

## **THE CANTERBURY ROYAL COMMISSION – IMPACTS ON THE PROPERTY MARKET**

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### **ABSTRACT**

*The earthquake swarm that has struck Canterbury, New Zealand from September 2010 has led to widespread destruction and loss of life in the city of Christchurch. In response to this the New Zealand government convened a Royal Commission under the Commissions of Inquiry Act 1908. The terms of reference for this enquiry were wide ranging, and included inquiry into legal and best-practice requirements for earthquake-prone buildings and associated risk management strategies. The Commission produced a final report on earthquake-prone buildings and recommendations which was made public on the 7<sup>th</sup> December 2012. Also on the 7<sup>th</sup> of December 2012 the Ministry of Business, Innovation and Employment (MBIE) released a Consultation Document that includes many of the recommendations put forward by the Royal Commission. This paper examines the evidence presented to the Royal Commission and reviews their recommendations and those of MBIE in relation to the management of earthquake-prone buildings. An analysis of the likely impacts of the recommendations and proposals on both the property market and society in general is also undertaken.*

**Keywords: Seismic retrofitting, earthquake-prone buildings, market impacts**

### **INTRODUCTION**

Early buildings in New Zealand were characterised by the use of timber which was both plentiful and cheap. Problems with fire however encouraged the use of unreinforced masonry in towns and cities with little thought given to the perils of earthquakes prior to the disastrous Napier earthquake of 1931. This resulted in the introduction of the first earthquake design standards in 1935. Significant design changes were also introduced in 1965 and 1976 with additional refinements in 1984, 1992 and 2005. These design changes recognised the growing body of knowledge about earthquakes and changes in construction methods.

Although the issue of designing new buildings to survive earthquakes has been addressed by improved design standards the challenges of dealing with old buildings that were not designed to withstand earthquakes has long been a problem for Territorial Authorities (TAs) in New Zealand. Under section 301 of the Municipal Corporations Act 1968 and then section 624 of the Local Government Act 1974 TAs were given wide ranging powers that enabled them to have the buildings made safe. These powers were continued in section 66 of the Building Act 1991 and remain in section 124 of the Building Act 2004. However, the extent to which these powers have been used has varied widely between different local authorities. A few TAs such as Wellington have used their powers in an active way by the serving of notices on owners requiring them to take action to make their buildings 'safe'. In order to do this the owners must strengthen, demolish or 'mothball' their buildings. Most TAs in New Zealand took a passive approach to using their powers and did not serve many section 66 notices on buildings. This was evident in a 1997 survey of TAs by the Building Industry Authority (BIA) which showed that only 5 out of the 64 responding Councils had actually issued notices under section 66 of the Building Act (New Zealand Society for Earthquake Engineering, 1998).

In response to concerns raised by the earthquake risk buildings study group of the New Zealand Society of Earthquake Engineers (NZSEE), the Building Industry Authority began preliminary public consultation on Section 66 of the Building Act in 1997. Consultation included a number of public forums in the major cities after which the BIA produced a discussion paper in February 1998 called "Keeping Buildings Safe and Sanitary". This

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paper contained a number of suggested changes to the Building Act in relation to earthquake prone buildings. The process was then effectively put on hold however, as it became apparent that due to the leaky homes crisis the entire Building Act needed to be revised and not just section 66. This review process was lengthy but it eventually culminated in the passing of the current Building Act which came into force on the 30<sup>th</sup> November 2004.

One of the major changes contained in the new Act was the definition of what constitutes an “earthquake-prone” building. The new definition set out in section 122 of the 2004 Act contains a number of significant changes compared with 1991 Act. Under the 1991 Act only unreinforced masonry buildings were defined as earthquake-prone whereas the 2004 Act includes other buildings such as non-masonry or concrete buildings.

The old definition was based on compliance with the 1965 Chapter 8 Building Code to a level of 50% of this code. This equates to structural strengths of approximately 10% of the current code.

Note that the new definition of an earthquake-prone building now explicitly takes into account ground conditions as well as the structure of the building itself. It is also linked to a further definition of what constitutes a moderate earthquake which is contained in the regulations. This gives the potential to effectively change the definition of what constitutes an earthquake prone building at the discretion of the Ministry of Business, Innovation and Employment (MBIE), without having to change the Act itself.

The current trigger level or minimum standard under the 2004 Act is equivalent to one third that of a new building. This is specified in section 7 of the Building (Specified Systems, Change the Use, and Earthquake-prone Buildings) Regulations 2005 where a “moderate earthquake” is defined as:

*...in relation to a building, an earthquake that would generate shaking at the site of the building that is of the same duration as, but that is one-third as strong, as the earthquake shaking (determined by normal measures of acceleration, velocity, and displacement) that would be used to design a new building for that site.*

This means that far more buildings were subject to Section 122 of the 2004 Act than were caught by Section 66 of the old 1991 Act, as the new ‘trigger’ level had the effect of reclassifying some buildings that previously were not considered to be earthquake-prone to become classified as earthquake-prone.

Having identified a building as either insanitary, dangerous or earthquake prone a TA has wide ranging powers under Section 124 to take action. The powers conferred on TAs under section 124 in relation to earthquake prone buildings were nothing new and were similar to the powers under the 1991 Act and before that to those under section 624 of the Local Government Act. As discussed earlier what is new is the ‘trigger’ level contained in the regulations.

Another significant change in the Act was the requirement for TAs to prepare and adopt a policy that explicitly addressed the problem of earthquake prone buildings (and unsafe and unsanitary buildings). Under the previous 1991 legislation the response of TAs to this problem had generally been limited with Wellington City being one notable exception. The 1991 Act left it up to the individual TAs to decide to what extent they proactively enforced section 66. Most chose not to enforce section 66 but the new requirements imposed by sections 131 and 132 as detailed below makes this option less politically tenable. This is particularly the case since the Christchurch earthquakes.

In response to section 131 each TA had to develop a suitable policy by 31 May 2006. Note that under section 131 the TA was only required to adopt a policy and there are still no legislative directives as to the form that this policy must take. Clearly though, the policy is expected to achieve the purpose of the Act – in particular the “health and safety provisions” embodied in Sections 3 which sets out the purpose of the Act. It was clearly the intention of the 2004 Act to encourage TAs to take a more proactive role in addressing the problem. The Department of Building and Housing developed a “Policy Template” and some “Policy Guidelines” (Department of Building and Housing, 2005) as an aid to Territorial Authorities (TAs).

The role of the Policy Guidelines document was described as follows:

*The document is intended to act as a resource from which TAs can draw in developing their individual policies. It is not prescriptive. It is expected that TAs, in consultation with their communities, will develop policies that strike a balance between the need to address earthquake risk and other priorities, taking account of the social and economic implications of implementing the policy.*

The policy guide sets out the two main approaches that can be used by Councils and which are characterised as either “active” or “passive”. These approaches are described in the guidance notes as follows:

### ***1. Approaches to policy implementation***

*Before a TA submits its draft Earthquake Prone Buildings (EPB) policy for community consultation, it should consider the way in which it wishes to implement its policy. The Department considers that there are two principle approaches that TAs could adopt.*

#### ***An active approach***

*Under an active approach, a TA would carry out an initial evaluation of buildings in its district to identify those likely to be at high risk. In the light of this, the TA should establish priorities for further, more detailed evaluations, set timetables for action and set guidelines of required performance levels for upgrading.*

*A TA would then advise building owners that their buildings are likely to be earthquake-prone and, if appropriate, seek from them a detailed assessment of the building. The policy should address which party will bear the cost of the assessment.*

*Adoption of this approach will provide a TA with the best possible risk reduction programme as it is able to set and control the level of any work required to mitigate risk.*

#### ***A passive approach***

*If a TA were to adopt a more reactive approach, the Initial Evaluation Process (IEP) and detailed assessment and any improvement of structural performance would be triggered by an application under the Building Act for building alteration, change of use, extension of life or subdivision.*

*With this arrangement, on receipt of an application relating to a building that the desktop research indicated could be earthquake-prone, a TA would undertake an IEP on the building. If this process indicated that the building was likely to be earthquake-prone, the TA would seek a detailed assessment of the building’s structural performance before issuing a building consent. If the detailed assessment indicated that a building was earthquake-prone, a TA would issue a notice to reduce or remove the danger to the level set out in its EPB policy. This work could be undertaken as part of the building work for which an owner seeks consent. However, once an application activates the EPB policy, a TA should require any necessary upgrading to be undertaken even if a building owner decides not to undertake the building work set out in the application.*

*This second approach has the significant disadvantage that it relies on a somewhat haphazard order of remediation based essentially on an owner’s intention for a building. This could leave some significant high-risk buildings untouched for a long period of time.*

*On the other hand, the cost of administering such a programme would be significantly less than for an active programme.*

Despite saying that the guidelines are not prescriptive, the purpose of the legislation is to ‘spur’ TA’s into being more proactive regarding earthquake strengthening and there is a clear bias in the guidelines towards the implementation of an ‘active approach’. The results of this encouragement can be seen in a summary of the various policies that has been compiled by The Department of Building and Housing relating to the various earthquake-prone building policies from all 73 TAs. This showed that approximately 45% had adopted an active policy, 32% had adopted a passive policy and the remaining 23% had policies that were both active and passive (Department of Building and Housing, 2008).

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The 2004 Act also requires TA's to review their earthquake prone building policies at not less than 5 year intervals. As a result a number of TA's have either developed '2<sup>nd</sup> Generation' policies or are in the process of developing them. However, many TA's appear to have put their reviews on hold as they await the outcome of the proposed legislative review currently underway.

On the 4<sup>th</sup> September 2010 the Canterbury region suffered a 7.1 magnitude earthquake which caused significant damage in Christchurch city but no loss of life. Thousands of aftershocks of varying strength have occurred since but on 22<sup>nd</sup> February 2011 a 6.3 magnitude earthquake struck Christchurch City causing the catastrophic collapse of many buildings and killing 185 people and injuring many more. The February earthquake has also caused extensive damage to the Christchurch CBD leading to the subsequent demolition of the majority of buildings in the CBD.

As a result of the earthquakes and the resultant loss of life and damages the New Zealand Government convened a Royal Commission of Enquiry on the 13<sup>th</sup> April 2011. The Commission met for the first time on the 4<sup>th</sup> May 2011 and were required to provide a Final Report to the New Zealand Government by not later than the 12<sup>th</sup> November 2012. This Final report has been delivered in several parts. Part One was delivered on 29<sup>th</sup> June 2012 and consisted of 3 Volumes. Part Two of the Final Report was delivered on the 10<sup>th</sup> October and consists of Volume 4 "Earthquake-prone Buildings". This volume recommends practice, policy and legislative changes to help minimise the risks to public safety from earthquake-prone buildings. This report was eventually released to the public on the 7<sup>th</sup> December 2012 and is discussed in this paper along with the evidence on which the report is based.

The earthquakes and the Royal Commission of Enquiry have also triggered an earthquake-prone building policy review by the Ministry of Business, Innovation and Employment (MBIE) which began in March 2012. The aim of the review is the introduction of a "Building Amendment Bill" with the regulatory changes to be passed in May 2013. As part of this process MBIE released a consultation document "Building Seismic Performance" on the same day that the Royal Commission report was released. The MBIE document sets out proposals to improve the New Zealand earthquake -prone building system.

The consultation document contains a number of proposed changes and where relevant compares and contrasts them with the recommendations contained in the Royal Commission Report. The MBIE consultation document seeks feedback on those proposals with the consultation process to run until the 8<sup>th</sup> March 2013. As part of the consultation process a series of public information meetings are planned to be held in February as well as additional meetings with "stakeholder groups directly involved with implementing the earthquake-prone building system". The Royal Commission recommendations are not binding on the government but have clearly needed to be considered as part of the review process and will undoubtedly form part of the public debate.

## **REVIEW OF EVIDENCE PRESENTED TO THE ROYAL COMMISSION**

The evidence relating to the third of the hearings held by the Royal Commission (Royal Commission, 2011) was presented over a period of nine days starting from the 7<sup>th</sup> November 2011. Transcripts of the evidence presented at this hearing are available on the Royal Commission Web site along with video recordings of the hearing itself. This hearing considered three related but different issues. The first of these was the performance of unreinforced masonry buildings in the Canterbury earthquakes, the second issue considered was the implementation of earthquake prone building policies under the building Act and the third related to buildings not currently classified as earthquake prone buildings but still below the standard of new buildings.

Much of the evidence presented was of a technical engineering nature with considerable debate about whether the method of comparing the strength of an old building against that of a new building, in terms of its percentage of "New Building Standard" (NBS), was either practicable or necessary. There was also debate about the degree to which strengthening work should be enforced using a prescriptive approach rather than a performance based system. The level of strengthening that should be required was also considered. A large body of evidence was

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presented looking at the performance of unreinforced masonry buildings in the earthquake swarm (Ingham and Griffith, 2011b) and built on a previous report presented to the Commission at an earlier hearing (Ingham and Griffith, 2011a). This evidence was subject to peer review by two experts based in California who were generally complimentary about the reports.

The point had been made in various submissions and evidence that there was a high correlation between earthquake prone buildings and heritage buildings. The issues relating to heritage buildings were addressed in submissions by the International Council on Monuments and Sites (ICOMOS) and the Historic Places Trust. ICOMOS raised the need to consider the need to protect heritage values when strengthening earthquake-prone buildings. The issue of a lack of practitioners in the field of conservation engineering was raised and ICOMOS were of the opinion that most engineers don't have the experience in archaic building materials or archaic structural systems. The challenge of protecting heritage buildings by strengthening work without destroying the heritage values that you are trying to protect was discussed as was the potential compromises required between health and safety objectives and conservation.

The Historic Places Trust made the following statement to the Commission.

*...there is a need to develop a national programme for earthquake strengthening with funding available at both national and local levels as an incentive for owners of earthquake-prone buildings. This incentive could be in the form of a tax credit, loans or grants. An effective approach will aim to share the costs of earthquake strengthening among owners, territorial authorities and central government as a collaborative approach. While heritage is a public good, it is often under private ownership.*

Dr David Hopkins, covered background to the legislation and made the suggestion that the Royal Commission supports moves to bring about market driven seismic strengthening and as part of that a grading system. He also made the point that due to the public good elements of earthquake strengthening that there was justification for incentives.

The Property Council presented evidence strongly advocating that any change to a national policy for mandatory seismic upgrades should be accompanied by a change to the tax laws that would allow for such expense to be tax deductible. The point was made that the recent changes to the tax law in NZ relating to depreciation of buildings "now significantly constrains the ability of property owners to fund changes to their buildings"

Evidence presented by Adam Thornton, an experienced structural engineer, covered a lot of technical material but made the point that the seismic assessments made by different engineers on the same building can vary by maybe 200% or more. Getting reliable design and cost estimates of seismic retrofitting work can clearly be an issue for owners. Thornton also made the point that it is important to get adjoining owners to work together and to allow staged retrofitting.

Evidence was presented Joe Arts who is a building owner in Christchurch about his experience with the seismic retrofitting process. He identified a number of challenges, including the need to comply with disability upgrades, heritage conservation requirements and party wall issues. He used as an example his experience of his building which was in 16 separate titles but effectively was one building.

The Department of Building and Housing presented evidence that covered the Building Act and the requirements for councils to produce earthquake prone building policies. It was stated that the 33% threshold was chosen as that aimed to avoid putting too much financial stress on owners and communities. The point was also made that the Government had provided a lot of flexibility to local councils as to how they dealt with the problem. It was stated that:

*the flexibility was in order to look at the impact that upgrade would have on their community, both from a financial perspective. It was to consider the nature of the stock that was in the locality and it was to consider the heritage and community values that the heritage posed and those issues were to be taken into account by councils when they were working out how they would approach the use of those powers.*

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The issue of additional upgrades for fire safety and access and facilities for the disabled being an impediment to seismic upgrading was also considered, although it was admitted by the Ministry that they had no hard data but only anecdotal evidence to support this.

Evidence presented by the Gisborne City Council covered their experience in terms of implementing their earthquake prone building policies and in particular highlighted their approach of requiring seismic upgrading to 66.66% of NBS. It was noted that the community had high levels of motivation due to recent earthquake experience. They also explained how they allowed for exemptions for small rural churches as it was expected that it would not be financially feasible to require strengthening.

Napier City council presented evidence about the challenge they faced in relation to the large number of art deco heritage buildings located in their city. Their CEO Mr Neil Taylor had the following to say:

*I have done a very cursory desktop calculation of the cost of completed works for Napier to simple two-storey art deco building meeting 35-50% of the new building standard at about \$200 and \$300,000 per unit. That is a significant sum for Napier and I just go on to talk about the fact that often in earthquake assessments building owners have an opportunity to consider the end of economic life question and demolition can become an option for building owners. Of course for art deco heritage buildings in Napier that are protected that's not an option. Earthquake strengthening to those buildings, the art deco buildings, doesn't provide for improved rental propositions or an improved return on investment. In fact money spent on earthquake improvements quite often is lost. It's not money that gets a return. That becomes a deterrent. The council has been very concerned about the risk of heritage blight as a result of the earthquake strengthening work or pressure for earthquake strengthening work.*

The Council also spoke about incentives. Based on rough cost estimates these incentives were expected to cost between \$50 and \$100 million. This was considered as unaffordable, as the Napier City Council only has a total rates income of \$46 million.

Christchurch City Council gave evidence of their experience and noted that there is a huge tension between balancing health and safety and to also recognise the imposition of costs upon the community. The need to consider the economic issues was central to the preparation of their earthquake-prone buildings policy. The point was also made that despite inviting 7000 owners and businesses to participate in the consultation phase of their earthquake prone building policies there were only 26 submissions in 2010. The Council under examination by the Commission was criticised for initially pursuing a passive policy and was bluntly asked whether "in failing to address the immediate danger posed by unreinforced masonry buildings in 2006, did the Christchurch City Council play Russian Roulette with its citizens?" The Commission also raised the question of incentives with some general discussion of the forms which these could take.

Wellington City Council gave evidence of their experience and outlined how they introduced in 2009 the ability for owners to carry out staged or targeted strengthening and also to negotiate a portfolio approach which prioritised buildings where they owned multiple buildings. They noted that there were real affordability issues involved in earthquake strengthening and stated they were keen to see Government facilitate the process with incentives. They also noted the potential issues they faced with residential properties with sub-standard foundations being a particular concern.

Auckland City gave evidence which noted the difficulties they were having due to a lack of base information. For example the following was noted that by Auckland Council:

*there is rather a lack of any adequate information on what the cost of upgrading buildings actually is so before we can start properly advising the public on what they are going to be faced with we'll start putting in place incentive packages*

Dunedin City Council outlined the challenges they have in terms of a lack of economic growth and high proportions of URM buildings, low levels of building investment, and poor maintenance of buildings. Like Gisborne they give dispensations for rural churches and rural halls. Like Wellington they allow for a portfolio

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approach and staging of strengthening. They also run free annual workshops, site visits and provide financial assistance in the form of heritage grants and rates relief. They noted that many owners were using earth quake strengthening to provide justification for demolition and were facilitating the process by neglecting to maintain their buildings. The perception of continually shifting 'goal posts' in terms of upgrades is seen as encouraging a wait and see attitude to retrofitting. They noted that currently there is a lack of financial incentive to strengthen as strengthened building receive no rent premium or remain untenanted. Dunedin City Council also made the following point:

*One is we would absolutely endorse Auckland's proposal that any decisions need to be based on science, not just a knee jerk reaction, and the other point is that we come from very diverse types of environment and I don't believe that one national policy has any chance of being successful. Every local authority in the country has its own slightly different way of solving those problems, its own funding for these issues so I really don't know how a national policy as such could solve the issue.*

Local Government New Zealand made a submission that was based on the principle of local decision making and autonomy. They stated:

*We believe the community should be free to make the decisions directly affecting them and that council should have the autonomy to respond to community needs. Our second point is particularly important in this context and that is that local differences require local solutions.*

They then went onto to say further that finally we are a strong advocate for cost sharing for national benefit. Where activities undertaken locally produce benefits at the national level we believe these benefits should be recognised through contributions of national revenues. They supported the use of local and central incentives to encourage retrofitting.

In summary, the evidence presented appear to show an evolving suite of techniques being used by TAs as they gradually came to grips with the scope and character of the problem facing them in terms of earthquake-prone buildings. There was strong desire expressed by some Councils and LGNZ to retain local autonomy.

What was notably missing from evidence presented was any rigorous analysis of economic or social costs including impacts on the property market or the likely subsequent land use changes. This weakness was identified in the peer review by Lizundia of the Ingham reports where he raises concerns regarding the lack of relevant cost information. He also expands on this point in his verbal evidence presented to the Commission on the 8<sup>th</sup> of November when he discusses the environmental impact report process that was considered necessary before invoking seismic retrofitting legislation in San Francisco and other Californian cities.

Similar sentiments were expressed by the other peer reviewer, Fred Turner, who in his evidence had the following to say :

*As you know I'm a structural engineer but I think that the structural engineering aspects you have are perhaps the least of your problems and the least of your challenges. The bigger issues are the social economic aspects"*

He went onto say that a market driven approach is very long overdue effort that should be encouraged in both California and New Zealand, using building evaluation techniques to rate buildings that would be reflected in rental rates and property values. He suggested that social economic research be conducted, so that this basic information was available to assist policy makers to make informed decisions, so that you are filling out not just the structural engineering aspects but the social economic aspects of the policy issues.

## **ROYAL COMMISSION RECOMMENDATIONS AND MBIE PROPOSALS**

There are a total of 36 individual recommendations made in Volume Three of the Royal Commission Report. Many of them are highly technical in nature and of limited relevance to this paper in terms of property market

impacts. The MBIE document contains 9 proposals which broadly agree with similar recommendations made by the Royal Commission although they differ in a couple of key areas. The MBIE proposals considered most important to the property market are discussed below with comparisons made with the relevant recommendations of the Royal Commission.

## **Compulsory Seismic Capacity Assessment of Buildings**

***Proposal 1: Local authorities would be required to make a seismic capacity assessment of all non-residential and multi-unit, multi-storey residential buildings in their districts within five years of the legislation taking effect, using a standard methodology developed by central government, and to provide the resulting seismic capacity rating to building owners. An owner could have their building's seismic capacity rating changed by commissioning their own engineering assessment.***

This proposal echoes that of the Royal Commission which recommended that local authorities complete assessments within two years for all unreinforced masonry buildings and within five years for all other potentially earthquake-prone buildings. It also reflects the process that was recommended by the DBH in the guidance notes provided to local authorities in relation to developing earthquake prone building policies. Clearly it is common sense in terms of problem solving and risk management to identify whether there is a problem or risk and to identify the size of the risk or problem. The Government has prepared a Regulatory Impact Statement (RIS). The RIS (MBIE 2012b) states that a major limitation identified as part of the review is that there is very poor information about the seismic performance of New Zealand's existing building stock. Proposal 1 should fix this problem.

While it is clearly an important and necessary first step in any seismic mitigation programme it raises a number of questions in terms of the practical applications of such measures. In particular, the accuracy and robustness of the methodology appears to have some weaknesses. The methodology that is likely to be used relies on base information on how the building was constructed, how the building has been maintained and the particular geotechnical characteristics of the site. Such information is not always readily available and/or may be expensive to gather and verify. It is likely that such methods will rely on assumptions being made by the engineer in the form of best guess estimates in relation to various key parameters. For example, the mortar and brick strength can be highly variable between different brick buildings or even with different parts of the same brick building.

Current experience with the initial assessment process has shown that the results can be highly variable and contradictory. For example, it has been reported (Cantabrians Unite, 2012) that a building in Greymouth had five separate evaluations carried out which resulted in assessments of 5%, 28%, 30%, 54% and 67% of new building standard (NBS). This particular building was a 17 year old single level modern retail building of comparatively modern construction which should have made it easier to get consistent results.

Examples like this highlight potential difficulties in getting accurate and robust results. They also mean potentially added costs and litigation are likely to become common in the process. They also provide the potential for owners to shop around to get the result they desire and thus undermine confidence in the system.

The skill and size of the engineering profession may also be an issue in terms of the property market. Seismic retrofitting appears to have been an overlooked area of the engineering profession. Recent engineering graduates while perhaps having a good understanding of how to design new buildings have limited knowledge and experience to equip them with the ability to analyse and interpret the likely performance of old buildings. The talent pool in New Zealand of experienced earthquake engineers is comparatively small and may make it difficult to conduct accurate feasibility studies in a timely manner.

The information required by Proposal 1 is useful and necessary in the formation of policy and cost benefit analysis. It may also be useful in terms of publishing lists of "suspected earthquake prone buildings" but has some

limitations in terms of clearly identifying accurately the actual status of any particular building. Detailed engineering studies are required for this. In addition the process recommended will undoubtedly come at a cost which can be met by the individual property owner or alternatively can be met by the wider community in terms of increased rates. A short time period to carry out the assessments will likely add to the costs. There appears to have been no work done on actually estimating the costs of such work being carried out. If the cost is to be met by the owner then this will reduce property values and investment returns.

## **Public Register**

### ***Proposal 3: Building information would be entered onto a publicly accessible register maintained by MBIE***

A major weakness in the current system has been a lack of information available as well as a lack of market awareness of the issues and liabilities of earth-quake prone buildings. The earthquakes in Christchurch along with the publicity resulting from the Royal Commission has resulted in a major shift in the market as discussed later in this paper.

The market is demanding access to the information sought under Proposal 3 and it is clearly in the public benefit that such information is available in the public domain. Access to such information should be readily accessible to allow for better decision making by purchasers and tenants. This decision making will also be improved if any agreement between owners and the local authorities regarding agreed strengthening actions, or any other relevant information is noted in the local authority register. It should be comparatively easy and cheap to amend current building warrant of fitness requirements to include a requirement to disclose seismic capacity ratings and this would greatly increase market awareness.

## **A Mandatory National Requirement**

### ***Proposal 4: The current national earthquake-prone building threshold (one-third of the requirement for new buildings, often referred to as 33 per cent NBS) would not be changed. However, it is proposed to establish a mandatory national requirement for all buildings to be strengthened to above the current threshold, or demolished within a defined period.***

Two divergent legal opinions have caused confusion in the market as it is not clear whether a TA can require the owner to strengthen a building to a higher level than that of 33.33% NBS. Some TA's for example, have been attempting to enforce strengthening levels of 66% of NBS and there was some expectation that this requirement may have been recommended by the Royal Commission and MBIE. However, this has not been the case and Proposal 4 would make it voluntary for the owner to increase strengthening beyond 33.33% of NBS.

An impediment to seismic retrofitting is uncertainty, as this makes decision making more difficult and can increase costs. The proposal recognises that there is a need to balance "life and safety considerations on the one hand, with the economic cost of dealing with vulnerable buildings on the other". Unfortunately there has been little information gathered in terms of cost benefit analysis to inform regarding what is the appropriate balance.

The balance in terms of safety versus social and economic costs is likely to differ considerably from community to community. It was for this reason that the existing legislation leaves it up to each individual community to debate and arrive at the appropriate balance for their communities. Elements of this community choice appear to be retained in the proposal in terms of the local authorities setting tougher upgrading requirements than nationally mandated.

However, the power to set more lenient upgrading requirements is removed. The costs and benefits of a nationally mandated requirement are not going to fall evenly on all owners or on all communities. Some property markets

will be a lot more negatively impacted on than others. MBIE has commissioned a study into a “risk framework” (Taig, 2012) and a cost benefit analysis that considers the economic issue on a national basis. However, both documents have limited relevance to individual building owners or communities.

## **Enforcing the Mandatory National Requirement**

*Proposal 5: All buildings would be strengthened to be no longer earthquake-prone, or be demolished within 15 years of the legislation taking effect (up to 5 years for local authorities to complete seismic capacity ratings, followed by 10 years before owners must strengthen or demolish buildings).*

*Proposal 6: Strengthening would be carried out faster for certain building (e.g. Buildings on transport routes identified as critical in an emergency).*

*Proposal 7: Owners of buildings assessed as earth-quake prone would have to submit a plan for strengthening or demolition within 12 months.*

The Royal commission recommends that time frames be set nationally but specifically targets URM buildings for more urgent work. It sets a time limit of 7 years which is less than half that of MBIE. This appears excessively short and will likely cause hardship for some owners and communities. Even the MBIE time limit of 15 years may be too short for some communities.

The strong emphasis on URM buildings by the Royal Commission appears to ignore the fact that the majority of deaths in Christchurch were caused by the collapse of two more modern buildings with critical structural weaknesses. Some attempt to identify and prioritise these ‘killer’ buildings needs to be considered.

The MBIE Proposal 6 while good in theory introduces uncertainty into the process until such high priority buildings are clearly identified. It may also mean that such buildings suffer an increased drop in value compared with their peers who have been given longer periods to strengthen.

The MBIE Proposal 7 appears draconian and impractical. It is forcing the owner to make a decision about the future of their property in an unnecessarily short time. Good feasibility studies take time and may change as market opportunities or trends change. The MBIE document is silent on the extent to which submitted plans then become binding on the owners, or what is required in terms of the content of the ‘plans’.

## **Exemptions and Time Extensions**

*Proposal 8: Certain buildings could be exempted or be given longer time to strengthen, e.g., low-use rural churches or farm buildings with little passing traffic.*

In a similar way the Royal Commission recommends that the legislation should exempt seldom-used buildings where their failure in an earthquake would be most unlikely to cause loss of life or serious injury to passers-by.

This appears to be a reasonable approach although it may cause problems in setting clear criteria which buildings must meet in order to be granted the exemptions. The expectation is that such exemptions will be limited in their application and thus will have limited impacts on property markets.

## **Roles, Advice, Information and Education**

***Proposal 9: Central government would have a much greater role in guiding and supporting local authorities and building owners, as well as in public education and information.***

The Royal Commission recommends that MBIE should review the best ways of making information about building risk in earthquakes publicly available, and carry out educational activities to develop public understanding about such buildings. It also recommends that territorial authorities and subject matter experts share information and research on the assessment of, and seismic retrofit techniques for, different types of buildings.

## **Other Issues**

The MBIE document identified some “other issues” on which the Ministry is seeking views. Depending on the results of the consultation process these other issues may be addressed by some form of legislative change. These “other issues” include the following:

### **Current Building Act Upgrade requirements in relation to fire safety and disability provisions.**

The Royal Commission recommends amending the Building act to enable local authorities to issue building consents for strengthening works without triggering the need to provide access and facilities for people with disabilities. No mention is made of any dispensation for fire egress.

Anecdotal evidence has identified the addition upgrades triggered by seismic retrofits as adding significantly to the costs and acting as a deterrent to owners. No cost information has been gathered to verify this although in a costing study carried out by Holmes Consulting on Christchurch heritage buildings (Hare, 2009) the figure was estimated at 20% to 100% additional cost. While such a dispensation has merit, it has the downside that it remains as an additional cost should the owner wish to change the use of the building.

## **Heritage Buildings**

Both the Royal Commission and MBIE recognise the challenges and difficulties faced by the owners of heritage buildings and talk of the need to conserve heritage buildings. The costs of strengthening heritage buildings are often higher due to the need to preserve the heritage value of the building and the resource consent process can be both time consuming and costly. Unfortunately no clear directions are given by either MBIE or the Royal Commission as to how heritage conservation could or should be facilitated.

## **Inclusion of all residential buildings**

The Royal Commission is recommending that TAs be allowed to adopt and enforce policies to require specific hazardous elements on residential buildings to be dealt with within a specified timeframe following consultation with their communities. This would have impacts on the residential real estate markets not dissimilar to those currently impacting on the commercial real estate markets.

## **IMPACTS ON THE PROPERTY MARKET**

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The impact of the Royal Commission reports and recommendations can only be speculated at this stage due to the short time period since they were released and the uncertainty surrounding their adoption by the Government into legislation. They have clearly influenced the current proposals put forward by MBIE in terms of potential legislative changes. However, it will only be once these legislative changes are finally made and the new legislation is implemented that the full market impacts will become known. Of the above proposals the ones most likely to have significant impacts on the property market are Proposals 3 and 5.

Proposal 5 requires all earthquake prone buildings to be either seismically upgraded or demolished in the next 15 years. This proposal has been estimated by MBIE to affect between 15000 and 25,000 buildings and cost \$1.717 billion dollars (MBIE, 2012). The proposal is particularly significant for URM buildings where the cost to strengthen to 67% of NBS has been estimated at \$2.1 billion compared with an estimated value of only \$1.5 billion (Ingham and Griffith 2011a). This proposal effectively means that all Councils will have an “active” policy and for some councils will significantly increase the pressure on mandatory upgrading compared with current policy settings.

If the Royal Commission Recommendation regarding URM buildings is followed then that will have an even greater effect on URM buildings, as reducing the time to strengthen to only 7 years is likely to lead to considerable market ‘stress’.

Proposal 1 and 3 will lead to better informed public and property market participants. This should result in the market making the necessary adjustments to price to factor in the true cost of seismic risk and legislative liability for upgrading. There is also the potential that the market may over price seismic issues in buildings leading to excessive drops in value that could be attributed to seismic ‘stigma’.

The potential impacts on the property market will be highly variable with some localities and property types being particularly affected. It will also vary depending on the property market cycles and general economy over the next 15 years. A number of real estate market commentators such as Colin Taylor (2012) and Gabriel Brewdant (2012) have already noticed what many have dubbed “The Christchurch Effect” where the seismic capacity of a building is a key characteristic being investigated by tenants and purchasers. The Christchurch effect that has already been identified as occurring in some property markets such as Wellington and Christchurch, is likely to be amplified and become widespread across the country. The Christchurch effect has seen the values of some earthquake prone buildings drop significantly and also impact on some buildings that although not earthquake prone in a legal sense are considered by the market to have insufficient seismic capacity. For example, comparatively modern buildings like the Majestic Centre in Wellington have had substantial upgrades in order to protect their place in the market.

There will be both winners and losers within the property market. The losers will be those buildings unable to attract tenants or purchasers due to the stigma attached to their seismic deficiencies and concerns over the cost and disruption of carrying out any mandatory retrofits.

This market shift is already driving a requirement for greater levels of market information. Corporate and government tenants are worried about their liabilities under the Health and Safety in Employment Act and are clearly basing leasing decisions on the earthquake prone status of their buildings. There has been some agitation by trade unions to protect their members by requiring that they only occupy ‘safe’ buildings. More attention is being paid to the drafting of leases in relation to earthquake issues, including the relative liabilities of the owner and tenant to meet upgrade costs.

As tenants spurn the option of leasing earthquake prone buildings there may be increased demand for newer buildings and new developments. They will potentially be the winners and developers are already responding to this by producing and marketing buildings that exceed the minimum requirements for new buildings. However

this assumes that the market is willing and able to afford the higher prices and rents associated with such properties.

In some markets there is the potential for large numbers of buildings to no longer have any economic value. The only option for the owners will be to demolish the buildings and try and find an economic use for the land. This is likely to lead to large numbers of vacant sites struggling to find a viable use and substantial economic losses for their owners. If enough vacant sites are created this will lead to an oversupply of development sites and there is likely to be a downward movement in land values.

It should be noted that the various real estate markets around the country impacted by the Christchurch effect show huge variation in rent levels, ownership characteristics, property type and land values. It is therefore dangerous to generalise about property market impacts. For example, impacts on the Wellington CBD where the dominant property type is high rise office buildings owned or occupied by corporate and government tenants should not be extrapolated to provincial New Zealand.

A major failing in the current system has been market failure to account for earthquake risk in buildings. The result of this will be to depress the values of those buildings deemed to be earthquake prone which will have the benefit of making it economically rational to strengthen such buildings assuming they retain some economic value after having their price reduced due to their earthquake status.

## **CULTURAL AND SOCIAL IMPACTS**

As well as the impacts on the property market there is the potential for substantial negative impacts on communities in terms of their cultural and social resources. The proposed changes to the legislation have been described by the Waitaki District Council chief executive, Michael Ross (2012), as “like an earthquake without having an earthquake” for many smaller towns. A study of post- earthquake Christchurch illustrates many of the likely impacts of enforcing an overly onerous mandatory strengthening programme.

The most obvious impact is the loss of heritage buildings. These provide a sense of place to many communities and reinforce a sense of community. They also often serve to house community activities, be they schools, community halls, libraries, theatres, town halls etc. In a best case scenario they are retained and strengthened which will lead to a degree of displacement while the work is carried out and the need for their communities of interest to find substantial amounts of public money to fund their upgrade. For churches which do not have access to public money this is especially challenging. In many cases the more likely scenario is demolition leading to an irreplaceable loss of heritage. Due to budgetary constraints the ability to replace all the demolished buildings may be limited and not all amenities will be replaced.

Heritage buildings also house many commercial activities such as offices and shops whilst also contributing to the character and sense of place. These heritage buildings are in private ownership and do not have the luxury of access to public money unless incentives are provided by the local authority. The scenario of demolition is therefore a real one. If upgrading is carried out then short term displacement of the occupants will occur. If demolition occurs there is a real chance that the displacement will become permanent as the displaced occupants may be unable to afford to build or lease alternative new premises. This can lead to the permanent loss of business or services in a community as well as the loss of the heritage resource. Where tourism is important to a community the loss of heritage can have negative economic effects also. The impacts on land use of any mitigation program need to be considered in the form of an environmental impact assessment that addresses the following questions.

- What buildings will be demolished
- What activities housed within those buildings will be displaced
- What buildings will be strengthened

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- What activities will be housed within the strengthened buildings
- What new buildings will take their place
- What activities will be housed within those new buildings?

Consideration also needs to be given not just to the physical characteristics of the buildings but the characteristics of their owners and occupiers as it is their abilities and objectives which will impact on the feasibility of any seismic upgrades.

The mandatory strengthening requirements of the current legislation have the potential to radically change the character of many of the towns and cities of New Zealand. The challenge is to mitigate the negative aspects of this change where possible. Some of the proposed changes to the legislation are likely to make this challenge harder.

## CONCLUSIONS

The legislative changes signalled in the MBIE Proposals and Royal Commission Recommendations have the potential to cause a sharp market correction in the value of any buildings considered earthquake prone. These buildings will likely suffer a significant drop in value that may render them economically obsolete and result in their demolition.

For towns and cities where earthquake-prone buildings represent a significant portion of the building stock the economic and social impacts will be severe. Owners and tenants will suffer temporary displacement at best that may become permanent. A large number of heritage buildings will be demolished and traditional land use patterns destroyed.

Based on the evidence presented to the Royal Commission and both the Consultation Document and Regulatory Impact Statement prepared by MBIE there has been very limited research undertaken to measure these social or economic impacts. A number of significant information gaps exist which should be addressed before any significant changes to legislation are undertaken. Some of these information gaps are addressed by the MBIE Proposals but their implementation will require time, resources and a research strategy.

The perceived weakness in the current legislation of allowing highly variable approaches at a local level is actually a strength, and not a weakness. This variation is encouraged by the current system as it was intended for local communities to research and develop risk mitigation programmes that were appropriate for their particular communities. This approach was strongly supported in a number of submissions to the Royal Commission.

Local solutions should be found for local problems. To enforce a nationally consistent approach would be a mistake. However local communities do need to follow an enhanced decision making process based on more relevant cost benefit analysis and environmental impact analysis. Underpinning these will be the collection of good base information as inputs into these studies. MBIE Proposals 1 and 3 will help this.

Complimentary to any regulatory approaches will be the impact of market forces which in some circumstances will require greater levels of seismic capacity than that mandated by law. For example if a significant number of tenants require buildings to be strengthened to higher levels than 66.66 of % NBS then that will become the benchmark regardless of whether 33.33% is specified in the legislation. Market forces may also have negative value on buildings not considered earthquake prone under current and proposed legislation.

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