

Quantifying Natural Hazard Risk in New Zealand – Looking Back to Look Forward

As part of the lead-up to release of the 2013 Investment Statement, Treasury is holding a series of seminars aimed at fostering interest in, and discussion on, balance sheet-related matters. It is our hope that this will help provide a sound platform for release of the Investment Statement by the end of 2013.

On the theme of risk management, this seminar involves a presentation by Kelvin Berryman, Director, Natural Hazards Research Platform, GNS Science, on natural hazard risk in New Zealand.

The National Security System has recognised that natural hazard events, such as the Canterbury earthquakes, along with pandemic, represent the most likely, potentially catastrophic impacts on New Zealand, in terms of lives lost or damaged, infrastructure destroyed and socio-economic well-being diminished. However, in order for New Zealand to mitigate these impacts (i.e. reduce the social and economic cost to the country) it is necessary to understand why volcanoes, earthquakes, landslides, tsunami, river floods, coastal erosion and storm surge, extreme wind, snow, and hail, occur where they do, at what frequency, in what magnitude range, and how they intersect with urban areas and the rural economy. Good progress has been made in understanding individual hazard processes, and increasingly the science community can make quantitative estimates of each hazard and associated cascade effects (a “multi-hazards” approach) using probabilistic modelling methods for individual, and integrated, perils.

What is lacking is the appropriately granular understanding of the build environment and its fragility to the range of natural hazard events and thus the associated potential economic impacts of future events, particularly indirect losses. Not until a range of realistic scenarios for each hazard on an equal probability basis are developed can we truly address cost-effective mitigation options.

In the meantime we can use recent events such as earthquakes in Canterbury (2010-2011), Edgecumbe (1987), and Cook Strait (2013), and the Manawatu floods (2004) as calibration for potential impacts of future events. By looking back at large historic events in New Zealand’s history we can imagine what future events may be awaiting us in the coming decades and what their social and economic impact might be, and provide a basis for discussion of mitigation options.

Date: Thursday 12 September 2013
Time: 11.00am – 12.00pm
Location: New Zealand Treasury
1 The Terrace
Level 5

RSVP: “Natural Hazards Seminar”
to Aimee Morris at
Aimee.Morris@treasury.govt.nz
by 10 September 2013, as
seating numbers are limited.

Kelvin Berryman

Director, Natural Hazards Research Platform, GNS Science



Dr Berryman's current role is Director of the Natural Hazards Research Platform, based at GNS Science. In his professional career spanning more than 35 years he has undertaken research and applied research across a wide range of natural hazard topics including active fault and coastal geomorphology studies, and natural hazard and risk studies from site specific to national scale.

He has been widely involved in seismic safety for the hydro-electric energy sector beginning with the initial Clyde Dam study in 1980, and more recently with Waitaki, Clutha, and Waikato River facilities and had major input to the refurbishment of the Matahina Dam in the late 1990's. Kelvin led the

NZ-wide tsunami risk study for MCDEM in 2005. He has significant international research and consultancy experience, particularly in the circum-Pacific region.

Kelvin has served the scientific community through work on editorial boards of academic journals, as national representative to a number of international science projects, including his current role on the governing board of the Global Earthquake Model. He has mentored several post-doc scholars and PhD students, is currently acting as a science advisor to CERA, and has served on a TEC PBRF evaluation panel since 2003.

In recognition of service to science, Kelvin has received a number of awards including the Otto Glogau award of the NZ society for earthquake engineering (1993 & 2000), the Joyner Lecture Award of the Seismological Society of America (2012), a Royal Society of NZ medal (2000), was elected a Fellow of the NZ society for earthquake engineering in 2012, and in 2011 received the Queens Service Order for services to science and Canterbury earthquake recovery.