Building Management in Emergencies: An Update on New Zealand Arrangements

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1. 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 earthquake 4 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 Mw7.1

- 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

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

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

189 Recommendations

108 Recommendations
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 field guides
  - earthquake, flooding, geotechnical
- New forms
- New placards – colour change and plain English
- Process recognised in National CDEM Plan 2015

Resources on www.building.govt.nz
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:
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

Wellington
Kaikoura
Christchurch
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 not affected
The key elements are:

1. Understanding the extent of the emergency and the nature of its impact on buildings within the affected community.

2. 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.
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….
Appropriate preparedness across the four elements requires:

- 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 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

2. Operational arrangements across Readiness (Preparedness), Response and Recovery that engage engineers and emergency managers

3. Resource capacity and capability 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
• To the many practitioners who have willingly responded to undertake building assessments and participated in the development and training of processes and guidelines

• To MBIE for funding and facilitating the development of field guides and forms, Tier 2 and 3 training and the Territorial Authority Guidance