



Infrastructure Resilience in Northland

Northland Lifelines Group
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NLG – what have we achieved so far?

- Priority utility sites and routes 
- Lifeline utility protocols and debriefs following events 
- Hazard assessment workshops – pandemic, cyclone
- Emergency communications review
 - Better relationships amongst utilities and with CDEM



'Infrastructure Resilience Outputs'

- An infrastructure 'risk profile' for the region
 - Potential cause of failures
 - Likelihood and consequence of failures.
 - Consequential impacts.
- Overview of our ability to respond and recover
 - Scope of existing planning
- More detailed review of highest risks
 - What are the critical resource constraints
 - Potential mitigation measures
 - Develop contingency plans where required



How will these outputs be used?

- **Increased infrastructure resilience**
 - information for other orgs risk mgt planning
 - basis for ongoing CDEM planning
 - better regional response to failures, and
 - potential improvements across the '4Rs



Project approach

- Focus on Level 2 – 5 emergencies
- Start with the helicopter view and then go deeper where the need is greatest
- Work with existing knowledge
- Workshop approach: 2-3 monthly workshops with inputs to be completed by utilities in interim
- Project manager coordination and collation of reports, but most inputs from utilities themselves



Infrastructure Consequences

	Telecomms	Electricity	Fuel	Gas	Transport	Water/ Wastewater
Tsunami	Local sites	Marsden, Bream Bay	Refinery		SH1	Coastal tmt plants
Volcano (Bol)	Kerikeri exch.	Substation			SH1	
Volcanic Ash	Major exchange Minor site	Substation Overhead lines	Refinery	Delivery point failures	All roads	Whangarei water supplies
Rural Fire						
Pandemic						
Cyclone	Major exchange Minor site	Substation Overhead lines				
Single site fire	Major exchange	Transpower sub-station	Refinery	Gas line / delivery points		
Technology Failure			Refinery		Rail signals.	
Drought	? Cooling					
Earthquake	?	?	?	?	?	?

Infrastructure Risk Profile?

Can't just use CDEM probability
Probability we need is, for example, that the tsunami hits Marsden Point

Hazard & Risk	Likelihood	Consequence	Level of Risk
Coastal – Storm surge	A	2	High
Coastal – Tsunami – distantly generated	B	2	High
Coastal – Tsunami – locally generated	D	4	High
Ex-tropical cyclone	A	3-4	Extreme
Drought - agricultural	C	2-3	Mod-High
Drought – water supply	C	1-2	Low-Mod
Earthquake	D	2	Low
Fire – rural (wildfire)	C	2-3	Mod-High
Flooding	A	3-4	Extreme
Land Instability	A	2	High
Volcanic – local volcanic field	E	2	Low
Volcanic – distant eruption	D	2	Low
Biological – introduced pests and animal diseases	C	3	High
Biological – Human epidemic	C	2-3	Mod-High
Hazardous substances	C	3	High
Mine subsidence	C	1	Low
Infrastructure failure – information technology	C	2-3	Mod-High
Infrastructural failure - electricity	C	2-3	Mod-High
Infrastructural failure – water (urban)	C	2-3	Mod-High
Infrastructural failure – roads and bridges	B	2-3	High
Major Passenger Transportation Crash or Collision – aircraft	C	3	High
Major Passenger Transportation Crash or Collision – marine	C	2	Mod
Criminal Act/ Terrorism	D	4	High



Top 5 Risks: Self-rating

Water	Transport	Electricity	Fuel	Telecomms
Loss of Power Flood Drought Pandemic Single Site Fire <i>Only area with solid contingency plans / mitigation measures is drought.</i>	Flooding Land Instability Tsunami / Surge High Winds Chemical Spills <i>Key improvement areas – tsunami / evacuation</i>	Storms/ cyclone Earthquake Tsunami Volcanic Ash Substation Fire	Loss of Power Storm / flooding Single site fire (NZRC) Road Access Land instability - pipeline	Loss of power Loss of own asset (exchange) Road failure (access to site) Flooding / storm Lack of staff <i>Main area with limited planning is loss of road access.</i>

Methodology and Programme

- 2008:
 - Project Plan
 - Regional risk profile
 - Mobilise first contingency plan: 'Electricity Failure'
- 2009
 - 'Tsunami'?
 - 'Cyclone-Storm'?



Contingency Plans

- What is each agency doing as the event develops/how are they responding? How is the damage assessment information being collected and disseminated?
- Priority sites vulnerability to this hazard/event (column in priority sites list?).
- How might the response change if it is a 'single utility' vs a 'multi-utility' failure?
- Critical resources – what are they, where and how can we get them?
- Considerations for CDEM – what agencies need to be involved?
- Longer-term mitigation options – whose role?
- Other?

