Submission to the Ministry of Business, Innovation and Employment

Re: Proposals for Regulations under the Building (Earthquake-Prone Buildings) Amendment Act 2016

10 FEBRUARY 2017

Introduction

The Institution of Professional Engineers New Zealand (IPENZ) is the lead national professional body representing the engineering profession in New Zealand. We have approximately 17,000 Members, including engineering students, practising engineers and senior Members in positions of responsibility in business. IPENZ is non-aligned and seeks to contribute to the community in matters of national interest, giving a learned view on important issues, independent of any commercial interest.

IPENZ has shared draft versions of this submission with the New Zealand Geotechnical Society, the New Zealand Society for Earthquake Engineering and the Structural Engineering Society. Our submission provides comments on behalf of the engineering profession as a whole.

Executive Summary

IPENZ supports a number of aspects of the proposals, however we have some key concerns as summarised below.

- We note the importance of the definition of ultimate capacity refers not only to the building as a whole but also to parts. We suggest that "part" be defined in the regulations and apply to both structural and non-structural elements or components of a building. When a "part" is assessed as earthquake-prone then the building as a whole should be categorised as earthquake-prone.
- We note the word "collapse" is used in the definition of ultimate capacity and while collapse has clear meaning for a building we believe terms such as "fall", "fail" and "partial collapse" would aid clarity around life-safety hazards associated with parts of a building.
- We are concerned that the earthquake-prone status of buildings adjoining earthquake-prone buildings is not dealt with adequately.
- We believe there are issues with how society defines a "building" compared with the definition of a building as related to a structure. We recommend the regulations address the risk imposed by an earthquake-prone building to those adjoining it, and how that risk is communicated to the building owner(s) and subsequently managed.
- We have concerns with the proposal to separate out buildings that are less than 20%NBS from those that are 20–33%NBS:
    - it is important the risk posed by all earthquake-prone buildings is managed and mitigated. While buildings rated less than 20%NBS are likely to pose more risk than buildings with higher %NBS ratings, those rated 20–33%NBS are still earthquake-prone and must not be seen as a low priority.
    - assessment of %NBS always includes some uncertainty and it is very difficult to distinguish between a building that is 19%NBS or 20%NBS, or 32%NBS or 34%NBS. Thus, there will be some margin of error, particularly for buildings at the threshold for different ratings categories.

Submission

Our comments are provided below in response to the questions posed in the discussion document.

Objectives for all regulations

1. Do you agree with the objectives for making regulations?

IPENZ supports the objectives for the regulations, as set out on pages 19/20 of the discussion document.

2. Are there any other objectives that should be considered?

We have no other objectives to suggest.

Ultimate capacity

3. Do you agree that defining 'ultimate capacity' will help to achieve the objectives for all regulations? What are the reasons for your views?

We support the proposal to define "ultimate capacity". We believe a clear definition will help establish a common understanding of this term.

4. Do you agree with the suggested definition? Please give reasons for your views.

We support the proposed definition, although we note the wording used is somewhat cumbersome.

5. Are there any other technical criteria that should be included in the definition of 'ultimate capacity'? If so, what are these and why do you think they are relevant?

We note the importance of the definition of ultimate capacity referring not only to the building as a whole but also to parts. We suggest that "part" be defined in the regulations and apply to both structural and non-structural elements or components of a building. When a "part" is assessed as earthquake-prone then the building as a whole should be categorised as earthquake-prone.

Further, we note the use of the term "collapse" in the discussion document and the Building (Earthquake-prone Buildings) Amendment Act 2016 (section 133AB (b)). It is vital for life safety that this wording be interpreted to include failure of non-structural elements that may become loose in the event of an earthquake. Verandas or cladding, for example, could become loose during or following an earthquake, potentially endangering lives and properties. This risk needs to be considered when buildings are being assessed.

6. If you did not agree with the suggested definition, what definition do you think should be used? Please give reasons for your views.

We have no alternative definition to suggest.

7. Do you have any other comments on the proposals about the definition of ultimate capacity?

We note the word "collapse" is used in the definition and while collapse has clear meaning for a building we believe terms such as "fall", "fail" and "partial collapse" would aid clarity around life-safety hazards associated with parts of a building – noting that parts could include large mechanical items.

It is important to note that the use of the word "probable" in the definition of ultimate capacity has the same specific meaning as in NZS1170 and the Steel and Concrete Codes. Other interpretations of the word "probable" are not appropriate and should be avoided. Clarification may be required to ensure all parties understand the precise meaning in this context.

Categories of earthquake ratings

8. Do you agree that establishing categories of earthquake ratings will help to achieve the objectives for all regulations? What are the reasons for your views?

We support the concept of categories as a means to prioritise efforts in managing risk. However we advise caution in the use of two categories within the earthquake-prone rating.

9. Do you agree that regulations are required to prescribe categories of earthquake ratings or do you think some other mechanism should be considered? What are the reasons for your views?

We have no comment in response to this question.

10. Do you agree with the proposal to create two bands of earthquake ratings for buildings? What are the reasons for your views?

Please refer to our response to Question 11 below.

11. Do you agree with the proposal to delineate the categories of ratings as 'less than 20%NBS' and '20–33%NBS'? What are the reasons for your views?

We have a number of concerns associated with this proposal. One is that an assessment of %NBS will always include some uncertainty and it is very difficult to distinguish between a building that is 19%NBS or 20%NBS, or 32%NBS or 34%NBS. Thus, there will be some margin of error, particularly for buildings at the threshold for different ratings categories.

Secondly, it is important the risk posed by buildings in both of these earthquake-prone categories is managed and mitigated. While buildings rating less than 20%NBS are likely to pose a greater risk than buildings with higher %NBS ratings, those rated 20–33%NBS are still earthquake-prone and must not be seen as a low priority.

Further, while we appreciate buildings with relatively lower %NBS pose a higher risk to safety, this may not be apparent to all building owners, occupiers and passers-by. It is difficult to convey the differences in risk posed by buildings of less than 20%NBS and 20–33%NBS in a way that individuals can understand the potential impact to their safety.

Finally, we are concerned the discussion document presents no policy rationale for separating out buildings that are less than 20%NBS from those that are 20–33%NBS. We believe some explanation of the rationale behind the proposal would have been helpful to inform and justify the proposal.

12. Are there any other risk parameters that could be taken into consideration in establishing the earthquake ratings categories?

We have no comment in response to this question.

13. Do you have any other comments on the proposals about categories of earthquake ratings?

We have a number of other comments relating to the definition of a building and how the earthquake-prone nature of a building could impact on adjacent buildings.

Firstly, we believe there are issues with how society defines a "building" compared with the definition of a building as related to a structure. Consider a group of adjoining dwellings/premises under multiple ownership, with no body corporate. Under section 8 of the Building Act 2004 each individual dwelling/premises would be considered a "building". To accurately and appropriate assess the %NBS of the dwellings/premises the total structure (made up of all the individual dwellings/premises) needs to be treated as one "building". This is vital as the performance of one structure affects the performance of the others. Engineers need as much information as possible when undertaking assessments and it would be optimal for engineers to have full interior and exterior access to buildings they are

assessing and any adjoining buildings. We recommend this be addressed as it creates potential for conflict between building owners.

Secondly, we question whether the impact of the earthquake-prone nature of buildings on adjacent buildings has been considered. For example, consider the situation where an earthquake-prone building shares a wall with another building. We are unclear as to the status of the adjoining building – is it earthquake-prone by association? We believe that at a minimum it is more susceptible to damage from the earthquake-prone building and this risk must be quantified (if possible), communicated between the building owners and managed.

One further issue related to adjoining buildings is access for assessments. It is critical that when undertaking seismic assessments, engineers have access to both buildings they are assessing (and associated records of those buildings) and adjoining buildings so they can provide accurate assessments.

Notices

14. Do you agree that issuing different forms of EPB notices will help to achieve the objectives for all regulations? What are the reasons for your views?

We support the proposal to issue clear, easy to understand notices however we are concerned that the proposed use of multiple notices will cause confusion.

15. Do you agree with the proposal to issue three forms of notice? Do you think this number and type is sufficient? What are the reasons for your views?

We believe building owners, users and the public will be primarily interested only in whether a building is classified as earthquake-prone or not. Using three different notices will add little additional value and could cause confusion.

16. If you did not agree that there should be three forms of notice, how many and what type of forms do you suggest we should use?

We believe one form of notice is needed to provide clarity and make the system easy for everyone to understand.

We do not support the creation of a notice for buildings or parts of buildings that were assessed under section 124 of the Building Act 2004 where the rating is not known. We think creation of a notice for these buildings is highly undesirable and it is preferable instead to focus on establishing the %NBS rating of the building.

If two categories (less than 20%NBS and 20-33%NBS) is proceeded with then we believe the use of two notices would be appropriate.

17. Is the information layout clear and easy to read? If not, what would you suggest to improve the forms?

As stated above, we believe one form is needed, with clear text to inform people and enable them to make good judgements as to whether they can safely enter, use or pass by a building.

We believe the notice should state:

- that the building is earthquake-prone
- which part of the building is earthquake-prone (if there is a single part that is earthquake-prone, resulting in the building being earthquake-prone)
- the earthquake rating category of the building (if two categories is proceeded with).

Clearly stating that a particular part of the building (eg a first storey veranda) is earthquake-prone will inform not only users of the building but also passers-by who could potentially be impacted by the building.

18. Should we make the forms more distinctive? If so, what do you think would achieve this?

We have no response to this question.

19. Is there any other comment you would like to make about the forms of notice?

We note that notices may be place for a long period of time. We recommend notices be laminated to ensure they can withstand weather conditions and maintain their appearance for as long as possible. We believe it would also be advisable for territorial authorities to undertake periodic checks of the notices to ensure they are still visible and in good condition.

Substantial alterations

20. Do you agree that establishing criteria for substantial alterations will help to achieve the objectives for all regulations? What are the reasons for your views?

We support the creation of criteria as a means to encourage building owners to undertake seismic work.

21. Do you agree that the criteria for substantial alterations should be set out in regulations? If not, what other mechanism could be used to define the criteria for substantial alterations and why?

We have no response to this question.

22. Do you agree with the concept that there should be a single measure only, common to all earthquake-prone buildings across the country, for identifying what building work will be deemed to be 'substantial alterations'? Please give reasons for your views.

We have no response to this question.

23. If so, do you agree with the proposal that this be 25% of the rateable value of the building (excluding land)? Please give reasons for your views.

We have no response to this question.

24. If you agree with using a single measure to identify substantial alterations, but do not support using the building value as a denominator, then please state what you think the measure and the value should be (eg a fixed financial threshold of (say) $200,000 for the total value of building work, or some other measure or value).

We have no response to this question.

25. If you disagree with the proposal, and think that there should be more than one measure to identify substantial alterations, what should these be and why?

We have no response to this question.

26. Should we choose a different approach to setting the threshold for substantial alterations between areas with higher value buildings and areas with lower value buildings (as may occur between some urban and rural areas). If so, what should the approach be?

We have no response to this question.

27. What are the implications of defining 'substantial alterations' (eg through a percentage of rateable value, and/or a fixed financial value for proposed building work) for mixed use buildings and buildings with multiple titles (eg multi-storey unit title apartments, shopping malls)?

We have no response to this question.

28. What are the implications of defining 'substantial alterations' (eg through either a percentage of rateable value, and/or a fixed financial value for proposed building work), for owners of heritage buildings?

We have no response to this question.

29. Are there any situations where it would not be appropriate to impose the 'substantial alterations' criteria on proposed building work? Please explain what situation/s and give reasons for your views.

We have no response to this question.

30. Do you have any other comments on the proposals about the criteria for substantial alterations?

We foresee a number of potential unintended consequences with the introduction of criteria for substantial alterations. Firstly, we believe this proposal could encourage building owners to spend the minimum possible, which could result in low quality work and increase the inherent risk associated with buildings.

Secondly, the proposal may encourage building owners to delay required stages of alteration work so there is at least 24 months between the stages of work, thereby avoiding the need to undertake seismic work. We recommend that consideration of the value of building work over a 24-month period not proceed to avoid this situation.

Finally, we foresee the potential for missed opportunities where building work falls below the substantial alterations threshold. There may be cost savings (and potentially life savings) to be realised if seismic work is undertaken sooner.

Exemptions

31. Do you agree that establishing prescribed characteristics for exemptions will help to achieve the objectives for all regulations? What are the reasons for your views?

We support the establishment of guidance to help territorial authorities in their decisions regarding exemptions. We believe the issuing of exemptions should be kept to a minimum to enable the earthquake-prone building regulations to be effective and achieve its objectives of protecting life safety and avoiding damage to property.

32. Do you agree that the prescribed characteristics for exemptions should be set out in regulations? If not, what other options could be considered and why?

Yes, we support the characteristics for exemptions being set out in regulations.

33. Do you agree that territorial authorities should have some discretion to make decisions about exemptions using parameters for building occupancy and use as a guide?

We support territorial authorities having some discretion to make decisions about exemptions. We believe it is appropriate that territorial authorities make decisions on behalf of their communities regarding the level of risk they are prepared to live with.

34. Do you think the proposed occupancy thresholds are appropriate to represent life safety risk? (These are: low – 0–50 people; medium – 51–300; high – more than 300.) What are the reasons for your views? If you disagree, what do you think the thresholds should be?

We believe the threshold for a "low ranking" building could in reality be quite high, with occupation up to 50 people. We encourage MBIE to consider re-evaluating the representative building types and locations used to ensure they reflect current usage.

35. Do you think the proposed 'frequency of occupancy' thresholds are appropriate to represent life safety risk? (These are: low – <25 times per year; occasional – 25–100 times per year; frequent – more than 100 times per year.) What are the reasons for your views? If you disagree, what do you think the thresholds should be?

We believe the three bands are unclear and could lead to unintended outcomes as there is no specification as to the duration of each use. For example, a "seldom used" building could be used 24 times for eight-hour-long meetings, resulting in a total use of 192 hours per year. Meanwhile a "frequently used" building could be used 101 times for one-hour-long meetings, resulting in total use of 101 hours per year. We recommend MBIE re-evaluate these bands to provide clearer guidance for territorial authorities.

36. Do you think that the exemptions provisions should apply to priority buildings? What are the reasons for your views?

We support the proposal that exemptions not be an option for priority buildings. These buildings are important, whether because of these characteristics or their use, and where they are earthquake-prone they need to be upgraded as soon as possible.

37. Do you think that the seismic hazard area of the building should be a consideration for exemptions?

The seismic hazard is already considered as part of the assessment and determination of earthquake-prone status.

38. Should the occupancy thresholds be lower if the main occupants of a building are young children or people who would require mobility assistance to leave?

We believe this should be a consideration for the local community.

39. What other factors should a territorial authority consider when considering an application for an exemption under section 133AN?

We have no response to this question.

40. Do you have any other comments on the proposals about exemptions?

We recommend the regulations explicitly state that buildings with high occupancy and frequent use are not eligible for exemptions, along with priority buildings.

We note and support the proposal that MBIE provide guidance for territorial authorities. This guidance must be prepared well in advance of the implementation of these regulations so territorial authorities have the opportunity to become familiar with before being asked to apply the regulations.

General

41. Do you have any other comment to make on the proposals (for example, matters related to implementation and monitoring)?

We note the proposal that the definition of "moderate earthquake" be tied to the current Act. While this will work in the shorter term, it may create issue in the future as the Building Code is updated. We recommend the Ministry consider instigating a system whereby a significant change in Z values would then trigger a review of %NBS assessment.

Conclusion

We appreciate the opportunity to make this submission and are able to provide further clarification if required.

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