

# **RUAPEHU DISTRICT COUNCIL**



## **EARTHQUAKE – PRONE, DANGEROUS AND INSANITARY BUILDINGS POLICY**

**2006**



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## **1.0 INTRODUCTION**

- 1.1 Section 131 of the Building Act 2004 requires all territorial authorities (TAs) to adopt a policy on dangerous, earthquake prone buildings and insanitary buildings.
- 1.2 The new definition of an earthquake prone building sets out to classify buildings built before the mid 1970's. The current New Zealand Structural Design and Loading Code, NZS 4203, was first introduced in 1970. It is considered that this is the beginning of the modern earthquake resistant design era whereby the catastrophic collapse of buildings is specifically guarded against via a design hierarchy of collapse.
- 1.3 This policy sets out Council's principles relating to earthquake prone, dangerous and insanitary buildings and specifies the processes that will be adopted in carrying out those functions and how the policy applies to heritage buildings.
- 1.4 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 a moderate earthquake. The definition covers more buildings and requires a higher level of structural performance of buildings than that required by the old Building Act 1991.
- 1.5 The policy is required to state:
  - a. The approach that Council will take in performing its functions under the Building Act 2004,
  - b. Council's priorities in performing those functions,
  - c. How the policy will apply to heritage buildings.
- 1.6 Council has made use of the Department of Building and Housing's (DBH) guidance document and, for ease of reference, the policy has been set out in the same format as the DBH policy template.
- 1.7 Section 132 of the Building Act 2004 states that a policy under Section 131 must be adopted in accordance with the special consultative procedure in Section 83 of the Local Government Act 2002.

## **2.0 LEGISLATIVE REQUIREMENTS**

- 2.1 The Building Act 2004 requires that territorial authorities must adopt a policy on dangerous, earthquake prone and insanitary buildings. Section 131 states that:
  - (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.*

2.2 Section 121 of the Act defines a building to be dangerous as follows:

- (1) *A building is dangerous for the purposes of this Act if-*
- (a) *in the ordinary course of events (excluding the occurrence of an earthquake), the building is likely to cause –*
    - (i) *injury or death (whether by collapse or otherwise) to any persons in it or to persons on other property; or*
    - (ii) *damage to other property; or*
  - (b) *in the event of fire, injury or death to any persons in the building or to persons on other property is likely because of fire hazard or the occupancy of the building.*
- (2) *For the purpose of determining whether a building is dangerous in terms of Subsection (1)(b), a territorial authority –*
- (a) *may seek advice from members of the New Zealand Fire Service who have been notified to the territorial authority by the Fire Services National Commander as being competent to give advice; and*
  - (b) *if the advice is sought, must have due regard to the advice.*

2.3 Under Section 122 of the Act an earthquake prone building is defined as:

- (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.*

2.4 With regard to what constitutes a “moderate” earthquake, the Building (Specified Systems, Change the Use and Earthquake-Prone Buildings) Regulations 2005 defines it as “*an earthquake that would generate shaking at the site of the building that is of the same duration as, 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.”*

2.5 Section 123 of the Building Act 2004 defines an insanitary building as:

*A building is insanitary for the purpose of this Act if the building –*

- (a) is offensive or likely to be injurious to health because –
  - (i) of how it is situated or constructed; or*
  - (ii) it is in a state of disrepair; or**
- (b) has insufficient or defective provisions against moisture penetrations so as to cause dampness in the building or in any adjoining building; or*
- (c) does not have a supply of potable water that is adequate for its intended use; or*
- (d) does not have sanitary facilities that are adequate for its intended use.*

### **3.0 OBJECTIVES**

3.1 The objective of the Dangerous, Earthquake Prone and Insanitary Buildings Policy is primarily to give regard to the safety of the public.

3.2 Council is seeking to promote a high standard of safety that will reflect the Government’s broader concern with the health and safety of the public in buildings and, more particularly, the need to address life safety in earthquakes.

### **4.0 INTERPRETATION**

**Building** - has the meaning given to it by Sections 8 and 9 of the Building Act 2004 (BA)

**Building Code** - means the regulations made under Section 400 of the BA

**Building Consent** - means a consent to carry out building work granted by a building consent authority under Section 49 of the BA

**Council** means the Ruapehu District Council or duly authorised officer of Council

**Dangerous** – has the meaning given to it by Section 121 of the BA.

**Earthquake prone**- has the meaning given to it by Section 122 of the BA

**Heritage Buildings** - Heritage Buildings are those buildings granted heritage status according to the Ruapehu District Plan.

**Insanitary** – has the meaning given to it by Section 123 of the BA

**LIM** – means Land Information Memorandum

**PIM** – means Project Information Memorandum

**Owner** - in relation to land and any buildings on the land,—

- (a) means the person who—
  - (i) is entitled to the rack rent from the land; or
  - (ii) would be so entitled if the land were let to a tenant at a rack rent; and
- (b) includes—
  - (i) the owner of the fee simple of the land; and
  - (ii) any person who has agreed in writing, whether conditionally or unconditionally, to purchase the land or any leasehold estate or interest in the land or to take a lease of the land and who is bound by the agreement because the agreement is still in force

**Private Dwelling** means

- (a) a building or group of buildings, or part of a building or group of buildings, that is—
  - (i) used, or intended to be used, only or mainly for residential purposes; and
  - (ii) occupied, or intended to be occupied, exclusively as the home or residence of not more than 1 household; but
- (b) does not include a hostel, boardinghouse, or other specialised accommodation

**Soft Stories** means brickwork or masonry

# POLICY AND CRITERIA

## Part One - Earthquake Prone Buildings Policy

### 1.0 OVERALL APPROACH

- 1.1 Council has undertaken an analysis of the earthquake risk for the Ruapehu District. This analysis can be found in Appendix One.
- 1.2 Council has had no previous policy on earthquake-prone buildings.

### 2.0 IDENTIFYING EARTHQUAKE-PRONE BUILDINGS

- 2.1. Earthquake-prone buildings will be identified by Council using the following assessment criteria, through information contained in building permits, consents and building files.
- 2.2 Council will carry out inspections of individual buildings where this is deemed to be necessary.

### 2.3 Assessment Criteria

- 2.4 In carrying out an assessment, Council will use the following basic criteria:
  - (i) The enforcement level which is set by regulation as one-third (1/3) of the current code (NZS 4203:1992).
  - (ii) A check will be made of any building irregularities, which would reduce the building's ability to withstand seismic attack e.g. 'soft' storeys, unsymmetrical layout of resisting elements, vertical and/or horizontal irregularity.
  - (iii) A check will be made of construction details to ensure the structure contains energy absorbing mechanisms (e.g. 'capacity' design detailing and sizing of elements).
  - (iv) Analysis against the imposed enforcement level with emphasis on building structure survival and avoidance of non-ductile failure mechanisms.

### 2.5 Action Plan for Buildings Identified as Earthquake-Prone

- 2.6 Council, on being satisfied that a building is earthquake-prone, will follow the process below:
  - (i) Advise and liaise with the owners of buildings identified as earthquake-prone to discuss what action is required to be undertaken.
  - (ii) Encourage owners to carry out an independent assessment of the structural performance of any buildings identified as earthquake-prone

within one year of first being notified that a building has been identified as earthquake-prone.

- (iii) Review any assessments received by Council within six months of initial notification and revise the list of classified buildings as necessary.
- (iv) Serve formal notice on owners of identified earthquake-prone buildings in accordance with Section 124 of the Building Act 2004, to remove the danger. A timeframe will be set for the owner to complete the work required to make the building compliant.
- (v) Owners may make submissions against the classification within six months of receiving the formal notice.
- (vi) Council will hold hearings at the request of submitters.
- (vii) A decision will be notified in writing within 60 days of any hearing, if held, or the expiration of the six-month period as set out in subparagraph (v) above, being the six month period within which owners have to make the submission.

### **3.0 LEVEL OF STRENGTHENING TO BE ACHIEVED AND TIMEFRAME**

#### **3.1 Previously Strengthened Buildings**

3.2 Buildings previously strengthened to the former legal requirement represent a special class. They, by definition, are of unreinforced concrete or unreinforced masonry. Strengthening is most likely to have been via the installation of the structural steel frame or structural steel bracing. Many of these buildings also required strengthening in one direction because they contained long brick shear walls along their side boundary but had open frames along their street elevation.

3.3 Although the design level to which these buildings have been strengthened (often only at just above 2/3 the strength specified in the 1965 Code), is slightly less than the new trigger level, the structural steel of their strengthening members have reserve capacity to accommodate the slight imbalance.

3.4 Consequently, Council will not classify these buildings as earthquake-prone.

#### **3.5 Heritage Buildings**

3.6 Council, through its District Plan, has adopted a policy whereby resource consent is required for the demolition or relocation of listed heritage buildings.

3.7 Council considers that heritage buildings have public good benefit as they provide aesthetic enjoyment and benefit for the community and contribute significantly to the amenity values of the District. As there is a limited number of heritage buildings within the District, as compared to the overall stock of buildings, and given the irreversibility of demolition, it is considered that the benefits of preservation of heritage buildings is substantial as compared to redevelopment benefits.

3.8 For heritage buildings not previously strengthened and not previously reclassified, it is considered that they should be strengthened to a level just above the trigger level. For these buildings a period of 25 years is imposed, from the time that they are identified by Council, for a heritage building to comply.

### **3.9 All Other Identified Buildings**

3.10 This category relates to non-heritage buildings to be identified in the proposed review as well as to buildings previously identified but not strengthened. In the absence of any national guidance relating as to what level buildings should be strengthened to, a value of 50% of the current Code should be adopted. For these buildings a time frame of 25 years from the date that they are identified to when they are strengthened, is to be allowed.

### **3.11 Change of Use, Alteration, Extension of Life or Subdivision of Buildings**

3.12 Where a change of use, alteration, extension of life or subdivision is proposed in an earthquake-prone building, Council may require the earthquake strengthening work to be carried out at the same time. In determining this matter Council will take into account the extent of the work proposed to ensure compliance with the Building Code and the cost involved.

## **4.0 PRIORITIES FOR IDENTIFICATION**

4.1 Council has prioritised the identification of earthquake prone buildings as follows, and will identify buildings in the following categories within the stated timelines:

- Category A: Buildings of high value to the community, including Heritage Buildings (within 5 years)
- Category B: All other buildings (within 10 years) except private dwellings
- Category C Private dwellings (within 15 years)

## **5.0 RECORDING A BUILDING'S EARTHQUAKE PRONE STATUS**

5.1 Council will keep a register of all earthquake prone buildings, noting the status of requirement for improvements, or the results of improvements as applicable.

5.2 In addition, the following information will be placed on the Land Information Memorandum (LIM) and Project Information Memorandum (PIM) of each earthquake prone building:

- (i) Address and legal description of land and building;
- (ii) Statement that the building is on the Council's register of earthquake prone buildings; and
- (iii) Date by which strengthening is required.

## **Part Two - Dangerous and Insanitary Buildings Policy**

- 1.1 Whether a building is considered 'dangerous' or 'insanitary' under the Act will depend on the individual circumstances of each case. Council will consider each case and determine the appropriate course of action based on the particular set of circumstances that exist.
- 1.2 Council must first be satisfied that the building in question is dangerous or insanitary. To determine this Council will carry out the following steps;
  - (a) On receiving a complaint or information expressing concern that the building is dangerous or insanitary, Council will endeavour to contact the owner of the building, inspect the building and site, and may also seek the advice of the New Zealand Fire Service.
  - (b) Following the inspection and taking into account the advice or recommendations of the New Zealand Fire Service, Council will determine whether or not the building is dangerous or insanitary. In making this decision Council will take into account the provisions of Sections 121 and 123 of the Building Act 2004.
  - (c) If Council is satisfied that the building in question is deemed to be dangerous or Insanitary, Council will then determine what work or action must be carried out to prevent it from being dangerous or insanitary.
  - (d) In forming its view as to the work or action that is required to be carried out on the building to prevent it from remaining insanitary or dangerous, Council will take the following matters into account:
    - (i) The size of the building;
    - (ii) The complexity of the building;
    - (iii) The location of the building in relation to other buildings, public places and natural hazards;
    - (iv) The life of the building;
    - (v) How often people visit the building;
    - (vi) How many people spend time in or in the vicinity of the building;
    - (vii) The current or likely future use of the building, including any special traditional and cultural aspects of the current or likely future use;
    - (viii) The expected useful life of the building and any prolongation of that life;
    - (ix) The reasonable practicality of any work concerned;
    - (x) Any special historical or cultural value of the building; and

- (xi) Any other matters that Council considers may be relevant, taking into account the particular set of circumstances.
  - (e) Following the inspection of the building, after receiving advice from the New Zealand Fire Service and taking into account the matters listed above, Council will then decide whether immediate action should be taken to avoid the danger or to fix insanitary conditions pursuant to the provisions of Section 129 of the Building Act 2004.
  - (f) If Council decides that immediate action under Section 129 of the Building Act 2004 is not required, Council will issue a notice under Section 124 of the Building Act 2004 requiring the owner to carry out the necessary work, to obtain a building consent and to commence work. The time required to obtain a building consent and commence work will depend on the particular set of circumstances, but shall not exceed the period specified in the notice from the time notice was served on the owner. Completion of the work for which a building consent has been issued shall depend on the particular set of circumstances of each case but shall not exceed the period of time set out in the building consent.
- 1.3 Where a property owner has failed to carry out the work within the time specified, Council may apply to the District Court for an order authorising it to carry out the work pursuant to Section 130 of the Building Act 2004. The full costs of carrying out such works will be recovered from the property owner.
- 1.4 With regard to heritage buildings that are determined to be dangerous or insanitary, Council will seek to ensure, as far as reasonably practicable, that work carried out will not diminish the heritage values of the building. Property owners must take all reasonable steps to ensure that this objective is achieved.

## **APPENDIX ONE**

# **ACTIVE GEOLOGICAL STRUCTURES OF THE RUAPEHU DISTRICT**

## **Introduction**

Ruapehu District encompasses an area of contrasting geology and structure that includes one of the principle centres of Central North Island volcanism. The Tongariro Volcanic Centre has evolved rapidly during the last 100 kyr (1 kyr = 1000 years) and many of the volcanic vents are younger than 10 kyr, including Mt Ngauruhoe (2287m) which has been constructed during the last 2.5 kyr (Stipp, 1968; Topping, 1974; Cole, 1990). The structure and geology of the Tongariro Volcanic Centre are superimposed on an older succession of mid-late Tertiary sedimentary rocks, deposited during the period from 30-2 Myr (Myr = million years) and preserved in the Taranaki and Wanganui Basins, to the west and south, respectively.

No large, historical earthquakes have been documented in the Ruapehu District, but numerous faults show evidence of progressive displacement during the late Quaternary (past 125 kyr), and several show evidence of rupture during the past ten thousand years (Topping, 1974). Neither the relationship between faulting and volcanism in the TVC, nor the detailed chronologies of prehistoric movements on individual faults have been established so far, but the following summary of principal faults in the Ruapehu District identifies the major structures, and provides a framework for the discussion of local seismic hazard. This section of the report should be read in conjunction with Table 2.1, where important parameters of quaternary faulting have been compiled from current knowledge.

## **Raurimu Fault**

The Raurimu fault bounds the western margin of the Tongariro Volcanic Centre and represents the largest fault in the Ruapehu District, with a trace length of ca. 20km between Tohunga Junction (Highways 4 and 49A) in the south, and Raurimu Spiral to the north (Fig. 2.1) (Schofield, 1954; Gregg, 1960). The Raurimu fault is a normal fault, downthrown to the east (toward the volcanoes) and is defined by a prominent scarp, which reaches a maximum height of ca. 60m near Makatote River. The fault divides at National Park where one strand, the inferred master fault, splays to the NE and separates greywacke basement from late Quaternary volcanics; another continues north from National Park through Raurimu Spiral, where it separates late Tertiary sedimentary rocks (to the west) from late Quaternary volcanic deposits.

Lahar deposits of late Pleistocene (60-20 kyr) age (Grindley, 1960; Topping, 1974) are offset by up to 60m across the Raurimu fault, and indicate an average slip-rate in the range 1-3 m/kyr (Table 2.1). Evidence for repeat movements of ca. 1m per event during the late Holocene (<3 kyr) is preserved at the fault in Orautoha Stream, where a stream terrace composed of laharic debris is offset vertically by ca. 3 metres and a channel on the same terrace surface is offset by ca. 0.7-1.0m (Fig. 2.1).

## **Ohakune Fault**

The Ohakune fault bounds the southern flank of Mt Ruapehu, and extends west as a prominent, 20-40m high scarp between Ohakune and the margin of volcanic ring-plain deposits west of Tohunga Junction (Fig. 2.1). The Ohakune fault truncates the Raurimu fault, and may extend further west into the North Taranaki Basin, but no trace has been observed from the air-photo analysis undertaken for this study. Geologic mapping would be required to establish its presence in the marine sedimentary rocks underlying the hill country in that area.

The Ohakune fault appears to be a normal fault, downthrown to the south, away from Ruapehu volcano. The Ohakune and Rangataua craters (50-20 kyr) that represent the southern-most elements of the Tongariro Volcanic Centre are located on the down-thrown side of the Ohakune fault and probably are related to the faults. Lahars inferred to be younger than 20 kyr (Grindley, 1960; Topping, 1974) are offset vertically across the Ohakune Fault, indicating an average slip-rate in the range 2-4 m/kyr (Table 2.1).

## **Raetihi Faults**

Two normal faults, defined by linear scarps up to five meters high, bound the margins of a 2km wide depression that extends 4km east from Raetihi township (Fig. 2.1). The faults disrupt lahar and ash deposits of inferred equal age to those offset by the Ohakune fault. No data are available to constrain the timing or frequency of movements on these faults, which may be related to displacements on the Ohakune fault.

## **Karioi Fault**

The Karioi fault is a normal, possibly oblique-normal fault that strikes NE-SW through Karioi, and is defined by a 10-20m high scarp that offsets late Pleistocene to Holocene (<20 kyr) lahars and hillslopes in Tertiary sediments, over a distance of 15-20km (Fig. 2.1). The displacement history of the Karioi fault is poorly constrained, but air photo analysis and field reconnaissance for this study has identified evidence of recent surface rupture (perhaps a few centuries ago) (Table 2.1), and there are several sites with potential for further detailed investigation of the timing of past fault movements.

## **APPENDIX TWO**

### **HERITAGE BUILDINGS**

<b>NAME</b>	<b>ADDRESS</b>	<b>LEGAL DESCRIPTION</b>
<b>Colonial House (Anderson House)</b>	Pipiriki-Raetihi Road PIPIRIKI	Blk X Rarete SD, Sec 8 Blk V Pipiriki CT B4/555
<b>Bank of New Zealand Building</b>	59 Seddon Street RAETIHI	Sec 52 Pt Sec 53 Blk IV Raetihi
<b>Hitching Rail (in front of BNZ)</b>	59 Seddon Street RAETIHI	Sec 52 Pt Sec 53 Blk IV Raetihi
<b>Mangapurua Bridge “The Bridge to Nowhere”</b>	Whanganui National Park	
<b>Glacier Hut</b>	Tongariro National Park MT RUAPEHU	
<b>North End Signal Box (Ex. Paekakariki Railway Yard)</b>	Ohakune Steam Museum OHAKUNE	
<b>ANZ Bank (former)</b>	46 Miriama Street TAUMARUNUI	Lot 3 DPS 29375
<b>Hapuawhenua Viaduct</b>	Ohakune	
<b>Former County Council Building</b>	102 Seddon Street RAETIHI	Sec 106 Blk X Raetihi Tn