



## **ONE-DAY LECTURE AND WORKSHOP**

### **RESILIENCE ENGINEERING 'Our Brittle Society'**

**Dr. Ir. RON MCDOWALL ONZM, FIPENZ  
MARCH - APRIL 2012**

**ROTORUA - Tuesday 27 March  
NAPIER - Thursday 29 March  
CHRISTCHURCH - Friday 30 March  
NELSON - Monday 2 April  
AUCKLAND - Tuesday 3 April**

#### **Introduction**

Resilient cities are constructed to be strong and flexible, rather than brittle and fragile. Their lifeline systems of roads, utilities, and other support facilities are designed to continue functioning in the face of rising water, high winds, cyclones, earthquakes and terrorist attack. Resilient systems reduce the possibilities of failure, the consequences of failure, physical damage and negative economic and social effects, and the recovery time. Resiliency emphasises the capacity of infrastructure and operations to respond and recover from extreme events. Recent events in New Zealand have caused some to think that perhaps we as a society are brittle. This workshop explores that contention and formulates what engineers should do about resilience.

#### **Overview**

Whilst engineers are on the front line of resiliency we are clearly not on the front foot. This workshop will explore, define and discuss the current issues of resilience, from a view of the professional engineer working in New Zealand. It is anticipated that the conclusions of this discussion will be included in a proposed IPENZ practice note for Resilience.

## **Audience**

This workshop is targeted to all professional engineers involved in the planning, design, construction, operation, maintenance, and end-of-service-life decision making of built facilities and infrastructure systems.

## **Learning Objectives and Outcomes:**

The expected outcomes of the workshops are:

- An understanding of the real world complexity of our built environment and infrastructure and implications for resilience;
- Development of a deep understanding of the principles of resilience and why professional engineers need to know;
- Know why our society can be seen as brittle;
- Determine how your practice can incorporate resilience into design and systems implementation, and
- Contribution to the production of the IPENZ Practice note “Resilience”

## **Profile:**

Ron McDowall is a chartered professional engineer with more than forty years of engineering practice experience. Early in his career he worked in Sweden on resilience projects for automatic restoration of power networks in the event of catastrophic failure. During the twenty years as a co-director of a consulting engineering practice he was involved in systems design that incorporated failure adaptation within systems engineering. In recent years working for the UN on toxic, hazardous chemicals and radioactive waste he has applied many of the principles of resilience engineering in system designs. In his academic life he has been researching resilience engineering at many levels.

### **Programme - Timetable**

<b>TIME</b>	<b>MODULE</b>
9:00 – 9:30	<b>I: Resilience Engineering – a toddler’s guide!</b> Resilience engineering, what is it, and why we, as engineers, should be interested.
9:30 – 10.00	<b>II: Risks – Is our Society Brittle?</b> A lecture presenting the integrated societal systems and their tendency to be brittle and the complexity nature of our society.
10.00 - 10.30am	<b>III: Socratic discussion</b> A facilitated group discussion to identify the issues of resilience within the NZ context.
10:30-10:45	COFFEE
10:45-12:00	<b>IV: Roles within society</b> What are the barriers to a society becoming a resilient nation? The group will discuss who should be in “charge” of resilience. Should engineering have a lead role? If not us who?, if not now when?
12:00-13:00	LUNCH
13:00 – 14:00	<b>V: Solutions vs Status Quo</b> Lifelines, Civil defence, local government are the status quo. Is resilience delivered by the status quo?
14:00 – 15:00	<b>VI: The IPENZ practice note</b> Issues and principles the workshop would like taken to the practice note production.
15:00 – 15:30	COFFEE
3:45-5:00	<b>VII: Takeaways</b>

## Registration / Information

<b>Fee</b>	<ul style="list-style-type: none"><li>○ \$295 plus GST for TSS Members</li><li>○ \$360 plus GST for IPENZ Members</li><li>○ \$425 plus GST for non members</li><li>○ Student rates available upon application</li><li>○ Note: A 25% cancellation fee will apply to all cancellations. Cancellations made within 48 hours and non- attendance on the day will incur the full fee.</li></ul> <p><i>Become a member of The Sustainability Society now to receive the special member's only rate.</i></p>
<b>To Register</b>	Email: <a href="mailto:vicky@thesustainabilitysociety.org.nz">vicky@thesustainabilitysociety.org.nz</a>