



Wellington City, New Zealand (photo from GNS Science)

Modern building designs in New Zealand have achieved the legislated aim of ensuring life safety. Nevertheless, they are not required to control damage, and hence ensure neither the suitability of buildings for continued occupancy or economical repair cost. For this reason, New Zealand's cities could be rendered non-functional by earthquake damage to buildings, their contents, and their infrastructure. This project aims to reduce post-earthquake trauma and economic impact for people in urban areas. The primary focus is design for reduced damage in large earthquakes, leading to economic benefits (minimised losses) and reduced social disruption.

The project's objectives are: establishment and verification of levels of performance, design methods and regulations that minimise earthquake damage to building components, contents, and services; development and verification of new low-cost seismic-isolation technologies that deliver the required levels of performance for buildings, their contents, and equipment; and modelling of the functioning of infrastructure networks damaged by earthquakes, using the model to reduce the restoration times.

This research will lead to better economic performance of the built environment through improvements to regulations, construction methods, protective technologies, and infrastructure management.

### Project Description

**Project:** Post-Earthquake Functioning of Cities

**Location:** New Zealand

**Client:** Foundation for Research, Science and Technology (FRST)

**Total Project Value:** Confidential

**Start Date:** July 2003

**End Date:** June 2009

**Lead Company:** GNS Science

**Associated Consultants:** BRANZ Ltd  
Robinson Seismic Ltd

### Key Features:

- Reduction of post-earthquake trauma and economic impact
- Technical assistance and advisory
- Structural and design engineering
- Performance based earthquake engineering
- Construction systems to reduce seismic impacts on services