

TRANSPower

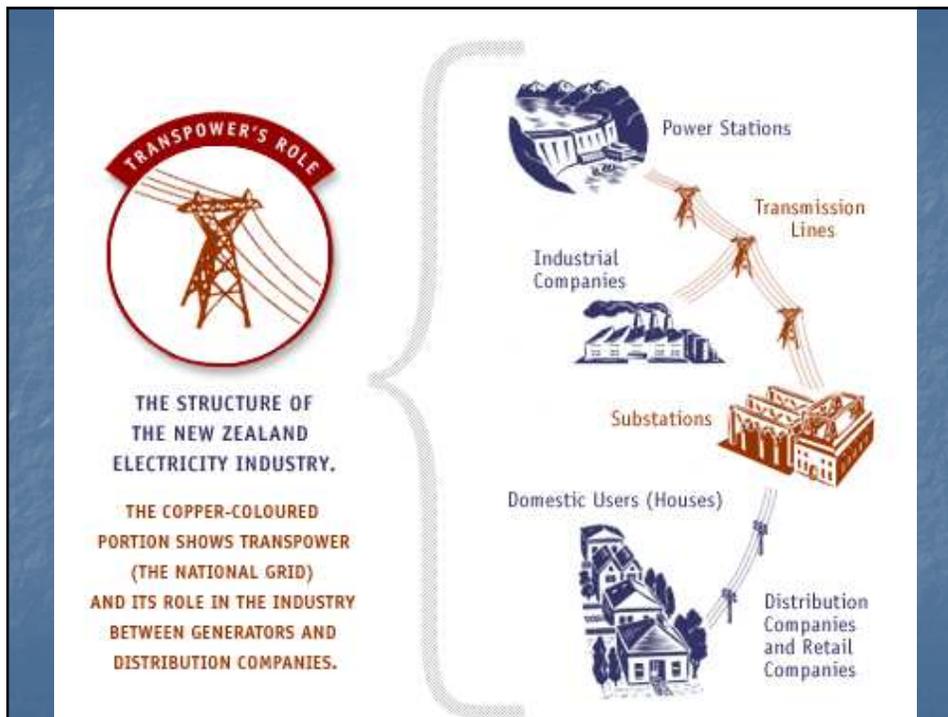
New Zealand Limited

2007 National Lifelines Forum



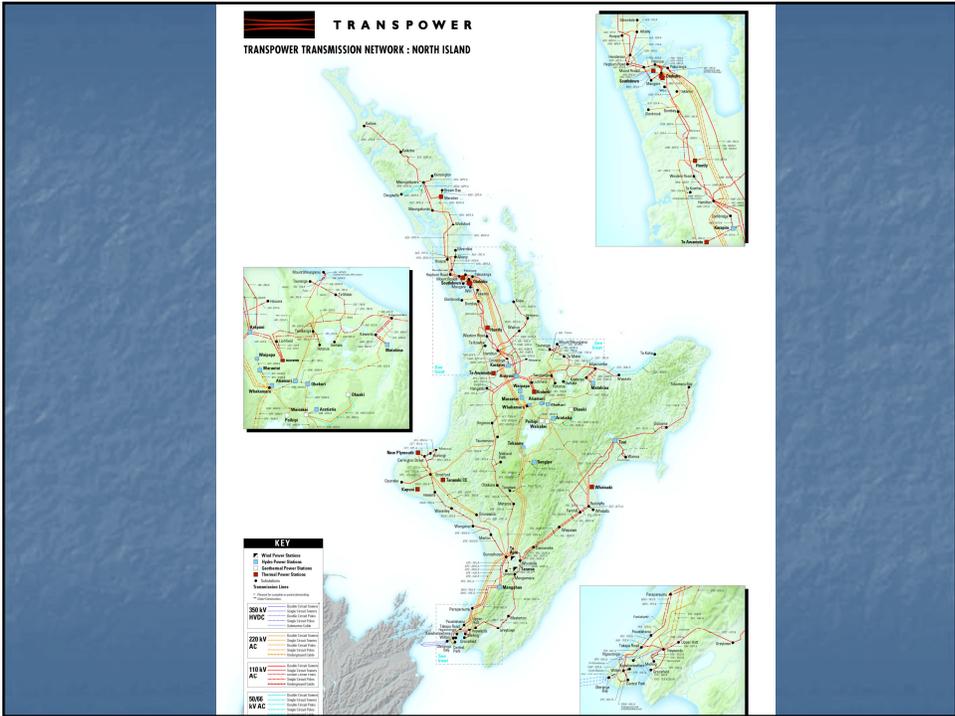
Who is **TRANSPower** ?

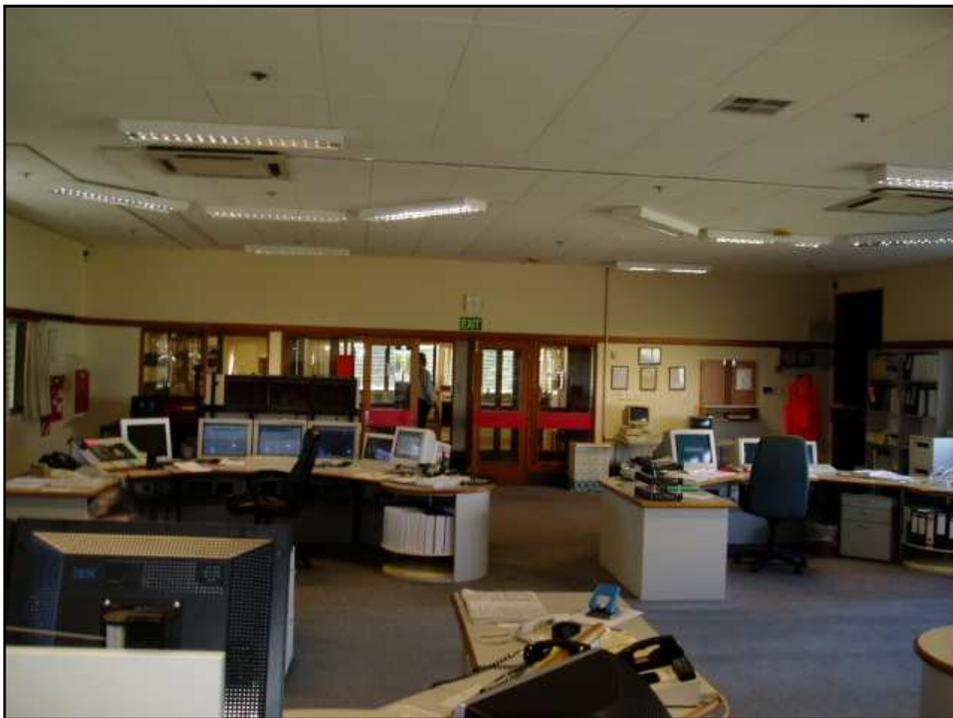
- Links Generators to Distribution Networks and major users.
- SOE owner and system operator of National Electricity Grid
- Generally redundancy built into system, ie more than one line of supply to most major cities

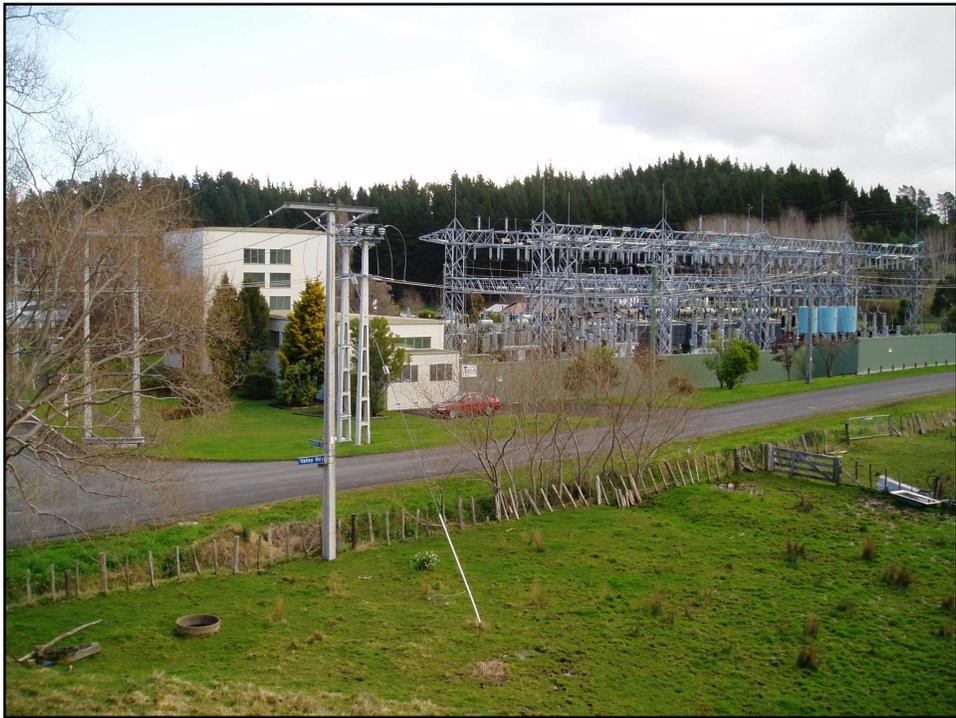


What is **TRANSPOWER** ?

- 12,000 km's of transmission lines
- 170 substations and switchyards
- Stand alone communications system
- National co-ordination centres in Hamilton and Wellington
- Regional operating centres in Otahuhu, Haywards and Islington.













Key drivers for service continuance

- CDEM Act 2002
- System Operator contract with Electricity Commission
- Connection Contracts
- Statement of Corporate Intent

Business Continuity Management in place

- Executive Crisis Management Plan
- Business continuity plans for core functions
- Emergency response procedures for asset management and system operation
- Contingency Plans for specific events

Civil Defence and Emergency Management Act

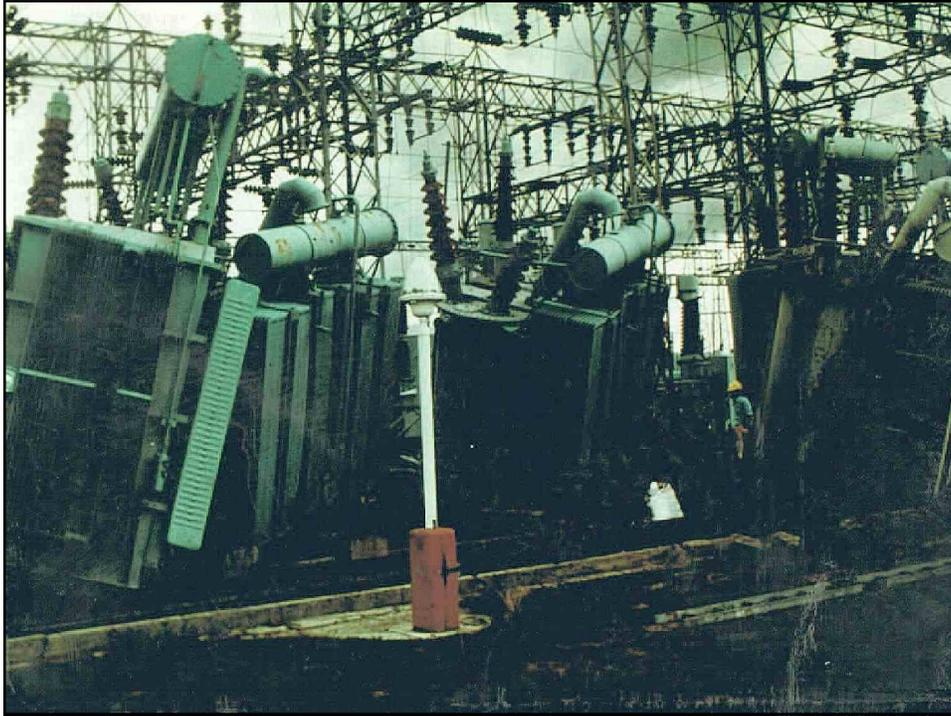
Compliance with Act is based upon the 4 R's

- Reduction
- Readiness
- Response
- Recovery

What could happen?







Risk Reduction

- Ongoing programme of equipment upgrading
- New transmission lines planned to supply Christchurch and Auckland
- Increasing capacity of existing transmission lines
- Programme of vulnerability identification on a national basis (periodic three yearly)

Policy Objectives

- Maintain supplies during and after Edgumbe sized earthquake (MMIX)
- Restore supplies to damaged areas within 5 days
- Ensure safety of public and personnel
- Minimise resulting cost of repairs

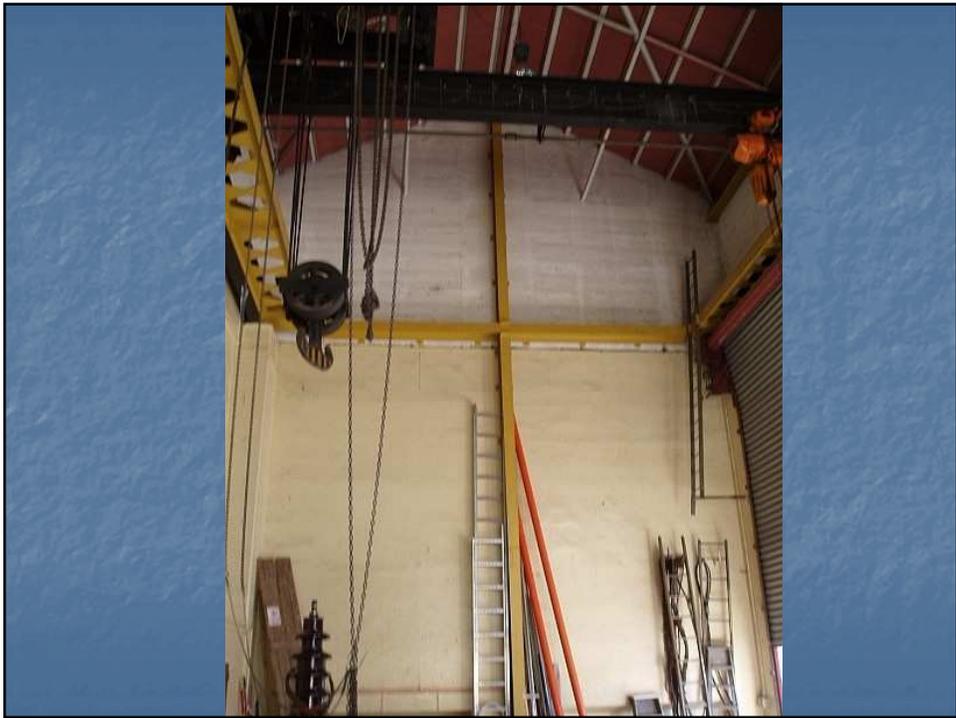
Utility: Transpower		Regional/Local										Asset: Stratford Substation		16 Feb 2005			
Component	Importance	Vulnerability to Hazard										Impact of Damage		Comments	Red Text Denotes Recommended Action		
		Ground Shake	Liquefaction	Landslide	Volcanic eruption	Severe Flooding	Snowstorm	Winter storm	Major Earthquake	Minor Earthquake	Minor Flooding	Minor Snowstorm	Minor Winter storm			Return to Normality	Return to Normality
Transmission lines	5	1	0	1	1	1	1	1	1	1	1	1	1	2	1	2 days	Steel lattice angle towers
Termination towers	5	1	0	0	1	0	0	1	3	2	1	2	1	2	1	2 days	Steel angle lattice with microwave dish
Gantries	5	1	0	0	1	0	0	1	3	2	1	2	1	2	1	2 days	Steel angle lattice - good
Buswork	5	1	0	0	1	0	0	1	3	2	1	2	1	2	1	2 days	Pipe clamped onto insulated concrete posts
Circuit breakers (external)	4	1	0	0	1	0	0	1	3	2	1	2	1	2	1	2-4 days	Mitsubishi old heating oil. Bolted down alstom folded chain Sprecher 220kV gantry
CTs/VTs	4	1	0	0	1	0	0	1	3	2	1	2	1	2	1	2 weeks	cut steel I lattice stand good CT same and PRC posts good
Reactors	4	1	0	0	1	0	0	1	3	2	1	2	1	2	1	1 week	on tall insulaor on angle stands
Water storage tanks																	not hold down
Power transformers	5	1	0	0	1	0	0	0	3	3	3	3	3	3	3	18 months	Ts A SF 33T Red Ph brackets missing/yellow same. Spare part Hd T10 sp PEI hold down good T6 same TS L only
Underground cabling	5	1	0	0	1	0	0	0	3	2	1	1	2	1	1-2 days	Concrete ducts with conc wooden lids	
Communications towers																	On termination tower
Scada	5	1	0	0	0	0	0	1	3	2	3	2	3	2	3	2 days	High post insulators on conc posts ok
Compressors/Tanks	4	1	0	0	0	1	0	1	1	2	3	2	3	2	3	2 days	
Overall building	4	1	0	0	1	0	0	1	2	2	3	1	2	2	3	1 month	Steel beams light metal. CB Bld Confirm CB bolted
Control cabinets and Panels	5	1	0	0	0	1	0	1	3	2	3	2	3	2	3	2 days	Restrain folder cabinet Provide lips holder cabin et Restrain HWC Pavers screwed to timer to conc cabin wood and
Suspended ceilings	1	1	0	0	0	0	0	1	2	1	1	2	1	1	1	N/A	Light hardboard type



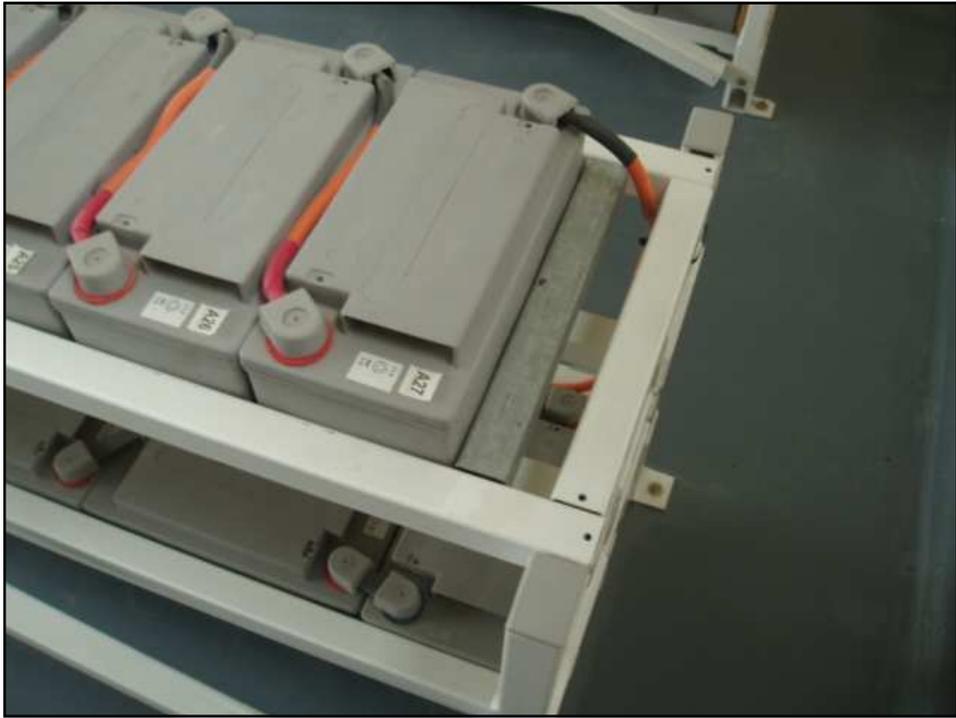














Summary

- National Grid an essential Lifeline
- Operated with real time management
- Over the years has invested heavily in risk reduction as well as risk management
- Ongoing process to keep service as reliable as is practical