Absolutely Positively
Wellington City Council
Me Heke Ki Pōneke

Guide to Seismic Strengthening for Heritage Building Owners

Edition 2 - April 2023

Contents

Abbreviations and Acronyms

ACENZ	Association of Consulting Engineers New Zealand.
BA	Building Act 2004.
BHIF	Built Heritage Incentive Fund.
CCC	Code Compliance Certificate.
CPEng	Chartered Professional Engineer.
DSA	Detailed Seismic Analysis.
EPB	Earthquake-prone building.
HNZPT	Heritage New Zealand Pouhere Taonga.
HRRF	Heritage Resilience and Regeneration Fund.
ICOMOS	International Council on Monuments and Sites.
ISA	Initial Seismic Analysis.
LBP	Licensed Building Practitioner.
LIM	Land Information Memorandum.
MBIE	Ministry of Business, Innovation and Employment.
NZCB	New Zealand Certified Builders Association.
NZIA	New Zealand Institute of Architects.
NZSEE	New Zealand Society for Earthquake Engineering.
NBS	New Building Standard.
PIM	Project Information Memorandum.
PS1/PS4	Producer Statements.
RMA	Resource Management Act 1991.
SESOC	Structural Engineering Society of New Zealand.

1. Introduction

Heritage places are valued parts of our communities. By assisting owners and custodians to adapt their buildings to be more seismically resilient we support their continuing use and keep connections to our histories and the stories of Wellington.

This guidance is intended for owners of earthquake-prone heritage buildings. It acknowledges and builds on the work and experiences of many people over the past decades who have successfully strengthened their buildings[1].

There is still much to do. In 2022 there were still about 600 earthquake-prone buildings (EPB) in Wellington, and about 20 percent are included in the heritage schedules.

[1] Brief history of earthquakes in New Zealand since the fifteenth century, see *Appendix 1: History*

2. Earthquake-prone heritage buildings

The Wellington District Plan includes schedules of heritage buildings and heritage areas that create regulatory protections for the buildings they cover. Within these schedules there are buildings that have been identified as earthquake-prone on the Ministry of Business, Innovation and Employment (MBIE) register of earthquake-prone buildings (EPB register).

Earthquake-prone buildings (EPB) have been identified as having a higher chance of causing damage or injury in an earthquake.

As they work through their obligations to have their buildings strengthened, owners of earthquake-prone heritage buildings face a more complex series of challenges caused by potentially additional procedures (such as the requirement for a resource consent), measures (such as specific construction or monitoring measures in heritage context), costs, or delays.

2.1. What is historic heritage?

The Resource Management Act 1991 (RMA) defines historic heritage as the natural or physical resources that help us to understand or appreciate New Zealand's history and cultures.

Section 6 – Matters of National Importance – of the RMA stipulates that all persons exercising functions and powers under the Act are required to recognise and provide for eight matters of national importance, including in sub-section (f): “the protection of historic heritage from inappropriate subdivision, use, and development”.

The Greater Wellington Regional Council requires Wellington City Council to identify places, sites, and areas with significant historic heritage values in the Wellington City District Plan.

The Wellington City Council has identified places, sites, and areas with significant historic heritage values in the Wellington City District Plan.

When a heritage place is scheduled in the district plan, there are rules and standards to manage the effects of change. This ensures the heritage values of the place are protected.

For more information

Click on the links to find out if an item is scheduled in the Wellington City District Plan as a heritage building or as part of a heritage area. You will need to look in both the operative and proposed district plans.

- Operative district plan schedule of heritage areas, buildings, objects, trees, and Māori sites
- Proposed district plan SCHED 1 Heritage Buildings
- Proposed district plan SCHED 3 Heritage Areas

2.2. What does earthquake-prone mean?

Section 133AB of the Building Act 2004 (BA) defines the meaning of an earthquake-prone building:

> *(1) A building or a part of a building is earthquake prone if, having regard to the condition of the building or part and to the ground on which the building is built, and because of the construction of the building or part,—*
>
> *(a) the building or part will have its ultimate capacity exceeded in a moderate earthquake; and*
>
> *(b) if the building or part were to collapse, the collapse would be likely to cause—*

(i) injury or death to persons in or near the building or on any other property; or

(ii) damage to any other property.

(2) Whether a building or a part of a building is earthquake prone is determined by the territorial authority in whose district the building is situated: see section 133AK.

Engineers often give earthquake-prone buildings an earthquake rating, commonly referred to as a percentage of the new building standard (NBS). Earthquake ratings mean the degree to which the building, or part, meets the seismic performance requirements of the building code. Buildings or parts of buildings that achieve less than a third of the new building standard (below 34 percent) are considered earthquake-prone.

If a building is confirmed as earthquake-prone, it is entered into the Ministry of Business, Innovation and Employment (MBIE) register of earthquake-prone buildings (EPB register), and the council issues earthquake-prone building notices to owners.

2.3. Summary of legislation

This is an overview of regulations you need to know about when you consider seismic strengthening. Work must meet legislative and planning requirements for seismic strengthening. The key legislation for earthquake-prone heritage buildings is as follows[2]:

- The Building Act 2004
- The Heritage New Zealand Pouhere Taonga Act 2014
- The Resource Management Act 1991

[2] More information, see Appendix *2: Legislation*

3. Options for earthquake-prone heritage

This section provides information on your options for managing an earthquake-prone heritage building, including for emergencies and urgent works.

3.1. Earthquake-prone heritage

When you are deciding how to manage your earthquake-prone heritage building, you could consider the following options:

- Seismically strengthening your building
- Demolishing all or part of your building
- Selling your building.

As resource consent is likely for alterations, adaptation and the demolition of heritage buildings and heritage areas, it is best to contact the council and Heritage New Zealand Pouhere Taonga (HNZPT) to discuss building requirements and heritage obligations early.

For more information

If you seek advice on your options:.

- Council's resilient buildings team: buildingresilience@wcc.govt.nz
- Council's cultural heritage team: heritage@wcc.govt.nz
- Heritage New Zealand Pouhere Taonga: infocentral@heritage.org.nz

3.1.1. Strengthening your building

Strengthening your building may be complex, but it has several benefits. You will ensure the safety of your building's tenants, protect your investment, and save a piece of New Zealand heritage for future generations to enjoy.

Retaining and retrofitting an existing building is often the most sustainable solution. Existing buildings contain embodied energy, and their retention can save carbon associated with the construction of new buildings, including in materials, transport, demolition and landfill.

The next sections of this guide include the support available to owners, a step-by-step guide to strengthening buildings, and some examples of structural strengthening works.

3.1.2. Demolishing your building

The RMA requires that historic heritage is retained and protected from inappropriate subdivision, use and development, which means demolishing heritage buildings and heritage structures must be avoided.

Heritage areas scheduled in the district plan include heritage buildings, contributing buildings and structures, and non-heritage buildings and structures. Demolishing contributing buildings and structures within heritage areas must also be avoided.

Non-heritage buildings and structures in heritage areas can potentially be demolished or relocated, subject to compliance with the other relevant rules and standards in the district plan.

3.1.3. Selling your building

You may decide to sell your building without completing any strengthening work. Potential purchasers are likely to ask for engineering documentation and advice. The more information you can provide about your building, the easier it will be for potential purchasers to make a decision.

All EPB status are always included in the Land Information Memorandum reports (LIM).

3.1.4. What if you do nothing?

If you decide not to do anything, you may put the safety of building occupants and passers-by at risk. You may also have difficulty:

- Insuring your building
- Raising finance against your building
- Attracting and retaining tenants
- Attracting buyers.

If you don't strengthen your building within the timeframes outlined in your building's earthquake-prone buildings' notice, the council can take enforcement action.

3.1.5. Enforcement by the council

If you don't strengthen your building within the timeframes outlined in your building's earthquake-prone buildings' notice, the council can take further enforcement action as stated in your building's earthquake-prone notice. The enforcement actions include putting up a hoarding, closing/shutting buildings from being used or inhabited, and prosecuting owners who could be liable for a fine of up to $200,000. The council may also seek orders from the courts to undertake the seismic work on behalf of the owners and recover costs from the owner.

For more information

- MBIE's Seismic Risk Guidance provides help for people to make informed decisions about their buildings

3.2. Emergencies and urgent work

An emergency is usually a sudden event where a building is likely to cause loss of life, injury, or serious property damage (such as collapse). If there is an emergency and your building needs urgent work to make it safe:

- Call 111 if there is a serious immediate risk to life or property, or if someone is badly injured
- Call the council on 04 499 4444 or email info@wcc.govt.nz if a building may be dangerous or insanitary.

Some considerations

Items included in the district plan heritage schedules can't be demolished or altered without resource consent. Provisions for emergency works are set out in sections 330 and 330A of the RMA.

The archaeological provisions of the Heritage New Zealand Pouhere Taonga Act 2014 still apply in emergency situations. Seek advice from Heritage New Zealand Pouhere Taonga (HNZPT) for advice on archaeological authorities.

Shed 35 was damaged by the 2016 Hurunui Kaikōura earthquakes and demolished under the emergency provisions of the RMA. Photo: Wellington City Council.

For more information

- Council's Dangerous and Insanitary Buildings Policy

4. Support for owners of earthquake-prone heritage

Support for owners of earthquake-prone heritage buildings may be available through advice from heritage advisors, information on your building, grant funds for heritage building owners, consent fee rebates and rates remissions.

4.1. Wellington City Council resilient buildings officers

The council's resilient buildings team is responsible for managing the earthquake-prone buildings in Wellington, including those listed as heritage on the District Plan.

Council's resilient buildings officers can notably:

- Confirm whether your building is a potential EPB, an EPB or not, or outside criteria of the EPB legislation
- Issue or remove EPB notices for buildings in Wellington city
- Provide guidance with legislative requirements as owners of EPB
- Provide help or direct towards financial or other resources that may be available for owners of EPB
- Help manage communication with resource consent and building consent teams during remediation of EPB
- Remove or add your building to the MBIE register.

4.2. Wellington City Council heritage advisors

Council's heritage advisors can notably:

- Confirm whether your building is included in the district plan schedules of heritage buildings or heritage areas
- Give you a copy of the heritage inventory report for your building or heritage area
- Talk about the Heritage Resilience and Regeneration Fund (HRRF)
- Provide general advice on heritage and conservation matters
- Discuss your initial proposals for your building
- Direct you to information on resource consent and building consent processes.

4.3. Heritage New Zealand Pouhere Taonga (HNZPT)

HNZPT has specialist advisors who give expert help on heritage conservation issues. Advisors can notably:

- Help you understand the heritage value of your building and what you need to protect
- Confirm whether your building is on the New Zealand Heritage list/Rārangi Kōrero
- Give you a copy of the list entry report which summarises information that HNZPT holds about your building
- Give expert help on heritage conservation issues relating to strengthening
- Help to plan your project to ensure you maintain and enhance the building's heritage significance

- Work with you and the council on the heritage conservation requirements under the Wellington District Plan
- Confirm whether an archaeological authority is required for the works.

4.4. Information about your building

The council can provide information about your building to help you and your consultant team make decisions about its future.

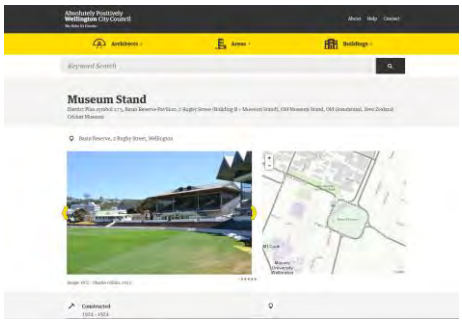
This includes:

- Heritage inventory reports
- Building permits
- Historic photographs
- Maps
- Other archival collections.

4.4.1. Heritage inventory reports

The council has prepared a heritage inventory report for each heritage building, heritage structure and heritage area scheduled in the district plan.

The heritage reports are available online at Wellington City Heritage website and .pdf copies are available by contacting heritage@wcc.govt.nz



An example of a report from Wellington City Heritage. The Basin Reserve Museum Stand was strengthened and re-opened for the BLACKCAPS vs India test match in February 2020.

4.4.2. Building permits

You can order digital copies of building permits and issued building consents from Wellington City Council Archives Online. These items are held behind a paywall and can be accessed for a fee.

4.4.3. Historic photographs

Historic photographs are useful when they show the building after it was first constructed, or with early or significant alterations. This can help you work out how your place has developed over time. Council's historic photographs are available from:

- Wellington City Council Archives Online
- Wellington City Libraries Heritage RECOLLECT
- Wellington City Council Flickr

Original drawing of the former Sydney Street East substation on Kate Sheppard Place. The building was strengthened and refurbished in 2014. Image: WCC Archives reference 00055:43:A4030

4.4.4. Maps

The council has digitised Wellington maps, a useful resource for building owners. The maps include soil classification codes, GNS slide geomorphology, predicted sea level rise and flood zones. The historical map viewer includes a digital copy of the c.1889 Thomas Ward Maps, and the 1937 Housing Survey.

- Wellington Maps
- Wellington Historical Map Viewer

This photograph shows 97 The Terrace in 1978. The original corner turret may have been removed after the 1942 Wairarapa earthquake. The building has recently been strengthened. Image: Charles Fearnley, Wellington City Recollect 50003-1301

4.4.5. Other archival collections

You can also find more information about your building by looking through historic images and maps, reading old newspapers, or reading about people who lived or worked there.

- Digital NZ
- The National Library
- Archives New Zealand
- Paperspast
- Te Ara Dictionary of New Zealand Biography

Part of the c.1889 Thomas Ward Maps overlaid on a current aerial photograph.

4.5. Grants and funding

There are several heritage grants you might be eligible for to help with earthquake strengthening costs.

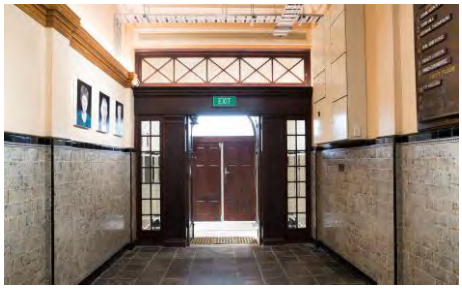
4.5.1. WCC Heritage Resilience and Regeneration Fund

The Heritage Resilience and Regeneration Fund (HRRF) recognises the importance of strengthening Wellington's earthquake-prone heritage buildings. The HRRF replaces the Built Heritage Incentive Fund (BHIF). Talk to us about help with funding seismic assessments, detailed design and construction costs.

The former Evening Post building on Willis Street was earthquake-strengthened in 2014 with help from the Built Heritage Incentive Fund (now HRRF). Image: Wellington City Council.

4.5.2. HNZPT National Heritage Preservation Incentive Fund

HNZPT offers the National Heritage Preservation Incentive Fund funding for private owners of heritage properties. Seismic strengthening and risk management planning is a priority. You can apply for up to 50 percent of construction costs but individual grants are normally less than $100,000.



The Wellington Trades Hall is listed as a category 1 Historic Place. It was strengthened in 2017 with help from the council's Built Heritage Incentive Fund (BHIF). Photo: Wellington City Council.

4.5.3. New Zealand Lotteries Commission

New Zealand Lotteries Commission offers several funds including:

- Lottery Environment and Heritage grants, available for places not privately or commercially owned
- Lottery Significant Projects grants, available for projects of regional or national significance

Futuna Chapel was designed by architect John Scott (Taranaki, Te Arawa) in 1958 and built by the brothers of the Society of Mary from 1959 to 1961. Futuna Chapel has been supported in several rounds of the BHIF including for seismic investigation and repairs. Photo: Wellington City Council.

4.5.4. Kainga Ora Residential Earthquake-Prone Building Financial Assistance Scheme

Kainga Ora offers the Residential Earthquake-Prone Building Financial Assistance Scheme with loans to help owner-occupiers of units or apartments in earthquake-prone buildings. Your building must be in an area of high seismic risk, such as Wellington, and you must provide proof you are facing hardship over earthquake strengthening costs.

You may be eligible to apply for a low interest deferred repayment loan of up to $250,000.

The Albemarle Hotel is being strengthened with help from the BHIF. Photo: Moira Smith, 2022

4.6. Fee rebates and rates remissions

The council offers consent fee rebates and rates remissions for some works to heritage buildings and earthquake-prone buildings.

4.6.1. Rates remission

If you're carrying out or have completed strengthening work, you may be eligible for a rates remission. Rates remissions may be available if your building is empty during strengthening works and when your building is no longer earthquake-prone.

If part of your building can't be occupied because it is not fit-for-purpose while it is being strengthened, you can apply for rates remission.

When your building is no longer earthquake-prone you can apply for rates remission for:

- Five years – if it is included in the district plan heritage schedules
- Eight years – if it is a category 2 Historic Place listed in the New Zealand Heritage list/Rārangi Kōrero
- 10 years – if it is a category 1 Historic Place listed in the New Zealand Heritage list/Rārangi Kōrero.

For more information

- On rates remissions and how they are calculated – Rates remissions for EQPB strengthening works

4.6.2. Resource consent fee rebate

If you need to apply for resource consent, you may be eligible for a reimbursement of up to $2500 for each resource consent application. Eligibility conditions for Resource consent fee reimbursements for heritage items include that:

- Your application must require a resource consent because of a heritage listing
- The council supports the proposed works
- Your building must not be owned by the council or a government agency.

4.6.3. Building consent fee rebate

When carrying out seismic work you can apply for a Building consent fee rebate. This can be for up to 10 percent of the consent fee, up to a maximum of $5000 per consent. The 10 percent rebate does not include third party charges included in the building consent fee, such as the building research levy.

5. Planning for strengthening of earthquake-prone heritage buildings

When you start to plan your earthquake strengthening project you should consider the values of your historic building, and look for ways to preserve and enhance those values. You can find out more about planning for conservation, and establish the values and significance of your building in:

- The ICOMOS NZ Charter
- The council's heritage building and heritage area reports
- A conservation plan for your building.

5.1. ICOMOS NZ Charter

The ICOMOS New Zealand Charter 2010 is widely used across New Zealand to guide conservation best practice and standards for heritage buildings. The charter explains the purpose, principles, practice, and processes of conservation. It also provides useful definitions of the main conservation terms, including preservation, maintenance, and restoration. A summary of the ICOMOS NZ Charter that is relevant to strengthening earthquake-prone heritage buildings includes the following:

Understanding cultural heritage value

Conservation should be based on an understanding of the cultural heritage values of the place. Seismic strengthening should take into consideration the significance of the building and what is important about the place.

Planning for conservation

Conservation should be subject to prior documented assessment and planning. Conservation work should be based on a conservation plan which identifies the cultural heritage value and cultural heritage significance of the place, the conservation policies, and the extent of the recommended works.

Respect for surviving evidence and knowledge

Conservation should maintain and reveal the authenticity and integrity of the heritage place. It should involve the least possible loss of fabric or evidence of cultural heritage value. For example, unless parts of a building are damaged beyond reasonable repair, they should not generally be replaced with new replicas.

Minimising intervention

Work should involve the least degree of intervention to the heritage place. Degrees of conservation for conservation purposes are described as the following, and are ordered in increasing degrees of intervention:

i. Preservation, through stabilisation, maintenance, or repair – for example seismic strengthening
ii. Restoration, through reassembly, reinstatement, or removal
iii. Reconstruction – for example reinstating a missing item as a replica
iv. Adaptation.

Retaining the use

Conservation is best facilitated by keeping a place in a suitable sustainable ongoing use or to serve a useful purpose. The seismic strengthening should aim to help the ongoing use of the building, and should not impede the building's function.

Recording, documenting, and archiving

Places should be recorded, and conservation should be documented, so that the information is available to present and future generations.

The ICOMOS NZ Charter is also referred to as a guidance in the Greater Wellington Regional Council Regional Policy Statement and the "Wellington Heritage Policy, September 2010", which are the basis for the council's approach to heritage management.

5.2. Conservation plans

Many heritage buildings have conservation plans to help manage change and protect heritage values. A conservation plan is the guiding document for the conservation, care, and management of a historic place. Plans describe the place and its history, and it identifies its significance and heritage values. They include policies to retain significance, while ensuring that buildings stay in a sustainable use.

Conservation plans can be simple statements of significance and conservation policies, or they can be large and complex documents. The scale of the plan will depend on the significance and complexity of the heritage item.

If your building has a conservation plan, give copies to your consultant team and contractor. If your building does not have a conservation plan, it may be time to commission one.

For more information

- The Conservation Plan by James Semple Kerr

6. Selecting your consultants and contractor

Whether your project is small and simple, or big and complex, we encourage you to seek advice from professionals, since choosing the right team of consultants and contractor will help make the process run smoothly.

This information aims to help you get started. It provides you with a (non-exhaustive) panel of the professionals that you may need for your structural strengthening project.

Your team	What they can do
Lead consultant or project manager	The lead consultant manages the project and coordinates the consultant team. This can be a project manager, an architect, or a structural engineer.
Architect	An architect plans, designs, and advises on the construction of buildings and structures.
Chartered Professional Engineer (CPEng)	A CPEng carries out the structural analysis, design, and calculations. They can submit and sign off the PS1 and PS4 producer statements for your building consent.
Quanitity Surveyor (QS)	Quantity surveyors manage the finances for construction projects.
Other consultants	Larger and more complex projects may need more specialist consultants like heritage specialists, planners, traffic engineers, services engineers, landscape architects and interior designers.
Contractor	Carries out the building works, including any structural strengthening.

6.1. Your consultant team and contractors - generally

Your consultant team and contractors should include professionals who:

- Have experience in working with buildings similar to yours, in terms of style, age and construction
- Have experience with strengthening historical buildings in Wellington to the building code
- Have the correct insurance – including professional indemnity insurance for designers and consultants, and construction related insurances for building contractors.

Here are some important questions to ask your potential consultant team and contractor:

- **Expertise and experience** - What is their experience with strengthening historic buildings in Wellington or New Zealand to the building code? Ask for a list of buildings they have worked on that are similar to yours, in terms of style, age, and construction
- **References** - Ask for contact details of the owners of two or three of their projects so you can discuss the quality-of-service clients received. Were there delays and amendments? Did they meet their programme and budget?
- **Quality assurance** - Ask designers and consultants how they double-check the accuracy and efficiency of their designs. For example, do they have a quality assurance or peer review process?
- **People** - Who in their organisation will work on your project.

Ask about their approach to your project:

- **The brief** - Talk about your brief, budget, programme, and the project's scope of work. Discuss the heritage significance and values of your building including any consenting requirements.
- **Project management** - Discuss who will be the lead consultant or project manager, and who will administer the construction contract.
- **Information** - Ask which consultant will be responsible for gathering existing information on the building. Who will prepare measured or as-built drawings? What surveys and site investigations will they need?

For your consultant team, ask:

- **Coordination** - How will they work with other people in the consultant team, and how they will co-ordinate their work?
- **Fees** - What are their fees and scope of their work?
- **Programme** - When could they be available to start work? What would be a reasonable timeframe to complete the work?

For more information

- MBIE has prepared some guidance - Get the right people for your project | Building Performance

6.2. Your project manager

The lead consultant or project manager is usually one of the first people you engage, and they can often help to assemble your consultant team. You may decide to manage the project yourself, but be wary of the time and expertise required. You can also get your engineer, architect, building professional or a specialist project manager to fill this role, but make sure they have experience acting in that capacity.

Questions to ask a project manager or lead consultant

Your project manager has an important role of ensuring your project runs smoothly. Along with general questions included above, there are some more specific questions you can ask your project manager:

- **Experience** - What is their experience managing strengthening projects on Wellington/New Zealand buildings similar to yours?
- **Qualifications** - What are their qualifications and background in the construction industry?

What your project manager will normally do

Usually, a project manager's role (or lead consultant) includes:

- Advising who needs to be involved in the project
- Managing relationships between the building professionals involved
- Helping develop and deliver a project timeline, or programme
- Identifying and resolve issues or potential problems
- Managing the process for getting resource consent and building consent
- Managing tenders and contract administration.

6.3. Your architect

An architect can help you consider the best use for your building, navigate planning requirements, and compliance with broader requirements of the building code.

Ideally for work on a historic building, choose a conservation architect, or an architect with heritage project experience. A conservation architect will help find ways to maintain heritage values of your building. Alternatively, your architect could work with a conservation architect, historic buildings surveyor or other heritage specialists, particularly for places with the highest heritage significance.

Before engaging an architect, discuss the services they provide and how they will work with you. Be clear about your budget and programme

What your architect will normally do

Your architect will carry out a variety of activities, depending on the scope of your project. Usually, the architect's role includes:

- Acting as the lead consultant and manage the building process, including tendering, contract administration and site observation. This may also be done by an engineer or independent project manager
- Gathering information on your building site
- Developing concept and preliminary designs and helping clarify what you want
- Providing developed and detailed designs
- Providing advice on your requirements under the Building Act - for example seismic, fire, access, and weather-tightness
- Managing or help with the process to gain resource consent and building consent
- Liaising and consulting with other professionals, including planners, engineers, quantity surveyors and building contractors.

For more information

The New Zealand Institute of Architects (NZIA) publishes advice on engaging an architect:

- Find an architect
- Working with an architect

To check if your designer is a registered architect search the NZRAB online register of architects.

6.4. Your engineer

Your engineer is one of the most important members of your consultant team for a seismic strengthening project. Some work can only be carried out by a suitably qualified and experienced chartered professional engineer (CPEng). This includes assessments submitted to council, and the preparation of producer statements required for building consent applications and code compliance certificates.

Your engineer should meet all the requirements described in section 2 of MBIE's EPB Methodology 2017, and notably:

- Be a chartered professional engineer (CPEng) whose main area of practice is structural engineering, with an emphasis on seismic strengthening
- Be a member of a professional engineering organisation that helps them maintain competency in structural engineering and meet current industry standards, such as NZSEE or SESOC

- Have experience in assessing and structurally strengthening heritage-listed buildings
- Have experience strengthening buildings in high seismic zones such as Wellington
- Have experience with buildings that contain similar materials and construction to your own building.

Before you hire an engineer, discuss their services and how they will work with you. The best engineering advice is likely to come from an engineer with experience in the seismic upgrade of historic buildings similar to yours.

While the building codes and NZSEE guidelines help ensure a consistent minimum standard, each engineer will have a unique approach to structural strengthening. An engineer experienced in strengthening heritage buildings can often use their engineering skills to get the best outcome for the least cost. This may include using material testing to ensure you make the most of the strength of the materials in your building, using advanced analysis techniques to predict the damage to your building in an earthquake with greater accuracy, and detailing the construction so that it easy to construct, thereby reducing labour costs.

Questions to ask an engineer

Along with general questions outlined in the beginning of this section, here are some specific questions to ask your structural engineer:

- **Investigations and testing** - Will they conduct testing to determine engineering properties of construction materials? This approach is encouraged as it helps your engineer better understand how your building will perform. This can improve performance and sometimes reduce costs of strengthening solutions
- **Chartered Professional Engineer** - Ask about work that must be supervised by a CPEng. How will the CPEng be involved in the project's design, seismic assessment, or site observation?

Make sure you understand what the engineer will provide. Greater input at the design stages may reduce construction costs later on. Similarly, spending time exploring different options and understanding the building in the concept stage can often reduce costs in later stages of design and construction.

What an engineer will normally do

Your structural engineer can help you with three important parts of your project. Usually, the engineer's role includes:

- Assessing your building and preparing an ISA and DSA
- Designing your strengthening scheme
- Providing producer statements (PS1 and PS4) for your building consent.

For more information

- Engineering New Zealand (formerly IPENZ) can help you Find an engineer
- The Association of Consulting Engineers New Zealand (ACENZ) has advice on Briefing and Engagement for Engineering Services Guidelines and a list of ACENZ members

6.5. Your contractor

A range of building professionals are needed to complete your project. Building owners often appoint a main contractor (or general contractor) to manage the site, arrange for site inspections and compliance with building and resource consents, manage the building trades, comply with

health and safety regulations, and complete the works. Your project manager or lead consultant can help to work out which type of contractor, building practitioner and construction contract is right for your project.

You need to engage a licensed building practitioner (LBP) to undertake restricted building work on a residential building. For commercial buildings you can choose to use a LBP, but this is not a requirement.

Questions to ask a building practitioner

Along with general questions outlined at the beginning of this section, here are some more specific questions you can ask your contractor. Ask about their approach to your project:

- **Tender** – are they interested in tendering for your project?
- **Programme** - Their capacity, other jobs they are working on, and availability to tender and start work on site
- **Consent conditions** - How will they manage the heritage and other consent conditions
- **Type of contract** – are you looking for a main contractor to deliver the whole construction project? Or do you need a specialist contractor or sub-contractor for part of the works?
- **Contract administration** - Let them know who will administer the contract, for example, have you commissioned a project manager or engineer to the contract, or an architect? Or are you acting as project manager?

For more information

- You can find a list of LBPs in the public register - licensed building practitioner register

You can also check the New Zealand Certified Builders Association (NZCB) or the Registered Master Builders Association (RMBA) for a list of certified or registered master builders.

- Find a builder - New Zealand Certified Builders Association website
- Find a builder - Registered Master Builders Association website

7. Strengthening a heritage building: Design

The design of a building project is usually divided into several phases. If the project is small, or the work is straight-forward, then some phases can be combined. This diagram shows the basic steps usually needed to complete the design of a building project.

Steps	Action
1. **Pre-design**	Develop your brief, consider feasibility, and engage your consultant team.
2. **Feasibility**	
3. **Information and Assessments**	Gather information about the site. Commission structural engineering assessments - ISA and DSA. Commission other site investigations and materials testing.
4. **Concept design**	Carry out site and building investigations, consider your options.
5. **Preliminary design**	Develop the preferred options, review costs, and feasibility.
6. **Developed design**	Developed design - apply for resource consent and an archaeological authority (if required).
7. **Detailed design**	Detailed design - apply for building consent and prepare tender documentation

7.1. Pre-design

Pre-design helps to get you started with your earthquake-strengthening project. This is when you start to think about your requirements (the project brief), gather information about the site, consider feasibility and engage your consultant team.

Objectives	Inputs	Consider	Outputs
Gather information about the site and building. Develop a brief for your project. Start to consider feasibility. Engage a consultant team.	Information about the site and buildings.	Applying for a grant towards the cost of the DSA. When to commission a DSA.	Consultants are appointed. An initial brief. An initial programme.

7.1.1. Developing a brief for your project

When you start your construction project plan for the conservation of your heritage building, you will need to prepare an initial brief for your consultant team and start to gather information on your building. A project brief is a living document updated throughout the design project. It is a way to

communicate your expectations to your consultant team, so they know what you are trying to achieve. Your brief may include:

- **The scope of strengthening** – should the building be strengthened to the minimum requirements, so it is no longer earthquake-prone? Or do you or your tenants need a higher percentage NBS? Though 34 percent is the minimum level needed to strengthen your building to, New Zealand Society for Earthquake Engineering (NZSEE) recommends strengthening to 67 percent. It is not always significantly more expensive to strengthen to 67 percent and can help minimise damage to your building in an earthquake.
- **Change of use** – Do you want to change the use of the building? For example, are you converting an office space to apartments? If so, you need to achieve as close as possible to the current building code, including for structural performance, accessibility and fire safety.
- **Other changes** – Do you want to change anything else about the building? For example, to conserve heritage items? Reinstate missing features? Increase or decrease its floor area?
- **Efficiency** – Do you want to improve the efficiency of the building's heating or cooling systems? Improve energy efficiency? Upgrade utilities like water, sewerage, electricity, or gas? Add sprinklers or a security system? Or improve service areas like kitchens or bathrooms?
- **Programme** – When do you need the works to be completed by?
- **Budget** – What is your budget?
- **Consultant team** – Who will be your lead consultant? An architect, project manager or structural engineer?
- **Construction** - Who will administer the construction contract? Is there a contractor or tradesperson that you would like to work with?

7.2. Feasibility

If you're planning a seismic strengthening project, you'll need to work out the financial impact of the work on your building. A record like this allows you to review the feasibility of your project, as you get more detail on your engineering solution. It allows you to quickly exclude unfeasible options, and be better informed when seeking funding.

There are many ways to calculate feasibility, and feasibility can depend on whether you intend to:

- Sell the building once the works are complete
- Retain the building as a long-term investment
- Keep the building as a residence or place to run your own business.

7.2.1. Sell the building

If you plan to refurbish your building and sell it when the strengthening work is complete, your feasibility study may simply consider the difference between your costs and the potential final sales price. You should also include any potential grants, fee rebates, and rates remissions in this calculation.

7.2.2. Long-term investment

If you plan to keep the building as a long-term investment, your feasibility study may also include your income over time, along with what it will cost to run the building. In this case you could also consider:

- The costs of each option
- The value of each upgrade option – including any potential to increase income, or decrease your operating costs.
- The time it will take for your investment to become profitable – this is sometimes known as a "pay-back" period.

7.2.3. Live or work from the building

If you intend to keep the building to live in, or to run a business from, your feasibility study may compare the costs of the possible development of your building with the cost to buy, lease or rent similar spaces and facilities locally.

Your project could be the opportunity to create a unique and distinctive place for your home or business in your historic building.

For more information

- The Property Institute provides a guidance paper on feasibility studies

7.3. Information, investigations, and assessments

Your consultant team will need information about your building so that they can design the works and provide advice on costs and feasibility. This includes:

- Available information
- ISA and DSA
- Site investigations and material testing.

7.3.1. Available information

Make sure to provide your consultant team with as much information on your building as possible. The more information your consultant team have, the more accurate their advice can be. They are likely to need:

- Certificates of title, covenants, and easements
- Council LIM and PIM reports
- Records from council archives, including original plans and specifications, and information on any changes to your building including previous building consents
- Previous engineering reports
- Heritage reports and conservation plans.

7.3.2. ISA and DSA

You will need to decide when to commission a detailed seismic analysis of your building. The following guidance explains what an engineering assessment may include, and the difference between an initial seismic assessment (ISA) and detailed seismic assessment (DSA).

Potentially earthquake-prone buildings

If your building has been issued with an earthquake-prone notice by the council, it means that the building has been identified as potentially earthquake-prone. Your engineer will need to carry out an assessment to work out if it is (or isn't) earthquake-prone. This assessment is likely to include an ISA, but for some buildings your structural engineer may recommend proceeding to a DSA.

Your engineer will need copies of any original drawings or specifications, and of subsequent changes including building consents. They will also need access to your building, including the interiors. They may also need to do intrusive investigation and material testing, which might include the removal of some finishes on the exterior or interior of your building.

For more information

- MBIE publishes a Methodology to identify earthquake-prone buildings

What is an ISA?

An initial siesmic assessment (ISA) is an initial assessment of a building based on its age, material types and easily identified weaknesses. It provides a broad indication of your building's earthquake rating but does not include calculations to understand the actual performance or likely damage in an earthquake. You might use an ISA for:

- **Identification** - As a quick tool to identify how likely it is your building is earthquake-prone. Councils often use this tool as an initial assessment because it is simple and can be done based on public information about a building
- **Demolition** - For buildings, or parts of buildings, with low heritage values an ISA may provide enough information to help make decisions. For example, you may decide to demolish a "non-heritage" building in a heritage area based on the ISA.

If you intend to strengthen your building, it is often best to have as much information as you can, as early in the design process as possible. This will help to make the best decisions and save your structural engineer from unnecessary work later on. Your structural engineer and consultant team can provide more information on when an ISA is sufficient, and when a DSA is required.

What is a DSA?

A detailed seismic assessment (DSA) is a calculations-based assessment of the strength of your building. It is focused on getting an accurate understanding of your building's current performance and to predict the likely damage in an earthquake. A DSA is usually the best way to decide on the structural strengthening work required for your heritage building. Understanding the seismic performance of your building can help target structural solutions to address the critical issues. This can make your building safer and may save you from carrying out unnecessary work. A DSA uses standard assessment methodologies and is useful if you later decide to have the advice peer reviewed.

For more information

- MBIE provides more information on ISA and DSA - Seismic assessment of existing buildings | Building Performance

Comparing seismic assessments

If you commission a seismic assessment and the findings differ from a previous assessment, what should you do?

Seismic assessments require a level of professional judgement, and some difference of opinion between engineers can be expected. Also, the level of complexity in the analysis can sometimes lead to different solutions. Generally, a more complicated analysis, such as a non-linear analysis, will result in a more efficient and targeted engineering solution.

If your seismic assessment was carried out before 2017, it may not meet the current MBIE criteria as the assessment methodologies have changed.

If significantly different assessments exist for the same building, and the engineers have used comparable assessment methodologies, Engineering New Zealand recommends engineers work together to resolve the issues.

Sometimes, in complex situations, engineers are not able to reach a solution by themselves. If you find yourself in this situation, Engineering New Zealand now offers a seismic assessment reconciliation service, which is designed to help engineers reach an agreement and provide you with clarity.

7.3.3. Site investigations

Your consultant team may also need to commission further investigations of your site and building. Some typical investigations for earthquake-strengthening include:

- Asbestos surveys
- Geotechnical investigations
- Materials testing
- Topographical surveys and built drawings
- Site investigations to locate services including electricity, water, gas, and sewerage.

Geo-tech

Your structural engineer is likely to recommend geotechnical investigations to help understand the specific risks to your building. Geotechnical information includes information about soil conditions and the level of ground motion likely to be experienced by a building at your site during an earthquake. It can also help identify if liquefaction will be an issue or if deep foundations are required.

Materials

Your structural engineer will be interested in the materials your building was constructed from. Physical investigations will help them work out:

- If the building was constructed to the plans and specifications. For example, if a wall is constructed from brick or timber framing. Some intrusive investigation may be necessary to determine your building's construction.
- The weight of the building and its component parts.
- The strength of building materials. For example, this should include physical testing of significant materials like reinforced concrete, brickwork, steel, and the condition of structural timber.
- Inspections of existing structural elements and connections. This may include inspections in the ceiling voids, and checking connections between the floor diaphragms and walls.

As-built plans, sections, and elevations

Your consultant team may need a set of drawings to help co-ordinate the architectural, mechanical and electrical services, and structural drawings. Your structural engineer may need an accurate survey of the building to help work out its geometry and construction. You will need to work out who will measure or survey the existing building, and create these drawings for the consultant team.

7.4. Concept designs

The concept design stage is when your consultant team prepares options for your building. You can use these options to obtain a rough order of costs, or a budget estimate. This will help complete your feasibility study and to select the right solutions for your building.

Objectives	Inputs	Consider	Outputs
Gather information about the site through site investigations. Develop options and solutions. Complete the feasibility study.	Discuss the project with the council's heritage advisers HNZPT. DSA (if commissioned).	Commissioning a DSA. Investigations that might be needed – for example, geotechnical, measured and topographical surveys, condition surveys, asbestos surveys, and strength testing materials.	Concept designs – drawings or sketches. Rough order of costs or a budget estimate.

Your structural engineer will start investigating the building's structure at the concept design phase. This may be based on the ISA initially, and will become more accurate once the DSA is completed. The concept design investigations can help identify the most critical or urgent works, and may include some cost-effective solutions to make your building safer sooner.

Once the structural engineer understands more about your building, they can prepare initial options for the structural design. These options should be shared with others team members to help understand the initial implications for the heritage values, architecture, mechanical and electrical services. Your consultant team should be able to provide a budget estimate, or rough order of costs, for each option. The options may include a sequence of work or programme that shows the work being carried out in stages. They may also consider ways to use your time and resources efficiently.

At this stage it is useful to contact the council's heritage advisors and HNZPT. HNZPT can offer expert help on heritage conservation issues relating to strengthening, and can steer you towards the solution that best maintains and enhances your building's heritage significance.

7.5. Preliminary design

The preliminary design is when your consultant team starts to develop preferred options and provide more accurate advice.

Objectives	Inputs	Consider	Outputs
Develop the preferred option. More accurate cost advice.	Pre-application meetings with the council for resource and building consents. DSA and results from site analysis and materials testing.	Applying for a grant towards the cost of the works.	Preliminary design – plans, sections, and elevations. Outline specification including materials and finishes. Preliminary costs prepared by a quantity surveyor.

At the preliminary design stage, it's good to get indicative costs from a quantity surveyor. These will be based on average costs of construction for similar buildings and types of work. The estimated costs are likely to change as your project develops and more detail of the work is documented. The more information given to a quantity surveyor, the more reliable the estimate will be.

Next steps

- Use this information to narrow your options to the one best suited to your requirements, and proceed to developed design
- Consider getting the design peer-reviewed by another engineer. They may see other ways to meet the upgrade objectives, save money or improve the outcome.

7.6. Developed design

Developed design is when your consultant team refines your preferred option. If your project needs a resource consent or an archaeological authority, apply for one by the end of this design stage.

Objectives	Inputs	Consider	Outputs
Develop the design. Apply for resource consent. Apply for an archaeological authority (if required).	Talk to HNZPT about archaeological authorities. DSA and results from site analysis and testing.	Eligibility for rebates and remissions for resource consent fees, building consent fees, and rates. Apply for a grant towards the cost of the works. Contractor procurement.	Developed design including drawings, sketch details, and an outline specification. Resource consent application. Archaeological authority application. Elemental estimate by QS.

You will need a cost estimate from a quantity surveyor. With a developed design, the estimate can now be based on a more certain schedule of work and materials, and on preliminary construction

details. Choose a quantity surveyor with experience in the type of building and work you are proposing. Expect this estimate to be more accurate than those provided earlier.38

Next steps

- Agree on finalised developed design
- Contact Heritage New Zealand Pouhere Taonga to apply for an archaeological authority if your work affects an archaeological site.
- Contact the council to apply for a resource consent.

7.7. Detailed design

Detailed design is the final stage of the design process. When this is complete you can apply for building consent, and get a contractor to price your building project.

Objectives	Inputs	Consider	Outputs
Finalise the design Apply for building consent Prepare tender documentation	DSA and results from site analysis materials testing Any requirements from the resource consent including conditions Building consent pre-application meeting	Commissioning a peer review of the structural design by another engineer Contractor procurement and type of construction contract Applying for a grant towards the cost of the works	Full documentation - architectural and structural engineering drawings and specification Building consent application Identify and agree how the contractor will be procured and which construction contract will be used Tender documentation Pre-tender cost estimate by QS

At this stage, your architect or designer will modify the design to meet any requirements or conditions identified in the planning approval and resource consent process.

The result is the detailed design consisting of a full set of architectural and engineering drawings. It will also include a specification covering materials, methods and processes to be followed when implementing the work.

Next steps

- Secure any major grant funding sources. Some funding sources have time limits on the draw-down and use of funds. Fundraising campaigns must take all of this into account so funding applications can be submitted in the right order.
- Contact the council to apply for a building consent.
- Once funds are in place and consents have been given, go out to tender to engage building professionals to carry out the work.

For more information

MBIE provides guidance on building consents including:

- Apply for building consent | Building Performance
- Building to the consent | Building Performance
- Sign-off and maintenance | Building Performance

7.7.1. Producer statements

Your building consent is likely to require producer statements for the engineering design and installation. The structural engineer preparing the building consent applications and producer statements should be a CPEng.

Producer statements help council to assess whether the design and completed work complies with the building code. When deciding on whether to accept a producer statement, the council will consider the qualifications and experience of the design professional who produced the statement and carried out the work.

The most common producer statements prepared by structural engineers are:

PS1 Design	A PS1 is for the design of the structure and is submitted with the building consent application
PS4 Construction Review	For earthquake-strengthening projects, the council is likely to require that your CPEng monitors elements of the construction work, reviews construction, and completes a PS4 before it can issue a code compliance certificate.

For more information

- MBIE provides guidance on Producer statements | Building Performance

8. Strengthening a heritage building: Completing the works

When the design process is complete and you have all your consents and a full set of tender documentation, you are ready to start construction. You will need to find a contractor and enter into a construction contract. This diagram shows the basic steps usually needed to complete the work.

Steps	Action
1. **Procurement**	Call for tenders, select a contractor, and enter into a construction contract.
2. **Construction**	Your contractor completes the building works.
3. **Compliance and completion**	Comply with funding and consent requirements, and obtain a code compliance certificate.
4. **Next steps**	Complete the final steps to ensure that your building is no longer considered earthquake-prone.

8.1. Tenders, proposals and contracts

Once you've selected a list of potential building professionals, arrange tenders, quotes and contracts before work starts. Tenders provide an estimated cost for your project.

Your project manager or lead consultant can help work out what type of tender process or construction contract is right for your project.

For more information

- The building performance website also provides information on tenders, quotes, and estimates - Tenders and quotes | Building Performance

8.1.1. Construction contracts

Once you've selected project professionals, set up a written contract that complies with the Construction Contracts Act 2002.

The contract defines the roles and responsibilities of the professionals your hire. It also needs to outline the scope of work, fees and any other costs that will be charged. Your lead consultant or project manager should advise you on construction contracts.

For more information

MBIE provides guidance on contracts for your building project.

- Why contracts are valuable | Building Performance
- Contracts for your building project | Building Performance
- Implied warranties and defects | Building Performance
- Construction Contracts Act | Building Performance

8.1.2. Insurance

You need to consider arranging insurance cover for risks to people or property during the construction works. The amount and type of insurance, as well as who needs to organise it, varies depending on the contract you have with your contractor. You will also need to let your own building and contents insurers know that you are going to start a construction project.

Types of insurance include:

- Building and contents insurance for accidental damage.
- Contract works insurance for damage to the work in progress.
- Public liability insurance to cover damage to other properties and for personal injuries that are not covered by ACC.
- Professional indemnity insurance for designers including architects and engineers.

For more information

- MBIE provides guidance on insurance Getting insurance | Building Performance

8.2. Construction

Once you have agreed on a contract, then the construction phase can begin. Your project manager or lead consultant should provide advice on how the construction contract will be administered. Some questions for building owners to consider include:

- Who will administer the building site?
- Health and safety
- Who will administer the contract?

8.2.1. Who will administer the building site?

In a traditional contract the client (owner) enters into a contract with a main contractor (or general contractor) who is responsible for the works on the building site. The main contractor completes the construction project - hires builders, tradespeople, and sub-contractors; organises visits from the council's compliance officers and obtains a code compliance certificate; and manages health and safety on site.

There are many other types of contracts, but for any contract make sure someone takes responsibility for each of these tasks.

8.2.2. Health and safety

One of the biggest obligations of the main contractor (or the person responsible for site administration in other contracts) is workers' health and safety. WorkSafe New Zealand has more information on construction health and safety obligations.

For more information

- WorkSafe New Zealand provides guidance on health and safety on site Building and construction | WorkSafe

8.2.3. Who will administer the contract?

If you choose a traditional construction contract, you will need a contract administrator. This could be your project manager, architect, or your engineer. Your contract administrator acts as your

representative and is the single point of contact between you and the contractor. The contract administrator issues all correspondence including claims, variations, instructions and certificates (required for payments). The contract administrator also monitors and reports on costs, assesses and certifies payments to the contractor. They monitor compliance with consents, and certify practical completion.

8.3. Compliance and completion

The construction works must comply with your resource consent and building consent, as well as any grant funding agreements. You will need to obtain the following information to prove that your project has been completed.

8.3.1. Producer statements

If your building consent requires a construction review producer statement (PS4), you must engage a chartered professional engineer (CPEng) to monitor the relevant works. The engineer will visit the site during construction to ensure the works comply with the building consent plans. They will then issue the PS4 before the main contractor applies for a code compliance certificate.

8.3.2. Code compliance certificate and producer statements

In a traditional building contract, your main contractor will apply for the code compliance certificate (CCC). A code compliance certificate proves that the works are complete, and that your building is no longer earthquake-prone. It's the building owner's responsibility to ensure the project has been signed off by council, even if you get a building professional to do so on your behalf.

8.3.3. Practical completion

The first step to formally completing your project is having a certificate of practical completion issued by your contract administrator. To prepare for this certificate, your contract administrator will have compiled a list of any defects and incomplete works to be completed in the defects' liability period.

For more information

MBIE provides guidance on building to the consent, and signoff and maintenance

- Building to the consent | Building Performance
- Sign-off and maintenance | Building Performance

8.4. Next steps

The final steps for your earthquake-prone building project, once you have obtained a code compliance certificate (CCC), is to notify the council works are complete.

The council will review the work and inform you whether the building is no longer earthquake-prone. Once the council has given you that information, you can remove your earthquake-prone building notice from the building's main entrance(s).

Make sure you complete any requirements for grant funds, and apply for any rates remissions for your strengthened heritage building.

8.5. Celebrating completion

Heritage places are valued parts of our communities. By adapting your heritage building to be more seismically resilient, you enable to continue its sustainable use, and to keep connections to our histories and the stories of Wellington.

Completing a seismic strengthening project is an achievement worth celebrating. A celebration is an opportunity to thank all the people who have supported you during your project.

It is also a good opportunity to promote your project and your building, and attract new tenants if your building is vacant. Don't forget to update your insurer - your structural strengthening project may reduce your premium.

9. Strengthening issues

When you strengthen an earthquake-prone heritage building there are many new concepts to discover and potential design solutions to consider. Your structural engineer will use the seismic analysis of your building to understand how it will perform in an earthquake. They will use their understanding of your building to design the strengthening scheme.

This section focuses on the vulnerabilities and strengthening solutions for unreinforced masonry (URM) buildings, simply because it's a common type of earthquake-prone building found in Wellington and across New Zealand.

It is intended to help you discuss your seismic strengthening project with your structural engineer, including your building's strengths and potential weaknesses, and how it may perform in an earthquake.

The guide includes a set of design principles for working with all types of heritage buildings, and practical suggestions your structural engineer can incorporate into their structural design for earthquake-prone buildings.

9.1. Strengthening issues

Wellington has a long history of earthquakes and the management of earthquake-prone buildings. From investigating the failures of buildings in earthquakes both in New Zealand and overseas some of the vulnerabilities of URM buildings are better understood. This diagram shows some of the common issues for a typical URM commercial building during an earthquake

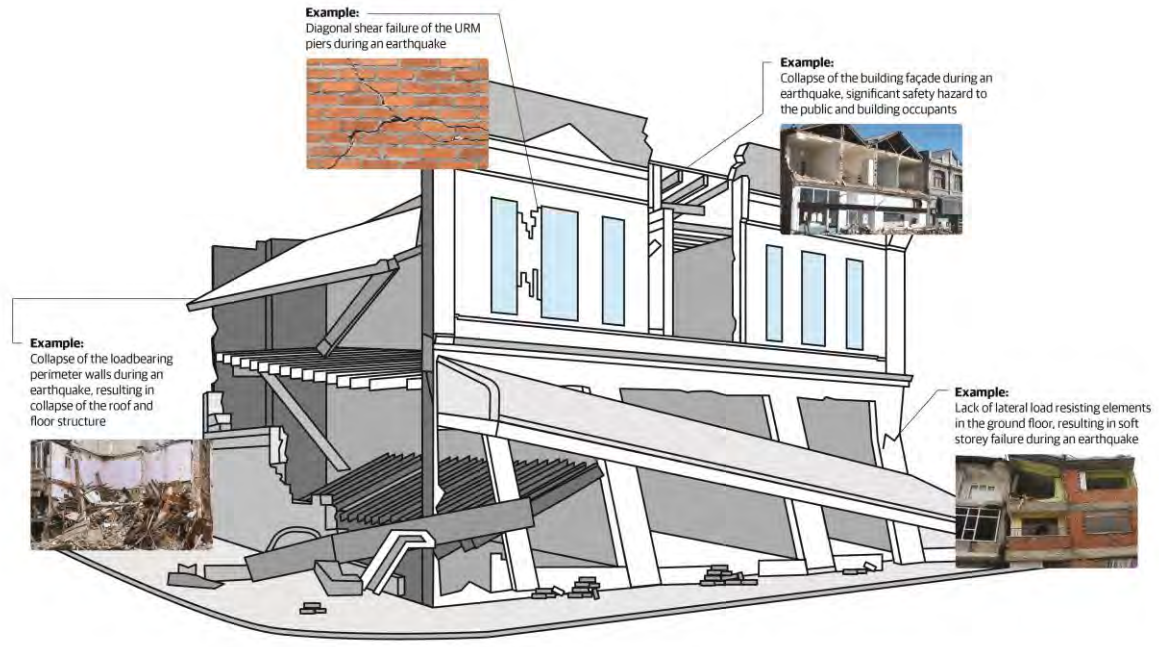


Figure 2: Common issues for a typical URM commercial building during an earthquake.

9.1.1. Unsecured items falling onto footpaths, roads, and neighbouring buildings

One of the biggest risks to people and property from URM buildings is when parts of the building fall or collapse during an earthquake. Common elements that fall include parts of the facades (external walls), unrestrained parapets and gables, pediments and decorative ornaments. Chimneys often break just above the roof and can topple over.

The following images show examples of decorative ornaments that fell from URM buildings during earthquakes.

This concrete corbel fell from a Wellington building in 2013. Photo: Wellington City Council, 2013

This stone finial fell from the Christchurch Arts Centre in 2011. Photo: Christchurch Arts Centre, 2011

9.1.2. Walls collapse

URM walls can collapse in an earthquake, and the following diagrams show their strengths and vulnerabilities. Walls are typically strong when subjected to forces along their length, and this is called an “in-plane” force. URM walls are more vulnerable to collapse if the same force is applied perpendicularly (to their flat face). This is called an “out-of-plane” force.

This image shows what happens to an URM wall when it is subjected to in-plane and out-of-plane lateral forces.

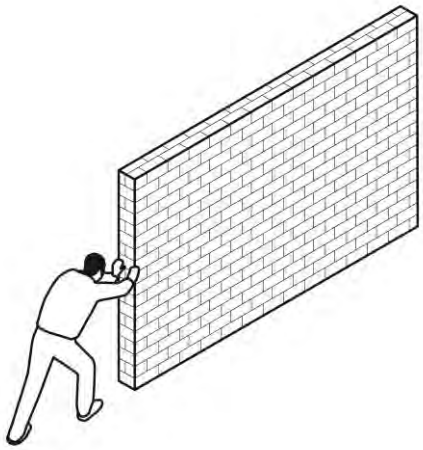


Figure 3: A wall responding to an in-plane force.

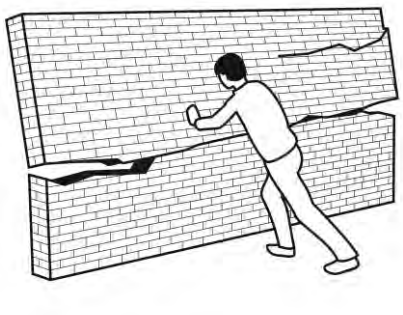


Figure 4: A wall responding to an out-of-plane force.

9.1.3. Diaphragm or connections fail

Buildings can be vulnerable to damage during an earthquake when connections between structural elements fail. Floors and roofs play an important role when they act as a diaphragm. Diaphragms are important because they transfer the horizontal (sideways) forces from an earthquake down

onto the vertical structural elements such as the walls, trusses, columns and frames. When heavy walls aren't connected well to their floors, the load doesn't have a path to get to the diaphragm or the foundations. This can lead to collapse of the building.

This diagram shows a two-storey building with a pitched roof. The arrows show the lateral loads that occur during an earthquake. The dotted lines show the floor diaphragm inside the building that helps to transfer the loads down to the foundations. The roof can also act as a diaphragm.

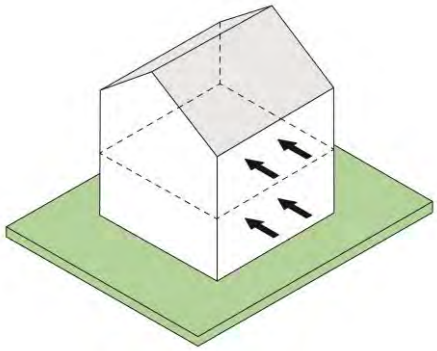


Figure 5: Lateral loads and diaphragms

9.1.4. The building's structure can fail

Some typical examples of buildings that have failed in recent earthquakes include those where parts of the building were not strong enough.

This image shows an example of a "soft-storey", where the ground floor was not as strong or heavy as the upper floors.

An example of a "soft-storey". Photo: Des Bull, Holmes Consulting

Your engineer will consider many aspects of your building, including its geometry, weight, relative stiffness of each floor level and whether there are gaps in the vertical structure (columns and walls) or diaphragms (floors and roofs). They will also consider the location and strength of your building's foundations.

9.1.5. Ground movement and liquefaction

Liquefaction is a natural process where earthquakes shake the ground and increase water pressure in some types of soil. The soil essentially turns to liquid during the shaking, creating a quick-sand effect. If foundations are not designed appropriately, this can lead to settlement and damage to your building.

There are three important factors to liquefaction – the type of soil, the level of the groundwater table and earthquake shaking. Your structural engineer may recommend you commission a geo-technical report to identify the risk of liquefaction.

For more information

- The Canterbury earthquakes Royal Commission examined the failure of URM buildings - *Canterbury earthquakes* - Royal Commission of Inquiry into Building Failure Caused by the Canterbury Earthquakes
- Christchurch Council - Christchurch liquefaction viewer

There is also a book about the Christchurch earthquakes that shows the damage caused to URM buildings.

- Dizhur, Dmytro. *Structural Performance: A visual record of strengthened vintage masonry buildings after the Christchurch Earthquakes to inform a safer future.* Self-published by author. 2021.

9.2. Working with heritage buildings

The value of working with a conservation architect, discussing your project with the heritage advisers at the council and HNZPT, and the guiding principles of the ICOMOS NZ Charter have been discussed in earlier sections of this guide.

This section considers some of the practical decisions that can be made to reduce the impact of structural strengthening works, and to protect and enhance heritage values.

9.2.1. Wellington district plan heritage design guide

Wellington's proposed district plan heritage design guide includes ideas for resilience and working with earthquake-prone heritage buildings to ensure good heritage outcomes. The guide is intended to ensure that seismic strengthening works protect and maintain the heritage values of heritage buildings and heritage areas. It includes best practice examples of structural strengthening schemes for heritage buildings in Wellington.

Of particular note is:

G38. Where structural strengthening to secure parapets is required, consider systems that:

- will not be visible from public spaces.
- do not obstruct gutters and rainwater systems.
- minimise penetrations through elements that contribute to the watertightness of a building.

G39. Where structural strengthening is required that may be visible from the exterior of the building, consider the use of structural systems that:

- Do not obscure shop display windows
- Do not restrict access to daylight or ventilation
- Are not located immediately behind window and door openings, particularly for elements such as shear walls.
- Allow access for cleaning, maintenance and repair of heritage fabric.

G40. The installation of exoskeletons, external columns, and external bracing elements is discouraged, particularly where these would:

- Be highly visible from public places.
- Obscure or remove the main determinants of architectural style.
- Be visually dominant in relation to the scale, form, proportions or materials of the existing building or structure.
- Restrict access for cleaning, maintenance and repair of
- heritage fabric.
- Compromise the watertightness of a building

For more information

- The proposed district plan heritage design guide

9.2.2. Practical suggestions for your engineer

There are some practical ideas for structural engineers and others when considering seismic strengthening options for heritage buildings. This guidance is based on section 4.5 of Securing parapets and facades on unreinforced masonry buildings published by MBIE in 2018, and it provides you with some suggestions for basic and usual strengthening works in heritage context.

Concealed fixings

Concealed fixings can help protect exterior cladding from water ingress and simplify long-term maintenance.

- Consider the use of concealed threaded rods, URM stainless steel self-tapping screws, and proprietary concealed stainless steel products rather than fixings that will be visible on the building's exterior.

Visible fixings

New bolted connections and pattress plates can look cluttered and obtrusive on heritage buildings, and may also raise issues with waterproofing. If exterior fixings are required, consider the following points:

- Keep any existing/original pattress plates and maybe use similar or traditional style plates

- Think about using as few plates/bolted connections as possible to achieve the required structural outcome
- Consider how new penetrations through exterior cladding will be sealed and made watertight
- Try to create a regular pattern and alignment with any new bolted connections
- Consider using circular washers – they are easier to align than square washers
- Consider the colour of the new connections. Traditional plates on plain brickwork are generally painted black. Modern bolted connections and washers on rendered or painted surfaces can be painted to match
- Quality of workmanship is important to ensure good structural and aesthetic outcomes. Wherever possible the contractor should set out the plates so they are square and level, in a straight line and distributed at equal centres. If square washers are required for structural reasons, they should be rotated to line up neatly.

Parapets

Parapets, copings, gutters and roofs play a critical role in waterproofing many 19th and early 20th century buildings. Consider the following points:

- Try to conceal parapet fixings, walers and bracing behind the line of the parapet
- Try to avoid any works that would reduce weather tightness or obstruct flow of rainwater in the gutters
- Steel clamps and tie rods that penetrate through window heads and copings can be visually obtrusive, and lead to problems with waterproofing. Consider how new penetrations through the cladding will be sealed and made watertight. Seek advice from a weather tightness expert (for example a licensed building practitioner) who specialises in URM buildings when necessary.

Interiors

When planning works that will affect interior spaces remember that, to keep using buildings, spaces must be able to be tenanted. The work must not compromise fire protection features. Care should also be taken to avoid damage to interior heritage features such as cornices, architraves, skirtings and panelling which can be costly to repair.

In general:

- Water ingress can cause considerable damage to any building. Refer to MBIE's Acceptable Solution E2/AS1 for help. When necessary, seek advice from a weather tightness expert (for example a licensed building practitioner) who specialises in URM buildings, particularly to design, supervise and install any work that alters a building's weather tightness
- Keep good records and documentation of the work. Hand a copy of the documentation to the building owner at the end of the works for incorporation into their maintenance manual or conservation plan
- Repair damaged traditional materials with like-for-like traditional materials
- Inform building owners of any requirements for long-term maintenance.

10. Strengthening examples and techniques

Many heritage building owners have completed the seismic strengthening of their buildings. This guide includes examples of seismic strengthening works, illustrated with photographs, so you can see the impacts of seismic strengthening on other heritage buildings.

There are a range of options available to retrofit and improve the performance of existing buildings in an earthquake. The eventual solution will be a balance between the level of acceptable risk, financial constraints and preservation of heritage. If your structural engineer suggests a staged approach to structural strengthening, priority should be given to retrofitting structure that poses the greatest risk to human safety in an earthquake.

For more information

Here are some links to guidance on strengthening solutions:

- Auckland Council earthquake-prone building guide
- MBIE - Securing parapets and facades on unreinforced masonry buildings
- MCH Heritage EQUIP – strengthening issues and solutions

Your structural engineer may suggest some of the following options, depending on their detailed seismic analysis of your building.

10.1.1. Parapets

Parapets must be braced back to the building's roof to ensure they don't collapse and fall in an earthquake. Here are some examples of parapet bracing.

To find solutions appropriate for your building, consult a structural engineer for a professional assessment.

New structure has been installed to secure the existing chimney and parapet for the former Cadbury building. It is not visible from the street. Photo: Wellington City Council.

For more information

- MBIE provides guidance on securing parapets
- Heritage EQUIP provides information on securing parapets

10.1.2. Gable end walls

Gable end walls can collapse if they are not well-anchored to the roof. Sometimes they are thinner than the remaining wall which makes them weaker and more vulnerable to collapse. Here are some examples of gable end walls that have been strengthened or braced.

To find solutions appropriate for your building, consult a structural engineer for a professional assessment.

New pattress plates have been installed to secure the gable end of the Karori Crematorium and Chapel. Pattress plates (sometimes called rosettes) are a traditional feature of old brick buildings and are usually painted black. Photo: Neil Price, Wellington City Council.

Before. Photo: Wellington City Council.

After. Photo: Moira Smith 2023.

The parapet of this building in the John Street Intersection Heritage Area in Newtown has been secured back to a new steel frame with bolts and washers. The outcome could be improved by painting the bolts and washers the same colour as the building. The image on the left shows before, and the image on the right shows after.

For more information

- MBIE provides guidance on securing gables
- Heritage EQUIP provides information on securing gables

10.1.3. Decorative ornamentation

Heavy decorative ornamentation on buildings poses a risk to pedestrians and people outside when it falls in an earthquake.

To find solutions appropriate for your building, consult a structural engineer for a professional assessment.

10.1.4. Chimneys

Chimneys are tall and slender and can easily collapse and fall through the roof in an earthquake. Here are some examples of chimneys that have been strengthened.

To find solutions appropriate for your building, consult a structural engineer for a professional assessment.

The chimney at Nairn Street Cottage has been fitted with a new structural chimney liner and fixed back to a new roof diaphragm. Photos: Hawkins Construction NI Limited & Carlos Gonzales, WCC Architectural Services.

The chimneys at 200 Willis Street have been reinstated as lightweight replicas. Photos: Wellington City Council (left) 2015 and Moira Smith (right) 2023.

For more information

- Heritage EQUIP provides some potential structural strengthening projects for chimneys
- HNZPT provide advice on repairing chimneys after an earthquake

10.1.5. Stability of walls

When walls are too slender between floors they can collapse. This can especially be an issue for cavity walls (walls with two separate layers of brick). Adding strengthening rods or strong-backing a wall can help them span between floors. Here are examples of walls that have had reinforcement added to improve their stability.

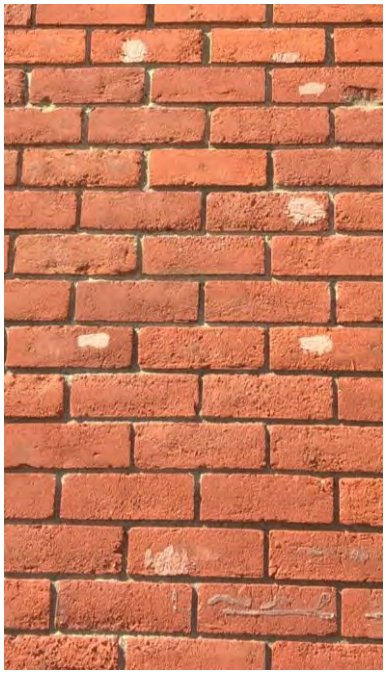
To find solutions to improve the stability of walls appropriate for your building, consult a structural engineer for a professional assessment.

Cuba Street's Thistle Hall is a good example of sympathetic works to strengthen a heritage building.

The northern elevation to Karo Drive shows the original pattress plates, and new and existing steel channels (wailers/waling) just visible below first floor level, at the first-floor ceiling level and at parapet level. These have been painted to match the render and designed to complement the original string course and pilasters. The parapets have been secured with a steel frame, and the roof and ceiling structure substantially reinforced.

A wailer or waling is a horizontal member fixed to a wall to provide transverse (to wall) load support for the wall. Photos: Wellington City Council.

10.1.6. Strengthening walls



The façade at 15 Tory Street has been secured with concealed fixings. The holes have been filled, and coloured to match the existing brickwork. Photo: Wellington City Council.

For more information

- Heritage EQUIP provides some additional information on unreinforced masonry walls

10.1.7. Diaphragms and connections

It is important that floors and roofs are well-connected to a building's walls and strong enough to distribute the loads to the perpendicular walls and frames. Here are examples of buildings where the performance of the existing diaphragms and connections has been improved.

To find solutions appropriate for your building, consult a structural engineer for a professional assessment.

Examples of a detail for anchoring walls to the floor diagrams. Photo: Lara Simmons

For more information

- Heritage EQUIP provides some additional information on floor and ceiling diaphragms
- BRANZ provides more information on Horizontal diaphragms

10.1.8. Strength and configuration

Here are examples of new structural frames and walls.

To find solutions appropriate for your building, consult a structural engineer for a professional assessment.

216 Cuba Street received funding from the Built Heritage Incentive Fund to help develop a detailed seismic strengthening scheme and complete the strengthening works. The work included installing concrete moment-resisting frames so the shop display window is not obscured. Photo: Wellington City Council

15 Courtenay Place is an example of a building where the performance of the existing structure has been improved. The image to the left shows continuous columns installed through the whole building from the ground floor to the top of the building. While the image on the right shows Continuous steel jackets installed around four of the existing columns from the ground through to 600mm above the floor on level 4.

This is an example of external structure known as an "exoskeleton" on the exterior of a non-heritage building. Photo: Moira Smith.

The installation of exoskeletons, external columns, and external bracing elements on heritage buildings is discouraged, particularly where these would:

- Be highly visible from public places
- Obscure or remove the main determinants of architectural style
- Be visually dominant in relation to the scale, form, proportions or materials of the existing building or structure

- Restrict access for cleaning, maintenance and repair of heritage fabric
- Compromise the water tightness of a building.

For more information

BRANZ provides more information on:

- Moment frames - Moment frames
- Braced frames - Braced frames – including concentric bracing and eccentric bracing
- Shear panels - Shear panels.

10.1.9. Foundations and liquefaction

If foundations aren't strong enough, your building will settle and may end up leaning dangerously after an earthquake.

To find solutions appropriate for your building, consult a structural engineer for a professional assessment.

For more information

- BRANZ provides information on Ground remediation

10.2. Other considerations

The following considerations are for all heritage buildings, including those not considered to be earthquake-prone:

- Verandahs
- Strengthening your home
- Heritage materials

10.2.1. Verandahs

Verandahs give shelter and protection from Wellington's weather and can add to our city's character and attractiveness. In an earthquake, verandahs can sometimes fall from a building, creating a hazard for pedestrians below.

Make sure your verandah has been designed for the effects of earthquakes. You should also make sure it stays weather tight and that connections to the walls are well-maintained and in good condition (i.e.: not rusting).

The council legally owns the roads and airspace above the road corridor in Wellington. The *Wellington Public Spaces Bylaw 2022* requires building owners to repair and maintain their verandahs to a reasonable standard.

For more information

- On how to check and maintain verandahs see - Check my verandah

10.2.2. Strengthening your home

Single residential homes are not part of earthquake-prone building legislation. Many homes are wood-framed single-story buildings which are fairly resilient to earthquakes.

Some of the problems that could affect Wellington homes in an earthquake are relatively easy and inexpensive to fix, like tying the house to its foundations or securing a hot water cylinder. The council has created a checklist you can use to identify any weak points.

10.2.3. Heritage materials

Heritage materials need care and consideration in repairs. It is important to repair with like materials and to maintain the patina and finish of heritage materials. HNZPT has developed a range of fact sheets providing advice on repairing heritage materials.

These include information on repairing brickwork, stonework, and chimneys. There is also guidance on replacing heritage elements with lightweight materials.

- Repairing brickwork
- Repairing stonework
- Repairing chimneys
- Replacing high-risk elements with lightweight materials

11. Contacts

Below are contact details for all the organisations you may need to advise and help you with plans for your building.

WCC contact centre

Phone: 04 499 4444

Email: info@wcc.govt.nz

WCC cultural heritage team

Phone: 04 499 4444

Email: heritage@wcc.govt.nz

WCC resource consents team

Phone: 04 801 3590

Email: planning@wcc.govt.nz

WCC building compliance and consents team

Phone: 04 801 4311

Email: bcc@wcc.govt.nz

WCC resilient buildings team

Postal Address: PO Box 2199, Wellington 6140

Phone: 04 499 4444

Email: buildingresilience@wcc.govt.nz

Heritage New Zealand Pouhere Taonga central region office

Level 1, 79 Boulcott Street, Wellington 6011

Postal Address: PO Box 2629, Wellington 6140

Phone: 04 494 8320

Email: infocentral@heritage.org.nz

Appendices

Appendix 1
History

Appendix 2
Legislation

1. History

Aotearoa New Zealand sits across the Pacific plate boundary known as the 'Ring of Fire', and Te Whanganui ā Tara Wellington has a long history of earthquakes. Our building construction has changed and evolved based on what we've learned about how buildings respond to these earthquakes.

The timeline below includes a brief history of earthquakes in New Zealand since the fifteenth century, and some of the lessons learned from each seismic event. It includes changes to legislation that makes our cities safer and more resilient, and examples of Wellington buildings that have been repaired and strengthened.

Decade and significant earthquakes	Legislation	History of Wellington
1460 Haowhenua		Haowhenua (land swallower) raised the Te Awa-a-Taia channel and changed Te Motukairangi (Miramar) from an island to a peninsula.
1620 Alpine Fault		
1710 Alpine Fault		
Taupō & Rotorua		
1830 1838 & 1839 Whanganui		
1840 1848 Marlborough	The 1842 Raupo Houses Ordinance was New Zealand's first building regulation. It was meant to reduce the risk of fires in cities and towns.	The 1848 Marlborough earthquake damaged brick and stone buildings in Wellington. Most were rebuilt in wood.
1850 1855 Wairarapa		 *The Nairn Street Cottage (1858) was built three years after the Wairarapa earthquake. It was strengthened in 2013. Photo: Moira Smith.*

1860

Old St Paul's Cathedral was built in 1865 next to Pipitea Pā in Thorndon. It was strengthened and repaired in 2019. Photo: Moira Smith.

1870

By the mid-1870s, fires were a major problem for Wellington. An 1877 by-law required buildings in the central city to be built of non-combustible materials like brick.

The former Supreme Court (1879) is one of Wellington's oldest brick buildings. It was strengthened in 2009. Photo: Wellington City Council.

1880

1888 North Canterbury

The Star Boating Club (1855-6) was strengthened with help from the Built Heritage Incentive Fund (now HRRF). Photo: Wellington City Council.

1890

The former T.G. Macarthy Trust Building (1897-1904) was strengthened in 2018 with help from the Built Heritage Incentive Fund (BHIF). Photo: Moira Smith.

1900

The Municipal Corporations Act of 1900 gave councils powers to manage dangerous buildings.

The former Public Trust Building (1909) was designed to resist fires and earthquakes. It was earthquake-strengthened in 2015. Photo: Moira Smith.

1910

The St James Theatre (1912) re-opened in 2022 after earthquake strengthening. Photo: Wellington City Council.

1920

1929 Arthur's Pass and Murchison

Morgan's Building (1922) was strengthened in 2012 with help from the BHIF. Photo: Wellington City Council.

1930

1931 Hawke's Bay

The Hawke's Bay earthquake destroyed the town of Napier in 1931. Many people were killed by the collapse of masonry buildings. The tragic circumstances of the Hawke's Bay earthquake triggered a national campaign to improve the seismic resistance of buildings.

In 1935 the Standards Institute published Model Building By-laws which included specifications for earthquake resistance. Over the next 40 years the use of brick as a structural building material was eliminated in New Zealand.

Many decorative parapets and clocktowers were removed from Wellington buildings in the 1930s and 40s. The parapet at the Whitcoull's Building (1907) was removed in the 1930s, and later restored as a replica. Photo: Wellington City Council.

1940 1942 Wairarapa	Brick facades and parapets in Wellington were damaged in the 1942 Wairarapa earthquakes.	
1950		
1960 1968 Inangahua	The 1968 Municipal Corporations Amendment Act gave councils powers to manage buildings that may be dangerous in an earthquake.	
1970		
1980 1987 Edgecumbe		 *In the 1980s the Department of Scientific and Industrial Research developed a new technique called "base isolation". "The Beehive" (1965-1981) has been base isolated. Photo: Wellington City Council.*
1990	The Building Act 1991 introduced a major change to New Zealand's building controls and included the first national building code. The Act included provisions for earthquake-prone buildings.	
2000	The Building Act 2004 is now the primary legislation governing New Zealand's building industry.	

2010 2010 Canterbury (Darfield) 2011 Christchurch 2013 Marlborough 2016 Kaikōura	The 2010 Canterbury earthquake damaged many older brick and masonry buildings in Christchurch. The 2011 Christchurch earthquake killed 185 people and injured several thousand. Forty-two people were killed by unreinforced masonry (URM) buildings. After the Canterbury earthquakes, the Building Act was updated with new requirements for earthquake-prone buildings. Legislation to improve public safety was introduced to manage the risk of further earthquakes after the Kaikōura earthquake. It was revoked when the risk of “aftershocks” reduced in 2018. The Earthquake-prone Building framework was introduced in 2017, and it is the national system for managing earthquake-prone buildings.	The 2013 Marlborough earthquake closed much of the central city in Wellington while buildings were assessed for damage. The 2016 Kaikōura earthquake damaged several buildings in Wellington, including Shed 35, a scheduled heritage building which had to be demolished. After the Kaikōura earthquake, owners of 113 earthquake-prone buildings on Wellington’s busy streets were required to secure URM facades and parapets within a 12-month period.
2020		For over 15 years, more than 1,100 buildings across Wellington have been identified as earthquake prone. There are about 600 EPB remaining to date, including 130 heritage buildings. 117 (90%) of the heritage EPB need seismic work completed by 2030.

For more information

- Historic earthquakes - Eileen McSaveney, 'Historic earthquakes', Te Ara - the Encyclopedia of New Zealand, http://www.TeAra.govt.nz/en/historic-earthquakes
- Canterbury earthquakes - Royal Commission of Inquiry into Building Failure Caused by the Canterbury Earthquakes

2. Legislation

This is an overview of legislations you need to know about when you consider seismic strengthening. Work must meet legislative and planning requirements for seismic strengthening. The key legislation for earthquake-prone heritage buildings is as follows:

- The Building Act 2004
- The Heritage New Zealand Pouhere Taonga Act 2014
- The Resource Management Act 1991

2.1. The Building Act 2004

The Building Act 2004 sets out the law for the construction, alteration, maintenance, and demolition of new and existing buildings throughout New Zealand. The Act determines which buildings are earthquake-prone and sets out rules for how they are managed. It requires owners of earthquake-prone buildings to strengthen or demolish their buildings within a set timeframe.

Under the Building Act, the council:

- Issues and reviews Earthquake-Prone Building (EQB) Notices.
- Is the consenting authority for Building Consents.

Here is the process for earthquake-prone buildings under the Building Act - from when they are first identified, through to when work is completed, and the earthquake-prone building notice can be removed from the building:

Steps	Action
Identify	The council identifies buildings that are potentially earthquake-prone and notifies owners. Councils use the EPB Methodology: The Methodology to identify earthquake-prone buildings.
Assess	Engineers assess the building using The Seismic Assessment of Existing Buildings: Technical Guidelines for Engineering Assessments.
Notice	The council decides if the building is earthquake-prone and issues a notice to the building's owners with a deadline to carry out the works. The timeframe for most Wellington buildings is 15 years, and priority buildings have 7.5 years.
Display	The earthquake-prone building notice is displayed on the main entrance/s to a building. The building is added to the MBIE Register of earthquake-prone buildings
Strengthen or demolish	Owners obtain necessary consents (including building consent), and carry out works to ensure their building is no longer earthquake-prone.
Notify	Owners inform the council once seismic works are complete and a code compliance certificate has been issued.
Completion	The council reviews the work and informs the building owner that the building is no longer considered earthquake-prone. The earthquake-prone notice can then be removed from the building.

For more information

- How the council manages earthquake-prone buildings and resilience.
- MBIE provides online courses for councils, engineers and building owners. The building owner's course outlines the process you will need to follow if the council identifies your building as potentially earthquake-prone.

2.2. Heritage New Zealand Pouhere Taonga Act 2014

The Heritage New Zealand Pouhere Taonga Act:

- Provides for the New Zealand Heritage list/Rārangi Kōrero, which identifies New Zealand's significant and valued historical and cultural heritage places
- Makes it unlawful for anyone to modify or destroy, or cause to be modified or destroyed, all or part of an archaeological site without first getting the authority of Heritage New Zealand Pouhere Taonga (HNZPT).

Heritage New Zealand Pouhere Taonga:

- Administers the New Zealand Heritage list/Rārangi Kōrero.
- Is the consenting authority for Archaeological Authorities.

2.2.1. New Zealand Heritage list/Rārangi Kōrero

Heritage New Zealand Pouhere Taonga (HNZPT) maintains a list of buildings and places that have significant cultural or historical value - New Zealand Heritage list/Rārangi Kōrero. The list is divided into two categories, with category 1 buildings being of special or outstanding historical or cultural significance. If your building is on the New Zealand Heritage list, you should inform HNZPT of your works early on. They can provide recommendations and advice.

Most buildings listed by HNZPT are also scheduled in the district plan, but not all buildings scheduled in the district plan are listed by HNZPT. A listing on the New Zealand heritage list does not come with any regulatory conditions but a listing in the district plan means that the district plan heritage rules and standards apply.

If your building is listed by HNZPT you may also be eligible:

- To apply for grant funding provided by HNZPT
- To apply for a longer period of rates remission from the council
- To apply for an extension of up to 10 years to strengthen a category 1 Historic Place.

2.2.2. Archaeological authorities

Most places in Wellington's CBD and inner suburbs are considered archaeological sites. If your project is likely to modify or destroy an archaeological site, talk to HNZPT about getting an archaeological authority. This regulation applies regardless of whether the work is permitted under a district or regional plan, or a resource or building consent has been granted. You can face substantial penalties for unauthorised destruction or modification of an archaeological site.

If you intend to demolish all of a pre-1900 building, you may need an archaeological authority (including for the above ground structures).

Some examples of archaeological sites include:

- Archaeological sites scheduled in the district plan
- Sites and areas of significance to Māori scheduled in the district plan
- All central business district (CBD) and inner suburbs (including Newtown) shown on the Thomas Ward maps
- Any site occupied by humans before 1900 – for example, where there is evidence that a pre-1900 building still stands or was once built on the site.

2.2.3. Contact Heritage New Zealand Pouhere Taonga

Level 1
79 Boulcott Street
PO Box 2629
Wellington 6140

Phone: + 64 4 494 8320
Email: infocentral@heritage.org.nz

2.3. The Resource Management Act 1991

The Resource Management Act 1991 (RMA) is New Zealand's main legislation that sets out how we sustainably manage our environment. Under the RMA, the council is responsible for making decisions to manage the effects of land use.

Historic heritage is considered a matter of national importance under the RMA. Decision-makers must work to recognise historic heritage and protect it from inappropriate subdivision, use and development.

If a place has been identified as having significant historic, physical, social, tangata whenua or other important values, it may be included in the heritage schedules in the district plan. The heritage schedules include Sites and Areas of Significance to Māori, Notable Trees, and Heritage Areas, Heritage Buildings and Heritage Structures. To protect heritage values, there are rules around how heritage places can be developed, subdivided and used.

Here is the process for how heritage is managed under the RMA.

Steps	Action
Identify	The council identifies places that may have significant historic heritage value. This includes places identified in the New Zealand Heritage list/Rārangi Kōrero.
Assess	The council assesses places using the Wellington City Council assessment criteria and thresholds.
District Plan Schedules	The council adds places with significant heritage values to the district plan schedules. The heritage schedules include Sites and Areas of Significance to Māori, Archaeological Sites, Heritage Areas, Heritage Buildings, Heritage Structures and Notable Trees.
District Plan	The district plan includes objectives, policies, rules, and standards to manage places that are included in the heritage schedules. Some works are permitted activities and do not need resource consent.
Resource Consent	Owners apply for resource consent for works that are not permitted activities Find out if you need a resource consent

2.3.1. Where can I find out more about the heritage values of my building?

The council has written a report about each heritage building and heritage area in the Wellington District Plan heritage schedules. The reports are available online at the Wellington City Heritage website and .pdf copies are available by contacting heritage@wcc.govt.nz