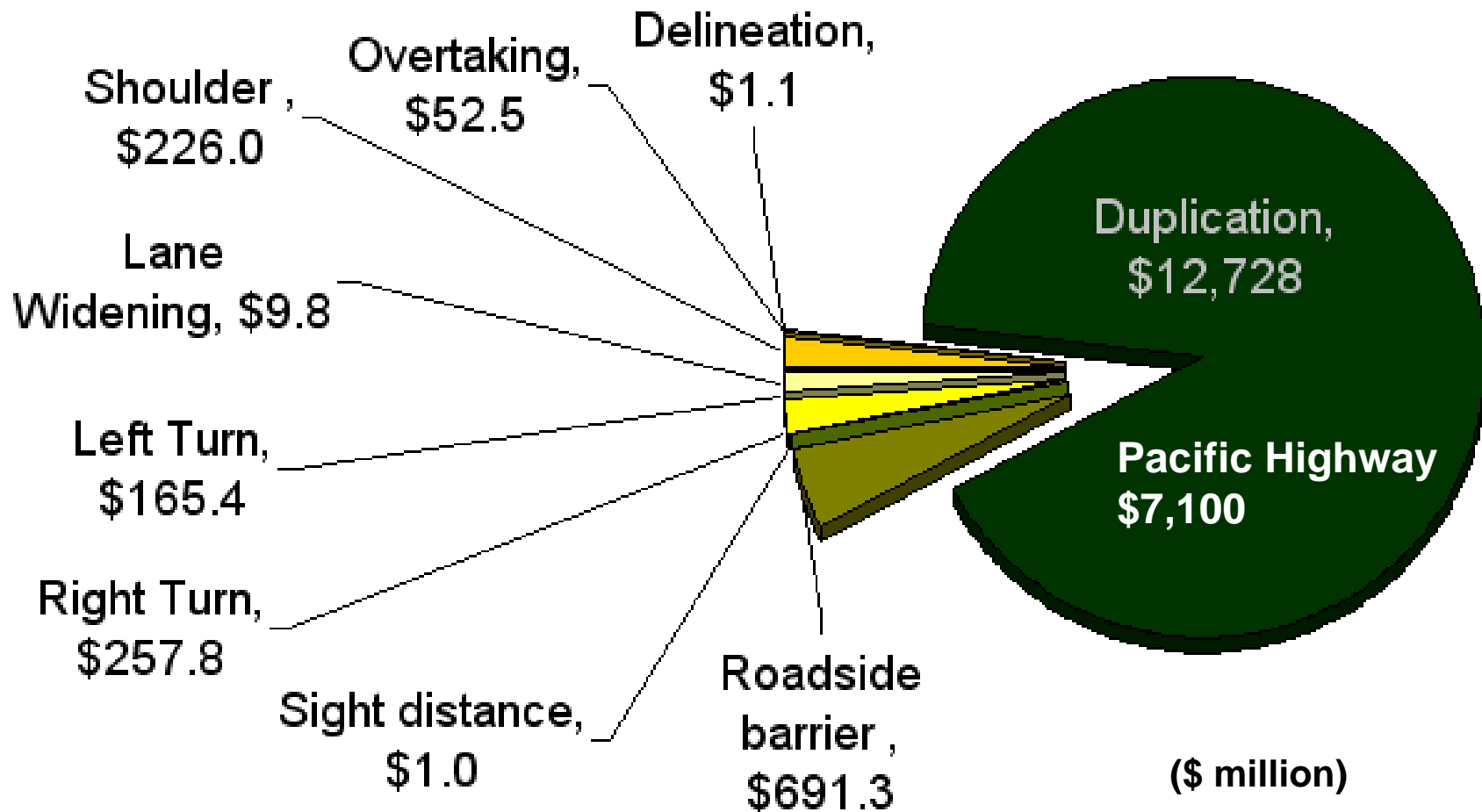
- Research question:

*What is the least-cost way of lifting a significant proportion of the national network to 4 stars?*



# Preliminary Results for NSW

- Total investment: \$14 billion (no time period set)

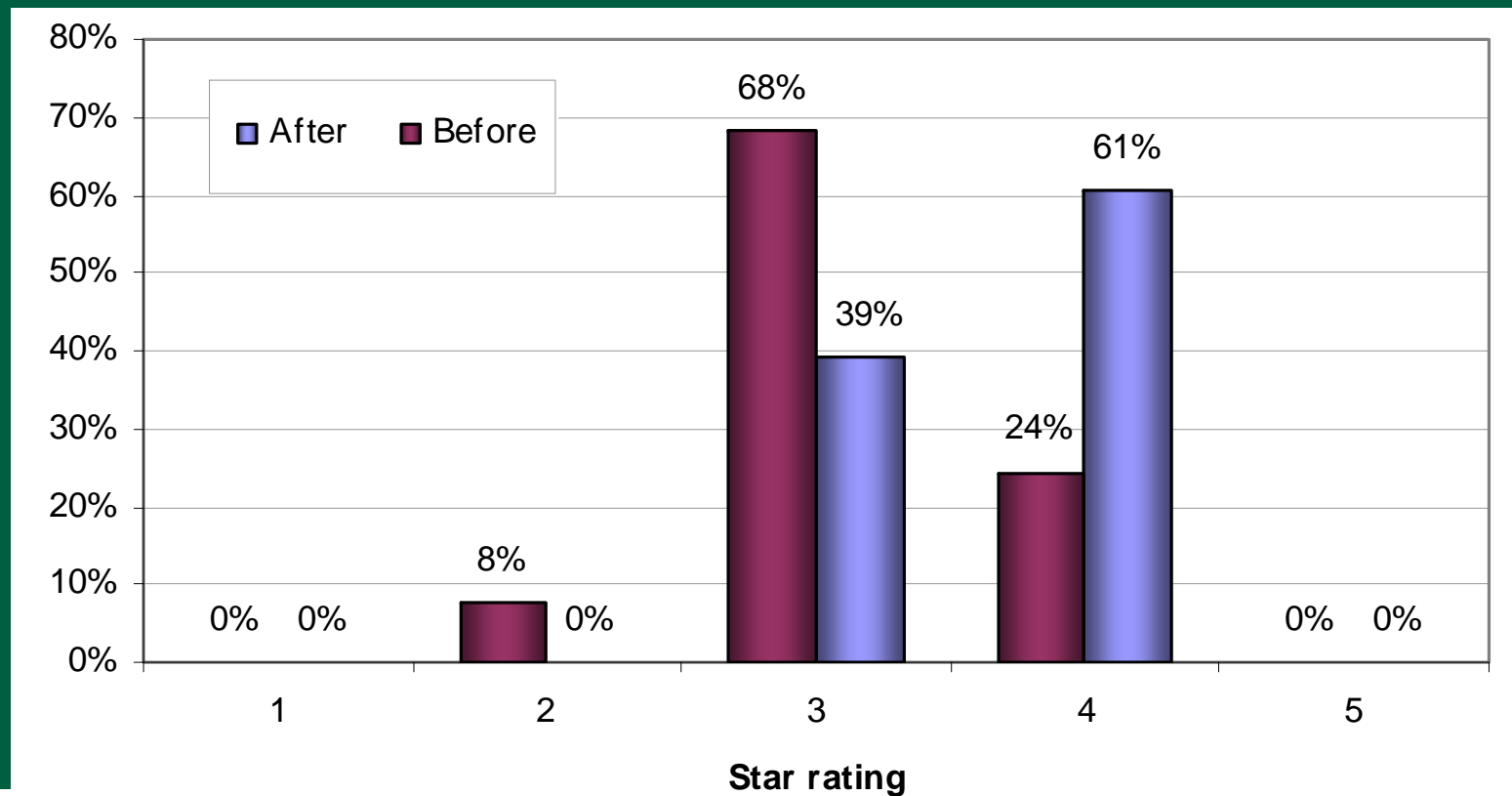


INITIATED BY ROADSIDE ASSOCIATION



# Preliminary results for NSW

- Improvements in Star Ratings as a result of investment (% of network by star rating)



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# RACQ AusRAP enhancement trial

- A project to undertake a trial of the iRAP methodology on a selection of Federal and State roads:
  - RACQ, Queensland Department of Transport and Main Roads, AAA, iRAP
- Complements Austroads project



# Star Ratings

Star Rating	Car Occupants		Motorcyclists		Bicyclists		Pedestrians	
	Length (km's)	%	Length (km's)	%	Length (km's)	%	Length (km's)	%
	1km	0%	0km	0%	0km	0%	0km	0%
	80km	30%	120km	45%	0km	0%	0km	0%
	48km	18%	61km	23%	0km	0%	39km	15%
	116km	43%	84km	31%	9km	3%	0km	0%
	22km	8%	2km	1%	0km	0%	0km	0%
	0km	0%	0km	0%	257km	96%	228km	85%
<b>TOTAL</b>	267km	100%	267km	100%	267km	100%	267km	100%

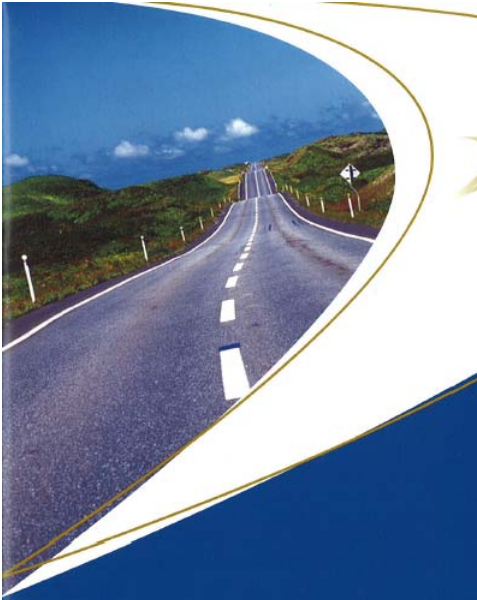


# RACQ AusRAP enhancement trial

## Top 5 Road Safety Investments

Countermeasure Type	Length	KSI's Saved (20 years)	PV of Safety Benefit (20 years)	Estimated Cost (20 years)	Cost per KSI saved	Program BCR
 Duplication with median barrier	18km	232	\$ 189,227,743	\$ 119,663,000	\$ 515,789	1.58
 Additional lane (2 + 1 road)	15km	170	\$ 138,279,000	\$ 110,591,000	\$ 650,535	1.25
 Roadside barriers - Left	80km	101	\$ 82,520,460	\$ 18,045,000	\$ 178,663	4.57
 Roadside barriers - Right	75km	98	\$ 79,587,030	\$ 13,925,000	\$ 142,092	5.72
 Overtaking lane	4km	29	\$ 23,407,248	\$ 14,136,000	\$ 487,448	1.66
<b>TOTAL</b>		<b>629</b>	<b>\$ 513,021,481</b>	<b>\$ 276,360,000</b>	<b>\$ 439,364</b>	<b>1.86</b>





**AusRAP**  
Australian Road Assessment Program  
DECEMBER 2007

February 2008

**Safer Roads  
Save Lives**

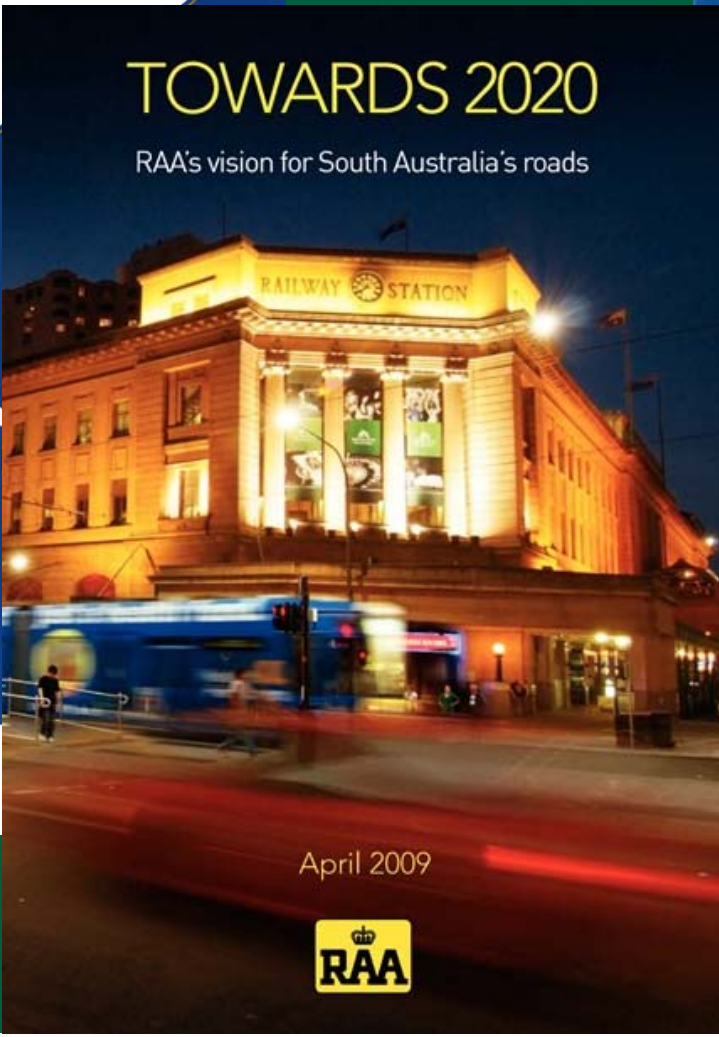
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Star Ratings for Victoria's  
Country Highways



**RACV**

**How Safe Are Queensland**  
Rating Queensland Highways for



**TOWARDS 2020**

RAA's vision for South Australia's roads

April 2009



**AusRAP**  
Australian Road Assessment Program



# star ratings for Victoria's country highways



Star Rating	Percentage
★★★★★ (not rated)	0%
★★★★☆	15%
★★★☆☆	57%
★★☆☆*	27.5%
★	0.5%
(not rated)	(urban or below 90km/h)

Total kilometres rated = 6,847 kilometres

Note: These star ratings are based on road data collected in 2004, 2005 and 2006.

# Media and presentations

- ARRB, ATA, ARF, and ALGA conferences
- Conference Week
- NRMA's Policy & Advocacy Committee (PAC)
- The Pacific Highway Taskforce
- Institution of Civil Engineers in London
- AusRAP DVD
- Series of radio ads with the theme "roads are more important in road safety than people think"





# Where to from here?

- National leadership and coordination
- Extend RACQ trial to other clubs
- Promote AusRAP to NRSS 2011-2020
- Seek funding for projects



# Where to from here?

- Update risk maps and star rating results
  - new road construction
  - national network expanded
- Performance tracking
- Extension to urban areas
- Refining the model
  - consider adopting iRAP model?



# A safe system: funding

\$17 million



Club projects

\$2.2 million



INTEGRITY  
BY EXAMPLE  
ASSOCIATION

