Practical Considerations For Implementing Legislative Change - An Architect and a Communicator's View

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ABSTRACT: The proposed changes to the earthquake prone provisions of the Building Act that are currently before the Minister of Internal Affairs will have significant implications for building owners, territorial authorities and professional advisers. These changes will see the scope of these provisions widened from only applying to unreinforced masonry buildings to those of any construction that can be shown to be not safe in earthquake.

From a regulatory perspective, the key feature of the proposed changes is that they are not mandatory. Individual territorial authorities will be able to develop their own strategies and time frames for firstly carrying out engineering assessments and secondly requiring physical mitigation for those buildings where structural improvement is found necessary. Clearly a structured risk-based approach will be required.

One of the biggest issues for all parties involved in this process is the development of a rational timeframe for individual buildings to be assessed and have physical improvements implemented where found necessary. There is a need to balance the opposing considerations of:

(i) Giving owners adequate warning and timeframe to react in; and
(ii) Reflecting the opportunity that significant alterations represent to carry out structural improvements that will reduce the earthquake risk

This paper reviews and comments on the key provisions of the proposed changes, and considers the process and communication issues.

1 INTRODUCTION AND CONTEXT

The current earthquake prone provisions of the Building Act have changed little since their introduction into the Municipal Corporations Act in 1968. However there has been a growing awareness amongst earthquake engineers over the past two decades that a number of buildings constructed prior to modern seismic codes have critical structural weaknesses. This awareness has led to moves by NZSEE to raise the threshold under which buildings are defined as being "earthquake prone". Work over the past decade has resulted in proposed changes to the earthquake prone provisions of the Building Act. The content of these proposed changes and the recent work of the Earthquake Risk Buildings Study Group is detailed in a companion paper (Brunsdon and Hopkins, 2001).

But how aware is the wider property industry of this deficiency in existing legislation and the need for amendments? There has been general acceptance that the current legislative requirements are inadequate and there has been varying responses by territorial authorities to their existing powers under the Building Act. If the proposed changes proceed through the

parliamentary process, and result in amended legislation, the implications of these amendments will be significant. The impact will be felt by all those involved in the property industry – owners, consultants and TA officials. Therefore there is a need to understand how these changes can most effectively and practically be applied and if there is anything the earthquake engineering professional can do to assist this change process.

The issues and concerns for these other groups within the property industry will be quite different from those of earthquake engineering specialists. If the changes are to be successfully implemented then the acceptance and understanding of other viewpoints is paramount. The language and approach of earthquake engineers must be modified to accommodate these other viewpoints and quite possibly an array of other information and data collected to justify the need for raising the threshold.

This paper explores an architect's and a communicator's perspectives on the proposed changes, considers how well they will meet NZSEE's objectives, and suggests some ways to address the issues arising.

2 NZSEE INTENTIONS AND EXPECTATIONS

The key intention is that buildings in the highest earthquake risk category (up to 33% of current code) will be upgraded to well above 33%. Although the proposed changes include the term "as nearly as is reasonably practicable as if it were a new building…" the NZSEE target is stated to be 67% of current code. Accordingly, buildings at less than 67% of code should be seriously considered for upgrade, even though this is outside the scope of the legislation. The implication is that existing buildings over 67% of code are considered acceptable.

However, territorial authorities (TAs) will develop their own strategies and timeframes for firstly carrying out assessments and then to have the necessary building work carried out. NZSEE expects these risk mitigation programmes to be over a period ranging between 5 and 50 years, depending on regional considerations such as the building's characteristics, seismicity and their economic situation. Further, NZSEE have proposed a detailed 2-stage evaluation procedure for TAs to follow, including an initial evaluation to review local building stock and a resultant building 'grade', with a subsequent detailed assessment if required (NZSEE, 2000).

3 PROPOSED AMENDMENTS

So what are the implications of the proposed amendments? The wording itself will be legally correct and in keeping with the ethos of the Building Act. But what lies behind the legal terminology and how will it be interpreted by those who have to administer it? Will the original intentions be lost? Let's take a look at some examples of the proposed amendments.

Section 64(4)(b) will be amended so that the term "not to be safe" is defined as *"likely to give rise to loss of life in an earthquake that would generate shaking at the site of the building one-third as strong as the earthquake that would be used to design a new building at the site"*. This sets the threshold for any upgrade work to be enforceable on an existing building at 33%. Those buildings in the 33 – 67% will not be addressed, and there will be no legislative means by which consideration of upgrading them can be suggested or enforced other than for a "change of use".

Section 65(c)(i) will require the remedial work to be to a standard "as nea*rly as is reasonably practicable as if it were a new building but not less than is necessary to make the building safe* ... under S64. This will mean that the upgrade work will be aimed at 100% of current code, with the absolute minimum standard being above 33% of current code.

Section 65(c)(ii) will require upgrade work to be done within a reasonable time specified in the notice but not less than 10 days, and for S64 (4)(b) buildings the time specified shall take into account S47 matters which the TA identifies as being relevant to the time specified. Ten days is the only period mentioned and other remedial work arising under this section is generally of a nature that the work should be done sooner rather than later. It is debatable that many TAs would be comfortable setting 10 – 50 year time frames for earthquake prone buildings and may very well require upgrading work to occur within far shorter timeframes.

Fundamentally, the amendments will have to seen in the context of the existing requirements of the Act, namely the purposes and principles of the Building Act. These include, amongst other things, to ensure buildings are safe, and in particular to safeguard people from possible injury in the course of the use of any building. At the same time due regard must be had to national costs and benefits. This is a tall ask and the reality will require consideration of the way the existing legislation is implemented now.

4 CASE STUDY

In order to explore further the effect of the proposed legislation and the issues raised above, a hypothetical case study building of the type targeted by the proposed changes is considered. Questions have been posed as to the practical applicability of the amendments.
The building is a 1940s era, three storey, steel frame and concrete building of 300m^2 footprint, located in an urban area within zone A. It is used for office accommodation on the two upper floors, with a mix of retail and café/restaurant at ground level. 20 people are accommodated on each of the upper floors while a maximum 100 people occupy the ground floor.

4.1 *Will this building be evaluated?*

According to Table 1 of the Initial Evaluation Process proposed by the NZSEE Study Group on Earthquake Risk Buildings, this building may fall below the 33% threshold, but it also could be as high as 80% of code. Only 1976 or later buildings are likely to be at 80 – 100% of code. The legislation only requires the TA to evaluate this building if it is considered likely to be earthquake prone, but on what basis does it make that decision? It may decide, erroneously, not to evaluate this building.

Therefore, it is suggested that the legislation should require all pre-1976 buildings to be evaluated and graded. Additionally, any 1976 or later buildings should require evaluation if there are specific doubts about their earthquake performance or if standards change markedly in future.

4.2 *When does evaluation occur?*

The TA has total discretion over the timing of the initial evaluation. There may well be localities where initial evaluation is not seen as a priority or even important. Therefore, it is possible that this building may never be evaluated; it may be a number of years before evaluation occurs, or the evaluation may occur next year.

Further to S6 of the Building Act, the public is entitled to expect a level of certainty with respect to the minimum earthquake performance of the buildings they visit and/or work in, or information regarding any shortfall.

Therefore, it is suggested that there must be a time limit, possibly related to the age of the building, its construction and/or it's use, set for the completion of the initial evaluation and grading. The timeframe for the subsequent detailed assessment, if required, and building work, can be left for negotiation between TA and building owner.

It follows that the evaluation could be done without any reference to any proposed or potential building work. It can occur independently of sections 38 or 46, and has no effect on work carried out under those sections. It is up to the building owner to assess the risk of any earlier building work being affected by any later detailed assessment and associated upgrade work.

4.3 *Who does the evaluation and holds the records?*

The problems with the creation and management of compliance schedules demonstrate the shortcomings in any general reliance on building owners to provide and maintain accurate and complete records of building provisions. Due to the public interest component of the evaluation, the record of such work has to be readily available to any interested or affected member of the public. Therefore, it can be argued that the TA is the appropriate party to be responsible for the evaluation, to hold the records of that evaluation, and to maintain the record further to any subsequent upgrades.

The reports are then produced without influence from building owners. They are available for any tenant or purchaser to peruse and make their own decisions accordingly with respect to their intentions regarding the building. To ensure independence and transparency in the compilation of reports and grades, the methodology used by all reporting engineers will have to be consistent and rigidly adhered to.

4.4 *Who pays for the evaluation?*

The primary focus of this legislation is the national and public interest, although it can be argued that there is a component of building owner interest. The initial assessment is expected to be a number of hours rather than days, it should be seen to be independent of the building owner, and the resultant information is for the public. It is suggested that the cost of all initial evaluations should not be a cost on the building owner nor on ratepayers, but covered via the BIA levy or an injection of funds from central Government.

4.5 *When should the detailed assessment and upgrade work be done?*

An initial evaluation has indicated that upgrade work is required on our building, but it has been agreed (for whatever reasons) between building owner and TA that the building work is to occur within 20 years. There seems no reason why detailed assessment, design, documentation and budgeting of upgrade work should occur immediately after the initial evaluation. Within 10 years (let alone 20) design codes, materials, construction techniques, the building owner and the building's intended use may well have changed and made some or all of the planned upgrade work redundant. If the detailed assessment and subsequent planning work had occurred immediately after the initial evaluation why was our current building owner put to such trouble and cost? It is common sense that the detailed assessment is carried out at the time the building work is carried out.

This decision could well be the most contentious, as it can be argued that if this building is determined to be earthquake prone then occupancy should not be permitted to continue until some minimum level of performance is attained. Alternatively the case can be made that, as the building has stood for the last 50 years, what is the problem with another five or ten before any upgrade work is carried out? Politically, the reality is that buildings will not be emptied of occupants due to the evaluation procedure unless a relatively minor earthquake is likely to cause loss of life.

The only legislative assistance is a reference to section 47 of the Act *"Matters to be considered by the TA"*. It is suggested that at present the flexibility and powers provided by S47 are under-utilised and misunderstood by both TAs and building owners. Therefore, there is likely to be substantial variations in the application of S47 as a tool for agreeing a programme of specific work by various TAs in the same earthquake zone, let alone in the opinions of different building owners regarding what they would consider reasonable for the same building.

To avoid conflict, for consistency and understanding amongst all parties, and to ensure reasonable and realistic timeframes are set, guidance and information should be provided on such issues, as the period within which there is a likelihood of a life threatening earthquake occurring for a building in its current state. TAs and building owners need to be able to understand this in concepts such as "within the next twenty years", "within my lifetime", "within my grandchildren's lifetime". Dependant on intended use and occupation of a building, further guidance could be provided on the period within which upgrade work should be carried out and any conditions of occupation and use, including notices and the like, over that time. Effectively this becomes a guide (of the status of an Acceptable Solution) to the risk management of any existing building and its use prior to upgrade work occurring.

Our building owner could actually carry out building work, without the need to undertake any

upgrade work within that period as long as the conditions noted are adhered to. The earthquake provisions can therefore be completely independent of the provisions of sections 38 and 46.

4.6 *Standard of the remedial work*

The trigger level for earthquake prone is 33% of current standard, and the legislation requires upgrading to a standard "as nearly as is reasonably practicable as if it were a new building but not less than is necessary to make the building safe … under S64". Again, the legislation places particular reliance on consideration of the matters noted in S47.

The cost/benefit aspects of upgrade work will rise significantly as 100% of code is approached (if not well before) and for many existing buildings this level of structural performance cannot be achieved. As noted above, 67% of code is an acceptable target upgrade level to the NZSEE. Therefore, the legislation should be changed to require upgrading to a standard "as nearly as is reasonably practicable to 67% of that as if it were a new building but not less than is necessary to make the building safe … under S64".

Consider that 18 years have passed, the building was not demolished in the interim, and our building owner (original or new) is now planning for the upgrading work, which has to be completed within two years time. Our building owner still has a wide range of options available to them in terms of the future use and intended life of the building. They must make hard decisions about the future use of and investment in the building and then be bound by the implications or results of those decisions.

Our building owner may have accumulated adjacent sites, intending within a further ten years amalgamating them and building a new 30 - 40 storey building, or selling the sites to such a developer. Alternatively the building owner may be interested in heritage buildings and has the intention to maintain a corner of older building stock beyond another 50 years for future generations as well as aiming at those tenants interested in character space.

Regardless, we may have our TA decide that "all our buildings will be up to 67% because that is what our citizens deserve", or a TA in a low seismicity zone may decide "34% is plenty as these buildings are now no longer earthquake prone". It is suggested that there is again a need for guidance to TAs and building owners on what is required or expected, if the intention of the Act regarding upgrade work is to be met.

5 COMMUNICATION/EDUCATION

Proposed changes to the earthquake prone provisions of the Building Act will have a significant impact for all those involved in the property industry: building owners and users, territorial authorities, as well as consultants. So how do we take a practical approach to informing the industry about these changes? Quite simply we need to communicate with each of the target groups above. There are a myriad of issues to consider. We could bombard the industry with information overload but is it really the most effective way of communicating change?

The objective is not to turn the industry into earthquake engineers overnight (or else it would flood the market!!) Our objective is more achievable than that. We want to package the information so that the user (of the information) be it the building control official, owner, or whomever can understand it, process it, and more importantly take action. The "taking action" may manifest as seeking more information, undergoing further training, getting a building assessment done, altering construction drawings or whatever. The objective is action-orientated not just a one-way traffic of information.

When it comes to communicating there is an old saying about tuning in to the radio station W II FM, or (What's In It For Me?). While there is a common piece of legislation (the Building Act) the impact of its implementation will be different depending on where you sit in the scheme of property ownership, occupancy, or control. Each of the target groups has a different "need to know" about the changes and to successfully communicate the information should be tailored to meet their needs. So let's take some of the key groups and analyse what their current situation is, their likely reaction to the changes to the Act, and their information needs.

5.1 *Target groups*

5.1.1 *The regulators*

The majority of Building Control Officials (BCOs) do not have specialist training in earthquake engineering but they are still charged with administering those provisions of the Act. They rely upon expertise of earthquake engineers for specialist assistance but they may be hampered by lack of information and lack of resources. There may be no reliable record of the building stock at risk and no resources available to deal with yet another enforcement requirement which Council is not reimbursed for.

For new buildings any additional compliance requirements will be checked through the building consent process. Existing buildings may only be captured for assessment if there is a change of use or alteration, or if the building is deemed dangerous and insanitary. In both cases the BCOs will need to call upon earthquake engineers to peer review and assess compliance.

BCOs' communication issues will revolve around understanding the impact of the changes in terms of administrative procedures and applying the legislation in practice. Guidance in the application of s47 of the Act, as previously mentioned in this paper, will be required. They will also need to know how to obtain further technical training or skills so that building consent plans can be assessed for compliance, at-risk buildings can be identified and a procedure negotiated through with the owner. Lastly, and most importantly they will also need some communication tools to convey the requirements to building consent applicants and existing building owners.

5.1.2 *Owner/occupiers*

When we group owners/occupiers together we refer to a diverse group in itself in that we could consider the communication needs of current building owners, commercial property investors and even future purchasers. Obviously there are occupants / tenants who should be informed of any immediate risks in their location. They will be concerned about their safety and the rental fee rather than the technical detail.

The people with the ability to affect the change (the owners / investors) will have many questions:

- What will happen to my investment?
- If I make changes to my building will it be one-off or just the tip of the iceberg?
- How much will it cost?
- Who owns this information?

So the information must be tailored around answering some of these questions and the rest of the technical detail left up to the experts within the industry.

5.1.3 *The designers*

Designers already perceive that they are hamstrung by over regulation in the building industry. So tightening up or adding to the requirements will not necessarily be welcomed. If there is a real perceived threat of designing a building which is not compliant, and the building is in a high-risk zone, the designer may be more receptive to the message.

The kinds of questions designers will want answers to will be:

- How do I design to accommodate the changes?
- How can I convince my clients this is necessary?
- Can I get my designs past council?
- What fees can I charge?
- When do I get the time to learn about this?
- Will I have to engage a specialist to help design these projects in the future?

So while there is a need for some technical information it must be short, sharp, specific and

usable. The fundamental issues must be answered first before getting down to the technical detail.

5.2 *Existing buildings*

The Building Act has permitted a degree of discretion and negotiation when considering "what is as nearly as reasonably practicable" when altering or changing an existing building. The three target groups mentioned above would all have communication issues around existing buildings as distinct from new buildings. It appears that these sections of the Act require a convincing case to be put before the Council by the owner/developer or his/her agent. Both parties must consider 1. what is required, 2. the extent of compliance, 3. timeframe and associated costs of implementation.

However, this discretionary ability allows for variation and inconsistency between Councils and also comparatively between buildings in the same district. With 74 TAs nationwide and now 22 registered building certifiers there is potential for even further variation. And if there is variation on the enforcement side of the equation there is even more discrepancy between owners and designers perception of what is required.

Each of the target groups requires guidance, not in interpreting the sections of the Act which relate to earthquake prone buildings, but on the application of the requirements. This is where the specialist expertise of the earthquake engineers will be needed and also the ability of earthquake engineers to communicate effectively between the parties.

6.0 **CONCLUSION**

The ultimate outcome of this legislative change must be to improve the earthquake prone provisions of the Building Act to ensure that the citizens of New Zealand have a high degree of confidence in the earthquake performance of the buildings that they visit and/or work within. The intended outcomes of the NZSEE are laudable, necessary and worthy of full support. Many years of development have gone into the proposed amendments to the Building Act. However, it is suggested that these may not fulfil the original objectives due to the practical implications of implementation. To ensure that the intentions of the NZSEE are met and that the national interest is accounted for, it is the Authors' view that a provision must be made, either legislatively or through guidance, for the following key requirements:

1. All pre-1976 buildings to be evaluated and graded
2. 1976 or later buildings to be evaluated and graded if there are specific doubts about their earthquake performance
3. Time limit within which evaluation and grading must occur
4. The holding and maintenance of records to be the responsibility of the TA
5. Consistent methodology used for evaluation
6. Cost of the initial evaluation to be centrally funded
7. Upgrading to be to a standard "as nearly as is reasonably practicable to 67% of that as if it were a new building but not less than is necessary to make the building safe … under S64"
8. Guidelines for the interpretation and application of S47 with respect to:
    - timing of detailed assessment and upgrade work,
    - conditions of use prior to upgrade work, and
    - standard of upgrade work

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This paper has not even touched the surface of the many groups of people who need to be communicated with about the amendments. There are politicians, key industry groups, manufacturers, and so on all with a unique "need to know". A practical approach to communicating the changes to earthquake prone provisions of the Building Act will require engagement of professional communications advice. It will require a strategic approach, and the development of a communications plan which sets out each target group and tailors the message accordingly to meet their needs. Only then can we hope to achieve a practical implementation of legislative change.

REFERENCES:

New Zealand Society for Earthquake Engineering 2000. An Initial Evaluation Process for Identifying Buildings Not Safe in Earthquake, *NZSEE*

Brunsdon D. R. and Hopkins D. C. 2001. Study Group on Earthquake Risk Buildings 1999/ 2000 Report, *Proc. NZSEE Annual Conference*

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