

# **Buildings and Infrastructure**

**National Lifelines Forum**

6 November 2013

**Dave Brunson**

# Session Overview

- “ **Aligning building and infrastructure resilience concepts**
- “ **Your questions**
- “ **Building Importance Levels – sector-based approach**
- “ **Updated guidelines for assessing buildings**
- “ **Proposed changes to the Building Act**

# Aligning Resilience Thinking: Infrastructure and Buildings

	<b>Physical Performance and Arrangements</b>	<b>Relationships Between Key Parties</b>	<b>Realistic Community Expectations</b>
<b>Infrastructure</b>			
<b>Buildings</b>			

# Aligning Resilience Thinking: Infrastructure and Buildings

	<b>Physical Performance and Arrangements</b>	<b>Relationships Between Key Parties</b>	<b>Realistic Community Expectations</b>
<b>Infrastructure</b>	Robust networks with redundancy, and response arrangements	Effective co-ordination between providers and with other agencies (pre- and post-event)	Appropriate preparation by end-users for outages
<b>Buildings</b>			

# Aligning Resilience Thinking: Infrastructure and Buildings

	<b>Physical Performance and Arrangements</b>	<b>Relationships Between Key Parties</b>	<b>Realistic Community Expectations</b>
<b>Infrastructure</b>	Robust networks with redundancy, and response arrangements	Effective co-ordination between providers and with other agencies (pre- and post-event)	Appropriate preparation by end-users for outages
<b>Buildings</b>	Robust buildings capable of both low damage in more frequent events and life safety in major events	Effective co-ordination of regulatory, design and construction processes	Owners and occupants understanding risk and performance objectives

# Orion's Symbol of Resilience



# Building Importance Levels

Clause A3 of the NZ Building Code (April 2012) for Fire Purposes

<b>1</b>	<b>Buildings posing a low risk to human life or the environment</b>	<b>Ancillary buildings not for human habitation</b>
<b>2</b>	<b>Buildings posing a normal risk to human life, the environment or a normal economic cost should the bldg fail</b>	<b>Houses, office buildings, car parking buildings</b>
<b>3</b>	<b>Buildings of a higher level of societal benefit, or with higher levels of risk-significant factors to occupants (large numbers of people; vulnerable populations)</b>	<b>Areas of assembly or congregation; health care facilities (not surgery or emergency treatment)</b>
<b>4</b>	<b>Buildings essential to post-disaster recovery or associated with hazardous facilities</b>	<b><i>Essential facilities with post-disaster functions</i></b>

## Structural Requirements for Importance Level 4

- “ **ULS: Building designed for 1/2500 year return period shaking**
  - Earthquake design forces 80% greater than for ‘ordinary’ IL2 building
- “ **SLS: Essential components to remain *operational* under 1/500 year return period shaking**
  - Only nominal damage to structure, non-struct. elements and contents; all services within the building functioning



# **Building Importance Levels: 2013 Developments**

- “ MBIE acknowledge that further clarification of how BILs affect key Lifeline Utility facilities is needed**
- “ Some key utilities have progressed their own thinking and established policies on which of their facilities should be IL3 and IL4**
  - . incl. Chorus paper to 2013 NZSEE Conference**
- “ Proposing to take a sector approach**

# Transpower Approach: Buildings and Key Equipment

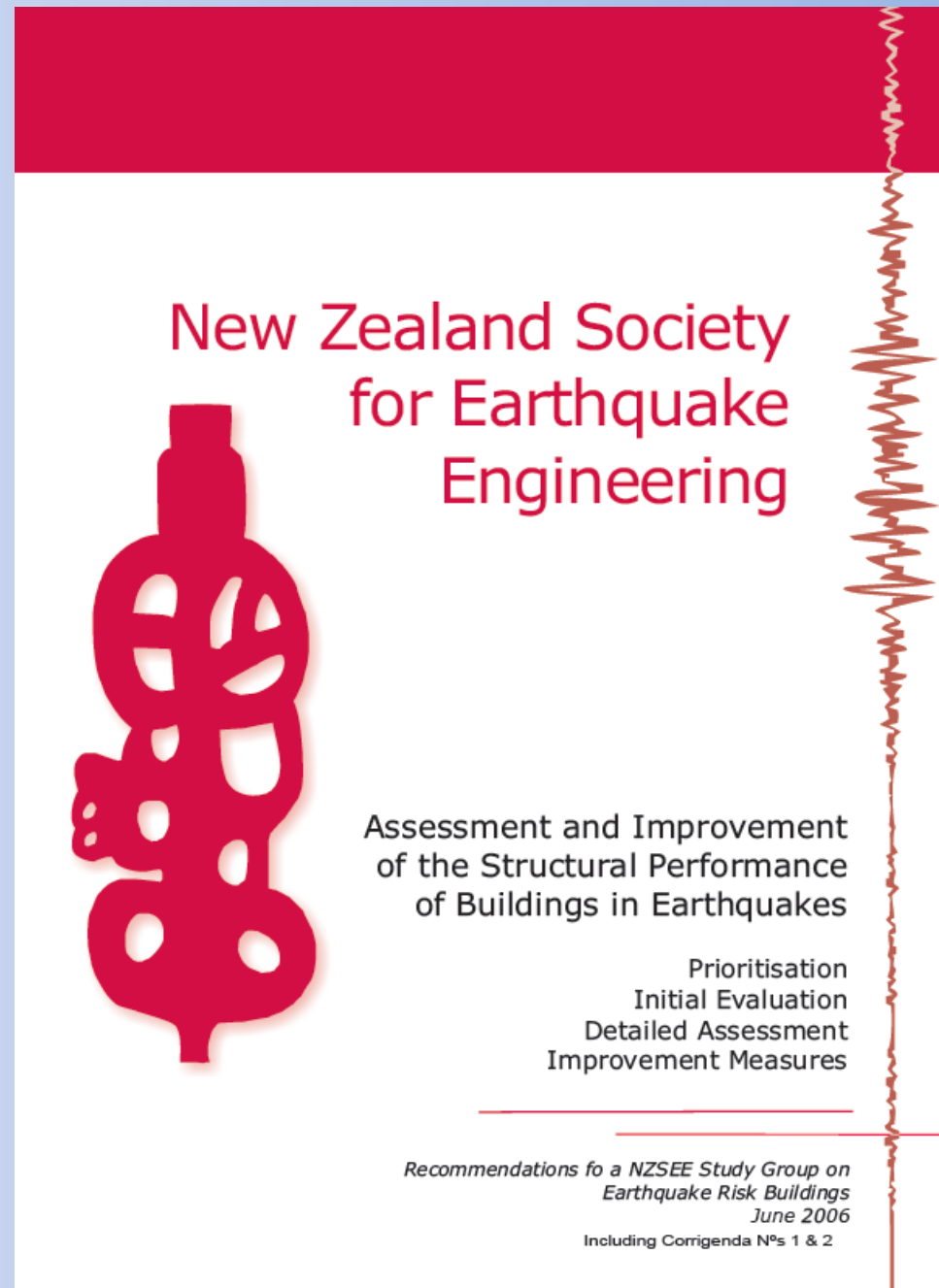
“ With no redundancy within the network and long lead times for replacement (eg transformers)

➤ **IL4**

“ With some redundancy within the network and more readily replaceable (eg circuitbreakers)

➤ **IL3**

# Updating the 2006 NZSEE Guidelines



# Project Scope and Stages

## Stage 1

“ Updating the sections of the document covering the Initial Seismic Assessments and Unreinforced Masonry where there is an urgent need for the latest guidance (2013)

## Stage 2

“ The whole document will be revised to ensure overall consistency and compatibility with current NZ and international earthquake engineering knowledge (2014/15)

# Initial Seismic Assessment Update

## Scope of Update – Section 3

- “ Not a major change to the process or details
- “ Better guidance on application generally, and in relation to low-rise structures
- “ Putting the IEP in a better context
  - . Just one method of Rapid Assessment
  - . Part of a continuum with Detailed Seismic Assessments
  - . Guidance for BCAs and building owners also being produced



## ***Proposed Changes to the Earthquake-Prone Provisions of the Building Act***

**The 5 August 2013 Cabinet meeting noted that:**

***A clear view has emerged that from a societal perspective the current system for managing earthquake-prone buildings is not achieving an acceptable level of risk***

- **A move to a system that has a significantly greater role for central government, particularly in providing leadership and direction**



## *Key Changes Proposed*

- 1. The undertaking by local authorities of a seismic capacity assessment of all non-residential and multi-storey/ multi-unit residential buildings within 5 years**
- 2. Buildings are to be strengthened so they are not earthquake-prone (or demolished) within 20 years**
- 3. A national register of information on earthquake-prone buildings to be established**
- 4. A building that is earthquake-prone (less than one-third current code capacity for new buildings) only needs to be strengthened to that level**

# Methodology for TAs to Prioritise Assessments and Strengthening

- “ **From a post-earthquake access perspective, which areas of buildings should be addressed with priority?**
- “ **Likely focus on arterial routes**
- “ **Possibly extending to critical lifeline utility facilities**
  - **Lifelines Groups’ Priority Access Routes and Priority Sites for Utility Restoration are likely to be drawn upon**