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EARTHQUAKE- PRONE BUILDINGS POLICY

2009

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Introduction

Wellington City is located in one of the most seismically active parts of New Zealand. Earthquakes are unpredictable events that occur infrequently and they can have significant consequences.

Earthquakes cannot be prevented, but their impacts can be mitigated. The Building Act 2004 (the 'Act') expresses the government's objective for earthquake-prone buildings to be strengthened to the appropriate seismic standards, or alternatively, demolished. It has an underlying objective to reduce the potential for injury, loss of life, or damage to other property that may result from the effects on buildings of a moderate earthquake.

This Policy has been developed under the requirements set out in the Act. It outlines Wellington City Council's approach to ensuring earthquake-prone buildings are strengthened to the level required by the Act, or may be demolished.

This Policy updates the Earthquake-prone Buildings Policy 2006, which replaced the Council's Building Safety Policy 1998.

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Policy Objectives and Principles

POLICY OBJECTIVES

The objective of this Policy is to discharge the Council's responsibilities and obligations under the Building Act with respect to earthquake-prone buildings.

In doing so, strengthening work undertaken to comply with the Policy will reduce the potential for injury, loss of life, or damage to other property in a moderate earthquake. It will also reduce the potential social disruption and loss of productivity that may result from an earthquake.

It is the responsibility of building owners to ensure that buildings comply with the requirements of the Act. The Council can give no assurance or guarantee that any building is not earthquake-prone at any time, until approved strengthening work has been completed.

POLICY PRINCIPLES

This Policy has been developed considering the purpose and principles of the Act which seeks to ensure that:

- people who use buildings can do so safely and without endangering their health
- buildings have attributes that contribute appropriately to the health, physical independence, and well-being of the people who use them
- buildings are designed, constructed, and able to be used in ways that promote sustainable development.

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Key Policy components

ASSESSING EARTHQUAKE-PRONE BUILDINGS

Section 122 of the Building Act, defines what it means for a building to be earthquake-prone.

(1) A building is earthquake-prone for the purposes of this Act if, having regard to its condition and to the ground on which it is built, and because of its construction, the building:
  (a) will have its ultimate capacity exceeded in a moderate earthquake (as defined in the regulations); and
  (b) would be likely to collapse causing:
    (i) injury or death to persons in the building or to persons on any other property; or
    (ii) damage to any other property.

(2) Subsection (1) does not apply to a building that is used wholly or mainly for residential purposes unless the building:
  (a) comprises 2 or more storeys; and
  (b) contains 3 or more household units.

Moderate earthquake has the same meaning as section 7 in the Building Regulations 2005 where –

> '…moderate earthquake means, 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 at that site.'

Buildings will need to be assessed to determine whether they are earthquake-prone. As a general guidance, **an earthquake-prone building will have strength that is 33% or less of the seismic loading standard NZS 1170.5: 2004**.

STANDARD OF STRENGTHENING REQUIRED

Once a building has been classified as earthquake-prone, strengthening work to ensure the building is no longer earthquake-prone will require a building consent. When a building consent is sought then the Council will assess whether the level of strengthening is to the minimum levels required by law and will also encourage, but cannot require, strengthening to the higher levels, particularly for buildings serving a specific post disaster function.

The benefits for the building owner of higher levels of strengthening include:

- improved levels of safety for occupants, tenants and the public
- allowance for a change of use to occur to potentially better meet owner or market demand and realise a better return
- greater 'future proofing' against changes in either the legislation or structural codes which may require higher levels of strengthening to be achieved
- leverage for improved insurance

- reduced risk of damage to the building or other properties in its proximity, or impacts on business continuity.

There is also an advantage to the city in reducing the impacts for our community following an earthquake event by:

- preserving the fabric of our city, particularly heritage buildings
- lessening the economic impacts
- lessening the disruption of service.

PRIORITISATION TO STRENGTHEN EARTHQUAKE-PRONE BUILDINGS

Table 1 prioritises the order in which the buildings will be assessed and, if necessary, will be required to be strengthened. The prioritisation seeks to balance the public risk associated with earthquake-prone buildings, the private cost of strengthening a building and the availability of people to undertake the strengthening work.

The prioritisation in Table 1 is determined by:

Importance Level – whether a building has a post-disaster function, serves a specific community purpose, or is likely to cause injury or damage to other property. The complete list of Importance Levels, which is based on NZS 1170.0:2002, is included in Attachment 1.

Building Age and Condition – the likely structural performance of a building based on the structural code to which the building was designed or strengthened.

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Table 1: Priority for assessing and strengthening earthquake-prone buildings

IMPORTANCE LEVEL	BUILDING AGE & CONDITION		
	A Pre NZS 1900 Chapter 8: 1965 Standard	B NZS 1900 Chapter 8: 1965 Standard	C Critical structural weakness [1]
1: Low degree of hazard E.g. Farm buildings and isolated structures, fences, walls	Passive	Passive	Passive
2: Not in other levels E.g. Hotels, offices and apartments less than 15 storeys	Moderate	Low	Low
3: Contain crowds or high value to the community E.g. Schools, universities, structures over 15 storeys, medical centres	High	Moderate	Low
4: Highest with post-disaster functions E.g. Hospitals, civil defence centres, police, air traffic control, power, radio	High	High	High

Ranking:

High priority | Moderate priority | Low priority | Passive

Note 1. Critical structural weakness is defined as individual buildings built post 1976 (NZS 4203 structural design code) with an identified detailing deficiency that renders it earthquake prone.

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MAXIMUM TIMEFRAME TO STRENGTHEN A BUILDING

Using the prioritisation established in Table 1, the maximum timeframes for undertaking strengthening work for a building that has been determined as earthquake-prone, are:

High priority	10 years
Moderate priority	15 years
Low priority	20 years
Passive	No maximum.

Buildings with earthquake-prone building notices issued under Section 66 of the Building Act 1991 will be reissued a notice under Section 124 of the Building Act 2004 requiring strengthening.

DELEGATIONS OF COUNCIL OFFICERS

A council officer with the appropriate delegations may issue an EQPB notice with a timeframe different to the timeframes stated in the policy. This specifically relates to situations where:

1. Due to the effects of an earthquake:
   a) A building that was considered earthquake-prone and had been issued a notice under this policy has been affected and it requires immediate action to address public safety issues.
   b) A building that was not considered to be earthquake-prone prior to the earthquake has been affected and requires immediate action to address public safety issues.

2. A building owner(s) has failed to comply with a notice and/or the timeframe has expired.

For the avoidance of doubt, this section does not affect the Council's powers under sections 124 to 130 of the Building Act 2004 in relation to dangerous or insanitary buildings, or the exercise of other enforcement powers under that Act.

DEMOLITION OF EARTHQUAKE-PRONE BUILDINGS

Once a building is classified as earthquake-prone, the building owner may choose to strengthen it, or if appropriate, demolish all or part of the building. A demolition proposal may require a resource consent to be obtained from the Council.

CHANGE OF USE

The Building Act 2004 provisions regarding change of use are separate from the Act's provisions relating to earthquake-prone buildings.

When a change of use for a building or part of a building occurs, then the structural upgrade of the building or the affected area is required to be strengthened "as nearly as is reasonably practicable" to the current requirements of the Building Code. Council has no discretion over this requirement which is a provision of the Building Act 2004.

The change of use provisions include the establishment of a household unit where there was none before, and wherever there is a change in the classified use as defined in Schedule 2 of the Building (specified systems, change of use, and earthquake-prone buildings) Regulations 2005.

HERITAGE BUILDINGS

A heritage building includes all buildings listed as a heritage building in the Wellington City District Plan and/or those registered by the New Zealand Historic Places Trust.

The Building Act requires that Council *must* ensure all earthquake-prone buildings are strengthened to at least meet the minimum prescribed standard (or be demolished) to reduce the potential of injury, loss of life or damage to other property in the event of a moderate earthquake. This Policy's approach to heritage buildings is to reduce the impact of any strengthening work required on the heritage fabric of the building. This means that for earthquake-prone heritage buildings:

- strengthening is required so that it is no longer earthquake-prone
- the maximum timeframes will apply, just as it does to all buildings
- a management plan outlining how strengthening will preserve the heritage fabric of buildings is to be provided
- demolition is not encouraged.

A heritage incentive fund has been operating since 2006/07 (called the Built Heritage Incentive Fund as at the date of adoption of this policy). This fund may provide assistance to owners of earthquake-prone buildings.

COUNCIL INFRASTRUCTURE

The management of Council's infrastructure, including roads, tunnels and water reservoirs, is also relevant to this Policy. Currently, Asset Management Plans set out how Council will meet its obligations under the Civil Defence and Emergency Management Act 2002, which places a duty on a local authority to plan and provide for civil defence emergency management within its district. It must also ensure that it is able to function, even at a reduced level, after an emergency such as an earthquake.

In addition, all works carried out on infrastructure currently comply with the risk analysis, best practice and relevant standards as set out in the Asset Management Plan.

PORTFOLIO APPROACH

Owners of multiple EQPBs can work with Council using the hearings process in attachment 2, to agree on a building portfolio strengthening plan.

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Identification of Earthquake-prone Buildings

The following sets out the procedure Council will use to establish the earthquake-prone status of all buildings.

Step 1. Desk top review
A desk top review of Council files will be undertaken by Council to assess which buildings could be earthquake-prone. Buildings that will *not* require further assessment include those:

- designed or strengthened to the 1976 NZS 4203 and subsequent codes, unless they have a critical structural weakness
- isolated structures unlikely to collapse causing injury, death or damage to other property (refer Section 122 (1)(b) of the Building Act 2004)
- used wholly or mainly for residential purposes, unless the building comprises 2 or more storeys and contains 3 or more household units (refer Section 122(2) of the Building Act 2004)
- Council and New Zealand Transport Agency infrastructure covered by an Asset Management Plan.

From the information gathered in this review, a database of potentially earthquake-prone buildings will be established.

Step 2. Initial assessment
The Council will in the first instance use the Initial Evaluation Process (IEP) set out in the New Zealand Society for Earthquake Engineering *Recommendations for the Assessment and Improvement of the Structural Performance of Buildings in an Earthquake* to determine the structural performance score of potentially earthquake prone buildings in relation to NZS 1170.5: 2004. Buildings with a score of less than 34 are considered to fall within the definition of an earthquake-prone building.

Buildings are evaluated on an area by area basis. Consideration will also be given to the number, classification and potential risk of buildings within an area when deciding the order of areas to be assessed.

Council will, at its own cost, use appropriately qualified engineers, to undertake the IEP.

In some circumstances the standard IEP by itself may not provide sufficient evidence to satisfy officers there is a reasonable probability the building is earthquake-prone. Examples of these circumstances may include: buildings that have been strengthened after 1991 to 100% of the 1965 Code, or buildings receiving “IEP” scores of between 25 and 34. If any such circumstances arise in relation to a building, Council Officers will further research Council records and conduct follow up investigations with the Council's technical advisers before advising the outcome of the initial assessment under Step 3 below.

Step 3. Advisement of the initial assessment outcome

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As the initial assessments are completed, the Council will write to owners of buildings with a standard IEP score of less than 34 and/or where there is other evidence, advising that their building is potentially earthquake prone.
The letter will also note any heritage listing and the consequent need for a Management Plan to preserve the heritage fabric of the building.

Notified building owners will then have six months to consider this advice and either provide additional information about factors that may affect the strength of the building or a detailed assessment of the structure. Relevant information could include:

- particulars of construction materials and detailing
- regularity of the building in both plan and elevation
- the type of soil the building is founded on.

This additional information can be completed either in accordance with the NZSEE document or an alternative acceptable standard. It is recommended that presenting any new information other than in accordance with NZSEE is discussed with council officers and confirmed as being acceptable to the Council prior to the work being undertaken.

Council may use appropriately qualified engineers to review this information received from building owners. Where discussions and negotiations are required between owners and their technical experts and Council and its technical experts, costs will lie where they fall.

Where the Council is satisfied that the building is not earthquake prone, the recorded status of the building will be changed and the owner will be advised of the Council's decision.

Step 4. Issue notice to strengthen building
Where, EITHER

a) after consideration of any further information provided in Step 3 above, the Council is still satisfied that the building is earthquake-prone, OR
b) Where a building owner has failed to respond to Council's letters under Step 3, and the Council is satisfied from the IEP process the building is earthquake prone

the Council will issue a written notice under Section 124 of the Building Act 2004 requiring a building consent to be obtained and the structural strengthening work to be undertaken.

Step 5. Dispute of earthquake-prone classification of building
Should an owner dispute the classification of their building as earthquake-prone, application for a 'Determination' may be made to the Chief Executive of the Department of Building and Housing. As set out in the Building Act 2004, the determination of the Chief Executive of the Department of Building is binding on the Council.

Step 6. Requests by a building owner(s) for extension in timeframe to complete work and/or with a portfolio of potentially earthquake prone buildings
The Council may consider individual submissions from owners through a hearing process requesting a longer timeframe than set out in section 3.4 to complete the strengthening work. This may be appropriate in special circumstances where the building owner is unable to comply with the requirement to strengthen the building within the maximum Policy timeframes.

The hearing process will take the purpose and relevant principles of the Building Act 2004 into consideration. It will consider the appeal of the building owner against the Council's requirement to reduce the risk to property or to the public in the event of an earthquake. In general, the hearing process and specific matters that may be considered are set out in Attachment 2. The hearings will be established by Council and administrative costs to the building owner may apply.

Should the building owner be permitted to have a longer timeframe to strengthen the building, the Council may take action to ensure the public is aware of the earthquake-prone status of the building and the risk associated with occupying the building. This may include placing a notice on the building or putting up a hoarding or fence around the building. Any notice will be reissued to reflect amended agreed timeframes.

Step 7. Updates
As building consents for structural strengthening are received and the strengthening work completed, the database will be updated to reflect the status of the building as *not* earthquake prone.

Step 8. Enforcement action
If structural upgrading work has not been undertaken in accordance with the notice issued at Step 4, the Council will consider enforcement action.

5. Availability of Earthquake-prone Building Information

The database of potentially earthquake-prone buildings is publicly available upon request and includes information that is already provided in Land Information Memoranda. The database will provide a summary of the data and also the current status of the building as potentially earthquake-prone or earthquake-prone. It will note whether this information is pending an outcome of an assessment to determine its correct status. Otherwise the Land Information Memoranda will note, "based on the information available to the Wellington City Council and based on the approach as required by the current legislation this building is not earthquake prone"

The information will continue to be included in property reports and Land Information Memoranda.

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Importance Levels for Building types – New Zealand Structures [1]

IMPORTANCE LEVEL	COMMENT AND EXAMPLES
1 (lowest)	***Structures presenting a low degree of hazard to life and other property*** • structures with a total floor area of $30m^2$ • Farm buildings, isolated structures, towers in rural situations • Fences, masts, walls, in-ground swimming pools
2	***Normal structures and structures not in other importance levels*** • Buildings not included in importance levels 1,3 or 4 • Single family dwellings • Car parking buildings
3	***Structures that as a whole may contain people in crowds or contents of high value to the community or pose risks to people in crowds*** Buildings and facilities as follows: (a) Where more than 300 people can congregate in one area (b) Day care facilities with a capacity greater than 150 (c) Primary school or secondary school facilities with a capacity greater than 250 (d) Colleges or adult education facilities with a capacity greater than 500 (e) Health care facilities with a capacity of 50 or more resident patients but not having surgery or emergency treatment facilities (f) Airport terminals, principal railway stations with a capacity greater than 250 (g) Correctional institutions (h) Multi-occupancy residential, commercial (including shops), industrial, office and retailing buildings designed to accommodate more than 5000 people and with a gross area greater than 10 000 m2 (i) Public assembly buildings, theatres and cinemas of greater than 1000m2 Emergency medical and other emergency facilities not designated as post-disaster. Power-generating facilities, water treatment facilities and other public utilities not designated as post-disaster. Buildings and facilities not designated as postdisaster containing hazardous materials capable of causing hazardous conditions that do not extend beyond the property boundaries

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4	***Structures with special post-disaster functions*** Buildings and facilities designated as essential facilities. Buildings and facilities with special post-disaster function. Medical emergency or surgical facilities. Emergency service facilities such as fire, police stations and emergency vehicles garages. Utilities or emergency supplies or installations required as backup for buildings and facilities of Importance Level 4. Designated emergency shelters, designated emergency centres and ancillary facilities. Buildings and facilities containing hazardous materials capable of causing hazardous conditions that extend beyond the property boundaries.
5 (highest)	***Special structures*** (outside the scope of the Standard[1]) • Structures that have special functions or whose failure poses catastrophic risk to a large area (e.g. 100km^2 or a large number of people (e.g.100,000) • Dams, extreme hazard facilities

Note [1]
Source: Standards NZ, Structural design actions Part 0: General principles, AS/NZS 1170.0:2002, Table 3.1
Note: There are no importance Level 5 buildings in the Wellington City area.

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ATTACHMENT 2

Hearings Process

The hearing process is initiated by the property owner or their agent applying to the Council in writing and requesting a time extension different to those set out in the section 124 notice that has been issued for the building(s). This may include information in support of a different timeframe and order that strengthening work is to be completed.

The matter will be heard by the Council's Regulatory Committee. Council officers will provide a report with recommendations and the building owner or their agent will have the opportunity to make a presentation to the Committee.

Once the Committee has made a decision the building owners will be advised and the notices reissued if necessary.

Specific matters that may be considered for an extension in timeframe to complete strengthening work

- whether people who use the building(s) can do so safely
- importance of ensuring that each building is durable for its intended use
- importance of recognising any special traditional and cultural aspects of the intended use of the building(s)
- costs of the building(s) (including maintenance) over its whole life
- importance of standards of building design and construction in compliance with the building code
- need to provide for the protection of other property from the risk of physical damage
- need to facilitate the preservation of buildings of significant cultural, historical, or heritage value
- importance level of the building(s)
- building structure and strength i.e. the code that was used to design and construct the building(s)
- special characteristics of the building(s) e.g. heritage or historic
- whether the building(s) has already been strengthened along with the level it was strengthened to and when the work was done
- financial implications
- ramifications if the building(s) were to be demolished rather than strengthened e.g. loss of heritage for future generations
- availability of the appropriate people to do the work
- proposals by an owner of more than one earthquake-prone building to modify the order and timeframes in which the portfolio of buildings is strengthened, provided there is no reduction in the net overall level of public safety otherwise required by the policy across the portfolio. Council will need to be satisfied that any loss in public safety from any extensions in timeframes for one or more earthquake-prone buildings are sufficiently offset by shortened timeframes for one or more other earthquake-prone buildings in the portfolio.
- consideration of work that has been undertaken on, or that otherwise affects, a building providing partial, targeted or staged strengthening.