

Department of Building and Housing submission to the Royal Commission for the Canterbury Earthquakes on Building Assessments after Earthquakes

Purpose

1. The purpose of this submission is to:
 - a. comment on issues with the building assessment process highlighted by the Canterbury earthquakes;
 - b. suggest ways in which the building assessment process could be improved; and
 - c. advise what the Department is doing (or intends to do) to improve the building assessment process.

Context

2. The current building assessment process is set out in the Building Safety Guidelines during a State of Emergency (the Evaluation Guidelines), published by the New Zealand Society for Earthquake Engineering (NZSEE) in August 2009 with support from the Department and the Ministry for Civil Defence and Emergency Management. Use of the Evaluation Guidelines is triggered when a state of emergency is declared, as was the case following the September 2010 and February 2011 earthquakes.
3. The building assessment process was severely tested following the Canterbury earthquakes of September 2010 and February 2011, and the scale of the damage highlighted a number of shortcomings in the process. These were the first full scale implementation of the building assessment process. The fact that a building assessment process had been promulgated enabled a speedy response and saved lives. However, there were difficulties in its application in what were extreme events. The Commission has heard about the consequences of some of the difficulties in post-earthquake building assessment.
4. While the process proved to be a useful framework for building assessment, its use following such large events has identified a number of areas where the emergency building assessment process and the resourcing and implementation of that process could be improved. The use of the building assessment process has also highlighted some gaps in the regulatory framework. In particular, the current building assessment process only provides for a rapid assessment of buildings immediately after the event. The process should be extended to ensure that buildings in areas affected by an earthquake or other natural disaster are adequately assessed for their long-term safety and performance.

Summary

5. There are a number of ways in which the building assessment process can be improved and the Department is focussing on two main areas:
 - a. Leading improvements to the building assessment process; and
 - b. Considering changes to the current regulatory framework to build on the current process.

Issues highlighted following the earthquakes

6. After the Canterbury earthquakes, the building assessment system was used for purposes for which it was not intended. It became seen as the “universal” and final indication of safety rather than fulfilling its original purpose of an initial, short-term assessment immediately following an earthquake.
7. The Department notes in particular:
 - a. There is a lack of detailed understanding of the building assessment process (by engineers, territorial authorities and building owners).
 - b. The limitations of the building assessment process are not well understood. The process is intended for rapid assessments in the immediate aftermath of a disaster (when a state of emergency is declared) and is not an assessment of longer-term performance or safety.
 - c. There are no legislative provisions for the transition from a state of emergency under the Civil Defence Emergency Management Act 2002 to the dangerous building provisions in the Building Act 2004 (following the lifting of a state of emergency).¹
 - d. The wording and colours (red, yellow and green) used for the placards issued under the building assessment process are frequently misunderstood. These colours have also started to become associated with processes outside of the building assessment process (in particular, dangerous building notices under the Building Act and notices under the Canterbury Earthquake Recovery Act 2011), adding to confusion.
 - e. There is a lack of sufficient training and trained resource to deal with such large-scale events.
 - f. Following the Canterbury earthquakes, ineffective measures were put in place to secure buildings in such a way as to prevent access to them and protect passers-by.
 - g. There were delays to demolition of buildings posing significant risk due to heritage and other considerations.
 - h. There were also some operational issues relating to reliable building information to help with quality decision-making (e.g. data on building ownership and earthquake-prone status).

¹ The Canterbury Earthquake (Building Act) Order 2010 and its replacement in 2011 provide some transitional provisions for Canterbury.

- i. There were problems with timely access to consistent building data and historic records on buildings and alterations.
- j. Over recent weeks the Royal Commission has identified a number of gaps between players with uneven knowledge and access to information. Some of these issues may have been mitigated by a more comprehensive building database with access by more people.

Department's role in the building assessment process

8. The Department has a role in each stage of the building assessment process:
 - a. The Department has a role in providing guidance and input for the preparation of tools prior to an emergency event;
 - b. The Department provides assistance and guidance during the state of emergency; and
 - c. The Department is responsible for the regulatory tools available to address long-term building safety once the state of emergency is lifted.
9. The Department assisted NZSEE to develop the Evaluation Guidelines. This work drew on international experience as well as on lessons arising from the application of the assessment approach in the Gisborne earthquake of 2007 (a much smaller event).
10. The Department also provided staff to assist in post-earthquake building evaluation. Specifically, it provided personnel with engineering backgrounds to support central business district evaluations as well as management and staff support to the implementation of building assessments during the Civil Defence emergency period following both major earthquakes (for example, in Operation Suburb immediately following the February 2011 earthquake).
11. During the response to both events, the Building Safety Evaluation processes evolved in response to the crisis. Some of these such as the use of indicator buildings to monitor the need for re-evaluation and the setting up of the critical buildings project to secure and stabilise damaged high-rise buildings has been picked up by some international agencies. It is also planned to formally recognise these process developments in the changes being proposed to the process.
12. When the state of emergency ends, the dangerous and earthquake prone building provisions of the Building Act are the relevant tool for ensuring ongoing building safety. The Department administers this legislation and has provided support to the Canterbury councils exercising their powers under these provisions. After the September 2010 earthquake, the Department included provisions in the Canterbury Earthquake (Building Act) Order 2010 to assist with the transition from the state of emergency to the existing dangerous building powers under the Building Act.

13. The Department also has a key role in providing technical guidance: it works across territorial authorities and also works with the engineering profession so is well positioned to lead the improvements required. The Department has made a separate submission to the Commission on the training of engineers and the organisation of the profession.

Comments on reports

14. The Department strongly supports the NZSEE's report to the Commission titled: Building Safety Evaluation Following the Canterbury Earthquakes, September 2011. The Department considers this an accurate representation of the events and issues and broadly agrees with the conclusions and recommendations.
15. Specifically, the Department agrees with NZSEE's assessment of the issues raised by the implementation of the building assessment process following the Canterbury earthquakes. It endorses the model of best practice contained in this report, and is committed to stepping into the leadership role the NZSEE submission proposes.
16. Since the NZSEE report was released, there has been the opportunity for further evaluation of the building assessment system by the Department, taking into account the recent Commission hearings on specific buildings and additional work by Department staff and others (including the draft guidance relating to the detailed evaluation required before buildings are reoccupied under Section 51 of the Canterbury Earthquake Recovery Act 2011 on the Canterbury Earthquake Recovery Authority's website).
17. The Department has now completed and published the investigations into the failure of the four main CBD buildings affected during the February 2011 earthquake and has adopted the recommendations, including those on post-earthquake inspections, of the Expert Panel appointed to complete this review. These recommendations are contained in the panel's report: Structural Performance of Christchurch CBD Buildings in the 22 February 2011 Aftershock, February 2012 (p87 of the report).
18. The Department's response to this report is titled: Technical Investigation into the Structural Performance of Buildings in Christchurch – Final Report (31 January 2012). This contains the Department's response to the Expert Panel's recommendations (p17 of this report). Both the panel's recommendations and the Department's response are included below for the Commission's convenience.

Expert panel recommendation 3: Post-earthquake inspections

Review current methods for inspecting and reporting information on the structural condition of buildings following an earthquake.

Such a review should address:

- the need for legislation covering the structural assessment and rehabilitation of buildings affected by earthquake
- the extent to which building owners are responsible for undertaking a more detailed evaluation of their buildings following earthquakes
- the need for public awareness and owner education programmes to improve the general understanding of the roles of post-earthquake inspections/evaluations and their limitations
- legislative requirements for the documentation of post-earthquake inspection information and public accessibility to such information.

Department response

In conjunction with the Ministry of Civil Defence and Emergency Management and the New Zealand Society for Earthquake Engineering, the Department will lead the review of methods for post-earthquake inspection of buildings. It is planned to review, refine and develop guidance on:

- methods to raise awareness with building owners and the public on post-earthquake evaluations, what they mean and their limitations
- the process for post-earthquake inspections of buildings and the documentation of those inspections
- assigning responsibility to building owners to undertake detailed evaluations of their buildings following an earthquake
- ensuring that building information is available remotely from the site of an earthquake event so that plans are easily accessible for inspecting buildings post-earthquake
- methods to enable public access to information on post-earthquake inspections of buildings.

Leading improvements to the building assessment system

19. The Department will lead improvements to the building assessment process in response to the Expert Panel recommendations set out above. Specifically, the Department will work actively with the Ministry of Civil Defence and Emergency Management and with NZSEE to ensure appropriate changes to this process based on the lessons learned from Canterbury.

20. This will be undertaken with regard to public understanding and safety; in particular, relating to the wording and use of the colour coding of placards. It has become clear that the public and building owners are interpreting the colour of the placards in a way not intended. The red, yellow, and green is now common nomenclature and in a way that goes beyond the original intention; and will be a considerable challenge to address.
21. The colour coding has its origins in the international assessment approach. The review will balance the need for international compatibility to facilitate overseas support for large events with recognition of the different New Zealand context and building stock. Different situations are likely to be faced in New Zealand than (say) in San Francisco, as there are likely to be a significant number of low-rise, free-standing residential homes here rather than a predominance of apartments and office blocks. Therefore, there is a need for the guidelines to clearly provide for different situations (as an example, different goals and operational structure were used for Operation Suburb following the February 2011 aftershock).
22. To improve the building assessment process the Department will:
 - a. consider what building features should be assessed and against what standards (this will also tie in with possible changes to the regulatory framework).
 - b. drive improvements to building information management (as also noted in its response to the Expert Panel). Data management is a critical component of any effective response to natural disasters, especially as access to onsite records may be seriously compromised (as was the case in Canterbury) by such events.
 - c. work with others to improve guidance and to put in place appropriate training (including clear communication of any changes to the evaluation system) so that appropriately trained people are available in an emergency.
 - d. through its Engineering Advisory Group, review existing technical guidance on the Level 1 and Level 2 assessments (which are part of the building safety evaluation framework) to ensure that this guidance adequately identifies and prompts assessment of building failure risks. The Department has already developed more comprehensive documentation for the detailed engineering evaluation process which is on the CERA website.
 - e. lead work on public education to ensure that the revisions to the assessment of buildings are effectively communicated; in particular, that their limits are well understood and the role of building owners is clarified.

- f. lead the development of guidance for building owners and occupants on what the preliminary assessment means and what steps they need to take next, including a full engineering assessment along with remediation plans.

Considering changes to the current regulatory framework to build on the current process

23. The Department considers there is work to do to ensure a seamless regulatory transition from any state of emergency declared under the Civil Defence Emergency Management Act (which triggers building safety assessments) to powers in the Building Act for ensuring the safety of buildings damaged by earthquakes or other natural disasters. The aftermath of the Canterbury earthquakes suggests that something more is required than the dangerous building provisions currently in the Building Act. In particular:
- a. the dangerous building provisions currently only apply to the most badly damaged properties and all earthquake damaged buildings should be considered;
 - b. consideration should be given to managing the high volume of damaged buildings that need to be assessed after such large scale disasters.
24. The Building Act is the appropriate framework for dealing with all buildings, irrespective of the level of damage, either by assessment through the dangerous and insanitary buildings provisions or by making separate and new powers in the Act for buildings damaged in natural disasters.
25. Under the Canterbury Earthquake (Building Act) Order 2011 (the Building Order), all yellow and red placards issued under the Civil Defence Emergency Management Act in a state of emergency in Canterbury are deemed to be a type of dangerous building notice under section 124 of the Building Act 2004.² Buildings given green placards after the earthquakes are not expressly dealt with in the Building Act or the Building Order, and would only come under the dangerous building provisions if the council became aware that a building was dangerous (as defined in section 121 of the Building Act). Action may be required on these buildings in the specific case of the Christchurch earthquakes under section 51 of the Canterbury Earthquake Recovery Act, but only where the Canterbury Earthquake Recovery Authority becomes aware of a structural issue with the building.

² This is for a period of up to 12 weeks from the date of issue, with the ability for these to be renewed.

26. The Department's view is that consideration should be given to including provisions for the treatment of all buildings damaged by earthquakes and other natural disasters within the Building Act. The experiences being gained through the implementation of section 51 of the Canterbury Earthquake Recovery Act will inform any legislative change to the Building Act to deal with such buildings. A similar provision being included in the Building Act may be a useful mechanism. This section states:

The chief executive may require any owner, insurer, or mortgagee of a building that he or she considers has or may have experienced structural change in the Canterbury earthquakes to carry out a full structural survey of the building before it is re-occupied for business or accommodation by the owner, a tenant, or any member of the public.

27. Any legislative change would need to be carefully considered. Factors that will be considered include:

- a. the need for flexibility to take account of the type of event giving rise to powers under the provisions; for example, requirements after a seismic event might differ from those after another natural disaster such as a flood;
- b. who should have the power to require building evaluation; for example, the responsible Minister or the Chief Executive of the Department in conjunction with the territorial authority;
- c. factors to be taken into consideration on exercising the new powers such as the scale of the event, the type of buildings in the affected area, further damage after the initial event such as through aftershocks;
- d. the standards for evaluation, again taking into account the size of the event and the damage profile as well as prioritisation which could consider the importance of buildings, their earthquake-prone status and so on;
- e. the threshold for requiring assessment of and action on earthquake-damaged buildings;
- f. what would be specified in legislation and what would be at the discretion of local territorial authorities and building owners;
- g. what assessments should be carried out and what the outcomes of these will be;
- h. the need to balance life safety with economic and resource concerns (e.g. keeping the affected area operational);
- i. issues of liability, as the current assessments after an event are carried out under the Civil Defence and Emergency Management Act and that provides protection from liability for the assessors conducting post-incident emergency assessments.

Conclusion

28. The Department is taking a leadership role with the Ministry of Civil Defence and Emergency, NZSEE and others to improve the building safety evaluation guidelines and process as well as associated communications, guidance and training.
29. The Department will consider any legislative changes required to effect a seamless transition from a state of emergency under the Civil Defence Emergency Management Act to the powers under the Building Act 2004; as informed by its work to improve the building assessment process, in the context of the Royal Commission's findings, and in the context of other legislative and policy reviews.

Appearance before the Commission

30. The Department wishes to appear before the Commission when it hears oral evidence on Building Assessments after Earthquakes (the hearing date is still to be confirmed). If possible, the Department would like to be heard at the end of the hearings so that it can consider other submissions and provide context on how the issues raised may impact more widely on the whole building regulatory system.

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