

POLICY: **EARTHQUAKE PRONE BUILDING**

GROUP RESPONSIBLE: Regulatory Services

DATE APPROVED: 31/5/06

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POLICY DETAIL:

1. INTRODUCTION

1.1 Background

To date the Southland District Council has not actively implemented a policy relating to the strengthening of earthquake prone buildings under the New Zealand Building Act 1991 other than requiring structural engineering assessment in cases of a “change of use” consent application to determine earthquake capacity of an existing un-reinforced masonry building.

However Section 131 of the New Zealand Building Act 2004 requires territorial authorities to adopt a policy on earthquake-prone buildings by 31 May 2006. The policy is required to state:

- The approach that the Southland District Council will take in performing its functions under Section 131 of the New Zealand Building Act 2004.
- Southland District Council’s priorities in performing those functions.
- How the policy will apply to heritage buildings.

The definition of an earthquake-prone building is set in Section 122 of the New Zealand Building Act 2004 and the Building Regulations. It is defined as a building, which would have its capacity exceeded in a moderate earthquake determined at 33.3% of new building design capacity. This definition covers more buildings and requires a higher level of structural performance for existing buildings than the 15% of new building capacity required by the New Zealand Building Act 1991.

This document sets out the policy proposed by the Southland District Council in accordance with the requirements of the New Zealand Building Act 2004. In developing and adopting this earthquake-prone building policy, the Southland District Council has followed the consultative procedures set out in Section 83 of the Local Government Act 2002.

Council has used for reference the Department of Building and Housing's "Policy Guidance for Territorial Authorities". Also sections from the 1993 report "Earthquake Hazards in the Southland Region" prepared by the Institute of Geological and Nuclear Sciences for Environment Southland have been quoted.

Section 132 of the New Zealand Building Act 2004 requires the policy to be reviewed within five years of being adopted and then at five yearly intervals with any replacement or amendment being subject to the consultative procedures of the Local Government Act.

1.2 Interpretation

In this Policy, unless inconsistent with the context the following mean:

AS/NZS 1170 Australian and New Zealand Standard for Structural Design
Actions

CP Eng	Chartered Professional Engineer
Council	Southland District Council
EPB	Earthquake Prone Building
GIS	Geographic Information System
IEP	Initial Evaluation Process
LIM	Land Information Memorandum
M	Earthquake Magnitude measured on the Richter Scale
NZSEE	New Zealand Society of Earthquake Engineers
PIM	Property Information Memorandum.

1.3 Earthquake Hazards in the Southland District

There are a number of active faults within Southland. Most of these faults could present the sites of future large, shallow earthquakes within the region. These faults are probably able to generate up to M 7 earthquakes and the Alpine Fault has potential to produce M 8 earthquakes. It is the shaking produced by these faults, as well as certain faults outside the region, that will have the widest impact of all the earthquake hazards in Southland. Unfortunately there is little known about the extent of these faults and their earthquake recurrence intervals, with the exception for the South Westland section of the Alpine Fault, which has an estimated earthquake recurrence interval of 250-570 years.

The Dusky Fault, is an east/northeast trending fault in Fiordland extending from Dusky Sound to the west arm of Lake Manapouri.

Four active trace faults have been mapped between Dipton and Mandeville. There is some question as to whether these faults as well as the Clifton fault are capable of producing large earthquakes. Surface rupture in these faults may not be related to a large earthquake on these faults at depth, but rather as a result of strong shaking generated by a large earthquake elsewhere. This could cause differential amounts of settlement in the rock types on either side of the trace faults. Surface rupture on any of these faults may be a secondary feature associated with strong shaking elsewhere, rather than a primary feature associated with earthquake at those specific trace faults. Other trace faults have been mapped in the Blackmount and Castlerock areas.

Active faults outside the Southland Region have potential to generate damage levels of shaking within parts of Southland. These are the Blue Mountain, Spylaw and Clifton faults, the closest of which is within 40 km of Gore and 100 km of Invercargill. Further from Southland there are active faults some 100-150 km from Gore in Central Otago.

The Southland Region in general and more particularly the Fiordland and South/Westland areas could be described as falling within the category of moderate to high seismic activity. Records since 1840 show the following shallow quakes having occurred off the Fiordland and South/Westland coasts:

- Five earthquakes of M 7.0 - 7.9.
- Three earthquakes of M 6.5 - 6.9.
- Several hundred earthquakes of M 4 - 6.4 have been recorded both inland and off the coast around the Fiordland and the South/Westland areas with central and eastern areas of the District affected to a lesser degree.

Historically shallow earthquakes of less than M 5-6 have occurred throughout the Southland Region. In the future earthquakes of this magnitude can be expected to occur anywhere in Southland. The strong shaking produced by such earthquakes will be quite localized, but could result in significant damage if located directly beneath one of the urban areas of Southland. Most at risk are unreinforced masonry structures, along with poorly designed/built structures sited on soft soil or sedimentary type materials expected to have a high to very high amplification capability for earthquake movement.

1.4 Policy Principles

The Southland District Council recognises New Zealand is subject to earthquakes of varying severity and some parts of it are seismically more active than others. In these more seismically active locations, the population's life and health, its buildings and other infrastructure are potentially at risk from the effects of earthquake.

Earlier established rural townships of Wyndham, Edendale, Riverton, Otautau, Tuatapere, Winton, Mossburn and Lumsden comprise a proportion of unreinforced masonry and other construction types potentially falling within the category of earthquake prone.

Whilst acknowledging the Government's legislative expression for promoting earthquake strengthening under the Building Act 2004, Council is mindful of the limited number of buildings affected (approximately 150-200) within the Southland District and the general lower occupancy numbers involved. This together with the economic impact on smaller population based communities, through imposing specified timeframes for upgrade, leads Council to believe an interventionist approach is not warranted or desired by the community.

On this basis the Southland District Council has opted for an earthquake prone building policy where the cost for assessment/upgrade is largely directed to the building owner by way of structural upgrade through the building "change of use or subdivision" provisions of the New Zealand Building Act.

A factor in this approach is the likelihood that building work for building change of use or subdivision will be undertaken at some stage during the building remaining life, which would trigger the structural upgrade through the building consent process.

1.5 Economic Impact of Policy

The economic impact of requiring structural assessment/upgrade in accordance with the provisions of the New Zealand Building Act 2004 for building “change of use or subdivision” will largely be restricted to the building owner rather than the wider community. There maybe some minor general costs to the community associated with Council’s Building Control staff administering the policy, which cannot be directly linked to a specific property.

2. POLICY PROCESS

2.1 Overall Approach

The Southland District Council will:

- Define an earthquake prone building as that which would have its capacity exceeded in a moderate earthquake, determined at 33.3 % of the design code level for new buildings (Refer Section 122 of the New Zealand Building Act 2004 and the Building Regulations 2005).
- Acknowledging the significant cost to the community of upgrade of existing buildings to current earthquake design capacity, accept as a minimum 34% upgraded earthquake design capacity in line with principles of Section 124 to reduce or remove the danger. The exception to this is where a consent application is lodged for building “change of use or subdivision” where the requirement would be to upgrade as near as practicable to 100% of current earthquake design capacity in line with Section 115 b (i) and 116A (a) (iii).
- Accept a higher level of risk in an existing building on the basis that it will generally be more economically viable to provide levels of strengthening and ductility to a new building as opposed to an existing building. As a result existing buildings, other than in the circumstances of a building “change of use or subdivision”, which can be shown to be able to resist shaking to a minimum of 34% of new building design capacity are deemed to meet the performance objective of the Building Act 2004.
- Identify high risk buildings and reduce the risk they pose to a more acceptable level, rather than attempt to ensure that all existing buildings comply with current requirements.

2.2 Identifying Earthquake Prone Buildings

The Southland District Council will:

- Identify potentially earthquake prone buildings through its building consent processes where application is made for a building “change of use or subdivision”. Structural assessment to determine the building’s current earthquake capacity and where necessary structural design for upgrade, to as near as practicable to 100% of current design loadings will be a requirement of a building consent application for “change of use or subdivision”.

2.3 Consulting with Building Owners

The Southland District Council will:

- Encourage owners to carry out an independent assessment of the structural performance of buildings identified as potentially earthquake prone through the building consent process.
- Serve formal notice on owners of earthquake prone buildings in accordance with the New Zealand Building Act 2004, requiring them to remove the danger where appropriate.
- Determine to cancel a building consent application made for a building change of use or subdivision, relating to an identified potentially earthquake prone building, where the owner deems the building project is no longer viable.
- Council may take immediate action under Section 124 of the New Zealand Building Act where it is identified that there is an immediate risk/danger to building users, the general public or to other property.
- Seek to reach a mutually acceptable approach (within a defined timeframe) with the building owner to deal with danger leading to a proposal for strengthening or removal of the building where it is necessary to take action under Section 124 of the New Zealand Building Act.
- Serve a formal notice on the building owner to strengthen or demolish the building in the event that a mutually acceptable approach and supporting proposal cannot be reached.

2.4 Interaction between Earthquake Prone Building Policy and the New Zealand Building Act

Section 112: Alteration to an existing building

Unlike building “change of use or subdivision” a building consent application for an “alteration to an existing building” places no obligation on Council to consider structural performance of the building beyond its current level as part of the alteration. The requirement to upgrade to current Building Code requirements for an alteration relate to disabled access and fire egress only.

However where structural deficiencies become apparent that could potentially impact on the safety of the buildings occupants, other people or buildings Council may take action under Section 124 of the New Zealand Building Act.

Section 115: Change of building use

Whenever a building consent application is received for change of use of a building that is identified as potentially earthquake prone, then irrespective of the general priorities set by the Southland District Council for dealing with earthquake prone buildings, it will be a requirement before issuing a building consent that the owner engage a CP Eng to undertake an assessment of the building to determine its ultimate earthquake capacity is as near as reasonably practicable to 100% of new building design capacity.

If the building is shown to be less than 100% of new building design earthquake capacity then Council will require specific design from a CP Eng on behalf of the owner demonstrating that the building is to be earthquake strengthened to as near as reasonably to the same extent as if it were a new building.

Section 116: Code compliance requirements for extension of life and subdivision

Subdivision of an existing building requires upgrade of the building in relation to the protection of other property to the same extent as a “change of use” being as near as reasonably practicable to the same extent as if it were a new building.

Section 122: Meaning of an earthquake-prone building

Where Council becomes aware of a situation where the safety of building users and the general public is being compromised or of risk to other property from a potentially earthquake prone building, Council has provision to take immediate action under Section 124 of the New Zealand Building Act.

Section 124: Powers of Territorial Authorities in respect of dangerous, earthquake- prone or insanitary buildings

Where Council is satisfied that a building is dangerous, earthquake-prone or insanitary there is provision under this section to take action by way of erecting a hoarding/fence, place warning notices and require dangerous/insanitary conditions remedied within a specified time.

2.5 Policy Timeline for Council

The Southland District Council will implement its earthquake prone building policy from 1st of July 2006.

2.6 Policy Timelines for Building Owners Response

- 12 months for a building owner to submit a CP Eng upgrade design for works where a consent application for a building change of use or subdivision has been lodged and placed on hold subject to the information being provided. After a 12 month period with no response the consent application is cancelled.

3. HERITAGE BUILDINGS

3.1 Special Considerations and Constraints

The Southland District Council is concerned that measures are put in place to ensure identified heritage buildings within the District (72 approx) have a good chance of surviving a major earthquake. However in doing so, Council acknowledges the minimal numbers of affected buildings within the District and the economic impact that imposing specified timeframes for upgrade of such buildings would impose on smaller population based communities.

On this basis the Southland District Council has opted for an earthquake prone building policy where the cost for assessment/upgrade is directed to the building owner by way of the provisions for structural upgrade through the New Zealand Building Act, where a building is to be subdivided or have its use changed.

Consent application for a “Change of use or building subdivision” relating to a heritage buildings will be assessed in the same way as other potentially earthquake prone buildings and negotiation held with the owners and the Historic Places Trust to identify a mutually acceptable way forward. Although special effort will be made to meet heritage objectives, structural earthquake performance in terms of ensuring building user/general public safety along with implications to other properties will take priority over heritage aesthetics where necessary.

In cases likely to be of particular public concern consultation will be included with the relevant Community Boards of the District.

3.2 SDC District Plan Heritage Building, Places and Sites Provisions

With respect to those heritage classification buildings:

- Redecoration and restoration of any original features or details are permitted provided it is carried out in the same manner, design and with similar materials to those originally used and does not detract from the character of the item that is being protected.

Reason:

Works that are in keeping with or are carried out to enhance the character of any heritage buildings should be encouraged and accordingly resource consent is not seen as necessary.

- Any alterations or additions proposed will firstly be considered as a non-notified controlled activity provided the proposal replicates with the original design, materials, colour and will not adversely affect the special character of the registered item. Council shall consult with the New Zealand Historic Places Trust and if satisfied these conditions are met, the application shall be approved. If not satisfied, the application will be notified as a discretionary resource consent.

Reason:

This method allows a certain degree of flexibility with the development of registered items whilst still ensuring any development is in keeping with the character of the item protected.

- Works which may modify, destroy or detract from the character of the registered item shall require discretionary resource consent which Council shall both publicly notify and serve notice upon the New Zealand Historic Places Trust and such other interested groups its sees fit.

Reason:

There may well be a valid reason why a heritage building needs to be altered or demolished (for example, public safety) and consequently the discretionary resource consent procedure enables Council to relax the standards when unique circumstances can be shown.