

PAPAKURA DISTRICT COUNCIL EARTHQUAKE – PRONE BUILDINGS POLICY 2006

Papakura District Council

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Introduction and background

Section 131 of the Building Act 2004 requires territorial authorities to adopt a policy on earthquake-prone buildings by 31 May 2006.

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. 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.'

This definition covers more buildings and requires a higher level of structural performance of buildings than that required by the Building Act 1991.

The definition of earthquake-prone building in Section 122 of the Building Act excludes buildings used wholly or mainly for residential purposes unless the building comprises two or more storeys; and contains three or more household units.

This document sets out the policy adopted by Papakura District Council in accordance with the requirements of the Building Act 2004. The policy is required to state:

- 1/ the approach that the Papakura District Council will take in performing its functions under the Building Act 2004
- 2/ Papakura District Council's priorities in performing those functions
- 3/ how the policy will apply to heritage buildings.

In developing and adopting its earthquake-prone buildings policy, Papakura District Council is following the consultative procedure set out in Section 83 of the Local Government Act 2002.

Papakura District Council has made extensive use of the Department of Building and Housing's guidance document and, for ease of reference; the policy has been set out in the same format as its policy template.

EARTHQUAKE - PRONE BUILDING PROVISIONS OF THE BUILDING ACT 2004

1/ Policy approach

1.1 Policy principles

Papakura District Council has noted that provisions of the Building Act in regard to earthquake-prone buildings reflect the government's broader concern with the life safety of the public in buildings and, more particularly, the need to address life safety in earthquake.

Papakura District Council has also noted that the development of earthquake-prone building policies is up to each territorial authority and has responded accordingly.

This policy has been finalised after due consultation with Papakura District Council ratepayers and stakeholders in accordance with Section 83 of the Local Government Act 2002.

1.2 Overall approach and identification of earthquake-prone buildings

Papakura is in a zone of low seismicity and its buildings comprise a range of types and ages reflecting steady development over the last 100 years from unreinforced masonry buildings to modern steel and concrete buildings.

Papakura District Council's practice to date has not been to actively identify earthquake-prone buildings. Building permits and building consents have been assessed under relevant New Zealand statutes, and inspections of buildings have occurred as part of the construction process.

Papakura District Council's earthquake-prone building policy under the Building Act 2004 reflects the Council's determination to reduce earthquake risk over time in a way that is acceptable in social and economic terms to its ratepayers.

Papakura District Council will initially take a passive approach to the identification of earthquake-prone buildings. The initial identification of such buildings will occur from July 2008 onwards as a result of assessing building consent applications for significant building upgrades, alterations, or changes of use.

A more active approach will be taken from 2017 onwards, when Council identifies "Buildings with special post-disaster functions as defined in AS/NZS 1170.0: 2002, Importance Level 4", and heritage buildings from July 2017 to July 2020. The maximum time for strengthening or demolition respectively will be 15 years after identification.

1.3 Identifying earthquake-prone buildings

Papakura District Council will:

- carry out a desktop review of its whole building stock to identify buildings that fall within the scope of potential earthquake-prone buildings under the Building Act 2004. There are approximately 16 000 properties in Papakura District. Using information from Quotable Value New Zealand, a preliminary Geographic Information System review has already been undertaken by Council. Filtering out most residential data and buildings built in 1980 or later, 699 addresses are left, for which Council needs to further check records, to determine which may contain earthquake-prone buildings. Records for buildings constructed between 1970 and 1980 will need further checking to determine whether the buildings were constructed prior to NZS4603:1976.
- follow this with a brief inspection of each building, where necessary.
- identify earthquake-prone "Buildings with special post-disaster functions as defined in AS/NZS 1170.0: 2002, Importance Level 4", and heritage buildings listed in the Council's District Plan, from July 2017 to July 2020.
- carry out initial evaluation of performance in earthquake based on information obtained by using the NZ Society of Earthquake Engineers' (NZSEE) Initial Evaluation Process (IEP). The IEP has a screening function to identify potentially high risk buildings. IEPs are required to be carried out by a qualified structural engineer.
- advise owners of these buildings of the results of the Council's broad assessment and invite them, within a limited time-frame, to meet with and/or obtain further details from the Council on future requirements

- give written notices to all owners of earthquake-prone buildings once the deadline for meeting Council requirements has passed and, subject to the results of discussions, to carry out work to reduce or remove the danger or demolish the building within a specified time-frame
- allow owners a right of appeal as defined in the Building Act 2004, which can include applying for a determination under section 177.
- The latest date for identification and notification and the maximum time for strengthening or demolition respectively will be 15 years after identification. Times required for strengthening or demolition commence on the date of issue of formal notice. Specific times will be assigned for action according to the assessment of structural performance and the nature of the concerns.

1.4 Assessment criteria

For practical purposes, Papakura District Council will define earthquake-prone buildings as those that, when subject to moderate earthquake shaking, do not meet or exceed the criteria for ultimate limit state as defined in the loadings and materials Standards for new buildings. Notices served under Section 124 of the Building Act require work on an earthquake-prone building to “reduce or remove the danger”. If an earthquake-prone building is upgraded to 33% of the standard required for a new building then it is technically no longer earthquake-prone.

Papakura District Council will use the NZSEE’s assessment procedures as its preferred basis for defining technical requirements and criteria. These Recommendations are designed to be used in conjunction with AS/NZS 1170 Loadings Standard, NZS 3101 Concrete Structures Standard, NZS 3404 Steel Structures Standard and other materials Standards.

1.5 Taking action on earthquake-prone buildings

Papakura District Council will:

- advise and liaise with owners of buildings identified as earthquake-prone
- liaise with owners to carry out an independent assessment of the structural performance of those buildings identified as earthquake-prone
- serve formal notices on owners of earthquake-prone buildings in accordance with the Building Act 2004, requiring them to remove the danger
- allow owners to appeal against the classification within 12 months of receipt of notice.

1.6 Interaction between earthquake-prone buildings policy and related sections of Building Act 2004

1.6.1 Section 112: Alterations to existing building

Whenever a building consent application is received from July 2008 onwards for significant upgrading or alteration of a building that is or could be earthquake-prone, then, irrespective of the general priorities set by Papakura District Council for dealing with

earthquake-prone buildings, the Council will not issue a building consent unless it is satisfied that the building is not earthquake-prone and that the building work will not detrimentally affect the building's compliance with the Building Code.

If the building is shown to be earthquake-prone, then the Council will require that the building be strengthened to comply as nearly as is reasonably practicable with the provisions of the Building Code. If an earthquake-prone building is upgraded to 33% of the standard required for a new building then it is technically no longer earthquake-prone, although the NZSEE recommends strengthening to 67% of the new building standard.

1.6.2 Section 115: Change of use

Whenever a building consent application is received from July 2008 onwards for change of use of a building that is or could be earthquake-prone, then, irrespective of the general priorities set by Papakura District Council for dealing with earthquake-prone buildings, it will be a requirement of the building consent that the owner make a detailed assessment of the earthquake performance of the building to determine whether or not it is an earthquake-prone building in its existing condition.

If the building is shown to be earthquake-prone then the Council will require that the building be strengthened to comply as nearly as is reasonably practicable with every provision of the Building Code that relates to structural performance as is required by section 115(b)(i)(A). (In this instance the requirement for earthquake-prone buildings would be the same as that for non-earthquake-prone buildings.)

1.7 Dealing with building owners

The steps in the process are outlined in 1.5 above.

1 Before exercising its powers under section 124, Papakura District Council will seek, within a defined time-frame, to discuss options for action with owners with a view to obtaining from the owner a mutually acceptable approach for dealing with the danger, leading to receipt of a formal proposal from owners for strengthening or removal.

2 In the event that discussions do not yield a mutually acceptable approach and proposal, Papakura District Council will serve a formal notice on the owner to strengthen or demolish the building.

1.8 Recording a building's earthquake-prone building status

Papakura District Council will keep a register of all earthquake-prone buildings noting the status of requirements for improvement or the results of improvement as applicable.

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

- address and legal description of land and building
- statement that the building is on the Council's register of earthquake-prone buildings
- date by which strengthening or demolition is required (if known)
- statement that further details are available from the Council's property file.

1.9 Economic impact of policy

Papakura District Council has viewed the NZSEE's 2003 paper 'Strengthening Existing New Zealand Buildings for Earthquake: An analysis of cost benefit using annual probabilities'. In the report, a range of conditional probabilities was used to determine cost-benefit ratios for various required strengthening levels. A design earthquake was assumed to occur within 10 years to 50 years of improvement work being carried out. The report made broad assessments of the total cost of structural improvement of all buildings and the expenditure required was related to the normal annual expenditure on all building work. These studies were used to set timetables for structural improvement of all categories of building and to set the required standard for improvement.

The report included upgrading costs for some locations. As an indication, upgrading costs vary from \$5.4 million for Invercargill (population approx 50 000) to \$256.9 million for Wellington. Whangarei's (population approx 45 000) costs are listed as \$8.6 million, Whangarei being in the same earthquake zone as Papakura District (population approx 42 000). Detailed data for Papakura District is not included in the report, and it is unclear whether Papakura District is included in the "Auckland" figure quoted, which gives a cost of \$126.9 million.

Papakura District Council's approved structural engineering consultants, Tse Group, were asked to advise what the approximate cost of an IEP would be for a two storey masonry building, constructed in the 1920s, with a floor area of 400 square metres, of which there are a number in the Papakura Central Business Area. They estimate the current cost of such an IEP as \$1 000.00 plus GST.

1.10 Access to EPB information

Information concerning the earthquake status of a building will be contained on the relevant LIM and PIM.

In addition, the Council will keep a record of the NZSEE grade of all buildings assessed, and will encourage all owners of significant buildings to have them assessed and graded. The Council recognises the long-term benefits of increased public awareness.

Papakura District Council will not require earthquake-prone buildings to have an identifying plaque. We believe that having the information available at the Council offices is sufficient notice at present.

In granting access to information concerning earthquake-prone buildings, the Council will conform to the requirements of the relevant legislation.

2/ Priorities

Papakura District Council has prioritised both the identification and the requirement to strengthen or demolish buildings as follows. Times required for strengthening or demolition commence on the date of issue of formal notice. Specific times will be assigned for action according to the assessment of structural performance and the nature of the concerns.

New Zealand Standard 1170 contains Table 3.2, "Importance Level for Building Types", which divides buildings into four categories. The model policy prioritises the identification of earthquake-prone buildings and the requirement to strengthen them by these categories. Level 4 buildings are those structures with special post disaster functions; Level 3 buildings contain people in crowds or contents of high value to the community.

Papakura District Council's order for action will be to identify earthquake-prone buildings with special post-disaster functions as defined in AS/NZS 1170.0: 2002, Importance Level 4 from July 2017 to July 2020.

Once each category has been reviewed and the earthquake-prone buildings within it identified, the process of liaising with owners and serving notice on them will commence.

3/ Heritage buildings

3.1 Special considerations and constraints

Papakura District Council believes it is important that its heritage buildings have a good chance of surviving a major earthquake.

However, Papakura District Council does not wish to see the intrinsic heritage values of these buildings adversely affected by structural improvement measures. For heritage buildings, demolition is an option of last resort.

The Building Act does not define heritage buildings, but Papakura District Council assumes these to be those buildings listed under the District Plan. Eleven buildings are listed under the Papakura District Plan: (see Section 2: 6.7.1.3 and Section 3 Schedule 3A):

District Plan Map Reference	Description	Comment
G	St Johns Church Norrie Road, Drury	*Historic architectural significance
H	Christ Anglican Church, (Selwyn Chapel) established 1862 103-105 Great South Road, Papakura	*Historic
I	House c1920 141 Park Estate Rd	Historic
K	Clotworthy House Hingaia Rd	Historic
L	Molloy House Hingaia Rd	Historic
M	Vela House Hinau Rd	Historic
N	"Camp Hilldene" Building 102 Hilldene Rd	Historic
P1	St James Church Church Road	*Historic/architectural value. Includes interior.
P2	Christ Church Alfriston Road	*Historic/architectural/visual appeal. Interior also.
P17	Aroha Cottage Jesmond Road Lot 1 DP11110 Blk VII Drury SD	*Registered as Category II under s22 of the Historic Places Act 1993
P18	Alfriston Hall Mill Road, Alfriston	Historic. Includes interior

* Five of these buildings are also listed by the NZ Historic Places Trust: St John's Church Drury, Selwyn Chapel Great South Road, St James' Church Ardmore, Christ Church Alfriston, and Paymaster's House (Aroha Cottage) Drury.

Heritage buildings will be assessed in the same way as other potentially earthquake-prone buildings and discussions held with owners and the Historic Places Trust to identify a mutually acceptable way forward. Special efforts will be made to meet heritage objectives. Seismic strengthening methods that respect heritage values will be supported and encouraged by the Council. Any seismic strengthening work must take into account the principles of the International Council on Monuments and Sites (ICOMOS) NZ Charter, any advice from Council's heritage staff or heritage professionals or organisations. Waivers and modifications of the building code will be considered on a case by case basis to allow for appropriate works to heritage buildings that respect the existing heritage values.

Following this consultation period, notices will be served requiring improvement or demolition within a stated (and preferably agreed) time-frame. In particularly important cases, public consultations will be included. The proposed time frame for the identification of earthquake-prone heritage buildings is: July 2017 to July 2020, with a further 15 year period for upgrading or demolition after identification.

4/ Actions Required By Council

- 1. Complete a preliminary desktop investigation of properties to identify potentially earthquake-prone buildings by July 2008.***
- 2. Require the assessment of earthquake-prone building status for building consents lodged for the significant upgrading or alteration or change of use of buildings from July 2008 onwards.***
- 3. Identify earthquake-prone "Buildings with special post-disaster functions as defined in AS/NZS 1170.0: 2002, Importance Level 4", and earthquake-prone heritage buildings from July 2017 to July 2020. Once this category has been reviewed and the earthquake-prone buildings within it identified, the process of liaising with owners and serving notice on them will commence. The latest date for identification and notification and the maximum time for strengthening or demolition respectively will be 15 years after identification. Times required for strengthening or demolition commence on the date of issue of formal notice. Specific times will be assigned for action according to the assessment of structural performance and the nature of the concerns.***
- 4. Set a budget from July 2017 for Individual Evaluation Processes (IEPs) and further assessments to identify earthquake-prone buildings in accordance with the approved timetable.***
- 5. Compile a register of earthquake-prone buildings***
- 6. Instigate a system whereby earthquake-prone building notices and correspondence are placed on the file for the property***

- 7. Instigate a system whereby earthquake-prone buildings information is recorded on LIMs and PIMs.**
- a. From July 2008 onwards, if a building has been identified as a potential earthquake-prone building, but an assessment of it has not occurred, an advice note will be placed on all LIMs and PIMs for that building about Council's earthquake-prone building policy and its timeframe for the identification of, and strengthening or demolition of earthquake-prone buildings.**
 - b. From July 2008 onwards, if a building has already been identified as an earthquake-prone building, an advice note will be placed on all LIMs and PIMs for that building about Council's timeframe for the identification of, and strengthening or demolition of that earthquake-prone building.**

References

- AS/NZS 1170.0: 2002 Structural Design Actions, Part 0: General principles. Standards New Zealand.
- NZS 1170.5: 2004 Structural Design Actions, Part 5: Earthquake actions – New Zealand. Standards New Zealand.
- 'New Zealand Society for Earthquake Engineering, Assessment and Improvement of the Structural Performance of Buildings in Earthquake, Initial Evaluation, Detailed Assessment, Improvement Measures, Recommendations of a NZSEE Study Group on Earthquake Risk Buildings, Prepared for the Department of Building and Housing , Study Group Draft December 2005'. Available at <http://www.nzsee.org.nz/>
- 'Strengthening Existing New Zealand Buildings for Earthquake: An analysis of cost benefit using annual probabilities'. Paper delivered at the 2003 Pacific Conference on Earthquake Engineering. Available at <http://www.civil.canterbury.ac.nz/deam/PCEE/Ses24.htm>