

# **Marlborough District Council**

## **Building Act 2004**

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**EARTHQUAKE-PRONE BUILDING POLICY 2006**

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# Earthquake-prone Building Policy 2006

## Introduction

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To make buildings safer to use in the future, the Building Act 2004 has introduced provisions to improve the likelihood of existing buildings withstanding earthquakes. These changes reflect lessons that have been learnt from the effects of earthquakes both internationally and in New Zealand, as well as the growing recognition of how inadequate past earthquake design practices are when compared with current knowledge.

To address the changes to the Building Act, territorial authorities are required to develop and adopt a **policy** regarding local buildings most vulnerable in a moderate earthquake (section 131 of the Building Act). This policy must be in place by 30 May 2006.

As part of the development of this Policy, the Marlborough District Council (the Council) must consult with the community to ensure there is a balance between the need to address earthquake risk and other priorities, such as the social and economic implications of implementing the Policy.

## Background

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The Policy on earthquake-prone buildings must describe:

- the approach the Council will take in performing its functions under the Act in relation to earthquake-prone buildings;
- the Council's priorities in performing those functions; and
- how the policy will apply to heritage buildings.

It is expected that the Policy will be implemented over a number of years, or even several decades. To keep policies up to date with any advances, the Act requires them to be reviewed every 5 years.

This document sets out the Policy to be adopted by the Council in accordance with the new requirements of the Building Act 2004. In developing and adopting this Policy, the Council aims to follow the special consultative procedure set out in section 83 of the Local Government Act 2002.

The Earthquake-Prone Building Policy 2006 will replace the Council's existing Earthquake-Prone Building Policy introduced in March 2002.

## Seismic Hazards in Marlborough

### Earthquake

Parts of Marlborough lie within the zone of highest earthquake risk in New Zealand. This is because the district is transected by a series of fault lines associated with the relative movements of the tectonic plates that New Zealand sits across. Ground shaking will occur from ruptures on these fault lines or subduction movement to the north of the district.

The active faults that have planning and development significance for Marlborough have been recorded in a Council database.

## Liquefaction

Research shows that some subsurface soils have a high probability of liquefaction occurring during strong earthquake shaking. Liquefaction occurs during shaking when soil becomes like liquid and loses its ability to support buildings. This results in damage to buildings. The types of soil most susceptible to liquefaction are low to medium density sands and silts, generally within 12 to 15 metres of the ground surface. These soils are known as flexible soils. Shallow groundwater level is also an important requirement for liquefaction to occur.

Within Marlborough, there are indications that soils susceptible to liquefaction can be found generally closer to the coast and the Riverlands locality in particular. It is intended that investigations will be carried out by the Council to determine more specifically where these areas are but funding for such work has yet to be made. In the meantime it will be a landowner's responsibility to determine if a particular site is susceptible or not when applying for a building consent.

## Purpose of the Building Act 2004

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The Act sets out its purpose in *Section 3* and this is as follows:

"The purpose of this Act is to provide for the regulation of building work, the establishment of a licensing regime for building practitioners, and the setting of performance standards for buildings, to ensure that—

- (a) people who use buildings can do so safely and without endangering their health; and
- (b) buildings have attributes that contribute appropriately to the health, physical independence, and well-being of the people who use them; and
- (c) people who use a building can escape from the building if it is on fire; and
- (d) buildings are designed, constructed, and able to be used in ways that promote sustainable development."

Sub-clauses (a) and (c) are particularly relevant in developing this Policy on earthquake-prone buildings.

*Section 4* of the Act sets out a list of principles that the Council has to take into account when carrying out its functions or duties, or exercising powers under the Act. The following principles are particularly pertinent in the development and implementation of this Policy:

- (b) the need to ensure that any harmful effect on human health resulting from the use of particular building methods or products or of a particular building design, or from building work, is prevented or minimised;
- (c) the importance of ensuring that each building is durable for its intended use:  
...
- (e) the costs of a building (including maintenance) over the whole of its life:  
...
- (h) the reasonable expectations of a person who is authorised by law to enter a building to undertake rescue operations or fire fighting to be protected from injury or illness when doing so:  
...
- (j) the need to provide for the protection of other property from physical damage resulting from the construction, use, and demolition of a building:  
...
- (l) the need to facilitate the preservation of buildings of significant cultural, historical, or heritage value:

## Previous Identification of Earthquake-Prone Buildings

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Previous legislation, starting with the Municipal Corporations Act 1968, followed by the Local Government Act 1974 and then subsequently by the Building Act 1991 defined earthquake risk buildings as structures comprised wholly or substantially of unreinforced concrete or unreinforced masonry and unable to withstand the loads imposed by 50% of the loading specified in Chapter 8 of NZSS1900:1965 – the 1965 design code.

The former Blenheim Borough Council and the Picton Borough Council (both predecessors of the current Marlborough District Council) used the same legislation to classify a number of buildings within its jurisdiction. These buildings were either given a timeframe within which they were to be removed from the list (either by securing, e.g. strengthening or by removing the danger e.g. demolition) or they were given a review period. It was not always clear what the intended outcome of a review period was to be but presumably a secure or demolish notice would have been issued if required.

Over time a considerable number of these buildings have been demolished or upgraded but some have not had any work undertaken on them to make them secure. There has been no specific schedule prepared of the buildings that have been addressed previously but through the identification process proposed in this Policy the status of these buildings will again be assessed.

## Policy Approach and Priorities

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The Council's predecessors (the Blenheim and Picton Borough Councils) ran an active program of addressing earthquake-prone buildings in terms of the previous legislation. The effect of this program has been to reduce the hazard posed by earthquake prone buildings considerably, with the focus being on "unreinforced masonry" structures.

This new Policy now proposes a targeted approach on buildings that are either multi-storey or have high density occupations (for example theatres, churches and halls). The higher risk buildings tend to be located in the commercial areas and therefore ensuring these buildings are safe (either structurally or through demolition) will considerably enhance the overall safety and well being of the public.

In developing this Policy, the Building Act 2004 requires consideration of all buildings but exempts residential buildings **unless** the residential building:

- (a) comprises 2 or more storeys; and
- (b) contains 3 or more household units.

## Assessing Earthquake-Prone Buildings and Standard of Strengthening Required

The current New Zealand structural design and loading code (NZS 4203:1992 Code of Practice for General Structural Design and Design Loadings for Buildings), was first introduced in 1976. It is considered that this is the beginning of the modern earthquake resistant design era whereby the catastrophic collapse of buildings should not occur for shaking levels associated with events having estimated recurrence intervals of approximately 500 years. Buildings post-1976 will not require specific consideration in any active program.

The definition of an earthquake-prone building is set out in section 122 of the Building Act 2004 and in the related regulations that define moderate earthquake<sup>1</sup>. This definition covers more buildings and requires a higher level of structural performance of buildings than that required by the old Building Act 1991.

Additionally, the current loadings code referred to previously, is to be replaced by NZS 1170.5:2004 "Structural Design Actions". That latter standard has been published and is expected to be cited in the

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<sup>1</sup>The government has, in regulations, defined a moderate earthquake 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 at the site.'

Compliance Documents for the New Zealand Building Code in 2006 but probably not before the adoption of this Policy.

It should be noted therefore, that the test for whether a building is earthquake-prone or not is in terms of the *current loadings code*, that is, NZS 4203. A decision to strengthen to the minimum in terms of NZS 4203:1992 may leave the building susceptible to reassessment when NZS 1170 becomes the operative document – its provisions will be about 20% higher.

### **Buildings Previously Strengthened are not Distinguished or Treated Differently under the Proposed Policy**

Once a building is classified as earthquake-prone, it will need to be strengthened, or if appropriate, demolished. It should be noted that the risk of damage for a building having a lateral load capacity nominally at the threshold value is of the order 25 times that of a building designed to the current load code. There is no specific provision in the Building Act 2004 or related regulations that the Council can rely on to insist that a particular capacity be attained. The legislation has not addressed the upgrading process in a definitive way. The Council will, however, encourage owners of earthquake-prone buildings to strengthen them to the greatest extent possible.

## **Identification of Earthquake-Prone Buildings**

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The procedure the Council will use to establish the earthquake-prone status of buildings is set out below.

### **Step 1. Desk Top Review**

A desk top review of Council files will be undertaken by the Council to assess which buildings could be earthquake-prone. Buildings that will be excluded from consideration are those statutorily excluded (residential buildings) and those built from 1977 onwards. Buildings so excluded because of their age class are considered to be less likely to be earthquake-prone and thus a very low risk.

It must be understood that all buildings (not statutorily excluded) are covered by the Act and in a particular circumstance a building may require need to be assessed notwithstanding its age, although this seems generally unlikely for buildings post-1976.

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

### **Step 2. Initial Evaluation Process**

The Council will use the Initial Evaluation Process (IEP) set out in the New Zealand Society for Earthquake Engineering's "Assessment and Improvement of the Structural Performance of Buildings in an Earthquake" to determine the structural performance of potentially earthquake-prone buildings in relation to NZS 4203:1992 as well as NZS 1170.5:2004.

The cost of the initial procedures, including employing independent and appropriately qualified engineers to undertake the evaluations, will be borne by Council. The evaluation will be carried out in the shortest practicable time to maintain the highest degree of consistency possible.

### **Step 3. Advice of IEP Outcome**

As the IEP evaluations are completed they will be supplied to building owners by the investigator. Building owners will then have six months to consider the conclusions of the evaluation and if so desired have any reasonable matter revisited by the investigator. Owners may have informal discussions with the Council on any aspect of the report(s) in that time.

When the program commences, any public information provided by Council including Land Information Memoranda (LIMs) or Project Information Memoranda (PIMs), will state in respect of non-residential buildings and residential buildings not excluded by the Act, that –

The building is of pre-1977 vintage and has not been the subject of investigation for the purposes of determining whether or not it is potentially earthquake-prone; or-

The building is of pre-1977 vintage and has been the subject of investigation for the purposes of determining whether or not it is potentially earthquake-prone and the details of investigations (are attached / not currently available); or-

The building is of pre-1977 vintage and has been the subject of investigation for the purposes of determining whether or not it is potentially earthquake-prone and the details of investigations (are in dispute / confirm the building as being earthquake-prone); or-

The building is of pre-1977 vintage and has been the subject of investigation for the purposes of determining whether or not it is potentially earthquake-prone. The investigations have concluded the building is not required to be the subject of any further considerations pursuant to Section 124 of the Building Act 2004; or

The building is of post-1976 vintage and there are no calculations or other information held by Council that would indicate that Section 122 of the Building Act 2004 “Meaning of earthquake-prone building” applies in this instance.

#### **Step 4. Issue of Notice to Strengthen Building**

Where, after consideration of any further information provided in Step 3 above, the Council is satisfied that the building is earthquake-prone it will advise the owner of the building and 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.

The Council will adopt an approach that encourages building owners to pursue voluntary compliance with such notices. It will pursue legal outcomes if so required as it has statutory obligations to take all practical measures to ensure public safety and well being.

#### **Step 5. Dispute of Earthquake-Prone Classification of Building**

The Council has decided not to establish an appeals process against the classification of a building as earthquake-prone as the Building Act sets out whether a building is or is not earthquake-prone.

Should an owner dispute the classification, however, an application for a “Determination” may be made to the Chief Executive of the Department of Building and Housing pursuant to Section 177 of the Building Act. The determination of the Chief Executive is binding on the Council.

#### **Step 6. Request by Building Owner for Extension of Timeframe to Complete Work**

The Council will establish a hearings process to consider individual submissions from owners requesting a longer timeframe to complete the strengthening work than that calculated by the Policy provisions. Building owners should be aware that there will need to be exceptionally compelling circumstances for time extensions as Council must at all times have regard for public safety and well being.

The costs of hearing such applications will fall to the Applicant.

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. The issuing of the Code Compliance Certificate will deem that the building as not being earthquake-prone in terms of the loadings code then in force.

## 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 taking enforcement actions under the Building Act.

## Timeframe to Strengthen a Building

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The Department of Housing and Building (DOBH) guidance document for territorial authorities in preparing an earthquake-prone building policy, suggests that a council can opt for “active” or “passive” approaches in dealing with earthquake-prone buildings. An active approach actively seeks and assesses buildings likely to be at high risk. A passive approach means that a detailed assessment would not occur until there was an application for building consent for building alteration, change of use or extension of life.

Because Marlborough is in one of the most seismically active parts of New Zealand, the Council considers that buildings having a higher risk need to be identified while those of lower risk can be left to be dealt with over time. There is no particular guide as to what constitutes a high risk so it has been proposed in the Policy that buildings with two or more storeys or buildings with concentrations of people be targeted.

### Active Program

Historically, the calculation for determining the timeframe by when buildings had to be strengthened / demolished has been based on the method given in the 1985 NZSEE “Recommendations”<sup>2</sup> as well as any undertakings that might be negotiated in discussions with a building owner. This document has been in the process of being updated for some time, however, there is no indication in the draft replacement document that there will be a similar calculation method so individual procedures will have to be developed.

The new approach for Marlborough proposes to treat higher risk buildings through an “active” program and to allow the assessment of other “at risk” buildings to be reactionary and arising from building consent application processes. The approach seeks to achieve a balance between the economic burden for the building owner, and the statistical probability of a damaging event before a building is made safe.

Because the “active” program is concerned in the first instance with higher risk structures the previous occupancy classification system has been modified to create two classes (versus 4 in the 1985 “Recommendations”). Class 2 structures have higher occupancy loadings and consequently they will attract the minimum period for strengthening, while Class 1 structures are allowed a longer period to reflect the lower at risk occupancy.

A design life approach is taken in establishing required time periods for strengthening. First an assumption is made that a threshold for the onset of damage for “at risk structures” is generally

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<sup>2</sup> New Zealand National Society for Earthquake Engineering, 1985; *Recommendations and Guidelines for Classifying, Interim Securing and Strengthening*.

above MM6<sup>3</sup>. An estimate of the return period for events equal or greater than MM7 is 53 years<sup>4</sup> and for an event MM8 or greater, 79 years.

NZS 4203 adopts a risk of 10% probability that a building will be exposed to a “design” event once or more in 50 years. Applying the 10% principle to the occurrence of MM7 and MM8 events, yields 5 year and 9 year occurrence intervals respectively.

It would appear reasonable to adopt for the two classes “design lives” within which strengthening or demolition should occur of 5 years for Class 2 earthquake prone buildings, and 10 years for Class 1.

The proposed method for calculating the time strengthening or demolition is set out in Appendix 2 to this Policy.

### **Passive Program.**

Timeframes for earthquake-prone buildings identified in the course of building consent processes will be treated as for buildings identified in the active program.

### **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, particularly for heritage buildings.

### **Change of Use**

When a change of use for a building occurs, then the structural upgrade of the building is required “as nearly as is reasonably practicable” with the Building Code. At this level of upgrade, a building will no longer be earthquake-prone.

## **Heritage Buildings**

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The Policy sets no different requirement for strengthening works for heritage buildings than for other potentially earthquake-prone buildings. What constitutes a heritage building for the purposes of this Policy and the fact that the Council has chosen to apply the same strengthening provisions are explained further.

A heritage building includes all buildings listed as a heritage resource in either of the Council’s resource management plans: the Marlborough Sounds Plan and the Proposed Wairau/Awatere Plan; as well those registered by the New Zealand Historic Places Trust.

For the avoidance of doubt, the Policy applies only to heritage buildings described above that are consistent with the Building Act exemption regarding residential buildings described on page 6 of this policy.

Section 4(2) of the Building Act recognises the importance of any special traditional and cultural aspects of the intended use of a building (sub-clause (d)) and the “need to facilitate the preservation of buildings of significant cultural, historical, or heritage value”(sub-clause (1)). The resource management plans also require a resource consent to alter or demolish a heritage building. The Building Act does not override

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<sup>3</sup> Intensity of earthquake as measured on the Modified Mercalli scale.

<sup>4</sup> Dowrick & Cousins, 2003: *Historical Incidence of Modified Mercalli Intensity in New Zealand and Comparisons with Hazard Models*. Bulletin NZSEE Vol 36, No 1.

the resource management plans on the need for a planning application to be made by a building owner, even if the building is to be demolished for public safety reasons. These factors need to be considered against the Building Act's requirement that the 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.

It is probable that some heritage buildings will be classified as earthquake-prone under the Act. The impact on heritage buildings could be significant if it is not financially viable to strengthen the building and demolition is favoured by the building's owner.

Because the Policy sets no different requirement for strengthening works than for other potentially earthquake-prone buildings, the building owner can elect to strengthen to any level (above the threshold) that suits. The building owner will need to make a direct approach to the Council if financial support is required and that will be treated in terms of the current heritage policies in the resource management plans, the Long term Community Council Plan and the Council's Heritage Strategy. If the building cannot be made safe above the threshold level of strengthening then demolition is the most probable outcome.

Where a heritage building is required to be strengthened, the New Zealand Historic Places Trust will be notified.

### **Availability of Earthquake-Prone Building Information**

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The database of potentially earthquake-prone buildings is publicly available upon request and includes information that is already provided in Land Information Memoranda or Project 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 or an assessment to determine its correct status. The information will continue to be included in property reports, Land Information Memoranda and Project Information Memoranda.

## Appendix 1 – Building Act 2004 Key Legislation

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### 3. Purpose—

The purpose of this Act is to provide for the regulation of building work, the establishment of a licensing regime for building practitioners, and the setting of performance standards for buildings, to ensure that—

- (a) people who use buildings can do so safely and without endangering their health; and
- (b) buildings have attributes that contribute appropriately to the health, physical independence, and well-being of the people who use them; and
- (c) people who use a building can escape from the building if it is on fire; and
- (d) buildings are designed, constructed, and able to be used in ways that promote sustainable development.

### 4. Principles to be applied in performing functions or duties, or exercising powers, under this Act—

- (1) This section applies to—
  - (a) the Minister; and
  - (b) the chief executive; and
  - (c) a territorial authority or regional authority (but only to the extent that the territorial authority or regional authority is performing functions or duties, or exercising powers, in relation to the grant of waivers or modifications of the building code and the adoption and review of policy on dangerous, earthquake-prone, and insanitary buildings or, as the case may be, dangerous dams).
- (2) In achieving the purpose of this Act, a person to whom this section applies must take into account the following principles that are relevant to the performance of functions or duties imposed, or the exercise of powers conferred, on that person by this Act:
  - (a) when dealing with any matter relating to 1 or more household units,—
    - (i) the role that household units play in the lives of the people who use them, and the importance of—
      - (A) the building code as it relates to household units; and
      - (B) the need to ensure that household units comply with the building code;
    - (ii) the need to ensure that maintenance requirements of household units are reasonable;
    - (iii) the desirability of ensuring that owners of household units are aware of the maintenance requirements of their household units;
  - (b) the need to ensure that any harmful effect on human health resulting from the use of particular building methods or products or of a particular building design, or from building work, is prevented or minimised;
  - (c) the importance of ensuring that each building is durable for its intended use;
  - (d) the importance of recognising any special traditional and cultural aspects of the intended use of a building;
  - (e) the costs of a building (including maintenance) over the whole of its life;
  - (f) the importance of standards of building design and construction in achieving compliance with the building code;
  - (g) the importance of allowing for continuing innovation in methods of building design and construction;
  - (h) the reasonable expectations of a person who is authorised by law to enter a building to undertake rescue operations or firefighting to be protected from injury or illness when doing so;
  - (i) the need to provide protection to limit the extent and effects of the spread of fire, particularly with regard to—
    - (i) household units (whether on the same land or on other property); and
    - (ii) other property;
  - (j) the need to provide for the protection of other property from physical damage resulting from the construction, use, and demolition of a building;
  - (k) the need to provide, both to and within buildings to which section 118 applies, facilities that ensure that reasonable and adequate provision is made for people with disabilities to enter and carry out normal activities and processes in a building;
  - (l) the need to facilitate the preservation of buildings of significant cultural, historical, or heritage value;
  - (m) the need to facilitate the efficient use of energy and energy conservation and the use of renewable sources of energy in buildings;
  - (n) the need to facilitate the efficient and sustainable use in buildings of—
    - (i) materials (including materials that promote or support human health); and
    - (ii) material conservation;
  - (o) the need to facilitate the efficient use of water and water conservation in buildings;
  - (p) the need to facilitate the reduction in the generation of waste during the construction process.

**122. Meaning of earthquake-prone building**

- (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 -
    - (iii) injury or death to persons in the building or to persons on any other property; or
    - (iv) 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.'

**124 Powers of territorial authorities in respect of dangerous, earthquake-prone, or insanitary buildings**

- (1) If a territorial authority is satisfied that a building is dangerous, earthquake-prone, or insanitary, the territorial authority may-
  - (a) put up a hoarding or fence to prevent people from approaching the building nearer than is safe
  - (b) attach in a prominent place on, or adjacent to, the building a notice that warns people not to approach the building;
  - (c) give written notice requiring work to be carried out on the building within a time stated in the notice (which must not be less than 10 days after the notice is given under section 125), to-
    - (i) reduce or move the danger; or
    - (ii) prevent the building from remaining insanitary.
- (2) This section does not limit the powers of a territorial authority under this Part.
- (3) A person commits an offence if the person fails to comply with a notice given under subsection (1).
- (4) A person who commits an offence under this section is liable to a fine not exceeding \$200,000.

**131 Territorial authority must adopt policy on dangerous, earthquake-prone, and insanitary buildings**

- (1) A territorial authority must, within 18 months after the commencement of this section, adopt a policy on dangerous, earthquake-prone, and insanitary buildings within its district.
- (2) The policy must state -
  - (a) the approach that the territorial authority will take in performing its functions under this Part; and
  - (b) the territorial authority's priorities in performing those functions; and
  - (c) how the policy will apply to heritage buildings.

**133 Adoption and review of policy**

- (1) A policy under section 131 must be adopted in accordance with the special consultative procedure in section 83 of the Local Government Act 2002.
- (2) A policy may be amended or replaced only in accordance with the special consultative procedure, and this section applies to that amendment or replacement.
- (3) A territorial authority must, as soon as practicable after adopting or amending a policy, provide a copy of the policy to the chief executive.
- (4) A territorial authority must complete a review of a policy within 5 years after the policy is adopted and then at intervals of not more than 5 years.
- (5) A policy does not cease to have effect because it is due for review or being reviewed.

**177 Application for determination—**

A party may apply to the chief executive for a determination in relation to 1 or more of the following matters:

- (a) whether particular matters comply with the building code;
- (b) a building consent authority's decision to—
  - (i) issue, or refuse to issue, a building consent, code compliance certificate, or compliance schedule; or
  - (iii) refuse to allow, under section 52(b), an extension of the period during which building work must be commenced before a building consent lapses; or
  - (iv) issue a notice to fix; or

- (v) refuse to allow, under section 93(2)(b)(ii), an extension of the period during which the building consent authority must decide whether or not to issue a code compliance certificate; or
  - (vi) amend a building consent, notice to fix, or code compliance certificate; or
  - (vii) impose a condition on a notice to fix or compliance schedule or to amend that condition:
- (c) a territorial authority's decision to—
- (i) grant or refuse a waiver or modification of the building code under section 67; or
  - (ii) issue, or refuse to issue, a certificate of acceptance under section 96; or
  - (iii) amend a compliance schedule under section 106 or section 107; or
  - [(iiia) issue or refuse to issue a certificate for public use under section 363A; or]
  - (iv) issue, amend, or impose a condition on a notice to fix:
- (d) the exercise by a territorial authority of its powers under sections 112 and 115 to 116 (which relate to alterations to, or changes in the use of, a building) and the issue by a territorial authority of a certificate under section 224(f) of the Resource Management Act 1991:
- (e) the exercise by a territorial authority of its powers under section 124 or section 129 (which relate to dangerous, earthquake-prone, and insanitary buildings) or the failure to exercise those powers:
- (f) the exercise by a regional authority of its powers under subpart 5 of Part 2 in relation to a dam or the failure to exercise those powers.

## Appendix 2 – Calculation of Time for Strengthening or Demolition

### Interpretation

**Class** : The group determining the period of time within which the strengthening or demolition of a building is required to have commenced.

**Occupant Load ( OL )** : The number of persons either in a building or who might reasonably be in the proximity of the building in the event of an earthquake when functioning normally.

**Occupational Intensity ( OI )** : Determine by calculation  
)

**Commence Strengthening** : Beginning physical works in compliance with a Building Consent and maintaining progress to wards completion as required by the Building Act.

### Classification

To determine the time for strengthening or demolition the following calculation is made –

$$OI = \frac{OL \times 100}{GrossFloorArea} \times \frac{WeeklyHours\_of\_NormalOccupancy}{40}$$

Both “OI” and “OL” are entered into the following chart thus classifying the building –

- Class 1 allowing 10 years to complete strengthening or demolition
- Class 2 allowing 5 years to complete strengthening or demolition.

