BUILDING PERFORMANCE

EPB Guidance Consultation:

Webinar #1 for Engineers

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NOVEMBER 2026



MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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Purpose of this webinar

- Help you engage with the ongoing **EPB Guidance** consultation – closes 4 Dec 2026
- Provide an overview of the new EPB System – **focus on technical aspects** of interest to engineers

- Webinar is **NOT** technical training on application of the EPB Guidance and Annexes.
  - Some technical guidance documents still under development.



Scan this to go to consultation page!

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How the EPB system fits together

Different documents play different roles but work as one system.

BUILDING ACT 2004 — LEGAL FRAMEWORK
Establishes the statutory framework for identifying, managing and remediating earthquake-prone buildings.

EPB METHODOLOGY — REQUIREMENTS + PROCESS
Defines which buildings are in the EPB system and sets the requirements for identifying, evaluating and remediating them.

TECHNICAL ANNEXES — TECHNICAL DETAIL
Set out detailed criteria, evaluation procedures and performance requirements.

EPB GUIDANCE — PUTTING IT INTO PRACTICE
Explains how TAs, owners and engineers can apply the Act and methodology in real situations.

Other parts of the system

- **REGULATIONS** — Set supporting requirements, including exemption criteria.
- **EPB REGISTER** — Provides the national public record of designated EPBs.
- **ENGINEERING DOCUMENTS** — Support seismic assessment and retrofit design.

- ✓ **The Act says what the law requires**
- ✓ **The Methodology says what must be done**
- ✓ **The Annexes provide the technical detail**
- ✓ **The Guidance shows how to apply it**

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Outline

- Background
- New system overview
- URM
  - Definitions
  - Mitigation requirements

Webinar #1 (Today)

- 3+ storeys of heavy (concrete) construction
  - High-Risk Deficiencies
  - Mitigation requirements

Webinar #2 (Thursday 11am)

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Background



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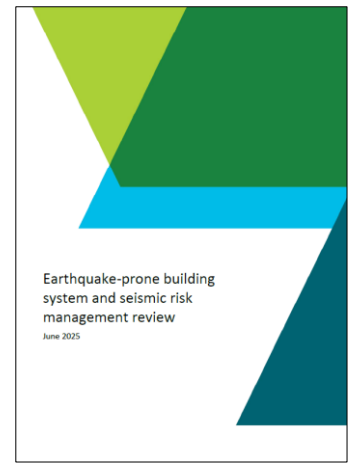
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Brief outline of Seismic Review findings

Despite some 1,500 earthquake prone buildings (EPBs) being strengthened or demolished, problems with 2017 EPB system have emerged:

- Remediation is often **uneconomic or unaffordable** for many owners
- Many **lower risk buildings** becoming EPBs
- **Insurer preferences** for more resilient buildings can drive up costs and make getting remediation finance more difficult
- **%NBS** causing confusion; differing engineering assessments
- **Heritage restrictions** posing barriers to remediation
- Impractical **enforcement tools** for territorial authorities



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Lower risk buildings being identified as EPB!





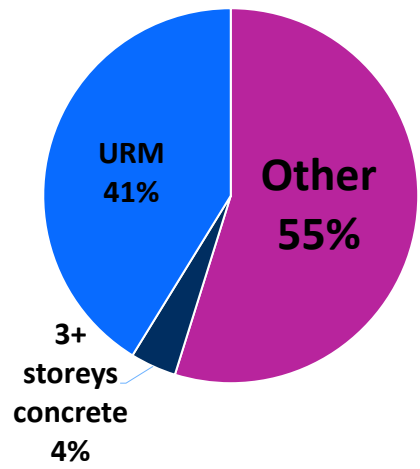




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And the cumulative result...

~5500 Buildings on the EPB Register:



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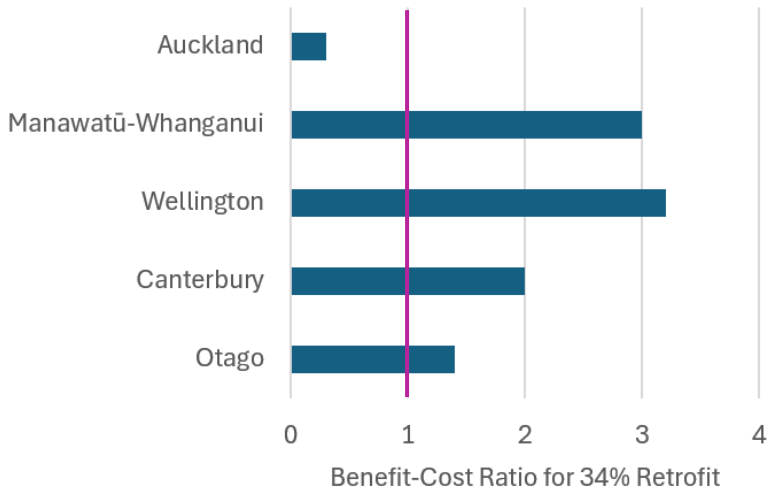
Commissioned research

- Implementation review - Sapere
- Remediation behaviours - ResOrgs
- Willingness to Pay - ResOrgs
- Cost-benefit analysis - Beca
- International jurisdiction review - QuakeCoRE

Scan this to go to page with all research reports and review report!

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Benefit-Cost Ratios





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International lessons



QuakeCoRE
NZ Centre for Earthquake Resilience
Te Hiranga Rū

Olga Filippova
Jason Ingham
John Hopkins

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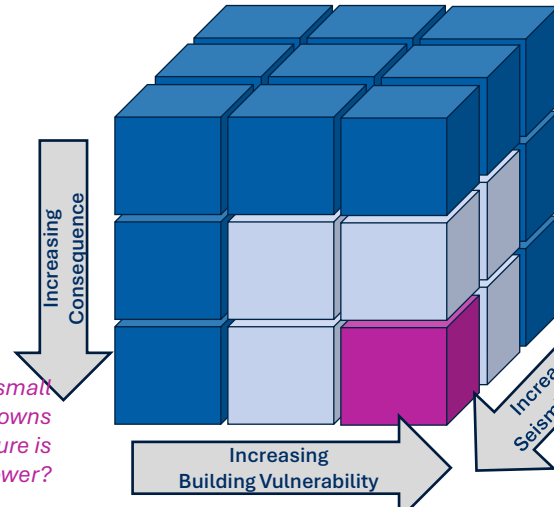
Future State Options

- Status quo (EPB system)
- 1. Improve the current system
- 2. Reduce the scope of the EPB system but retain its essential features
- 3. Mandatory remediation for highest risk buildings only
- 4. Remove the EPB system

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Risk-informed option

- Three components to life-safety risk:
  - Seismic Hazard
  - Building Vulnerability
  - Consequence (human exposure)



Relaxation for small buildings in small towns where human exposure is typically lower?

Need for obligations in lower hazard zones?

*Focus on URM and **high-risk** 3+ storey concrete?*

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New System Overview



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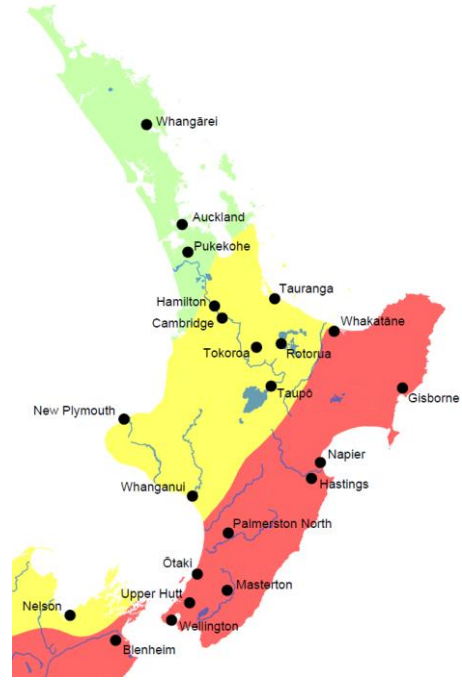
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Seismic Hazard

There are no longer any earthquake-prone buildings in:

- **Auckland**
- **Northland**
- **the Chatham Islands**

Low(er) Hazard zone has been removed from EPB system due to low Benefit-Cost Ratio.



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Seismic Hazard

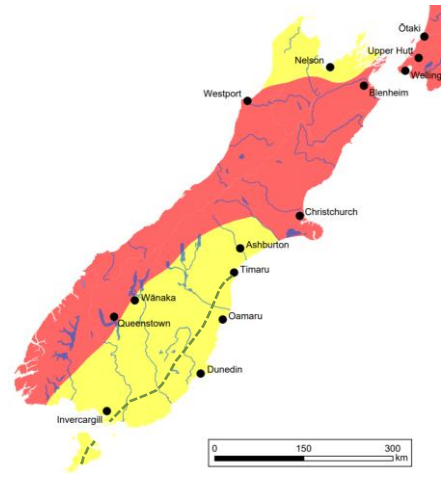
Coastal Otago moved to "Medium Hazard Zone".

But <u>no</u> change to:

- **Identify deadline (1 July 2032)**
- **Remediation deadlines for existing EPBs**
- **No priority buildings**
- **Z-factor from NZS 1170.5:2004**

Only change:

- **Remediation deadline for EPBs after 1 July 2027 → 25 years**

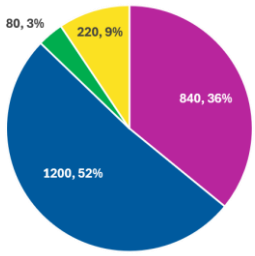


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Risk-targeted mitigation requirements

Mitigation requirements based on:

- **Building vulnerability** (building type)
- **Human exposure** (size and location)



Approx. distribution of mitigation requirements for current EPBs

LOCATION	BUILDING TYPE: Category A - URM buildings, 1-2 storey	BUILDING TYPE: Category A - URM buildings, 3+ storey	BUILDING TYPE: Category B, 3+ storey high risk heavy construction (eg concrete) buildings
Not Urban Area	Register and EPB sign	Façade risk mitigation	Targeted retrofit
Urban Area	Façade risk mitigation	Targeted retrofit	







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Register and EPB Sign

1-2 storey URMs outside urban areas will:

- **remain on EPB Register**
- **post EPB sign**

→ ***No further requirements***

BUT… *Façade Risk Mitigation* is needed to be removed from the EPB Register.



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Mitigation requirements

Section 133AD(2):

(a) **facade risk mitigation**, which mitigates the risk of injury or death posed by an earthquake causing building elements that are built of, or supported by, unreinforced masonry to fall onto an area outside the building by requiring the building's owner to carry out seismic work on or in relation to some or all of those elements:

(b) a **targeted retrofit**, which mitigates the risk of injury or death posed by an earthquake causing a building to fully or partially collapse by requiring the building's owner to carry out seismic work on or in relation to some or all of the structural deficiencies of the building that give rise to that risk.





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EPB Lifecycle

IDENTIFY → VALIDATE → MITIGATE → REMOVE

Territorial authority decides if a building becomes or remains an EPB.

Different for:
- Existing EPBs
- New EPBs in coastal Otago
- New EPBs after statutory time frames.

The **owner** can provide **territorial authority** with new information impacting its identification.

Includes **High-Risk Deficiency** review. (Webinar #2)

Building owner has seismic work done to meet the *remediation requirement* (façade risk mitigation, targeted retrofit or demolition).

Territorial authority removes the building from the EPB Register and informs the **owner** that they may remove the *EPB sign*.

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Identify

All existing EPBs on 1 July 2027:	New EPBs in coastal Otago (prior to 1 July 2032):	New EPBs after statutory timeframes:

• Identify if an existing EPB is either Category A (URM) or Category B (3+ storey Heavy)
  • *All others are removed from register.*
	• Identify if building is either Category A (URM) or Category B1 (pre-76, 3+ storey Heavy)
	  • *Similar to current identify process*
		• If Category A or B1 (with HRD) was missed during statutory timeframes
		• If Category B2 building (with HRD) is brought to attention of TA
		→ *Needs MBIE approval*

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OTHER CHANGES

Exemptions and extensions

Seismic work exemptions

- Councils may consider applications for exemptions from remediation requirements
- These buildings remain EPBs and must display an EPB sign until permanent strengthening work is completed

Deadline extensions

- Councils may consider applications for deadline extensions of up to 15 years in total
- Councils may set conditions for extensions
- Councils must consider heritage status

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OTHER CHANGES

Intersections with the consent system

Change of use – s115

- Building owners applying to change the use of their **EPB will not need to complete additional structural work** beyond the EPB requirements
- 1-2 storey URMs in small towns and rural areas will not need to complete any additional structural work to undergo a change of use

Substantial alterations – s133AZG

- EPB retrofits to the minimum requirements will **no longer trigger upgrades** to meet current **fire and disability** access requirements

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Category A – Unreinforced Masonry



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Outline – URM Buildings

- Definition of Category A (URM) Building
- Definition of storeys
- Definition of urban area
- Façade Risk Mitigation
  - Façade facing *public space*
  - Façade Securing or Overhead Protection
- Targeted Retrofit (URM)

	Category A (URM)	
	1 or 2 storey	3 or more storeys
Not Urban area	Register and EPB sign	Façade risk mitigation
Urban area	Façade risk mitigation	Targeted retrofit (URM)

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Definition of Category A (URM)

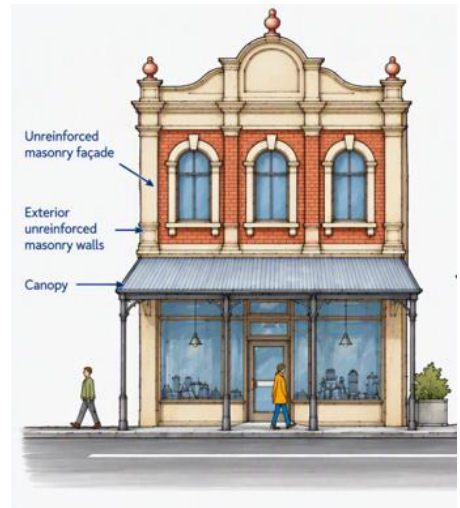
Category A (URM) must have at least one exterior wall containing URM materials.

URM materials:

- **clay brick masonry**, including single and double skin (solid and cavity) masonry
- **stone masonry**, including square-cut (ashlar) stone, rubble, or cobble masonry;
- **Unreinforced concrete block/brick masonry** (hollow or solid, grout-filled or ungrouted)

Includes:

- Masonry veneer fixed to other URM (eg cavity wall)
- Masonry contained in frame of unreinforced concrete/timber
- URM on top of veneer or frame



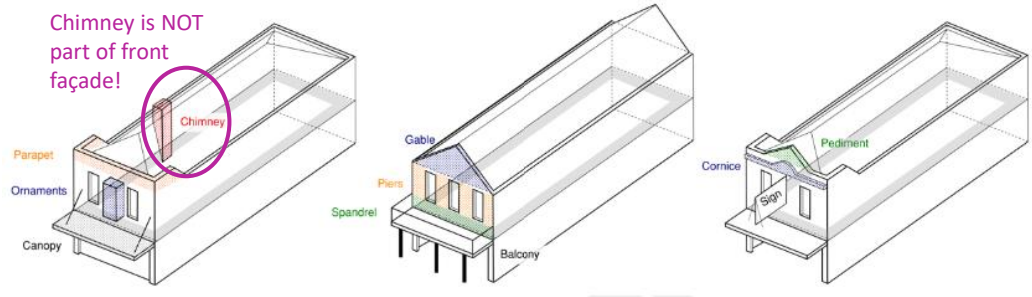
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Definition of façades

- Façade is any exterior wall of a building.

  BUT for *façade risk mitigation* - only façades facing *public space* require remediation (**more on this later!**)

- Includes façade elements (eg parapets, pediments, gables) plus other elements hung from or supported by a URM wall (such as canopies etc)

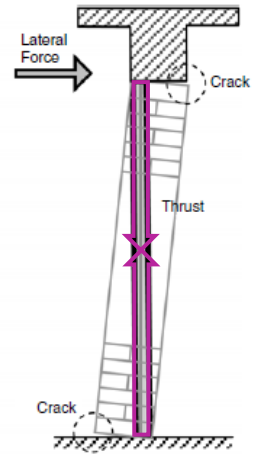


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What is NOT Category A (URM)?

- URM veneer fixed to reinforced concrete, reinforced masonry, timber, or steel framing.

- URM **bounded on all 4 sides** by and contained within a reinforced concrete or structural steel frame.
  - *Infill can have an opening less than 40% of the total area of URM and opening*.



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Examples of buildings which are not Category A URM



Reinforced Concrete frame with masonry infill is NOT Category A

BUT unbraced URM parapet on top would need to be addressed (if it faced onto *public space*!).

BUT these would be considered URM façade!





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Examples of buildings which are not Category A URM



URM party walls (or chimneys) with no URM on the facade

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Examples of buildings which are <u>not</u> Category A URM

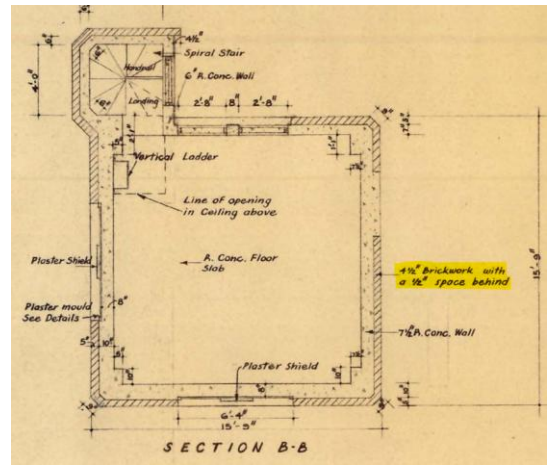


Concrete block masonry should be assumed to be reinforced (hence <u>not</u> Category A) unless there is evidence to the contrary.

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Brick veneer on concrete building is <u>not</u> Category A (URM)



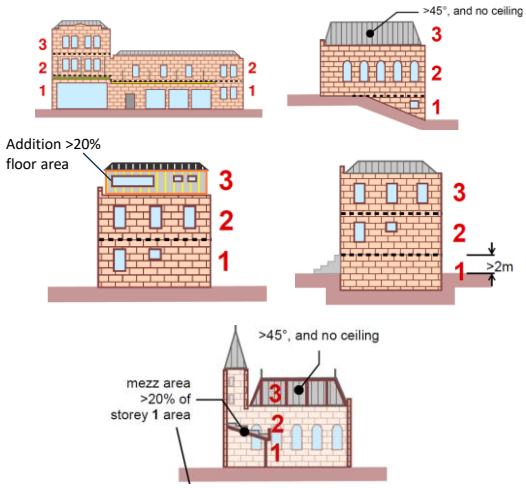


But may be a Category B building!

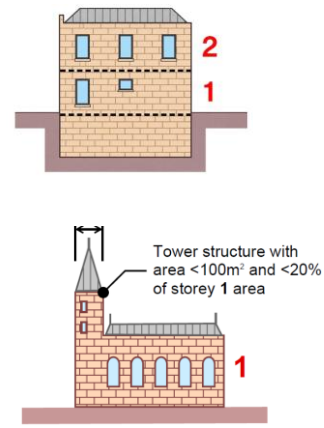
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Definition of Number of Storeys

3+ storeys



1-2 storeys



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Definition of Number of Storeys



A building with 3+ storey portion and 2 storey portion is a 3+ storey building

An additional lightweight floor (more than 100m² or 20% of plan area) is counted as a storey

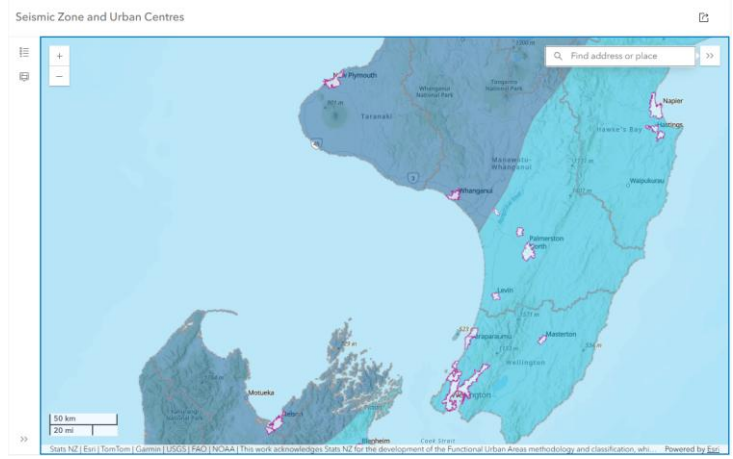


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Urban area

- Based on StatsNZ Functional Urban Areas (2021)

https://www.building.govt.nz/epbmap



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Outline – URM Buildings

- Definition of Category A (URM) Building
- Definition of storeys
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- Façade Risk Mitigation
  - Façade facing *public space*
  - Façade Securing or Overhead Protection
- Targeted Retrofit (URM)

	Category A (URM)	
	1 or 2 storey	3 or more storeys
Not Urban area	Register and EPB sign	Façade risk mitigation
Urban area	Façade risk mitigation	Targeted retrofit (URM)

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Façade risk mitigation

→ ***Not all façades require mitigation!***

- A ***façade requiring risk mitigation*** must face onto a ***public space*** with set back less than height of façade.

- If building does not have <u>any</u> *façades requiring risk mitigation*
  → ***it is not an EPB!!***

Public space: public road, footpath or other thoroughfare, or a place where people congregate

Public road	A road for vehicle traffic (including cycles) that is maintained by a **public authority**.
Footpath	A pedestrian path that is **adjacent to a public road** and/or to storefronts.
Thoroughfare	A passageway or street that **opens to roads, footpaths or places where people congregate at both ends** and is intended to provide the public with a way to get from one location to another.
Place where people congregate	(a) space intended for people to gather; or (b) otherwise **likely** to be used by people to gather on a **regular basis.**

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FAÇADE TEST

A *façade requiring risk mitigation* must pass all three tests

1	+	2	+	3
Contains URM		**Faces public space**		**Is within the setback threshold**
One or more relevant façade elements are unreinforced masonry.		The façade faces a road, footpath, other thoroughfare or place where people congregate.		Horizontal distance is less than the relevant element height above adjacent grade.

All three conditions must be met for that façade or façade element.

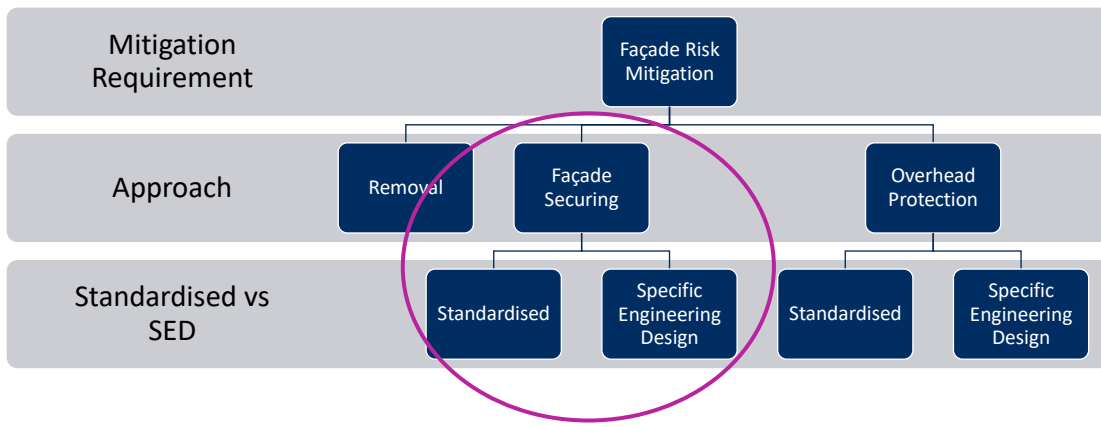
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Façade requiring risk mitigation – *examples*



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Façade Risk Mitigation Approaches



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What is Façade Securing?

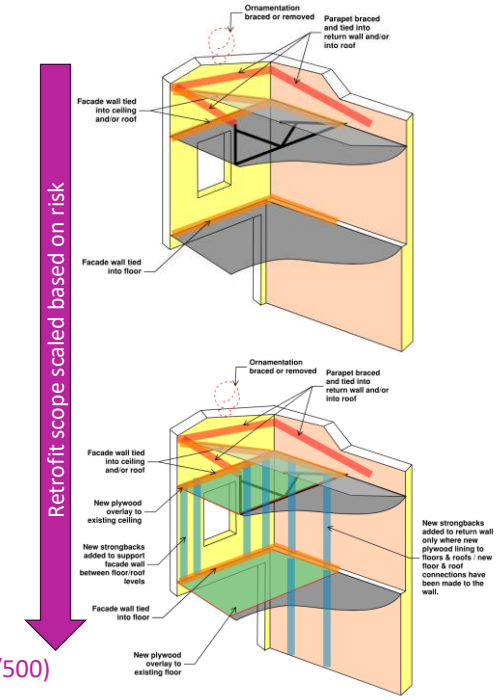
Façade securing addresses:

- **Stability** of façade elements
- **Connection** of façade to the building elements providing stability
- **Load path** from the restrained façade to the foundation
- Consider the **condition** of elements necessary for the load path (incl façade)

What earthquake level is used?

→ **1/3 of *Benchmark Seismic Hazard***

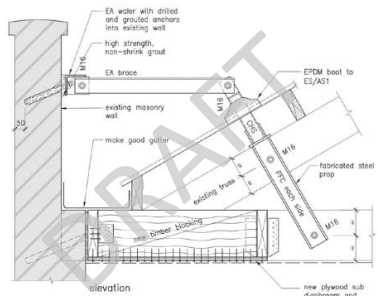
(*Benchmark Seismic Hazard* = NZS 1170.5:2004 at APoE of 1/500)

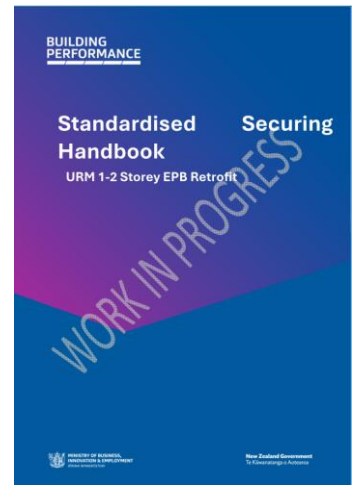


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Standardised Securing Handbook

- **In development!**
- Like NZS 3604 for Façade Securing for qualifying 1-2 storey URM
- Standardised system intended to be used by a range of suitably trained and qualified *specifiers* (not exclusively by engineers)





Consultation Q1-Q2 2027

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SED vs Standardised

- Bigger more complex buildings require SED.
- But engineers encouraged to consult the standardised details when developing SED design.
- Many standard connection conditions:
  - Floor – wall
  - Parapet restraint
  - Roof – wall for several configurations
  - Diaphragm improvement
  - Stair void details

Annex 2 - Table 5

	Building characteristics requiring *SED*:
1	3+ storeys
2	Gross Floor Area (GFA) greater than 600m^2 per floor or greater than 1000m^2
3	Span between return walls greater than 8m (high seismicity), 12m (medium seismicity)
4	Floor height greater than 4.5m or localised area of building greater than 15m^2 with a height greater than 4.5m.
5	Voids in mid floor and/or roof within 4m of the *façade* with a size greater than 15m^2 or 6m length in any one direction
6	Pitched roof greater than 45 degrees
7	When a void/window in the *façade* crosses through the floor level or roof level of the building.
8	Row buildings greater than 1 storey and where: • One or more buildings has a different number of storeys to the remainder, or; • The floor levels are at a different height (greater than 0.6m different) between the different buildings/section of buildings, or; • There are significant differences in *façade* openings between buildings
9	Buildings with two or more perpendicular *façades* requiring façade risk mitigation.
10	Significant pediments, large chimneys, unusual concentrated mass beyond those covered by the *standardised solutions* that are present within the *façade risk mitigation area*. This category applies only to items above roof level.
11	Stone rubble/cobble masonry/unreinforced concrete block masonry (not brick masonry or ashlar stone with parallel horizontal mortar beds)
12	Buildings with *URM façades* laterally supported by non-URM systems (capacity of non-URM resisting elements will need to be derived through specific engineering assessment).
13	Buildings with *URM façades* laterally supported by a concrete diaphragm

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Façade Risk Mitigation

facade risk mitigation, which mitigates the risk of injury or death posed by an earthquake causing building elements that are built of, or supported by, unreinforced masonry to fall onto an area outside the building by requiring the building's owner to carry out seismic work on or in relation to some or all of those elements:

i.e. stop masonry from falling onto *public spaces*.

→ ***Overhead Protection***

Annex 2:
Overhead protection does not aim to prevent *façade* failure or falling *façade elements*, but requires the **consequences to be substantially reduced**...

Protective structures, including enhanced existing elements, shall be designed to **arrest and contain** falling *façade elements* based on the **full unreduced fall energy** from their height on the building ... and **prevent its ejection** from the protected area.

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Façade Risk Mitigation does not address all risks!

Façade Risk Mitigation focuses on the highest risk elements only.

Façade Risk Mitigation does not require mitigation of the following:

- Full or partial building collapse.
- In-plane damage to *façade*.
- URM elements falling into non-*public space*, including neighbouring properties.
- Secondary elements (such as chimneys, parapets, partitions and veneers) except where they form part of a *façade requiring risk mitigation*.
- Any element that neither forms part of, nor supports, a *façade requiring risk mitigation*.
- Pounding effects.
- Excessive foundation deformations.

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Outline – URM Buildings

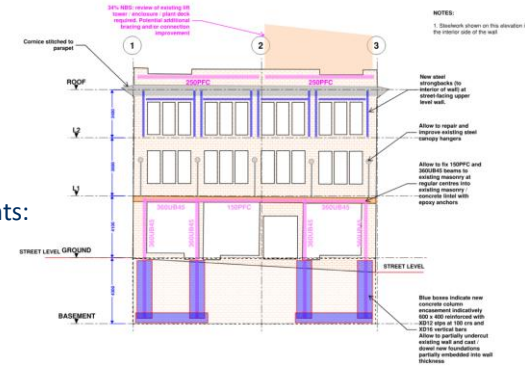
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Urban area	Façade risk mitigation	Targeted retrofit (URM)

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What is Targeted Retrofit?

Targeted retrofit for *Category A buildings* should improve the building such that there is a sufficiently **low likelihood of failure of the *LFRS* or *gravity system* leading to full or partial collapse** of the building, assessed at **1/3 of *Benchmark Seismic Hazard***.



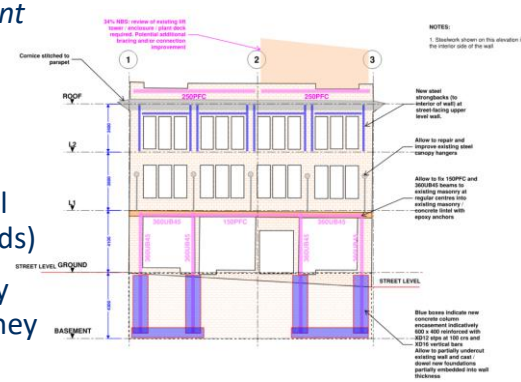
- Meet the requirements of Façade Securing
  - elements which face onto *public space* must be secured
  - elements that do not face onto *public space* (without causing building collapse) need not be secured.
- Provide adequate tying between building structural elements:
  - Improved predictability of structural behaviour in earthquake
  - Dependable complete load path for primary seismic actions
- Ensure elements of the *LFRS* and *gravity system* have sufficient strength and stability

→ **NOT** limited to *facades requiring risk mitigation*

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How Targeted Retrofit differs from a 34% retrofit

In **34% retrofit**, all elements which met the "*significant life safety hazard*" test would require improvement.



In **Targeted Retrofit**:

- Included in scope: Primary structure preventing full or partial collapse (eg loss of support to gravity loads)
- Not included in scope: Elements which do not carry gravity loads – partitions, chimneys, etc – even if they may have had score < 34%

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No seismic assessment needed to determine EPB status for URM

- EPB status determined by **building type and location**
  → *no seismic assessment needed*
- Spend **less time assessing** endlessly and move to mitigation!
- **Scope of retrofit** set by Methodology Annex 2, rather than assessment.
- **Existing retrofit** can be included in Façade Securing / Targeted Retrofit schemes, but needs to be reviewed by an engineer for effectiveness against the performance requirements in Annex 2.



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Consultation: what we need from you

REAL BUILDINGS
REAL SITUATIONS

Help us test how the methodology will work in practice.

1 Is it clear?
Can you follow the methodology and understand the role of the engineer?

2 Is it workable?
Can the requirements be applied consistently to real buildings and sites?

3 Are there gaps?
Are any building types, configurations or scenarios unclear or missing?

4 Is the scope of retrofit clear?
Does it provide enough information to support implementation of cost-effective retrofits?

Test the drafts against your experience

EPB GUIDANCE	ANNEX ONE - HRDs	ANNEX TWO - REMEDIATION REQUIREMENTS
Building classification Façade Definitions Storey Definitions Public spaces Setbacks	High-Risk Deficiencies Definitions Component Vulnerabilities Configurational Vulnerabilities Severe Physical Consequence Test	Retrofit scope Façade Risk Mitigation Targeted Retrofit (URM) Targeted Retrofit (Heavy)

BRING US THE DIFFICULT EXAMPLES — **Tell us what is unclear, what scenario causes the difficulty, and what would make the methodology easier to apply consistently.**

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Consultation: what we need from you

How to make a submission

How to provide feedback on the Earthquake-prone buildings methodology guidance

All interested parties are invited to provide feedback on any part of the proposed EPB methodology and guidance using the submission form below and email it to building@mbie.govt.nz by Friday 4 December at 5pm.

Submission form - EPB Legislation and Methodology and Guidance Consultation [DOCX, 179KB]

How to provide feedback on the Earthquake-prone buildings technical annexes

While the EPB annexes are mostly intended to support engineers with providing advice and designing solutions for earthquake-prone buildings, all interested parties are invited to provide feedback on any part of the proposed annexes and the high-risk deficiencies (HRD) review template. Submitters may either use the submission form below for general feedback, or download the spreadsheet to provide more detailed and specific technical feedback, and email it to building@mbie.govt.nz by Friday 4 December at 5pm.

Submission form - EPB Annexes Consultation [DOCX, 172KB]

EPB Annexes Consultation Feedback Spreadsheet [XLSX, 12KB]



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Additional Engineering Documents

Incorporated by reference in Methodology Annex

- Seismic Assessment Guidelines **Consultation in Q1-Q2 2027**
  - Used within HRD review and retrofit design
- Standardised Securing Handbook **Consultation in Q1-Q2 2027**
  - Used for Standardised Securing of 1-2 storey URM

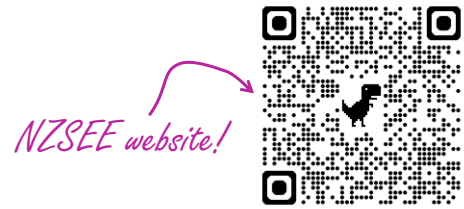
Guidance Documents

- Retrofit Guidance and Case Studies
  - Section 112 and 115 retrofit guidance
  - SED guidance for Façade Risk Mitigation and Targeted Retrofit
  - EPB retrofit case studies
- Retrofit Techniques for Concrete Buildings (to be published by BRiDGE)

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Questions and Reminders

- Engineers Webinar Part 2 – Heavy (concrete) Buildings
  - 11am Thursday
- Upcoming in-person seminars:
  - Wellington – 11 Nov
  - Dunedin – 18 Nov
  - Christchurch – 19 Nov
- NZSEE developing FAQs
- Submit comments by 4 Dec!
  - building@mbie.govt.nz
  - NZSEE/SESOC/NZGS also helping to coordinate feedback



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