Improving Organisational Resilience
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The Research Context
In New Zealand we have not had a major natural disaster in living memory

....but we live in a very hazard prone country...

and we are very isolated....

"...In the US, they were an island of devastation in a sea of resources; in New Zealand we would be just an island of devastation..."

The Research Context
Organisations manage, maintain and operate our critical infrastructure.
Contribute to both economy & community.
September 11th - Business disruption costs far exceeded the sum of all property losses.

To understand the impact of hazard events, we need to be able to evaluate how key organisations are going to perform during and after these events.
Resilient Organisations

6 yr FRST research programme involving:
- University of Canterbury,
- University of Auckland,
- Kestrel Group.

The programme has 3 strands
1. Organisational planning for hazard events
2. Prioritisation and deployment of resources
3. Legal and contractual frameworks

1) Organisational Planning

- **Goal:** To understand and improve the resilience of NZ organisations, and to facilitate integrated resilience planning between organisations.

- **Research Team:**
  - Erica Dalziell
  - David Brunsdon
  - John Vargo

2) Prioritisation & Deployment

- **Goal:** Develop a decision support tool that can be used following a hazard event for prioritising physical response and recovery of networked infrastructure, such as the road network.

- **Research team:**
  - Andre Dantas
  - Erica Dalziell
  - Alan Nicholson
3) Legal & Contractual Frameworks

- **Goal:** To establish a comprehensive procurement framework and programme management plan for reconstruction in the event of a national disaster.

- **Research team:**
  - Suzanne Wilkinson
  - Jason Le Masurier

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**Our Proposition...**

**Organisations are complex systems,** characterised by numerous interdependent relationships both within and between organisations.

Systems concepts provide a framework for evaluating the potential performance of an organisation under stress.

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**Organisations under Stress**

- In times of disaster and major disruption, different organisations are required to work together to develop solutions to novel problems.
- Organisations do not operate in a vacuum. The resilience or otherwise of other organisations impacts on the resilience of your organisation!
- This requires management of resilience **ACROSS organisational boundaries**
Exercising to Build a More Resilient Organisation: A New Zealand Example

Scope of Presentation

- Context: Foot & Mouth Disease in NZ
- Organisational Challenges Pre-exercise
- Exercise Planning process
- Building Resilient Organisations

This presentation uses the example of a major whole-of-government exercise in New Zealand to illustrate how exercises can be used to:

(i) Highlight organisational vulnerability;
and

(ii) Provide a platform for improving organisational resilience
**Context:**

**Foot & Mouth Disease**
- The NZ economy is heavily dependent upon meat & dairy exports
- NZ has never had an outbreak of Foot and Mouth Disease
- NZ invests significantly in biosecurity to prevent an FMD outbreak
- Modelling indicates that an FMD outbreak would cost NZ $6 billion in Year 1 (5% of GDP) and NZ$10 billion (8% of GDP) in Year 2

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**FMD - The Disease**
- Disease in Cattle
  - blisters on tongue, feet and teats
  - slobbering, smacking lips
  - tender and sore feet
  - shivering
  - raised temperature
  - reduced milk production

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![CARTOGRAPHY OF CONTAGION](image_url)

The U.K. outbreak spreads from and northwards across the Continent.

- FMD is spread by direct contact between animals, infected secretions, and movement of infected animals.
- The spread can be rapid over long distances, threatening the entire livestock industry.
- Early detection and containment are crucial to prevent further spread.

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Foot and Mouth Disease Response in NZ

- Ministry of Agriculture & Forestry is the Lead Agency
  - Exotic Disease Response Centre (overseeing field response in the affected region(s))
  - National response (policy aspect & linkage with central govt)
- Department of Prime Minister & Cabinet is responsible for co-ordinating Whole of Government response

Organisational Challenges Pre-exercise

- MAF operates on a business unit model
  - Smaller units with varying levels of autonomy
  - Recently restructured further
  - No clear Incident Control mechanism above the units, which have potentially conflicting response objectives
- Comprehensive response procedures but written from a technical perspective and not updated for new structures

Is this Situation Unique?

- No!
Exercise Planning Process

Exercise Preparation Challenges

- Align the response management structures and procedures with the Business As Usual structures
- Get senior management commitment
  - To enable resource commitment for essential preparatory tasks & full participation
  - To resolve Incident Management issues
  - To fully play their own key response role

Sound familiar??

- Yes!

Exercise Programme:

1. Preparation

- Familiarisation exercise to make those involved aware of current shortcomings (Month 2)
- Specifically managed programme to address previous ‘lessons’ (Month 5)
- Further ‘walkthrough’ exercise to acknowledge progress but emphasise what still needed to be done (Month 10)
- Update response procedures to align with current structures (Months 11 to 13)
Exercise Programme:

2. Delivery

- Exercise development (Months 8 to 13)
- Exercise delivery (Month 14)
- Analysis & reporting (Months 15 & 16)
- Capability building takes time!

Exercise Taurus:

The Scope

- First stage field exercise in March (one week)
- Second stage national co-ordination exercise (two days)
  - Day 1 – first day that outbreak is confirmed (one positive test)
  - Day 2 – dealing with issues subsequent to the initial notifications and containment response

Exercise Taurus:

The Players

- Stage One participants
  - >100 people from MAF & other agencies
  - 5 international observers
- Stage Two participants
  - >50 people from MAF
  - >25 people from 15 government & other agencies
  - 5 international observers
Exercise Taurus: The Postscript

- 3 weeks after Exercise Taurus, a suspected outbreak situation DID occur
  - A major response was mobilised
  - Was found to be a hoax very early on
- But all the participants were very grateful for the exercise 'practice'!!

Back to the Session Theme:
Building Resilient Organisations

Exercise Taurus: Organisational Issues to Emerge

- The potential disconnect between govt agencies/MAF national office/MAF field response was highlighted
- The importance of working with other government agencies appears to lack emphasis in the procedures
- Mechanisms for engaging with local and regional government also need clarifying and communicating
Exercise Taurus: Organisational Issues to Emerge

- Internal communications not always well handled
- Some teams/units staffed for policy development struggled to adapt to the dynamics of being in ‘response mode’
  - The need to reach out for information, rather than waiting for it to come in
  - Organising and resourcing a second shift

Wider Implications for Building Resilient Organisations (1)

- Organisations need to establish an effective work programme to develop & maintain response capability
  - familiarity with roles and procedures
  - policies & communication templates in place
  - induction for new personnel
- Organisations must identify dedicated resources to lead this programme

Wider Implications for Building Resilient Organisations (2)

- Organisations must build external support networks to be able to immediately involve
  - other organisations for direct operational assistance
  - other organisations for resource support
  - experienced Emergency Management professionals
Building Resilient Organisations: 
Question for You

- Training and exercising for low probability, high impact events
  - Especially for organisations with little exposure to regular emergency events

- What is an appropriate level of training?
- What is an appropriate form of training?

Finding Solutions for Real Issues in Real Organisations

10 in-depth Case Studies
- Developing a framework for evaluating resilience
- Variety of organisational types and sizes

Consequence Scenarios
- Regional event
- Localised event
- Distal event
- Societal event

Resilience Management

...bridging the interface between...
Risk Management and Business Continuity Planning

Resilience = fn (Vulnerability, Adaptive Capacity)

Vulnerability
- The likelihood of individual link or node failure
- Criticality of individual link or node performance

Adaptive Capacity
- Capacity to apply existing responses to problems
- Capacity to generate and apply innovative responses to new problems
**Vulnerability Matrix**

<table>
<thead>
<tr>
<th>Criticality</th>
<th>Voltage</th>
<th>Resistance</th>
<th>Conductance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>High</td>
<td>Moderate</td>
<td>Limited</td>
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</tbody>
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**Metrics for Resilience**

- **Vulnerability**
- **Adaptive Capacity**
- **Shock**
- **KPIs**
- **Time**

**Resilient Organisations**

**KEY OUTCOMES:**

- *Methodology* for Resilience Mgmt
- *Metrics* for quantifying Resilience
- *Best Practice* for improving Resilience
- And creating the *Business Case* for Resilience!
Thank You,

We would love to hear your questions & ideas!