

Seismic risk assessment for occupied buildings owned or leased by Government agencies

Using Initial Evaluation Process (IEP) and Detailed Structural Assessment Reports

Government Property Management Centre of Expertise

in conjunction with

The Department of Building and Housing

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Attachment:

Advice for Building Owners – Earthquake safety of buildings
Published by Ministry of Business Innovation and Employment –
Building and Housing

Seismic Risk Assessments - Using Initial Evaluation Process (IEP) and Detailed Structural Assessment Reports

Guidance

1. Objective

To provide agencies with guidance in utilising information from IEP and detailed structural assessments to make informed decisions and develop appropriate responses to identified risks.

2. Scope of this guidance

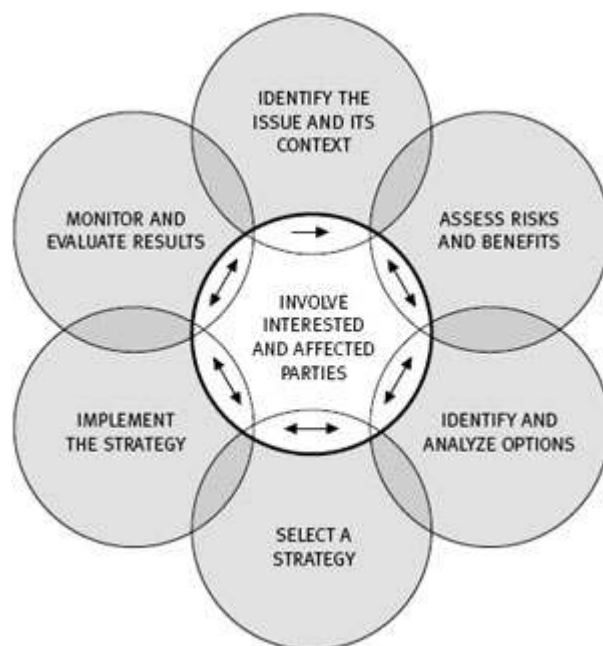
The Property Management Centre of Expertise has developed this guidance to encourage consistency in approach and outcomes where agencies have obtained an IEP or detailed assessment by a structural engineer.

PMCoE acknowledges that a “one size fits all” approach is not appropriate for agencies when they consider their response to identified seismic risk in a particular building. This guidance has, therefore, been drafted to highlight for agencies key considerations that agencies should have regard to in their decision making process.

3. Risk Management Framework

In considering the response to seismic assessment reports it is useful to recognise that what is being undertaken is the management of risk. Using a recognised risk management framework to work through the issues, risks and options will ensure that a systemic approach is taken to making the appropriate decisions.

A suggested frame work is:



- Define the issues and put them in context
- Assess the risks (immediate and longer term) associated with the issues identified
- Identify options for addressing the risks
- Select the appropriate response to address the risks identified
- Take action
- Monitor and evaluate outcomes

Framework is conducted:

- In collaboration with stakeholders
- Using iterations if new information becomes available that impacts risks identified

The key step in this model is defining the issues/ problem and fully understanding the potential impacts or consequences. To achieve this agencies need to ensure that they proceed on a foundation of solid, factual information.

4. Sufficient Information to Make Informed Decisions

It is important that agencies ensure they have full information and understand the potential issues before decisions are made. Much of the recent publicity around seismic risk has focused on the percentage of new build standard (%NBS). This, however, is only one element within detailed report on seismic risk. For this reason it is prudent for agencies to seek a detailed structural assessment where the IEP suggests seismic risks could exist.

It is worth recognising that calculation of the %NBS is not an exact science and requires judgement and assumptions from each engineer. For this reason it is possible that variations in rating could be seen between assessment by different engineers on the same building. Detailed assessments provide more specific structural information.

It is possible that a specific element in the building could present a risk that needs to be addressed. An example is the stairs in multi storey buildings. The Department of Building and Housing (DBH) has issued “Practice Advisory -13 Egress Stairs” (<http://www.dbh.govt.nz/practice-advisory-13>) highlighting that some require assessment for earthquake risk.

It is important, therefore, that agencies examine the detail in seismic assessment reports to extract the structural issues and risks that are the foundation of the NBS rating.

Agencies should critically analyse engineers’ reports to be satisfied that they:

- Clearly indicate any structural weaknesses within the building. Critical weaknesses should be highlighted.
- Explain the potential consequences, risks, impacts of the weaknesses identified on the buildings performance in a moderate earthquake. In particular what aspects pose a risk to life safety of building occupants and users.
- Provide clear recommendations on options to address the identified structural weaknesses with estimates of cost.

5. Choosing a Course of Action

Each building assessed is unique in character, age, construction, location, use etc. Agencies need to be cautious about adopting a generic course of action for buildings in their property portfolio.

There are no hard and fast “rules” on response. Agencies need to exercise judgement based on the information they are provided through engineers seismic assessment reports and their evaluation of the risks posed.

In choosing a course of action in response to seismic assessments agencies should:

- **Prioritise the safety of staff and the public** – the appropriate response will be determined by the identified structural weaknesses and their immediate potential risk to life safety or of injury. The safety of staff and the public must be a primary focus in choosing a course of action.
- **Address legal requirements** – these would include local Territorial Authority earthquake prone building policies, Health and Safety responsibilities. The Building and Housing Group (a division within the Ministry of Business Innovation and Employment) has published guidance for building owners. A copy of this advice is attached.
- **Minimise impact on staff and public** – business continuity, maintenance of services and consideration of the personal impact on staff should be factored into response options developed.
- **Consider potential impact of response on other stakeholders** – agencies need to have regard to possible perceptions and precedence that their response might generate and develop appropriate mitigating strategies where risks are identified.
- **Consider heritage requirements** – the Ministry for Culture and Heritage (MCH) has drawn our attention to the **Policy for Government Departments’ Management of Historic Heritage**, which Cabinet approved in 2004.

The Policy, which is not prescriptive, provides useful guidance on management of departments’ heritage properties. The government developed the policy for government departments only but agencies in the wider state sector may also find it helpful.

The Policy is available on the MCH website:

<http://www.mch.govt.nz/research-publications/our-research-reports/policy-government-departments-management-historic-heritage>.

Policy 11 may be of particular interest; it directs agencies to the New Zealand Historic Places Trust (NZHPT). NZHPT is the lead national heritage agency and it can provide advice to property owners on heritage management.

If you wish to seek advice from NZHPT, please contact Robert McClean at rmcclean@historic.org.nz. If you have general questions about the Policy, please contact Helen McCracken at the Ministry for Culture and Heritage (helen.mccracken@mch.govt.nz).

- **Ensure response is practical and achievable** – challenges exist where issues are identified in leased premises (see Section 6). Practical and achievable response is also linked to the balancing of investment (potential cost) and risk.
- **Ensure response investment is commensurate with risk** – agencies will be faced with a range of options from “do nothing” to “full upgrade” the latter being the existing building or seeking new accommodation. It is important that consideration be given to the risks that have been identified and a judgement made on where the balance between unacceptable and tolerable risk (see Section 7) lies. This will help inform decisions about the appropriate level of response and ensure prudent investment.

6. Landlord Obligations

Most agencies will be occupying buildings that are leased from third party landlords. In relation to seismic assessments and responding to issues identified the lessor/ lessee relationship adds a further dimension and can bring with it some challenges.

It is important that agencies understand the boundaries within which they are operating before they make any approaches to their landlord.

Some key points to recognise are:

- The contents of the agencies lease will determine what, if any, the landlord’s obligations are to provide information, conduct seismic assessments, undertake remedial work etc. There is no other legislative authority that directs landlords in this area other than local Territorial Authority Earthquake Prone Buildings Policy.
- The Building Act defines earthquake prone buildings (EPB) as those having rated at less than 33% of new building standard (NBS). While some Territorial Authorities have goals contained in their policies for building upgrade (67% NBS is common), building owners cannot be compelled to undertake more work than is required to remove the earthquake prone status unless change of use occurs.
- Owners of buildings assessed at greater than 34% NBS cannot be compelled to undertake earthquake strengthening work unless a change of use or significant upgrade occurs.
- Agencies have obligations as an employer under the Health and safety in Employment Act one such obligation being the provision of a safe work environment for employees or people in the vicinity. The focus of the HSE Act is not the meeting of minimum standards. Rather it sets an expectation that where hazards are identified all practical steps are taken to remove or minimise the risk posed. It needs to be recognised that compliance with the Building Act or Territorial Authority policies may not always mean that the requirements of the HSE Act have been met. Employers need to exercise judgement in this respect.

As can be appreciated the relationship an agency has with their landlords will be critical to successful resolution where potential seismic risks are identified.

7. Tolerable Risk

Tolerable risk is defined as a risk society or an individual is willing to live with so as to secure certain net benefits (e.g. risk of flying v benefit of travel) in the confidence that it is being properly controlled, kept under review and further reduced as and when possible (Fell & Hartford, 1997).

The concept of tolerable risk reflects the reality that in everyday life people face a variety of risks and make judgements on whether those risks are broadly acceptable, tolerable or unacceptable. In making these judgements people take into account a range of factors. Examples are:

- Personal experience and knowledge of the area of risk
- Confidence in the product, provider or legislator in the area of risk
- Perceived potential impact of risk
- Confidence in the controls in place to minimise risk
- Whether the risk faced is voluntary (e.g. car travel) or involuntary (e.g. pollution in the air)
- Societal concern or cultural view of the activity or risk
- Who bears negative or positive impacts of risk
- Media attention and how the risk is portrayed

In the context of considering seismic assessment of buildings it is important to have a clear view of what is needed to minimise the risk the structural issues identified pose (recognising it is impossible to eliminate all risk). The ultimate goal of structural work is to provide life safety for occupants and users while acknowledging that in a future seismic event the building could well be damaged beyond repair.

To ensure that no unnecessary cost is incurred Agencies need to form a view of where the tolerable risk point is in relation to a particular building balancing this against the requirement to keep staff and the public safe. In addition they should develop strategies and communication approaches to ensure that those impacted are fully informed and understand the rationale of such decisions.

If you have any questions regarding this guidance or would like to discuss particular issues relating to your agencies property portfolio please contact Steve Lewis stephen.lewis@pmcoe.govt.nz or phone DDI 04 916 3833; mobile 029 650 1715.



Advice for building owners Earthquake safety of buildings

July 2012



**You are responsible for ensuring your building is safe.
If there are concerns about your building, you should seek expert advice and act on it.**

You may be legally required to structurally upgrade your building in just a few situations:

- When the building's use is going to be changed – it must then comply, as nearly as reasonably practicable, with the Building Code structural requirements, as well as means of escape from fire (typically fire exits and alarms), sanitary facilities and disabled access.
- If the building is dangerous, insanitary or earthquake-prone. An "earthquake-prone building" is a structure that is 33 per cent or less of the new building standard (NBS) for earthquake strength design.

You should not wait for your council to act before dealing with any structural concerns.

- If you have concerns about your building, you should seek expert advice and fix any identified problems to the extent practicable.
- The New Zealand Society of Earthquake Engineering recommends that buildings should be strengthened to at least 67 per cent NBS, although owners should not rely solely on the NBS in assessing what action to take.
- Building and Housing is currently reviewing policy and practice around earthquake-prone buildings.

Being "earthquake-prone" doesn't necessarily mean that your building should not be occupied – but it does mean that you should get an expert engineering assessment as soon as possible, and work out a plan to fix the problems.