



Building Management in Emergencies: An Update on New Zealand Arrangements



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Presentation Overview

- Recap key lessons and enhancements to NZ arrangements following the Canterbury and Kaikoura earthquakes
- 2. Key Developments
 - Understanding the scope of 'Building Management in Emergencies
 - Having all the system elements lined up: '*Legislation through to Field Guides*'
 - An additional process component for multi-storey buildings: *Targeted Damage Evaluation*
- 3. Stocktake current capability, gaps and future challenges

Recap on the development of NZ arrangements

- 1. Guidelines first developed in 1990s, based on ATC 20 document
- 2. Revised in 2009, following Gisborne earthquake 2007
- 3. Refined following experience in Padang Indonesia 2009
- 4. Implemented following Darfield earthquake4 September 2010
- 5. Improvements following the 22 February 2011 Christchurch earthquake
- 6. New lessons from the 14 November 2016 Kaikoura earthquake
- 7. Revised documentation and legislation



Building assessment in practice (1)

Darfield earthquake 4 September 2010 M_w7.1

- Rapid assessment:
 - Commercial 1300 (7% red, 22% yellow, 71% green)
 - Residential 7000 (4% red, 14% yellow, 82% green)
- Approx. 75 engineers and 175 Building inspectors
- Local state of emergency 4 Sept to 16 Sept

Christchurch earthquake 22 February 2011

- Rapid assessment
 - Commercial 8,000(15% red, 25% yellow, 60% green)
 - Residential 70,000 (1800 red)
- Approx 500 engineers and 300 Building inspectors
- National state of emergency for two months





The Learning Process.....





Canterbury Earthquakes Royal Commission Te Komihana Rūwhenua o Waitaha

189 Recommendations

Review of the Civil Defence Emergency Management Response to the 22 February Christchurch Earthquake 108 Recommendations

> Coroners Inquest into the deaths of eight foreign nationals who died in the CTV building



Canterbury Earthquakes Royal Commission

Conclusions

- Current approach appropriate, in accordance with international best-practice
- Well served by volunteer engineers
- Improvements needed

Recommendations

• 51 recommendations for improvement (recs 111 to 161)



Post Canterbury developments

Detailed damage evaluation process, DDE (formerly DEE)







New forms

- New field guides
 - earthquake, flooding, geotechnical

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- New placards colour change and plain English
- Process recognised in National CDEM Plan 2015
- Resources on <u>www.building.govt.nz</u>

Training programme in place

- Tier 2 training undertaken
 - Engineers/ Architects
 - **Council Staff** .
 - (approx 400 on register)
- Geotechnical training early 2018
- On-line training modules

Tier 1: **National** resources capable of leading an assessment operation (12-20 people)

Tier 2:

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Awareness

Iraining

Senior Building Officials, **Chartered Professional Engineers** (structural, geotechnical) and Registered Architects (approx 400)

Tier 3:

Building Officials, Structural and Civil Engineers, **Registered Architects**

Building assessment in practice (2)



Kaikoura earthquake 14 November 2016





New issues from Kaikoura

- Fault rupture affected isolated South Island communities, along with significant landslide issues
- Three districts undertook rapid building assessments, but didn't fully understand the processes
- Insufficient engineering capacity to respond across both rural and metropolitan districts
- No state of emergency declared in Wellington, therefore no mandate to undertake assessment or require owners to provide further information
 - New legislation passed to allow Councils to declare a 'transition' even if State of Emergency not declared and to require owners to provide information
 - Amendment to the Civil Defence Emergency Management Act

Wellington buildings affected





Targeted Damage Evaluation

- Targeted Damage Evaluation (TDE) procedure quickly developed to assess a specific category of buildings (www.sesoc.org.nz)
- Approximately 70 Wellington concrete buildings of 5 to 15 storeys with precast flooring were assessed over three months
- Approximately 50% had issues that were not uncovered in the original rapid assessments



Wellington buildings <u>not</u> affected



Building Management in Emergencies

The key elements are:

- Understanding the extent of the emergency and the nature of its impact on buildings within the affected community
- Then, if appropriate, carry out a rapid building assessment operation within an identified area where there is cause for concern for public safety in or around buildings
- 3. The management of public safety issues both inside and outside any rapid building assessment operational area.
 - working with owners on repairs and barricades
 - urgent demolition where key public access routes are affected
- 4. Managing the issues caused by the emergency to enable the community to recover to business as usual.

Building Management in Emergencies



Recovering to 'business as usual' includes:

- providing timely information to the public;
- monitoring urgent repair work
- managing, updating and the eventual removal of building placards, cordons and barricades; and
- seeking more detailed assessments from owners where appropriate

All of which can encompass a considerable period of time....

Building Management in Emergencies



- Leadership and preparedness by local councils
 - Building Control and Emergency Management working together
- Support from local and national engineers
- Support from MBIE as the national building regulator

New Guidance for Councils and Engineers



- New guidance issued by MBIE
- Support and training under development for Councils to better understand the building management process following emergencies





Changes to the Building Act

- Bill currently before Parliament proposes to amend the Building Act to include for Building Management in Emergencies
- Introduces end-to-end process for managing buildings from response to recovery
- Powers to inspect, placard, restrict entry, mitigate risk, require owners to provide information, and investigate building failure
- Can be used when no 'state of emergency' or 'transition period' declared, if approved by Minister
- Requires proportionate use framework for recognising personal and property rights

Stocktake: Capability and Gaps

- Significantly more resources available than prior to Canterbury earthquakes
- Advances in tools and processes for electronically recording data in the field
- However decision-maker attention and prioritisation to this work
 remains a challenge
- Key gaps include:
 - Training of operational leaders
 - Protocols for accessing and utilising data from building instrumentation in the early stages of a response
 - Procedures for evaluating the residual capacity of damaged reinforced concrete buildings

The key components of managing buildings in emergencies are:

- 1. Legislation and plans that enable a clear interface between building and emergency management aspects
- Operational arrangements across Readiness (Preparedness), Response and Recovery that engage engineers and emergency managers
- 3. Resource <u>capacity</u> and <u>capability</u> to deliver on these arrangements
 - This includes leaders to prepare for and co-ordinate operations, and suitable numbers of trained and experienced engineers and building officers to provide necessary technical inputs

Acknowledgements



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