

Blending information for new resilience insights



Resilience??

Resilience is the transport systems ability to provide access for communities by absorbing the impacts of unplanned disruptive events, perform effectively through the disruption, and respond and recover functionality quickly.

It requires minimising and managing the likelihood and consequences of small and large scale, frequent and infrequent, sudden and slow onset disruptive events, caused by natural or manmade hazards.



RESILIENCE KEEPING OUR ROADS OPEN

Resilience is about preserving and quickly restoring access to the network in the face of unplanned events.



Increasing robustness and improving alternate routes

KEY ASPECTS

Decreasing the recovery time

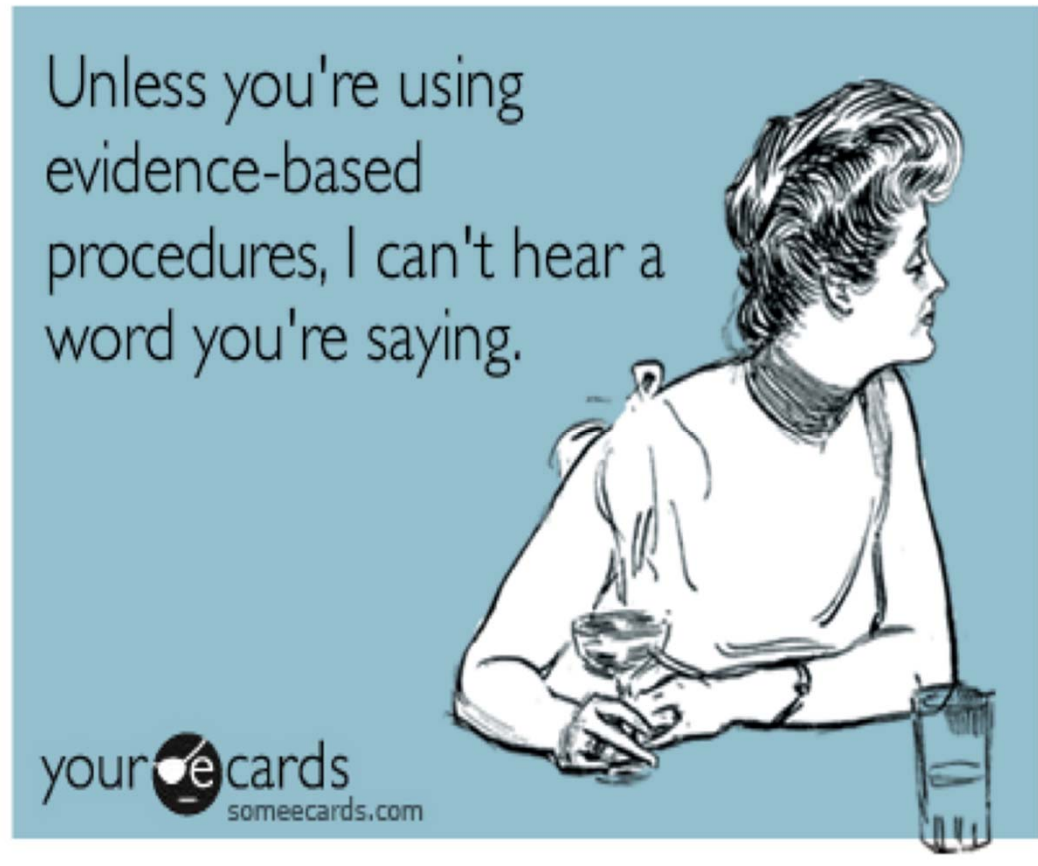
Pressures – The Challenge





But where first?

Invest wisely using evidence



In the past...



- Paper maps
- Local knowledge
- Inconsistency from region to region

And the focus now?

Consistent approach

Understand where to prioritise investment

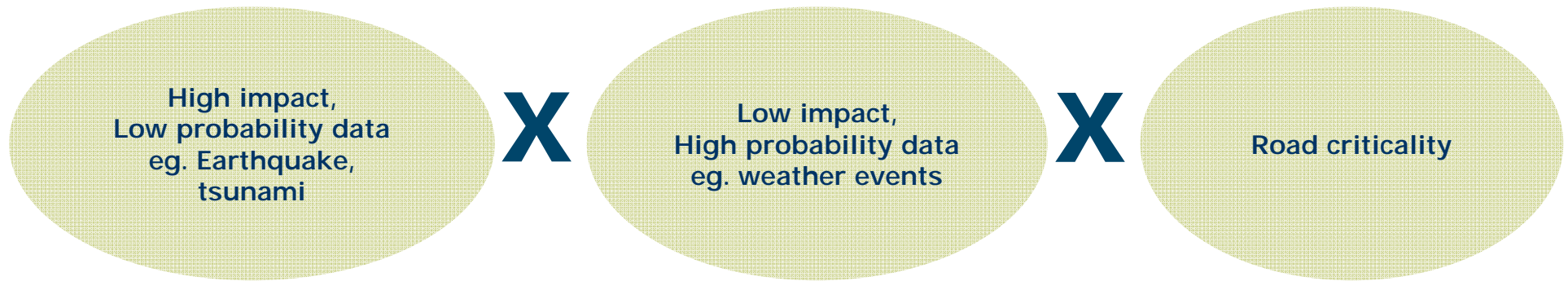
Data and knowledge re-purposing

Future proof data and tool

Visualise data and results



Resilience Hotspot Priority Tool



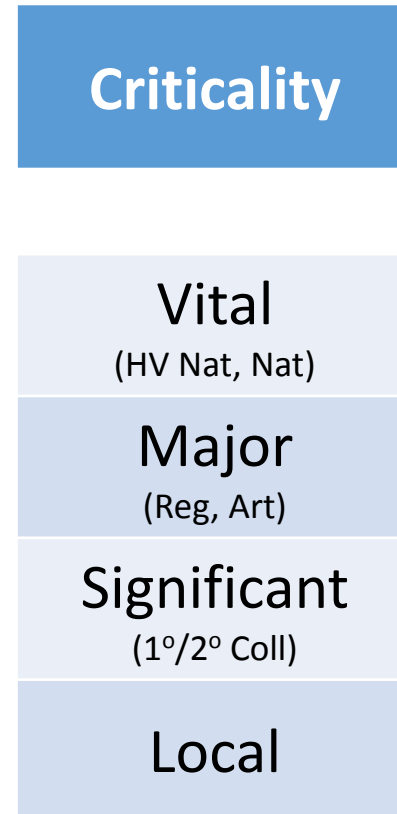
= Prioritisation data

Resilience Hotspot Risk Priority

Hotspot = Exposure * Criticality

Worst Disruption State	High Frequency Band Score (\$)			
	A (Very Low)	B (Low)	C (Moderate)	D (High)
None	I	I	I	I
Limited	I	I	II	II
Moderate	I	II	II	III
High	I	II	III	IV
Severe	I	II	III	IV
Extreme	I	III	IV	V
Catastrophic	I	III	IV	V

X



- About
- Earthquake
- Storm
- Volcano
- Tsunami
- Prioritisation Score**

Resilience Prioritisation Score



1 Prioritisation Score (Segment Level)

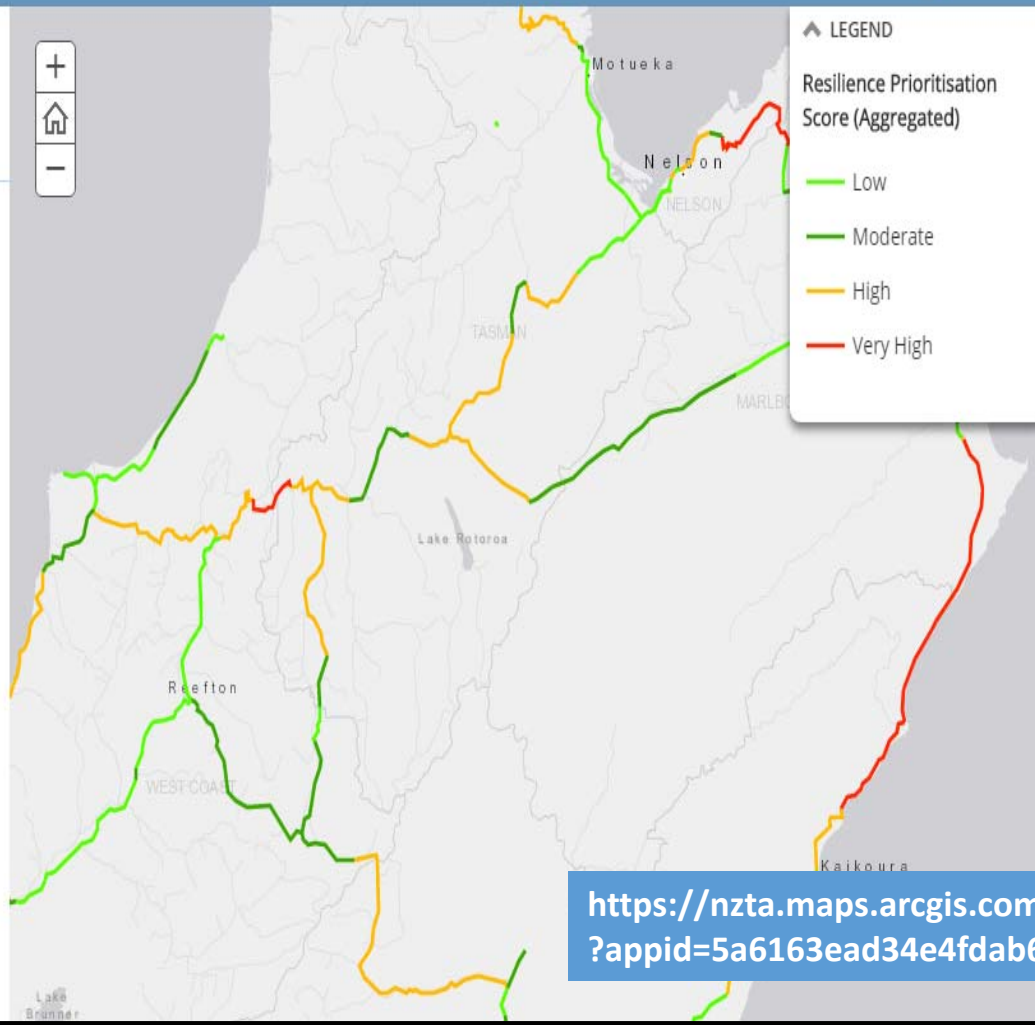
2 Prioritisation Score (Aggregated)

This map is intended to provide a high level view of resilience issues across the State Highway network.

The data is derived from a model that processes the following datasets:

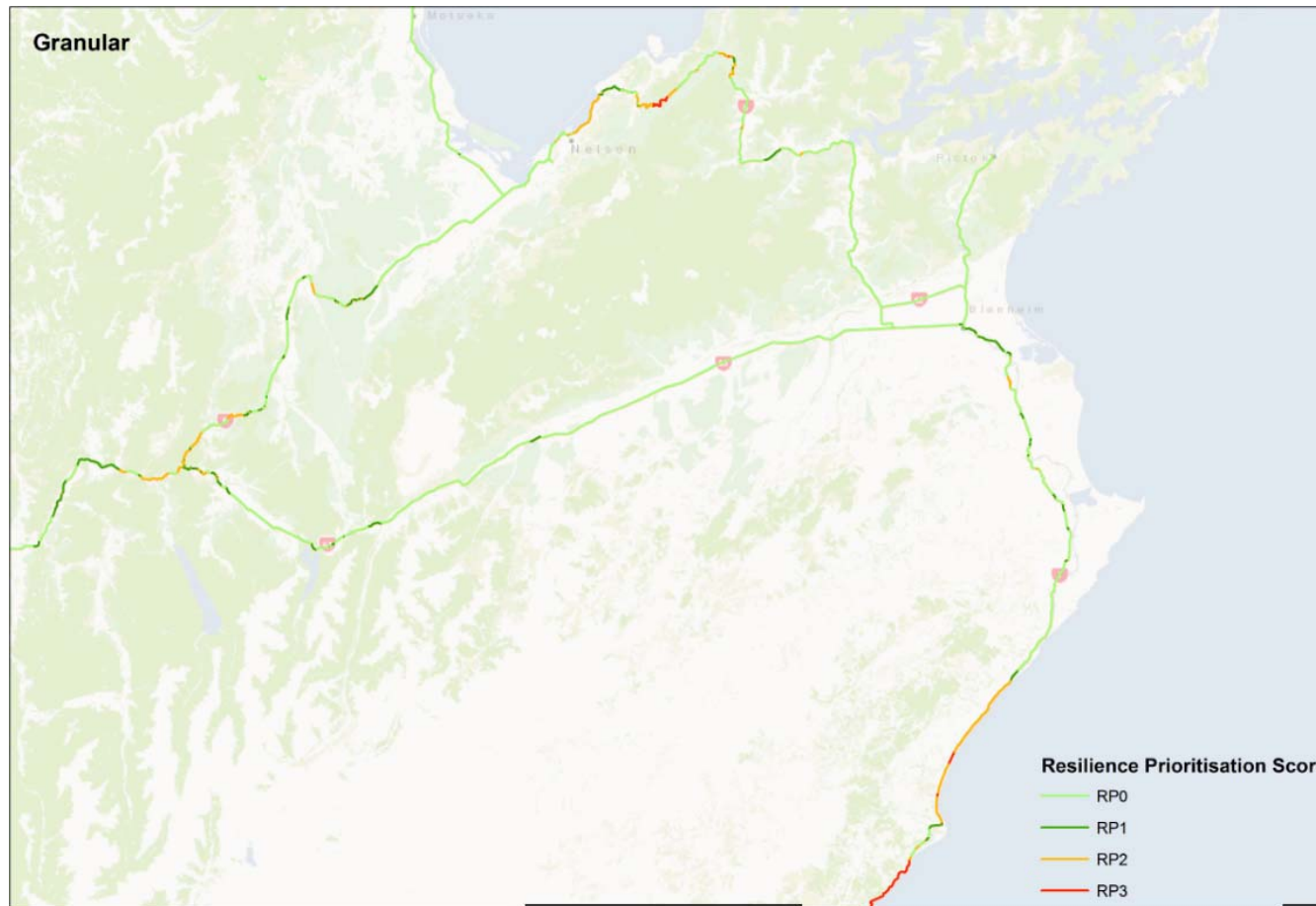
1. Low frequency events (Earthquake, Volcano, Storm, Tsunami)
2. Resilience costs data based on network maintenance costs for key natural hazard faults (Slips, Ice/Frost, Flood)
3. The relative importance of the road segment based on the One Network Road Classification.

- RP0 = Low resilience prioritisation
- RP1 = Moderate resilience prioritisation
- RP2 = High resilience prioritisation
- RP3 = Very high resilience prioritisation



<https://nzta.maps.arcgis.com/apps/MapSeries/index.html?appid=5a6163ead34e4fdab638e4a0d6282bd2>

Resilience Risk Priority



Critiques and Improvements

Generally well accepted

- Can provide national consistency and transparency
- Stronger evidence for funding prioritisation

Is RAMM data appropriate?

Wellington highways problems



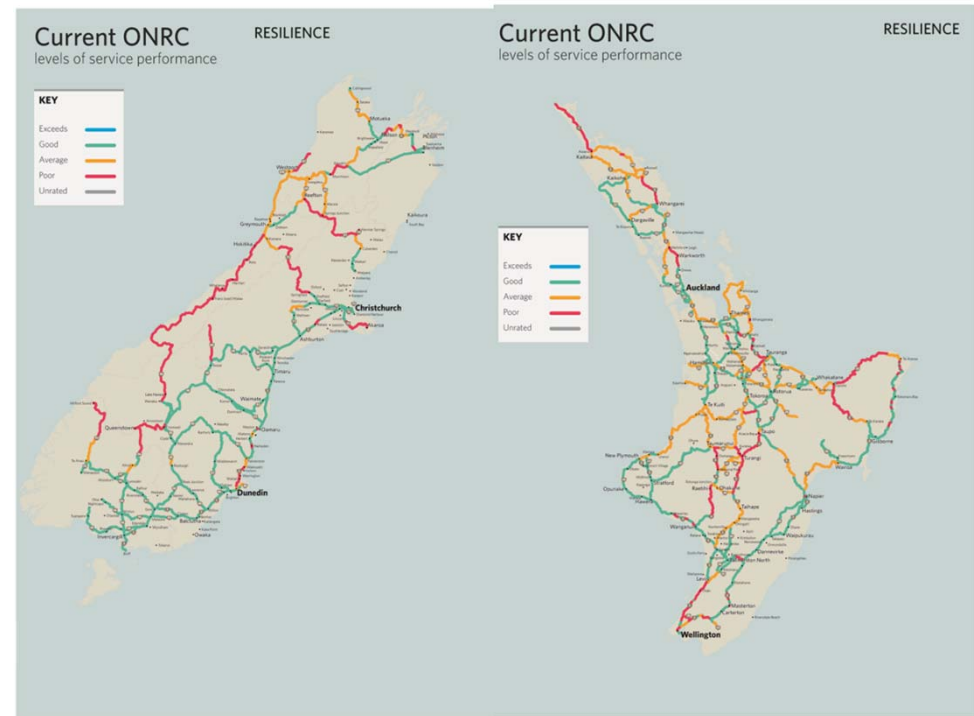
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Extreme	I	III	IV	V
Catastrophic	I	III	IV	V

Conclusions



It works!

- Consistent, transparent, automated
- Recognition of low frequency events
- Flexible
- Improvements identified
- Insights from using a GIS platform
- Valuable benefits gained from blending existing information



Thank you for listening



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<http://www.nzta.govt.nz/roads-and-rail/highways-information-portal/technical-disciplines/resilience-project>