BUILDING PERFORMANCE

EVIDENCE & INSIGHTS

Early insights – Initial Evaluation of the Earthquake-prone Building System

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MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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New Zealand Government

Use of this report

Readers should always refer to subpart 6A of Part 2 of the Building Act 2004 (special provisions for earthquake-prone buildings), the earthquake-prone building guidance, methodology and register as well as education and training provided on the **building.govt.nz** website.

Questions about this report and management of earthquake-prone buildings can be sent to **2020_EPB_TA_monitoring@mbie.govt.nz**

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Glossary of terms

Acronym	Meaning
BCA	Building Consent Authority (Council or private organisation carrying out building consent functions)
CBA	Cost-Benefit Analysis
EPB	Earthquake-prone building
FTE	Full-Time Equivalent (staff)
MBIE	Ministry of Business Innovation and Employment
per cent NBS	The rating given to a building as a whole, expressed as a percent of New Building Standard (NBS) achieved relative to the minimum Building Code, for a new building on the same site with respect to life safety
Register	National online register of EPBs
TA	Territorial Authority, local council carrying out a range of local government functions
URM	Unreinforced masonry (building), e.g. typically pre-1935 brick or concrete buildings
URM securing programme	URM Order and URM Fund 2017 – 2019 in response to the Kaikōura earthquake

Executive Summary

The Ministry of Business Innovation and Employment (MBIE) undertook an evaluation of the policy design, implementation and early outcomes of the national Earthquake-prone Buildings (EPB) system

In 2019 MBIE began a comprehensive evaluation of the new national EPB system that was introduced in 2017, replacing a previous decentralised system of managing earthquake-prone buildings. The EPB system regulates mainly pre-1976 non-residential buildings, about a quarter of which are also heritage buildings. It includes a national online EPB register, national EPB methodology, and regular reporting of progress against statutory timeframes by Territorial Authorities (TAs).

This evaluation fieldwork was conducted 18 months into the EPB system's 50+ year regulatory timeframe to remediate an estimated 10,000 high risk EPBs across New Zealand. As such, this evaluation presents early insights, intended to increase awareness and identify areas for learning for a wide range of stakeholders.

Evidence sources include desktop research and analysis of policy and other documents, 35 stakeholder interviews and three surveys. The evaluation assesses the policy design, implementation, and outcomes of the EPB system, using the success criteria of national consistency, fairness and proportionality, and efficiency and effectiveness.

The policy design of the EPB system is rated *good* overall

Overall, the EPB system is working well. At this early stage there is evidence demonstrating multiple benefits in its policy design, and MBIE and Territorial Authorities are implementing it adequately. While areas for improvement have been identified, there are no critical or widespread weaknesses requiring urgent or significant action.

Figure 1: *Is the EPB* ***policy design*** *working as intended?*

Evaluative criteria	**OVERALL RATING**	**National consistency**	**Fairness and proportionality**	**Efficiency and effectiveness**
Assessment for policy design	**GOOD**	Excellent	Adequate	Good

Figure 1 summarises the assessment of the EPB policy design against the three success criteria. Overall, the evidence indicates the policy design and its implementation for the EPB system was *good*.

The shift to nationally consistent requirements is rated *excellent*, and the timeframes to identify and remediate EPBs by three seismic risk areas generally has stakeholder buy-in.

THERE IS BROAD SUPPORT FOR THE EPB POLICY, WHICH IS CONSIDERED AN IMPROVEMENT OVER THE PREVIOUS SYSTEM

The national EPB system is working predominantly as intended, and is demonstrating multiple benefits and improvements over the previous system that was managed by TAs prior to 2017. Most respondents in the public survey carried out for the evaluation (79 per cent) are aware there are regulations to identify and manage EPBs.

Conversely, there are minor tensions of interpretation, such as how the EPB system aligns with workplace health and safety legislation. The public may perceive that the regulatory scope is much wider, given that media coverage can confuse EPB status under the legislation with other buildings that owners choose to close or upgrade for reasons outside of the legal requirements of the EPB system.

THE EPB POLICY ADEQUATELY BALANCES THE TRADE-OFFS BETWEEN LIFE SAFETY, HERITAGE AND COST

Evidence indicates an area of challenge in the EPB policy relates to the fairness and proportionality of the EPB system. It is rated *adequate* for its balancing of the complex trade-offs between life safety, heritage (culture and community identity), and remediation costs. The public survey reveals split views on whether the EPB policy balances the cost to strengthen EPBs and the benefit to public safety: 34 per cent agree the policy balances these factors well, 31 per cent are neutral, and 20 per cent disagree.

EARLY EVIDENCE SUGGESTS THE EPB POLICY COULD PRESENT AFFORDABILITY ISSUES THAT HAVE DISPROPORTIONATELY NEGATIVE IMPACTS FOR SOME BUILDING OWNERS

Early anecdotal evidence suggests the EPB policy could have disproportionately negative impacts for some building owners, in particular provincial and residential multi-unit building owners. The evaluation finds different types of building owners have varying degrees of knowledge, capability, incentive and capacity to afford costs of meeting the EPB requirements.

There was widespread concern from stakeholders around the financial impact on EPB owners to pay for remediation. Some stakeholders questioned the requirement on building owners to pay for remediation, given the perceived mix of public and private benefits to mitigating the risk to life safety in future seismic events. However, this is not a new responsibility, as there have been longstanding obligations on building owners to remediate dangerous buildings to ensure safety and reduce the risk of harm to others.

The government has responded quickly with targeted amendments to regulations for low-value provincial buildings, and by establishing the Residential Earthquake-prone Building Financial Assistance Scheme for residential multi-unit owners who are in financial hardship. Some stakeholders have indicated these interventions are insufficient to fully resolve the underlying concerns of the affordability of seismically strengthening their buildings or their views on proportionate public-private allocation of risk and cost.

While there is some difficulty predicting the remediation costs at this early stage of the system, early evidence indicates the estimated costs of remediating through seismically strengthening earthquake-prone buildings may not be economically feasible for many owners. Remediation costs may be higher than the initial policy projections. One factor contributing to increased costs cited by stakeholders was the choice to remediate above the minimum regulatory threshold.

EVIDENCE SUGGESTS THAT THE MARKET EXPECTS HIGHER NBS RATING THAN THE MINIMUM LIFE SAFETY STANDARD REQUIRED BY EPB POLICY

Compounding the challenges of achieving a balance between risk, life safety and cost, have been several significant earthquakes in the past decade. Following the Kaikōura earthquake in 2016, there has been a significant shift in the public's risk awareness and safety expectations, and standards set out by banks and insurers. This shift includes increased expectations of both the range of buildings that should be assessed, and the standard to which they should be remediated. For example, since 2017, 87 per cent of buildings strengthened in Wellington have been above the EPB system's minimum standard.[1]

The shift in expectations goes beyond the EPB system's focus on managing risks to human life, to include building resilience. This shift in expectations, while not caused by the EPB system, is having downstream impacts on EPBs in terms of the market value, demand for (and cost of) engineering assessments, tighter eligibility rules for insurance and lending, and surges in insurance and remediation costs.

While this shift in market expectations is likely to affect the cost of remediation, there are obvious benefits too: a more informed market, and higher-quality and more resilient buildings.

Implementation of the EPB system is rated *adequate*

Overall, the evidence indicates the implementation of the EPB system is *adequate.* Evidence indicates the EPB system is reasonably workable and easy to implement, with a particular strength around its national consistency, which is rated *good*, i.e. it has improved clarity of roles, and certainty of national timeframes, processes, and the EPB methodology.

Figure 2: *Is the* ***implementation*** *of the EPB system working as intended?*

Evaluative criteria	**OVERALL RATING**	**National consistency**	**Fairness and proportionality**	**Efficiency and effectiveness**
Assessment for implementation	**ADEQUATE**	Good	Adequate	Adequate

The evaluation identified a number of issues during the initial implementation phase:

- Mixed feedback from stakeholders, and limited public confidence around how well (27 per cent agreement), or how timely (23 per cent agreement), central and local government are managing EPBs.
- Teething issues with regulators' engagement with building owners or each other, information sharing, using the online EPB register or Territorial Authority (TA) monitoring tools, and engineers following the EPB methodology as intended.
- Variable capacity and capability across TAs, some smaller or provincial TAs have limited resources (most have less than one FTE).

The Kaikōura earthquake occurred just months before the EPB system came into force in July 2017. Until this point the EPB systems' initial operationalisation had been on-track. However, addressing the earthquake's damage, including managing the subsequent URM securing programme, diverted resources and attention from preparing for EPB implementation at a critical time for MBIE and the five affected TAs.

This interruption is a factor to consider in relation to stakeholders' most commonly cited area of suggested improvement: to take a more people-centred approach and provide more (and more user-friendly) information, support and engagement – particularly for smaller TAs and vulnerable EPB owners that have limited resources, knowledge or access to expertise.

1 Data provided by Wellington City Council staff, November 2020.

It is too early to assess most outcomes from the EPB system, although there are some early signs of improved understanding and awareness

This evaluation assessed the first 18 months of the 50+ year timeframe for the EPB system. As a result outcomes from the EPB system are rated as *too early to tell*. In the short-term, how, there are some early signs of improved awareness of the EPB system by TAs and the general public.

Figure 3: *Are the* ***outcomes*** *emerging as expected?*

Evaluative criteria	OVERALL RATING	National consistency	Fairness and proportionality	Efficiency and effectiveness
Assessment for policy design	TOO EARLY TO TELL	Too early to tell	Too early to tell	Not applicable
		There may be poor outcomes for some building owners		

The evaluation found relatively high levels of use of the EPB register and online resources (about 5,000 web hits per month). However, while awareness is high, there is room for improvement in understanding of how EPBs are managed. For example, only 43 per cent of the general public surveyed understood how buildings are rated for earthquake safety. Although it is too early to know if EPB information is translating into effective decision-making for building owners, a positive outcome so far is improved proactive engagement between TAs and building owners.

National consistency of outcomes is likely to be positive as more buildings are remediated through seismic strengthening or demolition. There are some early indications that outcomes could be *poor* for some groups, particularly around the affordability and feasibility of seismic strengthening for some building owners.

1. Introduction

The Earthquake-prone Building System

Following the devastation and life lost in the 2011 Canterbury earthquakes, the government initiated the Canterbury Earthquake Royal Commission of Inquiry (the Royal Commission) to report on the causes of building failure due to the earthquakes. The Royal Commission's report identified key issues with the way earthquake-prone buildings were being managed, including:

- poor understanding of the risks posed by earthquake-prone buildings;
- too much variability in approaches across territorial authorities to implementing policy requirements;
- decision-making being difficult for territorial authorities, building owners and building users as information on building strength was not widely available or easy to find and use;
- poor quality information on New Zealand's building stock, the number and location of earthquake-prone buildings and the strength of individual buildings; and
- a lack of central guidance, and limited central monitoring and oversight of the sector.

To address these issues the Royal Commission recommended changes to the legislation, policies, and practices underpinning how New Zealand addresses the issue of earthquake-prone buildings, to better manage risk to life safety. Major changes were made to the legislative framework defining how earthquake-prone buildings are identified and managed.

The Building (Earthquake-prone Buildings) Amendment Act 2016 (the Amendment Act) made substantial changes to how earthquake-prone buildings are identified and managed in New Zealand. The new earthquake-prone building system came into effect on 1 July 2017. It is a long-lived system that will take 50 years to complete. The key elements of the system:

- require a consistent approach to identifying and managing earthquake-prone buildings across the country and a focus on buildings that present the most risk to life safety;
- categorise New Zealand into three seismic risk areas (high, medium, low), with set timeframes for identifying and taking action to strengthen or demolish earthquake-prone buildings; and
- provide more information for people using buildings, such as nationally consistent earthquake-prone building notices with ratings for earthquake-prone buildings and a publicly available earthquake-prone buildings register (via the Earthquake-prone Building Register).

The system also prioritises identifying and remediating earthquake-prone buildings that are considered higher risk due to location and/or use and sets shorter timeframes for remediation. Priority buildings are earthquake-prone buildings in high and medium seismic risk areas (such as Wellington) that are considered to present a higher risk of being earthquake-prone due to their construction, type, use or location (for example, hospitals, schools and buildings along critical transport routes).

The objective of the EPB policy is to adequately balance life safety in a proportionate balance between protecting people from harm, retaining heritage, and the costs of remediating EPBs.[2]

2 MBIE (2013) Improving the System for Managing Earthquake-Prone Buildings, page 12, at https://www.mbie.govt.nz/dmsdocument/78-epb-policy-ris-pdf

The EPB system includes clearly legislated roles for TAs, engineers and building owners:

1. TAs identify potential EPBs in their district.
2. Building owners who are notified by their TA must obtain engineering assessments of the building carried out by suitably qualified engineers, within set timeframes.
3. TAs determine whether buildings are earthquake prone, assign ratings, issue notices and publish information about the buildings in a public EPB register (online).
4. Building owners are required to display notices on their building and to remediate their building.

The Building Act 2004 divides New Zealand geographically into three seismic risk areas – high, medium, and low risk. The broad timeframes for key EPB activities, based on these seismic risk areas, between 2020 and 2068 are outlined below.[3]

Table 1: *Table of EPB system timeframes (2020–2068)*

Key EPB activities	High seismic risk area		Medium seismic risk area		Low seismic risk area
	Priority	Non-priority	Priority	Non-priority	All
Identify buildings by (2020 – 2032)	Jan 2020	2022	2022	2027	2032
Remediate or demolish buildings (2028 – 2068)	+ 7.5 years (up to 2028)	+ 15 years (up to 2037)	+ 12.5 years (up to 2035)	+ 25 years (up to 2052)	+ 35 years (up to 2068)

This report shares the findings of an evaluation of the EPB system, which came into effect from 1 July 2017. The evaluation fieldwork and analysis was conducted by the Ministry of Business Innovation and Employment (MBIE) between August 2019 and November 2020.

3 Building (Earthquake-prone Buildings) Amendment Act 2016. The dates are approximate and do not include potential extensions in some circumstances. By seismic risk area there are 38 TAs (high), 32 (medium) and 15 (low) (9 TAs are across high/medium areas; 6 TAs are across medium/low areas; and 1 TA is across all three risk areas).

1.1 The objectives of this evaluation are to provide early insights, increase awareness, and identify areas for learning

MBIE's role as the regulatory steward significantly increased when the new EPB system came into effect.[4] MBIE is accountable for:

- articulating what the EPB system is trying to achieve;
- providing accessible, timely information and support to help regulated parties understand and meet their regulatory obligations;
- managing the various costs, risks and other impacts it may impose;
- monitoring and evaluating performance; and
- acting to improve its design or operation where appropriate.[5]

MBIE is applying its stewardship role over the EPB system, by evaluating the system and identifying any areas for improvement early.

The objectives of the evaluation are to provide early insights, and:

- review how well the EPB system is working, and how MBIE and Territorial Authorities (TAs) are performing at this early stage;
- identify areas to learn, collaborate and improve on;
- build public awareness and understanding about how New Zealand is addressing EPB risks to life safety;
- enhance relationships between the government, TAs, the building sector and the general public; and
- create a baseline, or benchmark, for future monitoring and evaluation to compare against.

The evaluation findings will be relevant to Ministers and government agencies, TAs and MBIE as the regulatory agencies responsible for managing EPBs, engineers, building practitioners, earthquake-prone building owners, and the insurance and banking sectors.

1.2 The evaluation report is structured around three main questions, with success criteria and a systems change lens

The evaluation report is structured around three main questions:

1. To what extent is the EPB **policy design** working as intended?
2. To what extent is the EPB system being **implemented** efficiently and as intended?
3. To what extent are the **outcomes** emerging as expected; or differ for particular groups?

These three evaluation questions guided the evaluation and set out the high-level questions about how well the EPB system is functioning against a set of explicit success criteria. The three evaluative success criteria to help answer each evaluation question, are:

1. NATIONAL CONSISTENCY

- Nationally consistent
  - EPB policy design supports consistency across territorial authorities
  - Consistent implementation with the Amendment Act
- Interfaces well with other legislation
  - Relationships with other legislation are clear and appropriate
  - Any potential conflict between legislative frameworks is managed.

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4 Office of the Minister for Building and Housing (2015) *Additional Decisions to Improve the System for Managing Earthquake-Prone Buildings: Cabinet Paper*, page 1.

5 Section 11 of the Building Act 2004 sets out MBIE's role in relation to its stewardship of the building system, including the EPB system. It reflects Cabinet's initial expectations for Regulatory Stewardship (March 2013), cited in Ayto, J. (2014) "Why Departments Need to be Regulatory Stewards", *Policy Quarterly – Volume 10, Issue 4 – November 2014, 23 – 27.*

2. EFFICIENCY AND EFFECTIVE IMPLEMENTATION

- Workable and easy to implement
  - Efficient TA processes
  - Administration and compliance costs are minimal
  - Cost-efficient and effective regulation oversight
  - Promotes user satisfaction and confidence
- Clear requirements and information
  - Roles, responsibilities and obligations are clearly understood and consistently applied
  - Powers and requirements are clear and transparent
  - Provides affected stakeholders with access to clear, user-friendly information and guidance
  - Promotes increased knowledge and understanding (technical/engineering, regulatory, personal/building, and social)
  - Supports good decision making with the best available information, responsive to changing situations and needs.

3. PROPORTIONALITY AND FAIRNESS

- Aligns with societal expectations
  - Responsive to level of public concern about and acceptance of risks with EPBs
  - Strikes an appropriate balance between economic and social costs (e.g. imposing seismic remediation costs onto building owners vs willingness to pay to mitigate risks for life safety)
  - Acknowledges value of heritage buildings to community's sense of place
- Promotes equity and fairness
  - Strikes an appropriate balance between national/regional consistency and impartiality, and targeting and staggered implementation by levels of risk, and local or individual context and need
- Responsive to individual property interests and rights
  - Personal and property rights are impacted only to the degree necessary to achieve life safety objectives.

1.3 The evaluation was carried out using mixed methods and a range of evidence

The evaluation was carried out by MBIE's Evidence and Insights team between August 2019 and November 2020. The scope is the EPB system's design and implementation under the Building (Earthquake-prone Buildings) Amendment Act 2016, and associated Regulations.

The evaluation used a broad range of evidence, drawing on stakeholder interviews with 35 individuals or group representatives, several online surveys, and an analysis of costs and administrative data.

Stakeholder groups interviewed for this evaluation include:

- MBIE policy and implementation staff
- Territorial Authority staff
- building owners and representatives
- engineers
- heritage building representatives
- other industry representatives.

The following online surveys were conducted during this evaluation:

- Survey of the general public: focused on levels of awareness and understanding of the EPB system, and attitudes to earthquake-prone buildings and remediation.
- Survey of TAs: focused on levels of awareness and understanding of the EPB system, including a focus on TAs' role in implementation and their experiences and views of the policy design and implementation.
- Survey of users of the online EPB register: focused on their experience and satisfaction with the online register.

See Appendix 2 for further details about the scope and methodology, which will be repeatable in future monitoring and evaluation work.

The MBIE evaluation team made the evaluative judgments in this report, assessing evidence against the evaluative success criteria, and applying the rating scale set out in Appendix 1.

2. Finding #1: The EPB policy design is rated good overall and is working predominantly as intended

Based on evidence from interviews and surveys of stakeholders across the sector, and a review of key documents, the EPB system's policy design and policy development has been rated as *good*. Its nationally consistent requirements are rated *excellent*, and its fairness and proportionality is rated *adequate* for its balancing of the complex trade-offs between life safety, heritage (culture and community identity), and remediation costs.

Figure 4: *Is the EPB* ***policy design*** *working as intended?*

Evaluative criteria	**OVERALL RATING**	**National consistency**	**Fairness and proportionality**	**Efficiency and effectiveness**
Assessment for policy design	**GOOD**	Excellent	Adequate	Good

KEY INSIGHTS

- The EPB system policy design and implementation is generally well regarded.
- The majority of the public surveyed are aware of the EPB system, and think about what would happen if there was an earthquake in their area.
- MBIE oversaw an exemplary, transparent policy development and consultation process over five years, including appropriate working groups of experts and stakeholders.
- The general public have some concern about the balance between heritage value, safety, and cost. This could indicate a lack of awareness that heritage value is supported through the EPB system via the Heritage EQUIP scheme and extensions available to heritage building owners.
- There appears to be an expectation from EPB owners that the minimum life safety standard would be aligned with bank and insurance requirements. Banks and insurance companies are requiring a higher standard of 'buildings resilience', which typically is more expensive.
- There is a misconception that the obligation for building owners to finance remediation of earthquake-prone buildings is a new responsibility. There are longstanding obligations on building owners to remediate unsafe buildings to reduce the risk of harm to others.
- There are different challenges faced by building owners in urban and rural areas. This may require more tailored information and support for specific types of building owners, depending on the challenges they face to comply with the EPB system.
- The majority of residential EPB owners want to do the right thing, but some lack the skills required to navigate the EPB system.
- Remediation through seismic strengthening appears to be the preferred option for residential earthquake-prone building owners, however some are discovering seismic strengthening is not economically feasible, and this can stall their remediation progress.
- Other remediation pathway options such, as demolition or on-sale for redevelopment, are not considered viable options by some EPB owners.
- There could be opportunities to pool resources, enabling individual building owners to benefit from economies of scale, particularly at the TA level and when EPBs are clustered closely together.

2.1 The 2017 EPB policy has multiple benefits and improvements over the previous system

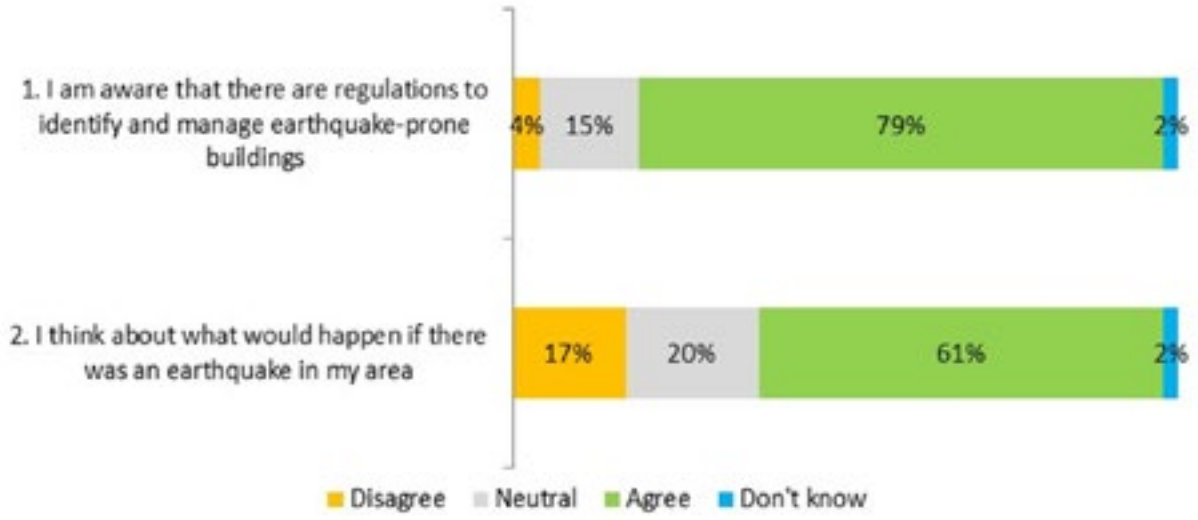
People expect that the buildings they live and work in are safe and well-built, and this is a key objective of the building regulatory system that the EPB system is part of. The EPB policy is preventive and is focused on remediating buildings that are considered earthquake-prone to mitigate the risk to life safety, before the next significant earthquake occurs.

Multiple interviewees cited the benefits of the 2017 EPB system including (in descending order of frequency):

- national consistency
- momentum for action by all TAs, including previously 'passive' TAs
- increased authority for TAs, and a greater role by central government
- improved information, clarity and transparency for building owners and the public, e.g. the visibility of a national online EPB register.

The EPB Social Survey surveyed 1,100 respondents from the public (see Appendix 2). It found that 79 per cent are aware of regulations to identify and manage EPBs; and 61 per cent think about what would happen if there was an earthquake in their area.

Figure 5: *Level of public awareness and agreement about EPB regulations and management (n=1100)*



2.2 The EPB policy design is rated *excellent* for national consistency

Based on evidence from interviews, surveys, and a review of documents, the 2017 EPB system policy design has been rated as *excellent* for achieving the success criterion of *national consistency*. Evidence demonstrates it provides a suite of centralised, national definitions, standards, and processes for assessing and remediating EPBs.

Many considered the policy has a coherent logic around the overarching principle of achieving life safety in the event of a significant earthquake. The EPB system is designed to respond to risk, with timeframes for identifying and taking action to strengthen or remove earthquake-prone buildings categorised based on the seismic risk.

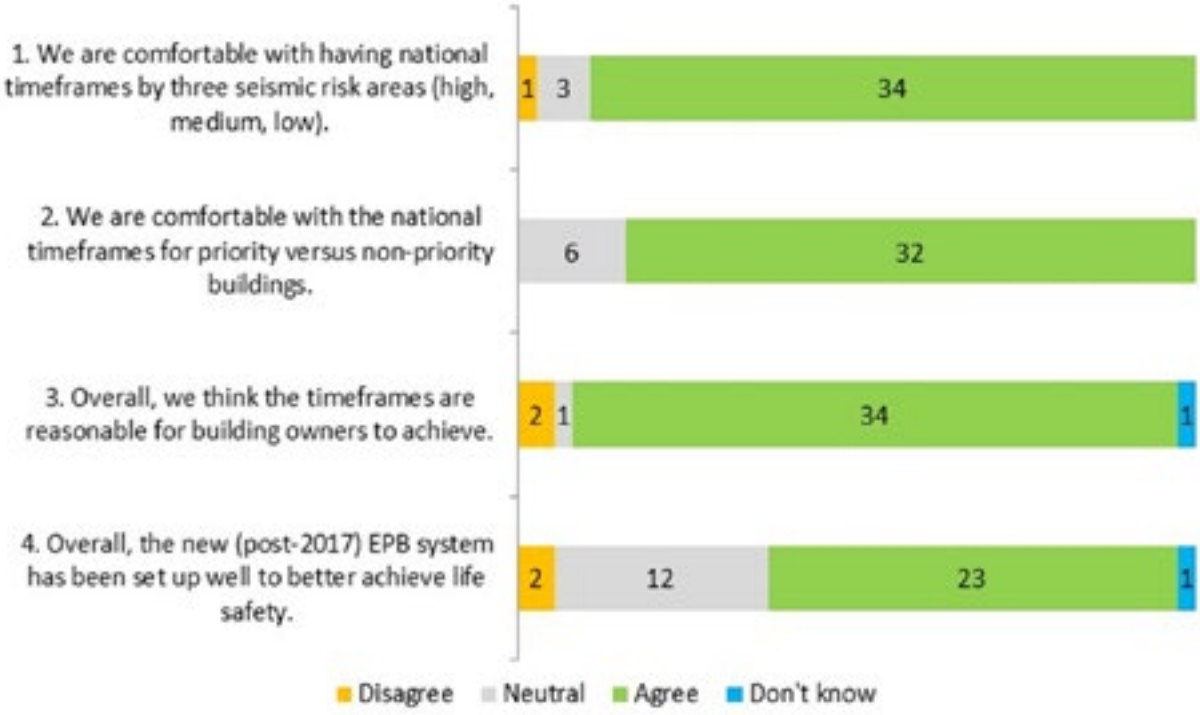
> The value of a life is the same on the main street of a big city as a small provincial town. – *Interviewee*

All TAs, engineers, and building practitioners must follow the EPB methodology and standards across New Zealand. The national online EPB register of buildings provides consistent, quality information for EPBs across the country, and is accessible to the general public. Timeframes for identification and remediation of earthquake-prone buildings are set nationally based on seismic risk areas.

All stakeholder groups gave the EPB policy design an average score of 4 out of 5. The second survey carried out for the evaluation, the EPB Survey of TA staff, similarly shows very high agreement with the EPB policy's national timeframes and three seismic risk areas (see Figure 6). Over half (23 out of 38) agreed the new EPB system has been set up well to better achieve life safety (with a further 12 being neutral).

> We think the methodology is great because it provides a really good measure for engineers to work against. – *TA interviewee*

Figure 6: *TA level of agreement about the setup of the new system for managing EPBs (n=38)*



Most interviewees appreciate the increased clarity and consistency of definitions and roles. However, some TAs seek further clarification around some areas of policy that are left open to interpretation, such as 'as near as reasonably practicable' for substantial alterations or changing the use of buildings subject to an EPB notice; and how future compliance and enforcement functions will be interpreted and work in practice (particularly for smaller TAs).

2.2.1 MOST CONSIDER THE NATIONAL EPB TIMEFRAMES ARE REASONABLE, THOUGH THE 2017-18 URM SECURING PROGRAMME CREATED TIME AND RESOURCE PRESSURES

Most interviewees agreed that the national EPB timeframes are reasonable, although a minority consider the timeframes are too short. These respondents were primarily concerned with the first EPB timeframe of January 2020 to identify priority buildings in high seismic risk areas.

There was concern about the impact of the 2016 Kaikōura earthquake on the ability of affected TAs to meet timeframes. In addition to new obligations under the new EPB system to meet the first statutory deadline of January 2020, four TAs also faced significant disruption, additional obligations, commitment of resources and work to implement the government's Unreinforced Masonry (URM) securing programme, 2017 – 2020.[6]

6 The URM Securing Fund programme was implemented in February 2017 – September 2018 under the Hurunui/Kaikōura Earthquakes Recovery (Unreinforced Masonry Buildings) Order 2017. It affected Wellington, Hutt City, Hurunui and Marlborough TAs, and required the four TAs to urgently identify and direct the securing of URM parapets and facades on high traffic routes: www.mbie.govt.nz/building-and-energy/

Despite this, by 2020 all priority buildings in high seismic risk areas were identified with all but two TAs meeting the 1 January 2020 timeframe under the EPB system. The next deadline for TAs in high seismic areas is to identify an estimated 1,285 non-priority buildings by 1 July 2022.[7] In contrast, some interviewees felt that some of the national timeframes are too long, noting 'low risk' is not the same as 'no risk'. Low seismic risk areas like Dunedin and Auckland are not required to identify EPBs until 2032 and owners have 35 years (until 2067) to remediate their buildings.

Building owners interviewed are less concerned about the specific timeframes than the fact that they now have a responsibility that they feel did not previously exist. However, there are longstanding obligations on building owners to remediate unsafe buildings to reduce the risk of harm to others.[8] Other interviewees such as TAs and engineers consider this new clarity of building owners' accountability a benefit of the new policy, and a timely wake-up call for building owners.

2.2.2 MOST RESPONDENTS FELT THE EPB POLICY ALIGNED WELL WITH OTHER LEGISLATION

Most interview respondents indicated that the EPB policy generally aligns well with other legislation and TA obligations. Around half of surveyed TAs (18 out of 38) agree that it aligns comfortably with legal health and safety obligations, a further 18 TAs were *neutral* or *didn't know*.

Some interview respondents discussed inconsistency in advice and practice between EPB policy, WorkSafe policy, and Government Procurement and Property (NZGPP) advice - stating many property lessors including government departments, are only willing to lease buildings that are 67 per cent - 80 per cent+ NBS. This creates perceptions of government double standards or not 'walking the talk'.

In reality, public and private sector tenants need buildings to meet their business needs and likely will have requirements over and above the life safety minimum standard, such as business continuity in the wake of an earthquake.

WorkSafe have clarified that if a 'person conducting a business or undertaking' owns or occupies an earthquake-prone building and they meet the earthquake performance requirements of the Building Act 2004, WorkSafe is not going to enforce to a higher standard under Health and Safety at Work Act 2015.

However, if the Building Act 2004 is breached, i.e. if a building owner fails to remediate their earthquake-prone building on time and someone is harmed, WorkSafe New Zealand may intervene under Health and Safety at Work Act 2015.[9]

2.2.3 MANY BELIEVE THE EPB SYSTEM WILL (OR SHOULD) ADOPT HIGHER ENGINEERING STANDARDS FOR EPBS

Setting definitions, standards and assessment guidelines for the seismic performance of buildings is complex and requires specialist engineering skill. Contrary to common shorthand references to New Building Standard (NBS) percentage ratings (e.g. the regulated minimum 34 per cent NBS) it requires nuanced assessment.

> Buildings are complex. Engineers can be competent but still reach different decisions, based on the assumptions they make about what they can't see behind the walls. It's not realistic to think prescriptive rules will produce totally consistent engineering assessments /results. – *Engineer interviewee*

building/investigations-and-reviews-for-safer-buildings/securing-unreinforced-masonry-building-parapets-and-facades/

7 MBIE Report on Progress toward identifying potentially earthquake-prone buildings 2020 March 2021: https://www.building.govt.nz/assets/Uploads/managing-buildings/earthquake-prone-buildings/progress-toward-identifying-potentially-earthquake-prone-buildings-2020.pdf

8 In 1968 local councils were empowered to intervene if they deemed a building likely to be dangerous in an earthquake. Councils could notify and require building owners to remove or remediate this danger (to the council's satisfaction and the owner's expense) within a specific timeframe.

9 https://www.worksafe.govt.nz/laws-and-regulations/operational-policy-framework/operational-policies/dealing-with-earthquake-related/#:~:text=While%20the%20risk%20of%20harm,re%20addressing%20the%20seismic%20risk.

Some interviewees advocate for, or consider it inevitable, that the minimum EPB standard will increase over time above the current minimum 34 per cent NBS (building standards as at 2017). For example, following the 2016 Kaikōura earthquake new information on how concrete buildings behave in earthquakes was discovered. Many engineers believe the EBP methodology should be updated to reflect the latest engineering knowledge by including the C5 or 'Yellow Chapter'.[10]

Some engineers and TAs interviewed, said they are already applying this new knowledge when assessing if buildings are earthquake-prone. There was also widespread market demand for engineering assessments for modern concrete buildings in the wake of the Kaikōura earthquake. These TAs and engineers advocate for the updated C5 standard to be confirmed as part of the 2017 EPB policy sooner rather than later.

This contrasts with advice from Engineering NZ and MBIE to *not* use the provisionally updated version for assessments required under the EPB policy until a robust review process is completed to consider if it is confirmed as a requirement in the statutory EPB methodology.[11]

2.2.4 THERE WAS NO CONSENSUS FROM STAKEHOLDER GROUPS ABOUT THE RELATIVE IMPORTANCE OF HERITAGE, SAFETY, AND COST

Analysis of over 500 comments in the EPB-Social survey confirms an inherent tension between the balance of heritage, safety and costs. Typical survey participant comments include:

> The buildings must be demolished or brought up to code immediately, regardless of cost or heritage status. Life is more important than history or money.

> If they are heritage buildings they need strengthening – they should be invested in, not pulled down.

> The cost of earthquake proofing in a lot of cases outweighs the value, either financial or historical. Put sentiment aside and be practical.

Evidence indicates that the heritage status of buildings creates difficult trade-offs between life safety, economic costs, and preserving cultural heritage and identity. Just over half of the EPB-Social Survey participants (54 per cent) agree that it is important to save heritage buildings, even if they pose an earthquake risk, because of their value to the culture and identity of a community. There was a similar result for TA survey participants (20 of 38).

Evidence clearly indicates concern about how heritage value, safety, and costs are balanced. However, the EPB system acknowledges the importance of heritage buildings, and Heritage EQUIP and extensions for heritage building remediation timeframes were established.[12]

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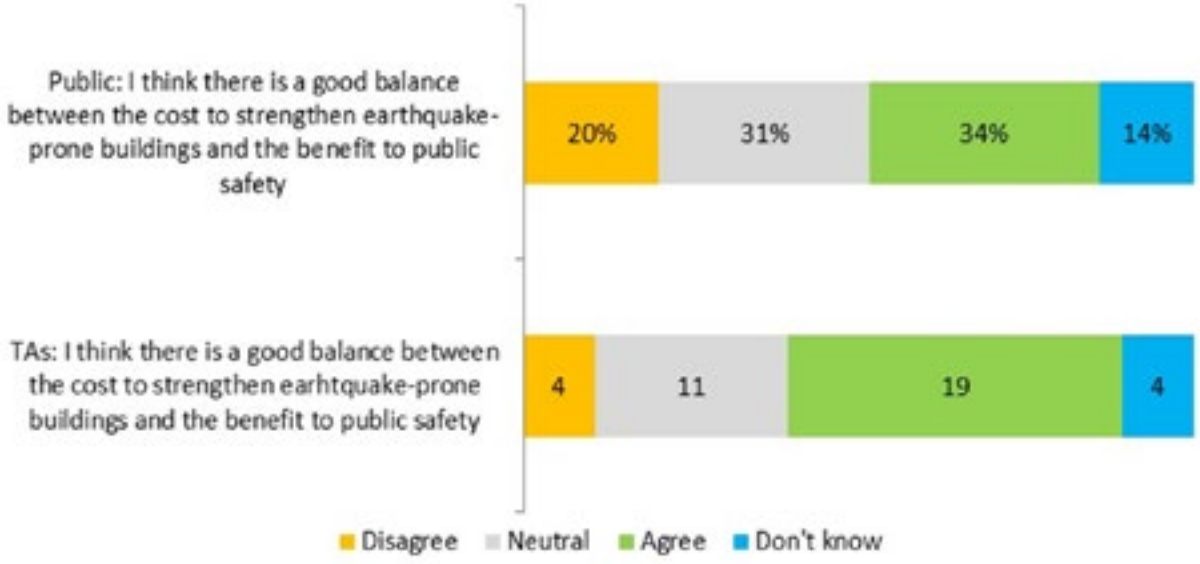
10 Specific definitions and guidelines for assessing buildings' seismic performance are set out in the 2017 Engineering New Zealand's Seismic Assessment Guidelines, known as the 'Red Book'. Section C5, colloquially known as the '*Yellow Chapter*', advises engineers about how to carry out detailed seismic assessments of concrete buildings, and in particular pre-cast floors. The proposed new version (issued December 2018) is still being tested to see if will be incorporated into regulation and the EPB system. For discussion of the new seismic knowledge see, for example, R.S. Henry et al (2017), "Damage to Buildings with Precast Concrete Floors During the 2016 Kaikōura Earthquake and Implications to Design and Seismic Assessment": a conference paper presented at the New Zealand Concrete Industry Conference, 12 – 14 October 2017, Te Papa, Wellington: https://cdn.ymaws.com/concretenz.org.nz/resource/resmgr/docs/conf/2017/4.pdf

11 Engineering New Zealand, "Revised Version of C5 Released" (news item), 3 December 2018, at: www.engineeringnz.org/news-insights/revised-version-c5-released-today/; www.building.govt.nz/building-code-compliance/b-stability/b1-structure/what-you-need-to-know-section-c5-concrete-buildings-proposed-revision/

12 For further information see: https://heritageequip.govt.nz/ and https://www.building.govt.nz/managing-buildings/managing-earthquake-prone-buildings/what-earthquake-prone-buildings-system-means-for-you/owners-of-earthquake-prone-buildings/

Figure 7: *General Public and TA Levels of Agreement with Values of Earthquake Safety vs Cost vs Heritage Buildings (n = 1100 public and n = 38 TAs)*



Note: For TA responses, the number of responses has been reported in addition to the proportion. This is because the total number of responses from TAs is small.

2.3 Implementation of the EPB policy design process is rated *good*

Based on evidence from interviews, surveys, and a review of documents, the *implementation* of the 2017 EPB system policy design has been rated as *good*. This is distinct from how the EPB system as a whole has been implemented, which is addressed in section 3.

Interviewees note that the implementation of the EPB policy process 2012 – 2017 worked well and met expectations.

Evidence indicates that MBIE oversaw an exemplary, transparent policy development and consultation process over five years, including appropriate working groups of experts and key stakeholders. The regulations include transparent processes, guidance and templates for TAs and other participants to apply consistently, in a way that aims to promote public confidence and support good decision-making. The EPB policy broadly adopts

the 2012 Canterbury Earthquakes Royal Commission of Inquiry recommendations, and received wide general support in submissions at the time.

2.4 The 2017 EPB policy design is rated *adequate* for proportionality

Based on evidence from interviews, surveys, and a review of documents, the 2017 EPB system policy design has been rated as *adequate* for *fairness and proportionality*.

2.4.1 INDIVIDUAL CIRCUMSTANCES OF SOME OWNERS OF EARTHQUAKE-PRONE BUILDINGS COULD RESULT IN DISPROPORTIONATE NEGATIVE IMPACTS

A concern repeatedly raised across a wide range of stakeholders is the potentially disproportionate impact of the EPB policy's obligations on some EPB owners. A large number of interviewees, from all stakeholder groups (including engineers, TAs, and general public), raised concerns about the fairness of requiring building owners to pay all costs associated with remediation.

Many of these stakeholders noted that there is a mix of public and private benefit to remediation, and felt that requiring building owners to pay these costs represented an unfair burden to building owners. Some interviewees suggested a mix of private and public cost-sharing. For example, subsidies through GST or another comparable tax rebate or incentive. Some interviewees note there are precedents for shared private-public allocation of property related risks and costs, in New Zealand and other jurisdictions, like Japan.[13]

The EPB system does not, however, introduce new financial obligations as there are longstanding obligations on building owners to remediate unsafe buildings to reduce the risk of harm to others.

Interviewees representing a wide range of stakeholder groups felt that the policy has a 'one size fits all' approach, and fails to account for the varied situations of individual building owners and risk of disproportionate negative impacts on residential building owners and provincial EPB owners.[14]

Some stakeholders noted that in the next 5 - 10 years good progress could be made in remediating or demolishing a number of straightforward EPBs, and the remaining EPB stock will reflect more complex provincial and residential EPBs facing affordability constraints.

Evidence from stakeholder interviews and media indicates the impact of the EPB system is materially different for residential EPB owners. Analysis of data provided by Wellington and Auckland city councils suggests that the proportion of residential EPBs is around 10 per cent of total EPBs (around 1,000 residential EPBs). However there could be multiple units and multiple owners in each residential EPB.

2.4.2 PUBLIC PERCEPTIONS ARE SPILT ABOUT HOW WELL THE EPB SYSTEM BALANCES COSTS AND BENEFITS

A review of policy documents indicates the EPB policy design (2012 – 2016) reflected the public's expectations that the risk to life safety posed by earthquake-prone buildings was mitigated. The EBP system is consistent with the recommendations made by the 2012 Canterbury Earthquakes Royal Commission of Inquiry, and informed by over 1,300 submissions. There was consensus support through the EPB Regulations' public consultation and submissions processes.[15]

The EPB Social Survey revealed that around one-third (35 per cent) of respondents agree there is a good balance

13 Precedents include the Public Works Act, the EQC levy/pay-out for earthquake damage to insured homes, the government's leaky homes financial assistance package 2011 – 2016, and the URM and Heritage EQUIP Funds' subsidies. Other jurisdictions are discussed in MBIE (2013) *Improving the System for Managing Earthquake-Prone Buildings: Regulatory Impact Statement*, page 10, at www.mbie.govt.nz/dmsdocument/78-epb-policy-ris-pdf

14 Note that regulation changes were made in 2019 to reduce unintended disproportionate impacts on provincial and small towns. Building consents cannot be granted for 'substantial alterations' to an earthquake-prone building unless the alteration includes seismic work. However, the definition of substantial alterations was set at 25 per cent of the building's value, disproportionately impacting areas with lower building values. The change to regulations now requires the value of the alterations to be greater than $150,000 in order to require seismic work. Feedback on this change has been positive.

15 The 2012 consultation paper released by the Department of Building and Housing (now MBIE) received 535 submissions; 121 written submissions were received on the Bill as introduced and a further 51 submissions on the select committee interim report; and policy staff ran seven public meetings around New Zealand involving over 1,000 participants: Interview/personal correspondence with policy official, November 2019, and Office of the Minister for Building and Construction (2013) *Improving the System for Managing Earthquake-Prone Buildings: Cabinet paper*, para 127, at https://www.mbie.govt.nz/dmsdocument/80-copy-of-epb-policy-cabinet-paper-pdf .

between the cost to strengthen earthquake-prone buildings and the benefit to public safety, while 20 per cent of respondents disagree. People aged 18 – 29 years are more likely to agree there is a good balance; and people aged 60+ years are more likely to disagree.

Figure 8: *General public levels of agreement with values of earthquake safety versus cost versus heritage buildings (n=1100)*

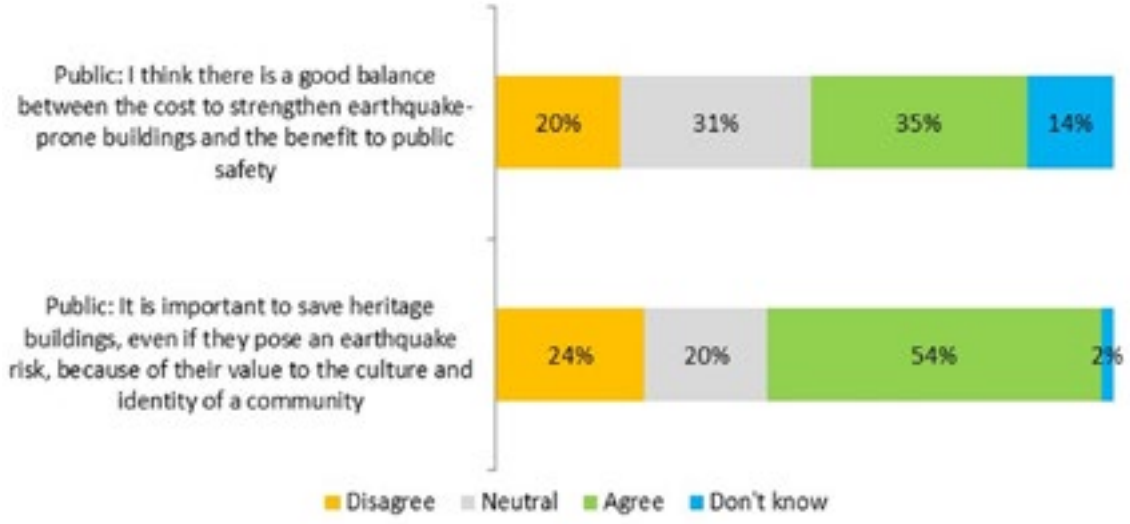


Figure 7 also shows that the public perceives that it is important to save heritage buildings, even if they pose an earthquake risk.

Similarly to the EPB-Social survey, the most common issue raised across 35 interviewees was the nuances and impact of trade-offs between remediation costs, which building owners must pay, and life safety. This is reflected in the spilt result regarding whether there is a good balance between the costs to strengthen earthquake-prone buildings and safety.

The feedback highlights the common theme raised by many respondents that both policy and implementation aspects of the EPB system do not adequately take into account individual circumstances. There is a tension between managing the principle of national consistency with the reality of individual circumstance. National consistency is a key objective of the EPB system, however feedback from interviews and survey comments indicate a desire for increased flexibility. For example, taking into account local conditions and councils, evolving building science knowledge, and different impacts for different types of buildings and building owners.

2.4.3 THERE IS VARIATION BETWEEN DIFFERENT TYPES OF BUILDING OWNERS IN THEIR ABILITY TO ENGAGE WITH THE EPB SYSTEM

Interviews and survey data indicated clear differences between broad categories of building owners, including:

› incentives for building owners to remediate

› their financial capacity to remediate through seismic strengthening

› capability of the building owners to navigate a pathway to remediation of their buildings.

Evidence indicates large commercial building owners have stronger market incentives for remediation when compared to private residential owners in a body corporate arrangement.

The group of building owners most frequently mentioned by interviewees (of all types) were provincial building owners, be they provincial TAs as owners of local community buildings, or private, small-scale building investors or landlords. Many building owners in the regions face a number of challenging circumstances. For example, a disproportionately high number of ageing and heritage URMs on the main streets, lower property values, infrastructure stresses, and limited access to seismic engineering expertise. This highlights the different challenges faced by building owners in urban and rural areas. This could indicate the need for more tailored information and support for specific types of building owners, depending on what challenges they face to comply with the EPB system. Heritage buildings present challenges and concerns for TAs and building owners.

> Everyone wants heritage, but no one wants to pay for it. – TA comment

Heritage buildings make up about a quarter of EPBs.[16] The EPB regulations provide a discretionary time extension for heritage buildings, and government funding through the Heritage EQUIP Fund. However, some TAs and provincial advocates express concern that heritage EPBs make up a larger proportion of provincial towns' main streets and community identity, but lack the economic drivers to incentivise seismically strengthening heritage buildings (at the building owner or potentially the TAs' expense).

Since the evaluation period, Wellington City Council has expressed concern about their ability to use these enforcement powers effectively and efficiently, given the cost and resource required to go through the District Court. Wellington City Council has initiated this process with two heritage buildings in 2020, however this is still before the courts.

> Eight years later [after the Canterbury earthquake] there are still buildings in Christchurch that are fenced off, deteriorating with exposure to the weather, vermin-infested and unsightly, but with no immediate fix in sight [largely because of affordability]. What council or community wants that?
> – TA interviewee

To help minimise the risk of heritage demolitions, the Heritage EQUIP programme provides grants for seismic upgrades of heritage buildings to a maximum of $400,000, covering up to 50 per cent of strengthening costs. As at October 2019, 54 grants totalling $7.8 million had been allocated, with most (35) of these going to regions outside major urban centres (an average of $223,000 each).[17]

Heritage EQUIP quickly recognised the extra affordability pressures for provincial buildings, extending cover to 67 per cent of costs in high and medium risk provincial areas. And its staff are proactively partnering with provincial TAs to engage and help heritage EPB owners through the procurement and decision-making processes preparatory to applying for an EQUIP grant.

2.4.4 CONCERNS FOR RESIDENTIAL MULTI-UNIT OWNERS

Residential multi-unit owners can face additional difficulties in navigating remediation of EPBs, as a result of the relationships and co-obligations set out in the Unit Titles Act (UTA).

> [As members of the owners' committee] we have had to do a lot of work . . . a lot of hours talking, problem solving. . . engaging externally with experts, but also a lot of our time trying to manage the expectations of the other homeowners as well. – Residential multi-unit interviewee

The majority of residential EPB unit owners we interviewed noted they do want to do the right thing, but lack the skills required to successfully navigate the system, and have added complexity of being in a multi-owner environment. Some commented that they feel they would have to be familiar with engineering, project management, law, finance, and building regulation in order to comply. Some residential unit owners can face additional difficulties in navigating remediation of EPBs due to the complex decisions they must reach consensus on multi-ownership groups, such as bodies corporates.

Some building owners are stressed about how they will comply with their obligations under the EPB system. They say that dealing with these issues for years, including affordability and engineering complexities has been

16 As of October 2019, 749 of the 2788 EPBs identified on the EPB register were heritage buildings. Note, there are different definitions and rules around heritage buildings, making specific numbers difficult to confirm, e.g. some buildings may be listed by Heritage New Zealand, TAs or both (the latter as 'historic' buildings on the district plan). The EPB policy definitions no longer include historic monuments as heritage 'buildings'.

17 Data kindly shared by Heritage EQUIP Fund staff, October 2019.

extremely stressful and taken a heavy financial and emotional toll. Some interviewees described it as traumatic, and like a second unpaid job, requiring a heavy investment of time.

Most territorial authorities offer incentives to help building owners initiate work towards remediating their earthquake-prone buildings. For example, Wellington City Council offers a range of support options for earthquake-prone building owners and this includes rates remission, building consent fee rebates, the Built Heritage Incentive Fund and the Building Resilience Fund.[18] The Residential Earthquake-Prone Building Financial Assistance Scheme was launched by Kāinga Ora - Homes and Communities in September 2020 to help residential owner-occupiers in financial hardship stay in their homes.[19]

However, some residential EPB owners interviewed noted that these amendments do not resolve their underlying concerns of affordability. Since the evaluation period there has been media reports that some EPB owners describe the Residential Earthquake-Prone Building Financial Assistance Scheme as a 'step in the right direction', but the financial hardship eligibility criteria is too strict, the $250,000 loan cap is too low, and a loan just shifts the timing for the cost impact (the loans do not have to be paid until the owner either sells or dies). Some suggest government should be offering grants and compensation.[20]

2.4.5 STRENGTHENING COSTS AND ISSUES ARE MORE COMPLEX, AND POTENTIALLY MUCH HIGHER-COST THAN INITIALLY ESTIMATED

Some interviewees suggested that the cost implications of remediating EPBs through seismic strengthening could be higher and more variable than the EPB policy anticipated. However, other stakeholders challenged the validity of these statements, and it is unclear whether betterment costs or other building issues are being addressed in these cost estimates (for example, remediation to above the required level of NBS, or addressing deferred maintenance).

Some residential EPB owners and TAs interviewed described a range of factors resulting in greater than expected remediation costs, including:

- increasing engineering and project management costs
- difficulty finding engineering and project management professionals, getting quotes, and assessing contractor's capacity or capability
- delays or changes in engineering and project manager contractors' availability, leading to finding new contractors to start over
- banks and insurance companies dictating remediation to a higher building resilience standard over and above the minimum life safety standard.

> [The bank] said over five years you could expect a return on the investment to strengthen to 34 per cent. But to go to 67 per cent [required by the lender], on the indicative costs we would be looking at 15 - 20 years before you would get a return. – Residential multi-unit interviewee

Appendix 3 presents a summary of available estimates for EPB remediation costs (ranging from $56,000 to $94,000 per unit).

The EPB System sets a minimum standard to mitigate risk to life safety in the event of a moderate earthquake, and is not intended to reflect best engineering practice or market conditions. However, many stakeholders we spoke to believe the EPB policy should reflect the realities of current market conditions, and actual remediation costs.

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18 https://wellington.govt.nz/news-and-events/news-and-information/our-wellington/2021/02/earthquake-prone-buildings-part-3

19 https://kaingaora.govt.nz/working-with-us/residential-earthquake-prone-building-financial-assistance-scheme/

20 Caley Callahan, "Apartment owners say earthquake-strengthening loan scheme eligibility too strict", Newshub article, 16 February 2020, at www.newshub.co.nz/home/new-zealand/2020/02/apartment-owners-say-earthquake-strengthening-loan-scheme-eligibility-too-strict.html; and Paul Pullar-Strecker, "Flat Owners to Get $10 million in Cheap Loans for Quake Fixes, Repayable on Sale or Death", Stuff article,16 February 2020, at: www.stuff.co.nz/business/119548803/flat-owners-to-get-10m-in-cheap-loans-for-quake-fixes-repayable-on-sale-or-death

2.4.6 ECONOMIES OF SCALE FOR REMEDIATION IS AN OPPORTUNITY TO MANAGE COSTS

The URM securing programme found that there are distinct efficiency and cost advantages for building owners to work together rather than in isolation, to share the costs of project management. For example, a precinct approach in Lower Hutt meant small building owners could combine with larger businesses' resources to engage a single engineering consultancy to cost-effectively deliver project management, council engagement and engineering assessments on behalf of multiple buildings at once. Wellington City Council similarly funded a contractor to engage with small building owners in bulk, to ensure timeframes were met. [21]

A useful learning is that it could have been more efficient to engage seismic engineers to assess buildings in bulk, e.g. at a precinct or city block level, on behalf of the TA and building owners.There is anecdotal evidence of engineers stepping up to organise bulk assessments, particularly for provincial areas that have limited engineering capacity.

Similarly, the Heritage EQUIP Fund has found it beneficial to pool its funding of professional advice for building owners in similar circumstances. It has awarded joint funding across eight buildings' owners in Feilding and Whanganui, and a group of 12 Invercargill building owners.[22]

This would require a willingness for groups of building owners and TAs to work together, and a sufficient base of funding and capability. Evidence suggests this can be a challenge for multiple owners in a shared legal entity, such as a body corporate, to navigate decision making and project management.

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21 MBIE (2020) *Post-Implementation Review of the Hurunui/ Kaikōura Earthquakes Recovery (Unreinforced Masonry Buildings) Order 2017 and Securing* Fund, pages 20, 23, and 30 at: www.building.govt.nz/assets/Uploads/managing-buildings/post-implementation-review-urm-order-and-securing-fund.pdf

22 Ministry of Culture and Heritage (2020) *Te Pūrongo ā-Tau (Annual Report) 2019/20*, page 43, at https://mch.govt.nz/sites/default/files/2020-annual-report-Manatu-Taonga_0.pdf

3. Finding #2: The EPB system's implementation is rated adequate overall

Based on evidence from extensive interviews and surveys of stakeholders across the sector, and a review of key documents, the EPB system has been rated as *adequate* for implementation. The evaluation identified the national consistency of implementation as a strength.

Figure 9: *Is the* ***implementation*** *of the EPB system working as intended?*

Evaluative criteria	**OVERALL RATING**	**National consistency**	**Fairness and proportionality**	**Efficiency and effectiveness**
Assessment for implementation	**ADEQUATE**	Good	Adequate	Adequate

KEY INSIGHTS

- There is a significant gap between the minimum standard to mitigate risk to life safety in the event of a moderate earthquake (34 per cent as set out in the EPB System), and the market expectations of higher levels of building resilience.
- The insurance industry is demanding building resilience, which is over and above life safety. This means that EPB seismic strengthening to 34 per cent does not guarantee increased insurability through a lower risk profile.
- Market forces, such as bank lending criteria and insurance risk assessment can mean it is not feasible for the EPB to be strengthened only to the minimum life standard of 34 per cent. To achieve building resilience, over and above mitigation to life safety, can mean that some EPBs could be beyond economic repair.
- Feedback from the general public survey is split as some people feel the timeframes for remediation are too long and some feel that the costs to seismically strengthen buildings are too high. These opposing views were considered in the policy design; to balance the cost to building owners, timeframes for remediation were extended.
- Stakeholders across the building system indicated that the guidance and information provided by MBIE is not fit for purpose for the range of audiences seeking information. MBIE should review the information that is available and design information for a range of stakeholder groups - such as residential EPB owners, and smaller commercial EPB owners.
- There is opportunity for increased training for TA employees working within the EPB system, as the system progresses and TAs reach different milestones.
- TAs in medium and low seismic risk areas were generally positive about the longer lead-in timeframes, noting that this enables them to plan and budget resources for implementation, through councils' three-year budget cycles.
- As a result of the long timeframes, building owners do not typically plan remediation immediately after receiving notices.
- TAs noted that momentum could be achieved when Council staff adopted a pro-active case management and direct engagement approach.

3.1 The national consistency of the EPB system's implementation is rated as *good*

The EPB system creates staggered national timeframes by three seismic risk areas, and by priority or non-priority buildings. The first statutory deadline was January 2020, requiring that the 38 TAs within high seismic risk areas identify priority buildings that may be earthquake-prone, and complete a local public consultation process to identify EPBs on strategic or high traffic routes. Identified buildings are placed on the national online EPB register.

The majority of TAs met these requirements, and accordingly, the EPB system is supporting a nationally consistent approach in practice that is proportionate to the level of priority and risk at individual building and district level.[23]

3.2 The Kaikōura earthquake posed challenges to implementation for both central and local government

Implementation was on-track for the EPB system following an extensive five-year period of policy development. However, interviewees note that the EPB system's initial operationalisation - particularly the development of information and support resources - was disrupted by the Kaikōura earthquake, which occurred just months before the EPB system came into force in July 2017. Addressing the earthquake's damage, including creating and managing the subsequent URM securing programme, diverted resources and attention from EPB implementation at a critical time.

3.2.1 THE CANTERBURY AND KAIKŌURA EARTHQUAKES AFFECTED INSURANCE MARKETS AND INCREASED THE PUBLIC'S AWARENESS AROUND EPBS

This section discusses changes in public expectations after the Canterbury and Kaikōura earthquakes. The following factors are outside the scope of the EPB regulatory system. However, they indicate the reality of the market demands and societal expectations in which the EPB system operates.

Evidence indicates the Kaikōura earthquake, along with the Canterbury earthquakes 5 – 6 years earlier, significantly changed the insurance market and the public's expectations, shifting social norms to a new (lower) level of risk tolerance in New Zealand. Four years later, this shift in societal expectations appears to be embedded as the *new normal*.[24]

Another impact of increased earthquake risk awareness has been the market's expectation beyond the EPB system's minimum standard, even for modern buildings.

3.2.2 THE PREDOMINANT MARKET STANDARD OR EXPECTATION FOR BUILDING RESILIENCE IS NOW 67 PER CENT - 80 PER CENT NBS, SIGNIFICANTLY HIGHER THAN THE REGULATED LIFE SAFETY MINIMUM

A recurrent theme across many stakeholder interviews, documents and media analysis, is that the building remediation standard now expected by the majority of the market and the public is significantly higher than the EPB policy's minimum 34 per cent NBS.

The minimum standard set by EPB System is intended to mitigate risk to life safety in the event of a moderate earthquake, and is not intended to reflect best engineering practice or current market expectations.

> Stakeholders were clear that a higher standard is expected by a range of players (insurers, banks, councils (owners of many public facilities), tenants, and owners) and is also expected by government departments in their lease of office buildings in Wellington's CBD. Nobody is strengthening just above 34 per cent NBS. It is always above 67 per cent, or a lot of them are above 80 per cent now. . . That is driven by tenants and commercial reality (banks and insurers). – Provincial TA interviewee

Higher market and public expectations signal a shift from life safety to building resilience and overall lowered tolerance for earthquake-related risk. For example, councils like Wellington City Council have adopted 67 per cent+ NBS for the public buildings that they own and operate, citing a strong focus on public safety and doing everything possible to minimise potential loss of life as part of their accountability to constituents.

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23 MBIE (2019) *Report: Progress Toward Identifying Potentially Earthquake Buildings 2019*, published November 2019, at: www.building.govt.nz/assets/Uploads/managing-buildings/earthquake-prone-buildings/progress-toward-identifying-potentially-earthquake-prone-buildings-2019.pdf

24 Vinnell et al, "The impact of the Kaikōura earthquake on risk-related behaviour, perceptions, and social norm messages", (2019) *Australasian Journal of Disaster and Trauma Studies*, vol 3, no 2, 53 – 64, at: http://trauma.massey.ac.nz/issues/2019-2/AJDTS_23_2_Vinnell.pdf

Multiple public buildings have subsequently been re-assessed and closed in Wellington, whether they fit the legal definition of 'earthquake-prone' or not, including Wellington's central library, and arrivals ferry terminal:[25]

> Wellington City Council's Chief Resilience Officer says it is not just local and central government policies contributing to city resilience tenants and landlords also: "What we're really pleased about is the market has responded. Tenants and occupants are now demanding more resilient buildings, and owners are responding."

3.2.3 THE INSURANCE AND LENDING MARKETS ARE FOCUSED ON 'BUILDING RESILIENCE', A HIGHER STANDARD THAN THE EPB SYSTEMS LIFE SAFETY MINIMUM STANDARD

Stakeholders interviewed report that the insurance, re-insurance and lending markets are adopting individual 'building resilience' as assessment criteria, a higher standard than the EPB policy's minimum standard of life safety. Remediation to the EPB System's minimum life safety standard (34 per cent) does not guarantee a lower risk profile from an insurance perspective.

> "The insurance industry just doesn't have the capital to cover all Wellington buildings against a big quake ... we have to look at potential damage costs per building". – Industry interviewee

Building owners reported that the insurability of their buildings can affect their ability to access finance from banks to initiate remediation projects. In particular, the cost to value ratio may not be feasible when the bank insists on a higher remediation standard, because the minimum 34 per cent+ NBS will not be satisfactory from a resale or insurance perspective.

This highlights that, even without the EPB system, market forces would be driving the requirement of more resilient buildings, and the EPB system is working as intended to set only the minimum standard in terms of life safety in the event of a moderate earthquake.

3.3 Public opinion is split on how the EPB system has been implemented, which may indicate a lack of visibility of the system

Around one-quarter of respondents to the EPB Social Survey (27 per cent) are confident in how EPBs are being managed by central and local government (see Figure 9). A further 33 per cent of the public surveyed responded with neutral, and 12 per cent did not know, which may indicate a lack of public awareness of how EPBs are being managed.

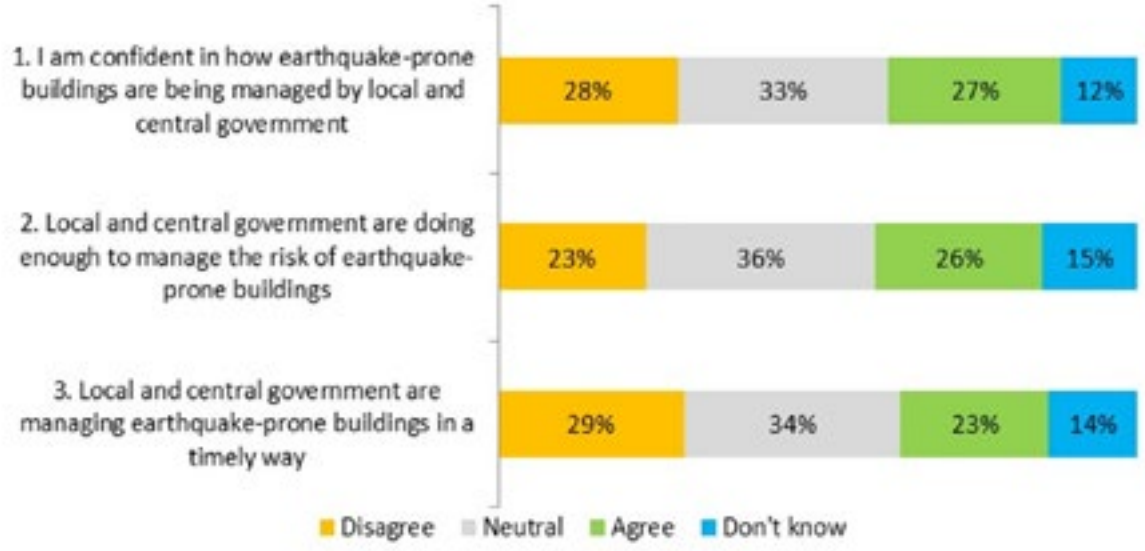
There is similar variability in levels of public confidence around whether authorities are 'doing enough' (26 per cent agreement) and progress being timely (23 per cent agreement).

It is unclear if the variable perceptions are in part due to the limited visibility of the EPB system, in terms of:

- being implemented at all (e.g. some areas of the country are still years away from the first statutory deadline), or
- the implementation being mainly at a desktop 'identification' phase rather than tangible strengthening.

25 Quote reported in Stuff article, Damian George and Rob Mitchell, "Wellington Report 2019: The cost of living with the threat of a big earthquake", 3 October 2019, at: https://www.stuff.co.nz/dominion-post/news/wellington/115194399/wellington-report-2019-capital-does-its-best-to-safeguard-against-major-quake-but-damage-inevitable

Figure 10: *Levels of general public agreement about how EPBs are being managed by central and local government (n = 1100)*



Analysis of comments from the EPB-Social Survey identify two main sentiments:

› a perception that the timeframes for remediation are too long, and more immediate action is required; and

› a perceived unfairness at the costs of EPB remediation for building owners.

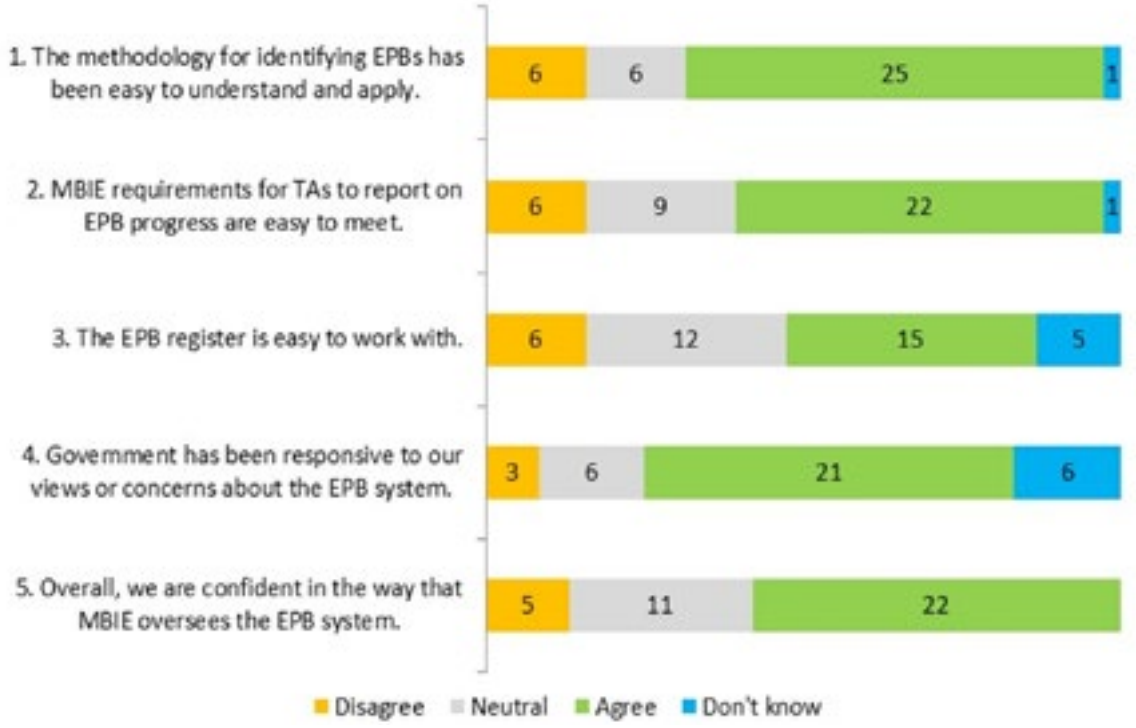
Work is moving too slow to remove or repair prone buildings. It seems to be cost led rather than safety led, despite various press claims to the contrary. – Comment from general public survey respondent

I understand the need to protect people but am also aware of the huge cost and disruption this can cause businesses.
– Comment from general public survey respondent

3.4 Feedback on central government's role in implementing the EPB system is positive, with some key areas for improvement

MBIE plays a key role in providing national consistency in its functions related to the EPB system. Feedback from TAs on MBIE's implementation of the EPB system is largely positive. For example, most TAs agree that the EPB methodology is easy to understand and apply and reporting requirements are easy to meet (see Figure 11).

Figure 11: *TA level of agreement about MBIE's implementation of the EPB system (n = 38)*



TA feedback about MBIE's online EPB register were less positive, with fewer than half (15 out of 38) of TAs agreeing the register is easy to work with. This issue was explored in more detail via a pop-up survey of EPB register users (half of which are TAs). The pop-up survey results show that most (29 out of 38) respondents find the MBIE-administered EPB register useful or somewhat useful.

Comments from survey respondents primarily focused on the site's shortcomings in design, and search function, and noted the EPB register information would be more useful if presented as an online app.

Mixed feedback may reflect the teething issues when becoming familiar with new processes and technology. Many of the 13 TAs' staff we interviewed said they are still getting to grips with the processes fully, and that it would naturally take longer and be more difficult initially.

MBIE staff acknowledge some initial issues with the EPB system processes, and continue to adjust the software and survey design to make monitoring, reporting processes and using the EPB register, more efficient and user-friendly for TAs.

3.4.1 MOST CONCERNS RELATED TO MBIE'S GUIDANCE AND SUPPORT NOT BEING FIT-FOR-PURPOSE FOR STAKEHOLDERS

A common theme in interviews and survey feedback is concern about adequate engagement, education, and information related to the EPB system. MBIE provides regulatory information about the EPB policy and process on its website, primarily for regulatory functions and specialist audiences such as TA staff and engineers. It includes several 30-minute online learning videos for TAs and others interested in how EPB-related decisions are made.[26]

Concerns about MBIE's performance in this area relate to guidance, support, and information provision including:

- difficulty finding or accessing online material – particularly requiring a Real Me ID
- overly technical content that is difficult to understand for audiences, such as building owners and the public
- no bespoke content for different types of building owners and their circumstances
- tension between MBIE's regulatory relationship with TAs and building owners.

26 www.building.govt.nz/managing-buildings/managing-earthquake-prone-buildings/

> People don't know where to go, how to start, in addressing an earthquake-prone building . . . they're overwhelmed . . . it's hard to find Government's information. – Interviewee

Several TAs, a government agency and a community lobby group said they have felt compelled to fill the gaps in MBIE's information and education by creating or providing information, advice, templates and guidelines themselves – particularly for building owners. There is a proliferation of resources that are useful, but scattered across different websites, and potentially creating confusion and uncertainty.[27]

A recent review of the URM securing programme 2017 – 18 found that shifting to a people-centred case management approach and proactive engagement including follow-up with building owners, was critical to that initiative's success.[28]

3.4.2 MBIE AND TA ENGAGEMENT IS LARGELY VIEWED AS POSITIVE BUT SOME SMALLER TA'S HAVE HIGHER NEEDS

The majority of TAs surveyed (21 out of 38) agree that the government has been responsive to their views and concerns about the EPB system, and feedback from large urban TAs about engagement with MBIE was positive. However, feedback from smaller TAs was less positive, with many noting frustration at the perceived inadequacy of support from MBIE.

> MBIE needs to better recognise and support the diversity of TAs [e.g. the relative lack of capacity and capability, and what are appropriate local solutions] ... TAs are the 'last ones standing' in terms of the risk and liabilities around EPB non-compliance ... – Interviewee

Several TA interviewees commented on the ongoing changes within MBIE (e.g. restructuring, staff turnover) and their inability to maintain a regular contact.[29] Others commented that it is unclear to what degree MBIE staff are able to provide 'support' versus 'enforcement', particularly for smaller TAs that have capacity and capability challenges.

MBIE refreshed its compliance strategy in relation to TAs and building consent authorities generally; around promoting compliance, developing a picture of risk, and identifying and responding to non-compliance.[30]

The refreshed strategy helps to clarify its functions, and provides a clearer risk-based approach to the EPB System, for example having frequent engagement and educating of TAs that are at higher risk of not meeting the EPB system requirements.

3.4.3 THE COMPLEX CO-REGULATOR RELATIONSHIP BETWEEN MBIE AND TAS WAS RAISED AS A RISK BY SOME LOCAL AND CENTRAL GOVERNMENT STAFF

Some interviews with local and central government staff alluded to tensions in the co-regulatory structure. For example, some questioning the other's priorities or decisions, and several TAs noting "the buck stops with us" (in terms of financial liability or accountability) yet they are expected to implement and comply with policies

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27 For example, Wellington City Council's website provides guidance on how to find an engineer to assess your building, questions to ask, links to a contact database of engineers, and an example brief to engage an engineer: https://wellington.govt.nz/services/rates-and-property/building-earthquake-resilience/assessing-your-building/engaging-an-engineer-to-assess-your-building and a community lobby group has created a tool to help bodies corporate estimate the costs of remediating a multi-unit EPB: www.innercitywellington.nz/earthquake-seminar-and-meeting-documents

28 MBIE (2020) *Post-Implementation Review of the Hurunui/ Kaikōura Earthquakes Recovery (Unreinforced Masonry Buildings) Order 2017 and Securing* Fund, pages 2 and 21, at: www.building.govt.nz/assets/Uploads/managing-buildings/post-implementation-review-urm-order-and-securing-fund.pdf

29 This was also noted in the review of the URM securing programme: MBIE (2020) *Post-Implementation Review of the Hurunui/ Kaikōura Earthquakes Recovery (Unreinforced Masonry Buildings) Order 2017 and Securing* Fund, page 22, at: www.building.govt.nz/assets/Uploads/managing-buildings/post-implementation-review-urm-order-and-securing-fund.pdf.

30 MBIE staff interview, and website information (updated 5 November 2019): www.mbie.govt.nz/cross-government-functions/regulatory-stewardship/regulatory-systems/building-regulatory-system/

developed by central government.[31]

> The EPB system leaves accountability to the TA and realistically [our] main action will likely be to do the strengthening work on a private building at rate-payers' expense... [we] have very little likelihood of recouping money from the owner. Even if the Council puts a caveat on the building, the owner probably won't sell. So Council is quite risk averse in this space, and it is difficult to navigate. – TA interviewee

Several TAs reported that they are anticipating barriers to enforcing the EPB system when remediation deadlines are breached. Some (particularly smaller) TAs want more clarity and guidelines around how to interpret and apply statutory enforcement powers in practice. Several interviewees also mentioned the potential role of the media to influence compliance through 'naming and shaming' building owners.

3.5 TA performance is rated *adequate* or *good* on most implementation aspects so far

TAs are required to report to MBIE on their progress in managing EPBs, which is completed via an annual online survey; and MBIE receives and reports on the results.[32]

Overall, TAs are rated *good* in their compliance with the administration and reporting aspects of their role, e.g. community consultation, and keeping the EPB register up to date.

In August 2019, TAs in high seismic areas reported high levels of confidence that they would meet the first statutory deadline in January 2020. At this time half of the TAs in high seismic areas had already completed the work, and 17 of the remaining 19 were confident they would meet the timeframe.

Since the evaluation period, the 2020 MBIE report on progress of the TAs confirmed that all priority buildings in high seismic risk areas have been identified. TAs were confident that owners of priority buildings in their districts will meet their individual remediation deadlines to complete all seismic work. One TA indicated that all seismic work had been completed in their district by building owners.

The next progress reporting will be in mid-2021 when 62 TAs in New Zealand's high and medium seismic risk areas will be reporting on their progress.[33]

3.5.1 EVIDENCE INDICATES TA CAPACITY AND CAPABILITY IS *ADEQUATE* OVERALL, THOUGH VULNERABLE TO STAFF TURNOVER AND COMPETING PRIORITIES

Most TAs surveyed (33 out of 38) agreed they have a good understanding of their role in implementing the new EPB system; and most (26 out of 38) agree the EPB system fairly balances accountability between building owners, engineers and TAs (see Figure 12).

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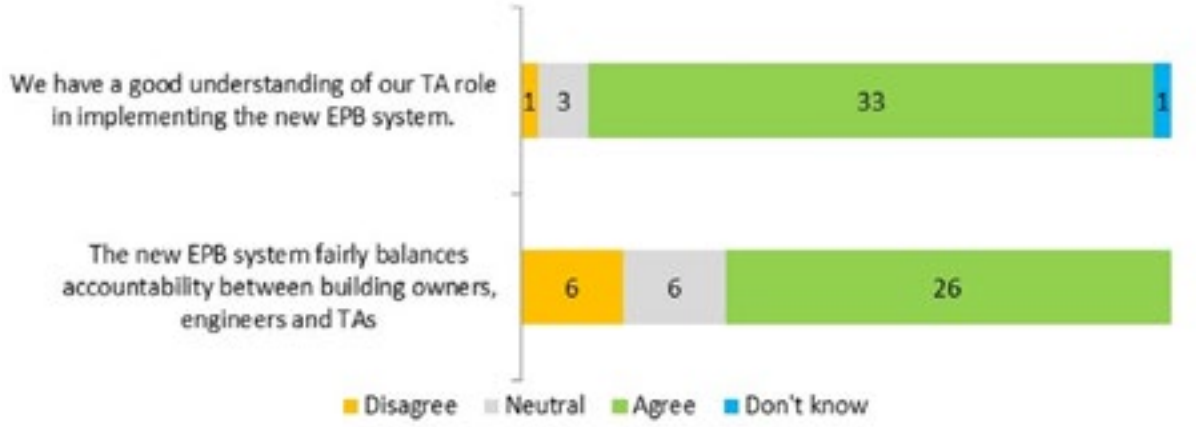
31 Similar issues were raised in a report synthesising the lessons learned from New Zealand's recovery following the Canterbury earthquakes, see: Greater Christchurch Group (2017) *Whole of Government Report: Lessons from the Canterbury Earthquake Sequence*, at: https://dpmc.govt.nz/publications/whole-government-report-lessons-canterbury-earthquake-sequence

32 MBIE (2018) *Report: Progress Towards Identifying Potentially Earthquake-prone Buildings 2018,* at www.building.govt.nz/assets/Uploads/managing-buildings/earthquake-prone-buildings/progress-toward-identifying-potentially-earthquake-prone-buildings-2018.pdf; MBIE (2019) *Report: Progress Toward Identifying Potentially Earthquake-prone Buildings 2019*, at: www.building.govt.nz/assets/Uploads/managing-buildings/earthquake-prone-buildings/progress-toward-identifying-potentially-earthquake-prone-buildings-2019.pdf

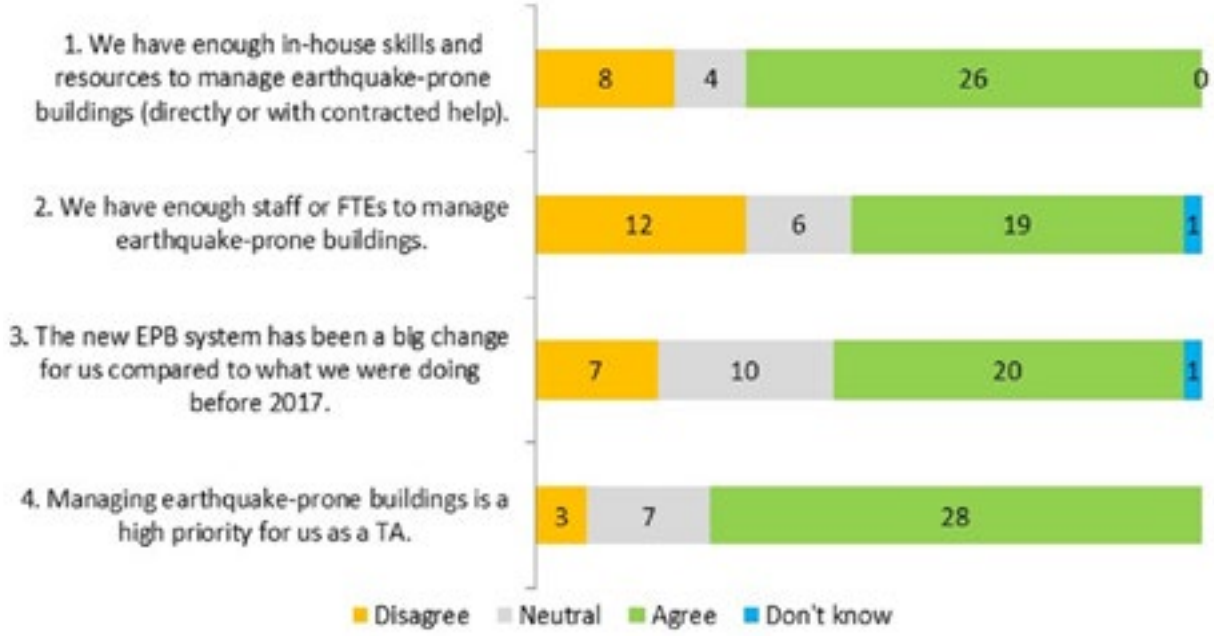
33 https://www.building.govt.nz/assets/Uploads/managing-buildings/earthquake-prone-buildings/progress-toward-identifying-potentially-earthquake-prone-buildings-2020.pdf

Figure 12: *TA level of agreement about defined roles and accountabilities in the EPB system (n = 38)*



Two-thirds (26 out of 38) of TAs surveyed agreed that they have enough in-house skills and resources to manage EPBs, and most used training or engaged a subject matter expert (23 out of the 38 TAs).

Figure 13: *TA level of agreement about resourcing and capability to implement the EPB system (n=38)*



Many TA interviewees describe struggling with the new EPB system initially, but with practical application and MBIE's national roadshow of training seminars, they are building greater capability and confidence.

Some interviewees noted in-house capability may be lost due to high staff turnover, and some staff wearing multiple hats – noting more training sessions may be required to fully understand the complicated detail and ramifications of the EPB system.

MBIE's 2015 – 17 summary of Technical Reviews carried out on councils' performance found that councils tend to focus on their building control functions, leaving their TA functions (such as EPB administration) under-resourced; and some councils are 'over customer-friendly' and under-use enforcement tools.[34]

34 MBIE (2017), *MBIE's Summary of the 2015 – 2017 Technical Review Programme*, pages 8 – 9, at www.building.govt.nz/assets/Uploads/building-officials/technical-review/council-technical-reviews-2015-2017.pdf

Some TA interviewees in medium and low seismic risk areas were generally positive about how the long lead-in timeframes for the EPB system are enabling them to plan and budget resources for implementation, through councils' three-year budget cycles.

About three-quarters of surveyed TAs (28 out of 38) agree that managing EPBs is a high priority, but most have limited capacity and capability. Half of the EPB-TA Survey participants (19 out of 38) agree they have enough staff to manage EPBs; and most policy and engineer interviewees consider TAs have sufficient capacity because of the extended timeframes to address most EPBs.

3.5.2 SOME SMALLER TAS MAY FACE ADDITIONAL CHALLENGES TO IMPLEMENT THE EPB SYSTEM WITHIN THE REQUIRED TIMEFRAME

Some TA interviewees indicated that smaller and provincial TAs may lack capacity because one council officer often juggles multiple statutory functions and areas of expertise. EPBs are just one part of their job.

> Half (0.5) FTE could do the job within a TA, given it is over a 5 year period [to identify most EPBs in high or medium seismic risk areas] and it depends on how they prioritise the work. – Interviewee

> It has been more involved than I first realised. I initially thought I could sort it out in a few weeks. But it has taken more like 18 months [to identify potential EPBs] – TA interviewee

These dynamics could point to risk of slower than expected implementation, as TAs become familiar with the new EPB system. Several TAs noted that locating and contacting building owners of potential EPBs was resource-intensive.

Some smaller TAs reported it was challenging to keep up-to-date with the requirements of multiple regulatory systems, of which the EPB system is just one. Some provincial TAs noted that a disproportionate amount of their main street buildings may be both heritage and earthquake-prone EPBs, requiring consideration of community identity, access to public facilities, and economic viability of remediation on top of life safety requirements.

3.5.3TAS FIND IT VALUABLE TO ENGAGE DIRECTLY WITH LOCAL BUILDING OWNERS ABOUT THE EPB SYSTEM

TAs have identified [a/the] need for further guidance and support for EPB owners. Direct face-to-face engagement with building owners is considered a necessary good-practice aspect of the EPB system by most of the 13 TAs interviewed, although it requires a significant investment of time and cost.

This early learning has similarly emerged from experiences with the URM securing programme, and the Heritage EQUIP Fund. The former found that many building owners were initially slow to respond to s124 notices for the first six months, perceiving the deadline to be a long way out and underestimating how long it takes to organise and undertake remedial building work. Momentum with compliance was achieved when Council staff adopted a proactive case management and direct engagement approach incentivising owners through the potential for prosecution and losing access to funding support.[35]

The Heritage EQUIP Fund has expanded its scope in recognition of the need for additional support for provincial building owners with heritage buildings who "don't know where to start". It now partners with TAs and others to encourage multiple building owners in regional centres to work together, providing professional advice and funding for strengthening work.[36]

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35 MBIE (2020) *Post-Implementation Review of the Hurunui/ Kaikōura Earthquakes Recovery (Unreinforced Masonry Buildings) Order 2017 and Securing* Fund, page 23 at: www.building.govt.nz/assets/Uploads/managing-buildings/post-implementation-review-urm-order-and-securing-fund.pdf

36 https://heritageequip.govt.nz/funding-your-project/heritage-equip-funding/how-much-funding-available

> By [encouraging groups of owners to work together] we think we are going to achieve economies of scale for building owners. – Provincial TA interviewee

3.5.4 IMPLEMENTATION BY TAS AND ENGINEERS IS NOT FUNCTIONING COMPLETELY AS INTENDED

The EPB system's intention is to mandate roles and provide a consistent process to address the life safety risk posed by EPBs. There are early indications that TAs and engineers' application of the EPB methodology may not be providing clear and consistent decisions on earthquake-prone building status.

Interviews revealed pre-existing behaviours by some TAs and engineers have continued into the new system. For example, engineers not signing off on building assessments and/or relying on a TA peer review; and TAs continuing to fund peer reviews of, or additional, engineering assessments. These practices can represent a significant additional cost for TAs. These behaviours appear to be driven by lack of confidence in the EPB methodology, legacy liability or accountability concerns, discomfort with the new EPB system, and councils requiring higher building standards than the life safety minimum.

> Our focus is on the end outcome of life safety, rather than procedural compliance (only) . . . If someone dies from a collapsed building in an earthquake, we will have to face up to our Chief Executive . . . to explain how we let this happen; and saying we 'followed the process' will be insufficient. – TA interviewee

In interviews and the TA survey, a small number of TAs reported a lack of confidence in engineering assessments of potential EPBs. The primary concern among these respondents was that some engineers are not completing the engineering assessment report prescribed in guidelines properly, and not following the EPB protocols.[37]

> Assessment summary reports are often missing information, engineers change the template around, and are still vague on what is required of them by the new scheme. – TA interviewee

Stakeholders also reported isolated incidents of building owners 'shopping around' for a favourable engineering assessment.

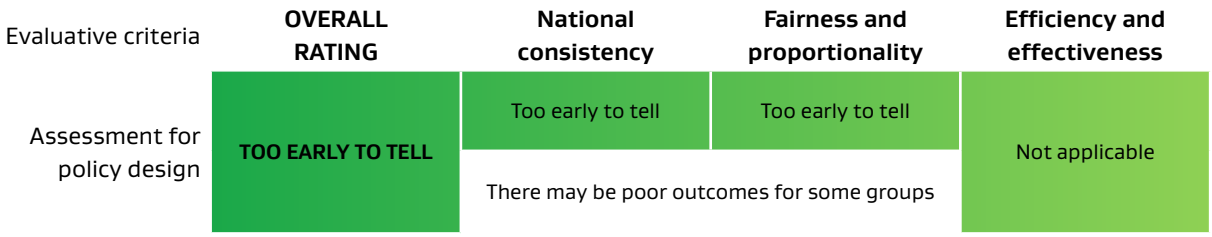
Anecdotally, engineer capacity seems to range from over-supply (and engineers bidding competitively for work in regions like Wellington), to reports of under-supply and long delays, particularly in the provinces. The Heritage EQUIP Fund is partnering with some TAs to address the under-supply, by helping provincial building owners to collaborate and contract an engineer to carry out multiple assessments in one place.

37 MBIE (2017) *EPB Methodology: the methodology to identify earthquake-prone buildings*, p 18, at www.building.govt.nz/assets/Uploads/building-code-compliance/b-stability/b1-structure/epb-methodology.pdf

4. Finding #3: It is too early to report outcomes at this stage, although there is some evidence of potentially poor outcomes for some groups

5. This evaluation was conducted near the beginning of a 50+ year regulatory timeframe to remediate an estimated 10,000 of the highest risk EPBs across New Zealand. As such, it is too early to definitively report on progress towards the expected outcomes of the EPB system.

Figure 13: *Are the* ***outcomes*** *emerging as expected?*



KEY INSIGHTS

- A lot of people are seeking information online regarding the EPB system. Feedback indicates that there is a need for a single source of truth for a diverse range of audiences seeking information about the EPB System.
- TAs noted that, while some building owners are resistant and will avoid taking action until they are forced, many building owners accept the regulatory landscape and are 'getting on with it'.
- There is a desire for increased collaboration across TAs, and a potential training/facilitation gap that MBIE could support.
- There is an opportunity for supporting the ongoing professionalisation of EPB professionals, through centralised training and professional networking opportunities enabling knowledge sharing.
- MBIE could assist TAs with co-ordinating a cross-TA compliance and enforcement strategy, or provide cross-TA educational updates and tools.

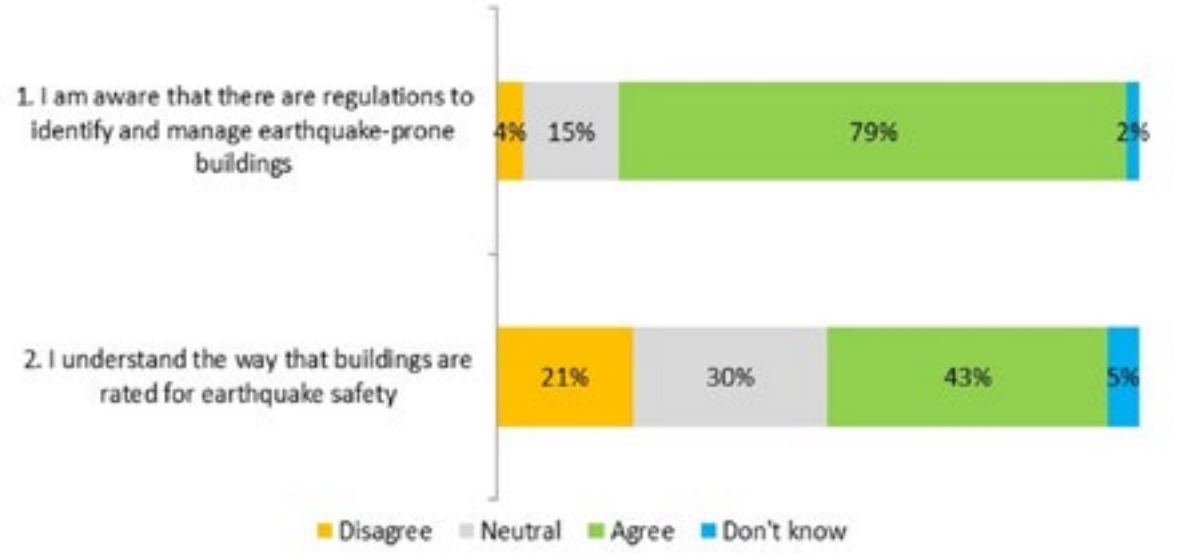
Expected EPB System short-term outcomes focus on effective system design, efficient administration, and improved information and tools. While it is too early to definitively report on these, this chapter provides early insights. For more information see the outcomes framework in Appendix 1.

4.1 Public awareness of the EPB system is high, but understanding is low

The 2017 EPB policy sought to address the lack of public awareness and information on the number, location and strength of EPBs, so that TAs, building owners and users can make informed decisions. To achieve this objective an online EPB register of buildings was established, requiring TAs to conduct public consultation, and provision of guidance information for relevant audiences.

The EPB-Social Survey indicates a high proportion of the general public are *aware* of the existence of the EPB system (79 per cent); but less than half (43 per cent) *understand* the way that buildings are rated for earthquake safety.

Figure 15: *Level of general public awareness and understanding about EPB regulations (n=1100)*



This contrast between awareness and understanding is expected, given that the engineering assessments of EPBs are technical, and widespread media coverage of earthquakes, building closures and upgrades can confuse what is regulatory and what is voluntary.[38]

Consistent with disaster responsiveness generally, a recent or personal experience of earthquakes impacts awareness and understanding.[39] For example, EPB Social Survey respondents in earthquake-impacted Christchurch and Wellington, and those aged over 50 years, reported significantly higher levels of awareness than other respondents.

Christchurch respondents are significantly more likely to *understand* how buildings are rated in the EPB System. Conversely respondents from Auckland (a low seismic risk area), and people under 40 years, were disproportionately unaware of regulations to identify and manage EPBs.

4.1.1 WEB TRAFFIC DATA INDICATES HIGH USE OF OFFICIAL ONLINE INFORMATION SOURCES

Data from government web pages indicates a steady flow of visitors seeking EPB-related information. For example, the EPB section of the www.building.govt.nz website averages around 5,000 page views per month. This volume of web page traffic is similar to the number of people seeking information online about pool fencing in summer, or what building work does not need a building consent.

Most web users are from New Zealand (82 per cent), and over half are from Auckland (a low seismic risk area, where the first statutory deadline is not until 2032). Visitors spend the most time on the '*How the system works*' web page.

Similarly, between August 2017 and October 2019 the Heritage EQUIP Fund website attracted over 14,000 visits. The average 500 visits per month doubled to over 1000 per month in 2019, when the Fund's scope was refreshed and expanded to include funding for professional advice, and recognition of particular challenges for provincial owners with heritage EPBs.[40]

Some stakeholders interviewed reported that building owners, engineers, and some TAs tend to seek out information and advice from colleagues or friends, rather than (or as well as) official information sources. This is consistent with general research around the influence of social norms and how people tend to seek information from sources they know and trust.[45]

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38 Media hit numbers include 130,000 for consultations by local councils and 16,000 for building closures: MBIE internal media analysis using The Knowledge Basket (2017 – 18 October 2019).

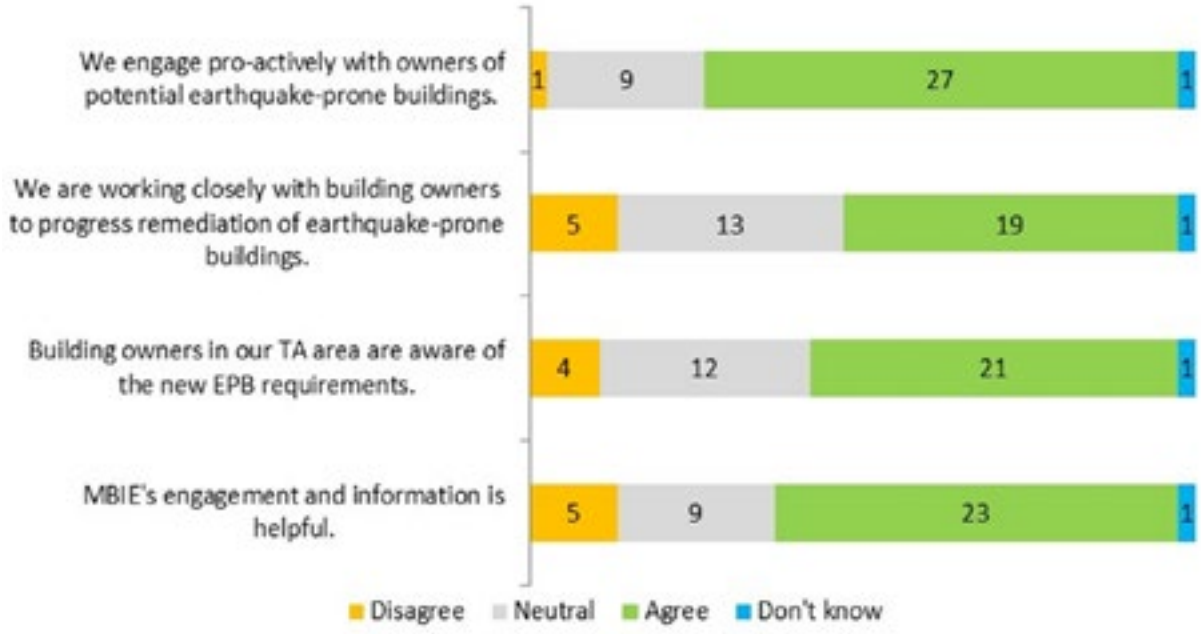
39 Colmar Brunton (2018) *Civil Defence Disaster Preparedness Report*, pages 8 – 9 and 20 - 21, at: www.civildefence.govt.nz/assets/Uploads/public-education/Civil-Defence-Disaster-Preparedness-report-2018.pdf

40 Web analytics data kindly shared by the Ministry for Culture and Heritage, 8 November 2019. The EQUIP Fund website went live in 2017; and the programme refresh with site changes in January 2019.

4.2 There is evidence of improved communication between TAs and EPB owners

It is too early to assess whether the EPB System is resulting in more effective decision-making. There is evidence of improved communication between TAs and building owners. The EPB Survey of TAs found that they generally report a high rate of satisfaction with MBIE's engagement and information (23 out of 38); and most are pro-actively engaging with owners of potential EPBs (27 out of 38). However, slightly fewer TAs (21 out of 38) agree that building owners in their area are aware of the new EPB requirements (see Figure 16).

Figure 15: *TA level of agreement about people and organisations they work with (n = 38)*



TAs in high seismic risk areas observed an early benefit of the EPB system in that their EPB regulatory role empowers a proactive approach to engaging with owners of potential EPBs. It has forced more interaction, which has improved the relationship between TAs and building owners generally.

Most TA interviewees noted that many building owners seem to accept the regulatory landscape and are 'getting on with it'. However, some interviewees reported that some earthquake-prone building owners are in denial, resistant and will likely avoid taking action to comply with their obligations until they are forced to.

4.2.1 THE NEW ONLINE EPB REGISTER IS CONSIDERED USEFUL IN SHARING INFORMATION ABOUT EPBS, BUT COULD BE MORE USER-FRIENDLY

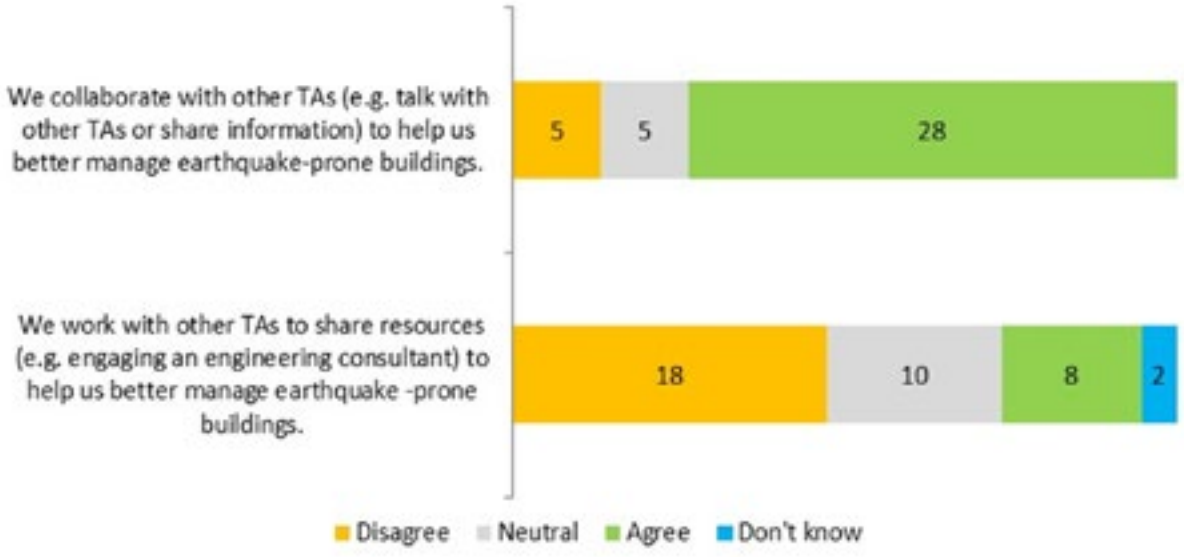
Before July 2017 the general public relied on the 67 TAs to individually publish details about EPBs in their district; which was infrequent and inconsistent. Under the new EPB system, there is now a national online EPB register, which is attracting about 600 visits per month.

The evaluation's online pop-up survey of people accessing the EPB register found that half the users were TAs updating the data for specific buildings in their district, and the remainder was split between those accessing the register for general interest (9 out of 38), and professionals in the building industry or a related sector (10 out of 38). The survey found that about three-quarters (29 out of 38) of respondents found the EPB register 'useful', none found it 'not useful'. Despite this, most of the open comments from the survey noted the register's functionality was not particularly user-friendly.

4.2.2 COLLABORATION BETWEEN TAS IS PRIMARILY INFORMATION-SHARING, WITH VERY FEW INDICATING THEY SHARE RESOURCES

Most TAs (28 out of 38) affirmed they collaborate with other TAs in terms of sharing information or talking with them. However, they are less likely to share or pool resources, such as engaging an engineering consultant together (8 out of 38 agreed).

Figure 17: *TA level of agreement about collaboration and shared resources (n = 38)*



There is clear appetite for further collaboration. Several interviewees involved in the government's roadshow for TAs and engineers commented that while they promoted cross-TA collaboration they had seen limited evidence of it in practice.

TAs we interviewed noted that barriers include different levels of capacity and capability, difficulties in coordinating across multiple TA budgets, and variations in the type of EPBs. MBIE could assist TAs with co-ordinating the development of a cross-TA compliance and enforcement strategy, or provide cross-TA educational updates and tools.

4.3 National consistency of outcomes is likely to be positive

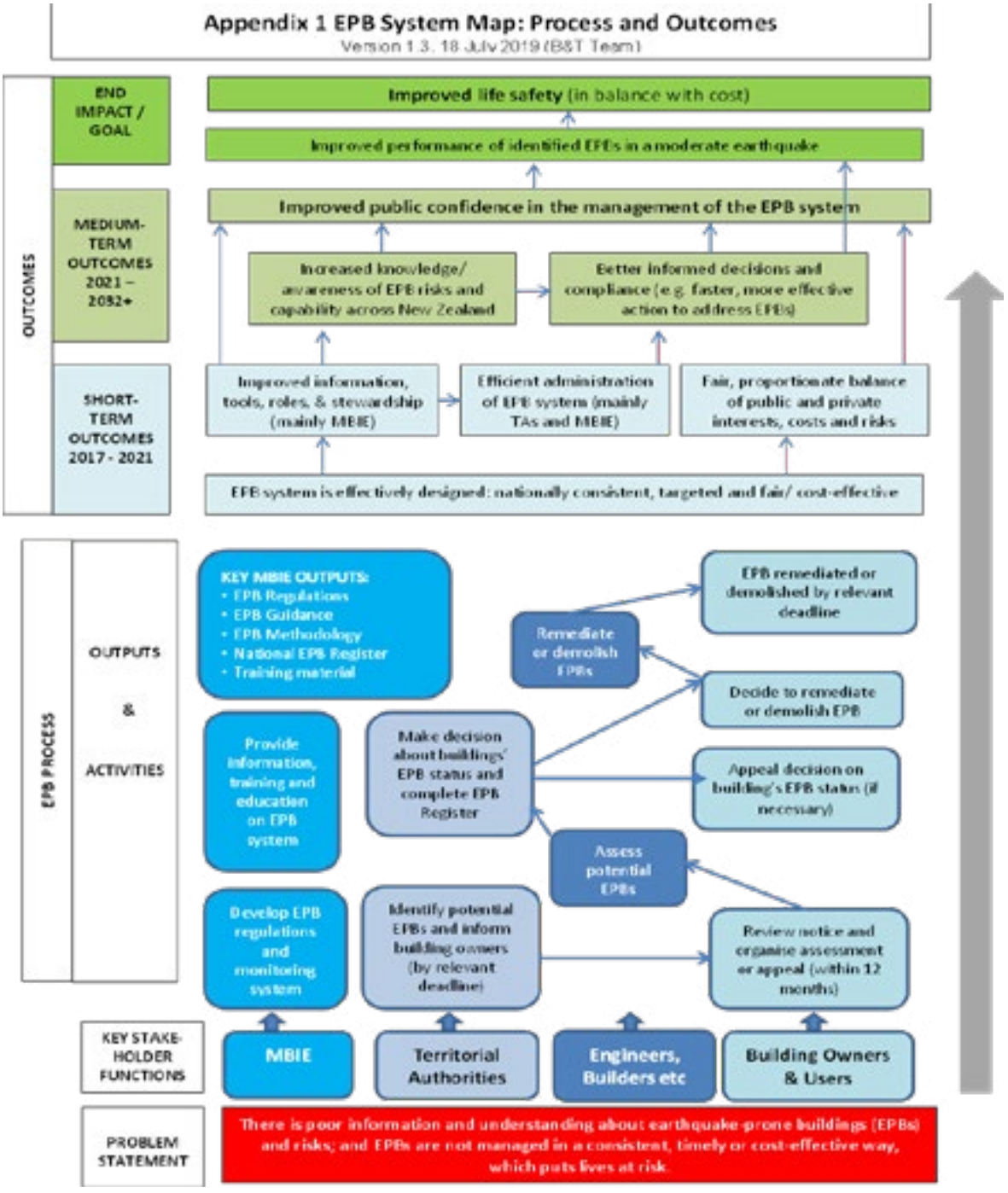
This evaluation has assessed the national consistency of both the EPB policy design and implementation positively (*excellent* and *good* respectively, see sections 2 and 3). This provides promising evidence that the policy will deliver on its intentions.

Having said that, concerns raised by provincial TAs and multi-unit owners in particular raise questions about how well the EPB system's focus on national consistency works in relation to variable capacity and capability of various stakeholders, in particular the variable circumstances of many building owners (see section 2.4), and the variable capability and capacity of smaller provincial TAs (see section 3.5).

Appendix 1: Evaluation criteria and logic model

Figure 20 presents the logic model used by this evaluation. Logic models are useful tools to test assumptions and dependencies, identify unintended consequences (positive and negative), and provide an overall framework for what to monitor and evaluate now, and in the future.

Figure 20: *EPB Evaluation logic model*



This model presents a simplified view of how the EPB system is expected to achieve expected outcomes. However, the EPB system is wider, and occurs in a complex adaptive system of changing dynamics and inter-relationships. It is unlikely to follow a predictable or linear pathway of change. Accordingly, the evaluation methodology also incorporates a systems change analysis.

In adopting a systems change analysis[41], Table 5 sets out the 'dimensions of merit' that describe what we looked for as evidence for each of the three success criteria. They are based on the same criteria used in the policy development of the EPB system.[42]

Table 5: *Dimensions of Merit for EPB Evaluation Criteria*

Criteria	Dimensions of merit
National consistency	**1.1 Nationally consistent** › EPB policy design supports consistency across territorial authorities › Consistent implementation with the Amendment Act **1.2 Interfaces well with other legislation** › Relationships with other legislation are clear and appropriate › Any potential conflict between legislative frameworks is managed
Efficient and effective implementation	**2.1 Workable and easy to implement** › Efficient TA processes › Administration and compliance costs are minimal › Cost-efficient and effective regulation oversight › Promotes user satisfaction and confidence **2.2 Clear requirements and information** › Roles, responsibilities and obligations are clearly understood and consistently applied › Powers and requirements are clear and transparent › Provides affected stakeholders with access to clear, user-friendly information and guidance › Promotes increased knowledge and understanding (technical/engineering, regulatory, personal/building, and social) **2.3 Supports good decision making with the best available information, responsive to changing situations and needs**
Proportionality and fairness	**3.1 Aligns with societal expectations** › Responsive to level of public interest/ concern about and acceptance of risks with EPBs › Strikes an appropriate balance between economic and social costs (e.g. imposing seismic remediation costs onto building owners vs willingness to pay to mitigate risks for life safety) › Acknowledges value of heritage buildings to community's sense of place **3.2 Promotes equity and fairness** › Strikes an appropriate balance between national/ regional consistency and impartiality, and targeting and staggered implementation by levels of risk, and local or individual context and need **3.3 Responsive to individual property interests and rights** › Personal and property rights are impacted only to the degree necessary to achieve life safety objectives

Matching against the criteria is the following rating scale in Figure 21, to consistently and transparently define how to assess 'how good' is *good* versus *adequate* etc.

41 The methodology refers to John Kania, Mark Kramer and Peter Senge (2018), *The Water of Systems Change*, page 4, at www.fsg.org/publications/water_of_systems_change

42 MBIE (2013?) Improving the System for Managing Earthquake-Prone Buildings, page 12, at https://www.mbie.govt.nz/dmsdocument/78-epb-policy-ris-pdf; and MBIE (2013) *Regulatory Impact Statement: Managing buildings after an emergency event*, page 11, at: www.mbie.govt.nz/dmsdocument/56-ris-managing-buildings-after-emergency-event-pdf

Figure 21: *Evaluation rating scale*

Too early to tell	Poor	Adequate	Good	Excellent
Emergent or yet to emerge, insufficient evidence to judge	Unsatisfactory, fails to meet expectations, serious or widespread weaknesses	Works fairly well, but some serious weaknesses or multiple risk areas	Works well, meets expectations, no critical weaknesses	Exemplary, exceeds expectations

Appendix 2: Evaluation Scope and Methodology

Scope of the evaluation

The main components of the explicit EPB system that have been evaluated are:

a) the 2017 **EPB policy**, as enacted in the new Subpart 6A of Part 2 of the Building Act 2004 (new sections 133AA to 133AY), associated Regulations, and the EPB methodology[43]

b) **implementation of a new EPB management system and practices**, mainly by TAs and MBIE - a national programme of outputs (such as the EPB register, EPB methodology and guidance) and activities such as TAs identifying and assessing relevant building stock within statutory timeframes

c) **public confidence and societal expectations** about how to manage the risks of EPBs with a proportionate balance of economic and social (life safety) costs.

The latter point leads to consideration of the contrast between the regulated EPB system (minimum scope of buildings and remediation standard) and current (wider and higher) societal expectations and market standards.

Outside this report's scope are broader functions or changes to the Building Act,[44] a concurrent review of related programmes such as the URM securing programme, Earthquake Commission functions, or people-related disaster preparedness/ management/ recovery aspects of earthquake risk management in New Zealand.

The evaluation is designed around a repeatable methodology, which is consistent with the wider evaluation framework for the EPB system.

Mixed methods of data collection and analysis of evidence

The fieldwork was carried out August 2019 – January 2020. Write-up in this report was delayed for much of 2020 due to Covid 19 and other unanticipated workload pressures. The mixed method approach included the following.

1. Interviews with a broad range of stakeholders

Interviews, face to face or in some cases by phone or online video-conferencing, were conducted with 35 stakeholders.

Table 3: *Summary of interviewee types and numbers*

Interviewee Type	Number of interviews
MBIE policy and implementation staff	6
Territorial Authority staff (mix of urban and provincial)	13
Building owners and representatives	8
Engineers	4
Other, including industry and heritage building representatives	4
Total Interviewees	35

43 The 2017 EPB policy was inserted into the Building Act 2004 by section 24 of the Building (Earthquake-prone Buildings) Amendment Act 2016 (2016 No 22); the regulations are the Building (Specified Systems, Change the Use, and Earthquake-prone Buildings) Regulations 2005; and the EPB methodology was incorporated under sections 133AV and 405 of the Building Act as a legislative instrument.

44 Including the Building Amendment Act 2019, regarding the management of buildings located in an area affected by an emergency.

Interviewees were provided with an information sheet setting out the evaluation purpose, type of questions, and right to confidentiality. Interviews were conducted with one or more individuals, face to face in most cases or by video or phone conference, with one or (usually) two evaluation staff. Interviewees typically involved between one and four people representing a particular role or organisation (counted as one); and interview notes were typed up and shared with interviewees, who had an opportunity to amend them. Notes were stored in a secure electronic folder and will be deleted at the end of this project.

2. Online surveys of the general public and TAs

a) A benchmark EPB Social Survey of the general public was carried out through Colmar Brunton's online panel in November 2019. The survey achieved 1,000 responses, representative of the New Zealand population, with an additional 100 'booster' responses from people in the Wellington and Canterbury regions.

b) A benchmark EPB TA Survey was conducted in-house by the evaluation staff. This survey was sent to contacts at 67 TAs in November 2019 and achieved a response rate of 57 per cent.

   The survey's design was approved by an internal Survey Panel, and most questions used a five-point Likert scale, where '1' is 'strongly disagree' and '5' is 'strongly agree'. Responses have been reported using net results for 'agree' (combining '4 agree' and '5 strongly agree') and 'disagree' (combining '2 disagree' and '1 strongly disagree').

c) A three question, 'pop-up' survey of visitors to the EPB Online Register was carried out using SurveyMonkey software, using multiple-choice responses, and a three-point Likert scale for a question about how useful they found the register (useful, somewhat useful, or not useful) . This survey received 38 responses, between 21 November 2019 and 17 February 2020. The survey unintentionally targeted both general users, and TA staff entering the register to update its content (half the 38 survey participants are TA staff).

3. A wide range of TA monitoring data

The evaluation used the EPB monitoring data collected annually from TAs since 2018, referring to published reports,[45] the raw 2018 – 19 data, and online annual summaries.

An MBIE summary of TA Technical Reviews is also referenced (MBIE carries out regular technical reviews of TAs in their role as Building Consent Authorities (BCAs)).[46]

4. Desktop analysis of key documents and available data

The areas of desktop research and analysis for this evaluation included:

a) Review of policy documents 2012 – 2019, including regulatory impact assessments, data about the quality of NZ building stock[47] and cost-benefit analyses (CBAs)

b) Market trends: the estimated and actual costs of remediation, and impact on market values, saleability, and insurability (where information is available)

c) Administrative data, including website hits and media statistics/ analysis.

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45 Ibid, pages 6 – 9.

46 MBIE (2017), *MBIE's Summary of the 2015 – 2017 Technical Review Programme*, pages 8 – 9, at www.building.govt.nz/assets/Uploads/building-officials/technical-review/council-technical-reviews-2015-2017.pdf

47 MartinJenkins analysed pre-1976 building stock data from a 2012 TA survey and QV data by three levels of 'new building standard' (NBS); under 33 per cent NBS, 34 – 67 per cent NBS, and > 67 per cent NBS: page 11 of MartinJenkins CBA appended to MBIE (2016) *Regulatory Impact Statement: Regulations under the Building (Earthquake-prone Buildings) Amendment Act 2016*, page 5, at www.mbie.govt.nz/assets/ed8979625b/ris-regulations-under-the-building-amendment-act-16.pdf. Other likely sources include MBIE determinations (review of specific Council decisions about EPBs), and BRANZ.

Limitations

The evaluation is the first of its kind for the new EPB system, so in many cases there is no 'pre-EPB' baseline data to compare against. We are mindful of the scarcity and inconsistency of data on the number and condition of EPBs in New Zealand, as well as specific costs and factors around remediating EPBs. Further, there are commercial sensitivities and complications around calculating private costs to remediate a range of buildings.

Part of the evaluation design involved creating new data collection systems and evaluation activities for the first time, which will guide future monitoring and evaluation.

A second limitation is the early stage of the 50+ year EPB system timeframe. For example, it will not be until 2032 that all TAS are obligated to have even identified all EPBs in their district. Similarly, many EPB owners have yet to substantively engage with the EPB system.

To avoid the current 'experience' gap (and mitigate the risks of survey fatigue) this evaluation has not attempted to survey EPB owners or the entire engineering or building industry; or to seek evidence of long-term outcomes. Instead, it has focussed on collecting data through interviews and web hits data about short-term outcomes like public awareness and attitudes; early implementation insights; and addressed the areas of emergent public interest in 2019.

We expect that as the EPB system moves to the consolidation stage (2021 – 2032), more data will become available as a critical threshold of TA and industry professionals come to have direct interaction with the EPB system; and the political, technical and social landscape may change and evolve in potentially new directions.

The ultimate evidence of the EPB system's effectiveness will be a review of how well buildings perform (and how many lives may be lost) in the next significant earthquake event. However, no one knows when the next significant earthquake will occur; or where; or impact on what type of population base or buildings profile, e.g. low scale provincial through to high density urban.

In this landscape of limited data and uncertainties, data collection, monitoring and evaluation should be considered iterative and cumulative, rather than definitive.

Appendix 3: Overview of remediation cost data estimates

Table 4 presents a summary of available estimates for EPB remediation costs. It's clear from the estimates in this table (ranging from $56,000 to $94,000) that the actual costs of remediation are relatively unknown. A range of factors affect the ability to estimate the cost of remediating EPBs, including:

- the relatively small number of buildings being remediated (statutory deadlines are at least seven years away)
- commercial sensitivity and there being no requirement to report on costs
- many buildings being remediated to higher than the EPB regulated minimum 34 per cent NBS.

Table 4: *Indicative summary of remediation cost data estimates (2012 – 2019)*

	Construction/ strengthening costs	NBS Standard	Engineering assessment costs	Other costs	Total per unit equivalent[48]
EPB Policy's cost estimates for 'a' building in 2012[49]	$300 - $416m2 [$40,000 - $55,000 per unit equivalent]	34% NBS (EPB regulations' minimum)	$10,000 - $20,000 per building (assumed a single assessment)	× Other costs not included	$56,000
URM Fund 2017 – 18 sample of 21 of the 114 remediated URM buildings' actual costs in Wellington50	$70,000 average per building (actual claimed costs range $11,000 - $306,000)*	unknown	$17,000 average actual claimed consultant costs (range $1,000 - $82,000)	× Data not available	$87,000 per building (average)*
URM Fund 2017 – 18 analysis of costs for 59 co-funded buildings[51]	$3,900 - $6,800 per linear not square metre of facades (1 – 4 storeys)	unknown	$5,000 median* (outlier costs up to $25,000)	× Other costs not included	$94,000 per building (average)

***Note, the URM Fund scope was only to secure facades and parapets, not strengthen the entire building structure (many remained 'EPBs' post-securing).**

48 To provide some comparability with the 2019 ICW Survey figures in the bottom row, a per-unit calculation is applied, using a hypothetical average 133m2 unit in a 15-unit residential building.

49 MartinJenkins (2012) *Indicative CBA Model for EPB Review*; at www.mbie.govt.nz/dmsdocument/74-cost-benefit-analysis-earthquake-prone-building-review-pdf and the updated, final CBA appended to MBIE (2016) *Regulatory Impact Statement: Regulations under the Building (Earthquake-prone Buildings) Amendment Act* 2016, at www.mbie.govt.nz/assets/ed8979625b/ris-regulations-under-the-building-amendment-act-16.pdf

50 Commissioned by MBIE on a confidential basis from building consents data refer mainly to 2 – 3 storey URM buildings, one third of which are small buildings in one street in central Wellington. The sample probably reflects buildings/costs where remediation was relatively straightforward and could proceed quickly within the URM Fund's 18-month timeframe, 2017 - 2018.

51 MBIE (2020) *Post-Implementation Review of the Hurunui/ Kaikōura Earthquakes Recovery (Unreinforced Masonry Buildings) Order 2017 and Securing* Fund, Appendix 1 (pages 34 – 38), at: www.building.govt.nz/assets/Uploads/managing-buildings/post-implementation-review-urm-order-and-securing-fund.pdf. The 59 buildings are in Wellington and Lower Hutt. The URM Fund's maximum funding/subsidy caps were: Category 'A': up to $1,500 for engineering assessment if no remedial work required; Category 'B': $25,000 max for 1 or 2-storey buildings requiring remedial work; Category 'C': 3 or more storey buildings requiring remedial work; Category 'D': $25,000 - $130,000 max up to 3+ storeys and 2 listed streets. The $94,000 figure is a simplistic average of the 104 buildings repaired at a total cost of $9.77 million (page 2).

A significant challenge is how to compare 'apples with apples' with EPB remediation costs. Stakeholders, and a review of previous cost estimates (see Table 4) identified a range of differing information or definitions, gaps in data, and wide variations in underlying assumptions about which costs are included or not. For example:

- Whether estimates include or exclude certain costs associated with remediation (e.g. building consent fees, professional or legal fees, business continuity)
- What type of building is being remediated (e.g. simple or complex design, multi-storey buildings, materials, inclusion of URM, heritage concerns relating to steel reinforcing).
- Variations in cost and availability of engineering or restrengthening expertise by region
- Economies of scale, e.g. adjacent buildings or precincts/ clusters of buildings strengthened at the same time
- Standard of remediation, to 34 per cent NBS (regulated minimum) or 67 per cent - 80 per cent+ NBS (market standard)
- Indirect or intangible costs of time, stress and effort for non-expert EPB owners to manage a remediation project.

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