Stronger Christchurch
Infrastructure Rebuild Team

Christchurch / Canterbury Earthquakes

Construction Clients' Group

28 March 2012

[redacted]

Details of Events

4th September 2010

22nd February 2011

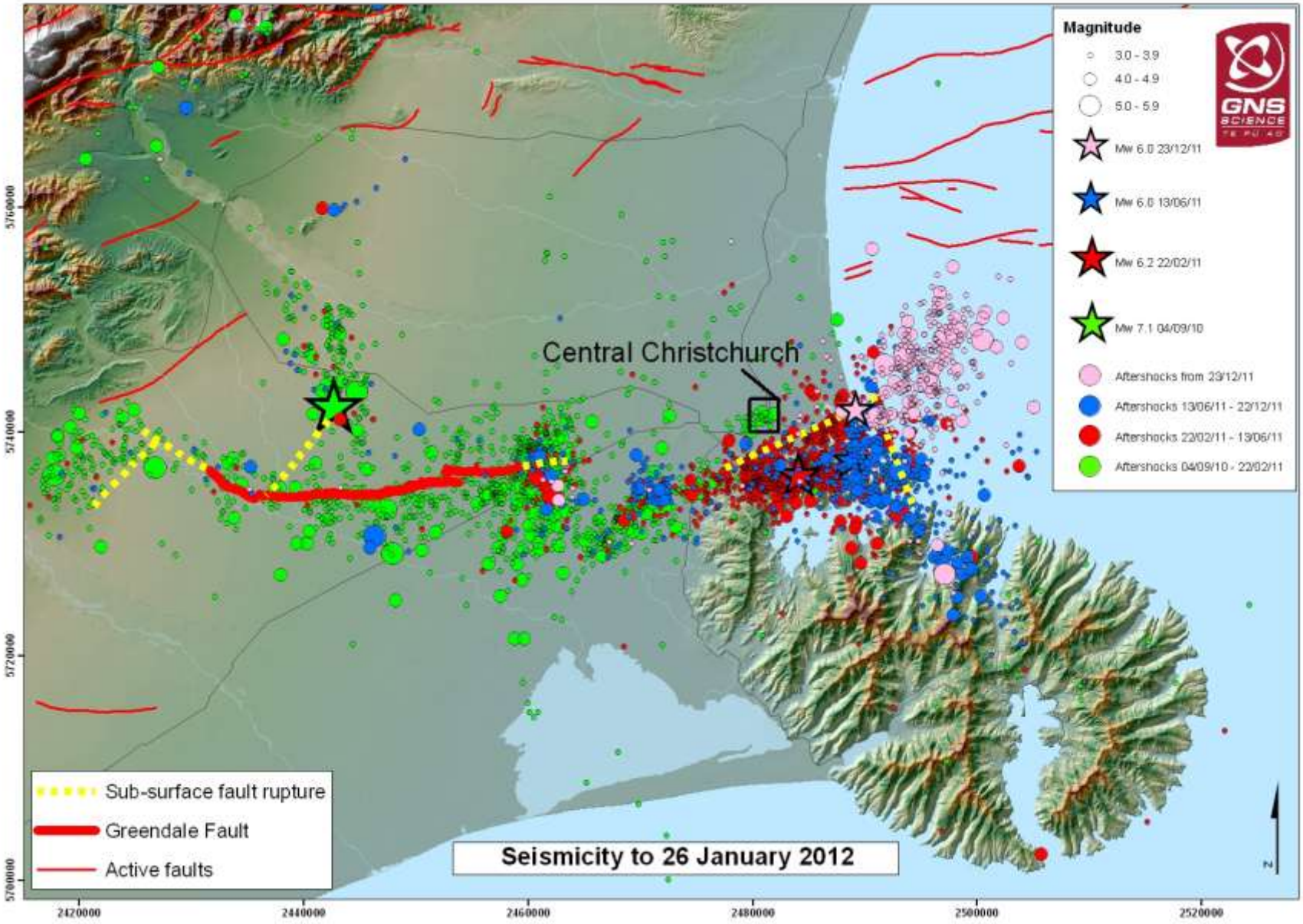
13th June 2011

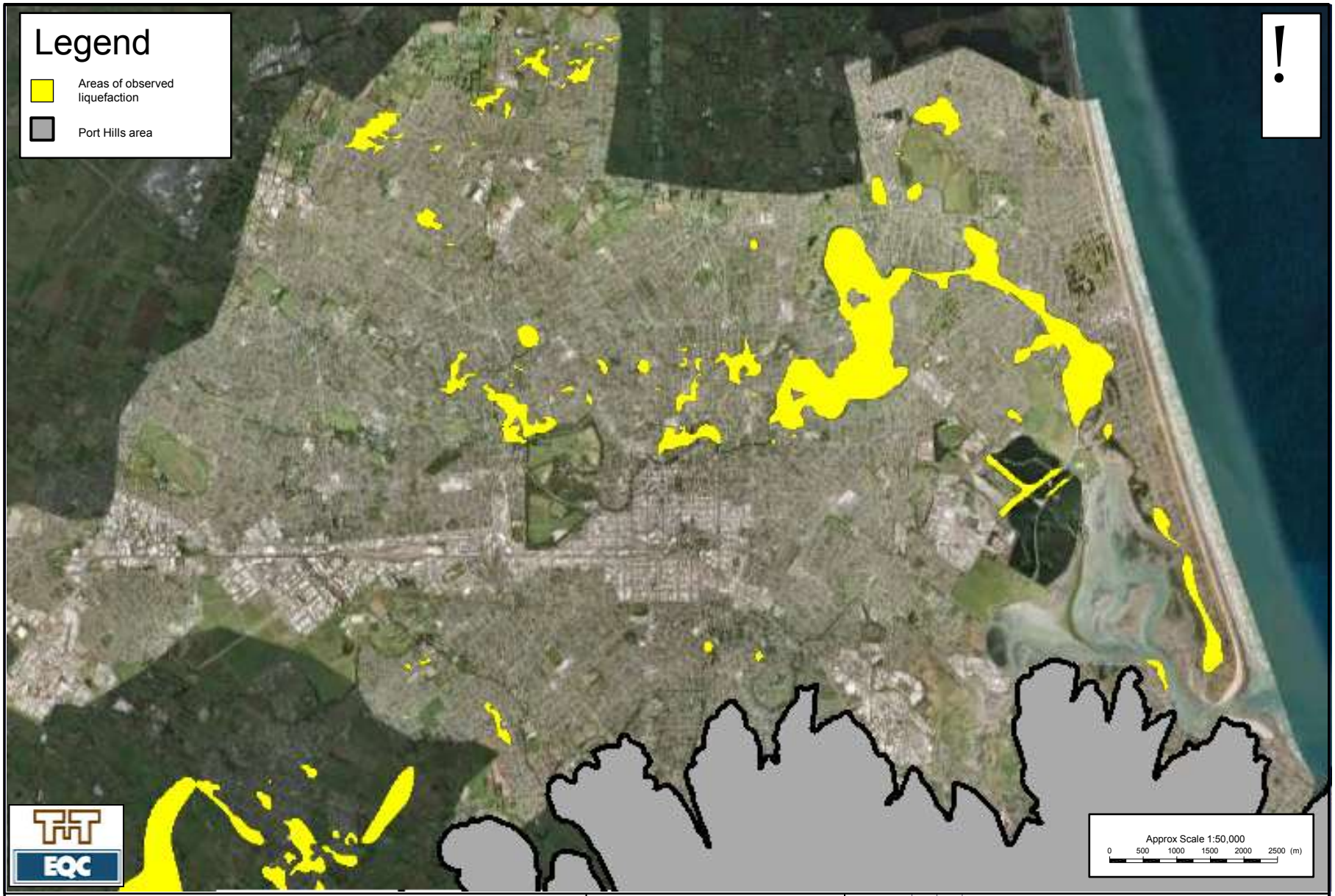
23rd December 2011

over 10,000 quakes or aftershocks to date

Canterbury Earthquake Sequence – looking backwards & forwards

Kelvin Berryman – Director, Natural Hazards Research Platform





Notes:
Low-resolution aerial photos sourced from Google Earth (Copyright: 2009).
High-resolution aerials provided by New Zealand Aerial Mapping (February 2011)
Property boundaries provided by Christchurch City Council

Canterbury Earthquake Recovery Authority

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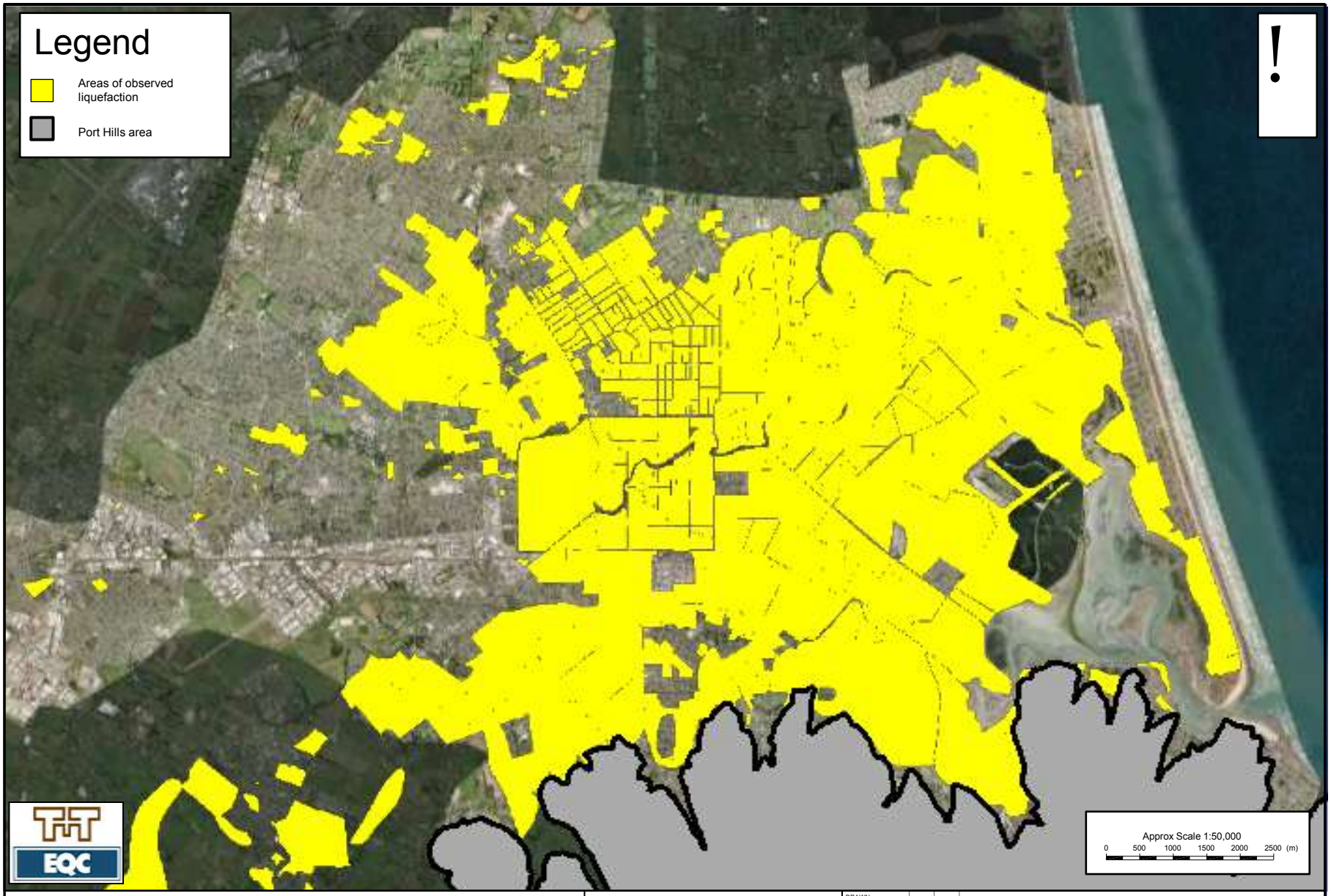
FIG. No.	
REV.	0

CERA
CANTERBURY EARTHQUAKE RECOVERY
Land Damage Map
Land Damage After 4 September 2010



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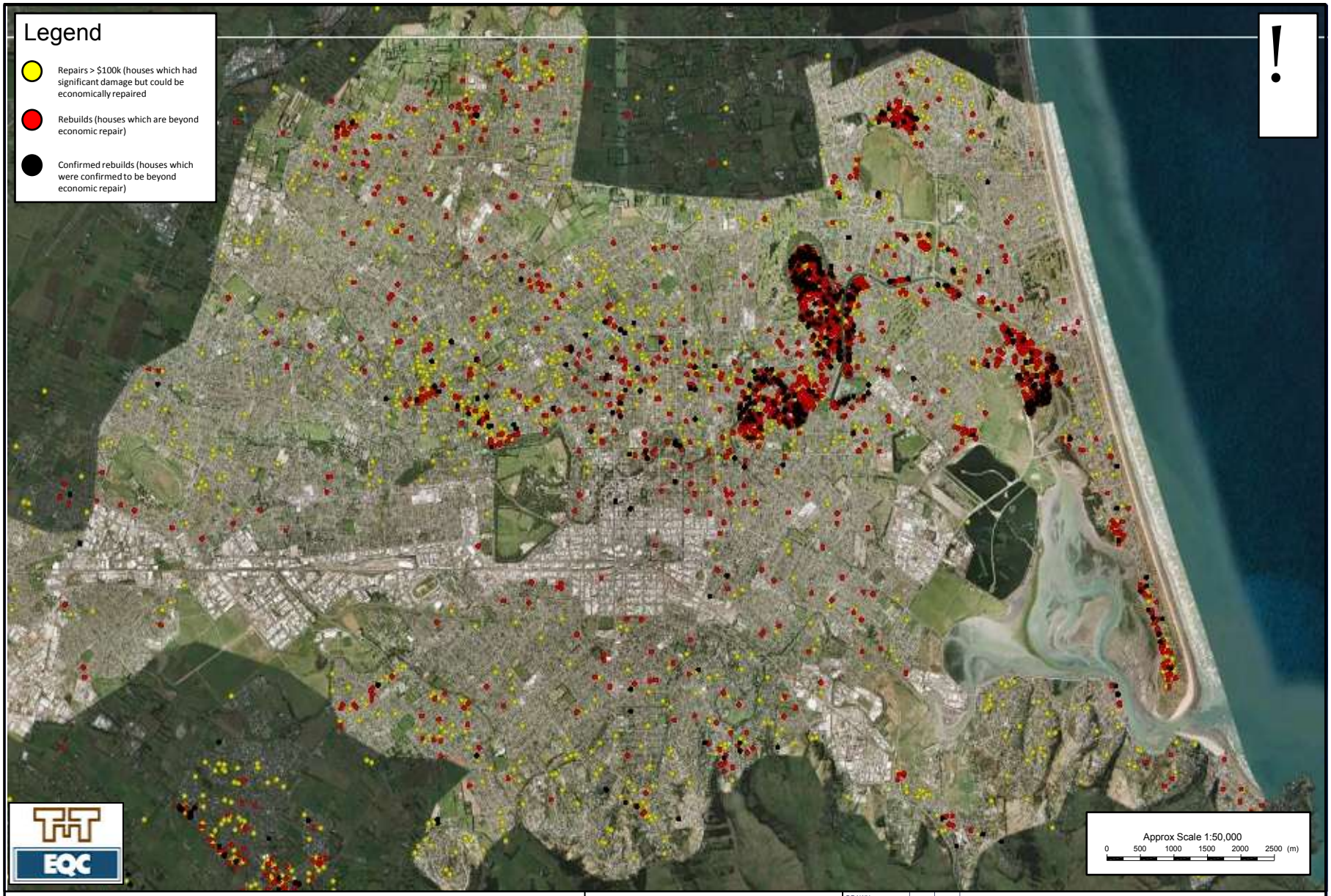
CANTERBURY EARTHQUAKE RECOVERY

Land Damage Map

Aggregated Land Damage After 22 February 2011



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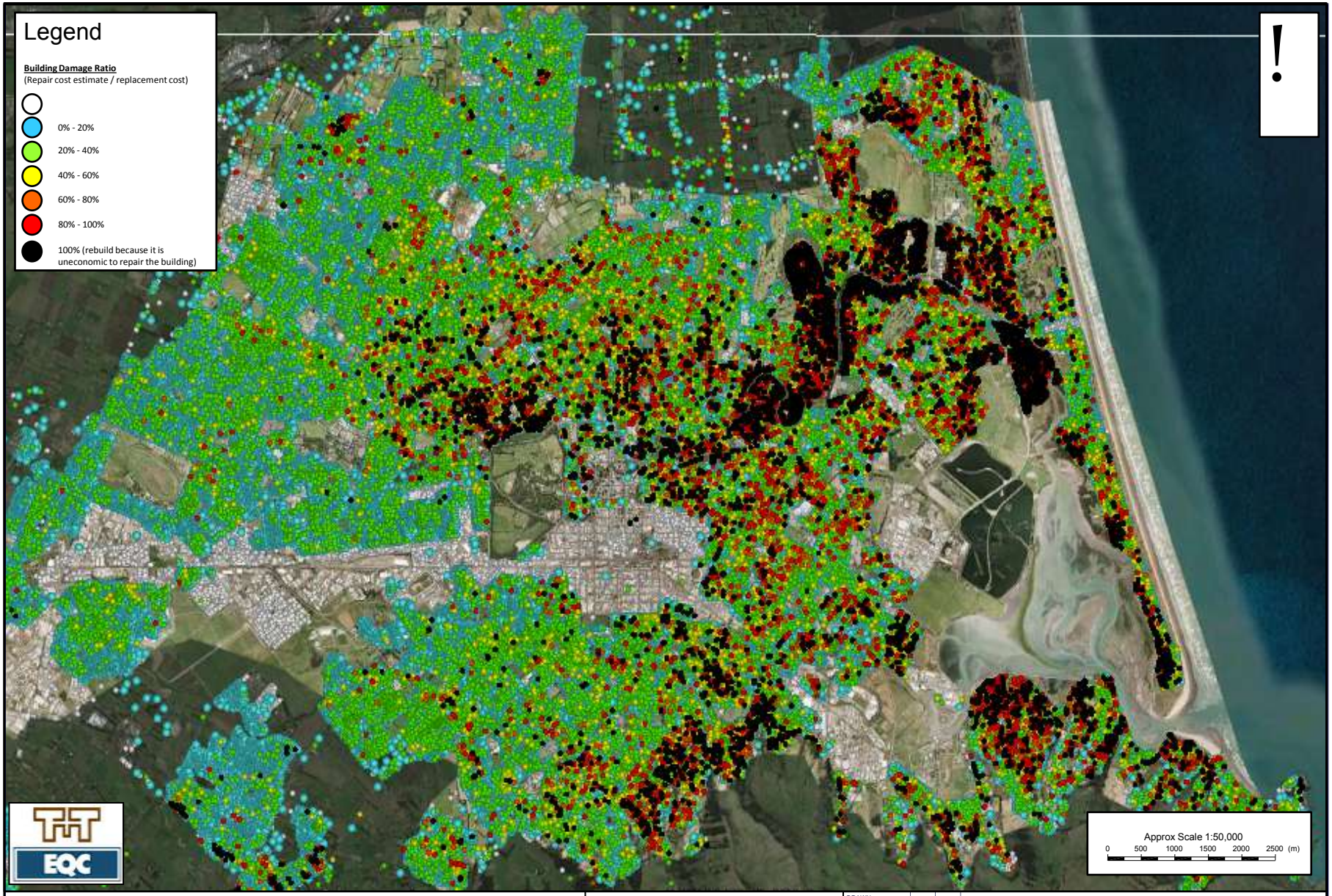
CANTERBURY EARTHQUAKE RECOVERY

Aggregated Building Damage Map
Building Damage After 4 September 2010



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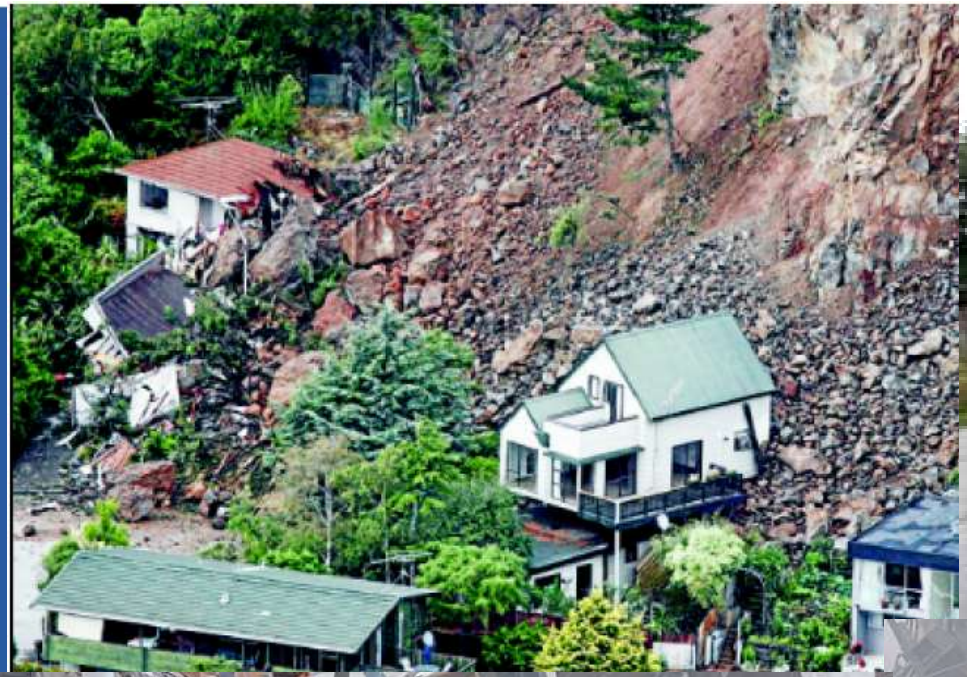
CERA
CANTERBURY EARTHQUAKE RECOVERY
Aggregated Building Damage Map
Aggregated Building Damage After 22 February 2011

Damage to Buildings




SHOE STOR
LEOPARD

Damage to Infrastructure


13 6 2011

Canterbury Earthquake Recovery Authority

Severe Liquefaction

Tonkin & Taylor

Damage to the Water Supply

Damage to Waste Water System

Wastewater Treatment

Oxidation Ponds

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Liquifaction

Liquefaction Silt

- Sep 10 – 30,000T removed
- Feb 22 - 430,000 T removed
- June 13 – 110,000 T removed
- Staging posts in city with semi trailers carting to Burwood
- 3000+ contractors and volunteers clearing silt during peak
- Approx 14,300 truck movements in 4 weeks post Feb 22
- One truck every 30 seconds at Burwood over 12 hours/day during peak.

How the City Responded

- Set key priorities with Civil Defence
  - Save life and provide shelter.
  - Get clean, safe water to people.
  - Open critical transport routes and provide sanitary services.
  - Get rid of the silt.
  - Clear the storm water system and prevent flooding.

How the City Responded

- Obtain Information on the extent of damage.
- Encourage Community to “Help Themselves”.
- Think ahead – must be strategic from day 1
- Use all resources available – student army, farmy army, government departments etc.
- Create a platform to deliver the Recovery phase of the work.
- MAKE DECISIONS

Transition – Emergency to Recovery

(a) Emergency response - Infrastructure Rebuild Management Office (IRMO) established after September 4th

(b) Escalation of scope - Civil defence after February 22nd to April.

(c) Plan for recovery - SCIRT formed in response to increased scope on 4th May (IAA signed)

(d) Recovery - Transition IRMO to SCIRT (1st September AA signed, responsibility transferred)

SCIRT Model

- Alliance Delivery Model
- Three Client Groups
- Five Contractor Groups
- Mix of integrated team and independent contractor teams
- Professional services to be engaged external to Alliance Agreement
- Design process to be managed across programme by integrated team

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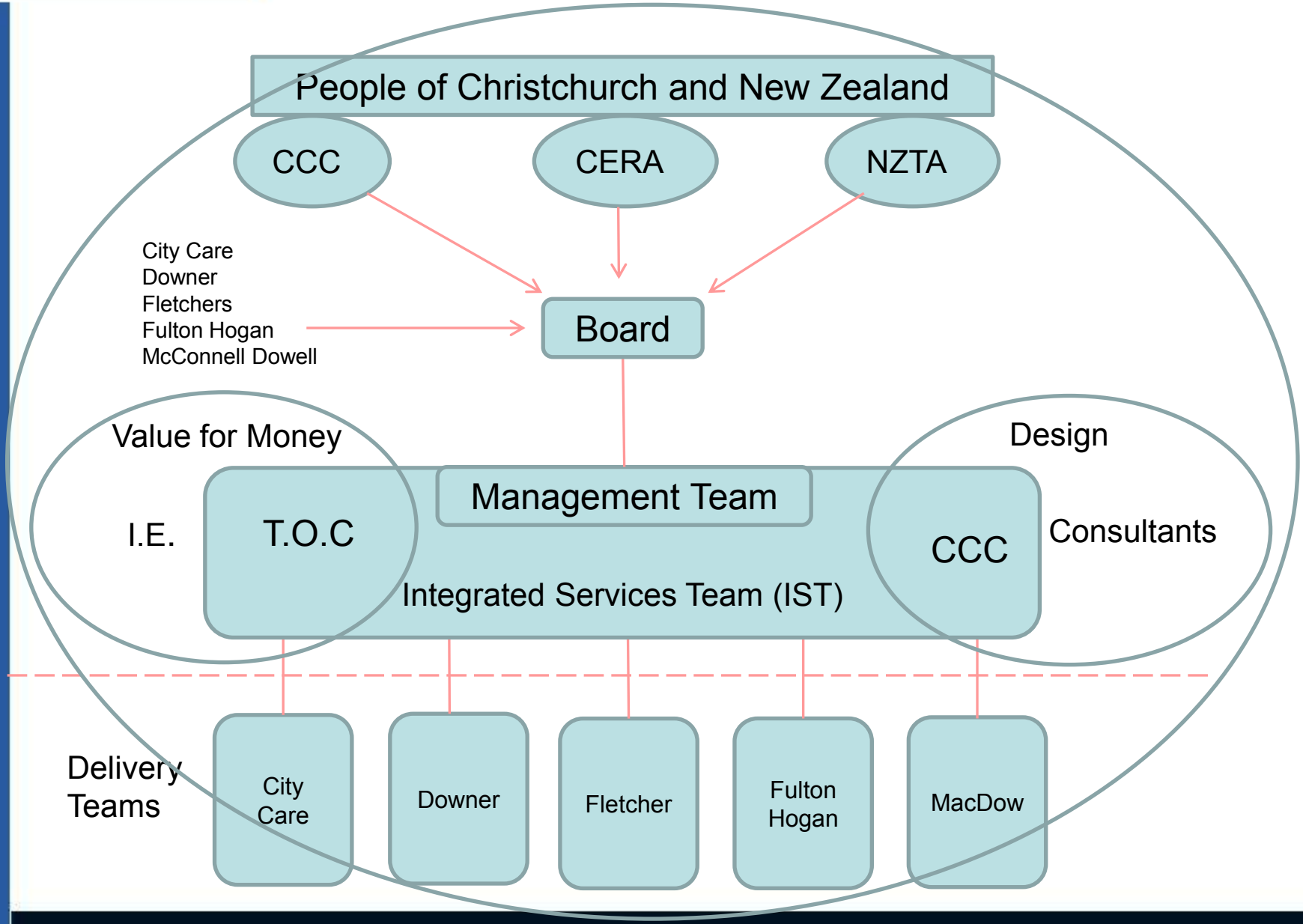

Scope to be Delivered

Rebuild of Horizontal Infrastructure

- Sewer
- Water Supply
- Drainage
- Roads and green spaces

Ambiguous scope – subject to change with ongoing seismic activity and investigation

Programme of many projects across four infrastructure networks

Summary Statistics

Initial assessment for April budget purposes

	Unit	Replacement/Repair
Water Reticulation	Km	160
Sewers	Km	570
Sewer Pump Stations	No	11
Stormwater	Km	100
Roading - residential	Km	600
Foot Bridges	No	51
Road Bridges	No	94

Cost Estimate Summary

Facilities	Rebuild Cost $ million
Water Supply	$150
Sewer Works	$910
Stormwater	$120
Roading	$725
Bridges etc	$95
Total	$2,000

Excluding:

- Land Remediation
- Damaged land (red zone) treatment
- Provision of services to new land developments
- NZTA Roads

Objectives

- Raise Bar in Safety (Contractors, Consultants and Industry in general)
- Demonstrated best long run Value for Money
- Manage process responsibly - balanced long term planning and programming vs rapid response
- Open dialogue across industry – vertical, horizontal and housing rebuilds
- Local labour resources – grow capacity through targeted training and development. Coordinated industry-wide approach.
- Optimise local and regional Contracting and Consulting capacity

Achieved to date

- Virtual Orginisation to deliver $500mill per annum
  - Development of Integrated Management Systems
  - Detailed ‘end to end’ process – incl systems to manage
  - Sourced, configured and activated Financial Tool - JDE
  - Developed process for prioritisation of projects – MCA tool
  - Developed Estimating protocols – aligned with IE
  - ‘Cradle to grave’ Programme Scheduling process - flows out of prioritisation

Achieved to date

- Strategic Review Process – completed Dec 2011
- Ongoing revision of Specifications to deliver ‘resilience’
- Co located Integrated Services Team – mid October 2011
- Engagement of Professional Services – 16 Consultants
- Transition from IRMO to SCIRT delivery – 1 Sep 2011
- High Performance Team Plan – developed and implementation commenced

Challenges Ahead

- Ramp up to $30 million / month spend by June 2012, $40 mill by Dec 2012
- Resourcing – including accommodation
- Containing inflationary market pressures – best value per dollar spend
- Positively influence the wellbeing of the team and the community
- Build confidence in client and stakeholder groups by delivering on promises

What's it all about?

Creating resilient infrastructure that gives people security and confidence in the future of Christchurch