

Briefing

Earthquake-prone buildings— where is the certainty for owners and what is the endgame if there is no certainty?

Problem statement: ‘There is no certainty’

The definition of moderate earthquake and the link to the new building standard (NBS) in place at 1 July 2017 in regulation 7¹ was intended to provide certainty to owners in earthquake-prone buildings (EPB) that they would not face ongoing strengthening requirements.

But this intent in the consultation document was watered down by the Cabinet recommendation that added, in brackets, ‘unless the regulations changed’, and has been further undermined through implementation by council officers and engineers and other professionals.

The evidence

- Putting the definition into regulations was intentional, and driven by the industry advisory group for the Building Bill 2003, because it was easier to change as new information emerged to inform changing building standards.
- Minister Williams would not provide assurance to Inner City Wellington (ICW) that owners who had complied would not have to strengthen their buildings again under an updated NBS. The Minister said she has no current plans to change the current requirements. However, if new information increases the life safety risk, Cabinet could decide that further changes are required, which would be subject to public consultation.²
- MBIE briefing to Minister Williams advising that work is underway on:³
 - how the results of the National Seismic Hazard Model (NSHM) review will inform subsequent updates to building performance requirements
 - a programme to improve the seismic requirements of buildings within the Building Code documents in light of reviewing the NSHM
- Property developers reporting an update to the building code from 2022 perhaps sooner, to reflect the NSHM, will drive more seismic upgrades, and those who haven’t invested to above the minimum will face some issues⁴
- Wellington City Council (WCC) advised a body corporate’s project manager at a pre-application meeting that it would not accept a proposal to take the building to 34%NBS as the building would no longer comply if the legislation changed. The council officer advised WCC would only accept a proposal to strengthen to 67%NBS. Both these positions are outside the council’s legislative mandate. After being advised that strengthening would not progress because an option to get to 67%NBS had been considered but was unaffordable, the Council agreed to accept the application, but owners had no faith that it would be a straightforward process.
- A WCC Advisory Service officer, in response to a question from owners on direction of strengthening in next 10 years, said WCC cannot answer this question, but provided his view that the 34%NBS will be sufficient for next 10 years, but earthquake resilience codes always change; his advice to all owners is to strengthen as far as they can afford to.

¹ Building (Specified systems, change the use, and earthquake-prone buildings) Regulations (2005).

² Letter to ICW, 7 April 2021.

³ Event briefing: NZ Society for Earthquake Engineering Conference 2021, 9 April 2021.

⁴ Urban Development Institute of NZ’s August 2021 meeting on Wellington’s development pipeline’

- Engineers and other professionals engaged by body corporates advising owners to strengthen as high as they can in case the regulations change.

What needs to be done by Minister Williams and Cabinet to provide certainty?

1. Provide a clear message to owners and councils that any increase in hazard levels that arise as a result of the current review of the National Seismic Hazard Model, and any resulting changes to the Building Code documents, will not affect the seismic assessment of existing buildings, including those buildings that have been strengthened or are in the process of being strengthened under the earthquake-prone building legislation. The hazard levels in place as at 1 July 2017, and the Building Code documents in place at that date, are to remain for EPB legislative purposes.

The purpose of the legislation was to strengthen or remove the worst buildings; those that would endanger occupants or those nearby, or not allow them to escape in a moderate earthquake. There will always be changes to our understanding of the hazard with new information and research, but earthquake prediction remains highly uncertain.

2. Move the definition of moderate earthquake from regulations into the Building Act to ensure there is adequate scrutiny of a decision that has significant financial and wellbeing implications for apartment owners.

The public consultation process of regulations and the Regulations Review Committee are inadequate and the views of affected owners will be outweighed by the engineering, building and heritage sectors, along with general public who receive a public safety benefit but do not pay for it. There is also politicians' reluctance to base life and death decisions on a cost-benefit analysis for earthquakes because of 'society's aversion to large scale deaths in a single event'. But society is not paying for it and the MBIE-commissioned cost-benefit analysis concluded that costs far exceeded the benefits.

Implications of doing nothing

The financial and personal risks for apartment owners⁵, and the economic risks for the country, are substantial:

- Apartment owners who have paid tens of thousands to several hundreds of thousands to strengthen will lose that money as the seismic rating for the building will drop, many buildings will be identified as 'potentially earthquake-prone' again, and many of those will become earthquake-prone again.
- New owners of apartments in strengthened buildings or in buildings deemed to be 'ok' will face the same financial and personal stress and risks of navigating the process, investigating, agreeing and progressing a solution in a multi-owner body corporate environment, and is likely to make purchasers question the viability of buying into medium- and high-density residential buildings
- Apartment owners who are in the process of finalising concepts and getting to building consent stage will have the application rejected and will need to go back several steps, creating further financial and personal stress.
 - For some buildings, strengthening to 34%NBS or just above it is the only option available due to costs and/or variable financial and risk positions of owners in multi-owner residential buildings. The difference in the estimated costs is substantial – \$2m v \$4m; \$4.2m v \$6.7m – before getting tenders.
- Projects will stop if the owners who are leading the work decide they have had enough and no-one is willing and/or able to lead the work.

⁵ ICW's focus is apartment owners, but many small commercial building/business owners will face the same issues.

- Territorial authorities will have the data on buildings that have been previously assessed and/or strengthened and will quickly be able to issue letters saying the building is ‘potentially earthquake-prone’ and start the 12 month clock ticking for owners to provide evidence the building is not earthquake-prone.
- Engineers will not have the capacity to complete the strengthening work of the existing EPB and begin the reassessments of buildings following an updated NBS. There are already capacity issues in Wellington to process the outsourced structural engineering assessments as part of the building consent process. Body corporates are vulnerable clients in these short-supply situations.

What else can be done to mitigate the impacts of a policy that has no clear end point?

The issues arising from the lack of certainty is because the current policy is based on a continuous cycle of using information to inform the National Seismic Hazard Model, the understanding of building performance, and the emergence of new technologies, which are then all reflected in an updated new building standard. There will always need to be upgraded building standards. The issue is the link of the ‘new building standard’ to existing buildings, especially when the application of the prescribed assessment methodology is subject to assumptions and interpretations.

Actions needed include:

1. Establish separate standards: one that applies to new buildings, and one that is applied to existing buildings being assessed for seismic rating and to determine a viable solution to strengthen for life safety.

New buildings are designed to retain a certain amount of resilience and continue to perform in earthquakes larger than the design level before collapsing. Older buildings do not necessarily do this and sudden brittle collapse can occur in the likes of unreinforced masonry buildings. There is also a degree of damage avoidance built into new building design procedures to satisfy the amenity requirements of the Building Code.

If earthquake-prone legislation is only about life-safety, this aspect of new building standard should not be reflected in seismic assessment of existing buildings. This means that there is a lot of judgement required to compare existing buildings with new building standards.

2. Enable resources from the engineering profession to refine the prescribed assessment methodology, to remove existing confusion, particularly the Red Book vs Yellow Book, and reconsider some potentially conservative aspects that identify more buildings as earthquake-prone than should be the case.
3. Review Regulation 10 to allow exemptions under section 133AN from the requirement to carry out seismic work on the building or part if the owners have already undertaken interim securing in accordance with the requirements for the URM strengthening of Wellington, Hutt and Marlborough buildings under the Order in Council following the Kaikoura Earthquake (refer MBIE Guidance *Securing Parapets and facades on Unreinforced Masonry Buildings* – February 2017). While the building may still not achieve 33%NBS, it will be unlikely to collapse in a moderate earthquake.

Experience from earthquakes internationally demonstrates that this is one of the most cost effective measures to undertake to reduce risk to occupants and passers-by. Providing further standard details for this work may also allow the work to be undertaken by Licensed Building Practitioners rather than directly by Chartered Professional Engineers, who are already in high

demand. Some overall engineering input will still be required but it can be at more of a review and training level.

4. Review the risk assessment undertaken for the current policy to determine:
 - if the earthquake-prone compliance requirements on apartment owners is justified compared to the compliance requirements associated with upgrading fire safety systems in residential houses. For residential houses not covered by earthquake-prone legislation, upgrades are only required if a building consent is applied for. Whereas owners in EPB must upgrade irrespective of whether any other work requiring a building consent is being undertaken.⁶
 - why society and Parliament 'accepts' hundreds of deaths and thousands of life-long injuries (and associated public costs) per year from road accidents, many associated with speed and driving under the influence of alcohol and drugs, but do not accept large scale deaths caused by single, infrequent events.⁷
 - whether apartment owners in wholly or primarily residential buildings have a different risk profile and responsibility compared to owners of commercial and public buildings.

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⁶ [Six deaths in house fires in May 2021.](#)

⁷ Media reported a Police spokesperson saying that speed was a factor in the eight deaths over Labour Weekend 2021.