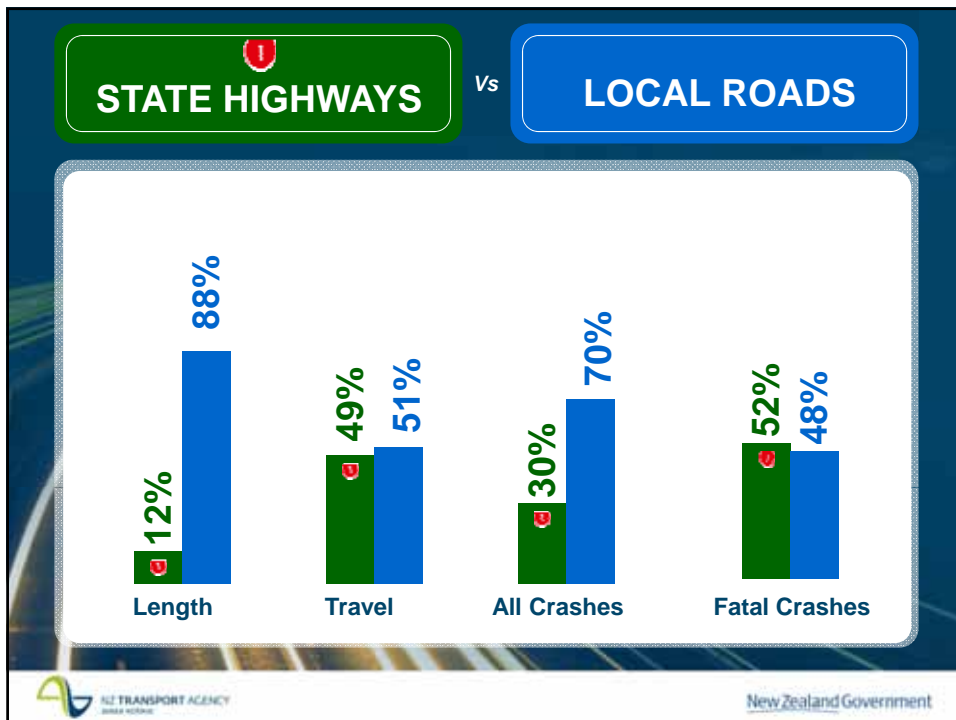


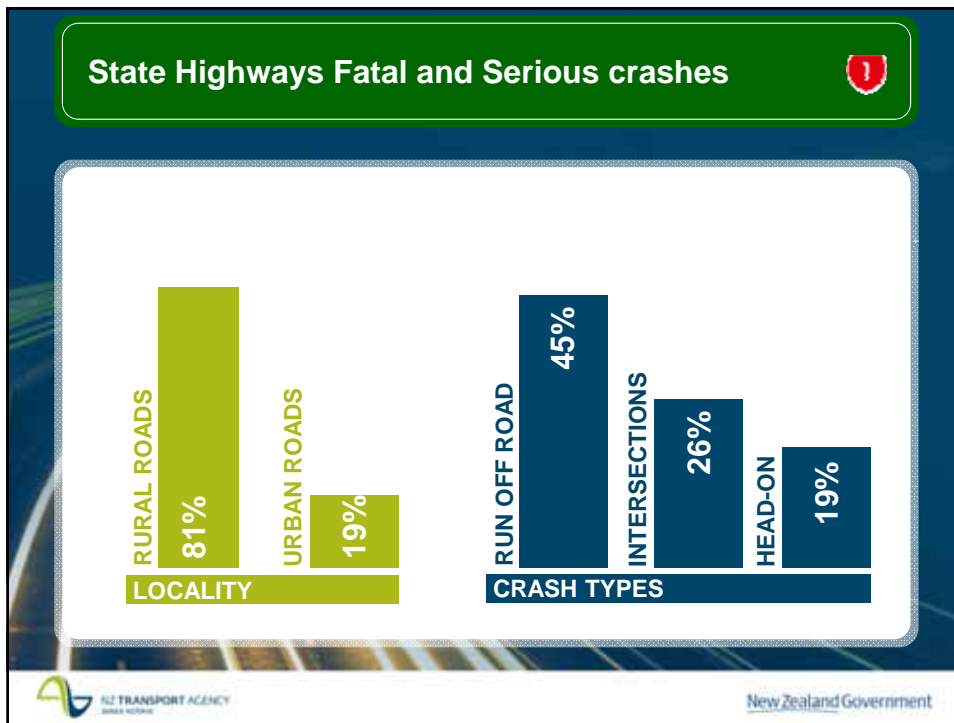
Creating a Safer State Highway Network

Colin Brodie, Chief Safety Advisor
Safety Highways & Network Operations
New Zealand Transport Agency

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Safer Journeys

The infographic outlines key priorities for safer journeys, with a focus on roads and roadsides. The 'Safer roads and roadsides' priority is circled in red. Below, the 'ROADS AND ROADSIDES: FIRST ACTIONS' section lists two focus areas: high risk rural roads and high risk urban intersections, both of which are also circled in red.

KEY PRIORITIES
HIGH CONCERN

- Reducing alcohol/drug impaired driving
- Increasing safety of young drivers
- Safer roads and roadsides**
- Safer speeds
- Increasing the safety of motor-cycling

ROADS AND ROADSIDES: FIRST ACTIONS

- Focus safety improvements on high risk rural roads**
- Focus safety improvements on high risk urban intersections**

Logos: NZ Transport Agency, New Zealand Government

What are High Risk Rural Roads KiwiRAP Road Assessment Programme





2008

ARE OUR ROADS?
Risky Road Assessment and Response for Road

RISK MAPS




2010


ARE OUR ROADS?
Risky Road Assessment and Response for Road

STAR RATINGS


Logos at the bottom: NZ Transport Agency, KiwiRAP, Ministry of Transport, AA, NZ, Police, New Zealand Government

KiwiRAP: Risk Maps





**COLLECTIVE RISK:
CRASH DENSITY**






**PERSONAL RISK:
CRASH RATE**

Logos at the bottom: NZ Transport Agency, KiwiRAP, New Zealand Government

Risk Maps vs Star Ratings 1



RISK MAPS	STAR RATINGS
<p>Shows us where crashes are occurring but NOT necessarily why:</p> <p>REACTIVE APPROACH</p>	<p>Measure the safety that is BUILT-IN to the road:</p> <p>PROACTIVE APPROACH</p>

Star Rating Process 1

- 10,000km rural SH's videoed with 4 cameras
- 18 Road attributes rated
- Risk scores calculated for each 100m
- Star ratings assigned to 5km sections




Star Rating Process

A vertical column of five green stars is positioned on the left side of the slide, indicating a high safety rating.

A photograph of a multi-lane highway with several callout boxes: 'SAFE ROADSIDE' on the left shoulder, 'MEDIAN DIVIDED' on the right side, 'GRADE SEPERATED INTERSECTIONS' in the center, and 'STRAIGHT' on the right side.

Logos: NZ TRANSPORT AGENCY, KiwiRAP, New Zealand Government

Star Rating Process

A vertical column of four yellow stars is positioned on the left side of the slide, indicating a moderate safety rating.

A photograph of a highway with several callout boxes: 'MODERATE ROADSIDE' on the left shoulder, 'NARROW MEDIAN SHOULDERS' on the right side, and 'AT-GRADE INTERSECTIONS' in the center.

Logos: NZ TRANSPORT AGENCY, KiwiRAP, New Zealand Government

Star Rating Process

SAFE ROADSIDE

GOOD ALIGNMENT
LOW VOLUME

UNDIVIDED

1

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KiwiRAP
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This slide illustrates a road with a 4-star rating. On the left, four yellow stars are displayed vertically. The road image shows a two-lane asphalt road with a yellow center line and white edge lines. The roadside is grassy with trees, labeled 'SAFE ROADSIDE'. The road is labeled 'GOOD ALIGNMENT LOW VOLUME' and 'UNDIVIDED'. A red shield with the number '1' is in the top right corner. Logos for the NZ Transport Agency, KiwiRAP, and the New Zealand Government are at the bottom.

Star Rating Process


MODERATE ROADSIDE



NARROW SHOULDERS

1

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KiwiRAP
New Zealand Government



This slide illustrates a road with a 3-star rating. On the left, three orange stars are displayed vertically. The road image shows a two-lane asphalt road with a white center line and white edge lines. The roadside is grassy with hills in the background, labeled 'MODERATE ROADSIDE'. The road is labeled 'NARROW SHOULDERS'. A red shield with the number '1' is in the top right corner. Logos for the NZ Transport Agency, KiwiRAP, and the New Zealand Government are at the bottom.


Star Rating Process 





ROADSIDE HAZARDS

TIGHT ALIGNMENT



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 KiwiRAP
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Star Rating Process 

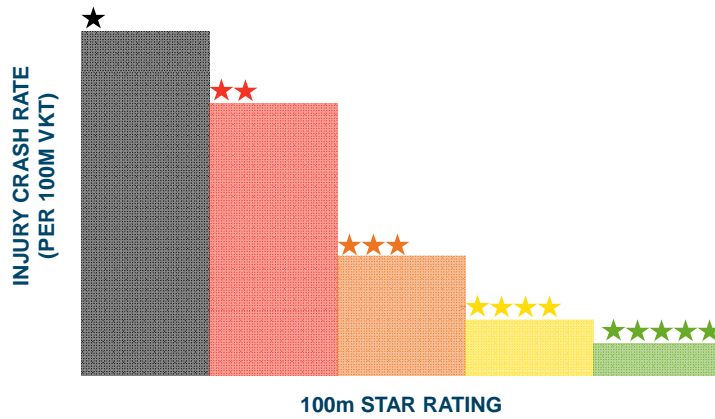


SEVERE ROADSIDE HAZARDS

HIGH VOLUME UNDIVIDED

 NZ TRANSPORT AGENCY
 KiwiRAP
New Zealand Government

KiwiRAP Star Rating / Crash Rate Relationship



New Zealand Government

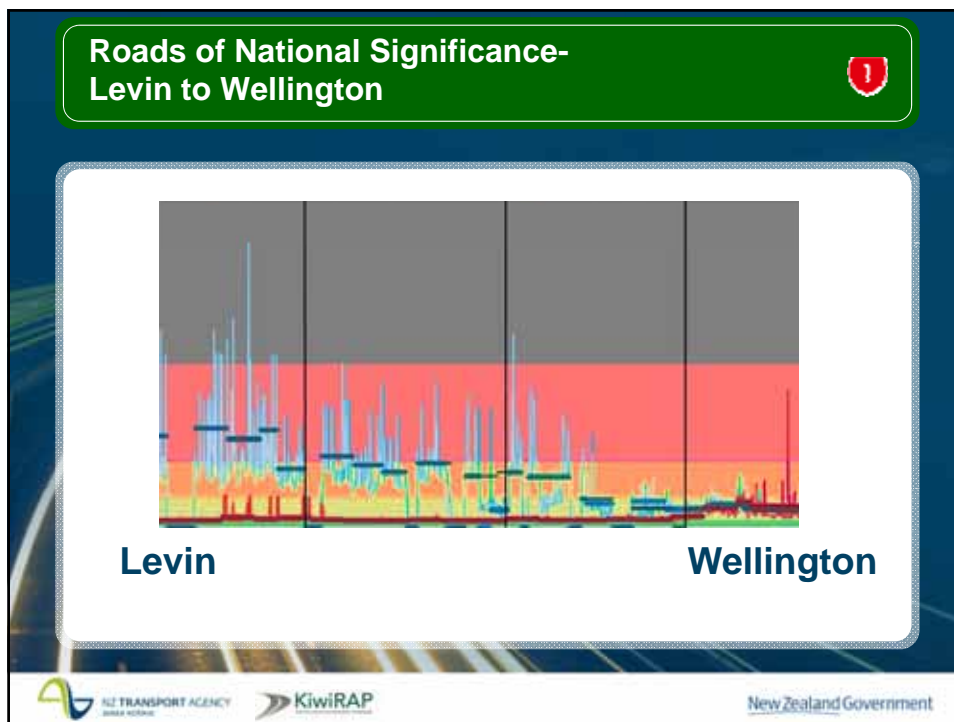
KiwiRAP Star Rating Results – New Zealand Star Rating Map



Star Rating	% Length	% VKT
★	0%	0%
★★	39%	33%
★★★	56%	40%
★★★★	5%	28%
★★★★★	0%	0%



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KiwiRAP Summary

- Provides national consistent measures of risk
- Will help target investments
- Will encourage corridor improvements
 - Roadside improvements/barriers
 - Median treatments/barriers
 - Intersection Improvements

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 KiwiRAP
New Zealand Government

Head on Crashes: Median Treatments: Centennial Highway 



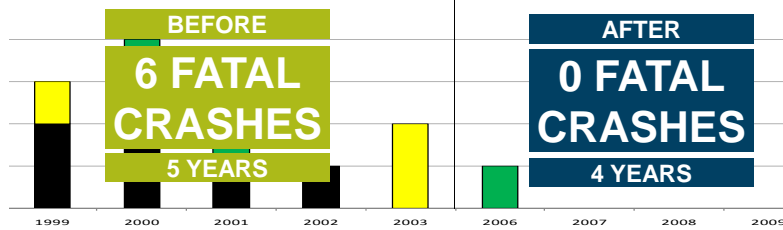
Head on Crashes: Median Barrier Treatment - SH1 Rangiriri 2+1 



Median Barrier - SH1 Rangiriri 2+1: Results



HEAD ON CRASH SEVERITY PER YEAR



- 90% reduction in head-on crashes
- 63% reduction in fatal & serious crash rate
- Increase in non-injury crashes (barrier strikes)

Head on crashes: Alternative Median Treatments: Wide Centreline Trials



Run-off Road Crashes : Clear Zone Treatments



Effect



New Zealand Government

Run-off Road Crashes: Roadside Barriers



New Zealand Government


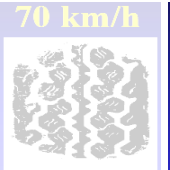
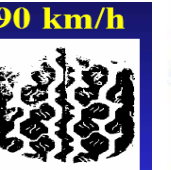


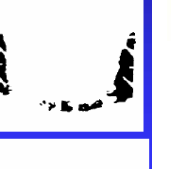
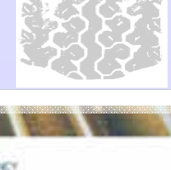
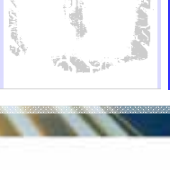

Run off road crashes: Keeping the rubber on the road.




The video player shows a black screen with a play button in the bottom right corner. To the right of the video player is a yellow diamond-shaped road sign depicting a car skidding, with a rectangular sign below it that reads "WHEN WET".



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**Keeping rubber on road:
Tyre foot print with 1mm water depth**

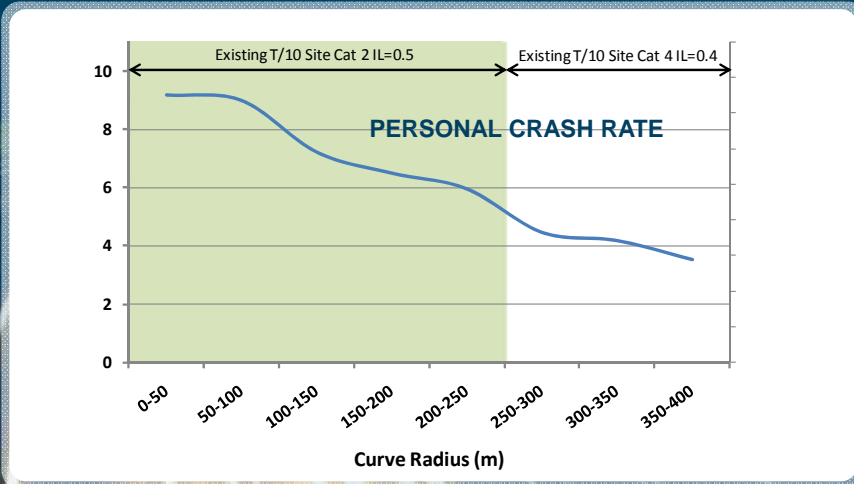
	50 km/h	70 km/h	90 km/h
New tyre (8mm)			
Worn tyre 50%			
Worn tyre Minimum (1.6mm)			



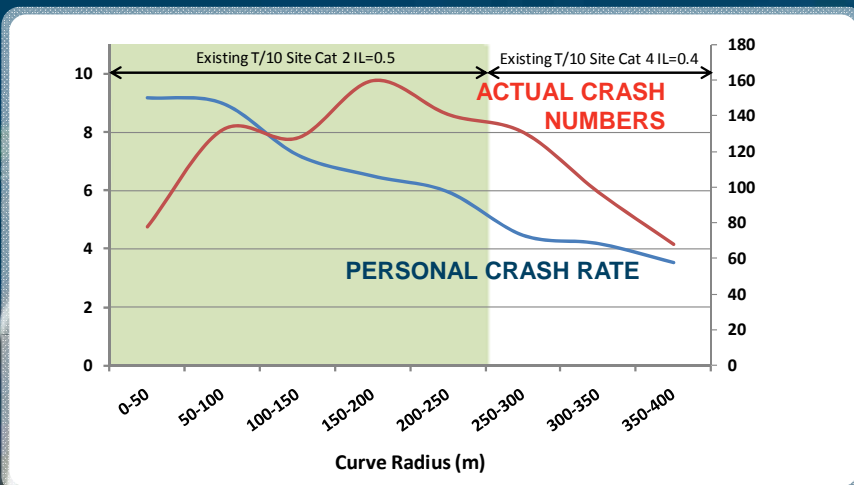
The figure shows a 3x3 grid of tyre footprint images. The columns represent speeds of 50 km/h, 70 km/h, and 90 km/h. The rows represent different tyre conditions: "New tyre (8mm)", "Worn tyre 50%", and "Worn tyre Minimum (1.6mm)". The footprint images show that as speed increases and tyre wear increases, the contact patch becomes smaller and less effective. To the right of the grid is a yellow diamond-shaped road sign depicting a car skidding, with a rectangular sign below it that reads "WHEN WET".

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Present Skid resistance policy for curves



Present Skid resistance policy for curves



Revised 2010 Skid Policy for Curves

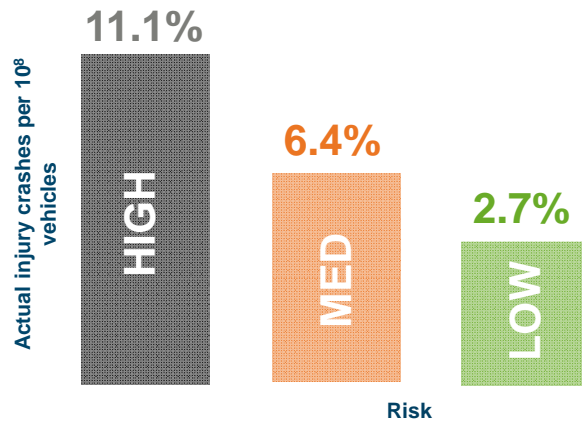


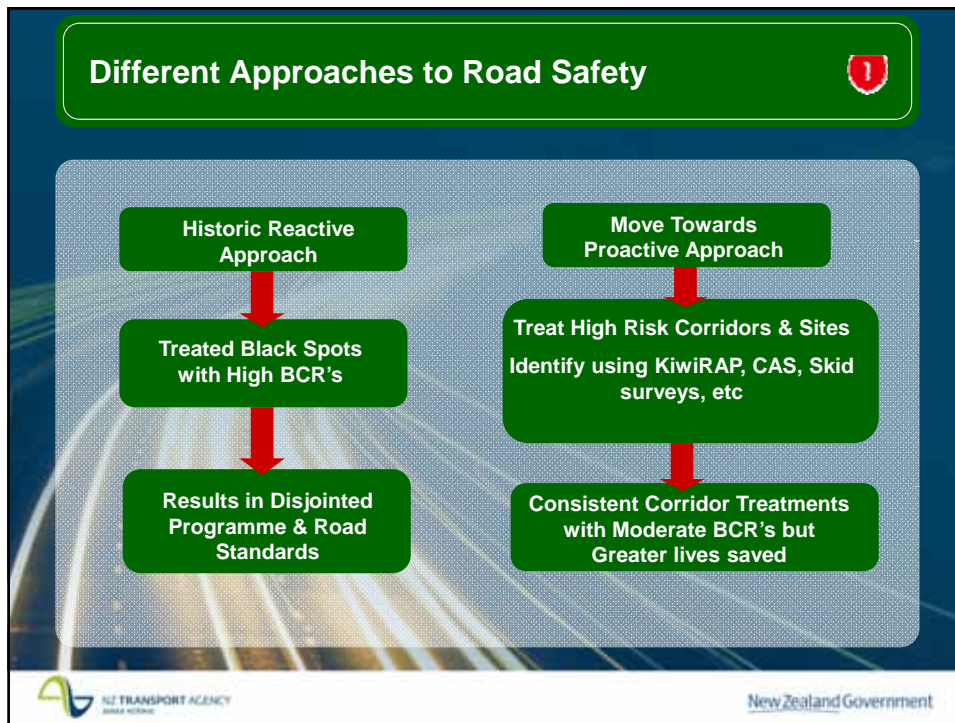
- Spatially located 17,000 rural curves with radius less than 400m
- Assigned a risk level of High, Medium or Low based upon:
 - Curve geometry
 - Approach speed vs curve speed
- Assigned a skid resistance level according to risk

Revised 2010 Skid Policy for curves



Personal risk vs actual injury crashes per 10⁸ vehicles entering a curve





Adopting the full Safe System Approach 1

- Not all roads will attract infrastructure spending
- Many roads will remain 2 or 3 star
- Risks on these roads require other safe system interventions
 - Safer Road Use: Educate motorists of risks
 - Safer Vehicles: Systems such as ESC
 - Safer Speeds: Speed management systems and speed limits based on harm minimisation


A SAFE ROAD SYSTEM INCREASINGLY FREE OF DEATH AND SERIOUS INJURY


SAFER ROAD USE
SAFER VEHICLES
SAFER SPEEDS
SAFER ROAD DESIGN

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KIWI RAP New Zealand Government

Thankyou

End

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Kaitiaki Takekōwhiri

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