



## Research Objectives

This research programme is designed to understand and improve the resilience of New Zealand organisations to major disruption. There is a need for research focused on organisations and their systems, as it is organisations that manage, maintain and operate our infrastructure, create our economy and contribute to our society. The ability of organisations to respond effectively following a hazard event will have a large influence on the length of time that essential services are unavailable, and therefore New Zealand's ability to retain economic competitiveness in the aftermath of a hazard event.

This is a six year research programme (2004 – 2010) funded by the Foundation of Research Science and Technology (FRST), with a total research budget of \$1.8M. The research programme will be led by *Dr. Erica Dalziell* (Department of Civil Engineering, University of Canterbury, New Zealand), and is a collaborative project between the University of Canterbury, University of Auckland, and Kestrel Group.

## Overview of key research steps and methodology

The research programme is interdisciplinary, integrating the planning, prioritisation and deployment and legal issues faced by New Zealand institutions. The programme is divided into three inter-related objectives:

1. Organisational planning for hazard events
2. Prioritisation and deployment of physical and human resources for recovery
3. Legal and contractual frameworks

## Objective 1: Organisational planning for hazard events

**Goal:** To understand how New Zealand organisations prioritise investment for hazard events, develop a framework for improved internal organisational planning and facilitate integration of hazard planning with other organisations.

This objective will explore the following issues:

- How organisations dedicate resources to prepare for and respond to hazards. The reasons for investment in emergency planning and how obligations to customers, regulators, government policy, and accounting practices influence these.
- The use of risk management approaches to emergency planning and how very low probability, extreme consequence events and the potential for organisational collapse are managed.
- Sophistication of operational and strategic plans for responding to extreme events, critical interfaces between organisations and how these are addressed
- Consultation and communication of risk and expectations within organisations, with their stakeholders, between organisations and with the community.

Lead Researchers	Specialist Areas
<b>Erica Dalziell</b>	<i>Objective Leader.</i> Risk management, complex systems analysis; hazard risk assessment.
<b>Dave Brunson</b>	Lifelines engineering, emergency planning and management, end user connections.
<b>John Vargo</b>	Strategic business planning, information security, organisational case study methodology.

## Resilient Organisations Research Programme

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## Objective 2: Prioritisation and Deployment of Physical and Human Resources

**Goal:** Develop a decision support tool that can be used following a hazard event for prioritising physical response and recovery of networked infrastructure. Prioritisation of repairs across damaged networks is an issue for many lifeline providers. The road network has been chosen as the case study because of its importance as a key lifeline in the aftermath of a hazard event. This objective will focus on the following issues:

- How information is collected and communicated during response and recovery activities at present, and which aspects of this process are effective or less effective?
- What are the information requirements of different stakeholders during response and recovery activities, and how can data collection activities and analysis be prioritised to meet these requirements.
- How is information and decision-making shared between organisations, particularly where critical links cross organisational boundaries (such as State Highways interfacing with major urban arterials), and how might the process be better facilitated in the future?
- Scope and develop a decision-support tool for road managers that help them to assimilate actual damage information as it is received and to optimise the deployment of available resources and prioritise infrastructure repairs.

Lead Researchers	Specialist Areas
<b>Andre Dantas</b>	<i>Objective Leader.</i> Transport modelling, logistics, application of GIS and Neural Networks in Transportation-related problems
<b>Erica Dalziell</b>	Risk balancing, natural hazard risk assessment in road network evaluation
<b>Alan Nicholson</b>	Transportation planning, risk evaluation and management for transport systems

## Objective 3: Legal and Contractual Frameworks

**Goal:** To establish a comprehensive procurement framework and programme management plan for reconstruction in the event of a disaster. This objective will focus on the following issues:

- Analysis of subcontracting arrangements –how will they be affected after a major disaster? Interconnectedness between organisations where they use common contractors, and the impact this may have on recovery.
- Analysis of NZ legal frameworks for construction – specifically the RMA and Building Act. The relevance of these Acts to post-disaster reconstruction, whether they would help or hinder and whether the current Acts can be used to develop a legal framework for reconstruction.
- Analysis of contractual aspects of construction projects - common construction contracts used in NZ and their relevance and usefulness after a natural disaster? Analysis of international contracts – recent developments in forms of construction contract (specifically FIDIC, World Bank and the New Engineering Contract) and how these standard contracts can be/have been modified to suit New Zealand conditions.
- Analysis of major international disasters and contracts for rebuild. How contracts to rebuild after a disaster have been set up, the procurement mechanisms that have been used and the applicability of this international experience in New Zealand?

Lead Researchers	Specialist Areas
<b>Suzanne Wilkinson</b>	<i>Objective Leader.</i> Construction Law, construction management, human resource management
<b>Jason Le Masurier</b>	Rethinking construction; construction management; culture change in the construction industry

## Contact Details

For more information on this research programme, email us at: [info@resorgs.org.nz](mailto:info@resorgs.org.nz), or go to our website: [www.resorgs.org.nz](http://www.resorgs.org.nz)