Natural Hazards New Zealand

Project Sheet:

Wellington Area Casualty Estimation

Strike-slip fault in Wellington, NZ (photo from GNS Science)

A major strike-slip fault runs through the urban region close to the central business districts of Wellington. This fault is capable of generating earthquakes of magnitude Mw=7.5 at average recurrence intervals of 500-800 years. Apart from situations where major secondary catastrophes (large scale fire, massive ground failures, tsunami, dam failure, collapse of large civil engineering structures, etc.), casualties in large earthquakes are mostly caused by building damage. New Zealand's earthquake design and construction practices are amongst the best in the world, however, some of the existing building stock pre-dates the introduction of the current high design standards.

A model was developed to estimate the number of casualties for the Wellington Region that are likely to arise from an earthquake scenario of Mw=7.5 at daytime and night-time. The principal basis of modelling was casualty estimation based on numbers of collapsed buildings. The extent of volume loss in collapse, and the possibility of speedy escape or rescue among those trapped, are crucial parameters factored in the model. These depend in turn on the form of construction, age, number of storeys and use of the building (residential or workplace). Thus the casualty estimation procedure requires a rather detailed classification of the building stock and its distribution.

Project Description

Project: Wellington Area Casualty Estimation

Location: New Zealand

Client: Accident Compensation Corporation (ACC)

Total Project Value: Confidential

Start Date: January 1997

End Date: June 1997

Lead Company: Joint Venture

Associated Consultants: Cambridge Architectural Research Limited (England)

Key Features:

- Provision of assets models (buildings and people)
- Estimation of infrastructure loss and human casualties