# Synod of Otago & Southland

## Earthquake Prone Buildings (EPB) Policy

## 2022 UPDATE

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# Contents

# Synod of Otago & Southland Earthquake Prone Building (EPB) Policy - 2022 UPDATE

## 1. Introduction & Background

The **Synod of Otago and Southland** is the body that has the final say in all property decisions for Presbyterian owned buildings **south of the Waitaki River** in the South Island. As such, the Synod is responsible for ensuring any/all related earthquake prone building matters are dealt with appropriately and in accordance with the legislation on Earthquake Prone Buildings (EPB's) which is described and detailed in the Building Act 2004 (which was amended in July 2017 to include the 2016 Earthquake Prone Buildings Amendment Act).

In 2013 the Synod set out its initial EPB Policy at a time when each Council was required to have its own individual earthquake prone building policy. In order to provide a uniform approach in 2013, the Synod encouraged all Parishes to:-

- ✓ review their building stock in order to rationalise the number of buildings where sensible and appropriate (which could include considering the neighbouring parish buildings collectively)
- ✓ get buildings seismically assessed (typically using the Initial Seismic Assessment (ISA) methodology albeit with some additional quantitative by calculation input).

This assessment work has been completed (for all but a few) and not surprisingly because of the age and construction type of our buildings, many were determined to be potentially earthquake prone. Some Parishes have gone on to get Detailed Seismic Assessments (DSA's) and completed strengthening work designs for those buildings they have wanted to retain, maintain and/or upgrade. Some other buildings have been sold, some demolished and some have completed strengthening works.

Since 2013 significant changes have however occurred in the engineering and regulatory environment, and the Synod has gained considerable experience in these issues and other matters. Specific issues encountered over the past five years by Synod that are of note include the following:

a. There have been some significant variances in assessed and reported %NBS ratings between some engineers on the same Church building. In these instances, some Parishes have accepted the most favourable and least consequential cost report with no further interrogation. This has led to situations where the Synod has felt uncomfortable with the assessment and rating accepted by the Parish and have been unable to resolve the issue despite the fact Synod is responsible as the ultimate and legal building owner entity.
b. Conflict within Parishes in relation to significant decisions relating to Church buildings (repurposing / sale or demolition), that are deemed to be earthquake prone and that have not had a high level of perceived assessment or due diligence. An ISA (even if this has involved calculations and is comprehensive in nature) has been perceived as insufficient.
c. The significant costs of thorough (DSA) assessments and/or detailed design and construction of strengthening works associated with small or declining Parishes is not viable particularly in the current construction market.
d. The timeframe for all Councils in NZ to identify potentially EPB's that have been classified as 'Priority' buildings from an earthquake risk perspective has passed and therefore there is a heightened focus on this nationally at Government level.

## 2. Overview of Current EPB Regulatory Requirements

There are some important principles and issues associated with the current regulatory requirements (which have changed from previous requirements), as summarised below:

1. Prior to 2016 each Council in NZ had their own earthquake prone building policy. The earthquake prone buildings amendments to the Building Act that took effect on 1 July 2017 however reflected the desire from the government for a more nationally-oriented approach with set time frames for key activities to occur.
2. Your local City or District Council has a key role in managing the EPB legislation. Their role is to:
    a. identify potentially earthquake prone buildings (or parts of buildings) in accordance with the EPB methodology and notify building owners of the need to obtain an engineering seismic assessment. The timeframe for this was to be completed by 1 July 2022 (some Councils are behind on this).
    b. review engineering seismic assessment reports received from building owners and confirm if a building (or part building) is earthquake prone or not. If they confirm the building is earthquake prone, the building owner is advised of what they need to do and are issued with an EPB notice to be placed on the building. The Council then place the building on the National EPB Register.
    c. monitor / report progress with respect to a. and b. above to the responsible government agency (MBIE) and on any building updates (demolition, strengthening or exemption).
3. As noted previously the Councils have been working on identifying 'Priority' buildings (High & Medium seismic zones only), in accordance with the legislation. In essence if the public building is unreinforced brick, block or stone then it is identified as a 'Priority' building, and the Council should have already or will be notifying you in writing stating you will need to respond to their request for an engineering assessment to be undertaken.
4. Building owners have a key role of complying with the legislation as follows:
    a. On receipt of a letter from Council (from 2a. above), then the owner has 12 months to provide an engineering seismic assessment report. Note that a request for an extension is permitted but must be made in advance with reasonable grounds for the extension.
    b. On receipt of a letter from Council (from 2b. above), confirming a building is earthquake prone then the building owner has specific timeframes to either strengthen or demolish (or seek an exemption for very low risk buildings - see item 13. below).
5. The Act excludes residential dwellings from the scope of earthquake prone buildings, unless they are of two or more storeys and have more than two residential units.
6. The engineering seismic assessment process and reporting of all potentially earthquake prone buildings must be carried out by a suitably qualified and experienced engineer and must use the engineering Technical Guideline documents. Specifically these documents are named "The Seismic Assessment of Existing Buildings – Technical Guidelines for Engineering Assessments (TGEA), July 2017" with subsequent updates, refer https://www.eq-assess.org.nz/).
7. There are fundamentally two types of seismic assessment, Initial Seismic Assessment (ISA) and a Detailed Seismic Assessment (DSA). They are used in different situations and to varying levels of complexity for both ISA and DSA (details on this are contained in the TGEA referenced above).
8. If a building is timber framed construction ('lightweight'), then it will not be identified by the Council as being potentially earthquake prone. These buildings may still need to be assessed but are the least likely to cause a life safety issue from earthquake and therefore are unlikely to be

earthquake prone unless they have features such as heavy tile roofs or a brick intertenancy wall or chimney elements.

9. When a building is given a seismic rating expressed as a % of New Building Standard (%NBS), this is essentially stating that the assessed building is xx% of the strength that a new building would be designed for. This rating does not represent the point at which the building will collapse, as determining the higher level of loading at which this is likely to occur is much more difficult to establish and/or predict.
10. The over arching principle with respect to the EPB portion of the Building Act and the %NBS ratings is about the life safety risk associated with a building while people are in it or around it. The assessments and ratings do not provide information about the level of damage that may occur to a building as a result of an earthquake. The likelihood of an earthquake occurring is not the same throughout NZ, and thus this is also taken into account in the seismic ratings via the individual location or area seismic hazard factors.
11. Older seismic assessment reports (ie. prior to July 2017) may need to be updated when they are presented for the first time to Councils and/or if requested by Councils if they already have a copy. A 'Technical Summary Sheet' for old reports is likely to be required as a minimum.
12. All buildings have what is defined as an 'Importance Level' (IL) which relates to the occupancy and function. In simple terms, most of our Church buildings are IL2 unless they have large numbers of people (>300 people) in one space or have a higher level function required of them (eg. a school, medical centre, or designated post disaster facility). The effect of being classified IL3 as opposed to IL2 is such that the design or assessment earthquake load which the building is measured against goes up by approx. 30% and therefore the %NBS rating for the building (as IL2) goes down by the same amount (if IL3). The IL is usually denoted after the seismic rating eg. %NBS(IL2).
13. The Legislation allows for an exemption from requiring strengthening works and/or demolition of particular earthquake prone buildings that are considered to have 'low use or occupancy'. For some rural Churches, the occupancy is very low (say <20 parishioners) and there is also very low utilisation (used for part days on say 1 or 2 days a week), and therefore the life safety risk associated with these buildings is low (both now and for the foreseeable future if nothing changes).
14. The current Health & Safety at Work Act (HSWA) was introduced in 2016 and an understanding of its relationship to the national earthquake prone buildings policy is now understood (see Section 4. of this document).
15. There is a considerable amount of resource available on earthquake prone building matters. One useful resource titled 'Responding to an Earthquake Prone Building Notification', has been specifically drafted for building owners as a 'road map' to navigate and comply with legislation. This document simply explains key terms / issues and pulls together the latest MBIE documents through website links contained in the document, see http://resources.quakecentre.co.nz/wp-content/uploads/2020/03/EarthquakeProneBuildings_Final.pdf
16. If a Parish wants to carry out strengthening works, then a Building Consent (BC) will be required unless there is a very minor / superficial amount of work required. The BC will require a full design process involving a structural engineer and probably an architect and/or project team (depending on scale and/or complexity). Because a BC is required, the Council will also require an assessment of the Fire & Accessibility compliance related to the buildings and a potential upgrade of at least the fire egress, signage and escape paths along with wheelchair accessibility and toilet facilities. The Council can waive some aspects of the current code requirements in the case that strengthening is being carried out on an EPB.

## 3. Responsibilities under the Health & Safety at Work Act?

Worksafe NZ is the work health & safety regulator who works within the HSWA. MBIE is the owner and compliance body for the Building Act which contains the Earthquake Prone Building legislation.

Church Councils are the body under the Under the Health & Safety at Work Act with the responsibility of ensuring that all buildings are 'safe' for employees, congregation members and anyone visiting the buildings. Even though the Otago Foundation Trust Board may be on the legal title for the buildings concerned, the role of the Otago Foundation Trust Board is as Trustee for the purposes of that congregation. The Church Council are effectively the PCBU (Person Conducting a Business or Undertaking) with reference to the HSWA which means the Church Council of that congregation is responsible for all issues to do with health and safety.

However Worksafe NZ have stated the following in relation to the question of compliance with the two Acts (HSWA and the EPB Building Act requirements:

*"Under the Health & Safety at Work Act (HSWA), employers and owners of buildings which are places of work must identify and manage hazards in the place of work where practicable - this includes building-related hazards.*

*Building owners must not only meet the requirements of the HSWA but also meet the requirements of the Building Act 2004 (Building Act). This includes standards for buildings' earthquake resilience. All **new** buildings must comply fully with this building standard (NBS). Under the Building Act (enacted on 1 July 2017) EPB's have been given prominence and Building Owners (and Councils) have new responsibilities to ensure compliance to the Building Act and monitoring building owners' progress against the relevant timeframes for assessment and strengthening (or demolition) of EPB's.*

If Synod Executive is of the view that any Church Council of any Congregation is failing to meet its obligations under the Health and Safety at Work Act or, if a Congregation is unable or unwilling to meet its obligations under the Health and Safety at Work Act 2015, it may request, or Synod will appoint a commissioner (at the cost of the congregation), to carry out the required obligations.

## 4. Overview of Presbyterian National Body EPB Policy Update (2021)

In June 2021 the **Presbyterian Church Property Trustees (PCPT)** the national body responsible for all Presbyterian Church property assets for the majority of NZ (except for the Synod area), have released their updated EPB Policy. The key points of the PCPT EPB Policy Update document are,

a. *all Presbyterian Church buildings (if they are to remain in use), are to be strengthened to >67%NBS UNLESS an exemption to a lesser standard is applied for and granted by the PCPT).*

b. *If the building is found to be <20%NBS (confirmed by DSA), then the building is to be closed.*

c. *If found to be <34%NBS (by DSA) then the building should also be closed unless there is a compelling case for it to remain open.*

d. *If found to be <67%NBS (by DSA) the building will have to be strengthened by June 2023-2030 (depending on seismic zone and building part that is vulnerable or age of building)*

e. *If found to be 68-79%NBS then if any renovation / architectural or structural work is to take place then a DSA should be carried out in conjunction with this work*

The PCPT EPB Policy Update significantly exceeds the requirements of the current EPB legislation.

By comparison the Synod's EPB Policy is different from the National Body and effectively follows the requirements of the EPB Legislation. The primary reasons for adopting this departure from the PCPT criteria are:

- Synod has the effective responsibility for the Church buildings in its area of jurisdiction
- Most of Synods main Church buildings would have to close under the PCPT Policy
- Closing a Church building does not eliminate the life safety risk for users. Many building users will face earthquake risks in their homes, other legally compliant buildings in the local CBD or buildings they are displaced to quite apart from the risks involved in additional travel to alternative Church venues.
- Strong long duration earthquakes happen very infrequently. By adopting the legislative standard and using experienced chartered professional engineers to assess and strengthen buildings to this standard, this approach deals with a buildings most critical life safety matters even though the compliant building will likely be damaged beyond viable repair in these sort of events.

## 5. The Synod of Otago & Southland's EPB Policy Update (2022)

All of Synod's Parishes, except for Te Anau and Queenstown, are located within the 'Low' or 'Medium' seismic zones (refer to Appendix 1 – Zone Map by Parish). The Synod area buildings are not the highest risk or priority for New Zealand (the timeframes imposed in the government EPB Policy for demolition, strengthening or exemption reflect this).

**The Synod have chosen to use the legislative requirements of the Building Act as the basis for their policy statement that will apply to all Synod of Southland & Otago Church properties.**

There are also some additional **Synod requirements** that have been included based on Synod's responsibilities and experience over the last few years.

**The following states the Synod's EPB Policy (2022) that will apply going forward.**

**General**

A. **Synod requires** all Parishes to critically evaluate the building needs of the Parish (present day and into the future), **prior to** committing to any significant investment in maintenance or building refurbishment or development of the Parish building complex or earthquake strengthening. If requested Synod is happy to assist in this process of 'needs evaluation'.

**Seismic Assessment**

B. **Synod requires** all seismic assessment and associated strengthening design work to be undertaken by a Chartered Professional Engineer (CPEng) who is experienced with this type of work. All seismic assessment and reporting must be in accordance with the appropriate sections/ parts of the MBIE et al, "The Seismic Assessment of Existing Buildings – Technical Guidelines for Engineering Assessments, July 2017" (including the latest updates). This work is to be undertaken using the Engineering NZ/ACE NZ standard Short Form Agreement which has a Professional Indemnity cover of $100k minimum up to $500k.

C. Synod **requires** as a minimum, the following legislative maximum timelines are met,

| **Seismic Risk Area** (see Appendix 1 Map) | **Local Council must ID potentially EPB's by:** | | **Owner's must strengthen or demolish EPB's from the time of receiving an EPB notice within:** | |
|---|---|---|---|---|
| | **Priority Bldg** | **All other Bldg's** | **Priority Bldg** | **All other Bldg's** |
| **High** | **1 January 2020** | **1 July 2022** | **7.5 yrs** | **15 yrs** |
| **Medium** | **1 July 2022** | **1 July 2027** | **12.5 yrs** | **25 yrs** |
| **Low** | **n/a** | **1 July 2032** | **n/a** | **35 yrs** |

*Table 1. – Max timeframes for identification / assessment and strengthening / demolition specified in the Building Act*

Note there will be situations where these timeframes will need to be significantly shortened the most likely being EITHER the building has an identified Severe Structural Weakness (SSW) identified in the assessment process (these are issues that may create a sudden structural partial or complete collapse of the structure) OR if the Parish wishes to undertake alterations / additions that will require a Building Consent (BC). If the building is considered to be an EPB the Council will require the building to be strengthened as part of that BC.

D. **Synod requires** a Detailed Seismic Assessment (DSA) to be undertaken if a significant new development is proposed in close proximity to an existing potential earthquake prone building.

E. **Synod requires** a recent quantitative Detailed Seismic Assessment (DSA), to be undertaken when a Parish is planning to demolish a Church building solely for seismic reasons, (does not include small ancillary buildings).

F. **Synod may request** a formal peer review if they are concerned at the reported seismic rating of a particular building (perceived to be rated either too low or too high). The Parish will be required to pay for this formal engineering Peer (Design) Review which is to be undertaken by an accepted authority/peer reviewer of Synod's choosing.

G. **Synod does not permit** the acceptance of an EPB status on a building without any level of engineering assessment (this includes those buildings where an exemption is to be applied for). This 'no action' approach is permitted in the legislation but will automatically default the building to being earthquake prone with no knowledge of its rating or associated life safety risk.

## Addressing Earthquake Prone Buildings

H. **Synod Church buildings will at all times meet the legislative requirements of the Building Act** (primarily "Subpart 6A - Special provisions for earthquake-prone buildings"). This means all Church buildings must come up to a minimum standard of 34%NBS within the maximum timeframes specified by the legislation (see Table 1 below) OR obtain an exemption.

I. **Seeking an exemption** from a requirement to earthquake strengthen for **rural low use/low occupancy buildings** once found to be earthquake prone, in accordance with the legislation, is entirely acceptable. This means some earthquake prone Church buildings can maintain a seismic rating of less than 34%NBS(IL2) if it can be shown the life safety risk is sufficiently low. A report from a suitably qualified engineer and acceptance of this from the Council is required.

J. **Synod suggests** for large city Church buildings that have significant numbers of people in the building and have high levels of utilisation (which may include incorporated child care facilities or use by large community groups), that the target seismic rating of these buildings is 67%NBS (IL2 or IL3 as appropriate). Note the Building Act only requires 34%NBS as a minimum for these buildings.

## Continued Occupancy

K. MBIE have recently provided a document to help building users, tenants and owners understand seismic assessments of their buildings and make risk-informed decisions about continued occupancy of these buildings following receipt of a seismic assessment when they have a low seismic rating reported. This document can be viewed here https://www.building.govt.nz/assets/Uploads/getting-started/seismic-risk-guidance-for-buildings.pdf

L. Synod's Policy endorses this document for Church buildings that are assessed as <34%NBS and/or the Parish have received an EPB notice from Council. In general the buildings can continue to be occupied, subject to a risk review by a chartered professional engineer in accordance with Part B of the above MBIE document and in agreement with Synod.

M. If continued occupancy is accepted, then managing the ongoing risk and communicating with all users of the Church building must be carried out by the Parish in accordance with Part C of the above MBIE document.

## 6. Some Other Questions Parishes may have

The following provide answers to some key questions that Parishes may have.

### 6.1 Is it worthwhile updating or rechecking existing reports?

The Councils seismic assessment review process also relates to engineering seismic assessments they have received from property owners previously. The criteria to be applied in reviewing these is defined in the EPB Methodology (see attached link Section 3.3 page 20) https://www.building.govt.nz/assets/Uploads/building-code-compliance/b-stability/b1-structure/epb-methodology.pdf

Quite apart from the Council's process it may well be worthwhile for Parishes to review previous reports (you would need to discuss this with your engineering provider of the assessment report). If your report is only a basic Initial Seismic Assessment (IEP or ISA), this is indicative only of the %NBS rating. It may be that a relatively small additional expenditure is required to provide some additional information or calculations to update the report to provide a better understanding of the actual %NBS rating (potentially achieving a better %NBS rating).

### 6.2 What if a Parish can't meet the Legislative deadlines?

All Parishes need to **plan to meet** (or better) the deadlines for both achieving assessment for the local Council AND the target dates for either strengthening or demolition (see Table 1). In the case a Parish does not meet either of these deadlines, providing a plan is in place AND a discussion has been undertaken with the local Council, then Synod will accept all reasonable requests for an extension of time. Please note the Council has the authority to get the assessments completed and invoice costs to the Parish in some circumstances.

### 6.3 What funding is available?

Funding from the Ecclesiastical Fund is available to assist parishes with both assessment and/or strengthening costs. Application is made in the same way as for other property applications. Funding will only be considered once the proposal has been approved by the Synod Property Commission. Given that there will be a significant number of parishes applying for funding for this purpose, as well as other qualifying purposes, no guarantees as to the amount of funding will be available for specific projects until decisions are made at a Synod Annual Meeting.

In addition, parishes with Category 1 Heritage Buildings can apply to the Synod Heritage Fund and buildings identified as Heritage in the local Council District Plan may be able to apply for funding from Council or other sources. Unfortunately a significant government funder (Heritage Equip) has at least in the current year, discontinued funding availability.

Other sources of funding may exist and these should be explored by Parishes.

### 6.4 What about the revised 2022 National Seismic Hazard Model?

Earlier this year GNS Science NZ (funded by MBIE), released an updated National Seismic Hazard Model (NSHM). New Zealand continues to be challenged by earthquakes and, because of our geographical make-up, it always will be. Fortunately, globally, our understanding of earthquake science has improved exponentially.

The NSHM calculates the likelihood and strength of earthquake shaking that may occur in different parts of Aotearoa New Zealand over specified time periods and it is this information that provides some input into our Design Codes that structural engineers (and others) use to determine what seismic load for particular building type in a particular area on the particular soil type, should be applied when carrying out structural design or assessment. It is not a simple correlation to the NSHM, it is complex.

The 2022 revision of the NSHM estimates the likelihood of the future earthquake shaking hazard to have increased throughout most of the country, ranging from almost no change to more than doubling in some areas. Effectively the maximum level of shaking for most areas has gone up. It does not mean the shaking to that maximum level will happen when there is an earthquake, it just means the probability of that happening has gone up.

So how does this effect previous and future seismic assessments of our Church (and other) buildings?

At this point in time there is no change to the assessment process or %NBS rating values and it is unlikely to change in the medium term. Assessments will continue to be measured against the current Design Code values which uses inputs from the previous 2010 revision of the NSHM.

However, when it comes to strengthening works there is an increased focus by the chartered engineering professionals carrying out the design of these works (to the specified strengthening %NBS rating, a minimum of >34%NBS), on considering how effective those works will be in protecting life safety if stronger shaking occurs. This typically means provision of multiple load paths for the seismic loads to get to ground and the strengthening elements being resilient (have the ability to yield / stretch rather than break). This has always been 'good practice' and this will continue with additional focus.

For those who want more information about the revised NSHM the following link may be useful, https://www.gns.cri.nz/research-projects/national-seismic-hazard-model/.

**If you have any other questions Synod is happy to discuss these and/or any other aspects related to earthquake prone buildings and building infrastructure**.

Yours in Christ,

*Fergus Sime*

*Executive Officer, Synod of Otago and Southland*

**APPENDIX 1** – Seismic Zone Map by Parish (Council / TA boundaries shown beneath overlay) - Low='green', Medium='yellow', High='red' & tabulated Parish seismic zoning description.


| Parish Name | Seismic Zone |
|---|---|
| All Dunedin Parishes | Low |
| Balclutha | Low |
| Bluff-Greenhills | Low |
| Camp Iona | Low |
| Camp Tirohanga | Low |
| Clinton | Low |
| Clutha Valley | Low |
| East Taieri | Low |
| Edendale | Low |
| KSL | Low |
| Maungatua | Low |
| | |
| All Invercargill Parishes | Medium |
| Alexandra Clyde | Medium |
| Calvin | Medium |
| Camp Columba | Medium |
| Central Southland | Medium |
| Cromwell | Medium |
| Heriot | Medium |
| Kennington | Medium |
| Knapdale-Waikaka | Medium |
| Kurow | Medium |
| Lawrence | Medium |
| LBK | Medium |
| Limestone Plains | Medium |
| | |
| Queenstown | High |
| Te Anau | High |

| Parish name | Seismic Zone |
|---|---|
| Mosgiel-North Taieri | Low |
| Palmerston | Low |
| Port Chalmers | Low |
| Portobello | Low |
| Oban | Low |
| Owaka | Low |
| St. Pauls Oamaru | Low |
| Tokomariro | Low |
| Waiareka-Weston | Low |
| Waikouaiti | Low |
| Waitaki | Low |
| Wyndham | Low |
| Maniototo | Medium |
| Mataura | Medium |
| Mossburn | Medium |
| Ohai | Medium |
| Otatara | Medium |
| Pukerau-Waikaka Valley | Medium |
| Riversdale-Waikaia | Medium |
| Riverton Union | Medium |
| St. Andrews Gore | Medium |
| Tapanui | Medium |
| Teviot Union | Medium |
| Tuatapere | Medium |
| Wallacetown | Medium |
| Woodlands | Medium |
| Upper Clutha | High |
| | |