Auckland Lifelines Group
3 year highlights

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ALG fosters understanding of Auckland's critical infrastructure

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Highlights:

- Updated in 2014.
- Ongoing updates as significant infrastructure changes occur.

Criticality 1: Nationally Significant

- Failure would cause loss of utility supply to most of region or loss of supply to another nationally significant site that depends on its service.
- Eg: Auckland Airport, Wiri Oil Services Depot, Ardmore/Huia Water Tmt Plants, SH1 / SH16 / SH20

Criticality 2: Regionally Significant

- Failure would cause loss of supply to more than 20,000 customers or reduction in service across the region or loss of supply to a regionally significant site
- Eg: Main cellsite hubs and telephone exchanges, Army Bay (Orewa) Wastewater Tmt Plants

Criticality 3: Locally Significant

- Failure would cause loss of supply to more than 5,000 customers or reduction in service across part the region or loss of supply to a locally significant customer.
- Eg: Smaller community water supplies (eg: Wellsford, Wellsford) and Wastewater tmt plants.



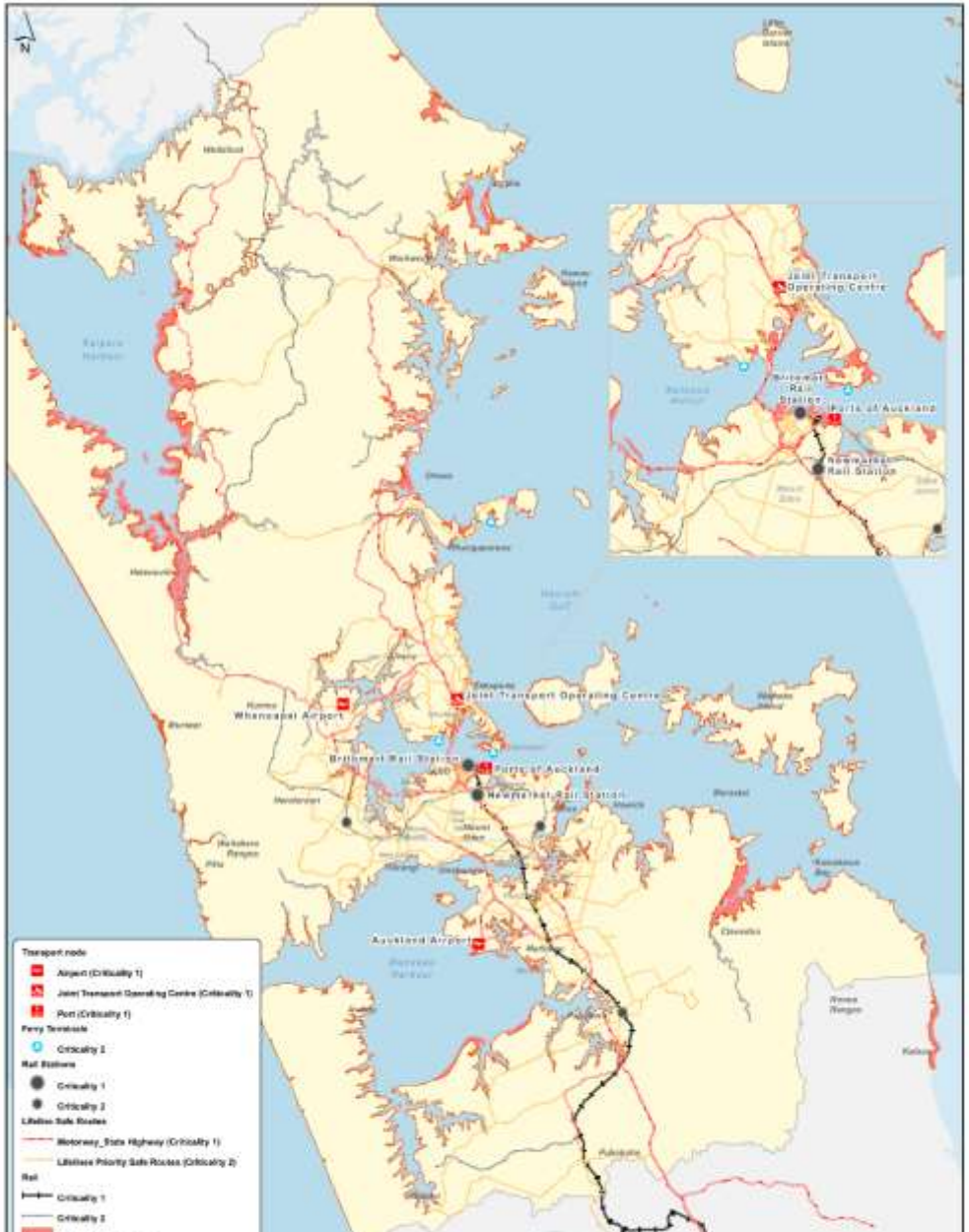
ALG fosters understanding of interdependencies

- at both a network and site level

Dependence on	Electricity	Gas	Fuel	Telecomms	Transport	Water / Waste
Lifeline Utility Sector Reliance						
Electricity						
Gas						
Fuel						
Telecommunications						
Road Transport						
Other Transport						
Water						
Wastewater						
Stormwater						
Community Sector Reliance						
Health						
Police						
Fire						
Banking						
Fast Moving Consumer Goods						

Legend	Critical requirement to maintain service continuity during business-as usual.	Some impact on ability to function. Utility becomes more critical in an emergency.	Not required for network operation, though may require for staff needs.

ALG fosters understanding of infrastructure vulnerability to hazards



Highlights:

- 'AELP-1' was the starting point for the Auckland Lifelines Group
- 'AELP-2' updates completed in 2013.
- Tsunami, Earthquake, Volcano, Storm, Technological Failures
- Will be updated as hazard and lifelines information changes.
- Identification of improvement actions will drive future business plans.

http://www.aelg.org.nz/document-library/critical-infrastructure-reports/

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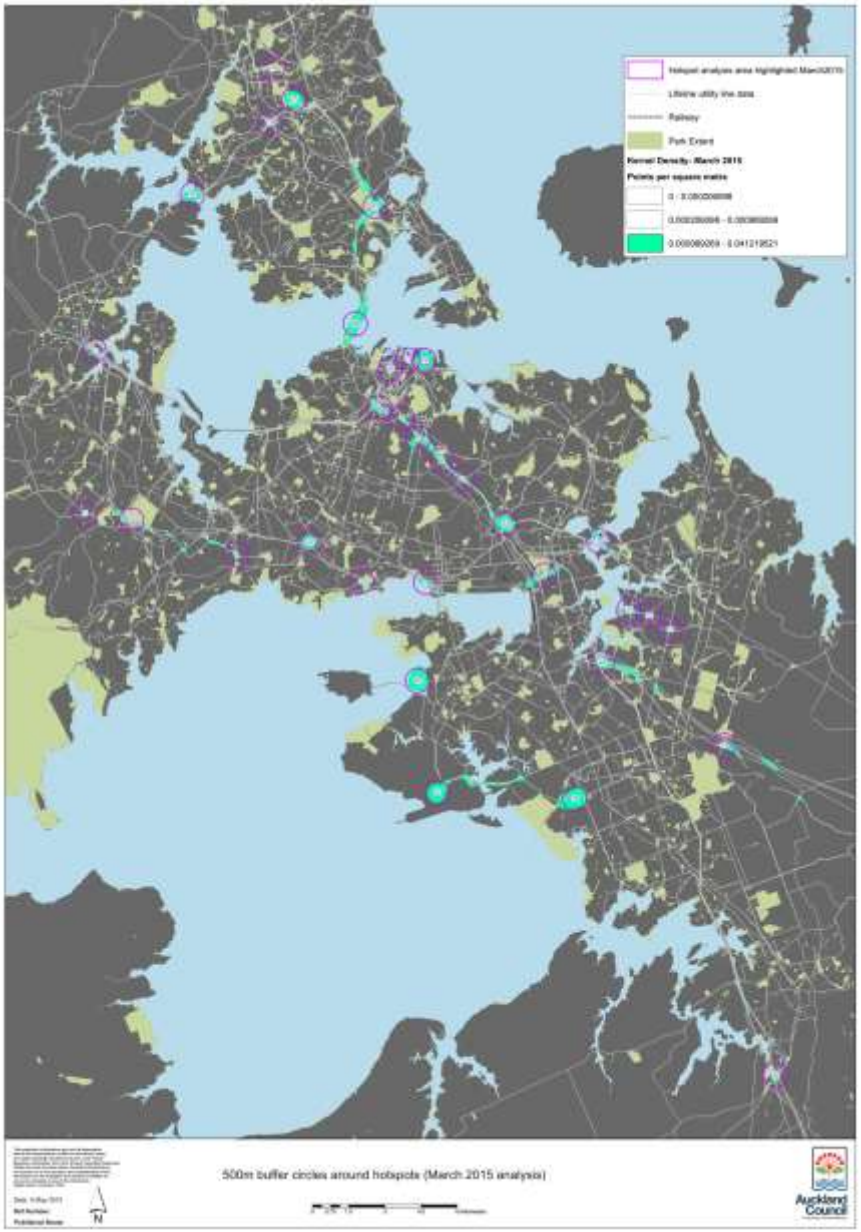
ALG fosters understanding of ‘hotspots’ and ‘pinchpoints’



- **Hotspots:** Place where especially significant assets of different infrastructure utilities or sectors are co-located.
- **Pinchpoints:** Utility asset or site where a satisfactory alternative route is not available and which is therefore essential to service delivery to *critical sites or facilities*.
- *Note: Pinchpoint* is equivalent to a ‘single point of failure’ (a term sometimes used in telecommunications) or ‘bottleneck’ (a term often used in road transport).

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ALG fosters understanding of ‘hotspots’ and ‘pinchpoints’



Highlights:

- Updated in 2014/15
- Used GIS ‘kernel density’ analysis to identify infrastructure hotspots.
- Considered hazards posed by other assets as well as by natural hazards in rating overall consequence of failure.
- Considered out of region pinchpoints.

Overall conclusions:

- Increased resilience of Auckland’s infrastructure – both redundancy and robustness (not quantified).
- Catastrophic failure of hotspot areas is considered very low probability – would require a volcano, meteor, plane crash, terrorism type scenarios.

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ALG Supports Research into Hazard Impacts on Infrastructure

- Additional volcanic ash posters developed
  - Buildings
  - Computers/Electronics
  - Gensets / HVAC
  - Urban Cleanup

- Existing Posters updated to common format
  - Airports
  - Roads
  - Electricity Transmission
  - Electricity Generation
  - Water Supply
  - Wastewater

http://www.aelg.org.nz/document-library/volcanic-ash-impacts/



ALG Supports Research into Hazard Impacts on Infrastructure

- Tsunami Impacts on Infrastructure.
- Joint project with Wellington Lifelines Group.
- Funding from EQC.
- Will soon be available on ALG website.

http://www.aelg.org.nz/document-library/

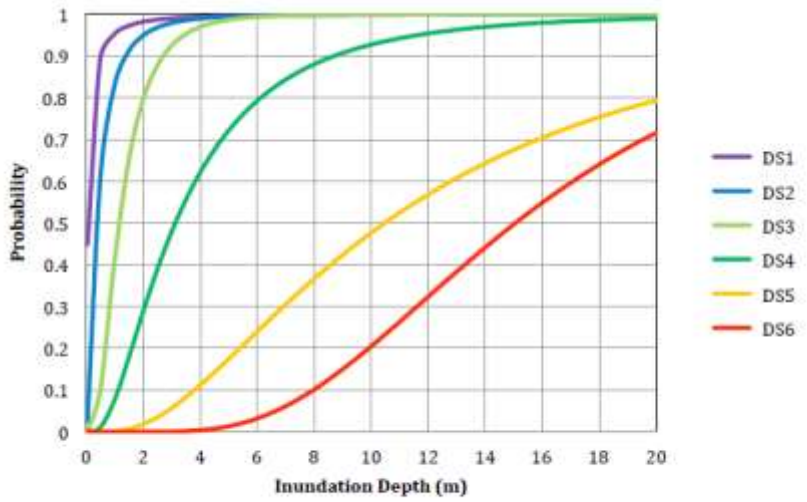


Figure 33 Fragility curve for 3+ storey reinforced concrete building. Source: Suppasri (2013a).

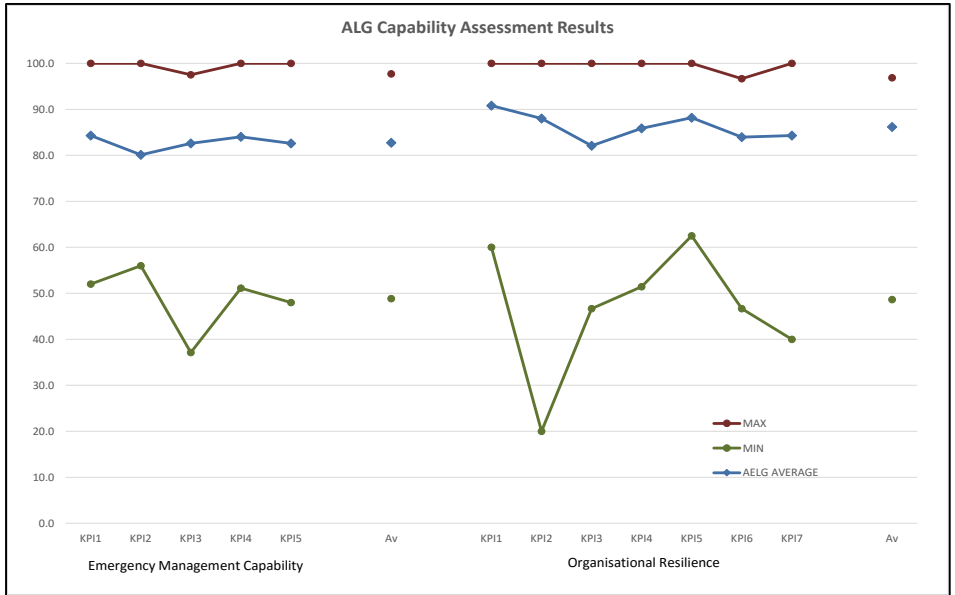
Damage State (DS)	Description
DS1: Minor	Minor flooding, no significant damage to structure
DS2: Moderate	Slight damage to non-structural components and contents
DS3: Major	Heavy damage to some walls but not columns
DS4: Complete	Heavy damage to walls and some columns
DS5: Collapsed	Destructive damage to more than half of walls and columns
DS6: Washed Away	Structure washed away with only foundation remaining

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ALG Coordinates Resilience Benchmarking across the Sector

Emergency Management Capability KPIs
KPI1 Emergency management planning is collaborative and coordinated with CDEM agencies
KPI2 Emergency management planning is collaborative and coordinated with other lifeline utilities
KPI3 Capability to respond to emergencies is developed and maintained
KPI4 Response procedures are pre-determined, documented and tested
KPI5 Recovery policies are planned and implemented

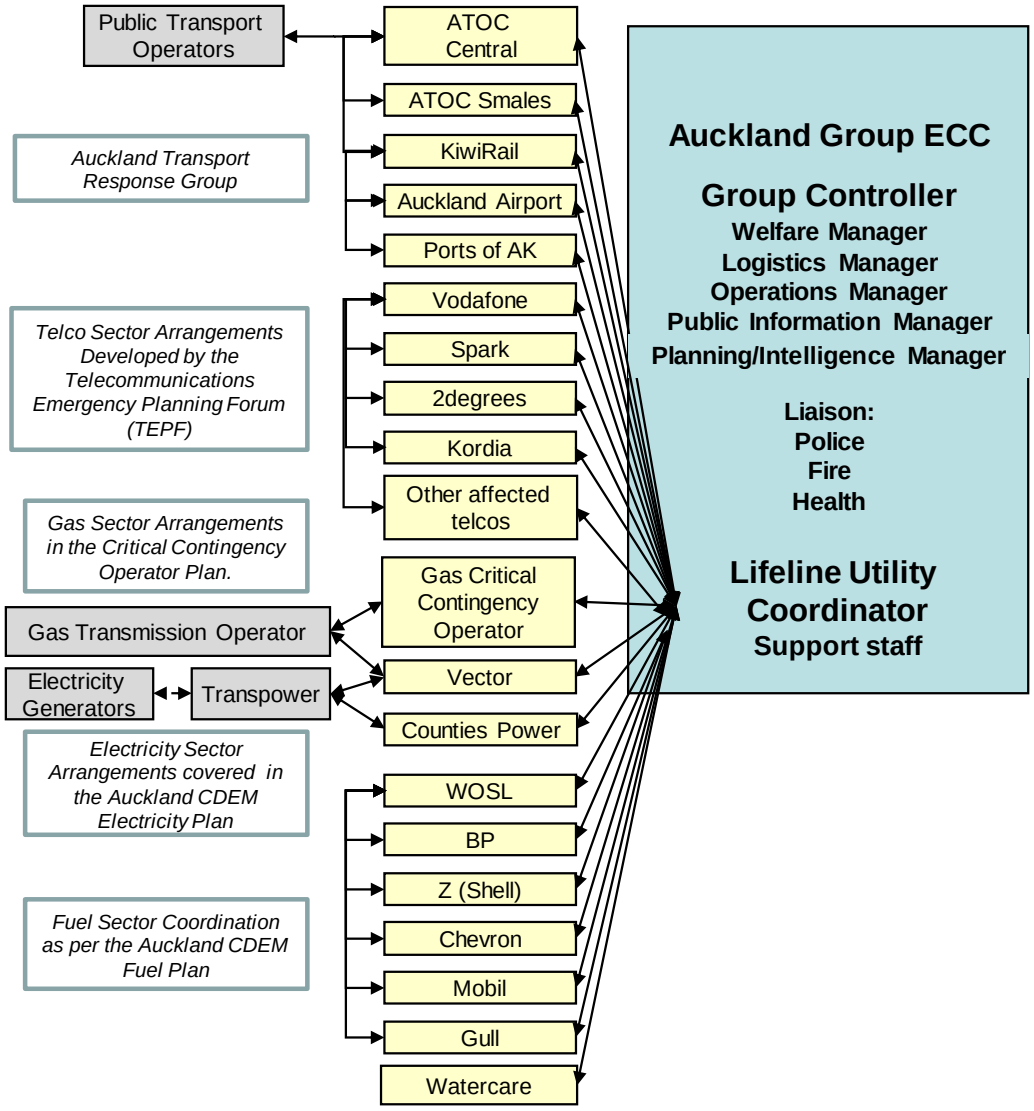
Organisational Resilience KPIs
KPI1 Risk management is comprehensive and integrated throughout the organisation
KPI2 Business Continuity Management has a formalised programme with high-level commitment
KPI3 Critical business functions and processes, and potential impacts on them are defined
KPI4 Business continuity strategies and arrangements are developed and implemented
KPI5 Leadership and culture are enabling of a forward-looking, agile organisation
KPI6 Effective relationships, partnerships and networks are developed
KPI7 Adaptive capacity is fostered through active learning and capability development



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ALG works with CDEM to support lifelines coordination and sector lifelines response protocols

- Auckland Fuel Contingency Plan
- Electricity Emergency Communications Plan
- Lifelines Coordination Protocols
- Sector Coordination Entity Protocols
  - Telecommunications
  - Electricity
  - Fuel
  - Transport
- Exercises (Exercise Mayday)



Lifelines Utilities use ALG information to support their own resilience initiatives

Risk Reduction, eg:

- Mitigation measures in areas of hazard vulnerability / hotspots.
- Network redundancy
- Backup arrangements for critical supply services
- Seismic resilience
- Geological design
- Location, location, location

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Lifelines Utilities use ALG information to support their own resilience initiatives

Readiness, Response and Recovery, eg:

- Alignment of emergency response with CDEM lifelines coordination processes.
- Prioritise service restoration to critical ‘CDEM customers’/sites.
- Identification of ‘priority safe routes’.
- Spare parts, strategically located.
- Pre-deployment of resources.
- Damage assessment procedures.
- Business continuity planning.
- Other corrective actions identified through the Resilience Benchmarking Process.