



WHAT IS KIWIRAP?

KiwiRAP analyses the road safety ratings of New Zealand's (80+km/h) rural state highway network.

KiwiRAP is part of an international family of Road Assessment Programmes (RAP) under the umbrella of the International Road Assessment Programme (iRAP). iRAP now works in partnership with government and non-government organisations in 70 countries. From its findings, iRAP recommends design improvements that need to be implemented in order to save lives and reduce the number of serious injuries on the world's roads.

The objectives of KiwiRAP are:

- To reduce deaths and injuries on New Zealand's roads by systematically assessing risk and identifying safety shortcomings that can be addressed with practical road improvement measures
- To have risk assessment as a key factor in strategic decisions on road improvements, crash protection and standards of road management
- To provide meaningful information on where the greatest levels of risk are faced, and in turn, to influence driver and rider behaviour

HOW DOES A ROAD ASSESSMENT PROGRAMME WORK?

KiwiRAP consists of three 'protocols':

- **Risk Mapping** - uses historical traffic and crash data to produce colour-coded maps illustrating the relative level of risk on sections of the road network
- **Performance Tracking** - involves a comparison of crash rates over time to establish whether fewer - or more - people are being killed or seriously injured; and to determine if countermeasures have been effective
- **Star Rating** - road inspections look at the engineering features of a road (such as lane and shoulder width or

presence of safety barriers). Between 1- and 5-Stars are awarded to road links, depending on the level of safety 'built-in' to the road (the higher the star, the better the road).

The first KiwiRAP Risk Maps were produced in 2008, followed by Star Ratings in 2010. This brochure shows results for Risk Mapping and Performance Tracking, comparing crash data for 2007-2011 to that from 2002-2006.

PERFORMANCE TRACKING

Performance tracking is the comparison of crash rates over time to establish whether fewer - or more - people are being killed or seriously injured on various road sections; and to determine how effective any countermeasures have been.

Performance tracking in this report compares 2007-2011 data to 2002-2006 data and is New Zealand's first opportunity to track the safety performance of the state highway network using KiwiRAP methods.

For the purpose of comparing the level of risk of crashes between different parts of the network, KiwiRAP has broken the 10,849km of the assessed state highway network into 168 road sections (known as 'links').

The same links that were developed and used for the first Risk Maps (released in 2008) have been used, where possible, in these results.

2012 RISK MAPS

For the purposes of displaying the safety risk of the state highway network, KiwiRAP looks at two different measures of risk: Collective Risk and Personal Risk. The focus of both is on crashes where people have been killed or seriously injured. The crash statistics used for the calculations are for the five-year period between 2007-2011.

The roads highlighted as being of higher risk than others are likely to have specific reasons why. The road, the vehicle, the speed and the driver/rider each contribute to risk.

Collective Risk (or Crash Density)

Collective Risk is a measure of the total number of fatal and serious injury crashes per kilometre over a section of road.

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Because Collective Risk is measured in terms of the number of crashes per kilometre of state highway, you would generally expect that those with higher traffic volumes would have a higher Collective Risk.

Personal Risk

Personal Risk is a measure of the risk to each individual using the state highway being assessed. Unlike Collective Risk, Personal Risk takes into account the traffic volumes on each section of state highway.

RISK RATING	COLLECTIVE RISK Average annual fatal and serious injury crashes per km	PERSONAL RISK Average annual fatal and serious injury crashes per 100 million vehicle-km	COLOUR
Low	≤ 0.039	< 4	Green
Low-medium	$0.04 \leq 0.069$	$4 \leq 4.9$	Yellow
Medium	$0.07 \leq 0.10$	$5 \leq 6.9$	Orange
Medium-high	$0.11 \leq 0.189$	$7 \leq 8.9$	Red
High	$0.19+$	$9+$	Black

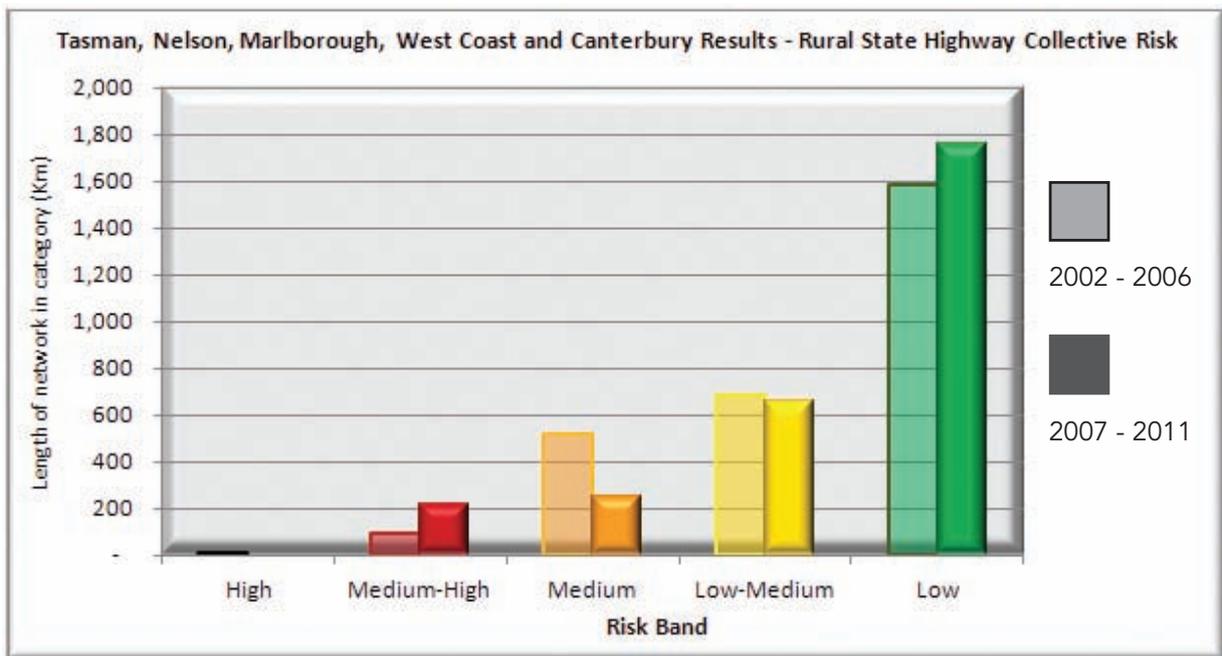
The risk thresholds for the bands have remained the same in order for comparisons to be made between the 2008 Risk Maps (covering crashes in the 2002-2006 period) and the Risk Maps in this report for the 2007-2011 period.

PERFORMANCE TRACKING FOR TASMAN, NELSON, MARLBOROUGH, WEST COAST AND CANTERBURY REGION

Collective Risk

There are no high collective risk sections of state highway in the Tasman, Nelson, Marlborough, West Coast and Canterbury region in the 2001-2011 time period. The percentage of state highway network in the medium-high collective risk category went from 3% to 8% of the network. The percentage of state highway in the medium and low-medium collective risk bands decreased, while the percentage of network in the low collective risk band increased from 55% to 61%.

Changes in Collective Risk in the Tasman, Nelson, Marlborough, West Coast and Canterbury Region (comparing 2002-2006 data with 2007-2011)



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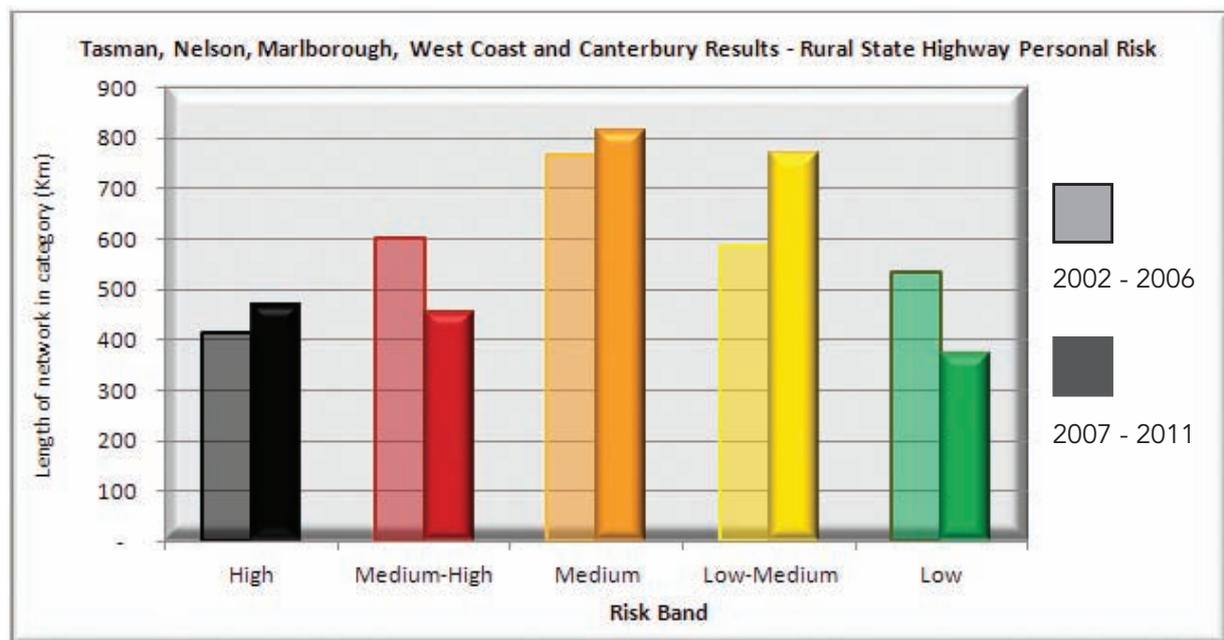
Period		High	Medium-High	Medium	Low-Medium	Low	Total
2002-2006	Percentage	0%	3%	18%	24%	55%	100%
	Length (km)	10	95	520	686	1,588	2,899
2007-2011	Percentage	0%	8%	9%	23%	61%	100%
	Length (km)	-	217	252	660	1,755	2,884

Note: percentages may not add to 100% due to rounding

Personal Risk

The percentage of the network in the Tasman, Nelson, Marlborough, West Coast and Canterbury region in the high personal risk band increased from 14% to 16% over the two time periods while the percentage in the medium-high personal risk band decreased from 21% to 16%.

Changes in Personal Risk in the Tasman, Nelson, Marlborough, West Coast and Canterbury Region (comparing 2002-2006 data with 2007-2011)



Period		High	Medium-High	Medium	Low-Medium	Low	Total
2002-2006	Percentage	14%	21%	26%	20%	18%	100%
	Length (km)	413	600	767	586	533	2,884
2007-2011	Percentage	16%	16%	28%	27%	13%	100%
	Length (km)	470	457	815	769	373	2,884

Note: percentages may not add to 100% due to rounding

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The table below details how the risk categories of the links in the Tasman, Nelson, Marlborough, West Coast and Canterbury region have changed between the two time periods.

CHANGES IN COLLECTIVE RISK		LINK	CHANGES IN PERSONAL RISK	
2002-2006 DATA	2007-2011 DATA		2002-2006 DATA	2007-2011 DATA
Low-Medium	Low-Medium	SH 1 Christchurch Northern Motorway	Low	Low
Low-Medium	Medium	SH 1 from Ashburton to Timaru	Low	Low
Medium	Low-Medium	SH 1 from Blenheim to Kaikoura	Medium-High	Medium
Medium	Medium-High	SH 1 from Christchurch to Ashburton	Low	Low
Medium	Medium	SH 1 from Kaikoura to Waipara	Medium-High	Medium-High
Medium-High	Medium-High	SH 1 from Picton to Blenheim	Medium	Medium
High	Medium-High	SH 1 from SH 74 to SH 73 Christchurch	Low	Low
Medium	Medium	SH 1 from Timaru to Oamaru*	Low-Medium	Low-Medium
Medium-High	Medium-High	SH 1 from Waipara to Kaiapoi	Low-Medium	Low-Medium
Low-Medium	Low	SH 6 and SH 67 from Murchison to Westport	High	Medium-High
Medium	Low-Medium	SH 6 from Blenheim to Havelock	Medium	Low
Low	Low	SH 6 from Greymouth to Haast	Low-Medium	Medium
Low	Low	SH 6 from Haast to Wanaka*	High	High
Medium	Medium-High	SH 6 from Havelock to Nelson	Medium-High	Medium-High
Low-Medium	Low-Medium	SH 6 from Richmond to Murchison	Medium	Medium
Low-Medium	Low	SH 6 from Westport to Greymouth	Medium-High	Medium-High
Low-Medium	Low-Medium	SH 7 and SH 7A from Waipara to Hanmer Springs	Low-Medium	Low-Medium
Low	Low	SH 7 from Hanmer Springs to Reefton	High	High
Low	Low	SH 8 from Fairlie to Omarama*	Medium	Low-Medium
Low	Low-Medium	SH 8 from Timaru to Fairlie	Low	Medium
Low-Medium	Low	SH 60 from Motueka to Collingwood	High	Low-Medium
Medium-High	Low-Medium	SH 60 from Richmond to Motueka	Medium	Low
Medium	Low	SH 62 from Spring Creek (SH 1) to Renwick (SH 6)	High	Low
Low	Low	SH 63 from Renwick to Kawatiri	Medium	High
Low	Low	SH 65 from Arika (SH 6) to Springs Junction	Medium-High	Medium-High
Low	Low	SH 67 from Westport to Karamea	Low	Medium
Low	Low	SH 69 and SH 7 from Inangahua Junction (SH 6) to Greymouth	Medium-High	Low-Medium
Low-Medium	Low-Medium	SH 73 from Christchurch to Darfield	Low	Low
Low	Low	SH 73 from Darfield to Kumara	Medium	Low-Medium
Low-Medium	Low-Medium	SH 75 from Christchurch to Akaroa	Medium	Medium
Low	Low-Medium	SH 77 from Ashburton to Darfield	Low	High
Low	Low	SH 79 from Fairlie to Rangitata	Low	Low-Medium
Low	Low	SH 80 from Twizel to Mt Cook	Medium	Medium
Low	Low	SH 82 from Kurow to SH 1	Low	High
Low	Low	SH 83 from Omarama to SH 1*	Low-Medium	Low

*These links cross boundaries, so will appear in more than one regional list.

Boxes highlighted green depict a decrease in risk between the 2002-2006 and 2007-2011 time periods; red depicts an increase in risk; no colour is no change in risk.

Note: (Table below)

¹The link length includes urban sections. However, the urban lengths and urban crashes have been excluded from the crash risk analysis.

²These links cross map boundaries, so will appear in more than one regional list.

³This link has been altered within the analysis period.

⁴The length of this link differs to that published in the 2008 Risk Map report due to the reassessment of where the urban boundary limits were set.

Symbol - : no data.

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2012 RISK MAPS FOR TASMAN, NELSON, MARLBOROUGH, WEST COAST AND CANTERBURY REGION

Link	Length ⁽¹⁾ (km)	Serious Injury Crashes 2007 to 2011	Fatal Crashes 2007 to 2011	Collective Risk Annual average fatal and serious injury crashes per km	Collective Risk Band	Personal Risk Annual average fatal and serious injury crashes per 100 million vehicle-km	Personal Risk Band
SH 1 Christchurch Northern Motorway	17.9	3	3	0.07	Low-Medium	0.7	Low
SH 1 from Ashburton to Timaru	69.6	21	5	0.09	Medium	3.5	Low
SH 1 from Blenheim to Kaikoura	129.1	27	5	0.05	Low-Medium	5.1	Medium
SH 1 from Christchurch to Ashburton	71.4	36	10	0.14	Medium-High	3.2	Low
SH 1 from Kaikoura to Waipara	123.7	46	5	0.08	Medium	8.1	Medium-High
SH 1 from Picton to Blenheim	27.9	13	4	0.14	Medium-High	6.0	Medium
SH 1 from Timaru to Oamaru ⁽²⁾⁽⁴⁾	75.4	20	10	0.08	Medium	4.4	Low-Medium
SH 1 from Waipara to Kaipoi	34.8	14	5	0.13	Medium-High	4.1	Low-Medium
SH 6 from Blenheim to Havelock	40.5	10	2	0.07	Low-Medium	3.9	Low
SH 6 from Greymouth to Haast	318.0	26	8	0.02	Low	5.2	Medium
SH 6 from Haast to Wanaka ⁽²⁾	137.8	19	3	0.03	Low	10.8	High
SH 6 from Havelock to Nelson	73.1	32	6	0.11	Medium-High	7.7	Medium-High
SH 6 from Richmond to Murchison	109.3	21	5	0.05	Low-Medium	6.0	Medium
SH 6 from Westport to Greymouth	93.3	11	6	0.04	Low	7.1	Medium-High
SH 69 & SH 7 from Inangahua Junction (SH 6) to Greymouth	109.7	10	2	0.02	Low	4.8	Low-Medium
SH 7 and SH 7A from Waipara to Hanmer Springs	75.9	13	4	0.05	Low-Medium	4.7	Low-Medium
SH 7 from Hanmer Springs to Reefton	128.1	20	3	0.04	Low	10.0	High
SH 8 from Fairlie to Oamarua ⁽³⁾	129.7	16	1	0.03	Low	4.5	Low-Medium
SH 8 from Oamarua to Cromwell and SH 8A ⁽²⁾⁽³⁾	128.0	13	2	0.02	Low	4.8	Low-Medium
SH 8 from Timaru to Fairlie	56.6	7	4	0.04	Low-Medium	5.2	Medium
SH 1 from SH 74 to SH 73 Christchurch	9.7	7	1	0.17	Medium-High	2.1	Low
SH 6 and SH 67 from Murchison to Westport	95.7	14	3	0.04	Low	8.9	Medium-High
SH 60 from Motueka to Collingwood	83.9	13	1	0.04	Low	4.9	Low-Medium
SH 60 from Richmond to Motueka	30.8	5	4	0.06	Low-Medium	1.8	Low
SH 62 from Spring Creek (SH 1) to Renwick (SH 6)	12.7	-	2	0.03	Low	3.9	Low
SH 63 from Renwick to Kawatiri	117.0	14	1	0.03	Low	9.7	High
SH 65 from Arikiri (SH 6) to Springs Junction	71.3	8	2	0.03	Low	8.8	Medium-High
SH 67 from Westport to Karamea	46.8	3	1	0.02	Low	5.6	Medium
SH 73 from Christchurch to Darfield	33.3	5	1	0.04	Low-Medium	2.2	Low
SH 73 from Darfield to Kumara	182.7	20	3	0.03	Low	4.7	Low-Medium
SH 75 from Christchurch to Akaroa	72.8	15	4	0.06	Low-Medium	5.5	Medium
SH 77 from Ashburton to Darfield	93.7	21	6	0.06	Low-Medium	13.0	High
SH 79 from Fairlie to Rangitata	61.0	5	2	0.02	Low	4.2	Low-Medium
SH 80 from Twizel to Mt Cook	54.6	3	-	0.01	Low	5.8	Medium
SH 82 from Kurow to SH 15	71.0	8	-	0.02	Low	9.1	High
SH 83 from Oamarua to SH 15 ⁽²⁾	109.2	4	2	0.01	Low	3.0	Low

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TASMAN, NELSON, MARLBOROUGH, WEST COAST and CANTERBURY REGION



COLLECTIVE RISK MAP

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PERSONAL RISK MAP

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