The New Earthquake-prone Buildings Regime and

Technical Guidelines for Engineering Assessments

Engineering Sector Briefings
June 2016
Earthquake-prone buildings – what’s in store

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Briefing for engineers, June 2016
What the new system looks like
New ways to manage EQP buildings

- Building (Earthquake-prone Buildings) Amendment Act 2016 now passed
- Draws on lessons from Canterbury earthquakes, Royal Commission findings, public submissions
- Changes take effect from the ‘commencement date’ (probably next April/May)

Objectives:
- Better targeting of our worst performing buildings
- More national consistency
- Improved public information
Aiming to strike the right balance
## How this fits together

| Building Act and regulations | • Substantial additions to Building Act plus new regulations  
• TAs no longer have individual EQP policies but still identify and manage  
• Revised EQP definition, new ‘ultimate capacity’ definition |
|-------------------------------|------------------------------------------------------------------|
| EPB methodology | • New document with regulatory status  
• Profiling tool for TAs to identify potentially EQP buildings/parts of buildings  
• Criteria for TAs to accept ‘engineering assessments’ (cites part of the Engineering guidelines) |
| Engineering guidelines | • Significant update to the red book (the 2006 NZSEE guidelines for ISAs and DSAs) is almost complete |
| EPB register | • New public register for EQP buildings/parts and their earthquake ratings |
Opportunities to have your say

• EPB methodology and regulations not yet finalised – sector input ongoing, public consultation in Aug/Sept

• Proposed regulations currently include:
  o Definition of ultimate capacity
  o Earthquake ratings
  o Criteria for ‘substantial alterations’ triggering upgrade
  o Criteria for exempting some buildings/parts from remediation
  o Form of notice (EPB notices)

• 2006 NZSEE guidelines have been fully revised – your opportunity to provide feedback
The new system in more detail
Scope of the new EQP provisions

Included:

• Commercial buildings
• Residential buildings of two or more storeys and three or more residential units
• Hostels and boarding houses
• ‘Parts’ of buildings (eg URM parapets, façades, verandas)

Excluded:

• Farm buildings, stand-alone retaining walls, fences, some monuments, bridges, wharves, tunnels, dams, storage tanks
Current definition for EQP buildings

122 Meaning of earthquake-prone building

(1) A building is earthquake prone for the purposes of this Act if, having regard to its condition and to the ground on which it is built, and because of its construction, the building

(a) will have its ultimate capacity exceeded in a moderate earthquake (as defined in the regulations); and

(b) would be likely to collapse causing

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

(ii) damage to any other property.
Revised definition – for EQP buildings/parts

133AB Meaning of earthquake-prone building

(1) A building or a part of a building is earthquake prone if, having regard to the condition of the building or part and to the ground on which the building is built, and because of the construction of the building or part

(a) the building or part will have its ultimate capacity exceeded in a moderate earthquake (as defined in regulations); 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.
Better targeting based on seismic hazard

• New Zealand divided into three areas based on the seismic hazard (Z) factor

<table>
<thead>
<tr>
<th>Seismic hazard area</th>
<th>Z factor</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>$ Z \geq 0.3 $</td>
<td>Christchurch, Gisborne, Napier, Wellington</td>
</tr>
<tr>
<td>Medium</td>
<td>$ 0.15 \leq Z &lt; 0.3 $</td>
<td>Hamilton, Invercargill, Tauranga, Whanganui</td>
</tr>
<tr>
<td>Low</td>
<td>$ Z &lt; 0.15 $</td>
<td>Auckland, Oamaru, Dunedin</td>
</tr>
</tbody>
</table>
**The seismic hazard areas set the deadlines**

- TAs in high and medium seismic areas must also identify ‘priority’ buildings/parts

<table>
<thead>
<tr>
<th>Seismic hazard area</th>
<th>TAs to identify potentially EQP within:</th>
<th>Owners to strengthen/demolish EQP within:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Priority</td>
<td>Other</td>
</tr>
<tr>
<td>High</td>
<td>2 ½ years</td>
<td>5 years</td>
</tr>
<tr>
<td>Medium</td>
<td>5 years</td>
<td>10 years</td>
</tr>
<tr>
<td>Low</td>
<td>n/a</td>
<td>15 years</td>
</tr>
</tbody>
</table>
Priority buildings/parts – a new concept

- Priority buildings/parts defined in the Building Act
- Only applies in **high or medium seismic hazard areas**
- Deadlines halved for identifying and remediating these

**Why?**

- More targeted legislation to speed up improvements to buildings/parts that:
  - are critical to emergency response (eg hospitals, fire stations)
  - house vulnerable groups (eg schools)
  - could block strategic routes
Some parts of URM buildings are also priority

- Strong submissions from Canterbury earthquake survivors have driven changes (“the Ann Brower amendment”)
- ‘Priority’ now includes parts of a URM building that could fall onto a public road, footpath or other thoroughfare and affect public safety (in high or medium seismic hazard areas)
EPB methodology – the engine room of the new system

• Set by MBIE’s chief executive and has regulatory status
• Contains rules, tools, methods and guidance for TAs to:
  o identify potentially EQP buildings/parts
  o determine EQP buildings/parts
• Contains criteria for TAs to accept:
  o engineering assessments supplied by building owners
  o ‘old’ engineering assessments (ones carried out before commencement date)
• Cites part of the Engineering guidelines
Buildings within **scope** of Amendment Act

- **Who?**
  - TAs

- **What?**
  - Identify potentially EQP by set deadlines (profiling tool)
  - Identify potentially EQP at any time

- Owners
  - Engineers

- **Engineering assessment** (in accordance with EPB methodology)

- TAs
  - **TA review and decision** whether EQP or not, and if EQP the rating
Key roles for engineers:

• Assist in advising building owners regarding an appropriate type of engineering assessment to meet the requirements of the EPB methodology
• Provide an engineering assessment in accordance with the EPB methodology
• Provide support to TAs where required in identifying potentially EQP buildings/parts, or decisions about EQP buildings/parts
TAs to identify potentially EQP buildings/parts

Identify by profiling – must complete by set deadline
• EPB methodology contains the profiling tool
• Targets buildings/parts expected to pose highest risk

Identify at any time
• EPB methodology sets clear criteria and examples
• TAs must identify if:
  o any reason to believe EQP (including info from owners or engineers)
  o building owner conducts significant structural work on buildings with specified characteristics
What the profiling tool contains

- Varies by seismic hazard area, lists building characteristics such as construction type, era, height/number of storeys
- Excludes already strengthened ≥34%NBS under Building Act 2004
- Specific profiles still being developed, but likely to include:
  - for all areas – URM buildings/parts, some pre-1976 multi-storey concrete buildings (details will be specified)
  - for medium and high areas – additional categories of steel/concrete buildings of specified types and eras
Identifying *potentially* EQP by the deadline

• TAs should spread over the timeframe specified for their location; order based on factors appropriate to the area (e.g., occupancy levels, building location)

• EPB methodology will specify acceptable evidence (e.g., previous assessment reports, plans, engineer’s letter, visual inspection)

• TAs may still need some engineering input/advice
Engineering assessments

• Building owners must now supply engineering assessments if a TA identifies their building/part as potentially EQP
• Owners can also obtain engineering assessments voluntarily
• EPB methodology specifies the type of engineering assessments and criteria for TAs to accept these – likely to be:
  o DSAs or ISAs meeting the technical requirements of the Engineering guidelines (ISAs will require some extra statements and information, which will be specified) and
  o some extra considerations for both DSAs and ISAs (also specified); e.g. engineers’ qualifications, inspections etc
TAs then determine if a building/part is EQP

- TAs must consider the legal test (engineering assessment informs the decision on (a))

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(a) the building or part will have its ultimate capacity exceeded in a moderate earthquake (as defined in regulations); 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.
TAs determine if a building/part is EQP (ctd)

- TAs then determine if building/part is EQP and, if so, its earthquake rating (one of two categories set in regulations, likely to be based on %NBS)
- TAs then issue EPB notice and update EPB register, advise owners to strengthen or remove building/part by the relevant deadline (clock starts when notice issued)
Transitions

TA policies:
• TAs can roll over in the meantime (not invalid if no 5 year review)

s124 notices:
• TAs must reissue as new EPB notices soon after commencement date (as long as building still in scope)

Existing engineering assessments (IEPs, ISAs, DSAs):
• EPB methodology will have criteria for accepting these after the commencement date
What all this means
Recap of roles for engineers:

• Assist in advising building owners regarding an appropriate type of engineering assessment to meet the requirements of the EPB methodology

• Provide an engineering assessment in accordance with the EPB methodology

• Provide support to TAs where required in identifying potentially EQP buildings/parts, or decisions about EQP buildings/parts
For building owners:

• Disclose to the TA if they have concerns about, or become aware of issues with, the seismic performance of their building

• Obtain an engineering assessment if requested by a TA and provide this within the specified timeframe

• If their building or part is determined EQP, strengthen or remove this within the specified timeframe
For TAs:

- Identify *potentially* EQP buildings/parts (and priority buildings/parts in high and medium seismic hazard areas only), update MBIE on progress
- Consider engineering assessments, determine whether buildings/parts are EQP
- Issue EBP notices, update the EBP register, consider applications for building owners for extensions/exemptions in some circumstances, enforce the system, etc
What happens next?

- Public consultation on proposed EPB methodology and regulations Aug/Sept
- Engineers can start advising building owners

Find out more:
- Contact MBIE at epb@mbie.govt.nz