



# Transport Resilience and Earthquakes - Learning Lessons from Christchurch

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# Presentation outline

- Quakes: Background context
- Short-term transport impacts
- Land-use / travel pattern changes
- Rebuild plans
- Ongoing legacy

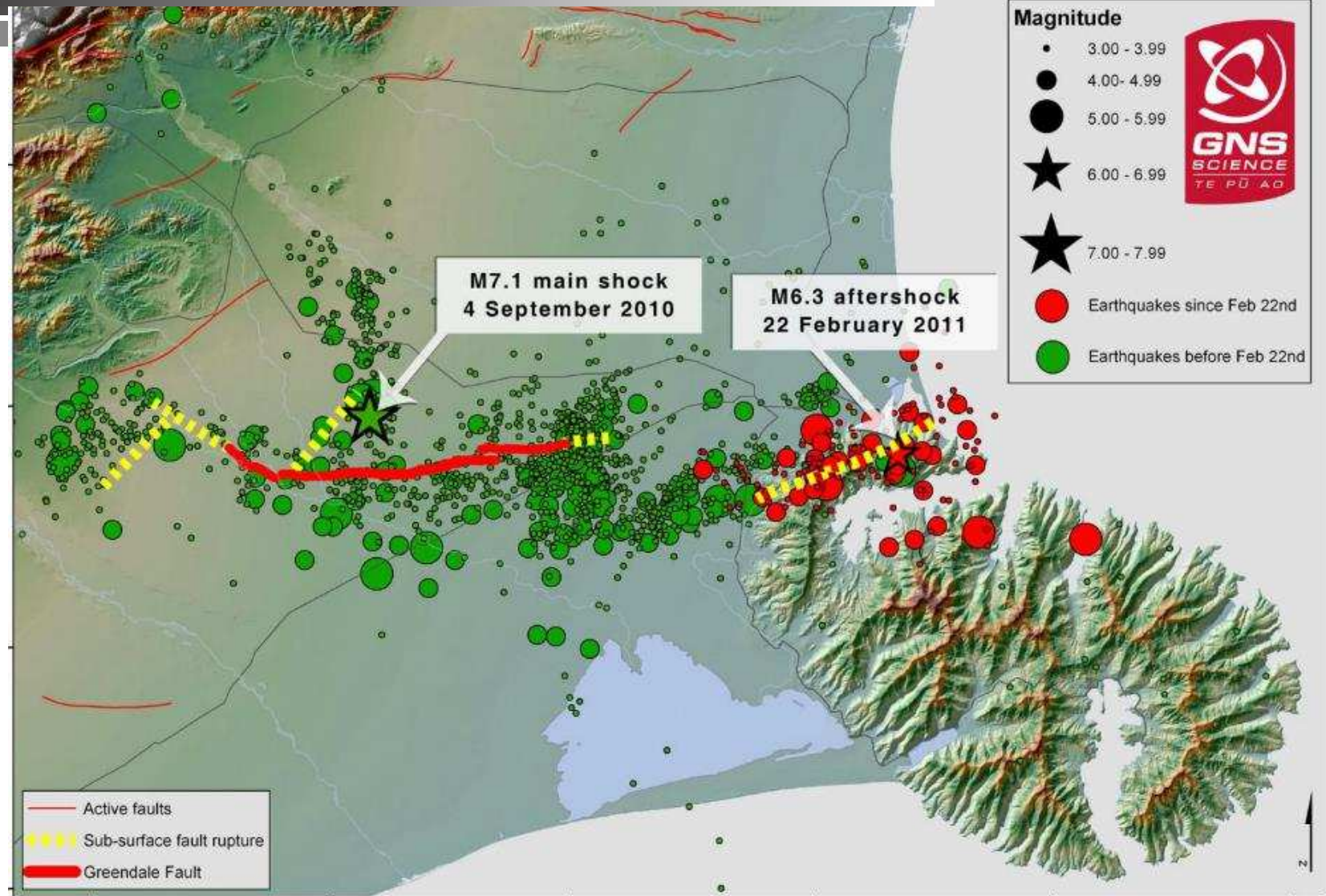
Various **Lessons Learned**  
along the way...

More Info: Koorey G. (2014), “**Transport: Post-quake impacts and new beginnings**”. In Bennett B., Dann J., Johnson E., Reynolds R. (ed.), *Once in a Lifetime: City-building after Disaster in Christchurch*, 512pp., Freerange Press, Christchurch.





# Some time ago in Christchurch...



# Chch earthquakes - Aftermath

- Major damage (est. \$40 billion rebuild)  
(and 185 deaths)
  - 70% of city centre demolished/rebuilt
  - 15,000-20,000 residential properties rebuilt
  - Over 100,000 other properties repaired
  - 45% of Christchurch's roads rebuilt – about 1000 km





# Christchurch: A bit tricky driving...

DISRUPTION  
THE PATH TO  
RESILIENCE



## **Lessons Learned:**

*The road network may be significantly affected by utilities/ground **under** it*



# ...But Great Walk/Bike Environments...



**Lessons Learned:**  
*A walk/bike friendly environment may  
be more mobile after a disaster*



• Annual Disaster Relief  
Trials, Portland OR, US





# Panic buying of supplies

## CHRISTCHURCH EARTHQUAKE

### People urged not to panic buy petrol

Share this      

8:56 pm on 24 February 2011

Oil companies are urging Christchurch people not to panic buy petrol, saying there is plenty of supply. Shell, BP and Caltex have all reopened some of their sites in the city following Tuesday's devastating quake, but say people are unnecessarily panic-buying, fearing that stocks will run out.

In some cases, service stations have had to close or restrict their supply to emergency vehicles. A queue for a petrol station in New Brighton stretched for 1km on Thursday, even though the station is closed due to the quake.

Oil companies say stocks are running low because of an unnecessary run on petrol - not because of a shortage of supply - and are urging people to only buy the fuel they need.

The companies say the BP fuel terminal in Lyttelton reopened on Thursday and another is expected to open on Friday. In the meantime, oil companies are trucking fuel to Christchurch from Timaru which has no shortage of stocks.



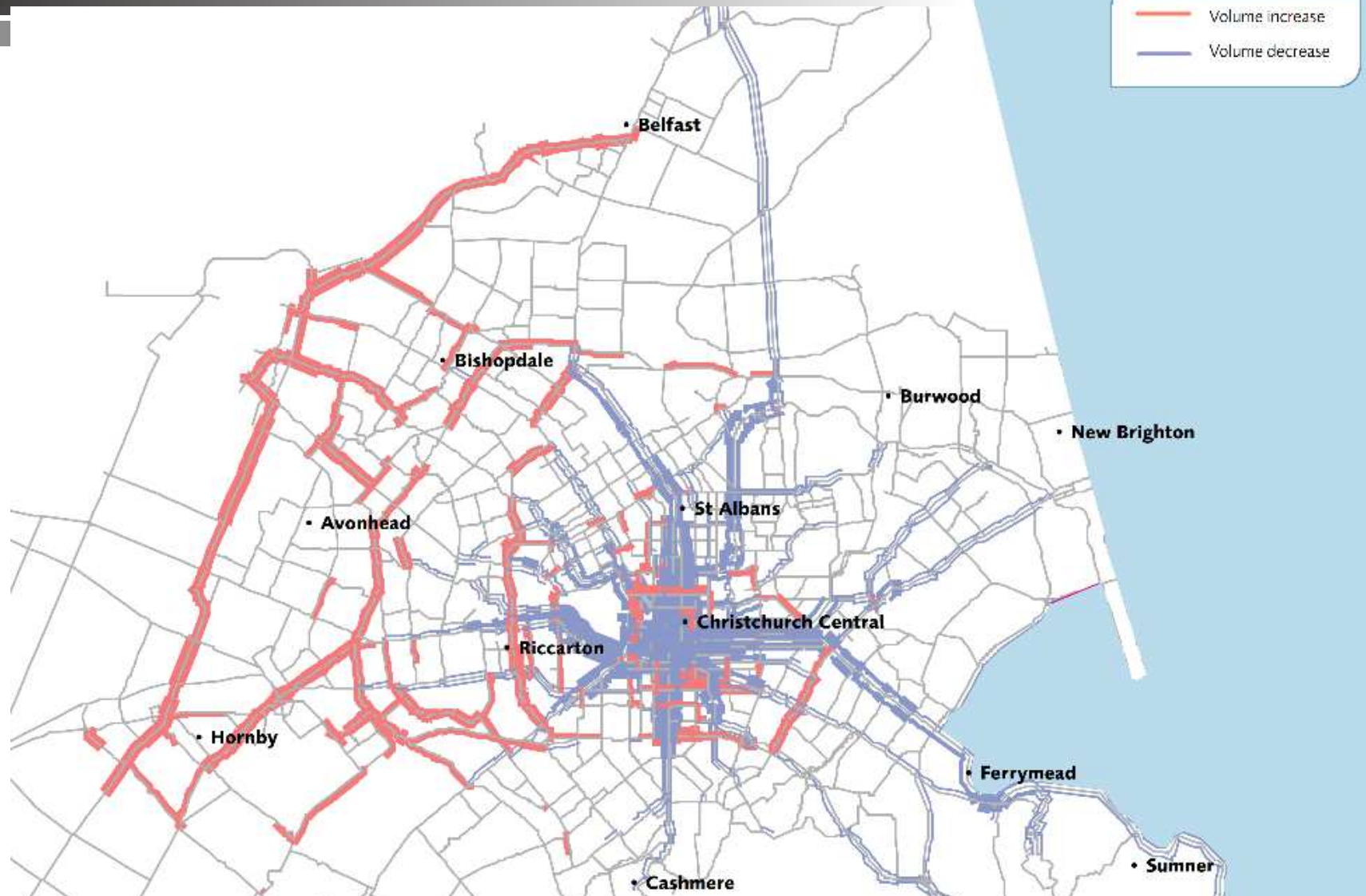
## Lessons Learned:

*Good communication and inventory management to prevent panic buying*

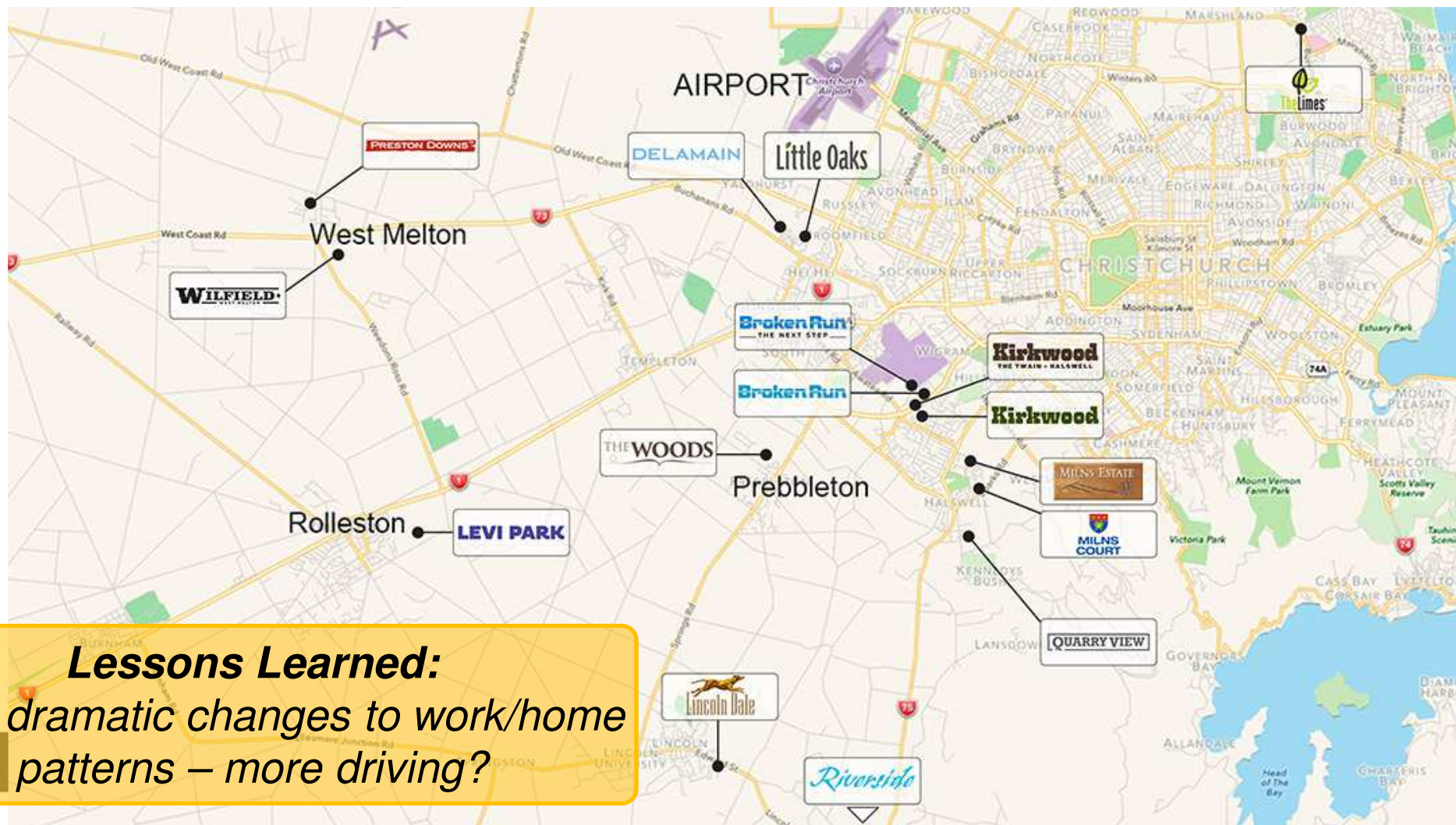


# Traffic changes

DISRUPTION  
RESILIENCE



# New subdivisions





# Changes to work/school patterns



## **Lessons Learned:**

*Some innovative solutions to deal with relocating – transport implications?*

**VIASTRADA**

TRANSPORT PLANNING AND DESIGN

## Site-sharing gives schools fresh ideas

TINA LAW

Last updated 05:00 20/07/2011

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Robert Kitchin

SHARING: Shirley Boys' High School pupils have seen how site-sharing works since March.

Some Christchurch secondary schools are considering changing their timetables after site-sharing has uncovered a new way of operating.

More than 20 schools have shared sites since the February quake. While some schools have returned to their home bases, 12 will still be sharing sites next term.

Schools have had to condense their day, with some taking the morning shift and others the afternoon shift. This has seen pupils lose an hour of teaching time a day.

Core Education research director Vince Ham said the negative aspects of site-sharing were obvious, but the experience had also revealed some positives.

Core Education, a not-for-profit educational research and development organisation, has been commissioned by the Education Ministry to conduct a study on the impact co-location and relocation has had on teachers, pupils and their families. The study will be released in October.

Some unexpected benefits of site-sharing had already been uncovered, Ham said. "It's not all doom and gloom."

At least three schools were reviewing their timetable and asking for parental feedback after seeing how different timetables had worked

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# Emergency traffic measures

- Additional traffic lanes at intersections
  - Cycle lane and parking removal to do this
- No “emergency” bus/cycle lane measures

It just seems absurd ... that for the sake of a few extra centimetres of road space, cycle lanes have been axed by the city council at a time when a lot of new cyclists are taking to the road.” Robin Delamore

## Lessons Learned:

*Emergency measures avoid consultation – but the right solutions?*





# Consultation



share  
an idea

Christchurch  
City Council





# What do people want?

- Strong push for walking / cycling / public transport
- People-friendly spaces



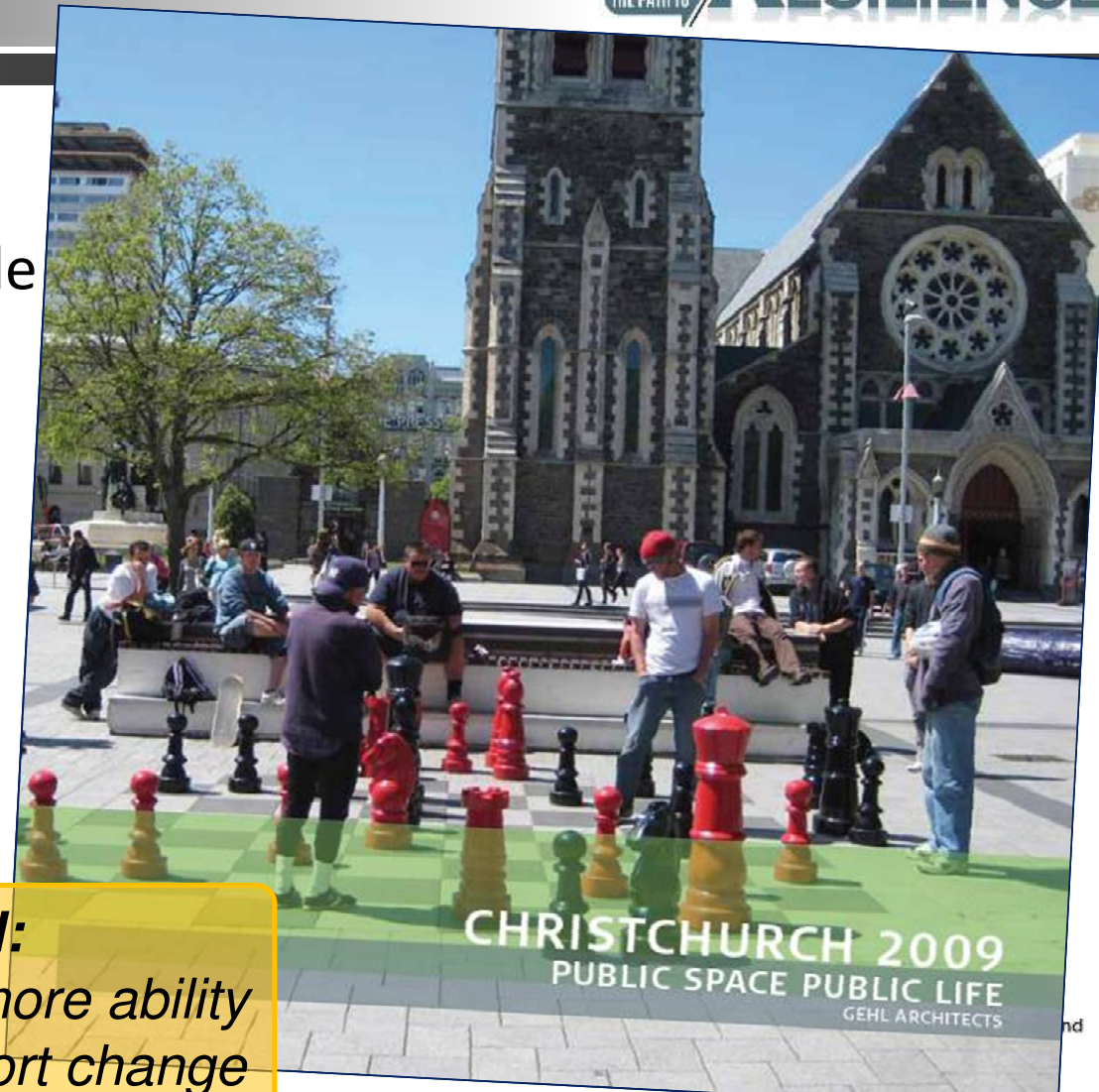
**Lessons Learned:**  
*Do you need to have a disaster to be able to ask these questions?*

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# This all sounds familiar...

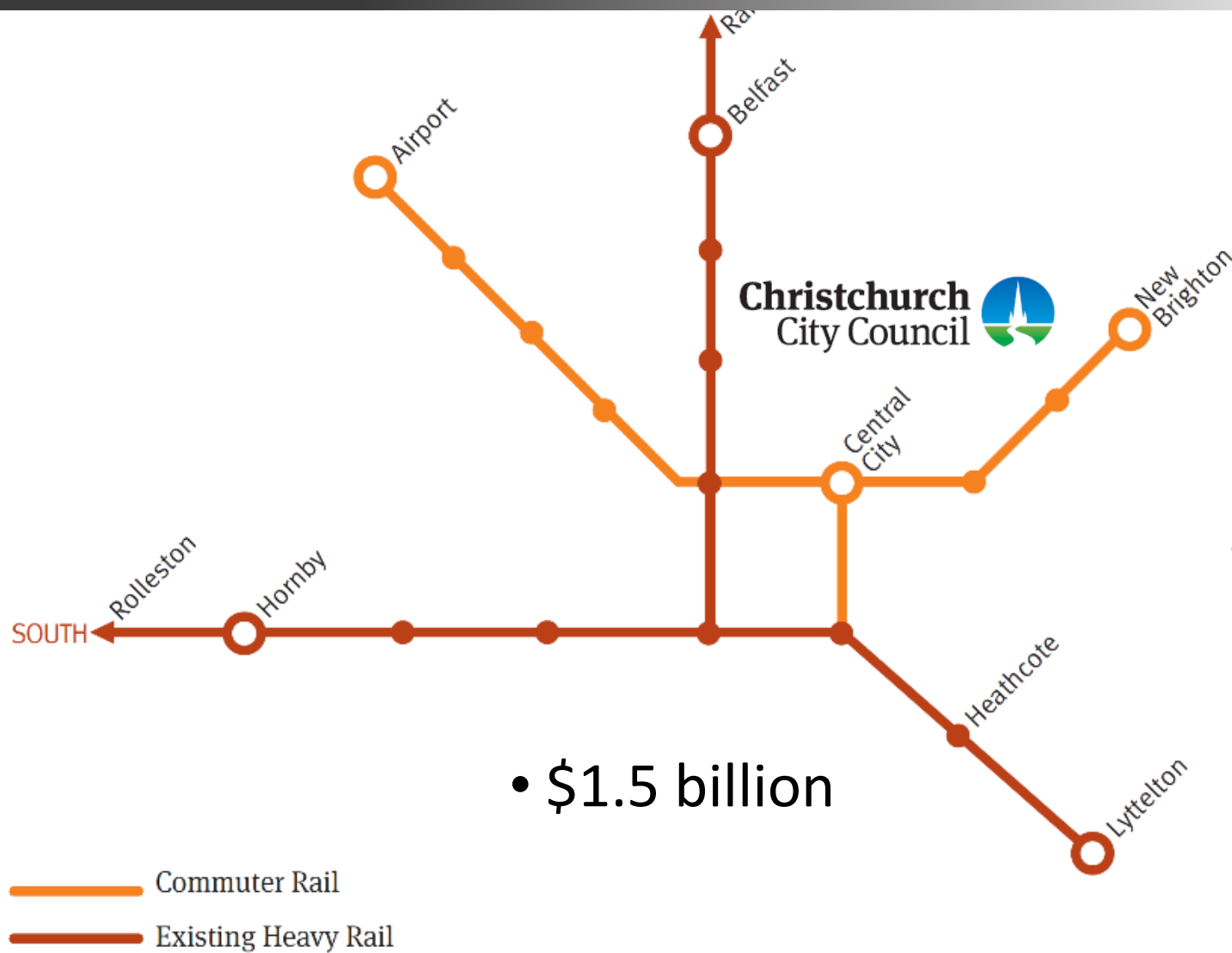
- CCC commissioned 2009 report
  - Recommended similar sustainable transport & people-friendly treatments for Christchurch
  - Largely shelved by Council...



## ***Lessons Learned:***

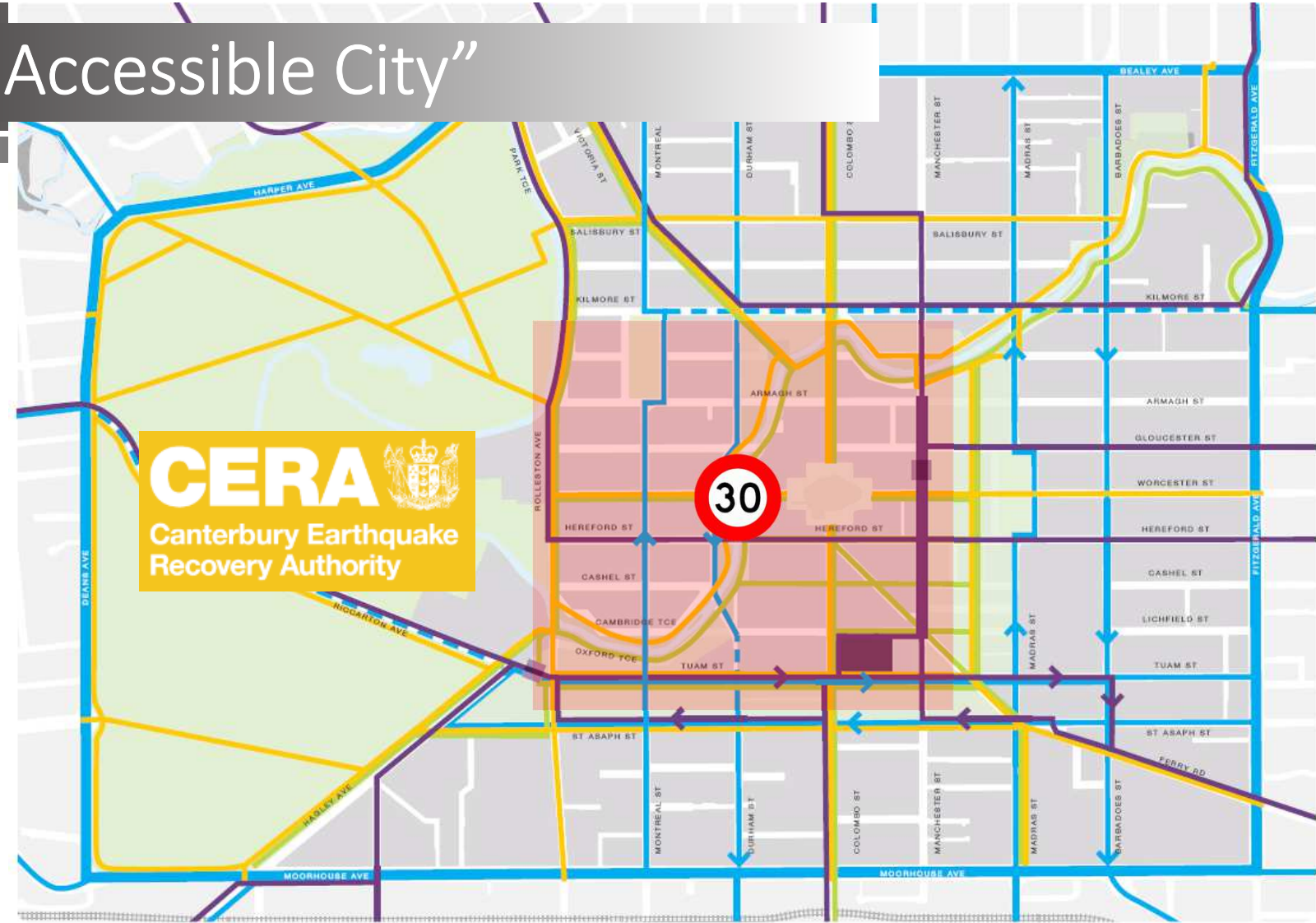
*A blank canvas gives you more ability to undertake radical transport change*

# CCC Plan - Proposed rail network



# CERA Plan - “An Accessible City”

- No mention of rail...



Cycling



Car travel



Walking



Public transport



Bus interchange

Christchurch Central  
Recovery Plan  
Te Mahere 'Marsake Ōnautahi'

Replacement transport chapter – October 2013

An Accessible City  
He Taone Wātea

CERA

Canterbury Earthquake  
Recovery Authority

Te Kaitiaki Take Kōwhiri  
Māori

Environment  
Canterbury Regional Council

Te Kaitiaki Take Kōwhiri  
Māori

Canterbury Regional Council

Canterbury Regional Council

Te Kaitiaki Take Kōwhiri  
Māori

Canterbury Regional Council

Christchurch  
City Council

Te Kaitiaki Take Kōwhiri  
Māori

Christchurch City Council

Te Kaitiaki Take Kōwhiri  
Māori

Te Kaitiaki Take Kōwhiri  
Māori



# New Transport Interchange



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SILENCE

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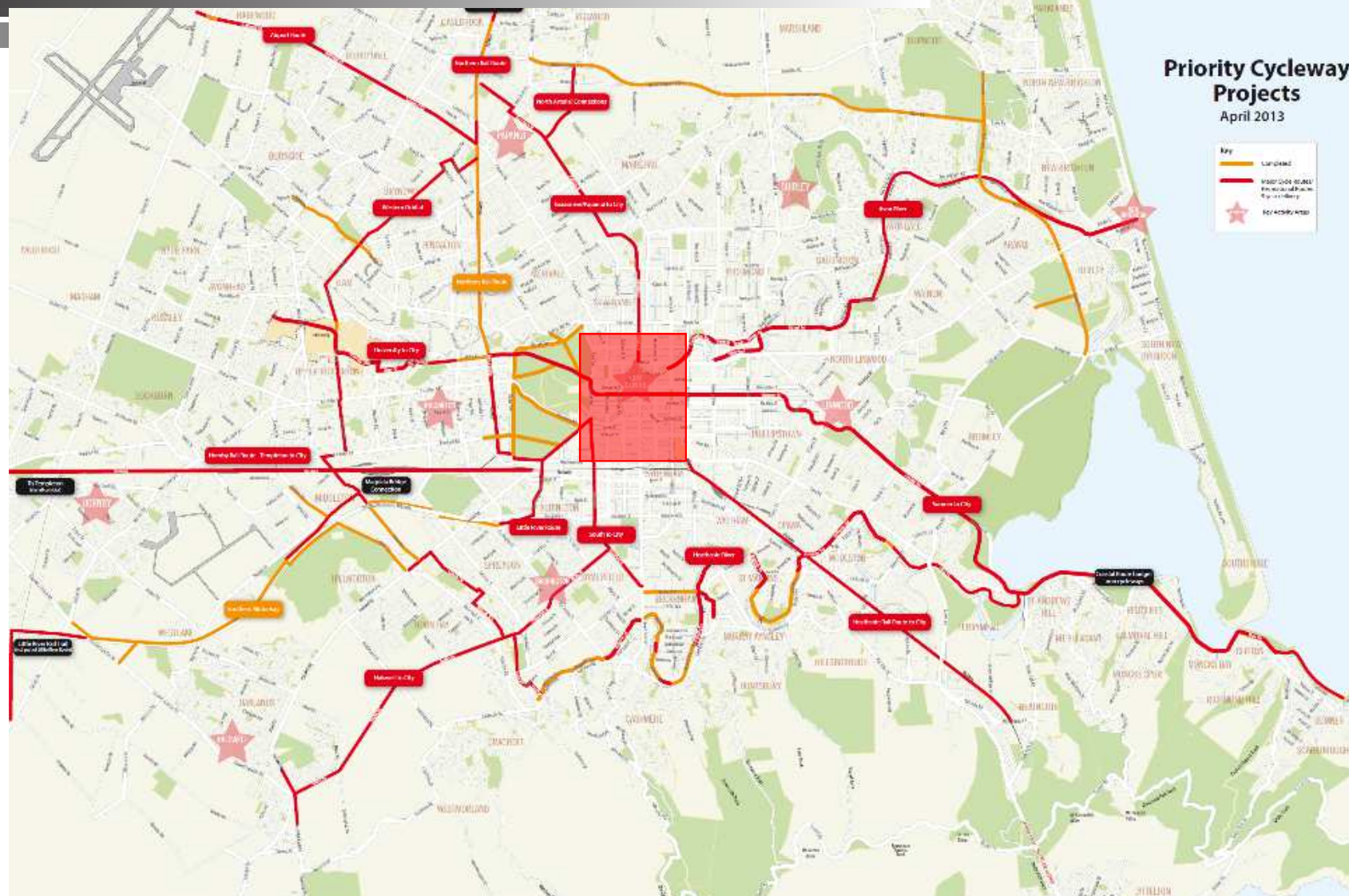


New Zealand  
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# Major Cycleway Routes

- \$230 million over 5-8 Yrs
- \$1.2 billion in benefits
  - Health
  - Safety
  - Envir'mt
  - Congestion





**Separated Cycleways**



**Neighbourhood Greenways**



A variety of cycleway treatments...

**Shared Pathways**

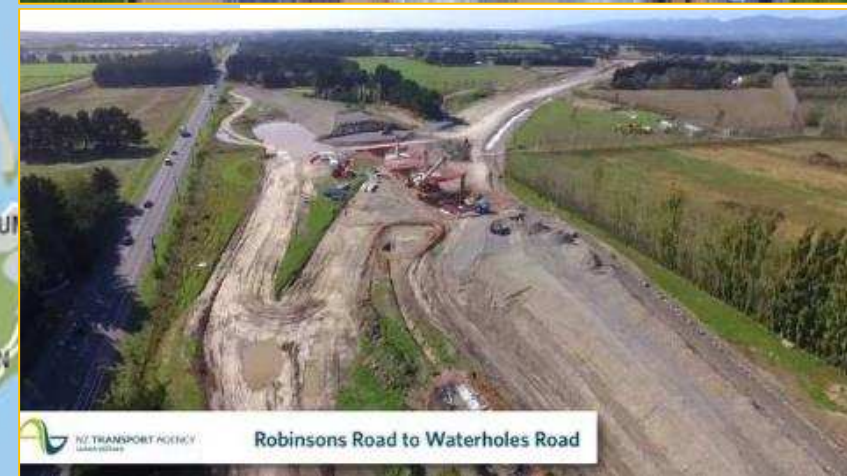
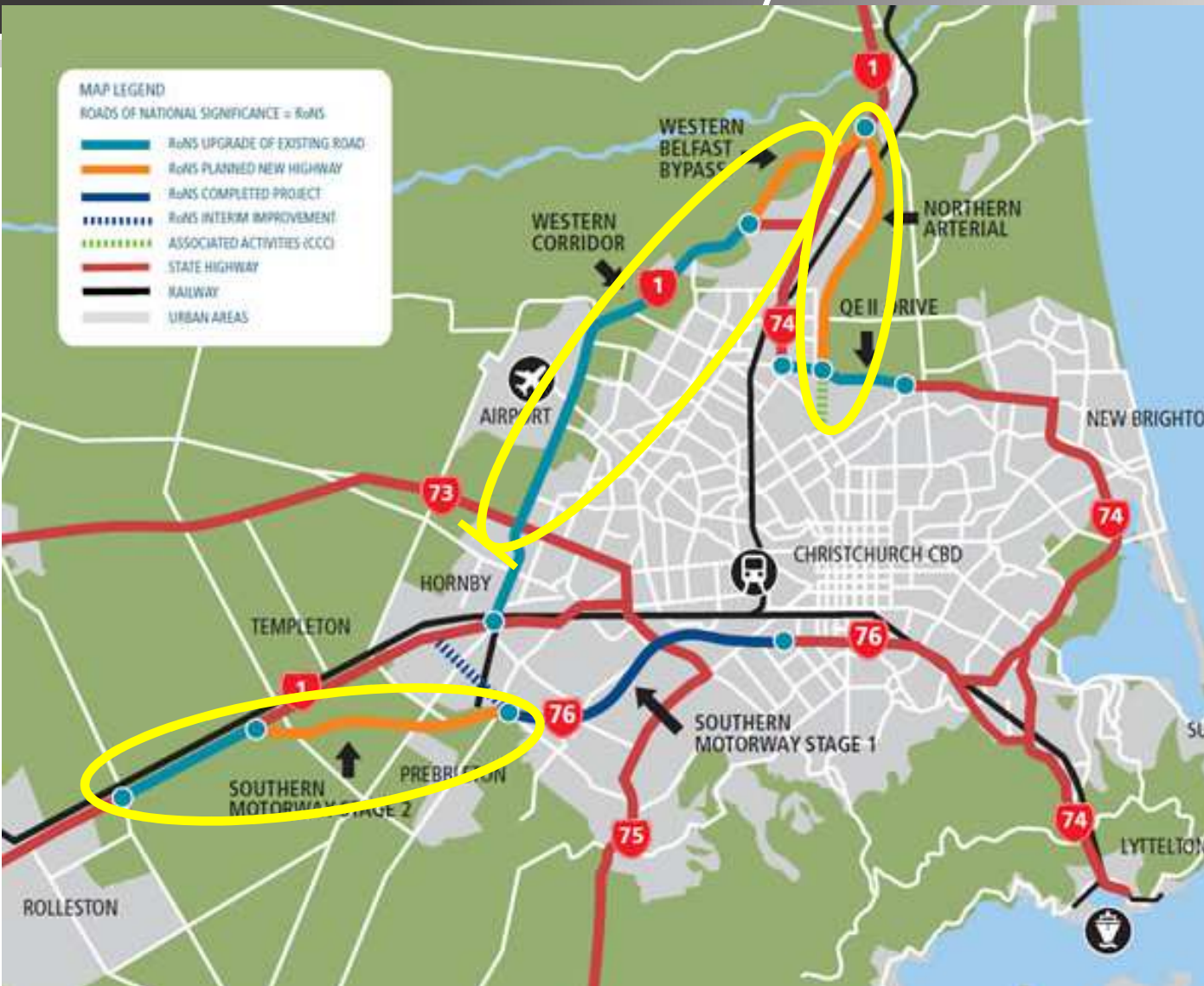


**Roadway Crossings**





# Christchurch motorways



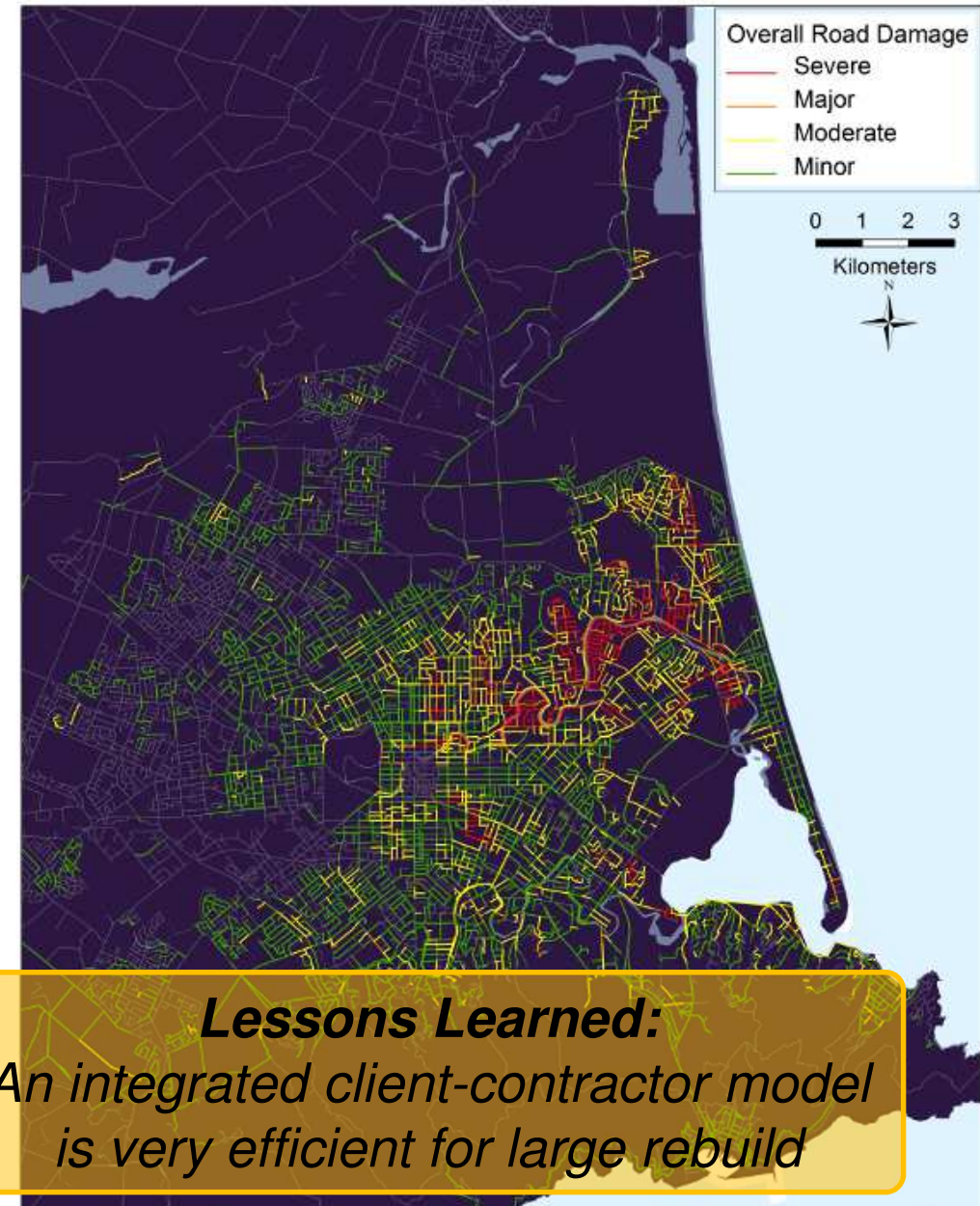


# Road damage/repair



**Stronger  
Christchurch**  
Infrastructure Rebuild Team

- Alliance Clients
  - Chch CC
  - NZ Transport Agency
  - CERA
- Lead Contractor teams
  - Fulton Hogan, City Care, Fletcher, Downers , MacDow
- Consultant designers seconded



# Just replacing “like for like”?

- Insurance payment requirements limited ability for betterment
  - Missed opportunities for improved street reconfiguration
  - Couldn't wait for other city transport strategies to be finalised



- <https://scirtlearninglegacy.org.nz>

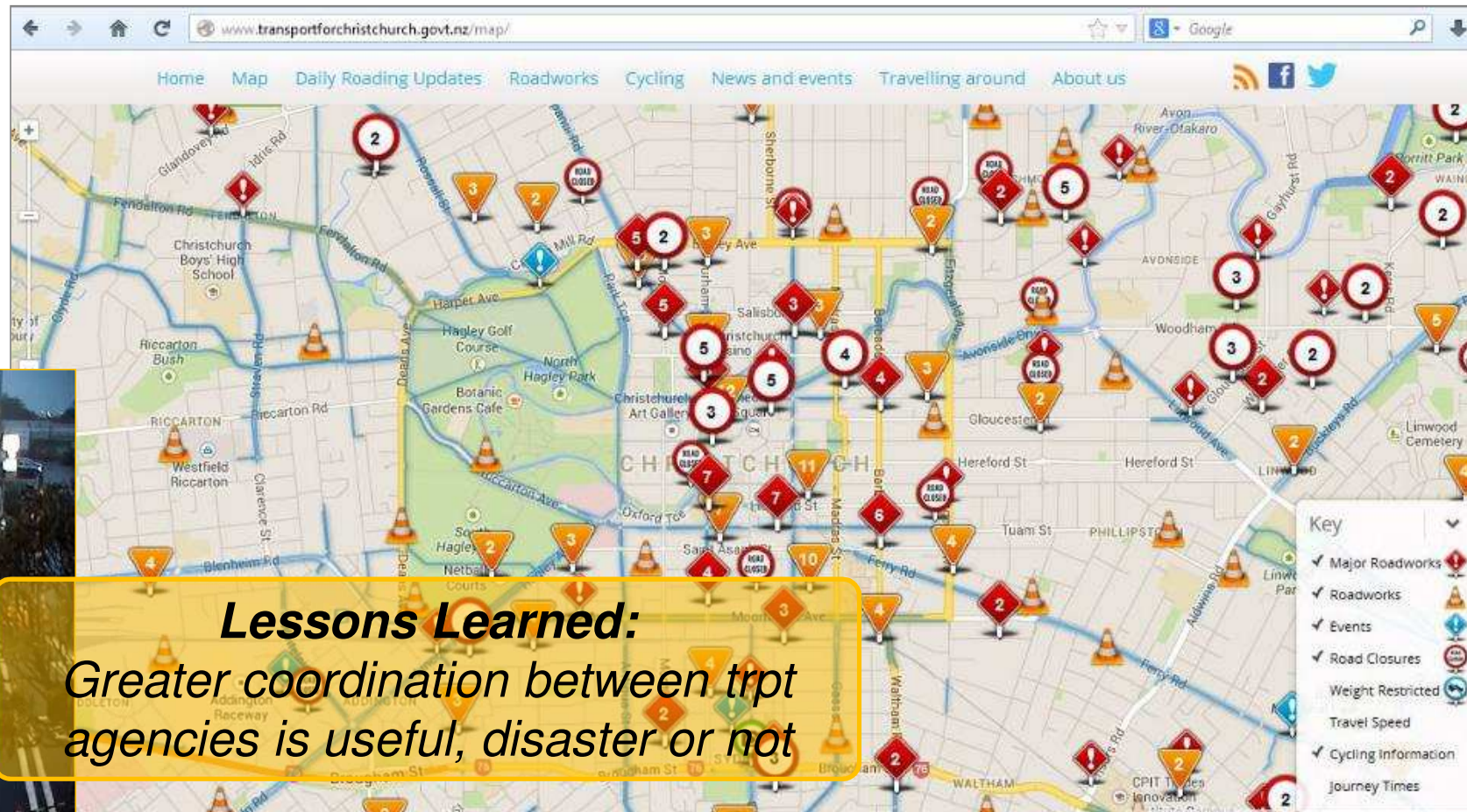


# Coordination of transport agencies



- 'Transport for Christchurch' formed post-quake

- CCC
- NZTA
- Env Canty
- Waimak DC
- Selwyn DC



**Lessons Learned:**  
*Greater coordination between trpt agencies is useful, disaster or not*

# Conclusions

- The Canterbury earthquakes identified many valuable lessons for transport planning
  - What worked well and also what not to do
  - Other areas with similar disasters should take note*
- Some learnings can/should be heeded ***in advance of*** any disasters happening
- Transitional nature of transport networks post-disaster is an opportunity
  - Allows for experimentation that is difficult to do otherwise (esp. with traditional consultation)





# Thank You!

- Any Questions?

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- *Twitter: [@GKoorey](https://twitter.com/GKoorey)*

