IN CONFIDENCE

# Assessing our foundations

## Evaluating the implementation and operation of the earthquake-prone building system

David Moore, Angus White, Hamish Hann, Jamie O'Hare

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# Glossary

| Abbreviation | Stands for |
|---|---|
| %NBS | Per cent new building standard |
| Amendment Act | Building (Earthquake-prone Buildings) Amendment Act 2016 |
| CCC | Code Compliance Certificate |
| DSA | Detailed seismic assessment |
| Engineering Assessment Guidelines | Technical Guidelines for Engineering Assessments |
| EPB | Earthquake-prone building |
| EPB methodology | The methodology to identify earthquake-prone buildings |
| HSWA | Health and Safety at Work Act 2015 |
| ISA | Initial seismic assessment |
| JC-SAR | Joint Committee for Seismic Assessment and Retrofit[1] |
| MBIE | Ministry of Business, Innovation and Employment |
| Remediation | Strengthening or demolishing an earthquake prone building |
| TA | Territorial authority |
| The Act | Building Act 2004 |
| URM | Unreinforced masonry |

[1] Prior to 2024, this was known as the Joint Committee for Seismic Assessment of Existing Buildings.

# Acknowledgements

We acknowledge the input from the Ministry of Business, Innovation and Employment, the Seismic Review Steering Group,[2] and the Joint Committee for Seismic Assessment and Retrofit of Existing Buildings, as well as the external experts we consulted at Holmes and ResOrgs and the stakeholders who provided their time and thoughts during interviews or in completing our online survey as well as the Parliamentary Counsel Office for providing information to us.

An overview of those we have engaged with is provided in Appendix B. These people were generous with their time and the discussions helped inform our thinking which has fed into this report. However, the views expressed in this report are those of the authors only and should not be taken as representing the views of any of the individuals engaged with during the process, nor any of the organisations they are associated with.

Our thoughts are with the families and loved ones of the people who have lost their lives during the seismic events that have informed the regulatory system discussed in this report.

[2] Ministry of Business, Innovation and Employment, (2024c).

# Executive summary

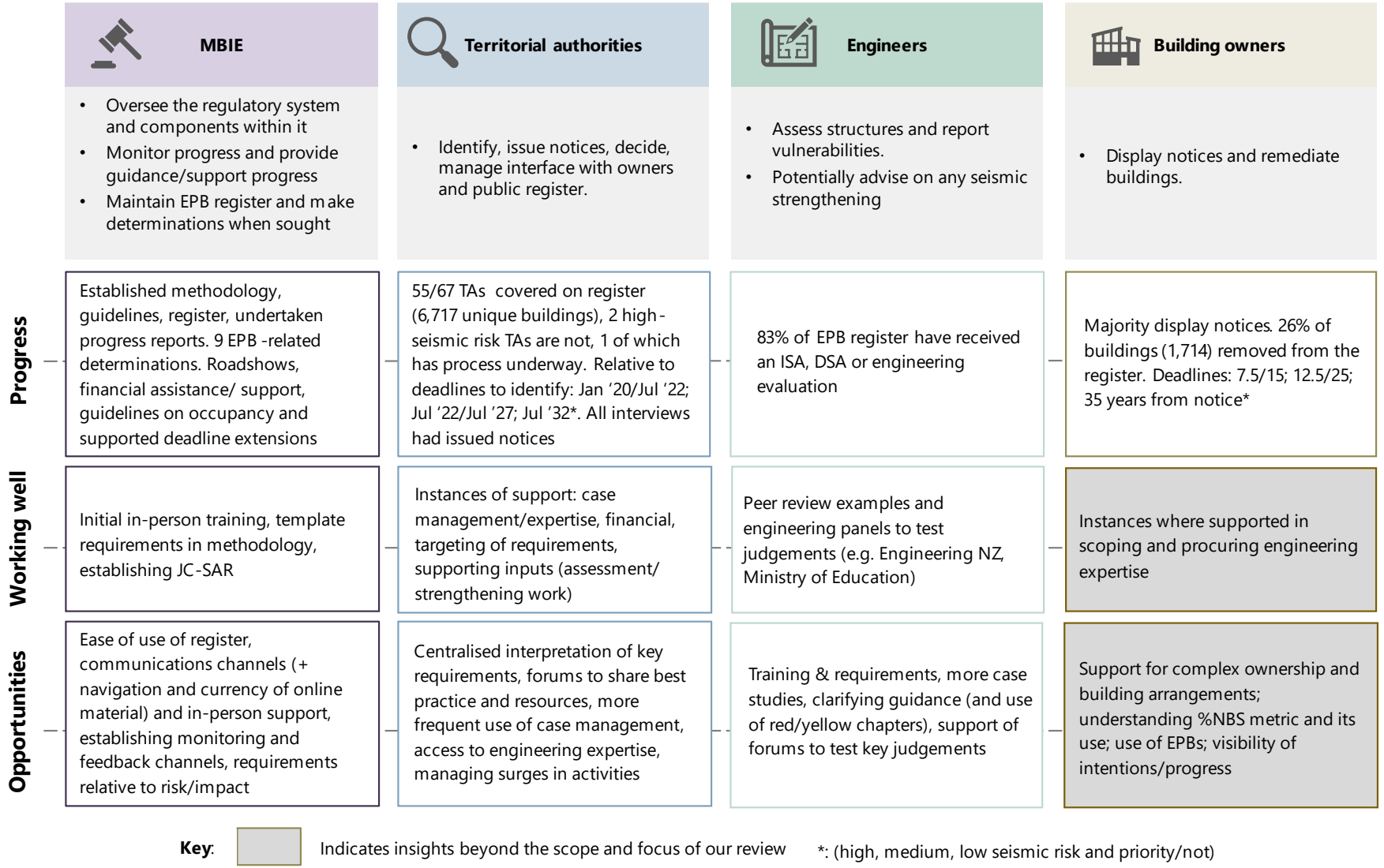
The Ministry of Business, Innovation and Employment (MBIE) engaged Sapere to identify which elements of implementation and operation (by MBIE and central government, territorial authorities (TAs) and engineers) of the current earthquake-prone building (EPB) system are and are not working well. This report is one part of MBIE's review of the management of seismic risk in existing buildings (the Review). Other work for the Review focuses on incentives, building owners, international approaches, and the costs and benefits of requirements for different building types.

Our focus is on how these key stakeholders are discharging their key responsibilities under the Building Act 2004 (the Act). We were asked not to focus on the role of building owners in supporting the ultimate outcomes of the system. We have sought to answer the questions set out in the table below. Our initial answers are highlighted in the table with supporting detail provided below.

Table 1: Key review questions and answers

| **Key questions in our Terms of Reference** | **High-level answers (elaborated on below)** |
|---|---|
| Whether the EPB system is being implemented by TAs, engineers and MBIE:<br>• effectively<br>• efficiently<br>• consistently | Positively:<br>• the parties are effectively discharging their responsibilities under the Act<br>• each party is undertaking their role efficiently given their role and resourcing<br>• TAs are implementing the EPB system more consistently than before 2017.<br>On the other hand, there are significant issues and challenges, including:<br>• risks to future remediation compliance as many building owners wait until the deadline before doing anything<br>• potential opportunities at a system-wide level to improve efficiency<br>• inconsistency across engineering assessments and where requirements can be interpreted differently.<br>Each party has their own reasons to be conservative which can affect the intended outcomes across the system, in a manner not intended by policy makers of the time. |
| Areas where the EPB system is working well and where it is not (within the scope noted above) | Summarised in Figure 1 and elaborated on below. |
| The quality of interconnections between TAs, engineers and MBIE | Connections are more prevalent and work best where parties' functions interface/directly relate to others in the legislative process (see Figure 2). Communication channels across parties could improve, and more formal and effective monitoring and feedback mechanisms could be established. |
| The adequacy of MBIE's administration, guidance and oversight | MBIE has adequately met its requirements under the Act, developing system components within its resourcing constraints (and given other policy focuses) as illustrated in Figure 1, noting more could be done to support oversight and to provide broader system stewardship. |

Figure 1: Overview of findings



## Administratively effective, individually efficient and more consistent than prior to 2017

**Progress is being made to identify and address EPBs, but challenges remain and overall effectiveness is hard to judge at this point**

MBIE, TAs and engineers have been progressing their roles under the Act. However, overall effectiveness of the system is hard to judge given the still relatively early stages and risks to future compliance.

MBIE has established the key system components it is responsible for, having established the EPB methodology, guidelines, register, and undertaken progress reports, as well as making nine EPB-related determinations. In addition, during initial implementation it supported roadshows of in-person training, and established financial assistance and support for at-risk building owners. It also developed guidelines on occupancy of EPBs and supported deadline extensions.

In the context of having extended the deadlines for remediating buildings (noting pressures that had been highlighted relative to resourcing), and building owner challenges having been identified with some of the support mechanisms stopped, we note the following:

- The register shows 6,717 unique buildings identified as EPBs as of January 2025.
- Most territorial authorities, 55 of 67 and all but 2 that are in high-seismic risk areas (and one that contains medium and high-risk zones), have EPBs and included them on the EPB register. All interviewed TAs had issued notices or were in the process of issuing notices where potential EPBs had been identified.
- The majority (83 per cent) of buildings on the EPB register have received some form of engineering assessment/evaluation. Reassessments have been a material factor in a significant portion of removals from the register.
- Overall, around a quarter of buildings on the EPB register (1,714 buildings) are no longer considered earthquake prone.
- Building strengthening is most prevalent in areas of high seismic risk, with 66 per cent of buildings that have been removed in high-risk areas being strengthened. This is particularly the case in the Canterbury and Wellington regions.
- There is a risk that most of the buildings remediated so far could be the "lowest hanging fruit," and the remaining buildings may be more complicated to progress (due to the building or the circumstances around it).
- We understand from TAs that the majority of EPBs have notices appropriately displayed and where non-compliance was identified, TAs often found this was able to be resolved with a compliance reminder and follow up, rather than requiring more formal enforcement action.

In the context of the indicators of progress noted above, we highlight the following key features influencing the broader effectiveness of the EPB system:

- The focus of attention was intended to be on the profile categories in the EPB methodology (where some raised there could be adjustments to the target building typologies), but many buildings have been identified that don't fit into one of the categories.

- The requirements may impose burdens and have unintended impacts beyond the benefit or ability for building owners to fund, limiting progress to reduce risk.
- The understanding of assessment implications (including %NBS meaning) is impacting occupancy decisions prior to deadlines, which affects the costs and incentives to progress remediation.
- There is a set of skills required to support strengthening that not all building owners (or engineers) will have.
- There is variation in approaches taken by TAs in the interface between determining if a building is an EPB and the requirements relating to seismic strengthening work.
- Resourcing constraints are likely to limit the ability of each of the parties to go beyond what is required of them under the Act in supporting intended outcomes, were a factor in the decision to extend remediation deadlines, and are a key risk to achieving the widespread remediation nationally within intended timeframes.
- The lack of milestones and visibility of progress in decisions around remediation limits TAs' understanding and ability to support progress.

Our comments above on effectiveness should be interpreted in the following context:

- This assessment of the way the system has been implemented and operates focuses primarily on the activities associated with identifying and assessing potential earthquake-prone buildings, given the early phases of implementing a regulatory system with a lifespan well beyond the period to date.
- While we have looked at remediation outcomes and non-compliance to date, it is important to note that the vast majority of deadlines were in the future when the Review was announced, and the subsequent four-year extension to all non-lapsed deadlines (as at 2 April 2024) has likely further delayed action by building owners to remediate their buildings.
- Therefore, we can only make limited conclusions in relation to the effectiveness of the overall system in addressing the risk to affected buildings, the level of compliance that can be expected in future, and the effectiveness of enforcement measures, given their limited application to date.

**Each party is undertaking their role efficiently given their resourcing, but there are potential opportunities at a system-wide level to improve efficiency**

At a high-level, MBIE, TAs and engineers appear to be undertaking their roles efficiently given their focus and resourcing. There are pressures on each to manage within the resources available, however concerns over liability provide reasons for each party to be conservative. These overlapping incentives to be conservative can affect the intended outcomes across the system, in a manner not intended by policy makers at the time. Opportunities to clarify aspects centrally (such as guidance on interpretation of aspects of the Act where there are differences in practices or where practices may deviate from intentions when designing the changes in 2017) may enable broader system efficiencies.

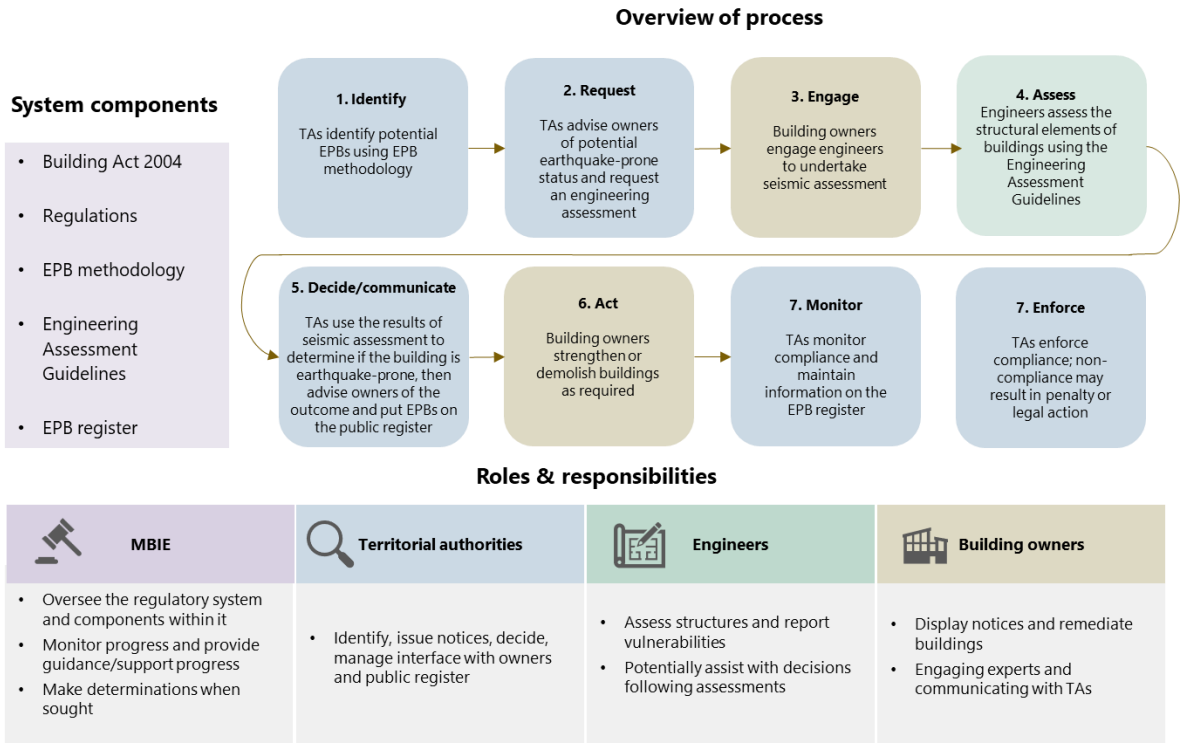
**The 2017 changes have supported national consistency but there are still differences in some practices**

We find that the arrangements have improved upon prior requirements with greater consistency across territorial authorities. MBIE, TAs, and engineers are largely performing their legislated roles as intended, and as one might expect given their context. There are still some areas of inconsistency and potential issues, but there are opportunities (as summarised in Figure 1 and discussed below).

## Aspects of most importance that are working best relate to supporting good practices and addressing challenges

Figure 2 provides an overview of the system components, and the envisaged process, roles and responsibilities. In this context, the key aspects of the system that are working well are set out below, followed by the issues and opportunities (building on the summary in Figure 1). In doing so, we comment on the quality of interconnections across parties and adequacy of MBIE's administration, guidance and oversight, focusing on the aspects that are working well and potential opportunities for improvement (doing this together attempts to limit repetition).

Figure 2: Overview of system components, process, roles and responsibilities




As illustrated in Figure 1, key areas that have and/or are working well were:

- greater consistency of practices across TAs than prior to 2017, with the EPB methodology having a key role supporting this and providing a template for TAs
- the Joint Committee for Seismic Assessment and Retrofit (JC-SAR) (a group of highly experienced engineers working across engineering societies), as well as stakeholders who govern the Engineering Assessment Guidelines, and the engineering societies, all work to

improve knowledge and address areas of concern, which has helped improve engineering assessment practices

- MBIE and central government-led:
  - initial in-person training and support, considered very helpful when the 2017 changes were implemented (requests for additional training were common)
  - guidance relating to the use of EPBs addressed an area of particular concern that had emerged
  - templates for some requirements under the EPB methodology and for EPB notices which have aided system efficiency and consistency
  - support pilot which helped to identify and assist with key challenges for building owners.
- TA-led:
  - case management, provision of expertise/support in procuring it, and financial support which have assisted with the system's effectiveness in areas where it has been offered
  - targeted requirements to support seismic strengthening (while exempting other requirements) which has assisted building owners to progress work.
- Engineering-led:
  - peer-review practices which have supported engineering judgements and assessments (though there is also a risk that seeking second opinions/review has contributed to conservatism)
  - engineering panels to test judgement, which were seen by stakeholders as helpful for challenging assessments or testing assessments for those buildings on the margin of being considered earthquake prone.

We also heard of examples where building owners were supported in scoping and procuring engineering expertise, or in navigating building/building-owner(s) challenges which worked well.

## Issues and opportunities are interrelated across those with responsibilities

The key issues and opportunities across the roles that are in scope of our review (excluding building owners) are set out next (expanding on the summary in Figure 1), before highlighting potential areas for improvement at a system-level.

**MBIE and central government**

MBIE communications (channels, clarity, and currency) with, and aspects of support for, key stakeholders could be improved. In addition, as part of its stewardship function, MBIE could support greater oversight and establish more effective feedback loops to enhance the understanding of practices and issues—and importantly, there should be clear avenues to make improvements and support learning across the system.

TAs raised difficulties with the EPB register relating to access and maintaining and seeing the latest information. We would support MBIE's efforts to ease difficulties for TAs where possible.

Central government occupancy decisions around EPBs and tenancy requirements beyond requirements of the EPB system impact outcomes and practices around potential EPBs.

While potentially needed to allow the review to take place and potential changes to be implemented without impacting on remediation timeframes for building owners, the recent timeframe extensions caused issues for TAs in terms of additional work and reduced ability to engage owners in practice.

Questions were raised during the work regarding the focus of the EPB requirements relative to the risks and wider impacts. We expect this will be a focus of the wider review.

**Territorial authorities**

There is still some inconsistency in the interpretation and application of requirements by TAs. Resourcing and turnover have the potential to impact the level of progress and support TAs can provide. Opportunities exist in particular around clarifying guidance for the use of the 'identify at any time' pathway under section 133AG(3) of the Act,[3] to minimise requirements on building owners, encourage strengthening work (such as through the application of section 133AT of the Act), and to establish forums to share best practice.

The ability for TAs to enforce remediation is expected to be particularly challenging in practice, given the tools are unlikely to address underlying drivers of inaction. However, TAs that have taken a more supportive and case management approach appear to have seen results in terms of remedial activity. There is potential for the surge in activity around deadlines to become a problem. Opportunities exist to provide more tailored support to building owners to manage surges in activities in the leadup to common remediation deadlines.

**Engineers**

The greatest remaining area of inconsistency is the engineering assessment reports. This is due to differences in the scope of activities performed, approaches taken, and the interpretation of the level of judgement required when engineers are assessing buildings. This appeared to largely be caused by differences in the experience of those involved in the assessments, though there were also indications that the communication of results and scoping of requirements were contributing issues.

Opportunities in this space include further case studies in guidance, training and/or other requirements for undertaking work, clarifying aspects of the Engineering Assessment Guidelines and the standing of the various guidance in relation to the application of new knowledge for assessments and/or subsequent work. Supporting forums to test key judgement decisions would also assist and ensure there are effective paths to resolve any differences of opinion.

## System-wide opportunities for improvement

Areas where we have identified potential opportunities for improvement at more of a system-level include:

- developing effective monitoring, feedback and learning loops to drive targeted continual system improvements, including clarifying the role and supporting the work of JC-SAR while reducing reliance on certain key individuals

[3] As well as the opportunities to be identified and requirements to act under section 133AQ of the Act.

- providing training and in-person support for TAs in medium and low seismic risk areas, and for new personnel who were not involved at the time the legislative changes were implemented
- improving clarity and guidance around the interface between the EPB system, the Health and Safety at Work Act 2015 (HSWA), and government tenancy decisions
- providing guidance and support at the interface between the identification and assessment of EPBs and the processes associated with building works to support remediation
- supporting the scoping of engineering work and providing avenues to support actions to remediate buildings where the costs will likely exceed the ability to recover those costs, or for buildings with complex challenges (such as multiple, overseas owners)
- considering the incentives of individual parties within the system given their roles and potential liability, and clarifying system design and guidance to address incentives for conservatism that may undermine broader system objectives
- supporting improved understanding of engineering assessments, the implications, and the targeting of efforts to where the risks and potential benefits from remedial work are greatest (whether through the EPB methodology and/or provisions under the Act such as s133AG(3) and s133AQ).

# 1. One part of a wider review of the earthquake prone building system

In June 2024, the Ministry of Business, Innovation and Employment (MBIE) commenced a review of the management of seismic risk in existing buildings (the Review).[4] The purpose of the Review is to ensure seismic risk in existing buildings is being managed effectively and in a workable, equitable, and proportionate way.

The current earthquake-prone building (EPB) system was implemented following the 2017 amendment to the Building Act 2004 (the Act) to include *Subpart 6A – Special provisions for earthquake-prone buildings*. Prior to this, TAs were responsible for developing their own policies for managing EPBs. As part of its current state analysis for the Review, MBIE engaged us to identify which elements of the current EPB system are and are not working well with the implementation and operation of the system by MBIE and central government, territorial authorities and engineers. The purpose of this work is to:

- identify what elements of the EPB system are working well and not working well
- consider the barriers and drivers impacting seismic risk management
- consider whether the current EPB system has been implemented and operationalised as intended.

Detail of the specific questions we have been asked is set out in Appendix A (and the executive summary), informing the approach and focus of our work. This report highlights our findings.

**Part of wider inputs MBIE has commissioned to inform the Review**

This work fits alongside other work that MBIE has commissioned to inform the Review which include:

- jurisdictional analysis, looking at international approaches to managing comparable risks
- cost-benefit analysis for the EPB system, assessing the costs and benefits of remediating EPBs
- public expectations and behavioural studies, looking at willingness to pay to mitigate, and behavioural response to, seismic risk.

## 1.1 The 2017 changes need to be considered in the context in which they were developed

Following the 2011 Canterbury earthquakes, the Canterbury Earthquake Royal Commission reported that there was poor understanding of the risks posed by EPBs, limited access to information about the strength of individual buildings, and variable approaches across territorial authorities (TAs) to managing EPBs (whose policies and practices varied), with limited guidance or central oversight of the system.

[4] For more detail, see Ministry of Business, Innovation and Employment, (n.d.).

The Building (Earthquake-prone Buildings) Amendment Act 2016 (the Amendment Act) was introduced to address the Royal Commission findings. This made substantial changes to how EPBs are identified and managed with the objective outlined in the box below. Key changes included:

- requiring a consistent approach to identifying potential EPBs across the country, with a focus on types of buildings that present the most risk to life safety
- setting timeframes for identifying and either strengthening or demolishing (remedying) EPBs, which prioritised efforts in the highest seismic risk areas and 'priority buildings'
- providing information to allow for informed decisions about risk, occupancy, and tenancy.

> **Objective of the Amendment Act and EPB System**
>
> The objective of the changes was to protect life safety in a moderate earthquake, while striking an appropriate balance between protecting people from harm and imposing seismic remediation cost onto the right building owners (Ministry of Business, Innovation and Employment, 2017b).

However, regulatory approaches to managing seismic risk have evolved over time, with TAs first given powers to identify EPBs and require building owners to take action as part of a 1968 Amendment to the Municipal Corporations Act. The engineering community has also responded to and supported EPB regulation through a series of engineering assessment guidelines. The Amendment Act and the Seismic Assessment of Existing Buildings 2017, hereafter referred to as the Engineering Assessment Guidelines, follow earlier changes in legislation and prior guidance on engineering assessments of buildings (Ministry of Business, Innovation and Employment, 2017c). Subsequent voluntary guidance, such as the 2018 C5 yellow chapter and a recent update to it, has also since been added (Ministry of Business, Innovation and Employment, 2025b).

## 1.2 There have been adjustments since 2017

Following the Amendment Act, other aspects of the EPB system were implemented: regulations, the methodology, the Engineering Assessment Guidelines, the EPB register, and progress reporting. This was accompanied by in-person training and support workshops across New Zealand and online material to support those with a role in the system (particularly TAs and engineers). In addition to this, specific guidance for building owners and guidance around occupying EPBs has also been developed.

### 1.2.1 Prior support for building owners

Notable streams of support to building owners following implementation of the EPB system were the Residential Earthquake-prone Building Financial Assistance Scheme, MBIE's EPB support service pilot, built heritage support, and targeted support to certain buildings with unreinforced masonry following the 2016 Kaikōura earthquake. Key aspects of these programmes have been disestablished (the first two linked to the Review being underway), which we expect may undermine engagement and potential progress despite identified needs.

## Financial assistance scheme

The Residential Earthquake-prone Building Financial Assistance Scheme was established in 2020 to provide low-interest, deferred-payment loans to owner-occupiers of earthquake-prone apartments facing financial hardship due to strengthening costs. Initial settings meant that it was difficult for any owners to meet the eligibility criteria, so changes were made in 2022. By 2023, over 60 applicants across seven buildings had their eligibility confirmed. However, ongoing barriers such as insurance requirements were identified as needing to be addressed for many of those applications to proceed to stage two and be approved for a loan. In addition, there was limited funding available for all the applicants confirmed as eligible, with only around four buildings (up to 40 people) likely to be able to be supported at any one time.

The scheme was disestablished in 2024, following the announcement of the Review.

## The EPB support service pilot

In 2023, MBIE worked with Wellington City Council to identify up to 30 (of 95) residential EPBs in Wellington at risk of not meeting their remediation deadlines without additional support. Ten buildings were selected to participate in the EPB support service pilot, which was designed to support multi-unit residential EPB owners to reach a decision about their remediation obligations within the statutory timeframes. The deadlines for these buildings ranged between 2023 and 2030. The pilot tested the demand, approach, and feasibility of providing an enduring service to a wider group of building owners nationally. The service was intended to have four key functions:

- Case management, advisory, and connection to other support services (legal, engineering/technical, mediation and well-being)
- Remediation options analysis
- Facilitation of collective decision making
- Facilitation of access to technical and expert advice.

An internal review of the pilot provided insights into the nature of barriers to achieving the EPB system's objective, and challenges particular building owners face (Ministry of Business, Innovation and Employment, 2024b, 2024a). The pilot began in June 2023 and was intended to run through to the end of 2024, however was ended early due to the announced Review. As a result, none of the buildings participating in the pilot reached an outcome and a final evaluation of the pilot was unable to be completed.

## Built heritage support

This stream of support includes the Heritage New Zealand National Heritage Preservation Incentive Fund, Regional Culture and Heritage Fund, and other sources (Ministry for Culture & Heritage, 2023). This also included Heritage EQUIP, an earthquake upgrade incentive programme which partially funded 77 projects between 2017 and 2020 (Ministry for Culture & Heritage, n.d.).

### Targeted regulatory initiative relating to unreinforced masonry buildings

In addition to the above streams, the Unreinforced Masonry Buildings (URM) Securing Fund provided targeted support to certain buildings following the 2016 Kaikōura earthquake. Several TAs have also undertaken initiatives to support building owners which we discuss in section 3.

An independent review of this initiative (Independent Review Team Commissioned by MBIE, 2020) noted the following:

- On 27 February 2017, the Hurunui/Kaikōura Earthquakes Recovery (Unreinforced Masonry Buildings) Order 2017 (URM Order) was approved, and the URM Securing Fund (the Fund) set up. The motivation behind these was that seismic modelling showed a heightened risk of a substantial aftershock in the 18 months following the Kaikōura earthquake of 14 November 2016. The report noted there was political will, and the technical means to address the buildings that presented the highest risk to life safety.
- The URM Order required Hutt City Council, Wellington City Council, Hurunui District Council and Marlborough District Council to manage the timeframes for securing buildings with street-facing unreinforced masonry elements.
- The Building Act was amended to:
    - introduce a new class of dangerous buildings under the Building Act (buildings with dangerous street-facing unreinforced masonry parapets and facades on listed streets)
    - enable affected territorial authorities to access the enforcement powers under the Building Act for the URM Order
    - require territorial authorities to issue notices, under section 124 of the Building Act (s124 notices) to owners of affected buildings by 29 March 2017, requiring them to carry out securing work on the buildings by a date in March 2018 (which was subsequently extended in certain cases for a further six months)
    - require affected building owners to complete the securing work within 12 months after being notified by the territorial authority (with the same extension as noted above)
    - remove the need for a building consent for the securing work, as long as certain criteria were met.
- The Resource Management Act was modified to remove the requirement for a resource consent to carry out unreinforced masonry securing work, provided certain conditions were met.

## 1.2.2 Deadline extension for EPB remediation

Prior to the Review, despite the progress discussed in section 3, a substantial number of deadlines were approaching (with a peak coming in 2027), with a number of building owners and territorial authorities increasingly raising concerns about the challenges to remediation and that a substantial amount of non-compliance was expected. In light of this, the government announced the Review and passed the Building (Earthquake-prone Building Deadlines and Other Matters) Amendment Act 2024, (Ministry of Business, Innovation and Employment, n.d.; New Zealand Legislation, n.d.) extending all

non-lapsed EPB remediation deadlines as of 2 April 2024 by four years, with an option to extend by a further two years if required through an Order in Council. This is also discussed in section 3.

## 1.3 This work follows early insights identified since implementation

MBIE's 2021 early insights initial evaluation of the EPB system (Ministry of Business, Innovation and Employment, 2021) made the following key findings that are relevant context for our work:

- The EPB policy design was good overall, working predominantly as intended.
- Implementation of the system was adequate:
  - Consistency was good, while fairness and proportionality as well as efficiency and effectiveness were assessed as adequate.
  - There was limited public confidence around how well or timely EPBs were managed.
  - There had been some teething issues relating to engagement, information sharing, use of the register and TA monitoring tools, and engineers following the methodology.
  - There was variable TA capacity and capability.
- It was too early to assess most outcomes from the system, but there was improved understanding and awareness.

In March 2023, the Joint Committee on the Seismic Assessment and Retrofit of Existing Buildings (JC-SAR) (2023—see box at the end of section 2 for more about JC-SAR) reported on its review of the implementation and application of the Engineering Assessment Guidelines, which recommended the following:

- Managing the guidelines holistically as a system (monitoring, feedback loops, support).
- Establishing structured training, emphasising building performance.
- Commencing a programme of technical updates prioritised by JC-SAR.
- Establishing a workstream on ratings for low rise buildings (except unreinforced masonry).
- Developing guidance for load path reviews focusing on vulnerabilities for recent builds.
- Reviewing how the New Building Standard (NBS) is applied to existing buildings and considering expanding the assessment summary table.

## 1.4 Our approach drew on various information sources

Our approach for undertaking this work involved the following as summarised in Figure 3 and detailed further in Appendix B:

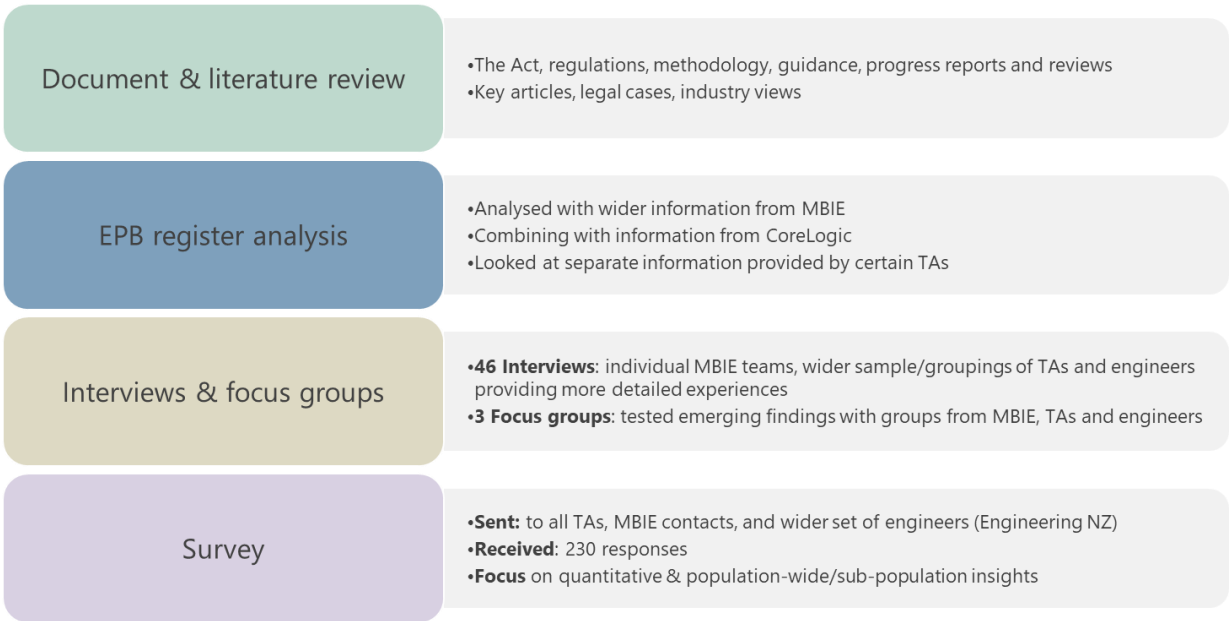
- A document and literature review provided context in terms of who provided what guidance and support within the system, and issues raised to date.
- Analysis of the EPB register gave a sense of how TAs are going at identifying earthquake-prone buildings, the nature of buildings on the register, the points in the process relative to

legislative timeframes for building owners, and progress removing EPBs from the register. This was additionally combined with information from CoreLogic to provide insights on the nature of buildings on or removed from the register, and we also examined information from a small number of TAs who shared other information they had about EPBs in their areas. Appendix C provides a summary of the key findings from this analysis.

- 46 interviews were undertaken with stakeholders across MBIE, TAs, Engineers and other stakeholders to identify key themes. Appendix B provides further details in related to who was interviewed.
- A survey of MBIE, engineering, TA, and other stakeholders was used as a wider test of themes, their degrees of importance, and how widely different views and perspectives were held. We received 230 responses to the survey which we used to quantify themes and explore differences between stakeholder groups (e.g., TAs relative to engineers). Appendix B provides more detail on the survey, noting key points relating to how these results should be interpreted are discussed in the next section. A fuller summary of the survey results will be provided separately to MBIE.
- Workshops were held with three stakeholder focus groups to refine themes (and test our draft report).
- We met with and tested the approach and key elements through the process with external engineering and EPB system expertise.
- We analysed information sought from MBIE and the Parliamentary Counsel Office on how many times the key system components discussed in the next section had been accessed over the last year as well as the volume and level of engagement with broader guidance material MBIE has made available.

Building owners were not consulted as part of our evaluation because their views and insights are being evaluated in a separate workstream for MBIE.

Figure 3: Overview of key inputs we have drawn on



## 1.5 Limitations and context for interpreting our findings

Our findings in this report should be interpreted in the context of our scope and focus relative to other inputs (that we defer to for insights in relation to building owners and costs and benefits associated with different building typologies), the point we are at in terms of the system's implementation (with a number of deadlines not yet passed), and the information base that have been available or able to be gathered. In particular, comments on effectiveness should be interpreted in the following context:

- This assessment of the way the system has been implemented and operates focusses primarily on the activities associated with identifying and assessing potentially earthquake-prone buildings, given the early phases of implementing a regulatory system with a lifespan well beyond today.
- While we have looked at remediation outcomes and non-compliance to date, it is important to note that the vast majority of deadlines were in the future when the Review was announced, and the subsequent four-year extension to all non-lapsed deadlines (as at 2 April 2024) has likely further delayed action by building owners to remediate their buildings.
- Therefore, we can only make limited conclusions in relation to the effectiveness of the overall system in addressing the risk to affected buildings, the level of compliance that can be expected in future, and the effectiveness of enforcement measures, given their limited application to date.

Further, information on access to key system components has only been available for the most recent year and is limited to the information that is collected by agencies (with the odd exception). Our process involved sampling stakeholders to interview and there is a risk that some viewpoints were not canvassed as a result (notably building owners, given other work MBIE was undertaking). The responses to the survey were greatest from engineers and were anonymous to encourage uptake but with the trade-off that we are limited in terms of the breadth of insights that are covered.

Appendix B includes additional information on the key inputs we consider and Appendix C provides a detailed register analysis provided in. A summary of the survey results was given to MBIE as a supplementary paper. As illustrated in Table 2, while our survey was issued to identified stakeholders, including engineers, TAs, MBIE staff, and anyone else involved in the EPB system, 145 of the 230 survey responses were from individuals identifying as engineers.[5]

[5] Several engineer respondents identified with other roles, such as MBIE (4), TAs (6), project managers, academics, and asset managers. Similarly, an MBIE respondent identified with alterative roles such as TAs (1). The 10 respondents who selected the other options identified as academics (3), architects (1), contractors, project managers and researchers.

Table 2: Survey respondent breakdown

| Role | No. of respondents |
|---|---|
| Engineer | 145 |
| MBIE | 14 |
| TA | 60 |
| Other | 10 |
| Not stated | 1 |
| **Total** | **230** |

Response rates across survey questions were highly variable. Some questions attracted fewer than 150 responses. We assess that the low response rate is a consequence of a combination of survey fatigue, lack of relevant insight to lend a view, or competing demands on respondent time. The low responses were not exclusive to any one respondent group. As such, we do not expect low response rates to have skewed the overall results. However, the survey results were not tested for statistical significance and are based on a relatively small sample size. Therefore, the survey results should be considered as indicative and interpreted in this light.

# 2. How the EPB system works

This section sets out the key components that make up the EPB system before showing the high-level process intended and the roles and responsibilities within the system (which we focus on in section 3).

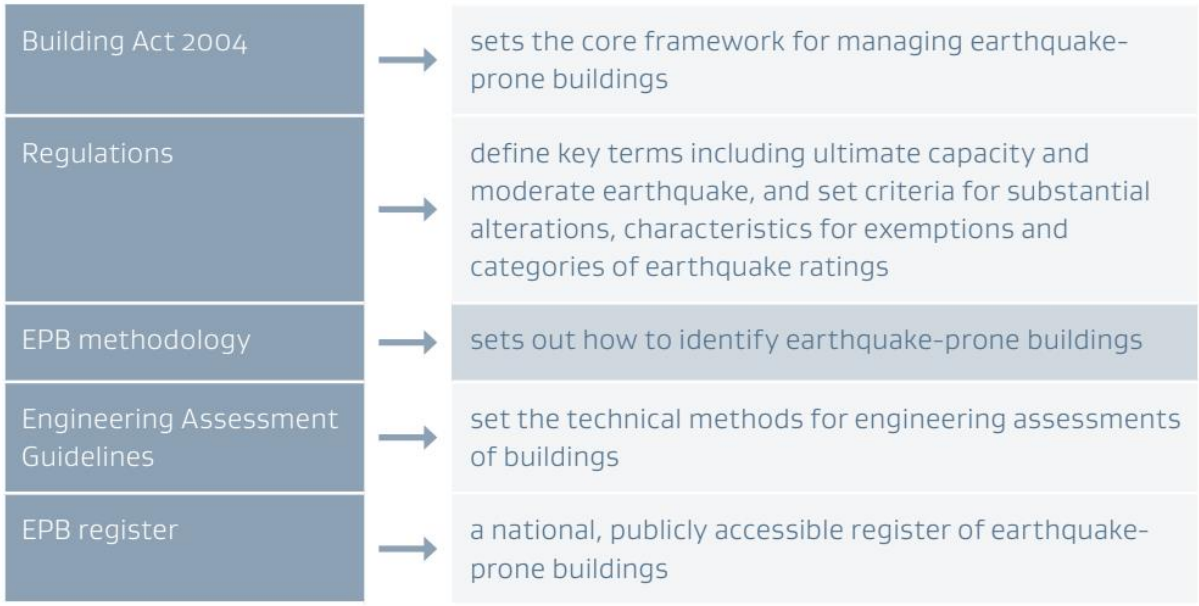
## 2.1 Key components that set up the EPB system

Figure 4 provides an overview of the key components of how the EPB system operates, with MBIE responsible for each of these components (roles of others in the system are described in section 2.2):

- Subpart 6A (Special provisions for earthquake-prone buildings, sections 133AA-133AY) of the Building Act 2004 (New Zealand Legislation, 2004) sets out the core framework for managing EPBs.
- The Building (Specified Systems, Change the Use, and Earthquake-prone Buildings) Regulations 2005 (New Zealand Legislation, 2005) defines key terms relating to how the system should be applied.
- The EPB methodology (Ministry of Business, Innovation and Employment, 2017a) is the methodology used to identify EPBs. The EPB methodology sets out the required process for:
    - TAs identifying potential EPBs
    - how engineering assessments must be carried out
    - TAs deciding if the building is earthquake-prone.
- The EPB methodology also sets out the categories of buildings to be focused on for the different seismic zones (as set out in Figure 5).
- The Engineering Assessment Guidelines are the technical guidelines engineers use when conducting engineering assessments of buildings or parts of buildings (Ministry of Business, Innovation and Employment, 2017c).
- The EPB register provides a public record of EPBs. It is managed by MBIE with TAs responsible for the information about EPBs within their jurisdiction (Ministry of Business, Innovation and Employment, n.d.).

Each of these components are briefly discussed below along with what this means for the roles and responsibilities for key groups set out in section 2.2.

Figure 4: The structure of the EPB system




Source: Ministry of Business, Innovation and Employment, 2017a)

### 2.1.1 The Building Act 2004

The Building (Earthquake-prone Buildings) Amendment Act 2016 made changes to the Building Act 2004, including introducing subpart 6A (Special provisions for earthquake-prone buildings, sections 133AA-133AY). Subpart 6A of the Act:

- sets out the buildings it applies to and the meaning of earthquake-prone building, earthquake rating and priority building
- divides New Zealand into three seismic risk categories based on the vulnerability of the location
- sets out the roles, obligations, options/powers, and deadlines for territorial authorities and owners in terms of identifying potential EPBs, engineering assessments, determining whether a building is earthquake prone, notifications, seismic work, exemptions and extensions
- sets out offences and requirements in relation to the EPB methodology.

### 2.1.2 Regulations

The Building (Specified Systems, Change the Use, and Earthquake-prone Buildings) Regulations 2005 set out:

- the meaning of 'moderate earthquake' and 'ultimate capacity'
- two categories of earthquake ratings, being those that are: i) 20 to 33 per cent of New Building Standard (%NBS), and ii) less than 20 %NBS
- criteria for substantial alterations

- how change of use will be considered and what specified systems will cover (specific safety and essential systems)
- characteristics a building must have to be considered for an exemption from remediation requirements
- the forms of required EPB notices depending on the category of earthquake rating.

### 2.1.3 The EPB methodology

The EPB methodology sets outs how:

- a territorial authority must identify potential EPBs, including establishing the profile categories to be considered potentially earthquake prone (as shown in Figure 5) and exclusions
- an engineering assessment of a potential EPB is required to be carried out, including the qualification, form, and technical and reporting requirements
- a territorial authority is required to determine whether a potential EPB is earthquake prone.

Figure 5: Categories of buildings for the different seismic zones

| | High seismic risk areas and medium seismic risk areas | Low seismic risk areas |
|---|---|---|
| Category A | Unreinforced masonry buildings | Unreinforced masonry buildings |
| Category B | Pre-1976 buildings that are either three or more storeys or 12 metres or greater in height above the lowest ground level (other than unreinforced masonry buildings in Category A) | Pre-1976 buildings that are either three or more storeys or 12 metres or greater in height above the lowest ground level (other than unreinforced masonry buildings in Category A) |
| Category C | Pre-1935 buildings that are one or two storeys (other than unreinforced masonry buildings in Category A) | |

Source: (Ministry of Business, Innovation and Employment, 2017a)

### 2.1.4 Engineering Assessment Guidelines

The Engineering Assessment Guidelines provide a technical basis for engineers to carry out seismic assessments of existing buildings. The Engineering Assessment Guidelines support seismic assessments for a range of purposes and must be used by TAs to decide whether a building is earthquake prone in terms of the Building Act 2004. The Engineering Assessment Guidelines have distinct parts:

- Part A outlines the scope and application, and provides a general overview of the seismic assessment process. It describes the linkage with the relevant requirements of the Building Act 2004, associated regulations and the EPB methodology.
- Part B describes the Initial Seismic Assessment (ISA). The ISA provides a broad indication of the likely level of seismic performance of a building. In some cases, an ISA will be followed by a Detailed Seismic Assessment (DSA).
- Part C describes the DSA. The DSA provides a more comprehensive assessment than an ISA. Part C is published in ten independent sections. Sections C1 to C4 collectively build on Part A and are to be used in conjunction with guidance for specific materials in Sections C5 to C10.

An engineering assessment summary report template is also provided, which is used to summarise the key points from initial seismic assessments (Part B) and detailed seismic assessments (Part C), and must be included at the front of all engineering assessment reports.

### 2.1.5 The EPB register

The EPB register is a national, publicly accessible register of buildings determined to be earthquake prone, as well as their earthquake ratings. In January 2025, it included 6,717 unique building addresses. The data can be downloaded, or users can search or use a GIS interface to identify a property or properties in an area. Key fields included in the EPB register are:

- address
- common name
- notice type (EPB notice, EPB exemption notice, s124 notice)
- date of issue
- earthquake rating (0-20 per cent, 20-34 per cent, undetermined, blank)
- seismic work deadline
- priority building (yes/no)
- notice issue by [TA]
- heritage status (blank, historic place 1 or 2, national historic landmark, scheduled by the TA, within historic area)
- area of seismic risk (high, medium, low).

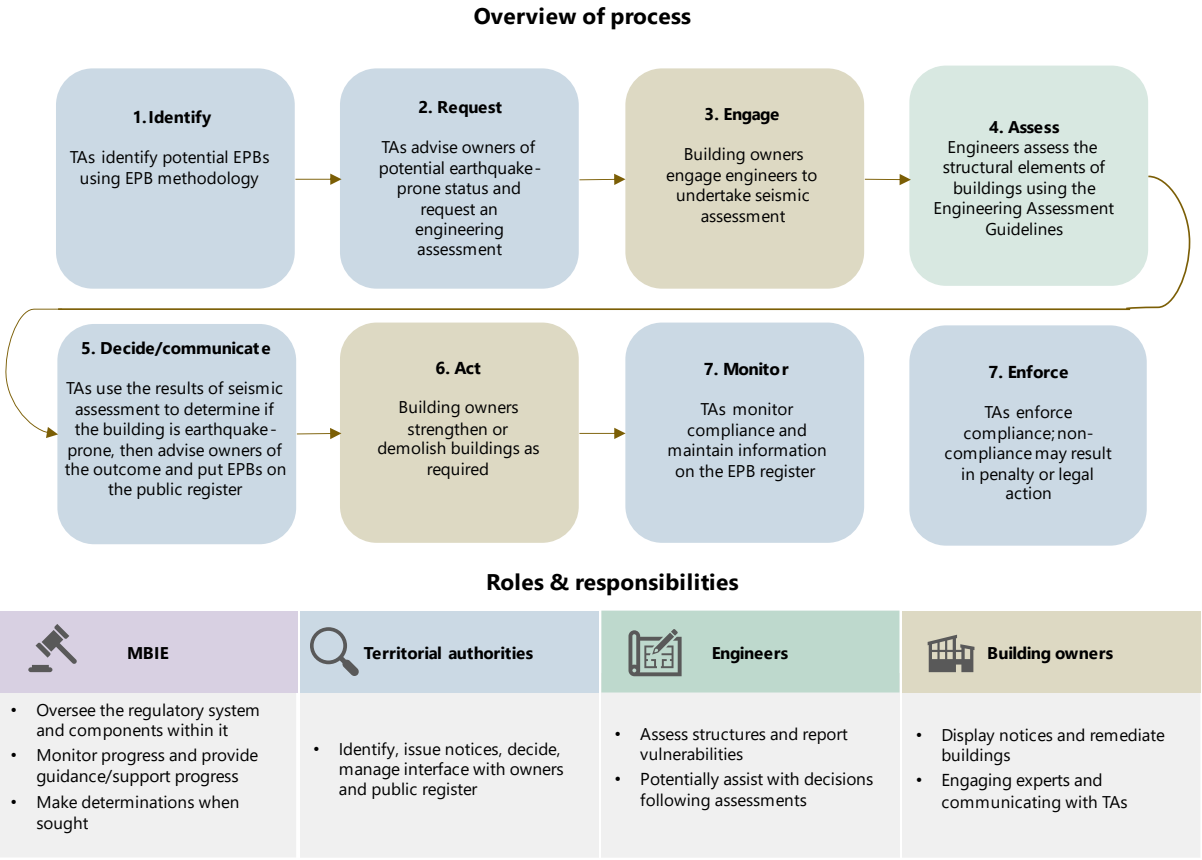
MBIE is responsible for managing the EPB register. TAs are responsible for the information included in the register for their locational jurisdiction. We understand from MBIE that an EPB register replacement project has commenced and that the project will provide an opportunity to make improvements to the register and how it functions.

## 2.2 Roles and responsibilities across the system

We set out the key stages and responsibilities in the EPB system in Figure 6. As shown in the figure, MBIE's role is in overseeing and supporting the system rather than having responsibilities for

individual components within it. In section 3, our findings are organised by looking at the respective roles of MBIE, TAs, and engineers in turn.

Figure 6: Key stages and responsibilities in the EPB system



**The Joint Committee on the Seismic Assessment and Retrofit of Existing Buildings (JC-SAR)**

In the foreword to its April 2025 "Guidance for Commissioning and Undertaking Reviews of Seismic Assessments," the JC-SAR (known as the Joint Committee for Seismic Assessment of Existing Buildings prior to 2024) states that it:

"is responsible for the joint oversight of the system used to assess, communicate, manage and mitigate seismic risk in existing buildings. It reviews how the Seismic Assessment Guidelines are functioning in practice, identifies areas that require further input and development, and either advises on or assists in the development of proposals for work programmes that contribute towards these objectives. The Joint Committee includes representatives from the Natural Hazards Commission Toka Tū Ake, the Ministry of Business, Innovation & Employment, and the technical societies (New Zealand Society for Earthquake Engineering, New Zealand Geotechnical Society, and the Structural Engineering Society of New Zealand).

The Joint Committee's vision is that:

- seismic retrofits are being undertaken when necessary to reduce our seismic risk over time while limiting unnecessary disruption, demolitions and carbon impacts, promoting continued use or re-use of buildings
- decisions on retrofitting are informed by an appropriate understanding of seismic risk and are aligned with longer term asset planning
- seismic assessment and retrofit guidelines help engineers focus on the most critical vulnerabilities in a building, serve the needs of the market and regulation, and evolve through a stable ongoing cycle allowing new knowledge and improvements to be included in a predictable manner, including the consideration of objectives beyond life safety
- engineers are supported in the implementation of Seismic Assessment and Retrofit Guidelines through a range of training and information sharing strategies, including tools for risk communication to manage unnecessary vacating of buildings
- society is informed about the level of risk posed by existing buildings."

Source: Joint Committee for Seismic Assessment and Retrofit of Existing Buildings, 2025)

# 3. Key findings

This section provides our key findings drawing from the inputs set out in section 1.4 (and detailed further in Appendix B) and noting the context in which our findings should be interpreted as discussed in section 1.5. We provide a high-level overview before looking at respective roles of MBIE, TAs, and engineers in turn as set out in Figure 6 above, and ending with findings at a system-wide level or relating to building owners, noting that they have not been the focus of our work and are more in focus of other workstreams as part of the Review.

## 3.1 The system is largely being administered as intended across MBIE, TAs and engineers

Noting the limitations set out in section 1.5 and the point in the process in which the EPB system is operating, we conclude the system is largely being administered as intended. Arrangements implemented under the EPB provisions generally improve upon prior requirements:

- There is greater consistency of requirements and in how stakeholders operate the EPB system than prior to 2017.
- When the system was implemented, it used the latest guidance and knowledge available, noting there are now requests to update guidance with new knowledge.

Territorial Authorities are performing their roles as may be expected given incentives, timeframe requirements and resourcing:

- Most TAs in high seismic risk zones have identified potential EPBs, and TAs in other seismic risk zones are at different stages in the process.
- Most TAs check compliance with notices to some extent.
- Areas of TA innovation appear to have paid off (notably case management and engineering panels) and could be considered more widely.
- TAs are using the 'anytime pathway' under section 133AG(3) of the Act[6] to identify potential EPBs (potentially beyond what may have originally been intended) with a number of buildings being identified beyond the target building typologies set out under the EPB methodology.

There are some areas of challenge:

- While there is scope for TAs to make decisions on EPBs or remove them from the register prior to a Code Compliance Certificate (CCC) for remediation work, various reasons mean this does not occur.
- There are regulatory tools to support compliance with remediation requirements, but there are practical barriers to effective use of these tools and some concerns over potential future compliance with remediation requirements.

[6] As well as the opportunities to be identified and requirements to act under section 133AQ of the Act.

- Timeframes are spread nationally based on earthquake hazard (i.e. seismic risk zones) but there are still surges for individual TAs around deadlines which could cause issues related to compliance.
- TAs have no regulatory mechanisms to ensure visibility of progress/intent, which could lead to a concentration of work as deadlines approach.
- The extension to the timeframe recognised looming pressures but also undermined TA activities/engagement with owners and imposed additional costs on TAs.
- Engineering expertise for seismic assessments is limited in many provincial areas, and thus building owners leaving remediation to the last-minute puts pressure on engineer availability.
- Engineers do not receive undergraduate training in seismic assessments, and there is a different way of thinking and approach needed for assessing existing buildings than is applied to design new buildings.

There are still opportunities, including the following:

- Clarifying the role of engineering judgement when assessing buildings, including that the Engineering Assessment Guidelines need to be considered as a whole.
- Understanding of the %NBS metric and its use by the market.
- Focusing requirements on risk, encouraging improvements and recognising the financial context for many buildings, for instance potentially considering points in building lifecycle when investments may make more sense.
- Use of EPBs and visibility of intentions/progress prior to deadlines.
- Potential for greater stewardship, particularly monitoring and feedback channels to support continual improvement. This could include clarifying the role of, resourcing and further supporting JC-SAR with greater means of supporting continual improvements in practices (or considering the format, role and scope of such a group).
- Potentially considering further the impacts of EPB decisions to the local area and interfaces between buildings.
- MBIE communications and case studies could be extended as well as training workshops repeated, and other support may improve effectiveness/overcome some barriers.

There are unintended consequences of the existing system that must be acknowledged:

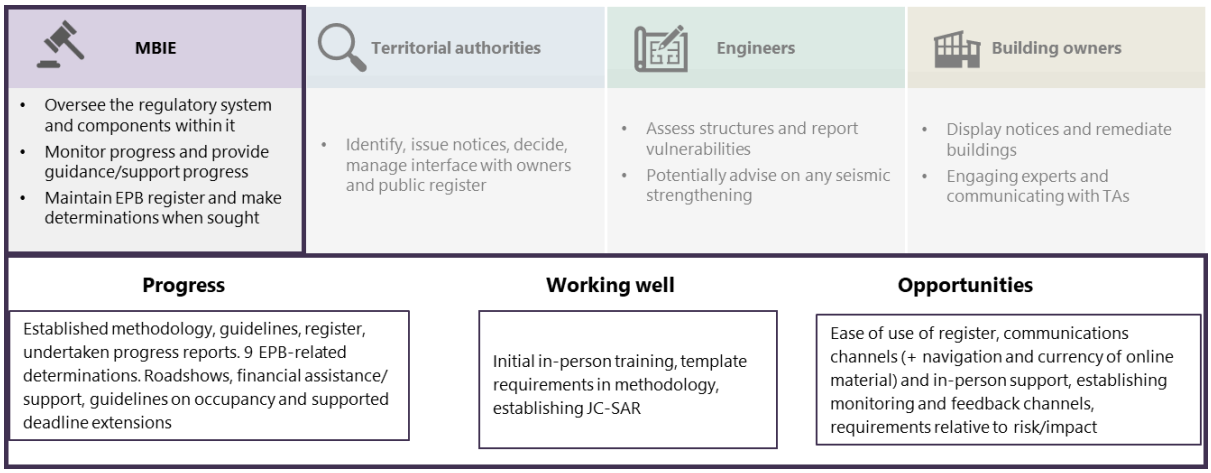
- The %NBS metric is not well understood and has been taken to mean something different in the context of health and safety obligations.
- The %NBS score has received a level of focus beyond its intended use with some tenants disproportionately weighting the %NBS, rather than considering the actual risk to life (which we understand is typically very low even at lower scores). As a result, a higher %NBS score may mean better rental income for some building types (including those well outside the EPB system focus, which can also impact availability of engineers to support the focus of the EPB system).
- The government itself seeks a high %NBS for buildings it leases, setting an unclear message about what is an appropriate rating.

- while investment in strengthening buildings with high %NBS progresses, there is often less investment in buildings with low scores or low rentals.
- There are inconsistent bases for EPB assessments of *potential* EPBs to *voluntary* assessments or to requirements for seismic *strengthening work*.

## 3.2 MBIE

For the most part, engineers and TAs have told us MBIE's oversight of the system since 2017 has improved, and MBIE's role in the system is supporting the purpose of the EPB system. Nationally, consistency has improved and the training and education MBIE provided to engineers and TAs when the system was implemented were widely seen as valuable. Nevertheless, there are still further opportunities to support greater effectiveness, efficiency and consistency across the system as illustrated in Figure 7.

Figure 7: Overview of findings for MBIE




We explore below key themes related to MBIE's oversight of the system, including that:

- implementing the EPB system in 2017 has improved national consistency
- the EPB Methodology is an important tool for operationalising the EPB system
- Engineering Assessment Guidelines are crucial to seismic assessments
- there is a desire to adopt new engineering knowledge into the Engineering Assessment Guidelines
- the EPB register provides information to the public, but some administrative difficulties were raised
- improved monitoring of the EPB System could produce useful insights and further stewardship efforts support practices
- Building Act determinations are rarely used for EPB system issues.

### 3.2.1 Implementing the EPB system in 2017 has improved national consistency

The EPB provisions under subpart 6A the Building Act are generally seen by TAs and engineers as a strong mechanism for reducing safety risks from earthquake-prone buildings, suggesting the provisions are viewed as important in guiding decisions and ensuring safety.

Overall, our findings point to a regulatory framework that has improved over time, has clear roles and is largely being administered as intended (at this stage). There is room for further clarity in how the framework is applied, and additional education and communication is needed to ensure universal understanding and consistent application by TAs and engineers. Specifically, we note the following:

- Training workshops during implementation were well received.
- Developing guidance and putting information on the website improved risk communication.
- Communication to TAs and engineers could improve.
- Further improvements to guidance could improve consistency.
- The system relies on a few key experts for earthquake engineering technical advice and support.

**Training workshops during implementation were well received**

Feedback on the training and support from MBIE when the new legislation came into effect has been extremely positive from both TAs and engineers. Training and education are widely seen as valuable tools for both supporting the operation of the EPB system and for reducing life safety risk from earthquake-prone buildings. TAs and engineers found the roadshow of training workshops available at the time very useful.

During implementation, MBIE led a series of information and training workshops in different regions around the country, primarily focused in high seismic risk zones. Engineering experts facilitated the workshops for engineers and TAs from surrounding areas. The engineering experts were accompanied by MBIE and TA experts. It was an opportunity for engineers and TAs to come together for in-person training and guidance on the EPB system.

It was a common view across interviews and from the survey responses that the training and guidance are important. Many engineers and several TAs requested more training, either as a refresher or because new staff are involved in the system that were not around at the time of the workshops. Some TAs are only now identifying potential EPBs (e.g. TAs in medium and low seismic risk zones), and the individuals in the TAs responsible for identifying potential EPBs often were not around when the workshops were held.

**Developing guidance and putting information on the website improved risk communication**

In general, feedback from TAs and engineers on MBIE's EPB system guidance has been positive. There is a lot of information available for different stakeholders in the system to use.

Engineers and TAs who responded to our survey question suggested the communication of risk associated with EPBs is somewhat better or much better under the current system. However, this

sentiment was stronger among engineers than TAs (where there were also fewer responses). Engineers also see the public information as better than before 2017, while the TAs that responded to our survey, although acknowledging improvements, feel it is somewhat better or about the same as before 2017 (66% of the 38 TA responses). For example, there are still gaps in the wider public understanding of risk which is evidenced by the lower level of risk people are willing to accept with buildings compared to other commonly experienced risks.

Many TAs we spoke to have links to MBIE guidance and the EPB register on their websites, or they include links to MBIE guidance in the notices they send to building owners when notifying of a potential EPB. Although we also heard of difficulty finding the right information at times because of the amount of content available.

There is a now a huge amount of content about the EPB system on the MBIE and particularly building.govt.nz websites, and some users find it difficult to find what they are looking for. Some TAs and engineers commented that the webpages need a refresh and consolidation.

**Accessing of key system components and guidance**

Information provided by the Parliamentary Counsel Office and MBIE shows that of the key system components set out in section 2, there have been:

i) over 1 million views across all components of the Building Act in the 12 months to 22 April 2025, 20,784 specifically of components of subpart 6A relating to the EPB system (noting individuals can view the Act in different ways and also download it, with many expected to view a number of sections within one visit) with s133AT relating to alterations to buildings subject to EPB notice the most viewed with 2,568 views – well above the next of 1,347 for s133ABM on the Meaning of earthquake-prone buildings (indicating it could be an area where interpretation is considered more difficult).

ii) 4,873 views across components of the Building (Earthquake prone Buildings) Amendment Act 2016 over the same period

iii) 45,583 views across components of the Building (Specified Systems, Change the Use, and Earthquake-prone Buildings) Regulations 2005 over the same period

iv) 2,397 views of downloads of the EPB methodology in the past 12 months to May 2025 (542 of the introduction, 1,558 of section 1, 659 of section 2, and 369 of section 3)

v) 5,080 views of the Engineering Assessment Guidelines over the same period (674 of Part A, 491 of Part B, between 100 and 300 of section C1-C10 and summary report template and the Initial evaluation procedure template, other than C5 which had 523 views)

vi) Between 2 and 6 views over the same period of each of the Progress towards identifying potentially EPB documents for 2018 – 2022 and 22 views of the 2013 document

vii) 4 views of the 2021 early insights report over the same period, and

viii) 166,125 pageviews of the EPB register in the 12 months to 31 March 2025 (from a total of 16,455 users and 25,125 visits)

Information provided by MBIE states that the building.govt.nz website has 53 pages that have been visited collectively 31,090 times over the last 12 months to April 2025, with viewers spending an average of 54 seconds on each page.

In addition, owner guidance documents relating to extending remediation deadlines and substantial alterations have been downloaded 223 and 109 times respectively.

Further, its two seismic risk series pages have been viewed 1,830 times collectively, with 142 video watches of the seismic risk guidance case study, and 2,291 downloads across its four seismic documents.

**Communication to TAs and engineers could improve**

Views were mixed on whether support from MBIE is better or worse than arrangements prior to 2017. Ongoing communication and guidance from MBIE are broadly seen as helpful. While some engineers and TAs felt support had improved since 2017, feedback from many TAs and engineers is that MBIE's engagement has fallen away somewhat, and its ability to act on suggestions has been more limited.

We heard several instances of delayed or confusing communications from MBIE. One example was communications indicating that new policy or guidance was coming soon and would be communicated, but that TAs then had to go and look for it after it did come out. A small number of TAs said the only contact they have had with MBIE about the EPB system is when they get the requests for information for the progress updates every few years.

**Further improvements to guidance could improve consistency**

Most TAs have appreciated the guidance and used some combination of the available guidance (e.g. templates for notices and the EPB methodology).

Clarity of requirements and providing worked examples are widely viewed as a cornerstone of an effective EPB system. TAs and engineers suggested MBIE could develop additional guidance on various aspects of the system, ranging from how to correctly apply section 133AT of the Act (which we note above was viewed significantly more than other sections in the last year)[7] to providing case studies on specific buildings or aspects of the system.

Case studies were suggested by TAs for two reasons:

- TAs want to see how the system and legislation can apply, using specific cases as examples.
- TAs want to give the information to building owners who can then educate themselves on what they need to do and ways to reduce associated costs.

[7] Section 133AT allows TAs to use some discretion when granting a building consent for strengthening work to permit the alteration of the building or building part without requiring the building to comply with provisions related to fire safety and accessibility.

**The system relies on a few key experts for technical engineering advice and support**

A critical concern raised by many interviewees is technical engineering support is limited to a few experts in the system. Reliance on one or two individuals is risky when there are 67 TAs and many engineers who require support with questions and issues related to engineering assessments. The availability of quality technical expertise is seen as a key enabler to effectively reduce risk, and many system stakeholders view it as a foundational element in ensuring sound decision-making and consistent application of complex regulations.

A common suggestion from both TAs and engineers we interviewed was for MBIE to convene a group of technical experts who could be called on by engineers and TAs when they have questions or issues. A formalised group would reduce the reliance on individuals in the system.

One expert came up consistently as a vital resource to support TAs and engineers with difficult technical questions or grey areas in the guidance. The expert is seen by TAs and engineers alike as a great neutral party who has fulfilled a critical role. The expert's role is not formally recognised or resourced and the impression we received, voiced by a few interviewees, is that it is lucky they know and have a way to reach out to the expert. Questions arose around redundancy and succession planning in relation to this person and whether there is a more formal avenue that does not rely on the generosity of one person.

### 3.2.2 The EPB methodology is an important tool for operationalising the EPB system

The EPB methodology document is generally viewed by TAs as an important tool in the process of identifying risk to life safety from EPBs, with strong support across most respondent groups. We heard some questions as to whether the EPB methodology is sufficiently linked to life safety risk (e.g. missed risks in the profile categories and differences in life safety risk for the same or similar %NBS rating).

**Some questions on whether the EPB methodology is sufficiently linked to risks**

While the EPB methodology is generally considered to support the EPB system's intended purpose, interviews and survey responses questioned whether the EPB methodology is sufficiently linked to risks. The profile categories exclude buildings with known risks. For example, hollow core concrete buildings constructed post-1970 are not captured by the profile categories despite their known vulnerabilities (see paragraph below).

**Some questioned whether the EPB methodology is picking up the right risk categorisations**

We understand separate work is considering the costs and benefits of work on different building typologies and further developing the building typologies in the methodology. We will defer to that work, but have had the factors in Table 3 highlighted across some of the discussions as indicators of higher or lower risk.

Table 3: Building characteristics flagged to us as indicators of higher or lower risk

| Likely/increased likelihood of being EPB | Unlikely/decreased likelihood of being EPB |
|---|---|
| • Unreinforced masonry (highly likely unless work has been done)<br>• Flexible buildings exacerbate vulnerabilities of precast flooring systems<br>• Areas with liquefaction issues/poor ground conditions<br>• Where there are specific appendages or components (precast cladding panels, some stair typologies, etc.) and potential to fall on people (usually externally)<br>• Some building configurations where buildings are not tied together well | • Timber buildings of up to around three storeys (but may be identified, possibly on the basis of brick chimneys or other isolated issues)<br>• Post-1976 buildings (unless poor extensions or design errors) |

### 3.2.3 Engineering Assessment Guidelines are crucial to seismic assessments

The Engineering Assessment Guidelines are widely regarded as a crucial tool for ensuring consistent and reliable assessments to reduce life safety risks from EPBs, with strong support across most respondent groups, particularly engineers. Almost 90 per cent of survey respondents (the majority of which are engineers) think the Engineering Assessment Guidelines support or significantly support the system. We discuss the consistency of engineering assessments in section 3.4.1.

- Engineers requested more examples in the Engineering Assessment Guidelines to support engineers conducting assessments.
- A number of engineers wanted further case studies included in the Engineering Assessment Guidelines to give engineers support in assessing common elements and show how to apply certain factors, which are currently applied differently for similar building types.
- We note it is important to consider the guidance as a whole though, and buildings need to be understood in their entirety. If including case studies encourages engineers to just flick to a specific section, then this needs to be balanced with the need to apply judgement to assess a building's performance holistically. Use of engineering judgement is discussed further in section 3.4.2.
- There were questions about whether the Engineering Assessment Guidelines result in a %NBS rating sufficiently linked to risk.
- Interviews revealed questions about whether the Engineering Assessment Guidelines lead to a rating that adequately captures a building's risks:
    - A building rated as earthquake prone (i.e. <34 %NBS) could be assessed as such because the first building element to fail is a parapet with a risk of falling on a pedestrian walkway. A building could be rated as not earthquake prone (e.g. 35 %NBS), but failure of its weakest element could lead to total collapse of the building. However, although one is an EPB and the other isn't (and therefore the risk of failure for the non-EPB building is lower),

the consequence of the non-EPB collapsing is much greater than if the weakest element fails in the EPB.[8] This is not captured by the %NBS rating.

- Different buildings with the same low rating can have vastly different risk profiles. Failure of one may lead to something as simple as a panel falling off a building, but with relatively low consequence, compared to another that has risk of failure in the primary load system that may lead to potential collapse. In simple terms, it appears things such as which zone a building is in, failure of which component, and what the exposure from failure is may play into the risk characteristics, but not all are directly captured by the %NBS rating.

### 3.2.4 Desire from many to adopt new seismic/engineering knowledge into the system

There is a desire from both TAs and the engineering profession to adopt new seismic and engineering knowledge into the EPB system:

- Most engineers felt new knowledge should be incorporated:
  - 81 per cent of engineer respondents to the survey think not applying updated knowledge will cause some or significant issues to adequately addressing risk of life safety in practice.
  - MBIE respondents and TA respondents, though fewer, were slightly less concerned about new knowledge, with 62 per cent and 55 per cent respectively thinking not applying updated knowledge will cause some or significant implementation issues.
- Most respondents felt there is potential for confusion or a sense of moving goalposts which could undermine action:
  - 83 per cent of survey respondents think uncertainty over potential future changes to regulations are causing some issues or significant issues.
- Some survey respondents suggested updates should be made to clarify status/approach, irrespective of requirements.

There was a near consensus from engineers we interviewed that new knowledge should be incorporated into the Engineering Assessment Guidelines while allowing some leeway for building owners who have already invested in strengthening. This sentiment was shared by TAs but to a lesser extent. Leeway is needed because the sense of constantly 'shifting goalposts' is leading to lack of trust in the system and in engineers.

Best practice is constantly changing for engineers as new knowledge becomes available, so many engineers want to see this incorporated. For instance, most engineers and many TAs think the C5

[8] A building rated 20-<34 %NBS has an approximately 10-25 times greater life safety risk relative to a new building compared to a building rated 34-65 %NBS, which has an approximately 5-10 times greater life safety risk relative to a new building.

yellow chapter (which can only be used for non-EPB seismic assessments)[9] should be used instead of the red book (regulatory requirement).

Many engineers we interviewed suggested a regular cycle of updates be implemented for the red book (e.g. every five years), rather than doing nothing and then implementing a step change. We heard from one engineering society that there was an understanding when the red book was developed that the societies would be able to make changes to it in future that would be adopted by MBIE, particularly to clarify approaches in the Engineering Assessment Guidelines when they turned out to be less clear than intended. However, once the system was implemented, it had not been possible to make changes to the Engineering Assessment Guidelines and the EPB methodology (even to address errors or to improve clarity).

Most interviewees who wanted to see changes implemented as well as those who opposed changes recognised issues could arise from continual updates, such as a previously strengthened building becoming earthquake prone if it was reassessed—however the opposite is also true. There are buildings on the EPB register that would not be considered an EPB if the C5 yellow chapter was used to determine the %NBS rating. This is a cause for confusion. If a building has not been identified as a potential EPB by the TA but is being assessed because the owner wants to know, an engineer would use the C5 yellow chapter, which might return a non-EPB level rating for a building that could rate below 34 %NBS if the red book is used. The opposite can also be true, where strengthening is required because of a lower rating using the C5 yellow chapter, but if the red book was used then strengthening work would not be needed.

A major concern with changes are they lead to confusion with owners from "constantly shifting goalposts" and reduce trust in the system and in engineers. We understand that owners are postponing work when they think the Engineering Assessment Guidelines are going to change. We understand there is a sense from owners that engineers want gold plated solutions (for greater good/safety or for reputational or liability reasons), whereas owners are just trying to do what makes sense financially (while meeting minimum life safety objectives). Fear of changing requirements is likely a factor limiting owners from making progress.

A regular suggestion from engineers was to establish a five-yearly update to allow latest knowledge to be incorporated, and then give building owners a grace period (say 15 years) before requiring another engineering assessment if they have already done strengthening work. The grace period could ameliorate owner concerns that the goal posts are constantly shifting, and encourage undertaking strengthening work earlier rather than postponing.

### 3.2.5 The EPB register provides information to the public, but some administrative difficulties were raised

It is generally felt by TAs that the register supports its intended purpose as a public information tool. Some functionality and administration difficulties were highlighted.

[9] See: https://design.resilience.nz/assets/Documents/C5-2025a.pdf

Almost all TAs we interviewed said the EPB register meets its intended purpose as a public information tool. Information provided to us by MBIE suggests that the EPB register appears to be utilised by the public and other stakeholders, as in the first quarter of 2025 there were 55,403 views of the EPB register, or 6,847 visits from 4,668 users—this is equivalent to between 32 (on New Years Day) and 1,645 views, and 7 and 152 engaged sessions, per day.

Visits were mostly via google or directly, with lower amounts being referred from individual council or other sites.

Some issues were raised that add to the administrative burden on TAs and could potentially be streamlined:

- Once a person at the TA with editing rights adds a building to the register as an EPB, a second person from the TA with administrative rights is required to log in and authenticate the entry. While the intent is understood, the TAs who raised it as an issue do not think it adds value (and we observed some data errors when looking at the register). It also does not make sense for smaller TAs who often only have one person responsible for EPBs. Several TAs wait to upload several at a time because it is too much administration to do for just one building. When a person leaves, the TA requires MBIE to authorise a new person before the TA can make changes to the register.
- The register sometimes shows contradictory information depending on using web view or data extract. Some buildings still show as earthquake prone on the web view even though they have been remediated and show as such if viewed after doing a data extract.
- One TA noted it has allotments with multiple buildings on the allotment, but the register only allows the TA to register one building per allotment.
- The search function is unreliable, particularly when the TA has just made changes:

  "With recent extensions, would send to publish, check it has been published but then when checked as member of public the old info was being shown until a number of refreshes—spent hours doing [x] notices and pulling hair out when doing the extension".

All TAs we spoke with have a second register they manage locally. The local register has more detailed information than the public register that the TAs wish to keep track of beyond remediating the building. For example, the TA uses it to keep a record of all buildings that have an assessment, regardless of whether it is an EPB or not, and often as a way of tracking information about the building and any communications with building owners. They can also record when a building has been strengthened, what work was done, and when.

There is potential for the EPB register to be used to collect more useful information which could be used to monitor the system better. This would require an updated system along with clear communication to TAs about information they would need to enter when adding a building to the register (the likes of a data dictionary would also likely help). We discuss the benefits of improved monitoring in the section below.

### 3.2.6 Improved monitoring of the EPB system could produce useful insights, and further stewardship efforts support practices

We heard the following regarding MBIE's monitoring of the EPB system:

- The progress reporting to MBIE supports its purpose.
- The Act does not allow for visibility of all TA progress to identify potential EPBs in a single year.
- There is limited potential for insights in the information collected.

TAs had little comment regarding the updates on progress with EPBs they provide to MBIE. A small number of TAs said the only time they hear from MBIE is when they get a request for the report. One TA noted they did not know part of their region had been re-zoned to medium until they received a request from MBIE for the progress report, indicating that there may be opportunities to consider improvements in communications. Only 25 per cent of TA respondents to the survey felt progress reporting supported the EPB system, compared to 69 per cent of MBIE respondents (again noting the lower number of TA and MBIE survey respondents).

The Act stipulates requirements for TAs to report to MBIE on their progress to identify potential EPBs in their region. TAs report every year, two years, or three years depending on which seismic risk zones cover their region (Table 4). The cadence of reporting means that there isn't a single year when MBIE would see progress across the entire country.

Table 4: Timeframes for reporting and identifying potential EPBs by seismic risk zone

| Seismic risk zone | Reporting requirement | Timeframe to identify potential EPBs | |
|---|---|---|---|
| | | **Priority buildings** | **Non-Priority** |
| **Low** | Every 3 years | 15 years | 15 years |
| **Medium** | Every 2 years | 5 years | 10 years |
| **High** | Every year | 2.5 years | 5 years |

A stronger monitoring function could improve data collection and provide MBIE with insights to make informed decisions to support the system based on how it is performing. Our understanding is that it is difficult to gather useful insights on the performance of the system because sufficient data is not held centrally. By defining reporting requirements in the Act, MBIE felt there was a very high bar to asking for anything not specified in legislation and they were limited in what they could request from TAs to monitor the EPB system.

MBIE acknowledged TAs get a lot of requests for data and information and want to limit their requests to reduce the burden. Therefore, they have not requested information beyond what TAs are required to provide under the Act. For example, data about what building typologies are being identified as potential EPBs and how they are identified would be useful to determine if the profile categories in

the EPB methodology are capturing the most at-risk building types, or if there are other building types that potentially should be included if they are being identified as potential EPBs through other means (i.e. 'identify at any time' pathway). A national view of building owner compliance, enforcement action, and challenges building owners face (that TAs know about) would also be incredibly useful to MBIE if the information was reported by TAs.

Although MBIE does not collect much information on the system, engineers and TAs suggested there was a need for a mechanism to provide feedback on the system which would lead to improvements. There is a desire for a feedback loop so that TAs and engineers can give MBIE feedback on specific aspects of the system and MBIE can introduce improvements where needed and possible, based on the feedback.

This is consistent with the recommendations of JC-SAR's review of the implementation and application of the Engineering Assessment Guidelines, as summarised in section 1.3.

### 3.2.7 Building Act determinations are rarely used for EPB system issues

We note that:

- there was little feedback provided on determinations, highlighting how few determinations have been made related to the EPB system
- their purpose is unclear to many engineers who felt an expert panel would be more useful for resolving disputes.

Very little feedback was provided on determinations. Only a few TAs had submitted for a determination for a matter relating to an EPB. We heard mixed messages about time to get a determination. Anecdotally, one engineer supported a TA with a submission that took two years for MBIE to come back with a decision, while another TA noted it had submitted several determinations (only one related to an EPB) and felt the process had got faster over time. We note that a January 2025 press release by the Minister of Building and Construction noted determination wait times have reduced by 80 per cent between late 2023 and late 2024 (New Zealand Government, 2025).

In response to our survey, determinations are generally considered an important aspect of supporting the operation of the EPB system, though opinions vary between neutral and supportive. Engineers were neutral or uncertain about their importance, with a notable number indicating that determinations are somewhat important.

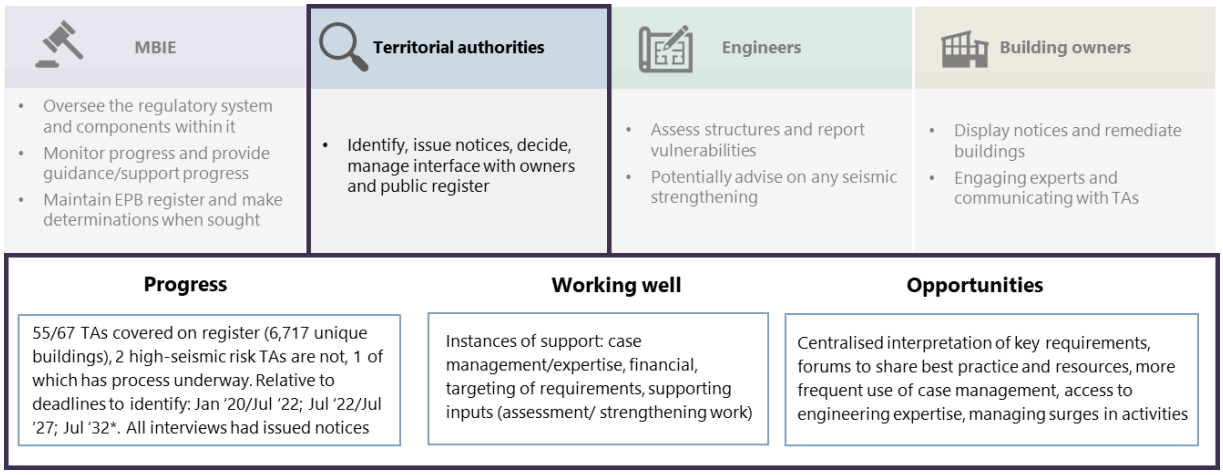
Some engineers and TAs suggested an independent panel of experts for engineering queries would be useful when questions or disputes arise. Engineers suggested such a panel would be useful when they have queries on how to best apply the Engineering Assessment Guidelines for unique buildings or when they need a second opinion. TAs indicated a panel could act as a support mechanism when they need support reviewing an engineering assessment report. It was also envisaged by some that a panel could help resolve disputes when two engineers return different assessments. We note these are slightly different functions, however, to that which determinations serve. We touch on the potential benefits of an independent panel of experts below in the section on quality of engineering assessments.

## 3.3 Territorial authorities

Territorial authorities appear to be largely implementing the system as intended given their resourcing and the tools available to them. TAs are implementing the system more consistently than prior to 2017. There are aspects of the system that different TAs have operationalised differently. These aspects often relate to a TAs interpretation of the EPB provisions in the Act, timing relative to requirements and seismic risk zone, and resourcing and staffing of the function.

Overall, TAs are largely performing their administrative duties effectively. However, not all TAs have complied with timeframes for identifying EPBs and there are some inaccuracies on the EPB register. Further, due to varying timeframes, based on seismic risk zone and the proactive efforts of TAs in identifying potential EPBs, the system has not yet been fully tested end to end (e.g. how TAs may manage many building owners passing the deadline at the same time without remediating their building), and there is some room for improved consistency.

Figure 8: Overview of findings for TAs




### 3.3.1 Only some TAs are identifying priority routes

Under section 133AF(2)(a) of the Act, TAs in medium and high seismic risk zones must identify public thoroughfares (such as roads and footpaths) onto which parts of URM buildings could fall in an earthquake, and that have sufficient traffic to warrant the remediation of those parts of the URM buildings. Section 133AF(2)(b), in conjunction with section 133AE(1)(f), allows TAs to identify transport routes of strategic importance (in terms of emergency response). Although different sections of the Act, TAs we spoke to seemed to refer to thoroughfares and strategic routes interchangeably as priority routes.

TAs we spoke to felt they are appropriately identifying priority routes, although this varied by TA and the approach they took:

- Some consulted publicly and others undertook targeted consultation or determined internally.
- Some undertook initial screening which showed no buildings likely to impede the route in an earthquake.

**TAs identified priority routes in different ways**

Feedback from TAs was split on whether they identified priority routes or not (with this only being required by TAs in medium or high seismic risk zones under section 133AF of the Act). Those that did appear to have followed the Act and EPB methodology to identify priority routes. Most TAs we spoke to that identified priority routes used the special consultative procedure in section 83 of the Local Government Act 2002. Almost all TA survey respondents to our survey (noting the relatively small sample size) felt many or most TAs were performing this function well, but this was not reflected by all stakeholders.

One engineer noted they have experienced TAs taking a conservative view of what is deemed a priority building under 133AE(1)(f) of the Act. Section 133AE(1)(f) states that a building should be deemed a priority building if it has "the potential to impede a transport route." TAs are sometimes deeming a building as a priority building if any part of the building could collapse onto the route, even though realistically, the building would not impede the entire road if it collapsed (e.g., may inhibit one lane on a four-lane road). This has the potential to place undue burden on the building owner because the deadline for remedying a priority building is shorter than non-priority buildings.

There is variation in how priority routes were identified. Some TAs interpreted the legislation differently depending whether they considered a route a priority route, a thoroughfare, or a strategic transport route. Sections 133AF and 133AF(1)(f) were considered by some to be difficult to interpret, and this was sometimes highlighted as the kind of instance where greater guidance on interpretation of the legislation would be helpful in supporting system efficiency and consistency.

For example, one TA had focused only on identifying potential EPBs on priority routes (intending to look beyond these routes as a subsequent step) and stated it would not have identified most buildings on its register as potential EPBs using the profile categories. The TA only considered the buildings because they are on the main road which was identified as a priority route. The TA interpreted the legislation as meaning that the main thoroughfare is a strategically important transport route, even though alternative routes are available because emergency services were located on the route. Another TA did not identify a priority route in its town because there were alternative routes emergency services could use in the event of an earthquake. We note this illustrates some differing interpretations of the requirements for TAs.

**Reasons for not identifying priority routes were mixed**

TAs that did not identify priority routes tended to have the following:

- They were in low seismic risk areas (so are not required under the Act to identify priority routes).
- Initial screening showed no buildings likely to impede the route in an earthquake.
- Alternative routes were available in the event of a building collapsing on the main road.

One TA we interviewed spoke to the local emergency services instead of using a special consultative procedure under section 83 of the Local Government Act 2002. The emergency services in that TA said there are enough alternative roads, so a transport route of strategic importance was not identified.

Several TAs noted that the teams working on EPBs did not normally undertake consultation processes, so this required additional efforts to liaise with other parts of the TA and/or with other TAs.

### 3.3.2 Potential EPBs are generally being identified by TAs

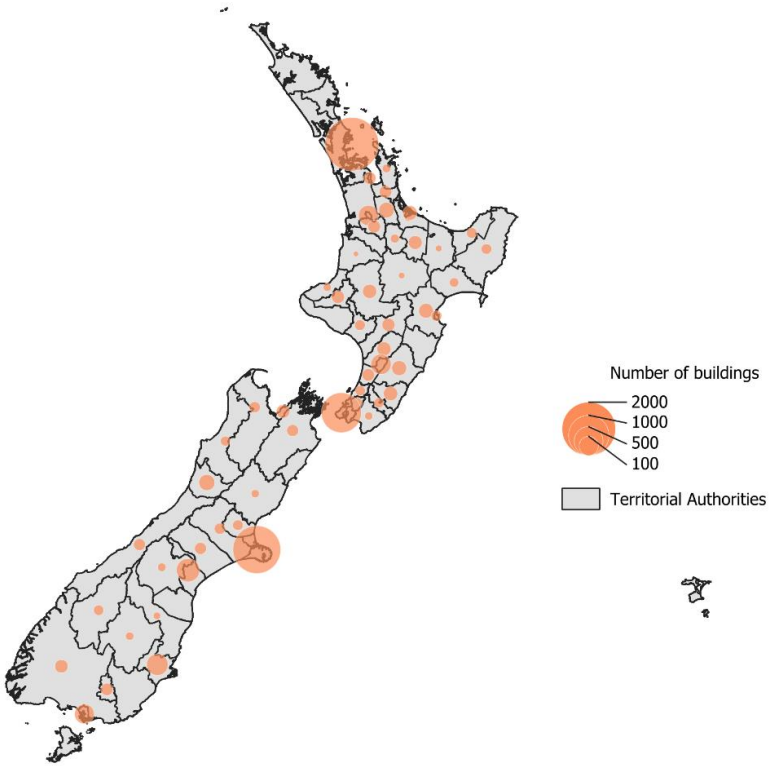
It is generally felt by both TAs and engineers that most TAs are effectively identifying potential EPBs, but some issues were raised:

- Most but not all TAs have undertaken exercises to identify potential EPBs.
- The 'identify at any time' pathway appears to be used regularly by many TAs.
- There exists some uncertainty over when, or if, engineers should notify a TA of an EPB.
- Concerns were raised over how potential EPBs can be identified.
- Grandfathering clauses in the Act are interpreted differently.

**Most TAs have undertaken exercises to identify potential EPBs**

Many TAs had previously undertaken exercises (prior to 2017) so had information to start with. Figure 9 shows the distribution of EPBs identified and added to the EPB register by each TA. The size of each bubble is proportional to the number of buildings identified as earthquake-prone.[10] There are 12 TAs with no EPBs on the register. Two of these TAs are fully within high seismic risk zones and a further TA contains both medium and high risk zones.

Figure 9: Distribution of EPBs by territorial authority




[10] Includes remediated buildings since removed from the register.

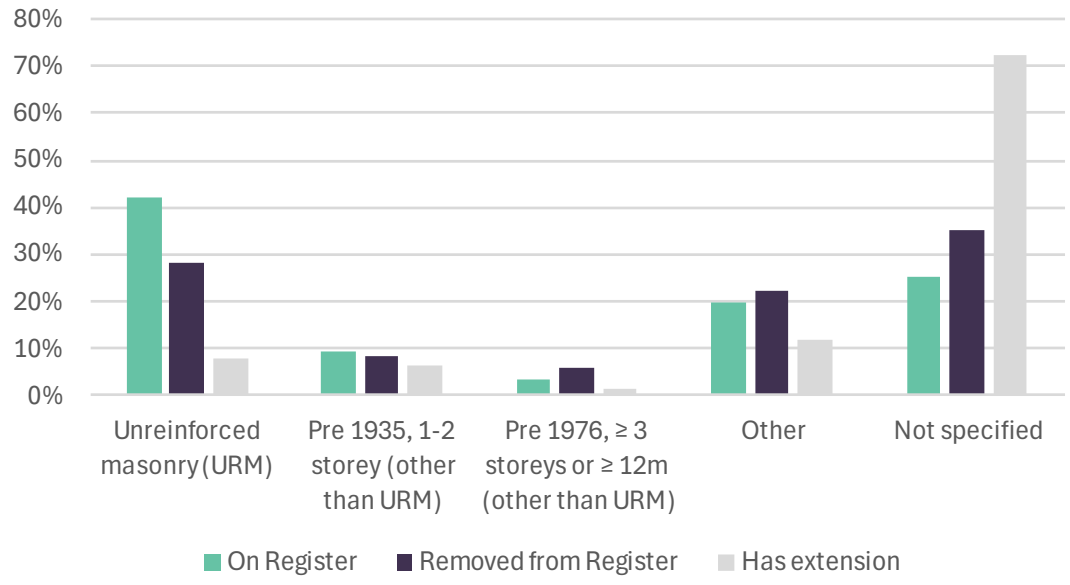
Source: (MBIE, 2025), Stats NZ, Territorial Authority 2025 (clipped)

Unreinforced buildings make up the largest share of buildings still on the EPB register (42 per cent), likely reflecting their vulnerability in earthquakes (Figure 10).

While the proportion of EPBs in the older and low-rise buildings is relatively small, there is a relatively balanced proportion between buildings on the register, buildings that have been removed, and buildings that have received an extension.

Very few buildings fall into the pre-1976, ≥ 3 storeys or ≥ 12m category, although we note that the construction date has been inferred in our analysis above using CoreLogic data. See Appendix C for further analysis of buildings on the EPB register.

Figure 10: Proportion of EPBs by construction type




Note: This analysis includes all 6,717 unique addresses on the EPB register.

Engineers were less confident about performance across TAs to identify potential EPBs. We heard concerns from a few engineers that they felt that some TAs were over- or under-identifying potential EPBs. Over-identifying potential EPBs could be putting unnecessary burden on owners to prove they are not, because it is difficult to have them removed once they are on the register. Under-identifying potential EPBs could be in part due to limitations in the profile categories set in the EPB methodology.

**The 'identify at any time' pathway is used regularly by many TAs**

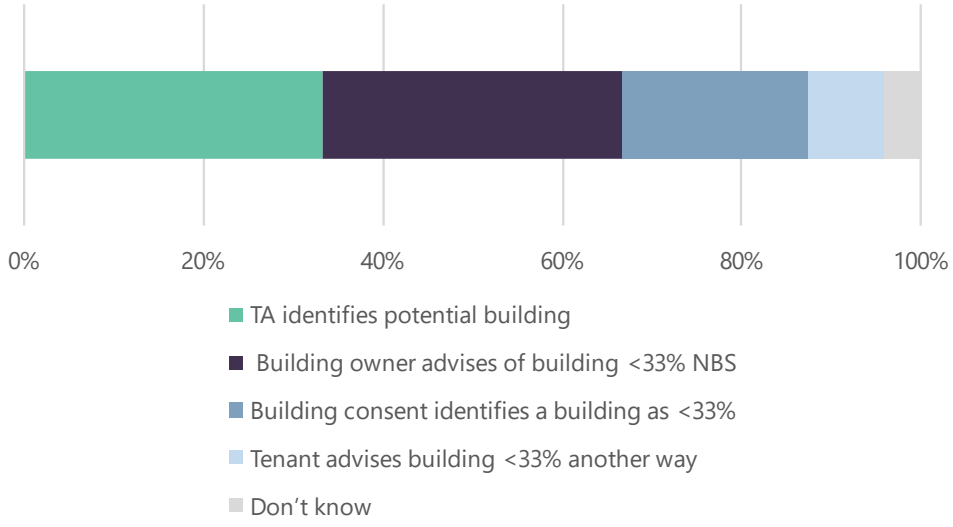
It is common for TAs to have identified EPBs using the 'identify at any time' pathway (section 1.3 of EPB Methodology and section 133AG in the Act)[11] to identify potential EPBs which were not picked up using profile categories. Our impression is that TAs believe they are fulfilling their responsibilities by

[11] Section 133AG(3) of the Act: "After the end of the applicable time frame, a territorial authority may, if it has reason to suspect that a building or a part of a building in its district may be earthquake prone, identify the building or part as potentially earthquake prone, whether or not by reference to the EPB methodology."

using the "identify at any time pathway," likely because of how EPB methodology/section 133AG are written. Around 20 per cent of buildings currently on the register don't fit into one of the profile categories, which could indicate the degree to which TAs are using the pathway.

TAs often find out about these buildings when an owner applies for consent to do strengthening work, and so the TA requests the engineering assessment report. Some TAs stated they have identified potential EPBs when an inspector goes past a building and believes it should be on the list. Other TAs have options for owners to proactively provide engineering assessments, to mixed success. Figure 11 shows how the smaller number of TA respondents to the survey used the 'identify at any time' pathway.

Figure 11: How TA respondents to the survey used the 'identify at any time' pathway




One TA has received quite a few assessments via a public facing email address. Another TA sent a letter to all building owners requesting any assessments and got very little response. Some TAs have been notified because tenants have requested an assessment be done.

There is no requirement for building owners to share a seismic assessment with the TA unless it has been identified as a potential EPB through the TA's own assessment. There is a perverse incentive for building owners not to do so—once their building is on the register it can be hard to get it off, and the clock starts ticking on the timeframe for the owner do the strengthening work.

**There was some uncertainty over when, or if, engineers should notify a TA of an EPB**

When questioned, the response from engineers was mixed on whether they felt they had an obligation to tell a TA when they assessed a building as less than 34 %NBS. A few engineers noted they have an ethical obligation as a Chartered Professional Engineer to notify the TA if a building poses a risk to life safety. Several engineers said the building owner was their client and so it was up to the owner to decide to share the assessment with the TA.

Engineers have ethical obligations under the Code of Ethical Conduct (Engineering New Zealand, 2016), but there are questions regarding timing/timeliness to afford a building owner the opportunity to either take action (improve the building themselves) or report the assessment to the TA directly.

Ideally, engineers should give the owner every opportunity to act within a reasonable timeframe before approaching the TA themselves.

**Concerns were raised over how potential EPBs can be identified**

Several TAs and engineers raised concerns that the current process for identifying potential EPBs may exclude some buildings that pose an earthquake risk but do not fit the profile categories in the EPB methodology (for example, hollow core concrete buildings constructed post-1970). On the flip side, there are buildings identified as EPBs that some engineers and TAs do not believe pose a significant risk to life safety (e.g. light timber framed buildings). See section 3.2.2 for more detail.

**Grandfathering clauses in the Act are interpreted differently**

We heard from two TAs who had already identified earthquake-prone buildings prior to 2017 and then removed some buildings from their EPB register following the 2017 changes. The TAs interpreted the EPB methodology as not requiring the buildings to be on the EPB register because they do not fit the profile categories. One of the TAs sent letters to the owners notifying them that although the building was off the register, the TA would not say it was not earthquake prone. However, the owners of those buildings are not required to display a notice.

We understand other TAs have interpreted the EPB methodology differently. One TA we spoke to noted that the provisions in Schedule 1AA of the Act require TAs work through the EPB methodology as they would for any potential EPB if they had identified an earthquake prone building prior to 2017. This TA has around 50 buildings on its register that are light timber framed buildings, but the TA is following the methodology for the buildings to be removed. The TA is requiring the owner to procure an assessment to get the building removed from the register, even though the building would never have been on the register in the first place under the 2017 changes.

The different interpretations of Schedule 1AA highlight a broader issue with grandfathering clauses if the system changes following the Review. More risk averse TAs are placing the onus on owners to get assessments, while other TAs are taking a more pragmatic approach.

Future legislative changes could cause confusion about which buildings remain in the EPB system and which are excluded. Clear clauses, considering all real-world implications, are needed to ensure consistency across TAs, and balance risk with placing undue financial burden on owners.

### 3.3.3 Territorial authorities rely on the engineering assessment rating to decide if buildings are earthquake prone

TAs follow the EPB methodology to determine if a building is earthquake prone once they accept an engineering assessment report:

- It is extremely rare for a building to be rated below 34 %NBS and the TA to decide it is not earthquake prone.
- TAs review engineering assessments against the MBIE checklist and their own experience.

**It is extremely rare for a building to be rated below 34 %NBS and the TA to decide it is not earthquake prone**

Every TA we spoke to said they always determined a building was earthquake prone if they accepted an engineering assessment report that assessed the building as below 34 %NBS. Section 133AK of the Act requires TAs to determine whether a building is earthquake prone once they receive an engineering assessment report. Section 3.4 of the EPB methodology sets the criteria a TA must use to determine if a building is earthquake prone. Section 3.4 is sometimes referred to as the two-step test. The first step is receiving an engineering assessment report stating the building is less than 34 %NBS. The second step is for the TA to decide if section 133AB(1)(b) of the Act is met.

We heard of one example (from an engineer) where a TA received an assessment below 34 %NBS and determined the building was not earthquake prone. It is not that TAs only rely on the engineering assessment reports without considering the building themselves, but instead because, in all but this outlier case, section 133AB(1)(b) will be met because of how the section is worded.

> 133AB Meaning of earthquake-prone building (Building Act 2004)
>
> 1) A building or a part of a building is earthquake prone if, having regard to the condition of the building or part and to the ground on which the building is built, and because of the construction of the building or part,—
>    a) the building or part will have its ultimate capacity exceeded in a moderate earthquake; and
>    b) **if the building or part were to collapse**, the collapse would be likely to cause—
>       i) injury or death to persons in or near the building or on any other property; or
>       *ii)* damage to any other property.

The bolded wording in the box above makes it clear why TAs cannot think of almost any case where this section of the Act would not be met. The TA must consider the building as earthquake prone if any person could be injured or die, or any other property be damaged if the building or part were to collapse.

The TA's consideration is not about how likely a person is to be in that building when there is an earthquake, but rather, if a person is in the building and it does collapse, whether they would be injured. It is difficult to think of any building where, if it were to collapse, a person inside would not be injured, and this is the test TAs must use.

Therefore, any additional effort by TAs once they receive the engineering assessment report is typically to consider whether they can trust the assessment, and less so about considering the second step in the two-step test.

**TAs review engineering assessments against the MBIE checklist and their own experience**

Many of the TAs we spoke to do not have an engineer on staff and rely on the experience of their building inspectors when accepting the assessments. We commonly heard TAs who "use the checklist" provided by MBIE. If an assessment report meets the checklist, then the assessment is accepted. This is

consistent with section 3.2 of the EPB methodology, which states that a TA must accept an engineering assessment if it meets the requirements set out in the EPB methodology.

Most TAs question the assessment if it does not look right or if the rating is just over 34 %NBS. When this is the case, most TAs request more information from the engineer who did the report (consistent with section 3.2 of the EPB methodology) or send to another engineer for peer review. We heard it is more likely the TA would ask the peer reviewers to test if risk to life safety is created by the building rather than apply the second part of the test. When a TA does not accept an assessment report, it can cause friction with the owner and/or engineer.

We cover the quality of engineering assessment reports and use of peer review in section 3.4 below.

### 3.3.4 Territorial authorities are not consistently checking EPB notices

Enforcement varies between TAs to ensure owners are complying with the requirement to display EPB notices:

- Most have done some level of checking of notices (if not, this was due to resourcing).
- The approach tends to be more supportive rather than heavy handed.

**Most have done some level of checking of notices**

Most TAs we spoke to have done some checking to ensure building owners are correctly displaying EPB notices. However, most TAs have checked notices sporadically or when they are visiting an area for another purpose.

The main driver for not doing checks consistently is resourcing. Smaller TAs often have a team of one or two individuals responsible for the EPB system in their TA. The individuals are often responsible for other council activities, leaving them with little time to conduct regular compliance checks. Larger TAs with more staff can have hundreds of notices issued and competing priorities combined with the lack of funding for the EPB system, means notice checks fall down the priority list of what needs to be monitored by the TA.

**The approach tends to be more supportive rather than heavy handed**

If an owner is observed to not be displaying the notice, several TAs said they give the building owner a warning first. Then if the notice is not displayed on a subsequent check, the TA issues an infringement. We understand that in some cases, it is the tenant and not the owner who removes the notice because the tenants run a business and are worried the notice will scare customers away.

### 3.3.5 Enforcing deadlines is likely to be an issue for many TAs

Deadlines passing without buildings being remedied is an issue that is starting to be tested, but is likely to become a big issue for TAs as more building remediation deadlines approach. Concern around looming deadlines was raised by several TAs with no clear plan of how it could be addressed. The issues will be felt by TAs individually because buildings in each TA's jurisdiction tend to hit

deadlines in a cluster.[12] As of January 2025, 147 buildings had exceeded their deadline and have not been removed from the EPB register. This number is expected to grow (see Appendix C for more detail).

Some TAs are concerned the buildings that have been remediated first are the "low-hanging fruit," and many of the remaining buildings will be more complex and likely to lead to issues as the deadlines near. Some TAs expressed the sentiment that, without central government support, this issue is unlikely to be resolved.

The Act does not give TAs any tools to ensure owners are making progress to strengthen their EPB until after the deadline has passed. All TAs can do is attempt to engage with owners or provide incentives to encourage owners to act. Therefore, the four-year extension to owners with deadlines after 1 April 2024 granted by the government is seen as postponing the inevitable:

- Some TAs are yet to issue notices let alone worry about owners missing deadlines.
- There is a cohort of owners who will not remedy their EPB before the deadline.
- The EPB provisions in the Act do not provide TAs with mechanisms to ensure progress.
- Enforcing compliance would be a costly and time-consuming exercise.
- A cohort of owners will undertake strengthening work near the deadline.

**Some TAs are yet to issue notices let alone worry about owners missing deadlines**

We heard of a few instances when a TA acted when the deadline had passed, and the owner had not remediated the building. While some TAs have EPBs on the register where the deadline has passed, for many TAs the deadlines are still years into the future.

Some TAs are yet to issue notices or are focusing their efforts on reissuing notices based on the extended deadlines. Several TAs noted the significant cost associated with sending new notices with the extension. The legislation prevents TAs from recovering costs for the notices. The four-year extension led to confusion for some TAs around what it means for notices and the issued date of the notice, and caused additional work for TAs to communicate this with building owners.

**There is a cohort of owners who will not remedy their EPB before the deadline**

It is clear from talking to TAs there is a cohort of building owners across the country who will not do anything to their building (e.g. strengthen or demolish) in the required timeframe. TAs need a plan for what to do when this occurs. When asked, most TAs acknowledged they do not have a plan to address when owners run out of time and have not remediated their buildings by the deadline.

In many cases, smaller TAs or those in low seismic risk zones told us they are waiting to see what happens in other TAs who will face the issue first (e.g. TAs in high seismic risk zones such as Wellington) before planning for how to deal with the issue of unremedied buildings. A couple of TAs

[12] TAs have often identified potential EPBs in tranches when they go through the process, either because they have done it efficiently or to meet the deadline under section 133AG of the Act to identify potential EPBs in their district. Deadlines in a TA tend to cluster as a result.

said they hope central government steps in to enforce the issue or to give funding to support TAs to enforce the deadline.

In several TAs, we heard it came down to appetite from councillors to prioritise work to plan for the issue but because of the longer timeframes, it was not considered a priority.

**The EPB provisions in the Act do not provide TAs with mechanisms to ensure progress**

Beyond communicating with the owner, there is nothing under the Act for a TA to do to ensure the owner is progressing with strengthening their EPB. Unless the owner submits a building consent for strengthening work, TAs have no visibility over an owner's progress or intent to strengthen their EPB. This means it is likely that many TAs will get to a point where they have several EPBs on the register surpassing the deadline without being strengthened.

The recent Seismic Ordinances of California (Dal Pino, 2025) were quoted to us as an example of how progress could be monitored in New Zealand. Once an owner has been notified their building is potentially earthquake prone, they have certain milestones they must meet. As an example—within the first few years after receiving a notice the owner must provide the council a plan of what they will do, then they several years to apply for a building permit, then work must be completed after a few more years. The owner's process is constantly monitored and so the council is aware of progress.

Instead, here in New Zealand, the more proactive TAs who identified large amounts of potential EPBs at a time may end up feeling punished for doing so. Some TAs that issued many EPB notices in a one-to-two-year period realised they could be under resourcing pressure when deadlines are reached because requirements will be concentrated around the similar timeframe.

Many TAs we spoke to proactively approach owners when an EPB is nearing the deadline. One TA noted they were making good progress engaging with owners with buildings approaching deadlines before the four-year deadline extension. Before the extension was granted, they were communicating with building owners and starting to understand the owners' plans. However, as soon as the extension was announced, all owners went quiet because they potentially felt they have another four years before they have to worry about it.

When it comes to heritage buildings, there is little support for owners to remediate their buildings before the deadline. It can be more difficult and expensive to strengthen heritage buildings in a way that is sensitive to their status. We heard of some owners using a tactic known as 'demolition by neglect.'

Demolition by neglect is where the owner prolongs action to the last minute. At which point the building is in such disrepair, the owner has an excuse to demolish the building rather than meet the requirements to repair or strengthen a heritage building. We understand this is an issue across both building and resource management regulation with neither regulation having provisions to prevent this practice.

We understand demolition by neglect is not exclusive to heritage buildings and it likely applies to any EPB where the cost of upgrade is prohibitive for the potential marginal improvement in returns.

We heard some suggestions of incentivising building owners to make progress or even to make some improvements, even though it may not be sufficient to improve a building above 34 %NBS—for

example, by extending the timeframe for building owners who can demonstrate they are making progress and acting to remediate the building.

**Enforcing compliance would be a costly and time-consuming exercise**

Some TAs are concerned they will not have the resources to enforce mass non-compliance if owners do not remedy buildings in the required timeframe. Most TAs we spoke to expect non-compliance from a contingent of building owners.

The Act provides several avenues a TA can go down to enforce compliance. It can:

- impose safety requirements or restrict entry to the building or building parts to prevent risk to people's safety (s133AR)
- fine the building owner for failure to complete seismic work (s133AU)
- carry out seismic work and recover the costs from the owner (s133AS).

To carry out seismic work, the TA must first apply to the District Court for authorisation to do so,[13] which is a costly exercise to undertake for each building.

Section 133AS allows the TA to recover the costs for the seismic work from the building owner and the cost becomes a charge on the land. However, something TAs must contend with is when the land is worth much less than the costs to strengthen or even demolish the building. The cost for the TA would be upfront and may not be recoverable for some time. Smaller regional centres with older building stock may be disproportionately affected if this provision is used because the local economy is unlikely to support the cost of upgrading the buildings to a high standard.

**A cohort of owners will undertake strengthening work near the deadline**

Along with a cohort of owners who will not remedy their buildings, TAs expect a cohort of owners to only strengthen their building at the last minute. This could put a strain on TAs who have small teams responsible for processing consents and conducting inspections for code compliance, which could lead to delays for owners if they are concentrated at one time. More visibility over owners' progress would allow TAs to plan to stage the compliance processes so the TA does not become a roadblock to strengthening works.

### 3.3.6 Extensions, exemptions, and concessions are rarely used

The Act gives TAs several levers to support building owners with EPBs. Under section 133AN of the Act, TAs can provide exemptions to building owners so that the owner does not have to remedy an EPB. For certain heritage buildings, TAs can provide an extension to the deadline under section 133AO of the Act to give the owner more time to remediate the building. TAs can also provide incentives to the building owner, such as allowing alterations to the building without need for meeting fire and accessibility requirements (s133AT). We note that:

- exemptions and extensions are rarely used
- TAs often offer incentives to encourage building owners to strengthen EPBs.

[13] See s133AS(2) of the Building Act 2004

**Exemptions and extensions are rarely used**

We heard one example of a TA granting a building owner an exemption from the requirement to carry out seismic work. The TA gave the exemption because the building is unoccupied and isolated, so it does not pose a risk to pedestrians or traffic. This raises the question of whether the exemption threshold is too tight—specifically, whether a less stringent approach could be adopted without increasing risk in low seismic zones.

Extensions also do not appear to be commonly used by TAs. We did hear a few examples of TAs giving heritage building owners extended timeframes to remedy their building, which typically came with conditions. The Act provides a useful tool in that the TA can grant the extension but require the owner to meet certain criteria by certain dates to ensure the building is remedied by the new deadline. We understand relatively few buildings are eligible because section 133AO only applies to Category 1 heritage buildings (New Zealand Legislation, 2014).

A few TAs provided short-term extensions for building owners to provide an engineering assessment under section 133AJ of the Act. For example, one was for a residential building where the owners needed time to meet as a body corporate to agree to an assessment so were given an extra six months. We understand these extensions were well received by the owners. Further analysis of building extensions and exemptions is included in Appendix C.

**TAs often offer incentives to encourage building owners to strengthen EPBs**

The extent to which TAs incentivise building owners to undertake seismic strengthening work varies across TAs. Whether a TA offers incentives to building owners appears to come down to a particular TA's appetite to:

- prioritise strengthening work over fire and accessibility requirements
- reduce the financial burden on building owners through concessions such as rates rebates and forgoing building consents or building consent fees.

Many of the TAs we spoke to use section 133AT of the Act to some extent. TAs see the benefit of getting the strengthening done while not making it too burdensome on the owner. Many TAs provide exemptions under 133AT so building owners don't have to pay the additional (and often expensive) costs related to the building meeting provision of the building code related to escape from fire and accessibility for persons with disabilities.

Some TAs have gone further by offering rates rebates for building owners while their building is being strengthened, or not requiring a building consent for purely strengthening work. We heard from one TA who does not offer concessions because the councillors do not have an appetite for it.

How and when section 133AT is applied appears to vary across TAs, and some TAs we spoke to did not seem sure about when or how to apply it.

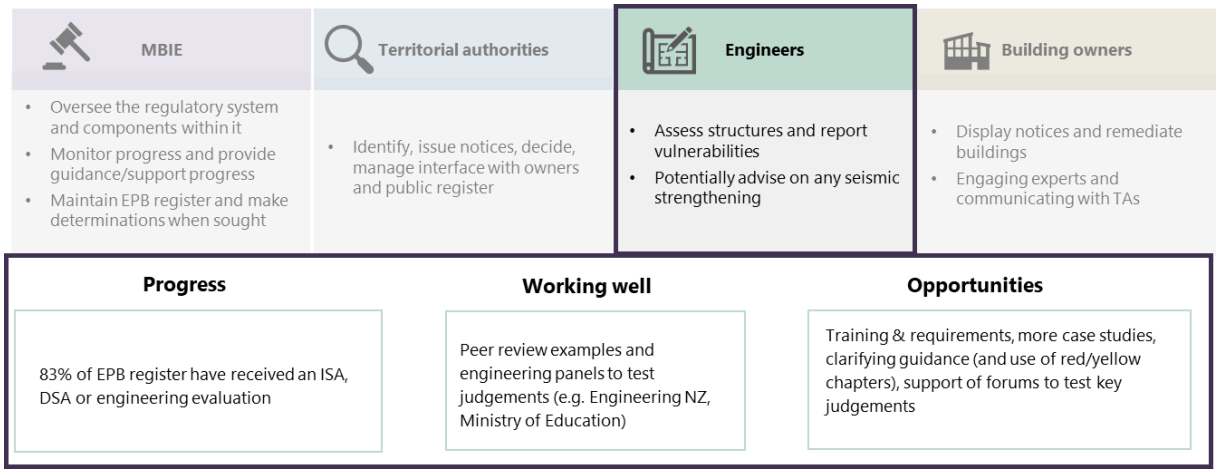
## 3.4 Engineers

Engineers are critical to the EPB system meeting its intent to reduce risk to life safety from earthquake-prone buildings. Engineers are operating in the EPB System as could be expected considering available guidance, support and incentives.

There are concerns over the quality of the engineering reports and the consistency of assessments. Some reports are excellent and some leave TAs and owners with a subpar product. The quality is heavily influenced by an engineer's experience and understanding of the Engineering Assessment Guidelines and their intent. There is a cohort of engineers who are experts and produce good assessments and there are also engineers who require more experience.

For the most part, engineers are providing advice proportionate to actual seismic risk. However, many engineers were felt to be being overly conservative in their assessments of a building and not applying judgment or testing alternative load paths to the extent expected when the Engineering Assessment Guidelines were developed.

Figure 12: Overview of findings for engineers




### 3.4.1 Quality of engineering assessments varies, and consistency is still an issue in some areas

For the most part, engineers are correctly identifying the elements of the building that are vulnerable to earthquake, and which have a genuine life safety implication if they were to collapse. However, quality and consistency of engineering assessments vary:

- The quality of assessments varies and the outcome of multiple assessments for the same building can differ depending on the engineer.
- Initial Seismic Assessments are not always used appropriately.
- Feedback was mixed on whether TAs and engineers get engineering assessments peer reviewed.
- Qualification and additional training for engineers is desired by some.
- The interface with geotechnical engineers could be strengthened.
- There are not always enough suitably qualified engineers available.

**Engineers are correctly identifying the elements of the building that are vulnerable to earthquake**

Most TAs we interviewed and surveyed expressed a high level of confidence in engineers' ability to correctly identify earthquake vulnerabilities in a building or building part and identify those elements which have a genuine life safety implication: Of the TA survey respondents:

- around 70 per cent felt many or most engineers were correctly identifying the elements of the building that are vulnerable to earthquake
- almost 55 percent felt many or most engineers were correctly identifying which building elements have a genuine life safety implication. Just over 27 per cent felt it was roughly even whether engineers performed this function well.

Most engineers we surveyed feel they perform this function well, and very few expressed concerns. Less than 20 per cent of survey respondents who are engineers felt only very few or a minority of engineers are performing these functions well. However, only a small number of engineers we interviewed felt this capability was universal and noted there are still gaps in the profession. For example, many engineers can identify potentially vulnerable elements in a building but less can then determine the behaviour at a system level and identify how it makes those vulnerable elements less relevant to the outcome.

**The quality of assessments varies and the outcome of multiple assessments for the same building can differ depending on the engineer**

Engineers or TAs that responded to our survey believed the quality and consistency of engineering assessment reports has improved since 2017. Of survey respondents who were involved in the system prior to 2017:

- 58 per cent of engineers feel the quality and consistency of engineering assessments are somewhat better or much better than prior to 2017
- 60 per cent of TAs feel the quality and consistency of engineering assessments are somewhat better or much better than prior to 2017
- around a quarter of engineers and TAs feel the quality and consistency is about the same.

However, most TAs and almost all engineers we interviewed commented on the variable or poor quality of some assessment reports.

Several reasons were put forward for quality and consistency issues. The most common reason raised was the experience of the engineer assessing the building and their proficiency with seismic strengthening. The view of most interviewees was the Engineering Assessment Guidelines allow every structural engineer to think they are qualified to conduct engineering assessments, and this has allowed underqualified/inexperienced engineers to conduct assessments.

Other reasons include the following:

- The Engineering Assessment Guidelines allow two different (ISA vs DSA) but valid types of assessments of buildings that can result in a different %NBS rating. Using different assessment types or methods can lead to challenges when it comes to peer review and decision-making.

- Some engineers noted the Engineering Assessment Guidelines imply a level of precision to the assessment process, but they are not comprehensive enough to guarantee the same outcome when different engineers use different methods for the assessment.
- The level of judgement applied by the engineer can also lead to differing quality and is related to the competency and experience of the engineer. As discussed below, views differ on the level of judgement engineers should apply when assessing a building.
- How the engineer is briefed by the client (e.g., a building owner vs a tenant) can affect the assessment outcome. For example, we were told of instances where tenants have used a low %NBS rating to justify quitting a lease. We understand this is less of an issue since 2017. Further to how an engineer is briefed is how much the client can afford to pay for an assessment. The cost determines how much an effort an engineer can put into producing the report.

If TAs receive a questionable report, most noted they would attempt to work with the engineer to improve the quality of report. TAs would send the report back to the engineer with feedback on what is missing, request additional information from the engineer, or get the report peer reviewed by another engineer (see theme on peer review below).

Several TAs noted they often find a phone call with the engineer helps particularly if the engineer has used judgement in the assessment which they can justify to the TA by providing additional information.

**Initial Seismic Assessments are not always used appropriately**

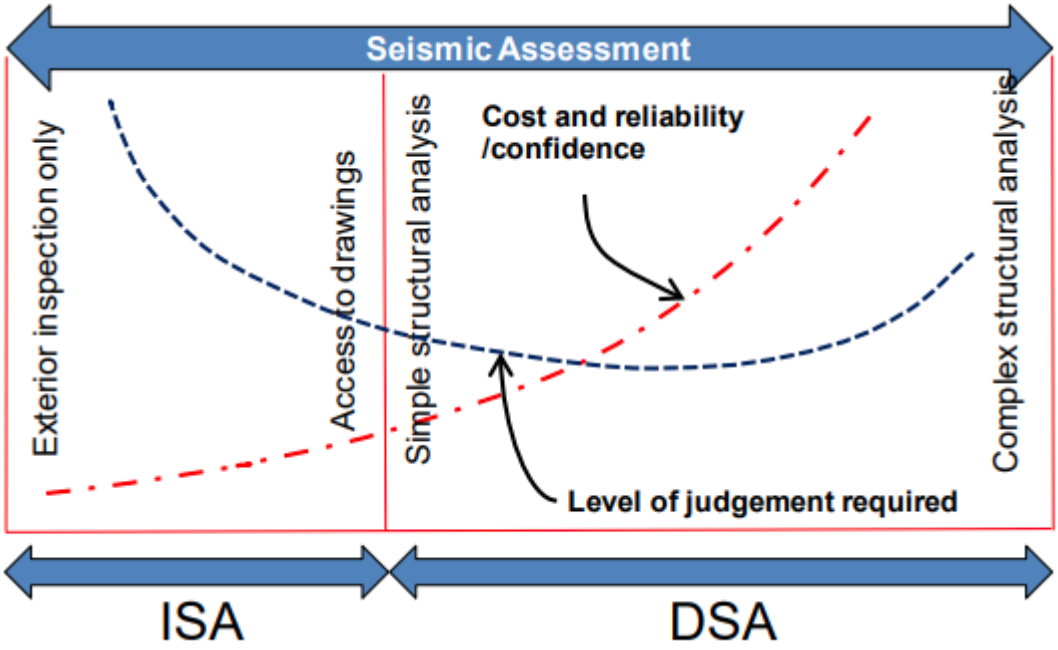
Feedback was mixed on use of ISAs and DSAs. We heard from some TAs who encourage owners to only get a DSA because it provides more detailed information on the building (although it is also more costly for the building owner). Several other TAs recognise the ISAs are a useful screening tool to get across several buildings and then request a DSA from owners if the rating is close to 34 %NBS. This is seen by most TAs and Engineers as the more acceptable use of an ISA. It is to review a portfolio of buildings to investigate whether a building needs to be assessed in more detail. Some engineers also noted an ISA errs towards conservatism, particularly when it is done by a less experienced engineer.

Some TAs and engineers have questioned the quality of ISA reports because the engineer has implied a greater level of calculation and detail than is involved in an ISA. Because of the implied detail, some engineers noted they have seen owners and TAs make decisions on a building based on an ISA (e.g., strengthening, purchases, or determining it is not EPB) when the ISA does not provide an adequate level of certainty for those decisions. We understand engineers are encouraged to do some calculations on specific building elements to calibrate some of their judgement. We also heard of overly detailed ISAs, 40 to 50 pages long, which conclude a DSA is needed.

It is extremely unlikely for a geotechnical engineer to be consulted on an ISA which means geotechnical hazards are unlikely to be captured by ISAs. Figure 13 shows the seismic assessment continuum as presented in the Engineering Assessment Guidelines. The figure illustrates how each

assessment could be carried out with a varying degree of knowledge, detail, and judgement[14]. A well done ISA can be as good as a simplistic DSA as long as the engineer has access to drawings and knows what they are doing.

Figure 13: Assessment continuum




Source: Ministry of Business, Innovation and Employment et al., (2017)

A few engineers noted they have deterred owners from commissioning an ISA because the engineer is relatively confident from experience the building will be earthquake prone. They recommend a DSA instead because it will provide useful information to the owner about what will needs to be done to strengthen the building.

**Feedback was mixed on whether TAs and engineers get engineering assessments peer reviewed**

TAs indicated they are typically more likely to get an engineering assessment report peer reviewed if it is 34 %NBS or just over. This is to ensure the rating is valid and the building is not earthquake prone. Indicative of conservatism existing in the EPB system, we asked several TAs if they would get a report peer reviewed if it rated the building just under 34 %NBS (i.e. around 30-33 %NBS). All TAs responded that they would not and would accept that the building is earthquake prone.

Many engineers said they have used or done peer review at some stage but not often.

Almost all TAs and engineers we spoke to said peer review is a good process and engineering assessments should be peer reviewed more often. Some engineers noted there is not much incentive to get a peer review done but it could pick up details an engineer missed, leading to a better assessment.

[14] The figure is slightly misleading because there is an overlapping area where either an ISA or DSA could be done.

Peer review is seen as more important when the engineer doing the assessment is less experienced with seismic assessments. Several engineers remarked that having peer review might lead to less conservatism because of the shared risk. On the other hand, we heard some engineers would be reluctant to take on the risk associated with doing a peer review.

Several TA and engineer interviewees suggested it would be useful if a third-party group was set up consisting of experts where engineers could reach out if they need support with difficult aspects of an assessment or TAs could ask for support when they receive a questionable assessment, and the TA did not have the capability to interrogate it.

The likes of JC-SAR or an independent panel of experts could potentially fulfil such a support role. Given the relatively small pool of experts in New Zealand, using JC-SAR would be the likely choice. JC-SAR could provide quality assurance to the sector by considering complaints or issues with technical competence, assisting TAs to manage complex consents and peer reviews, and help develop and revise standards based on their experience in this supporting role. However, appropriate processes, resourcing, liability, and oversight would be needed to enable JC-SAR to fill this role.

The fact engineers require this support raises the question of whether engineers are taking on building assessments beyond their expertise. Without oversight or guidance from more experienced engineers this issue may go unnoticed and its possible the conservative nature of the system has prevented this from becoming a significant concern.

**Qualification and additional training for engineers is desired by some**

A common suggestion from TAs and engineers was MBIE should require mandatory training for engineers to complete so they can prove competency to conduct assessments. They way the regulations are currently written allows any charted structural engineer to sign off an engineering assessment, regardless of their experience (see section 2.2 of the EPB Methodology). Currently, there is little support or resource in the system to ensure engineers maintain competency and ethical standards around how they conduct assessments.

Many engineers and TAs believe that if an engineer applies judgement, there needs to be some level of licence/qualification to show the engineer is qualified to do so. For example, one TA suggested a central organisation to set requirements and deem an engineer acceptable, or a third party to audit assessments they receive.

The EPB Methodology states the minimum requirement for the engineer signing off an engineering assessment is to be a chartered structural engineer. Assessing the seismic behaviour of existing buildings and building parts is more challenging than designing a new building and requires a different focus and approach which engineers are not trained for when they graduate[15]. Using traditional design approaches to assess an existing building can lead to an incorrect assessment of the building's performance (Ministry of Business, Innovation and Employment et al., 2017). New Zealand's

[15] A useful analogy described to us to explain the difference between an engineer designing a new building and assessing an existing building is baking a cake. It is easy for a baker to follow a recipe to bake a perfect cake. However, it is much more difficult, even for an experienced baker, to take an existing cake and perfectly recreate the recipe from scratch.

building stock varies greatly, and it takes a lot of experience to assess a building holistically and understand how it is likely to perform in an earthquake. Experienced engineers understand the nuances present in the Engineering Assessment Guidelines and have 'work arounds' for when the guidelines are not clear. Many engineers would benefit from more clarity and guidance.

Any training is via limited training in postgraduate study or otherwise comes from work experience. Therefore, many chartered engineers may not have the level of experience anticipated when the Engineering Assessment Guidelines were established.

**The interface with geotechnical engineers could be strengthened**

There is a geotechnical aspect to engineering assessments which we have heard is often overlooked. Geotechnical engineers assess the foundations and site-related conditions that could affect a building in an earthquake (e.g., from hazards such as liquefaction, subsidence, slope collapse).

Although there are questions about when a geotechnical engineer should be involved[16], they are inconsistently consulted by structural engineers for detailed seismic assessments on buildings. The relationship between the structural engineer and geotechnical engineer needs to be collaborative so any potential geotechnical hazard is well understood when assessing the building. Initial seismic assessments give very little or no consideration to geotechnical hazards.

We have heard three issues for why geotechnical engineers are not always involved:

1. Structural engineers do not always know when they should be consulting a geotechnical engineer or feel they understand the hazards enough to do it themselves (this is the biggest issue of the three).
2. There are not many geotechnical engineers who are trained appropriately to conduct assessments. As with structural engineering, a shift is needed from what they are trained to do to what they are required to do in an assessment.
3. Geotechnical engineers deal with a much broader range of uncertainty in ground performance and the engineering assessments do not always reflect this.

Involving a geotechnical engineer to conduct a high level evaluation of site behaviour would provide a good indication at the outset whether further work is required.

**There are not always enough suitably qualified engineers available**

It was inevitable given the nationalisation of the EPB system and the associated legislated timeframes that the relatively small pool of experienced engineers would not keep up with demand for assessments or strengthening work.

However, in some regions we understand it can be difficult for owners to find a structural engineer to assess their building or do strengthening work, let alone a sufficiently experienced engineer. The legislated timeframes for TAs to identify potential EPBs has meant in some areas (especially rural and provincial areas where only a few structural engineers are available), owners are struggling to find an

[16] Not all buildings are at risk to geotechnical hazards.

engineer to conduct an assessment. We heard of one TA where an engineer passed away, leaving a backlog of owners who struggled to find another engineer who could assess their building.

### 3.4.2 Engineering advice is generally proportionate to structural vulnerability but conservatism is an issue

Most engineers believe that most in the profession are not appropriately considering alternative load paths and flow-on effects that might influence the outcome. A couple of themes were raised for why this is (separate but related to an engineer's experience which we discuss in the section above):

- Engineers are not applying the appropriate level of judgement when assessing a building or building part.
- Alternative load paths are not appropriately considered.
- Engineers are sometimes being overly conservative for life safety or liability reasons.

**Engineers are not applying the appropriate level of judgement when assessing a building or building part**

Whether engineers should apply judgement while assessing a building and to what extent they should apply that judgement was a contentious issue. Feedback varied between engineers and between TAs.

One school of thought is the Engineering Assessment Guidelines are intentionally prescriptive to reduce the need for engineers to exercise judgment when assessing a building (if at all).

The second school of thought is judgment is required to assess the holistic performance of a building or building part and that the engineer conducting the assessment must have sufficient engineering experience to appropriately apply their judgement. Judgement is required for considering buildings or aspects of buildings that don't fit neatly within the guidelines, or where there is considerable uncertainty in building conditions.

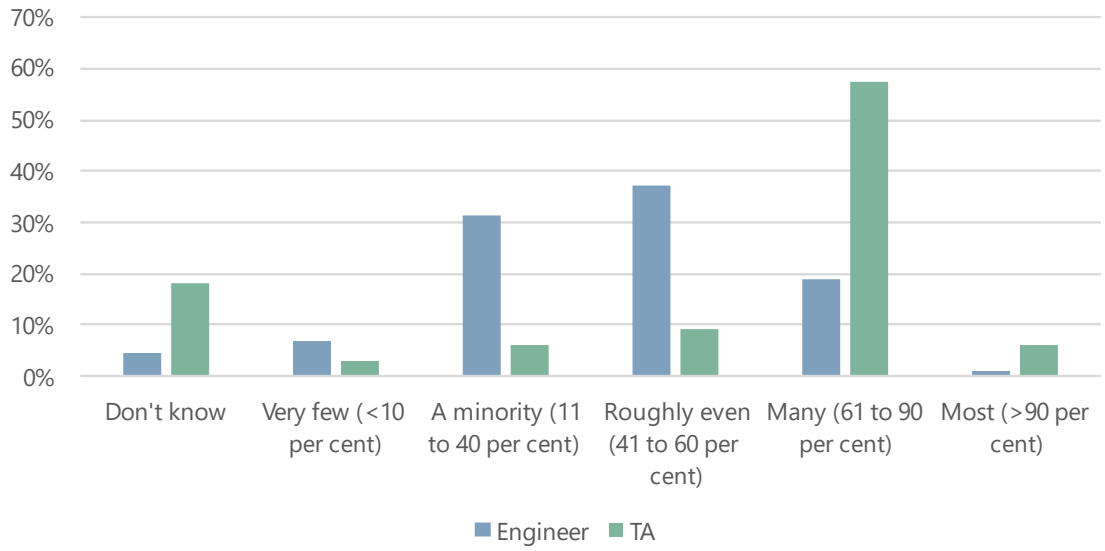
Around half of engineers who responded to the survey think the Engineering Assessment Guidelines require the right level of judgement relative to prescribing methods, calculations, and assumptions:

- 33 per cent of engineers think the Engineering Assessment Guidelines require somewhat or significantly too much judgement
- 52 per cent responded neutrally
- 14 per cent felt the Engineering Assessment Guidelines require somewhat or significantly too much prescription

We understand the Engineering Assessment Guidelines were created with the expectation engineers would apply judgement when using the Guidance to assess a building (see Figure 13 above).

The finding that only half of engineers think the Engineering Assessment Guidelines have the right balance between judgement and prescription is reflected in their confidence in the engineering profession's ability to use appropriate judgement to arrive at the right %NBS. Only 20 per cent of engineer respondents think many or most engineers are using appropriate judgement compared to 64 per cent of TA respondents.

Figure 14: Responses to the survey question *How many engineers use appropriate judgement to arrive at seismic ratings that reasonably reflect the potential performance of the building and risk to life safety*




**Alternative load paths are not appropriately considered**

The question about the level of judgement used was raised often regarding whether an engineer assesses a building's performance beyond failure of the weakest building element. We often heard from TAs and engineers that some engineers will identify the weakest element in a building and assign the rating based on that element.

According to many engineers we spoke to, the Engineering Assessment Guidelines require the engineer to push beyond the weakest element's failure to consider alternate load paths. The engineer should assess how the building will cope when loads are redistributed to other elements when the weakest element fails. Assessing how the building or building part copes after the weakest element fails can often lead to a higher %NBS rating, but it requires more work (and therefore more cost) and sound engineering judgment to get right.

Just over 18 per cent of survey respondents who are engineers think many or most engineers appropriately consider the alternative load paths and flow on effects that might influence a building's outcome in an earthquake. Almost half of TA respondents (49 per cent) think many or most engineers perform this function well.

One reason we heard for why this is sometimes not done came down to economic incentives, which we cover in section 3.6.3.

**Engineers are sometimes being overly conservative for life safety or liability reasons**

A theme of engineers being overly conservative came through from both TAs and engineers (we discuss other sources of conservatism in the system in section 3.6.3).. The theme mostly related to the perception engineers were risk adverse for liability reasons and the fear of being taken to court. Some engineers may (potentially subconsciously) limit this risk by reporting conservatively in their assessments. The Canterbury Royal Commission hearings and the focus placed on engineers came up often as a reason why engineers may fear being held liable (whether rational or not).

Another reason engineers could be conservative is because of the risk to life safety. Engineers assess priority buildings such as schools and hospitals occupied by, or near to, vulnerable people. In these situations, it is understandable why a less experienced engineer could be more conservative in their assessment to avoid the risk to life safety.

We also heard engineers often operate on a fixed fee for assessments (tens of thousands of dollars), and doing an assessment may lead to strengthening work for the engineer which can be in the hundreds of thousands of dollars (so there may be commercial incentives to be conservative too). As mentioned above, there is possibly also a level of conservatism being applied in cases where buildings are not being tested to the level envisioned by the Engineering Assessment Guidelines (e.g., what happens to the loads when the weakest element fails). Carrying out additional modelling to stress test the building beyond failure of its weakest element is expensive to undertake, so engineers do not always do it if they are not passing on the cost to the building owner (or if the scope of work is limited). Many owners cannot afford to pay for it, even though it may lead to a higher rating and potentially less cost for strengthening. Without the modelling to justify higher ratings, some engineers will lean towards more conservative ratings.

## 3.5 Outcomes and interface between MBIE, TA, Engineers

This section uses responses to our survey and analysis of the EPB register to elaborate on the following key points about the outcomes and interface between MBIE, TA, and Engineers:

- Progress is being made in remediating EPBs but risks remain
- The interface is not as efficient as stakeholders would like
- Not all feel there are avenues to address issues
- Decisions on EPBs are made at the right level
- The arrangements could be more effective
- Engineering expertise is not always readily available to TAs
- Stakeholders don't feel they have all the tools they need

**Progress is being made in remediating EPBs but risks remain**

We understand from MBIE that as of January 2025, 1,714 EPBs had been removed from the register with 945 of these being strengthened, 258 demolished, and 361 identified as being above 33 %NBS following DSAs. To put this in context, in January 2025 there were 6,717 buildings on the EPB register, so that amounts to over a quarter of buildings identified as being potentially EPB to date no longer being considered earthquake prone and around 15 per cent of the register having had some form of remedial action. However, there is some concern that the buildings remediated so far are the 'low-hanging fruit' and progress will become more difficult as issues arise around remediating the more challenging buildings.

**The interface is not as efficient as stakeholders would like**

Responses from our survey suggest the interface between engineers, TAs, and MBIE is not as efficient as stakeholders would like. This sentiment was strongly felt among engineers. This suggests operational friction or communication barriers that may be more keenly felt by those directly engaged

in technical roles. In contrast, MBIE respondents—who were fewer and perhaps less embedded in on-the-ground coordination—generally expressed fewer negative views, which may point to a disconnect in perceptions of how well the interface is functioning.

**Not all feel there are adequate avenues to address issues**

Survey responses reveal that many participants, particularly engineers and TAs, somewhat agree that avenues exist to address issues. Engineers show a divided perspective—with substantial numbers leaning both toward agreement and disagreement—suggesting inconsistency in the availability or visibility of these avenues across projects or regions. This fragmentation could point to ad hoc or informal issue resolution mechanisms that vary in accessibility or effectiveness.

Interestingly, MBIE respondents (again fewer overall) appear more confident that avenues exist, with none reporting significant disagreement. This again hints at a possible disconnect between those setting or overseeing processes and those navigating them day-to-day. The mixed sentiment overall suggests that while mechanisms for raising and resolving concerns may technically exist, they are not uniformly trusted, understood, or experienced as effective—especially by those most reliant on them. These perceptions may deter people from using the existing avenues.

**The arrangements could be more effective**

Most survey respondents are unsure or only somewhat confident that the current arrangements are working well. Engineers are more likely to say the arrangements are not effective, or to be unsure. This suggests that, for many working directly with the system, things could be smoother or better coordinated.

MBIE and TA respondents are generally more positive, but not strongly so (noting the smaller sample size). A lot of people gave neutral answers or only slight agreement, which suggests the system might be working okay in some areas but is not consistently good or reliable. There appears room to make it clearer, more consistent, and easier to work with.

**Engineering expertise is not always readily available to TAs**

The responses show that many people, especially engineers, feel that engineering expertise is not readily available to TAs, with a significant number disagreeing or being neutral. Engineers are particularly critical, which may imply that they believe there are barriers to providing the expertise needed or that the system does not facilitate easy access to it.

On the other hand, MBIE respondents are more positive (again fewer), with few expressing dissatisfaction. TAs (also fewer than the engineers) have mixed views, but overall, many seem to feel that access to engineering expertise is limited. We have heard many engineers do not want to work for TAs for liability related reasons.

**Stakeholders do not feel they have all the tools they need**

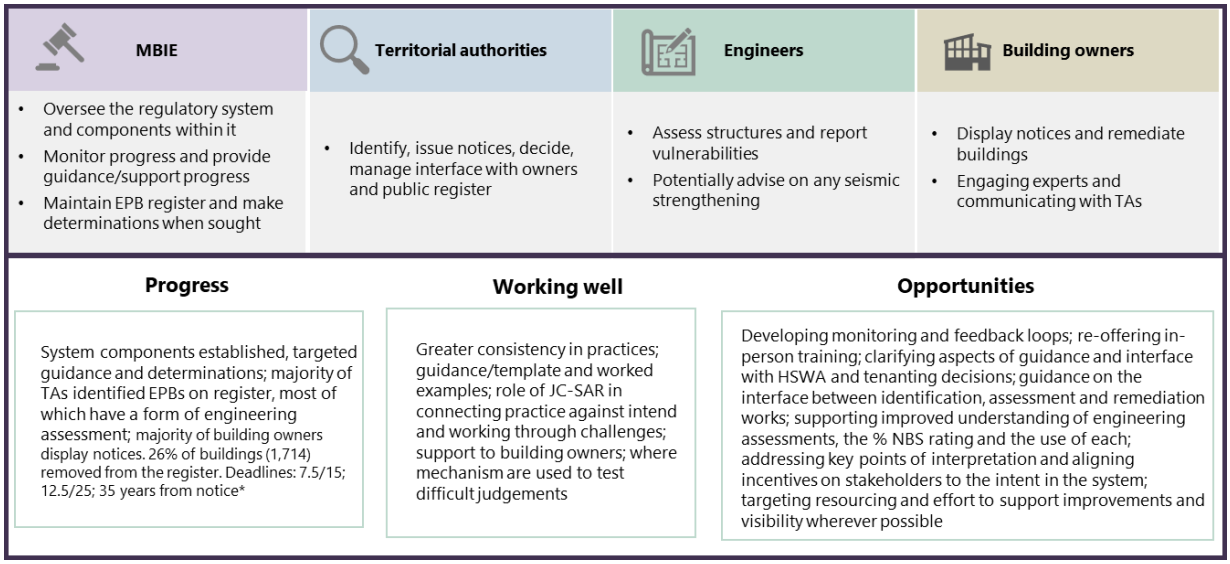
The survey responses suggest that many respondents feel that not all parties have the tools they need. Engineers (the largest group) express the most concern, with a large portion either disagreeing or unsure. This could relate to wanting more technical support with assessments or acknowledging they play a substantial role in determining if a building is earthquake prone, which is not sufficiently recognised in the regulatory system.

MBIE and TA respondents while fewer are more positive, but not overwhelmingly so, with a fair amount of neutrality or mild disagreement. This shows that while some tools may be available, there are still gaps in what is needed for everyone to perform at their best. It seems there is room to improve access to the right tools for more consistent and effective work across all parties.

## 3.6 System-wide or owner-related findings

This section covers system-wide themes or findings related to owners. The latter themes are related to aspects of the system which are not the focus of this evaluation but are important for achieving outcomes.

Figure 15: Overview of system-wide or owner-related findings




### 3.6.1 The %NBS rating is misinterpreted and its association with risk is misunderstood

A common theme from engineers and TAs is the %NBS metric used to rate potential EPBs is misused:

- It was widely felt that the %NBS terminology is misleading, and the associated risk is misunderstood.
- Commercial incentives are driving building owners to strengthen their building higher than expected when the EPB system was implemented.
- The market is incorrectly using the %NBS as a predictor of building resilience/serviceability following an earthquake.

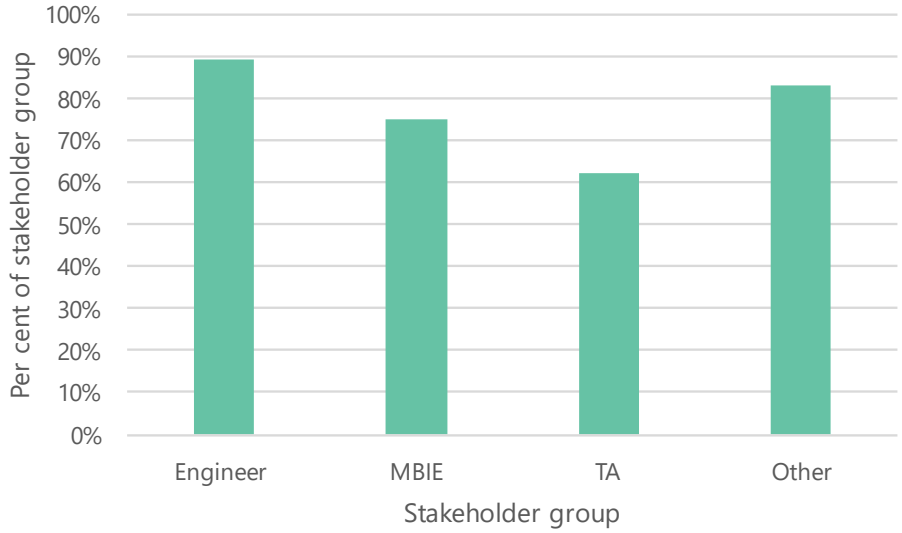
**Many felt the %NBS terminology is misleading, and the associated risk is misunderstood**

Over 80 per cent of survey respondents felt the use of the %NBS metric and it's understanding significantly or somewhat undermines or inhibits the system adequately addressing risk of life safety.

Engineers are the most concerned about the use of the %NBS metric (see Figure 16). Almost 90 per cent of engineers who responded to the survey think the %NBS terminology and its understanding

cause issues. Engineers felt the terminology '%NBS' is misleading because it is not exactly an abbreviation for per cent of the new building standards, but rather it is a metric/index to rate the relative life safety of an existing building to that of a minimally compliant new building on the same site.

Figure 16: Per cent of survey respondents in each stakeholder group who think the use and understanding of the %NBS rating poses some or significant issues




TAs responding to our survey are less concerned, possibly due to how they see the metric applied. For example, TAs may see the metric used for strengthening work or when a building owner requests a building consent. They are also more concerned if a building is above or below 34 %NBS, compared to engineers, who are often hired to assess buildings based on market driven incentives, which can sometimes be misguided.

**Commercial incentives are driving building owners to strengthen their building higher than expected when the EPB system was implemented**

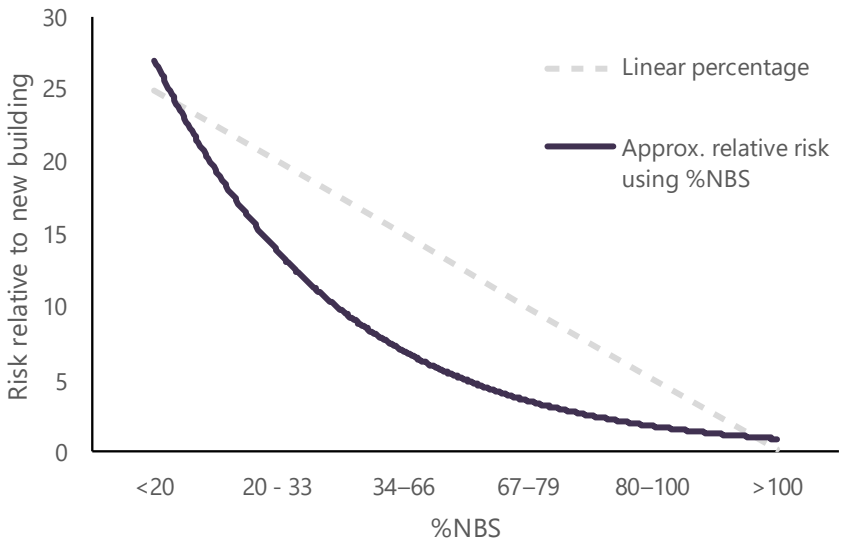
While positive to some extent, commercial incentives to strengthen buildings to ratings higher than 67 %NBS is driven by a misunderstanding of the metric/index.

The commercial incentive to go beyond 67 %NBS is often related to demand from tenants due to safety concerns. However, while increasing the %NBS to above 34 %NBS (e.g. 67 %NBS) should reduce the risk to life safety, strengthening beyond 34 %NBS can be expensive and the returns from investment are non-linear (despite what the %NBS scale may imply).

Using a percentage for the rating itself could be the cause of some of this misunderstanding. Neither the cost of strengthening nor the resulting increase in capacity are linear, but for the person who does not have the technical knowledge, it may seem reasonable to assume a linear increase in life safety no matter how much is spent. There are both life safety and non-life safety benefits from strengthening a building that building owners may wish to consider. However, there are diminishing returns to life safety benefit, particularly beyond the 67 %NBS mark.

Figure 17 illustrates the non-linear risk profile of a building at different %NBS (dark purple line) compared to the relative risk if %NBS used a linear scale as would be expected from a percentage (grey dashed line). The approximate risk of building collapse for a building rated above 80 %NBS is much lower.

Figure 17: Approximate risk relative to a new building using the %NBS compared to a linear percentage scale.




Source: Adapted from Table A3.1 (Ministry of Business, Innovation and Employment et al., 2017)

**The market is incorrectly using the %NBS as a predictor of building resilience/serviceability following an earthquake**

Many engineers noted the %NBS is used by the market for determining insurability or whether an owner can get a loan. We heard owners are often unable to insure their building or get financing from a bank if their building is less than 67 %NBS. We understand there is also a misguided perception in the market that if a building is above a certain %NBS then it will not be damaged in a moderate earthquake, which is incorrect. The %NBS is related risk to life safety and not resilience of the building in an earthquake or its serviceability following the earthquake. That said, there would likely be less damage from a building with a higher %NBS, which means less downtime for repairs.

Some TAs and engineers noted in the interviews they feel the government has endorsed this use of the %NBS by not allowing their staff in a building that is below 67 %NBS, even though the legislation states the minimum is 34 %NBS. This sentiment was common. The higher expected level was considered to be driving owners to strengthen buildings beyond what is required and potentially beyond what is economic to do.

### 3.6.2 The underlying economics of remediation work do not always match relative to risk, timeframes and building use

Concerns were raised about a cohort of EPBs that will not be strengthened for economic reasons:

- Some buildings will not be remediated because the economics do not justify strengthening work.

- There is often a significant step change in the cost relative to achieving increases in seismic ratings which aren't always justified.
- Questions were raised as to whether central government could provide funding to building owners.

**Some buildings will not be remediated because the economics do not justify strengthening work**

We heard from several TAs who expect some buildings not to be remediated because the underlying economics do not justify paying for the strengthening work. We have also heard many instances of owners unable to afford the work. This is particularly an issue in small rural/provincial towns where owners are being told they need to spend a lot of money to strengthen buildings which they are unlikely to ever recover through rent.

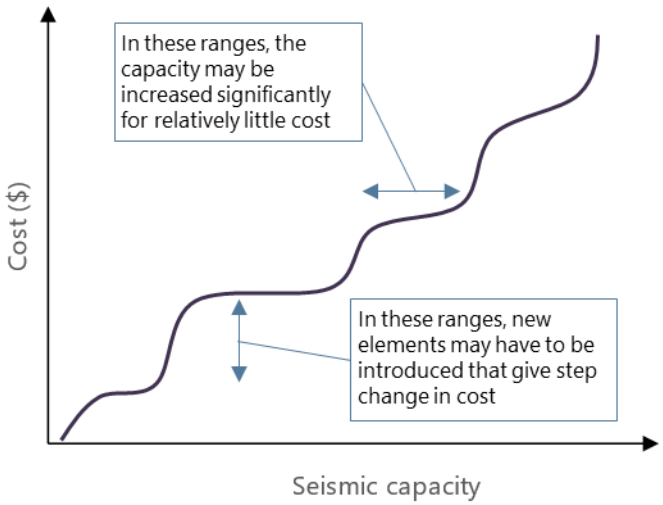
**There is often a significant step change in the cost relative to achieving increases in seismic ratings which are not always justified**

It is not always practical to design upgrading work to achieve a specific target seismic rating, as there is seldom a linear relationship of cost to increase in capacity (Figure 18).

Often, there are significant step changes in the cost of achieving a minor change in seismic rating, as the increase can only come about through the introduction of significant new structural elements. This may increase cost disproportionately and may also reduce operational efficiency of the building if the new structural elements are too intrusive.

Equally, it is possible that significant increases in seismic rating may be possible for nominal increased cost and if the work is being done, it will make sense to add the extra capacity where possible.

Figure 18: Generalised relationship between cost and seismic rating




Source: Holmes

**Questions raised whether central government could provide funding to building owners**

Around 60 per cent of survey respondents felt there is insufficient support for owners to carry out non-viable strengthening work (i.e., where the marginal increase in returns do not justify the cost of strengthening).

Some TAs have suggested central government offer owners support to get their buildings above 34 %NBS. For many TAs it will not be affordable or it will not be palatable to pay for the strengthening work and attempt to recoup costs from the owner. We have heard several examples of where there would be no point because the owner would not be able to afford it. These TAs are concerned the rate payers would be left with the bill in areas where rates are already high.

Other suggestions were allowing solutions that strengthen the worst elements of a building to mitigate consequences to life safe while acknowledging or accepting the building would never get above 34 %NBS. This is most relevant to URM buildings where relatively low-cost standard solutions exist to mitigate some risk, but getting an 'accurate' assessment of how much risk and removing the higher order risks is where the cost is incurred.

### 3.6.3 The EPB system incentivises risk aversion at many (and compounding) levels

**Engineers and TAs are incentivised to be conservative when assessing potential EPBs and deciding if a building is an EPB (respectively)**

We noted the reasons why engineers can be conservative in section 3.4.2. Reasons include some engineers being incentivised to take a conservative approach to engineering assessments because of the fear of being held liable for an unconservative assessment and the possible poor outcomes in the event of an earthquake, or because they are hoping to contract with the owner to do the strengthening work.

There is little incentive for a TA to decide a building is not an EPB once they receive an assessment for a building rated below 34 %NBS. This would require the TA to take on the liability for the risk if there is death or injury related to that building following an earthquake. From a TA's perspective, it makes sense to trust the engineer's assessment and deem it earthquake prone—indeed the methodology indicates that engineering assessments must be accepted if they meet conditions set out in the methodology.

This theme could extend to owners as well as TAs and engineers. Owners in low seismic risk zones have little incentive to upgrade their building now when they have 35 years to remedy the building (or 39 years for those eligible for the recent four-year extension). As the recent four-year extension has shown, legislation can change and there is little reason to strengthen the building earlier if they do not need to.

### 3.6.4 Occupancy and prioritising work

We identified several themes relating to how the system is not considering occupancy levels when prioritising remediation work:

- The deadline for carrying out seismic work on a building is based on the seismic risk zone and does not consider risk factors at the individual building level, such as how the building is used, typical occupancy levels and how frequently the building is occupied.
- Tolerance for a rating below 34 %NBS is much lower than other hazards which could pose a higher risk.
- Low occupancy structures used a few times a year (e.g. scout halls, churches, grandstands) are being strengthened using public resources when funding could be better used on other buildings.

**The deadline for carrying out seismic work on a building is based on the seismic risk zone and does not consider risk factors at the individual building level**

The deadline for doing strengthening work or demolishing the building does not account for the actual risk from the building. For example, an earthquake prone single story low occupancy corner store or fish and chip shop in a high seismic risk area (examples commonly cited to us) has 15 years to be strengthened, compared to 25 years for an earthquake prone multi-story office building in a medium seismic risk area (or 35 years in a low seismic risk area). Although the earthquake hazard is higher in the high seismic risk area, the consequence of an earthquake could be much more devastating in the medium seismic risk area.

The Seismic Ordinances of California (Dal Pino, 2025) use occupancy as one of the primary factors to prioritise which buildings should be strengthened and when. The purpose of using occupancy is to phase system resources (e.g., councils, engineers, builders, etc.) to prevent a bottleneck, which is a concern for many TAs in New Zealand (see section 3.3.5). An empty URM in an isolated area poses less of a risk to life safety than one located on a main street in a busy part of town, but they could both be required to be strengthened in the same timeframe under the current system.

Occupancy is considered when a building is assessed to an extent via importance levels. A building's importance level will affect the %NBS rating. The seismic standard the building must achieve to not be considered earthquake prone is higher for buildings with a higher importance level. However, in practice, this means two buildings with the same seismic capacity could have a different %NBS. For example, an office building (importance level 2) would have a higher %NBS than a building with the same seismic capacity that is used as an education facility or hospital (importance levels 3 or 4).

**Tolerance for a rating below 34 %NBS is much lower than other hazards**

Remediating a building's earthquake risk is prioritised over other risks by virtue of the regulatory requirements. Examples of this include the following:

- Councils are required to prioritise both as regulators and building owners, supporting buildings to meet minimum %NBS requirements. However, for several TAs this will involve directing resources to addressing the seismic risks of buildings even if the risks associated

with other natural hazards (such as tsunami or fires) may be expected to have a greater likelihood or impact.

- An earthquake-prone hospital building must be remedied, but may not be the highest priority investment in terms of achieving broader health outcomes and at the extreme could disrupt services during strengthening work. For instance, within the health capital budget, were it not for the EPB regulatory requirements, we understand that health capital spending would be invested elsewhere to better support life safety (with EPB investments made only to meet timing requirements and any investment beyond 34 %NBS to be considered separately when there may be another reason to consider investing in those building assets).

### 3.6.5 Resourcing in the system for MBIE and TA to fulfil their roles

MBIE and TAs may not be sufficiently resourced to undertake their roles in the EPB system.

Around 18 per cent of survey respondents felt MBIE is sufficiently resourced to undertake its role in the system, compared to 32 per cent of respondents who felt MBIE is insufficiently resourced, and 50 per cent who responded they did not know or were neutral.

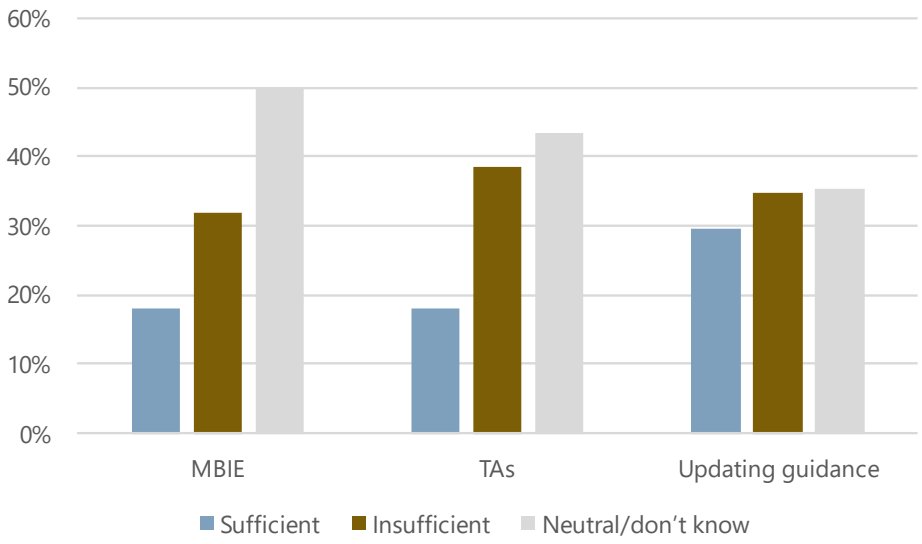
This sentiment of insufficient resourcing was also felt by survey respondents about whether TAs are sufficiently resourced to undertake their role. Over 38 per cent of respondents felt TAs are insufficiently resourced. Most TAs we interviewed agreed they are not sufficiently resourced, though it was noted that resourcing also varied across councils and was more of an issue for some TAs.

Several TAs pointed out that the legislation prevents them from recovering costs from issuing notices, making the four-year extension to the time frame a costly exercise for those TAs that had to reissue notices with the new deadline. Another TA noted the team was only created following pressure from an MBIE audit and was asked by the council to justify their existence financially.

We highlight the financial pressure TAs are starting to feel in section 3.3.5 because many TAs expect there will be unremedied EPBs passing the deadline, and the TA may have to act to mitigate the risk. However, as discussed above, this would be a costly exercise that would likely be passed onto ratepayers (failing any change or intervention).

When asked if there are sufficient resources to support updates to the guidance, responses were more balanced—30 per cent felt there are sufficient resources, 35 per cent felt resources were insufficient, and 46 per cent didn't know or responded neutrally.

Figure 19: Survey responses to the question: Are sufficient resources available for the following?



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# Appendix A Scope and focus of our work

Our contract asked the following specific questions:

"The Provider will identify what elements of the current system are working well, and what elements are not working well, with the implementation and operationalisation of the system by key actors such as MBIE, territorial authorities, and the engineering sector. This includes:

- Reviewing implementation of the earthquake-prone building (EPB) system by territorial authorities in low, medium and high seismic risk areas. This should consider all elements of the territorial authorities' role in the EPB system, including how territorial authorities have identified potentially earthquake-prone buildings, decided that buildings are earthquake-prone, identified priority routes in accordance with the *Building Act 2004*, approached compliance and enforcement, and applied exemption and extension requests.
- Providing independent insights into MBIE and central government's role in implementation of the earthquake-prone building system, including administering the EPB Register, Building Act determinations, public advice and guidance, education of stakeholders, surveying of territorial authorities, the implementation/management of the EPB methodology, past decisions on management of the system including whether to adopt new knowledge into the seismic assessment guidelines.
- Examining the role of engineers and the seismic assessment guidelines in implementing the earthquake-prone building system, including the consistency and quality of seismic assessment outputs when determining which buildings are earthquake-prone and whether current engineering advice is proportionate to the actual seismic risks.
- Considering the effectiveness of the interconnection between territorial authorities, engineers, and MBIE in implementing the earthquake-prone building system."

The original RFP for this work elaborated on the key outcomes sought from the assessment further, stating it would do the following:

- Assess whether territorial authorities in low, medium, and high seismic risk areas have correctly (effectively, efficiently, and consistently, and according to legislation):
    - identified potentially earthquake-prone buildings
    - assessed whether building owners have obtained engineering assessments of these buildings
    - determined whether buildings are earthquake-prone and assigned correct ratings
    - managed owners strengthening or demolishing buildings within set timeframes as specified by the Act and outlined in EPB notices recorded in the EPB register.
- Assess whether the EPB system is effective, efficient and consistent in the way it identifies and assesses buildings, for example, NBS assessments, territorial authority processes and practices.
- Assess MBIE's role in implementing the earthquake-prone building system. This should include its administration of the EPB Register, Building Act determinations, public advice and guidance, education of stakeholders, surveying of territorial authorities,

management/implementation of the EPB methodology, past decisions on management of the system including whether to adopt new knowledge into the seismic assessment guidelines.

- Assess how MBIE's guidance document such as the Engineering Assessment Guidelines have contributed to the regulatory system the management of seismic risk, and driven clear and consistent outcomes, such as correct/effective assessment of EPB buildings.
- Examine the role of engineers/technical experts in implementing the system, including reviewing the quality and consistency of seismic assessments as a key input into determining which buildings are earthquake-prone and shaping remediation decisions.
- Assess the interconnection between territorial authorities, engineers, and MBIE in effectively implementing the earthquake-prone building system, including how they work together operationally.

The RFP also noted the following were **outside of scope**:

- The future state of seismic risk management regulations.
- The experiences of earthquake-prone building owners, given their input is being sought through other parts of the Review.
- The underlying policy intent of the earthquake-prone building system is out of scope of this proposal, including the intent of the 2016 Building Act amendment and supporting policy advice.

This has informed the focus of our work, with the answers to key questions the focus of the executive summary.

# Appendix B  Key inputs to our evaluation

We highlight the key inputs that have informed our evaluation across our: document and literature review, interviews, focus groups, survey, register analysis and external expertise.

## Document and literature review

We undertook a document, website and literature review that included the following:

- Analysis of relevant legislation, regulations and material on the MBIE and building.govt.nz websites that make up the EPB system or provide guidance on it (and those of different TAs/societies).
- Analysis of use of key components of the building.govt.nz website relating to the EPB system.
- Literature review that was also added to through the evaluation as any new material was identified. This focused on: court cases, literature and industry articles/reports, prior reviews, guidance, reporting, financial or other support, resourcing and media relating to EPBs and the EPB system.

## 46 interviews across relevant stakeholder groups

We held 46 interviews with stakeholders from across the EPB system:

| Stakeholder group | Interviews |
|---|---|
| MBIE | 5 |
| Territorial Authorities | 17 |
| Engineers | 18 |
| Other (Universities, government agencies, engineering societies) | 6 |
| **Total** | 46 |

The TAs we interviewed covered a mix of high, medium, and low risk zones across the country and were chosen in consultation with our external experts and MBIE. Likewise, we sought to have a range of different engineering and other expertise to span. The relevant teams within MBIE included:

- Building Performance Engineering
- Building Performance and Resilience Policy
- Building and Regulatory System (Operations/Monitoring)
- Communications, Building Systems Performance (Implementation), and
- Insights.

## Separate focus groups with MBIE, TAs and engineers

We held separate focus groups for each of the three stakeholder groups – MBIE, TAs, and Engineers. The purpose of the focus groups was to present our initial findings with system stakeholders to promote discussion and test our thinking. Feedback from the focus groups was used to refine the themes presented in this report.

## 230 survey responses from stakeholders

A survey was issued to identified stakeholders, including all MBIE, TA, engineering and other stakeholders identified during the early stages of the review and from early engagements. In addition, Engineering New Zealand agreed to distribute the survey to its members and through channels available to it including through relevant engineering societies. Stakeholders were also able to share the survey with others, in a form of snowball sampling.

The survey consisted of a series of mostly qualitative questions relating to:

- how the current arrangements compare to those prior to 2017 (across a range of relevant considerations)
- the degree to which aspects of the regulatory framework and MBIE and central government's role in supporting it achieves the intended objective
- the portion of TAs performing their key functions well
- the portion of engineers performing aspects of their role well
- interconnections across roles and effectiveness
- the nature of EPBs and the use of "other" pathways.

230 responses to the survey were received from different stakeholders, particularly engineers. Survey responses were treated anonymously.

## Analysis of EPB register combined with CoreLogic/case studies and of views of key system components/guidance

We also analysed the EPB register and combined this with relevant property information we drew from CoreLogic and considered other information provided by certain TAs as described in Appendix C. We also analysed information from MBIE and the Parliamentary Counsel Office on how many times the key system components had been accessed over the last year as well as the volume and level of engagement with broader guidance material MBIE has made available.

## External engineering and EPB system expertise

To inform our understanding and test and work through aspects of the review, we are consulting the following external experts at key stages of the review:

- John Hare (Holmes)
- Hamish McKenzie (Holmes)
- Charlotte Brown (ResOrgs).

# Appendix C  Register analysis

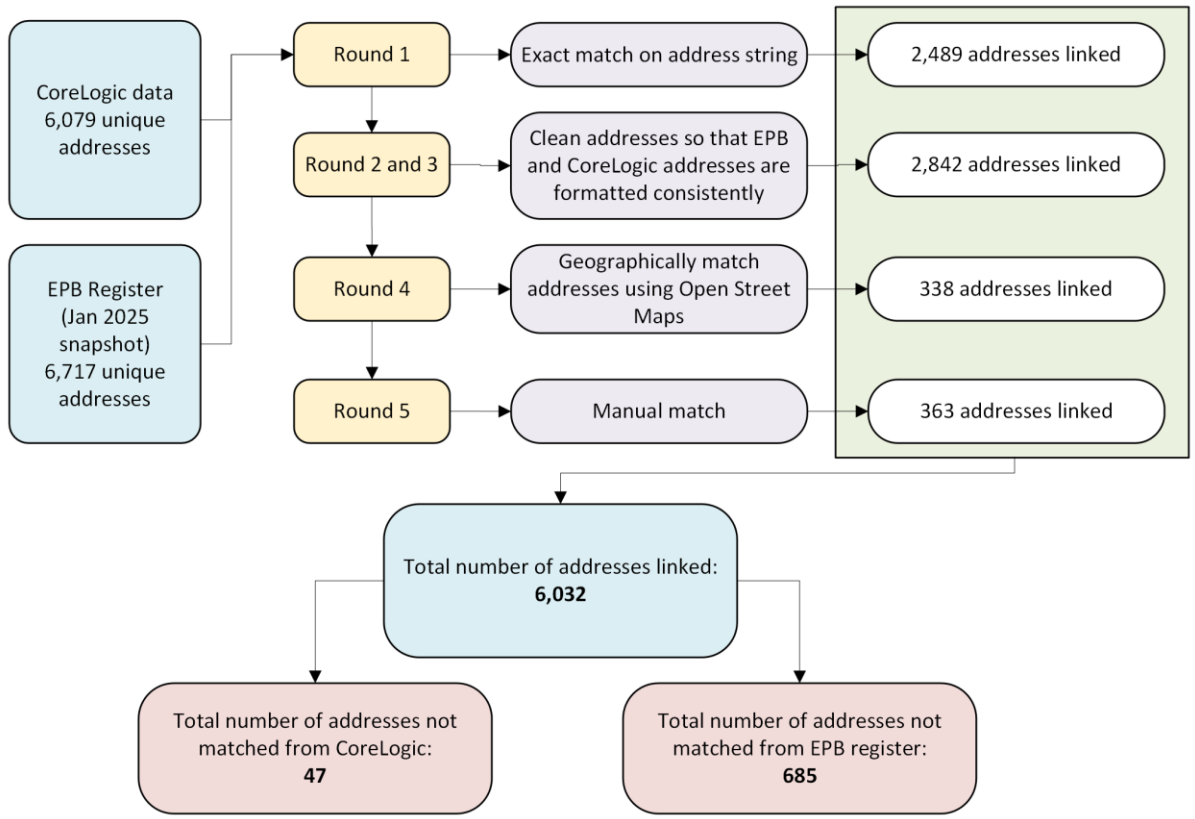
In this appendix, we present descriptive statistics that highlight insights into current earthquake-prone buildings. This is informed by two key datasets:

- **The EPB register**: provides a public record of EPBs. It is managed by MBIE with TAs responsible for buildings within their jurisdiction (Ministry of Business, Innovation and Employment, n.d.).
- **CoreLogic property data**: outlines information about individual properties and the real estate market, including property details, sales history, market trends, and estimated values.

## Available data

We begin with the January 2025 snapshot of the EPB register which has 6,717 unique building addresses. Information was extracted from CoreLogic associated with these addresses where possible. An iterative matching process was used to combine the EPB register with CoreLogic property data. This process is outlined in Figure 20. We were able to successfully identify 6,079 buildings in the CoreLogic property data, while 685 properties were not able to be linked.

Figure 20: Matching process for EPB and CoreLogic data



## Caveats

As we were unable to link 685 EPBs, the resulting descriptive statistics may be biased. Figure 21 below shows that lower %NBS rated EPBs are slightly underrepresented, while Figure 22 shows buildings in higher risk areas are underrepresented. We note that these caveats should be considered carefully when interpreting the results from this section.

Figure 21: Proportion of total and unmatched EPBs by %NBS

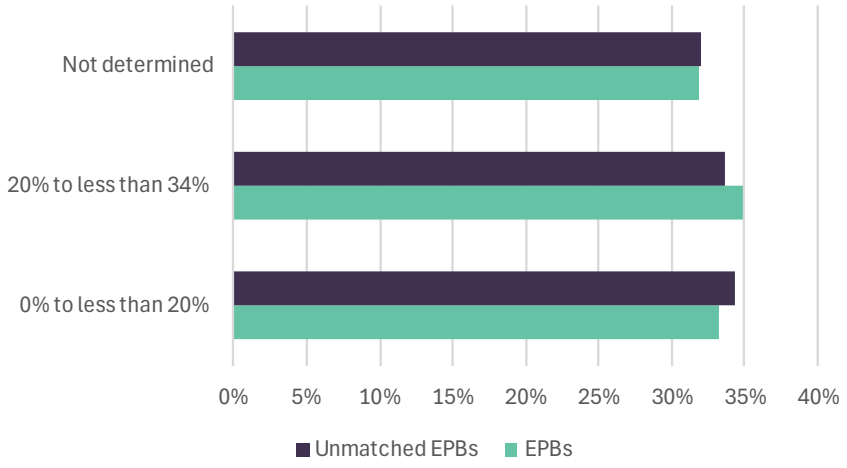
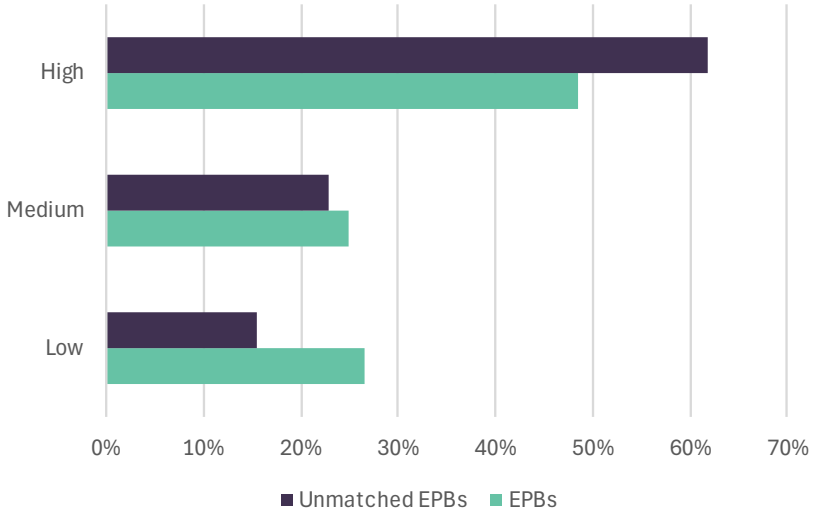



Figure 22: Proportion of total and unmatched EPBs by area of seismic risk



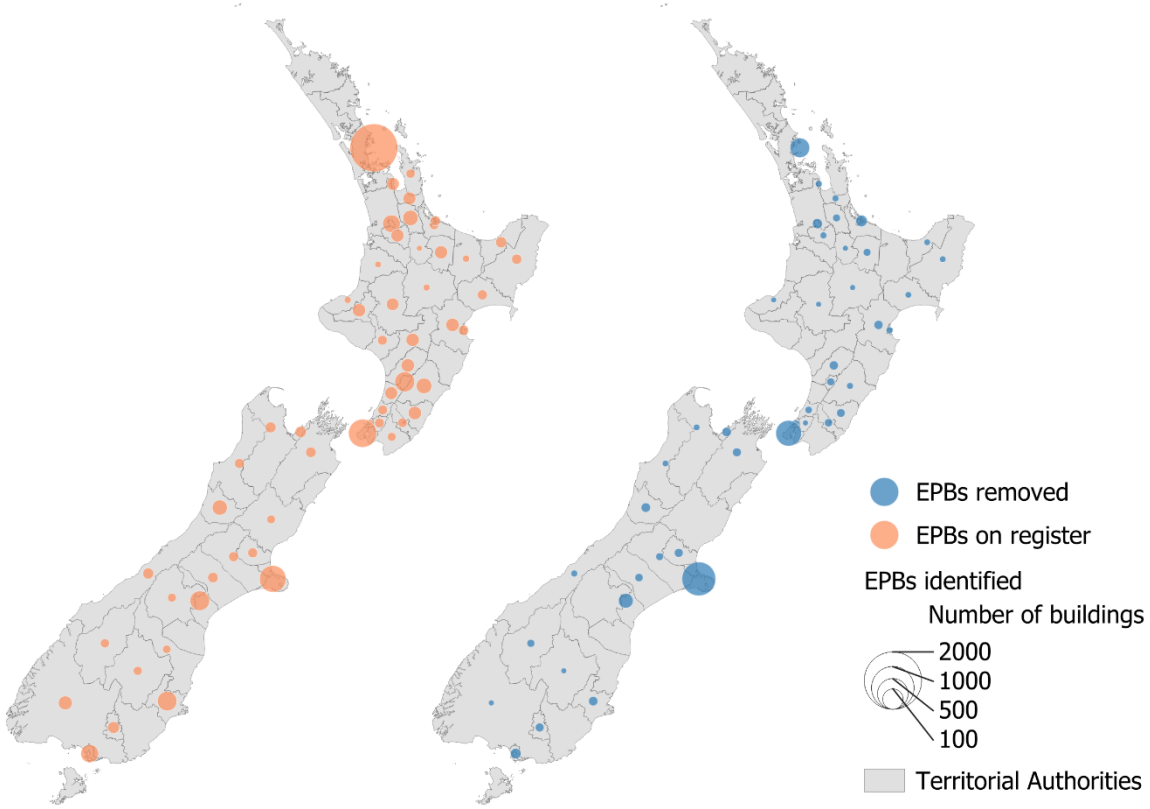

# Descriptive statistics

This section presents key descriptive statistics on buildings on the EPB register, summarising key characteristics such as EPB location, property types, land use, age and heritage status, removals and value.

## Where EPBs are located

As shown in Figure 23, most EPBs are intuitively located in large population centres such as Auckland, Christchurch and Wellington. The left-hand side of Figure 23 shows the location of EPBs that are currently on the register, while the right-hand side shows the location of EPBs that were on the register, but have since been removed due to strengthening, demolition, reassessment or any other reason. Building owners in TAs in high seismic risk areas, notably Christchurch City Council and Wellington City Council appear to have achieved more removals to date.

Figure 23: Distribution of EPBs by territorial authority




Source: MBIE (2025), Stats NZ, *Territorial Authority 2025 (clipped)*.

Figure 24 shows that building strengthening is the most common removal pathway, this is particularly the case in:

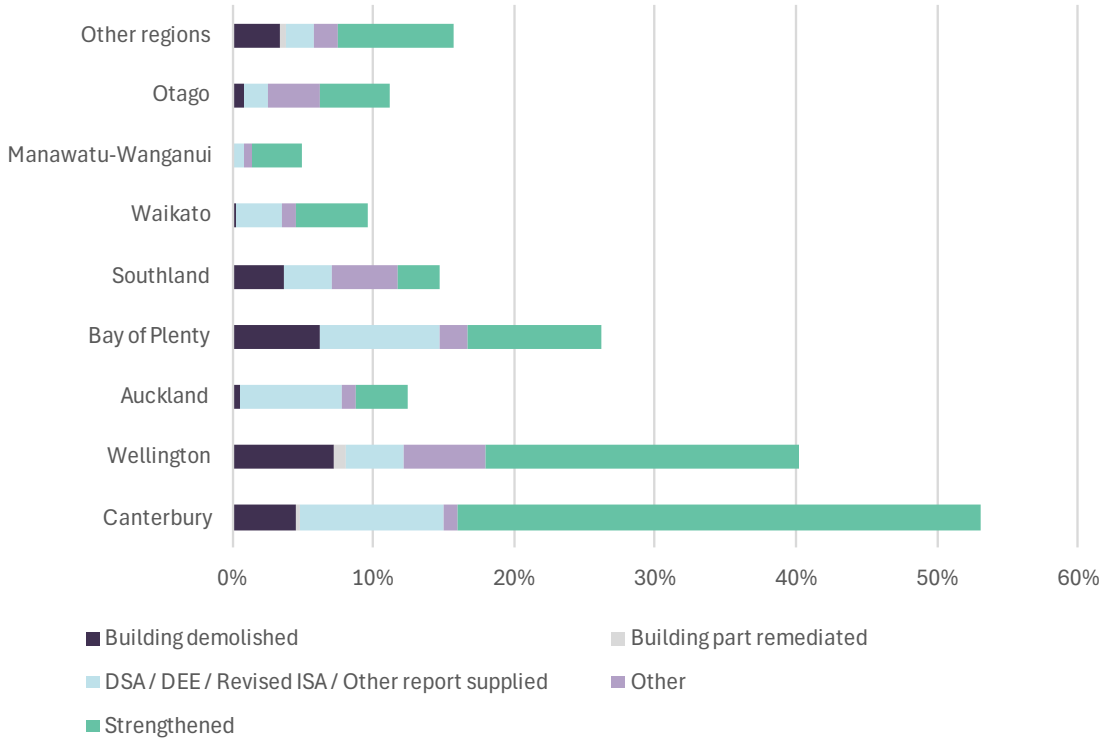
- Canterbury (37 per cent), possibly reflecting the scale of post-earthquake response and urgency around seismic strengthening
- Wellington (22 per cent) which may reflect proactive building owner response in a region with heightened awareness of seismic risk

Other regions currently show relatively lower strengthening rates which could be due to lengthened deadlines (a result of lower seismic risk), different enforcement approaches or financial constraints.

Demolitions are relatively more common in Wellington (seven per cent) and Bay of Plenty (six per cent). While this is still a small share overall, it may suggest that in some cases, demolition is chosen where retrofit costs are high or building utility is low.

Reassessment of %NBS scores through DSAs, revised ISAs or Detailed Engineering Evaluations (DEEs) have prompted significant levels of removal in several regions, notably Canterbury (ten per cent), Bay of Plenty (eight per cent) and Auckland (seven per cent). This might point to some degree of initial uncertainty or over-conservatism in identifying EPBs. As more detailed assessments become available, these buildings are found to not meet the threshold for earthquake-prone status. Removal for "other" reasons are relatively prevalent in Wellington (six per cent), Southland (five per cent) and Otago (four per cent), which can include reasons such as a building initially being identified incorrectly or change of use of building.

Figure 24: Reasons for removal from EPB register by region (as a proportion of all EPBs)




For the following sections, we present statistics on earthquake prone buildings across three categories:

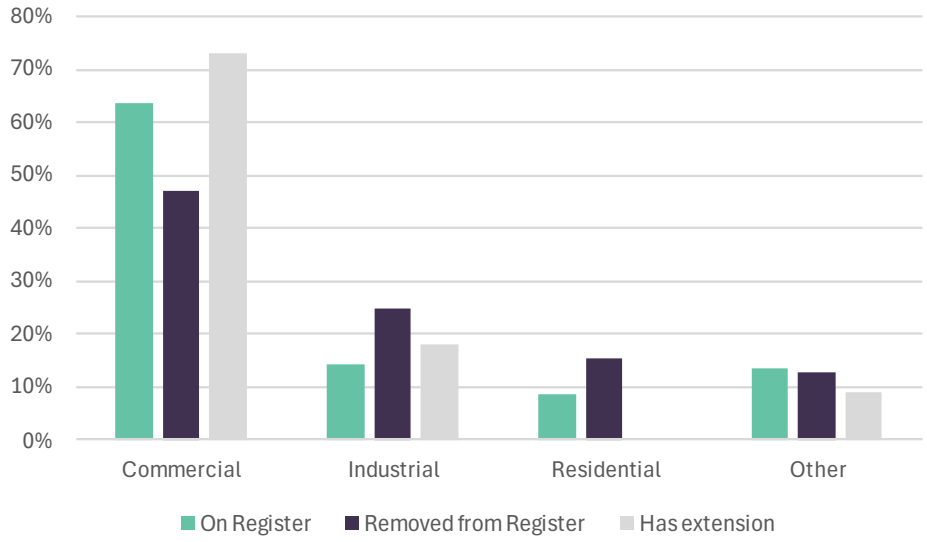
1. **On the register**: these are buildings that were on the register and have not been remediated or demolished as of January 2025
2. **Removed from the register**: buildings that were previously on the register, but have since been removed either due to remediation, demolition, or any other reason
3. **Has extension:** buildings that have received an extension under section 133AO (heritage buildings) and section 133AMA (completing seismic work on or after 2 April 2024). Under the updated legislation requirements (s133AMA) a building or part of a building that is required (as a result of a relevant EPB notice issued before 26 November 2024) to complete seismic

work on the building or part on or after 2 April 2024 to be issued with a new EPB notice with an extension of 4 years after the deadline specified in the relevant EPB notice issued.

## Property type

Around 60 per cent of buildings that are on the register or have been on the register are commercial buildings. Figure 25 shows that relatively fewer buildings that have been removed from the register are commercial. Buildings that have been removed from the register have a relatively higher prevalence in the industrial and residential categories. Only 67 buildings have received an extension, and none of these are residential as of January 2025. Most buildings with extension have not received %NBS which might indicate they have not received an assessment. Only one of those buildings has heritage status.

Figure 25: Proportion of EPBs by property type

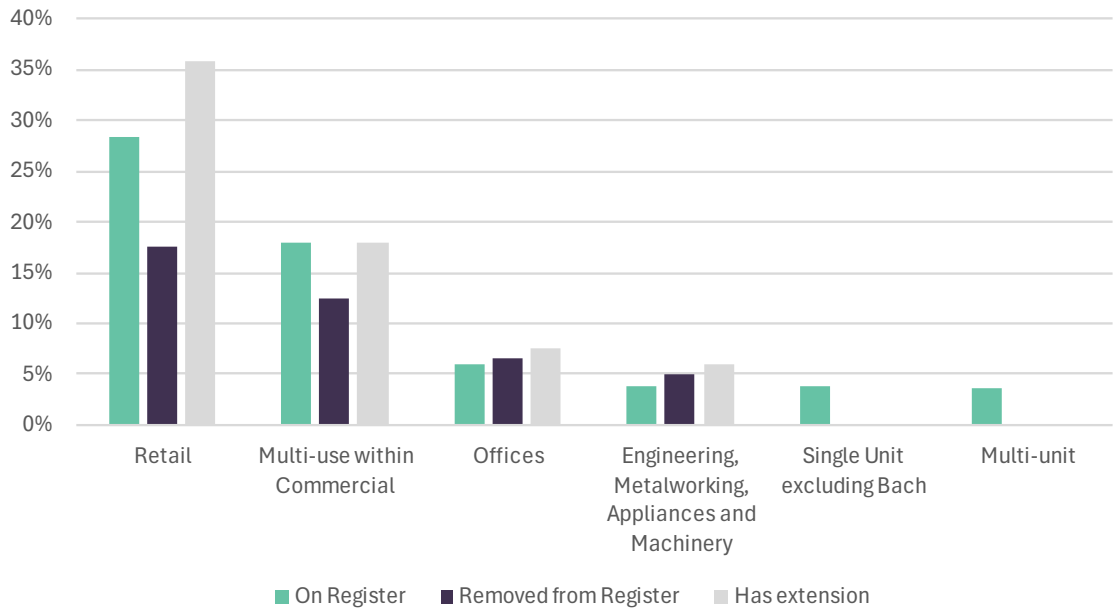



## Land use

Similarly, Figure 26 shows that retail and commercial multi-use are the dominant land use categories for EPBs. Relatively more properties in engineering and manufacturing have received extensions compared to all EPBs and those that have been removed from the register. No single-unit or multi-unit EPBs have been removed from the register or received an extension as of January 2025.

40 per cent of all buildings fall under an additional 64 other land use categories, e.g., religious, recreational, sanitary, agriculture, parking, etc. These are not presented in Figure 26.

Figure 26: Proportion of EPBs by land use




## Construction date

Many buildings on the register are at least 90 years old, with 34 per cent of all buildings that are or have been on the register being built before 1934. Figure 27 shows that nearly 40 per cent of buildings currently on the register were built prior to 1934. Whereas nearly 40 per cent of buildings that have been removed were built after 1976. A significant proportion of buildings that have received an extension for seismic work were also built prior to 1934 (which aligns with section 133AO extensions only being applicable to certain heritage buildings).

Figure 27: Proportion of EPBs by year of construction

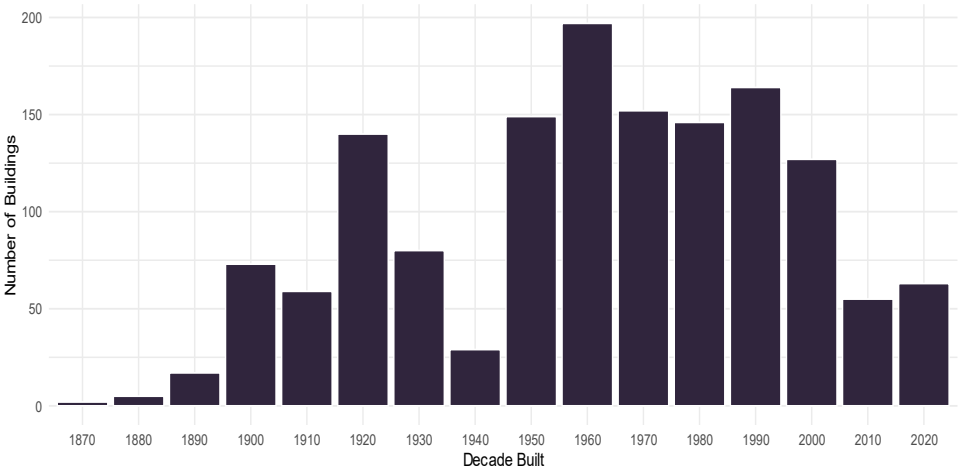

Figure 28 again shows that most EPBs currently on the register are older, while some have been built as recently as 2024. Many of the buildings that have been removed from the register are newer (as

noted above), while many buildings that have been granted an extension were built in the 1920s and 1930s.

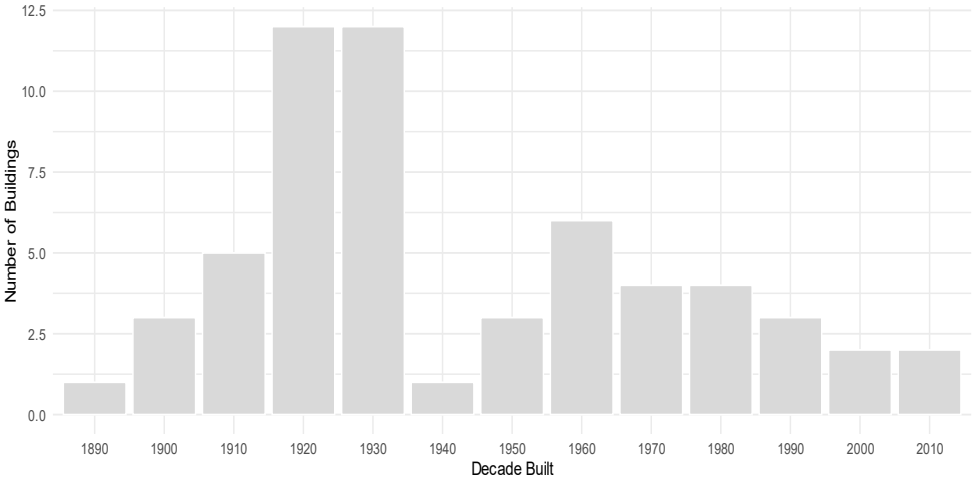
Figure 28: Number of EPBs by decade of construction

Panel A: Buildings on the register


Panel B: Buildings removed from the register




Panel C: Buildings that have been granted an extension

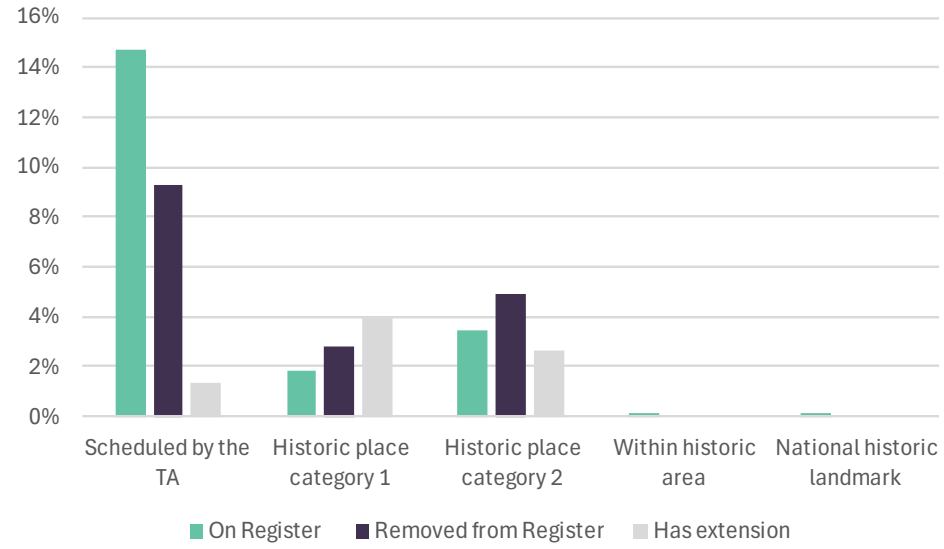



## Heritage status

80 per cent of buildings that are or have been on the register have no heritage status and are not subject to heritage protections. Figure 29 shows that 15 per cent of buildings currently on the register are scheduled as having heritage status by the TA, which is a local heritage listing. A further five per cent fall under national heritage classifications 1 and 2.

Category 1 buildings, which include places of special or outstanding historical or cultural heritage significance, are more likely to be granted extensions than other heritage categories. This is not surprising given the wording of s133AO, whereas it would be worth exploring further if others have been granted an extension under s133AMA or may have been misclassified in the register. Very few buildings are classified as within a historic area or as a national historic landmark, and none of these buildings have been removed from the register, nor have they been granted an extension.

Figure 29: Proportion of EPBs by heritage status




Note: This analysis includes all 6,717 unique addresses on the EPB register.

## Property value

Figure 30 shows that many buildings have either not received a %NBS rating or this is not been reported in the EPB register.[17] We do not know whether this is because TAs have identified them using the profile categories set out under section 1.2 of the EPB Methodology or the section 1.3 'identify at any time' pathway, but either way the %NBS is either not available or has not been entered on the register.

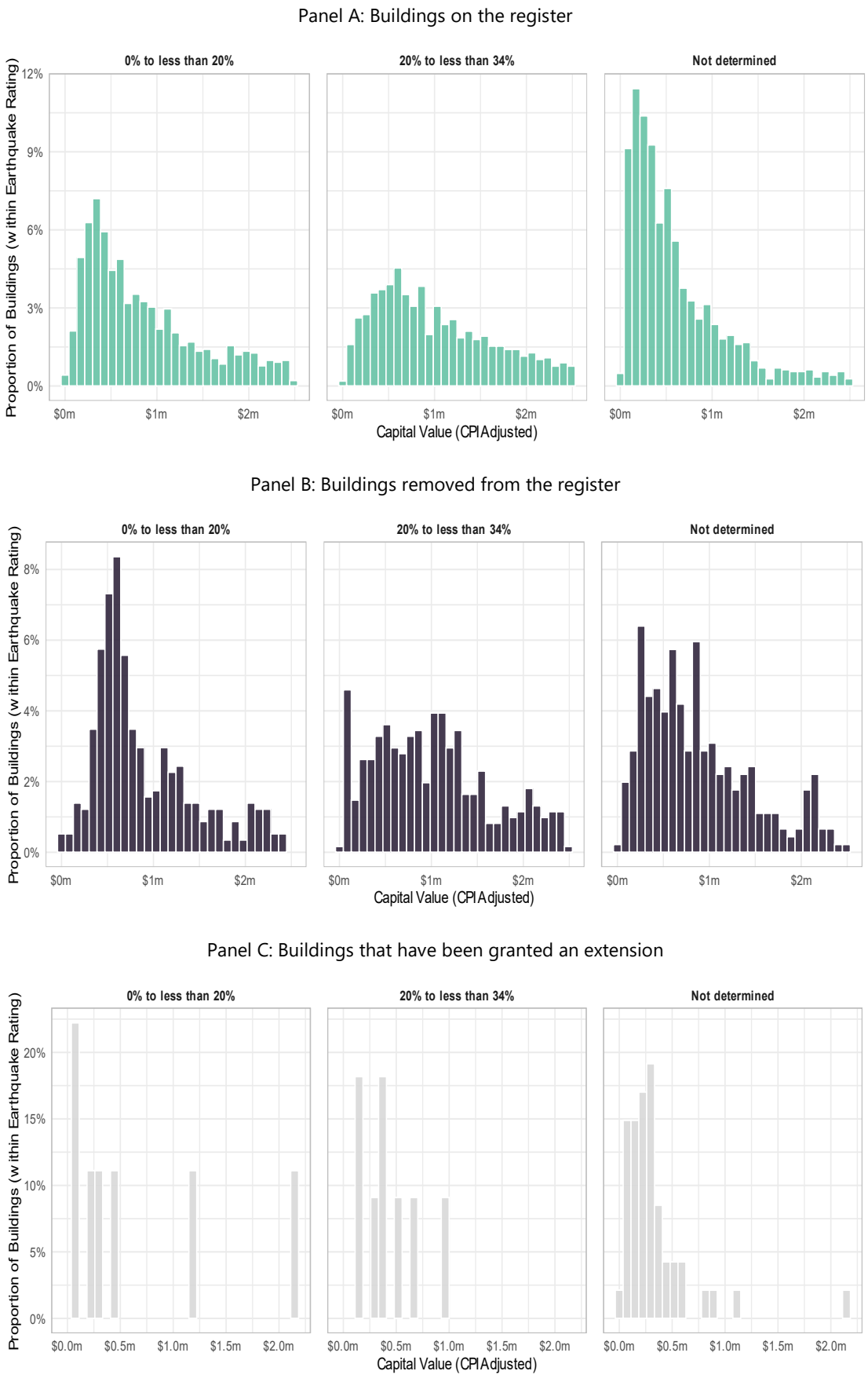
Figure 30 shows that the distribution of the capital value (CV) of buildings currently on the register are heavily left-skewed to less than $1 million. Buildings that have since been removed from the register are also left skewed, but relatively more normally distributed compared to buildings currently on the register.[18] Buildings that have been granted an extension predominantly had CVs less than $1 million.

The CV of buildings with a %NBS between 0-20 per cent are slightly more left skewed compared to buildings with a rating between 20-34 %NBS, indicating that higher %NBS scores are associated with higher CVs among EPBs.

[17] The reported %NBS rating recorded in the register is the rating that is agreed upon when the building is issued with an EPB notice. The new %NBS rating determined when the building is removed from the register is not required to be recorded on the register.

[18] We undertook a simple, illustrative analysis that controlled for all observable factors which might affect property value. This analysis showed that earthquake prone status is negatively associated with capital value but is not statistically significant. Likewise, construction materials are not statistically significantly associated with capital value.

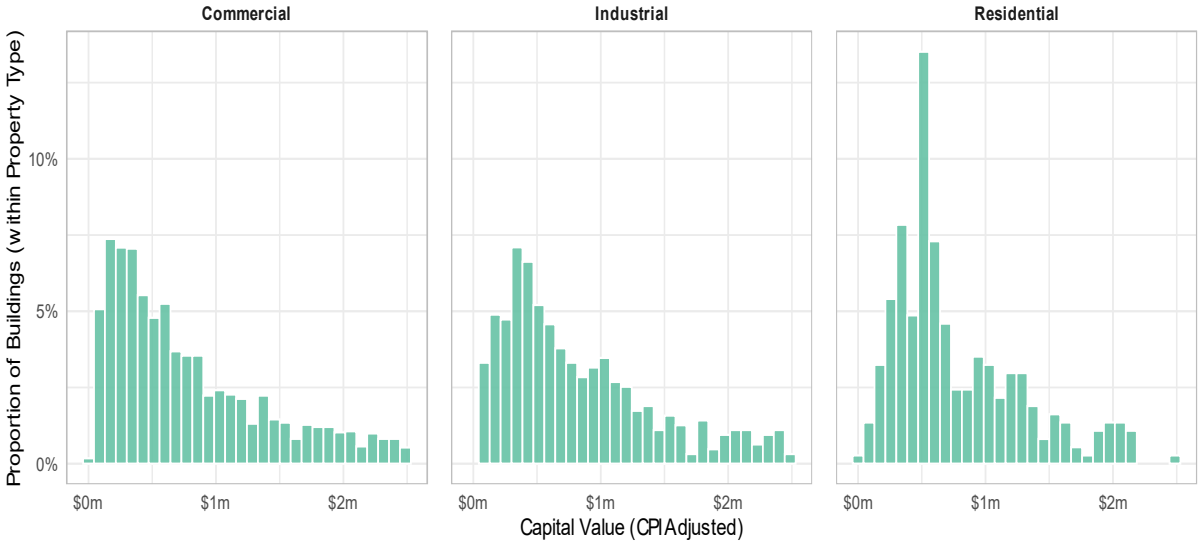
Figure 30: Distribution of capital value by %NBS (CPI-adjusted)



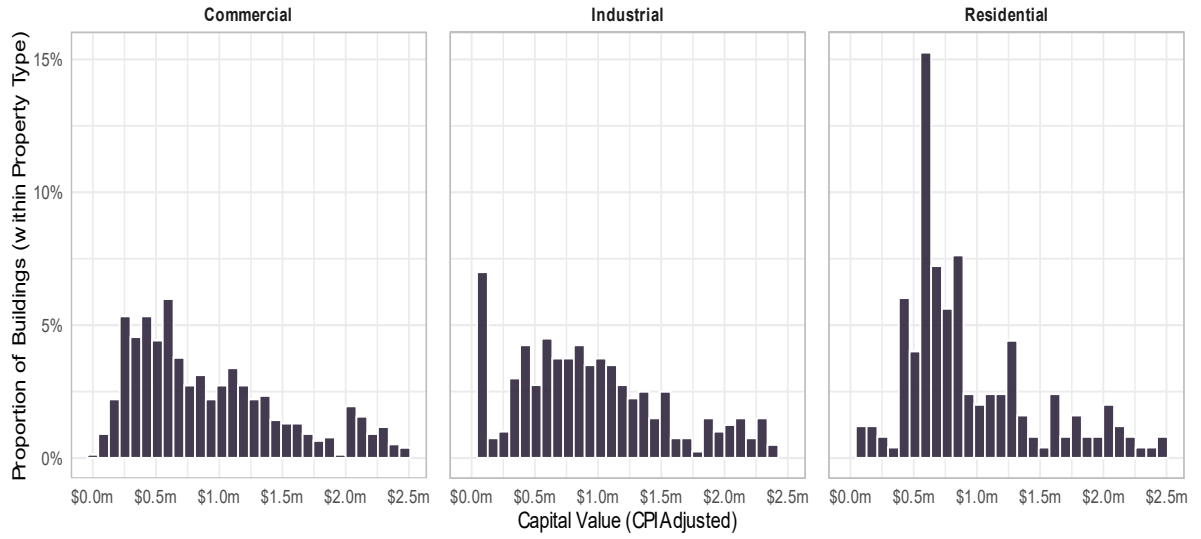
As previously discussed, a majority of EPBs are commercial buildings. Figure 31 shows that there are no obvious differences in the distribution pattern of CVs between property types, apart from a higher prevalence of higher-value commercial and industrial buildings (more than $2 million) relative to residential buildings which are concentrated around $600,000 to $700,000 CV.

Figure 31: Distribution of capital value by property type (CPI-adjusted)

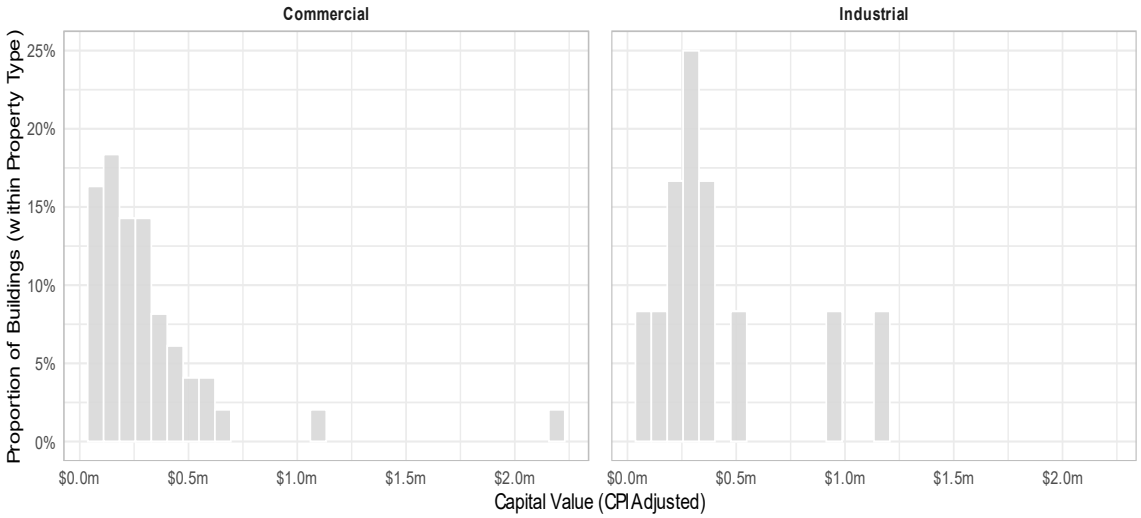
Panel A: Buildings on the register




Panel B: Buildings removed from the register



Panel C: Buildings that have been granted an extension



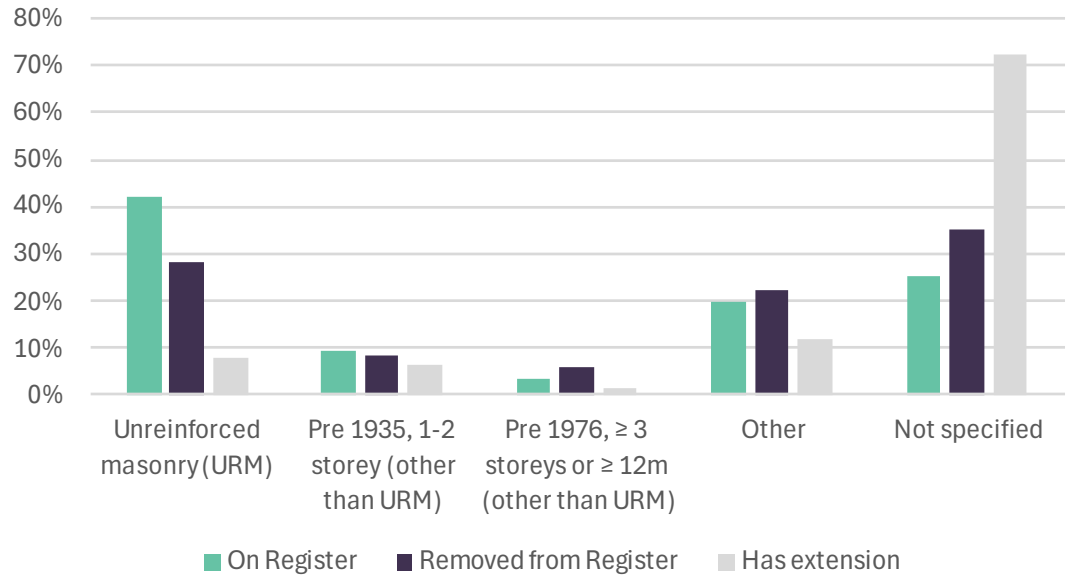

## Construction type

Unreinforced buildings make up the largest share of buildings still on the EPB register (42 per cent), likely reflecting their vulnerability in earthquakes.

While the proportion of EPBs in the older and low-rise buildings is relatively small, there is a relatively balanced proportion between buildings on the register, buildings that have been removed, and buildings that have received an extension.

Very few buildings fall into the pre-1976, ≥ 3 storeys or ≥ 12m category, although we note that the construction date has been inferred in our analysis above using CoreLogic data.

Figure 32: Proportion of EPBs by construction type

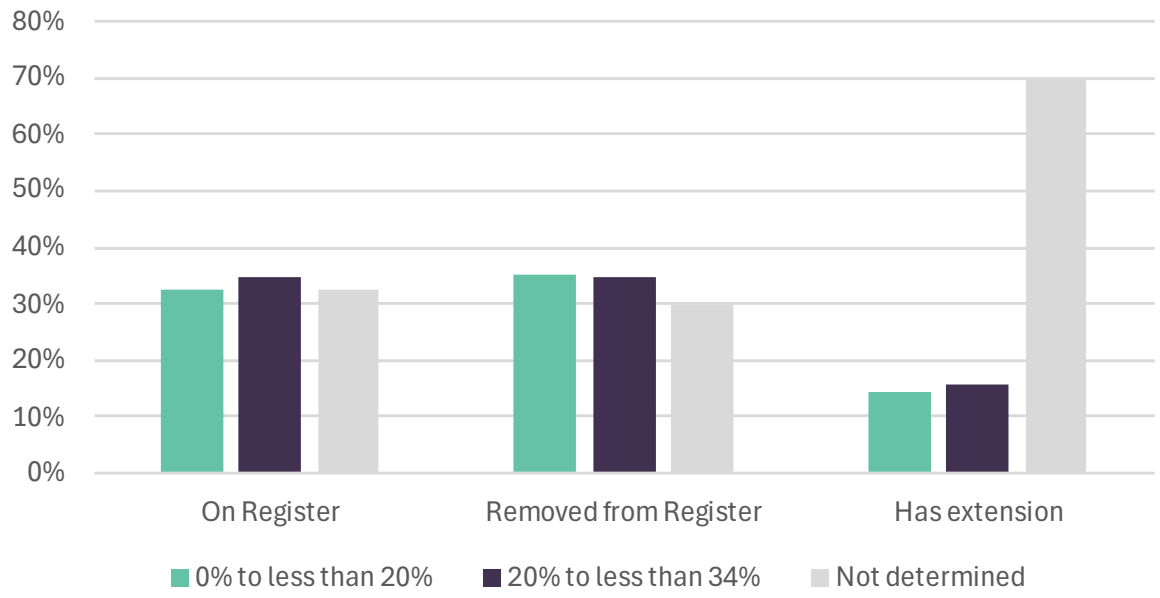



Note: This analysis includes all 6,717 unique addresses on the EPB register.

## %NBS score

As discussed in our above analysis, Figure 33 shows that many buildings have either not received a %NBS rating or this is not reported in the EPB register. A large proportion of buildings that have received an extension have yet to receive a seismic assessment.

Figure 33: Proportion of EPBs by %NBS Score



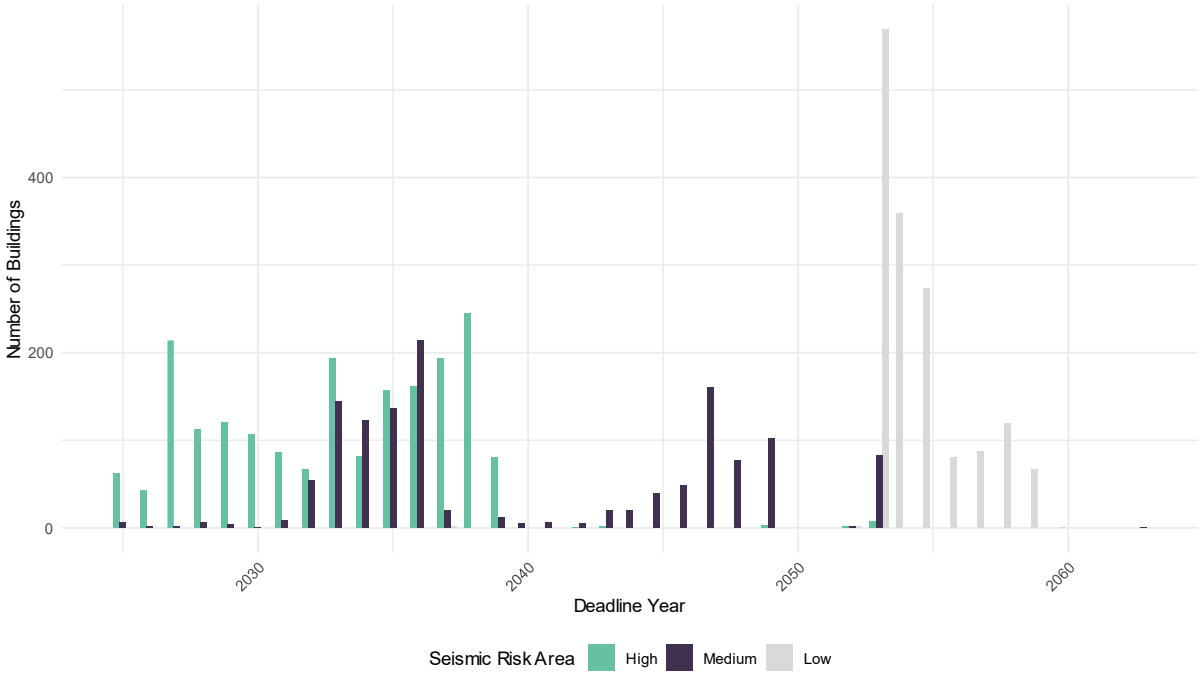

Note: This analysis includes all 6,717 unique addresses on the EPB register.

### Remediation work deadlines

The EPB register reports the seismic work deadline for each earthquake-prone building. The duration of time between the issue of an EPB notice and the remediation deadline is determined by the area of seismic risk that the building lies in, and its priority status (these aspects are discussed in sections 1.2.2 and 3.6.4).

Figure 34 shows that high seismic risk areas have shorter timeframes for remediation work. A third of buildings in high seismic risk zones require remediation by 2030, while 96 per cent require remediation by 2040. There is also some significant overlap in deadlines between buildings in high and medium seismic risk zones, with 57 per cent of buildings in medium seismic risk zones requiring remediation by 2040. Very few buildings in low seismic risk zones require remediation prior to 2053.

Figure 34: Remediation work deadlines by seismic risk area

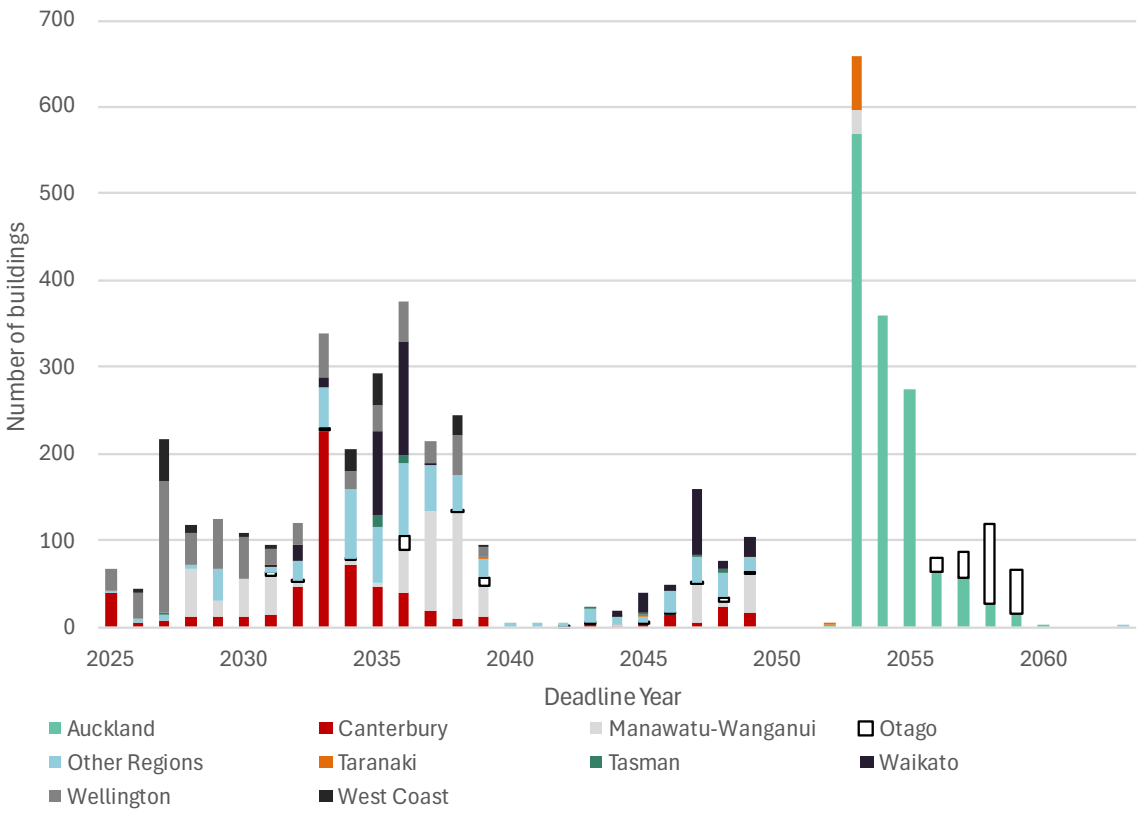



Note: This analysis includes all 6,717 unique addresses on the EPB register.

Figure 35 shows that the large number of buildings in low seismic risk zones post-2050 are in the Auckland and Otago regions. Deadlines in high seismic risk regions vary from region to region. For example, all EPBs in Canterbury require remediation prior to 2050 (most prior to 2040), while all buildings in Wellington require remediation by 2039. A majority of EPBs in the Taranaki region, despite being a predominantly medium seismic risk zone, require remediation by 2053, relative to pre-2050 in other medium seismic risk zones.

A total of 147 buildings have exceeded the deadline of January 2025 (the date of the EPB register snapshot used in our analysis) and have not been removed from the register. 37 per cent of these buildings are in Wellington region, followed by 34 per cent in the Bay of Plenty and 10 per cent in Canterbury. Nelson, the West Coast, Gisborne, Marlborough, Waikato, Otago and Southland account for the rest of the buildings, with fewer than 30 buildings within these regions.

Figure 35: Remediation work deadlines by region




Note: This analysis includes all 6,717 unique addresses on the EPB register.

# Insights from the Wellington City Council

The Wellington City Council (WCC) jurisdiction lies almost entirely within an area of high seismic risk. We were provided WCC's record of EPBs which allows for additional analysis, as we WCC collects information that is not recorded on the EPB register. This includes more detailed construction types, the number of storeys and the ownership type.

## Ownership type

Figure 36 shows that companies and individual owners together account for the majority of EPBs with 379 buildings in total. Public sector owned buildings are also a substantial portion of EPBs in WCC, with WCC and central government collectively representing 14 per cent of all EPBs in within the TA.

Figure 36: Number of WCC EPBs by ownership type

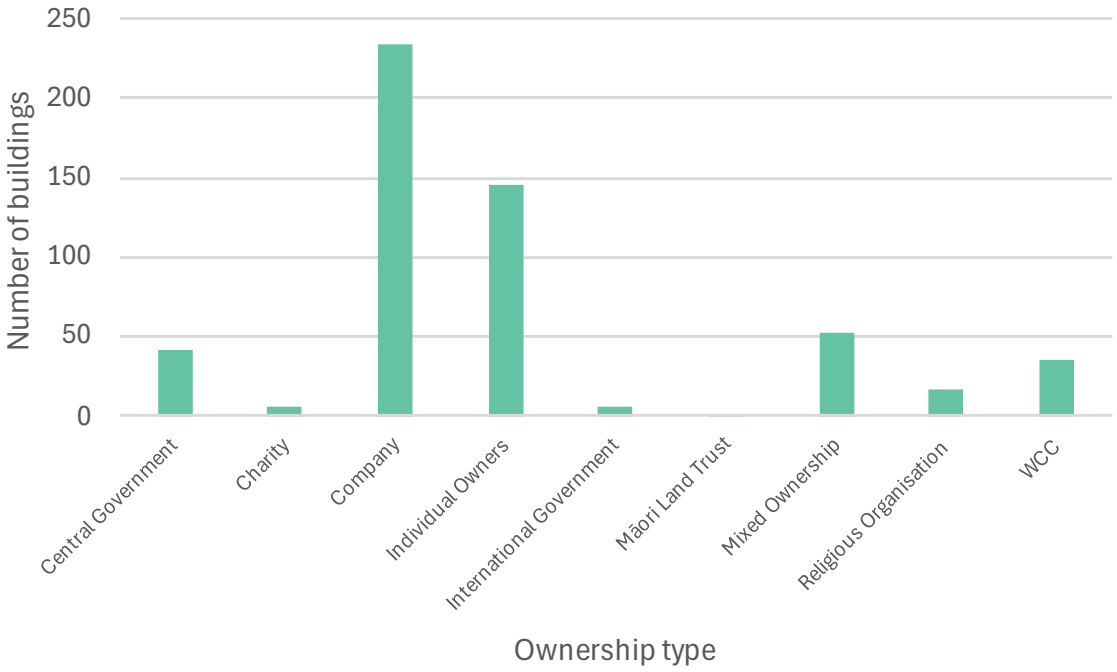
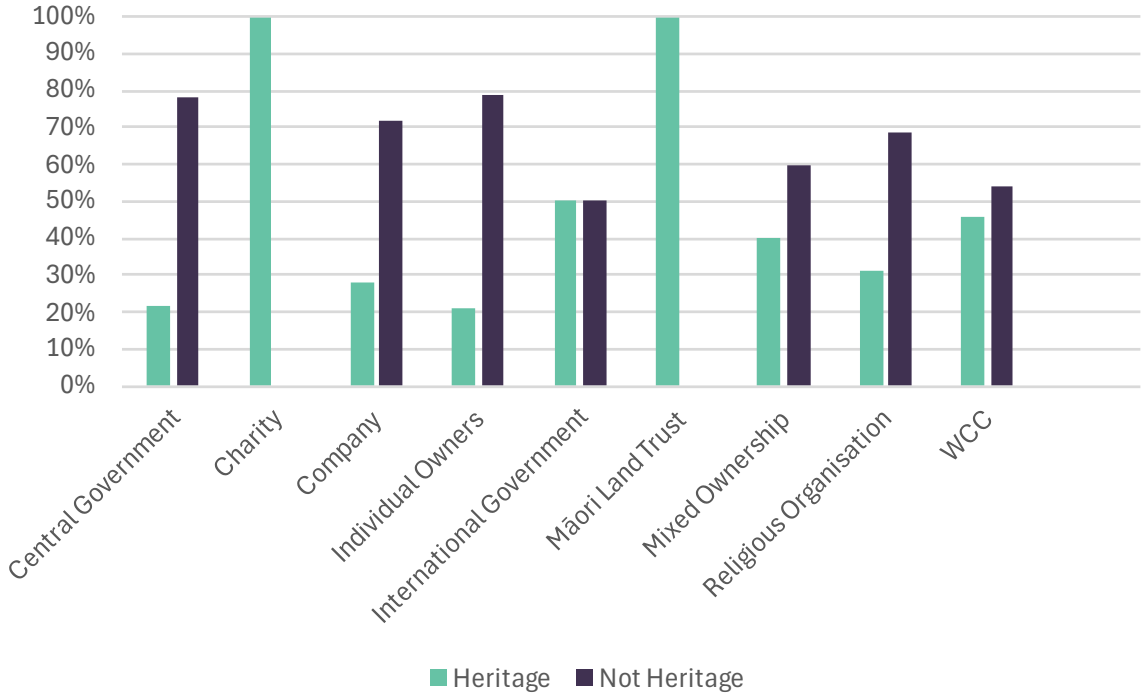



Figure 37 shows that central government, individual owners, and companies are less likely to own buildings with a heritage status, albeit with very small sample sizes amongst charities, international governments and Māori Land Trusts.

Figure 37: Proportion of WCC EPBs by heritage status and ownership type



## Construction type

Figure 38 shows that:

- Concrete is the most common material among EPBs within the WCC jurisdiction, present in 203 buildings. Many of these buildings are mid-century buildings likely with non-ductile detailing, brittle columns or poor reinforcement.
- URMs are the second largest group with 177 buildings, reflecting their high seismic risk. These structures are a particular focus of the URM Order where there was more stringent timeframes for strengthening or demolition.
- There are 124 timber structures, many of which are older, residential buildings.
- Steel-framed buildings represent the smallest group, as they are less likely to be in the profile categories under the EPB methodology, and typically less likely to present seismic risks. Many of these buildings are older, with most buildings being built before 1980.

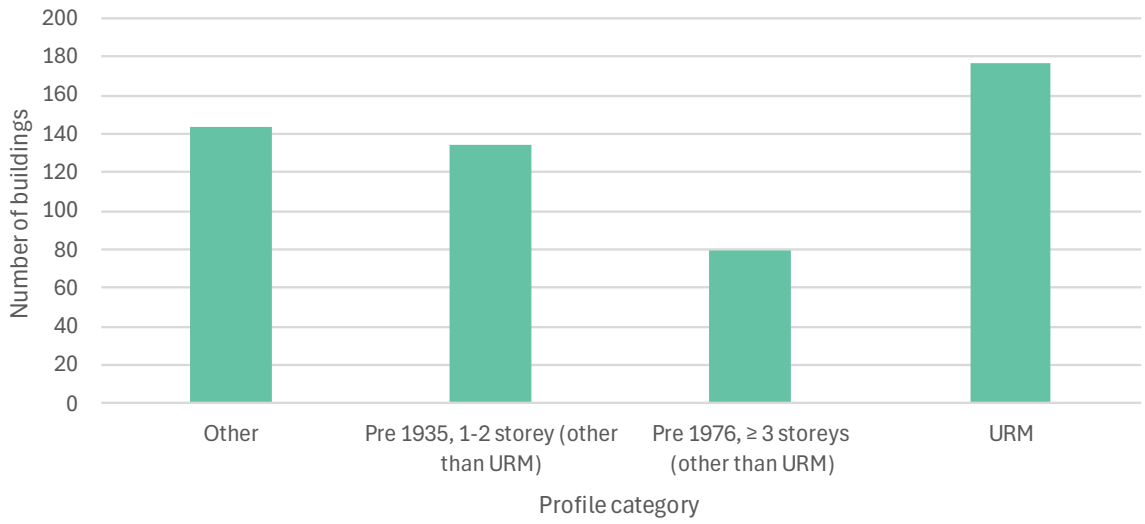
Concrete structures dominate the EPB landscape, accounting for more than 60 per cent of identified buildings with the WCC jurisdiction.

Figure 38: Number of WCC EPBs by construction type


## Profile categories

Most EPBs within WCC jurisdiction are URM, followed by buildings that do not explicitly fall into the profile categories (other). 134 buildings fall into the pre-1935, 1-2 storey category, while only 80 fall into the pre-1976 category.

Figure 39: Number of WCC EPBs by profile category




Note: Profile categories for WCC are inferred using construction type, construction year, or number of storeys, but these are not official categorisations provided by WCC. We are therefore unable to ascertain when a building might be ≥ 12m tall.

## Number of storeys

The WCC's EPB profile is dominated by low-rise buildings. Taller EPBs are relatively few, but they span a long period of construction, including more recent periods; the 1960s to 1980s contribute the largest share of tall EPBs, many of which are non-ductile concrete frame or shear wall buildings (see Figure 41). Notably, even buildings from the 1980s and 1990s appear on the EPB register, which fall outside the profile categories in the EPB methodology so may be more likely to have been identified before the 2017 changes or via the 'identify at any time' pathway.

Figure 40: Number of WCC EPBs by number of storeys

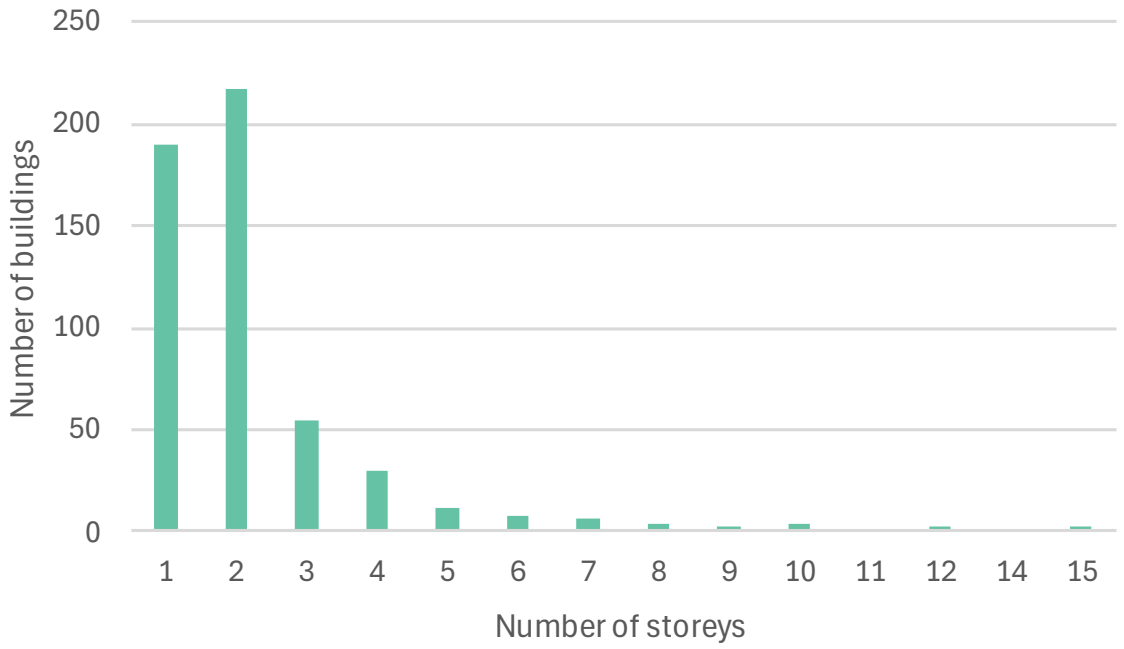



Figure 41: Number of WCC EPBs ≥ 5 storeys by construction decade

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## For more information, please contact:


David Moore

Phone: +64 4 915 7590

Mobile: +64 21 518 002

Email: dmoore@thinkSapere.com


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|---|---|---|---|---|---|---|
| Level 9<br>1 Willeston Street<br>PO Box 587<br>Wellington 6140 | Level 20<br>151 Queen Street<br>PO Box 2475<br>Shortland Street<br>Auckland 1140 | Level 18<br>135 King Street<br>Sydney<br>NSW 2000 | Level 11<br>80 Collins Street<br>Melbourne<br>VIC 3000 | GPO Box 252<br>Canberra City<br>ACT 2601 | PO Box 1210<br>Booragoon<br>WA 6954 | Level 18<br>324 Queen Street<br>Brisbane<br>QLD 4000 |
| +64 4 915 7590 | +64 9 909 5810 | +61 2 9234 0200 | +61 3 9005 1454 | +61 2 6100 6363 | +61 8 6186 1410 | +61 7 2113 4080 |

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