INTRODUCTION

The legislation concerning Earthquake Prone Buildings (EPBs) is changing, with implications for many building owners across New Zealand.

New legislation is expected to be passed in early 2016. Here are the basics of the proposed legislation.

SUMMARY

- All EPBs are to be identified and registered. Local councils will inform owners if they believe their building may be earthquake prone.
- Timeframes for councils to assess buildings range from 2.5 years for high priority buildings in high risk areas, up to 15 years for lower risk areas.
- All buildings found to be earthquake prone will require strengthening or demolition.
- Remediation timeframes range from 7.5 years for high priority buildings in high risk areas up to 35 years for lower risk areas. The clock starts only once a building is confirmed as earthquake prone.
- Significant alterations to earthquake prone buildings at any time will trigger requirements to strengthen.
- Means of escape from fire, and accessibility enhancements may not be required as part of earthquake strengthening.
- Unreinforced masonry (URM) elements that can collapse into the street are to be treated as a high priority. Simple and pragmatic strengthening works are often suitable for addressing this.
- EDC are here to help. We know the rules and we understand the commercial pressures on building owners.
- Legislation is currently at the select committee stage, but is expected to pass into law early 2016. EDC are following the process and will advise of changes and their implications as the legislation advances.

Please be aware that while EDC has endeavoured to ensure this document is factual and correct, this is only a summary of long and complex proposed legislation. For full information we recommend you consult your lawyer, and refer to the MBIE website or the Building (Earthquake-prone Buildings) Amendment Bill.
WHAT IS AN EARTHQUAKE PRONE BUILDING?

The following criteria must be satisfied to determine that a building is earthquake prone:

1. The seismic strength of the building is less than the seismic demand in a moderate earthquake. Where a moderate earthquake is defined as being 1/3 of the current code seismic loading level (33% NBS).

2. Collapse of the building in a moderate earthquake is likely to result in injury or death, or damage to other property.

3. The building is not a house or farm outbuilding.

In summary, EPBs are buildings such as:

- Offices
- Shops
- Factories
- Multi-unit residences (with at least 2 floors and at least 3 units)
- Hotels
- Hospitals
- Theaters

with a seismic strength of less than 33% of the current code requirement.
CLASSIFICATION OF RISK

The following criteria must be satisfied to determine that a building is earthquake prone:

The proposed new legislation assigns a particular level of seismic risk for each area of the country, the importance of each building and the expected level of earthquake shaking. Areas of the country are defined as low, medium or high risk as shown in the map opposite.

Further to this, higher priority is assigned to:

1. Hospitals and emergency service facilities,
2. educational facilities occupied by more than 20 people,
3. parts of unreinforced masonry buildings that could fall into the street, and
4. buildings that could impede main transport routes.

Of these, it is the third point that is likely to impact many buildings, particularly the older building stock common to our smaller towns and cities. This specific inclusion is as a result of the Canterbury Earthquakes where masonry falling into the street resulted in many injuries and deaths.

New Risk Zones for Strengthening:

- **High Risk Areas (> 0.3)**
  - Wellington
  - Christchurch
  - Palmerston North
  - Napier/Hastings
  - Gisborne
  - Blenheim

- **Medium Risk Areas (0.15 < 0.3)**
  - Hamilton
  - New Plymouth
  - Wanganui
  - Invercargill
  - Tauranga
  - Rotorua
  - Nelson
  - Timaru

- **Low Risk Areas (0.15 < 0.15)**
  - Auckland
  - Oamaru
  - Northland
  - Dunedin
INITIAL ASSESSMENT

Territorial authorities (local councils) are being assigned the job of determining what buildings are earthquake prone and will be required to keep a register.

Timeframes for doing this take into account the risk level of the region and the buildings.

Initially the councils will be required to identify all of the earthquake prone buildings in their region. It is expected that the council will make a ‘first cut’ of buildings they believe to be earthquake prone simply by considering factors such as age, construction materials, size and use of the building. Timeframes for completing this process are outlined on the next page.

Councils will be required to notify owners of potentially earthquake prone buildings. Building owners will then have 12 months (extendable to 24 months in some circumstances) to have an engineering assessment completed and the seismic strength confirmed.

All buildings confirmed to be earthquake prone will be recorded on a public register and will be subject to an earthquake prone notice.

It is important to note that the initial council assessment is not sufficient to confirm a building as earthquake prone. A final assessment from a structural engineer is required. Costs for obtaining an engineering report are borne by the building owner.
INITIAL ASSESSMENT TIMELINE

Local councils have a defined time period for carrying out an initial assessment of all buildings in their district.

Local council assessment timeframe:

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk</td>
<td>5 YEARS</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>10 YEARS</td>
</tr>
<tr>
<td>Low Risk</td>
<td>15 YEARS</td>
</tr>
</tbody>
</table>

Timeframes will be halved for Priority buildings. Refer to page 6 for details of priority buildings.

Building owners have 12 months to determine if they have a EPB by commissioning a structural engineers report.

Only buildings confirmed as earthquake prone following an engineering assessment will be added to the public register with the earthquake prone building notice affixed to the front door. This is intended to act as an incentive for building owners.

REMEDICATION TIMELINE

All identified earthquake prone buildings will require remediation using one of two options – strengthening or demolition.

Building owners remediation timeframe:

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk</td>
<td>15 YEARS</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>25 YEARS</td>
</tr>
<tr>
<td>Low Risk</td>
<td>35 YEARS</td>
</tr>
</tbody>
</table>

Timeframes will be halved for Priority buildings.

The remediation timeframe starts following the completion of building assessment, when the building is confirmed as earthquake prone.
STRENGTHENING OPTIONS

If an EPB is not demolished, it must be seismically strengthened so that it is no longer an EPB. In other words it must be strengthened to at least 34% NBS.

Solutions for achieving this are building dependent, but do not necessarily involve large scale invasive works.

At EDC we have considerable experience in strengthening a range of buildings from modern tilt panel precast warehouses, to 100 year old unreinforced brick masonry offices.

Strengthening typically involves adding in new structure, or enhancing the existing structure to resist earthquake loads.

Under current law, when alterations are carried out, the building must be enhanced to the current code standard with regard to accessibility and means of escape from fire.

Under the new legislation, when strengthening a building it is likely that accessibility and fire upgrades will not be required; if the cost of these works would make strengthening the building prohibitively expensive.

So you may not need to add in a $100,000 sprinkler system as part of your strengthening works!
WHAT IF I WANT TO CARRY OUT ALTERATIONS TO MY EARTHQUAKE PRONE BUILDING?

Any substantial alterations to an earthquake prone building will require strengthening to be carried out as part of the works.

As is the case with the current legislation, the means of escape from fire, and accessibility of the building will need to be enhanced to the current code level.
WHAT ABOUT UNREINFORCED MASONRY?

Unreinforced masonry (URM) buildings, mostly constructed between 1900 and 1940 are prevalent across the country, particularly in our small towns and cities.

URM has been specifically identified as a high priority element in the new legislation. Although this is a great step in making our buildings safer, strengthening of URM can be seen as expensive, time consuming and disruptive to the building occupants, leaving demolition as the ‘fall-back’ option for many owners.

The act amendment targets only URM that can fall into the street, and therefore we believe there are suitable, pragmatic works that can inexpensively enhance many buildings.

This could be as simple as removing parapets, or strengthening an awning to support the weight of any collapsing masonry; protecting those in the street below. EDC understands that in many cases simple enhancements that don’t cost a lot of money can significantly improve a buildings seismic performance.
CONSEQUENCES OF INACTION

If a building owner cannot, or will not, carry out an engineering assessment of their building, the local council is entitled to carry this out on their behalf and bill the owner all costs.

Failure to strengthen or demolish an earthquake prone building by the due date could result in a conviction and fine of up to $200,000.
OUR THOUGHTS

EDC have been undertaking seismic assessment and strengthening designs across the country. From an engineering perspective we see the risk based approach to the new legislation as a pragmatic and sensible approach. That said, we believe that any strengthening of earthquake prone buildings should be carried out to a minimum level of 67% NBS where possible. Our experience has shown that this is unlikely to result in a significant cost increase over strengthening to 34% NBS.

Regardless of new legislation, other factors are likely to drive earthquake strengthening. Already a number of large companies have a requirement that the buildings they occupy have at least 67% of the current seismic code; and smaller companies are heading in the same direction.

Adding to this, lenders often include a condition of finance that a building be a minimum of 34%, or in some case 67% NBS. Insurers are also considering the strength of a building when providing cover.

We feel that arbitrary timelines for strengthening, especially in lower risk areas, are likely to be somewhat irrelevant. Our expectation is that as the number of earthquake prone buildings diminishes, the rental value of the remaining EPB’s will be driven lower.

At EDC we are well versed in the regulations and we have a good understanding of the commercial pressure building owners are under. We would welcome the chance to talk to you about your building.

CONTACT US

For more information or advice call or email either Sam Polson in our Christchurch office or Scott Lawrence in our Auckland office and we’ll be happy to help.

Sam Polson
Christchurch
Structural
Team Leader

Scott Lawrence
Auckland
Structural
Team Leader

BE(Hons) CPEng MIPENZ MStructE

After a period working in Wellington and Singapore, Sam spent five years in the Middle East working on a range of high-profile projects in the UAE and Saudi Arabia. However Sam realised that he missed the green grass of home and the projects that New Zealand offers, so at the end of 2011 Sam returned to his old University town to assist with the rebuild.

His areas of expertise are the design of concrete and steel commercial buildings, residential design, seismic strengthening and acting as an expert witness. Sam is an advocate for strengthening and upgrading of existing buildings. He believes in collaboration with building owners and stakeholders to develop solutions that are cost effective, easy to build and meet the project brief.

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Scott joined EDC in June 2015 with 11 years’ experience working within New Zealand and Singapore. He graduated from the University of Bristol (UK) in 2003 and has spent the majority of his working life overseas. He brings good business development, client relationship management, design project management and leadership to EDC.

Scott’s strengths are in the design of residential and commercial timber, steel and reinforced concrete buildings and the seismic design, evaluation and strengthening of existing buildings including unreinforced masonry buildings. His design philosophy is to spend the time in the early stages of a project so that client needs can be understood and options explored before committing to detailed design.