



Department of Building and Housing submission to the Royal Commission for the Canterbury Earthquakes on New Building Technologies

Purpose

1. The purpose of this submission is to:
 - a. comment on the report titled “Base Isolation and Damage-Resistant Technologies for Improved Seismic Performance of Buildings” prepared by A Buchanan et al. August 2011 (the Report); and
 - b. comment on the implications of issues relating to new building technologies in the context of the whole building regulatory system, and in particular
 - (i) the place of **Damage Limitation** in building regulation; and
 - (ii) **Safe Innovation**.

Context

2. In response to comments made during the Commission hearings to date the Department has been preparing a submission to the Commission detailing the key elements of the current building regulatory system, how existing mechanisms may be used to respond to the Commission recommendations and upcoming changes resulting from the recent review of the Building Act 2004 (the Act). The Department intends to provide this before Christmas 2011 and encourages the Commission to consider the system as a whole in its recommendations.

Summary

3. The Department commends the Commission for commissioning the Report and only has a few specific comments on the Report. It serves as a very useful analysis of the “current state of the art” in respect of seismic design of structures and technologies to improve building performance. The Department would encourage the contents of the Report being given more profile particularly among commercial building owners and designers as a best practice guide. The Report is also a useful analysis of some of the causes of building failures which in itself is information that needs to be widely shared. The Department will consider further the recommendations in the Report for changes to the building regulatory system and would be happy to discuss its views with the Commission at the hearings on new building technologies.
4. In the context of new building technologies the Department considers that at the regulatory level the following two themes are important in considering the future shape of building regulation and the place of new building technologies:
 - a. **Damage Limitation:** The primary purpose of the Act, and regulations made under the Act, is preserving the lives and wellbeing of building users. However concern about limiting damage to buildings (and the technology that might assist with this) is being raised in submissions to



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the Commission. If the Commission were to recommend change on this issue, the impact on the wider system would need to be considered carefully.

- b. **Safe Innovation:** The current regulatory system seeks to balance the principle of allowing innovation in building solutions with a level of prescription necessary to ensure safety (and to meet the purposes of the Act). Innovation is encouraged but must be balanced with proper checks and balances to ensure new innovation is safe.

Specific comments on the Report

5. The Department notes the proposals in section 10 of the Report and will take them into consideration in the Department's work programme, a work programme significantly focussed on implementing the recommendations arising from the Commission's Interim Report. Where legislative or regulatory change is proposed the Department must follow the required processes and would be happy to advise the Commission on what may be required to bring about any proposed changes.
6. At this point the Department wishes to indicate that it considers some building performance criteria set in New Zealand Standards may be more appropriately set in regulations such as the Building Code. As the Building Code is in regulation, this would require formal amendment.
7. The Department notes the issues raised in the Report with regard to the education needs of the engineering profession. The Department intends to make a separate submission on "The training of engineers and organisation of the engineering profession" in the New Year.
8. The Department does not comment on any of the systems presented in the Report with respect to their efficacy in limiting damage to buildings or meeting the requirements of the Building Code, because it would not be appropriate for the Department, as the regulator, to comment on particular systems. The Department's role is to ensure there are appropriate mechanisms for innovation to be safely used in or applied to buildings.

Theme: Damage Limitation

9. In relation to the Canterbury earthquakes, the following questions have arisen:
 - Should limiting damage to a building be a functional requirement or performance criterion in the Building Code; and
 - Should the Building Code address how a building should behave at the point of collapse.
10. However, these questions should not just be considered in relation to the Building Code. In the Department's view the starting point is section 3 of the Act which states that:

The purpose of this Act is to provide for the regulation of building work, the establishment of a licensing regime for building practitioners, and the setting of performance standards for buildings to ensure that -



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- (a) people who use buildings can do so safely and without endangering their health; and
 - (b) buildings have attributes that contribute appropriately to the health, physical independence, and well-being of the people who use them; and
 - (c) people who use a building can escape from the building if it is on fire; and
 - (d) buildings are designed, constructed and able to be used in ways that promote sustainable development.
11. The current focus of the Act (and regulations made under the Act, such as the Building Code) is life safety and the wellbeing of building users and not directly the protection of property. Therefore consideration must be given to how damage limitation can and should fit within the overarching purposes of the building regulatory system. The Department notes that such a significant change would require full policy analysis and government approval. Part of this analysis would be consideration of the economic impacts of requiring increased strength so the buildings tolerate earthquakes better and suffer less damage.

Theme: Safe innovation

12. The current building regulatory system does allow for innovation, but puts in place parameters to ensure that innovation is carried out safely.
13. Section 4(2)(g) of the Act provides that one of the principles to be applied in the application of the Act is “the importance of allowing for continuing innovation in methods of building design and construction”. This principle must be considered in the light of the overarching purpose of the Act of providing safe buildings (as set out above).
14. To allow for innovation the Building Code regulatory system is performance based. That is, the Building Code does not specify *how* buildings are to be constructed, rather it specifies the functional requirements and performance criteria with which buildings must comply in their intended use. In doing so it deliberately creates a framework for allowing continued innovation in buildings, to achieve the minimum performance that is specified in the Building Code.
15. In principle the performance-based regime allows for innovative and new building materials to be introduced. In practice the Act also provides for:
- a. Compliance documents: these set out particular methods or solutions that, if followed, will comply with the Building Code; and
 - b. Product Certification: a voluntary scheme by which building products and methods can obtain certification of compliance with the Building Code.
16. It is important that a system that allows innovation in building technology includes appropriate checks and balances to ensure safety. To ensure that innovation is safe, all building work must comply with the Building Code and, before granting building consent, building consent authorities must be satisfied that the building work, if carried out in accordance with the plans, will comply with the Building Code. This process allows innovators to put forward new technologies to the building consent authority for consent, and consent can be granted if the



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innovator demonstrates that their new technology meets the relevant performance criteria in the Building Code.

17. Many new technologies are being applied successfully now, which would suggest that the current regulatory framework is not necessarily a barrier to the application of innovation in building products and design.
18. Innovations do need to be robustly tested and evaluated, and brought safely into "mainstream" solutions. As part of the implementation of the recent review of the Building Act 2004 the Department will be doing further work on how to promote safe innovation.
19. If the Commission's findings highlight barriers to innovation, the Department will take those findings on board in its work programme and consider not only the matters raised by the Commission but the impact on the building regulation system as a whole.

Appearance before the Commission

20. The Department wishes to appear before the Commission when it hears oral evidence on New Building Technologies in the week of 7 February 2012 to present this submission. 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 issues raised fit within, or may impact more widely on, the building regulatory system.

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