

The following presentation was given at:

**SCAF Workshop**  
**“Integrated Cost and Schedule Risk Analysis”**

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# REBUILDING CHRISTCHURCH





- **4 September 2010: 1<sup>st</sup> earthquake (mag 7.0-7.1)**
- **22 February 2011: 2<sup>nd</sup> earthquake (mag 6.3)**
- **Liquefaction produced approx.. 400,000 tonnes of silt**
- **Floods**
- **13 June 2011: 2 tremors (mag 5.6 and 6.3)**
- **Landslides**



Photograph taken during 22 February 2011 aftershock



Compulsory purchase of building and land

Sewage system breached

Insurance complications

Rescue and emergency centres

International help  
Communication

**1,000,000 homes demolished**  
**6,800 minor injuries** £15b rebuild costs

UK Gov & British Nationals

**185 deaths**

Flood areas

Recession

No-Go Areas

160,000 homes damaged

**220 trauma cases**

NZ Army

Singaporean Army

Insurance claims

**70,000 people left**

Historical buildings damaged

Australian search parties

NZ Red Cross

Emergency help

Road Damage

Earthquake

Power supplies

Liquefaction

NZ Emergency Services

Commission

NZ Police pathology

Burst water mains

Black out

Temporary housing

Civil Defence website info

Looting

Businesses struggle as sites are 'no go' areas

Christchurch hospital

Cardboard Cathedral

Christchurch Hospital overwhelmed  
Australian Search Parties  
NZ Police - identifying bodies  
Electricity blackout  
Sewage and water pipes broken  
Cell phone towers  
Major access problems (trains, roads)  
Flood areas



Emergency housing  
Cardboard Cathedral  
Temporary shopping centre

Population/skills drain  
Children  
220 trauma cases  
Higher taxes





# New Zealand Government



**Christchurch Central**  
Development Unit

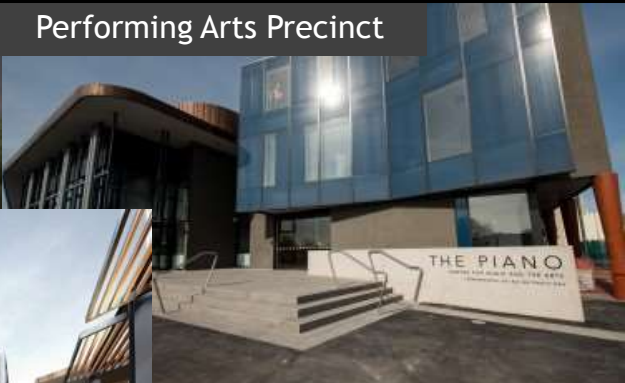




Avon River Precinct



Culture Centre



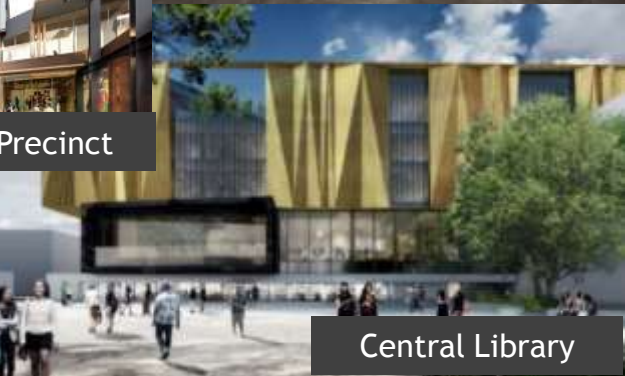
Performing Arts Precinct



Earthquake Memorial



Retail Precinct



Central Library



The Square



Justice & Emergency Services Precinct



Convention Centre

Cricket Oval



Metro Sports Facility



Bus Interchange



Residential Demonstration Project



Stadium



Health Precinct



Earthquake Memorial

Each project meets  
a community need



Residential Demonstration Project



Stadium



Retail Precinct





## Considerations

Number of projects

Complexity of individual projects

Building in conjunction, not isolation

Valuable land between projects

Accessibility to sites

Disruption to travellers and community

## Principle Objectives

Green, Prosperous and Accessible

## ERM Capabilities

Managing opportunities

Managing risks across projects

Various report levels: project level, Christchurch Council and Local Community

Managing risks whilst under scrutiny



Current Population  
Returners  
Migrants

Building capacities

Latest technology

Improved infrastructure and access to city

Good living and entertainment lifestyle

Good work prospects

Promotion of facilities



## How did we start working with AECOM and Deloitte?

AECOM's Head of Project Controls in New Zealand was Matt Heal. Matt had worked with riskHive on the London 2012 ERM system and was responsible for taking the ERM through to the London Legacy Development Corporation (LLDC), where it is still used today to manage risk on the Olympic Park scheme.

Matt remembered that the riskHive ERM system was fast to deploy and scale and that it was easy to use (we didn't train anyone on 2012) and wanted a quick intuitive solution for CERA as they had to get up and running in short order.



## Selection

As riskHive was the AECOM corporate ERM tool, the CERA project used the main system to get started while the NZ Government organised a swift competition to see if there was a more appropriate option - and found no better option.



## Framework

Deloitte & Touche authored the risk framework with SME input from riskHive from February 2015 through to May of 2015, configuring a pilot ERM system to match the CERA requirement. A 25-user system was formally procured and rolled-out in June 2015 and I went out to New Zealand to deliver capability and training. The system subsequently and successfully scaled to 100 users in December 2015.



Personal

Workers,  
Home Owners &  
Consumers

Stakeholders

Focused,  
critical &  
accountable





## The Standard Build

- No such thing (i.e. frameworks)
- Fluid

## Face-to-face

- Trust
- Quick Response
- Training

## ‘Vague’ is better than nothing

- It’s OK to start with poor quality data



## New and Improved



## Added Innovation

- Super Configurability
- Supports ‘one size does not fit all’
- Every framework enforces changes to the system
- Graphical Visualisation
  - Bowties
  - Word Clouds
  - Risk Radar Report
  - Landscape Exposure charts





- SME Risk Management Consultancy
- Tool with a history in construction and large scale projects
- Reduced training and learning curve
  
- Helped develop risk management framework
- Configured new processes and life cycles
- Ability to capture risks from a variety of disciplines
- Reporting to stakeholders
- Created reports for specific risk data
- Historical, current and project risk data
  
- Analysing spend v effectiveness
- Capturing delays and interdependencies
- Assessing impact of risks on the project budget and health
  
- Built and maintained a strong customer relationship
  
- CERA replaced with Otakaro Ltd in April 2016 which is now responsible for Anchor Projects - ERM now with Otakaro



- Improved risk maturity moving into quantitative analysis for cost and schedule.
- Continue to provide a system which can be adapted alongside the customers developing needs and as their level of risk maturity grows.
- V5 of the tool incorporating lessons learnt is being rolled out now.
- Customer User Groups.



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# Questions