



EARTHQUAKE PRONE BUILDINGS (UPDATED) 29 JULY 2021

Unfortunately, many Presbyterian buildings fall within the earthquake prone classification. It is important that these buildings are identified for the safety of users and to enable the development and implementation of strategies for the future.

To assist Church Councils and Presbyteries, a Church-wide policy has been adopted on the assessment and management of earthquake prone buildings.

While one of the primary objectives of this policy is to reduce the potential for injury or loss of life - the other is to safeguard buildings for the future use of the Church - this policy will also ensure that the Church meets its legal obligations under:

- the Building Act 2004;
- the Health and Safety at Work Act 2015 ('OSH' legislation); and
- the Trustees' responsibilities as the title-holder.

The priority is focussed on identifying buildings at risk and ensuring that if the building is to remain in the medium to long term, appropriate remedial work is undertaken.

Under the Book of Order and the Presbyterian Church Property Act 1885, the leadership of each Congregation has the primary responsibility for ensuring that its public buildings are safe and functional.

The Council of Assembly statement on this issue is:

Our Council of Assembly, after consulting with our Doctrine Core Group, has reached the conclusion that Church owned buildings that are unsafe should not be used for church or community activities. This conclusion is not just a matter of risk management, but one that the Council believes affirms the integrity and nature of our Church and its Christian witness and mission; none of us wishes to knowingly place anyone at risk by worshipping or working in an unsafe environment.

The Council of Assembly has requested the Church Property Trustees to oversee this policy on their behalf for Property north of the Waitaki River.

Strengthening our buildings to strengthen our mission

There is no doubt that earthquake prone buildings are a challenge. We are looking ahead to ensure that we end up with churches that are: (a) safe for our congregations; (b) able to offer shelter and serve the community as a meeting place and a service centre after a major seismic incident; and (c) strong enough to provide a place from which congregations can carry out their mission and ministry for several years to come.

If you wish to discuss this policy, or to have practical advice on its implementation, please contact the Church Property Trustees' Executive Officer, Russell Garrett.

We want to acknowledge the stress this has caused and to thank you for all the work that has been done already

The Trustees want to acknowledge the vast amount of good work that has already taken place to address our earthquake prone buildings. We are very aware of the stress that earthquake strengthening is placing on many people and parishes.

This revised policy follows a review of progress that parishes have made to date

The good news is that many Congregations have made great progress on strengthening requirements. Some work is already complete, there are multiple projects currently under construction, and more in the planning phase. There is, however, much to do.

The new changes to the policy (last updated in 2018) are:

1. We have extended the deadline for confirming the state of your buildings to 30 June 2022

We commend the very many congregations that have already completed a seismic assessment of their buildings. However, a number of congregations have not yet done so. It is important for Presbyteries and Congregations to be responsible property owners. At the very least, this means knowing the state of your buildings.

The policy requires parishes to obtain an Initial Seismic Assessment (or a Detailed Seismic Assessment) as soon as possible. The new deadline for this is **30 June 2022**. A copy of the ISA/DSA needs to be sent to your Presbytery and the Trustees as soon as it has been obtained.

2. We have lengthened the timetable for strengthening buildings to at least 67% of New Building Standard for most buildings as follows:

			Current Deadline	New Deadline
All	Parapets and Facades		30 June 2019	30 June 2023
Region	Low Risk	Pre-1991 buildings	2020 - 2025	2027
		1991 and later	2030	2030
	Medium Risk	Pre-1991 buildings	2019 - 2025	2025
		1991 and later	2025	2027
	High Risk	Pre-1991 buildings	2019 - 2023	2023
		1991 and later	2023	2025

3. We have clarified the basis on which a congregation can apply for an exemption.

In certain limited circumstances, a congregation can apply to the Presbytery and Trustees for an exemption from the requirement to strengthen a building to at least 67% of NBS.

Please note the sections on the funding of seismic assessments and the requirement for Trustee approval for work over \$50,000 at the end of this document. For commercial buildings, please contact us for the addendum to this policy.

Understanding the basic framework around earthquake prone buildings

The NBS number

In New Zealand all buildings are rated as a percentage of the New Building Standard (% NBS). The loading code requirements aspect of the NBS vary across the country depending on the risk of earthquake, local seismicity factors and ground conditions. The assessment against the standard is based on the recommendations of the NZ Society of Earthquake Engineers. Table A below sets out the implications of different percentages of the NBS. The risk of failure (life safety risk) increases significantly as the rated percentage drops.

Table A: Understanding New Business Standard Ratings

% NBS	Grade	Relative Risk of failure compared to a 100% rated building	Notes
>100	A+	<1 times	Over designed for emergency use
100	A	-	Standard for new buildings
80 - 99	A-	1 – 2 times	Current preferred standard for existing buildings
68 - 79	B	2 – 5 times	Future focus, preferred minimum
34 - 67	C	5 – 10 times	Medium term focus
20 - 33	D	10 – 25 times	Short term focus, legally earthquake prone if a public building or multi story residential
<20	E	>25 times	Immediate focus, legally earthquake prone if a public building or multi story residential

A building that is <34% NBS is considered to be “earthquake prone”. A building that is <67% NBS is considered to be an “earthquake risk”.

The types of evaluation

Since the Christchurch earthquakes the two different types of assessment have been called various names. It has now been decided that they should be called:

- **Initial Seismic Assessment (ISA).** This is a high level screen to indicate the likely seismic performance of a building, taking into account its age and type of construction, local seismicity and the ground conditions. As it is a quick assessment, it can sometimes be considerably more conservative than the next assessment (Note: until recently this was called an Initial Evaluation Procedure or IEP.)
- **Detailed Seismic Assessment (DSA)** This is a more detailed quantitative appraisal by an earthquake engineer that establishes the seismic performance of the building based on its individual characteristics. If a building is likely to be under or near the 34% NBS threshold, it may be more cost effective to obtain a DSA directly, as a DSA will provide more certainty and avoid the potential for having to pay for both an ISA and a DSA. (Note: until recently this was called a Detailed Engineering Evaluation or DEE.)

34% or 67% - What is the difference?

It is recommended that Congregations upgrade their property to at least 67%, which is higher than the 34% required by many Local Authorities and the legislation.

The reasons for this are simple:

- **At 34% a building has a high probability of staying sufficiently intact that people will not be injured or killed. But there is a much higher likelihood that the building will no longer be useable.** Government and Local Authorities are primarily concerned about life and limb and have therefore focused on 34%.
- **At 67% it is likely that the building will remain useable, or can be fixed, and so the work of the Congregation can continue.** In the long-term interests of the Church, we want facilities to remain functional.

The 33% level is actually quite low. The New Zealand Society of Earthquake Engineers states:

“33% NBS is the minimum legal limit for a building’s earthquake capacity. This is a relatively low level of capacity, with a 10-fold greater risk of significant damage occurring than for a new building. The NZSEE recommend that the minimum should be 67% NBS (5 times the risk compared to a new building) to give an acceptable level of protection in a moderate to severe earthquake.”

Strengthening to less than 67%

In the light of the request by the 2014 General Assembly, the Trustees may permit Congregations to upgrade to a lesser percentage than 67% NBS but not below 34% NBS when:

- a. The cost of going to 67% NBS is excessive;
- b. The building is not one that is critical for the worship, life and mission of the Congregation;
or
- c. The building is not fit for purpose and would still not be fit for purpose even if strengthened to 67% NBS.

Economic Cost

Before considering an exemption on the ground of cost, the Trustees will require:

- a. A Detailed Seismic Assessment (DSA) for the building;
- b. Indicative costs for both the 34% NBS (if the building is below 34% NBS) and the 67% NBS options (as sometimes, particularly for wooden buildings, the cost difference is surprisingly small);
- c. An indication of the NBS point between 34% NBS and 67% NBS that provides value for money (i.e., weighing up the increase in strength against the expenditure necessary to achieve that increase); and
- d. Agreement from the Congregation and the Presbytery that the building does not have a long-term role in the worship, life and mission of the Congregation and of the National Church.

In considering an application for an exemption on economic grounds, the Trustees will look for the percentage of NBS that gives value for money in terms of the work required and the cost of that work – the Trustees may set a higher exemption figure than 34% NBS if this is justified.

Non-Critical Facility

Before considering an exemption on the ground that the building is not critical for the worship, life and mission of the Congregation, the Trustees will require

- a. A Detailed Seismic Assessment (DSA) for the building;
- b. Clear evidence that the building is non-critical, e.g., it plays an insignificant part in the worship, life and mission of the Congregation, it is used only infrequently and this is likely to continue into the foreseeable future; and
- c. Assurance that the building is otherwise of little economic value to the Congregation or the National Church.

Fitness for Purpose

Before considering an exemption on the ground that the building is not fit for purpose, the Trustees will require

- a. Clear evidence of this, e.g., the building has very low levels of use because it is not well designed or is otherwise unsuited to the functions of contemporary congregational life;
- b. A Detailed Seismic Assessment (DSA) for the building;
- c. Indicative costs for both the 34% NBS (if the building is below 34% NBS) and the 67% NBS options; and
- d. Confirmation that, at 67% NBS, the facility would still be unfit for purpose.

Consequences of Granting an Exemption

If the Trustees give approval to strengthen to less than 67% NBS, the Trustees will regard this as a clear indication to the Congregation and the Presbytery that the building will not be restored if it suffers significant damage in a natural disaster.

A decision to grant an exemption from strengthening to 67% NBS will therefore need to be approved by the Church Council, the Congregation, the Presbytery and the Trustees.

Union and Co-operating Parishes

The Methodist Church requires its buildings to be strengthened to 67% NBS and so do many, perhaps all, Anglican Dioceses. An application for exemption from a Cooperative Venture will therefore, in addition to any other consents, require the consent of each of the other participating partners at the regional level to an exemption being granted. It may also require the consent of the Trustees of the other participating partners.

Where a congregation is a Cooperative Venture, the Church Council must consult the other participating partners at an early stage if it is applying to the Trustees for an exemption.

The process for seeking advice

There are four key stages to identifying and addressing earthquake prone buildings, and while most buildings will pass through each stage in succession, this is not mandatory if a well-founded decision can be made earlier on.

1. The Church Council reviews the buildings currently used by the Congregation and decides how best the building resources will fit into the future life and plans for the Congregation. If the building is seen as required in the medium to long term, the Congregation should continue with assessment;
2. The Church Council obtains (or may receive from its Local Council) an Initial Seismic Assessment (ISA);
3. If the ISA is below 67%, the Church Council will continue on to a Detailed Seismic Assessment (DSA). When seeking a DSA, the Church Council should ask the engineer to identify the key critical structural weakness and key elements that need to be corrected, as focusing on these will reduce the cost of improvements;
4. Any necessary remedial work is undertaken to address the key structural elements so that the building meets the required percentage of NBS.

All advice must be obtained from a suitably qualified structural engineer. It is also wise to ensure that the report from a larger firm is signed off by the engineer responsible as well as one of the qualified partners as an internal reviewer. Larger firms should include this automatically. Small firms or sole practitioners may not do so as a matter of course. Therefore, Church Councils need to ensure that these reports are peer reviewed by an independent, experienced and qualified engineer, preferably a consultant who specialises in the materials used in the construction of the property involved.

The timetable for taking action

A timetable has been established that takes into account:

- The likelihood of earthquake frequency and intensity by dividing the country into the Government determined risk zones;
- The likelihood that the building will fail to meet the 67% NBS criteria, based on the age and the materials of the building;
- The need to take responsibility rapidly if the initial ISA is low, but at the same time moving on to the fuller (and more reliable) DSA in a timely manner.

Based on these principles, the timetable for obtaining an ISA/DSA and upgrading is set out in table B below. An ISA (only) is sufficient if the resulting rating is above 67% NBS, otherwise both an ISA and DSA are required.

Note: Depending on the results of the ISA/DSA further actions may be required urgently, and these are outlined in the next section.

Table B - Risk zones for strengthening



High Risk Areas – Table C

Wellington	Christchurch
Palmerston North	Napier/Hastings
Gisborne	Blenheim

Medium Risk Areas – Table D

Hamilton	Tauranga
New Plymouth	Rotorua
Wanganui	Nelson
Invercargill	Timaru

Low Risk Areas – Table E

Auckland	Northland
Oamaru	Dunedin

Table C – High Risk Areas Timetable

Applies to: East Coast, Hawkes Bay, Manawatu, Wairarapa, Wellington, Kapiti, Marlborough, North Canterbury (including Kaikoura), Christchurch, Westland

Year Built	Urgency	ISA / DSA Required by	Upgrade to at least 67% NBS
Facades/parapets	1	June 2022	June 2023
Pre 1991	2		June 2023
1991 - later	3		June 2025

Note: Facades/parapets are any ornamental structures that are adjacent to public spaces and which could fall off the case of an earthquake. While the deadline date is June 2023, any building with these features demands urgent attention.

Table D – Medium Risk Areas Timetable

Applies to: Applies to: Taranaki, Central North Island (Wanganui to Bay of Plenty), Waikato, Nelson, Inland South Canterbury (including Timaru)

Year Built	Urgency	ISA / DSA Required by	Upgrade to at least 67% NBS
Facades/parapets	1	June 2022	June 2023
Pre 1991	3		June 2025
1991 - later	4		June 2027

Note: Facades/parapets are any ornamental structures that are adjacent to public spaces and which could fall off the case of an earthquake. While the deadline date is June 2023, any building with these features demands urgent attention.

Table E – Low Risk Areas Timetable

Applies to: Applies to: Taranaki, Central North Island (Wanganui to Bay of Plenty), Waikato, Nelson, Inland South Canterbury (including Timaru)

Year Built	Urgency	ISA / DSA Required by	Upgrade to at least 67% NBS
Facades/parapets	1	June 2022	June 2023
Pre 1991	4		June 2027
1991 - later	5		June 2030

Note: Facades/parapets are any ornamental structures that are adjacent to public spaces and which could fall off the case of an earthquake. While the deadline date is June 2023, any building with these features demands urgent attention.

Actions required following the outcome of an Initial Seismic Assessment (ISA):

- **Buildings assessed as Grade E (below 20%) *must* temporarily close**, pending a decision on the building’s future to be made after a DSA has been obtained. The Church Council must also:
 1. Immediately install prominent and permanent signage, notifying visitors of the earthquake status of the building;
 2. Consult within the Congregation and the Presbytery over the role of the building in the life and mission of the Congregation and the Presbytery;
 3. Depending on the outcome of (2), as soon as possible obtain a Detailed Seismic Assessment (DSA);
 4. Obtain advice on what their Local Authority requires for public buildings in this situation.

- **Buildings assessed as Grade D** (between 20% and 33% NBS) should temporarily close, pending a decision on the building's future to be made after a DSA has been obtained. If the Congregation believes that there are compelling reasons why the building should stay open in the meantime, the Church Council must consult with the Trustees and the Presbytery. The Church Council must:-
 1. Immediately install prominent and permanent signage, notifying visitors of the earthquake status of the building;
 2. Consult within the Congregation and the Presbytery over the role of the building in the life and mission of the Congregation and the Presbytery;
 3. Depending on the outcome of (2), as soon as possible obtain a Detailed Seismic Assessment (DSA);
 4. Obtain advice on what their Local Authority requires for public buildings in this situation.
- **Buildings assessed as Grade C** (between 34% and 67% NBS): The Church Council must obtain a Detailed Seismic Assessment in sufficient time to be able to complete any strengthening required within the time frame set out in Tables C-E above.
- **Buildings assessed as Grade B** (between 68% and 79% NBS): The Church Council does not have to obtain a follow-up DSA, but it should have a DSA carried out when renovation or structural work is considered to see if strengthening to 100% NBS is feasible or practical.
- **Buildings assessed as Grade A- and A** (between 80% and 99% NBS) are considered buildings of continual use. The Church Council does not have to obtain a follow-up DSA.
- **Buildings assessed as Grade A+** (over 100% NBS) are "over designed" and will be considered in continuity plans or for civil use by the State or Local Authority. The Church Council does not have to obtain a follow-up DSA.

Following the outcome of a Detailed Seismic Assessment (DSA):

- The expectation for buildings determined to be **Grade D or E** following a DSA is that these buildings **will be closed immediately, if they are not already closed**. Warning notices must be displayed for Grade D or E buildings notifying visitors of the earthquake status of the building. The Church Council shall consult with the Congregation and the Presbytery over the future of the building in the life and mission of the Congregation and the Presbytery. The Church Council shall consider whether it is feasible and desirable to upgrade the building to at least 67% NBS (or a lesser figure if the Trustees grant an exemption). If it is feasible and desirable a strategy must be put in place to bring the building up to the agreed percentage within the time frame set out in Table B above or the time allowed by the Local Authority, whichever is sooner.
- Buildings assessed as Grade C following a DSA require permanent and prominent notification to be installed advising site visitors of the earthquake status of the building. A strategy must be put in place to bring the building up to at least 67% NBS (or a lesser figure if the Trustees grant an exemption) within the time frame set out in Tables C-E above or the time allowed by the Local Authority, whichever is sooner.
- Buildings assessed as Grade B following a DSA will reference the evaluation as part of renovation or structural works to see if upgrading the building to 100% NBS is possible or practical.
- Buildings assessed as Grade A are considered buildings of continual use.

- Buildings assessed as Grade A+ are “over designed” and will be considered in the church’s continuity plans or for civil use by the State or Local Authority.

Seismic restraint of non-structural components

Items such as suspended ceilings, suspended heaters, air ducts, lights, projector screens, wall hangings, sound system speaker boxes and organ components have to be restrained for seismic activity in accordance with the building code. Congregations should seek that advice from a structural engineer or specialist service engineer to ensure these items are restrained to the standards as detailed in NZS4219.

Cooperative Ventures property

In Cooperative Ventures, this policy only applies to Presbyterian-owned buildings. Buildings owned by other churches should be dealt with in line with their policies.

Synod of Otago and Southland

For information regarding policies and funding for church buildings in the Synod of Otago and Southland area please contact the Executive Officer, Fergus Sime: phone 0800 76 22 22.

Funding of Seismic Assessments

Where the Congregation does not have the funds available to commission the seismic assessment, the Church Council may apply to use any capital funds held by the Trustees on behalf of the Congregation to meet the cost of the ISA or DSA. Where a Congregation has no funds available to undertake the evaluation, the Church Council should raise the issue with Presbytery.

The standard approvals process will apply to any work on church property

Before work over the value of \$50,000 is undertaken on any church property (or if the property is to be demolished or sold), the usual approval process must be followed (please refer to the Property Handbook available on the website).

Keeping everyone informed

Please forward a copy of the evaluation and other relevant information to both your Presbytery and the Church Property Trustees office for their records.

If you want to know more

The NZ Society of Earthquake Engineering has produced a guide for building owners which has some useful advice on managing these issues. It can be found online at www.presbyterian.org.nz/sites/default/files/cpt/20140807_155647.pdf