



New Zealand Lifelines



Lifelines are the essential infrastructure and services that support the life of our community. Water, wastewater and stormwater, electricity, gas, petroleum, telecommunications, and transportation networks including road, rail, airports and ports are all covered.

Introducing Lifelines

Lifeline Utility representatives collaborate with scientists, emergency managers and other professionals in regionally-based Lifeline Groups. The objectives are to reduce infrastructure outage risks and minimise restoration time when outages occur.

The Lifeline Groups undertake projects to reduce vulnerabilities to regional scale emergencies (regional Group activity commenced in the early 1990s). A National Committee was set up in 1999 to foster regional activity and provide a link to Government.

The Civil Defence Emergency Management Act 2002 requires individual Lifeline Utilities to establish planning and operational relationships with CDEM Groups. Lifeline Utilities support the CDEM Groups by exchanging information about their risk management processes and their readiness and response arrangements. In many regions, this flow of information is facilitated by participation in Lifeline Group activities.

In summary, the collaborative Lifelines process provides a framework to support integration of asset management, risk management and emergency management by utilities. The emphasis is on pre-event planning. Post-event operational roles remain the responsibility of individual utilities.

NZ Lifelines Groups

Northland Lifelines Group
Auckland Engineering Lifelines Group
Bay of Plenty Lifelines Group
Waikato Engineering Lifelines Group
Gisborne Engineering Lifelines Group
Manawatu-Wanganui Lifelines Advisory Group
Hawke's Bay Engineering Lifelines Group
Taranaki Lifelines Advisory Group
Wairarapa Engineering Lifelines Association
Wellington Lifelines Group
Marlborough Engineering Lifelines Group
Nelson-Tasman Engineering Lifelines Group
West Coast Engineering Lifelines Group
Canterbury Lifeline Utilities Group
Otago Engineering Lifelines Group
Southland Lifelines Group

promoting infrastructure resilience

Lifeline Group Activities

Lifelines Groups are now established in nearly all regions of New Zealand (see listing on front page). Most have informal relationships with regional Civil Defence Emergency Management (CDEM) Groups, with some having specific CDEM roles.

Membership of Lifelines Groups is voluntary. Funding is typically contributed by participating organisations but usually only covers the cost of a co-ordinator/facilitator. Participating utilities make significant 'in-kind' contributions through involvement in Lifeline Group work programmes.

Traditionally, a main Group activity is a project aimed to identify key regional infrastructure vulnerabilities, often including a list of critical areas where many services may congregate (e.g. bridges with other services attached). The documents that result typically include mitigation recommendations. When viewed collectively, mitigation recommendations are often seen to have greater benefits than individual asset owners would take into account.

Lifelines Groups are also involved in readiness activities with outputs often including agreed priorities for disaster restoration (including priority routes), petroleum disruption planning and emergency communications arrangements.

While there has been a traditional emphasis on natural hazards, work encompasses all infrastructure outage risks. The overall outcome is a much greater



Above: Ferrymead Bridge, Christchurch, under redevelopment. This photo, taken soon after the February 2011 earthquake, shows extensive riverbank damage and liquefaction in the area. Credit: H.A. Cowan.

understanding of regional vulnerabilities and interdependencies. Individual Utilities are encouraged to take these matters into account in developing their response plans and business cases for new investment.

The various outputs from a Lifelines Group provide valuable material for Emergency Managers at regional and local levels, enabling a better understanding of regional vulnerabilities. This facilitates risk communication with the community, including the business sector, in turn assisting their planning.

Utilities face strong commercial drivers to reduce outage risks. Additional benefits from continued Lifeline services accrue to the community at large. Lifeline Utilities are encouraged to take the wider societal view into account when considering resilience enhancements.



Left: Installation of a temporary transformer at the New Brighton substation, Christchurch, following the February 2011 earthquake. An emergency 66kV overhead line was also quickly built to supply the area. Credit: Orion New Zealand.

Key Observations and Outcomes

Key observations from Lifelines projects, overseas study tours and New Zealand experience include:

- Many utility assets are highly vulnerable to natural hazards, particularly those located where ground deformation could occur or in floodplains.
- All utilities are critically dependent on other utilities. Electricity is needed for pumps and telecommunications (to mention two examples), telecommunications is needed for control equipment and emergency response, and road access is needed for reconnaissance and access to sites where repairs are needed. Restoring services to other utilities (and to their contractors and consultants) is therefore vital for the broader community recovery.
- There is also a growing awareness of vulnerabilities within individual utility organisations. For example, outsourcing key functions can add to service continuity challenges especially in emergencies.

Right: Lines damaged in Christchurch earthquake. Kiwi Rail carried out quick repairs at this and other damaged sites.

A considerable range of mitigation and readiness improvements have been undertaken by individual Lifeline Utilities in the past two decades. Lifeline Group activities have often sharpened the focus and lent a greater sense of urgency to this valuable work, much of which is not expensive. Individual and collective Lifeline mitigation work proved most valuable in facilitating resumption of Christchurch infrastructure services following the 2010 and 2011 earthquakes.



The New Zealand Lifelines Committee

The New Zealand Lifelines Committee (NZLC) maintains a watching brief over the activities of the various regional Lifelines Groups. The Committee seeks to ensure that new ideas and key learnings are actively exchanged between the Groups.

The NZLC's focus is:

'Enhancing the connectivity of lifeline utility organisations across agency and sector boundaries in order to improve infrastructure resilience'

The NZLC has adopted three themes to frame work on infrastructure resilience. These are the need for:

- Robust assets, or satisfactory alternative service continuity arrangements.
- Effective coordination, pre and post-event, at national and local levels.
- Realistic end-user expectations, so that users are risk-aware and better able to consider options.

The principal functions of the NZLC are:

- Advising Lifelines Groups on best practices across a range of activities, including encouraging new projects and supporting them by offering information on methodology and other learnings from projects in other regions.
- Providing a link between Lifelines activities and government – relevant government programmes include Lifelines work within the Ministry of Civil Defence & Emergency Management and national infrastructure planning within Treasury.
- Promoting resilience-related research and disseminating the results from regional, national and international research so that improvements can be included as businesses cases are developed for new investments. Capturing the learnings from the 2010 and 2011 Christchurch earthquakes is a key focus.
- Organising the annual National Lifelines Forum. The Forum updates representatives from Lifeline Groups and national utilities on latest developments, and provides an opportunity to develop positions on common resilience-related issues.

Current NZLC members

The following organisations are the current NZLC members:

- Telecom NZ Limited
- Transpower New Zealand Limited
- New Zealand Transport Agency
- Vector Limited
- Water New Zealand
- Ministry of Civil Defence & Emergency Management
- Ministry of Business, Innovation and Employment
- Earthquake Commission
- GNS Science



Above: New watermain under construction beneath Mangere Bridge, Auckland. Collaboration is often required between different infrastructure owners when new construction or maintenance are planned. Credit: Watercare Services Ltd

Further Information

Please visit the New Zealand Lifelines Committee website: www.nzlifelines.org.nz

or contact the Chair or Principal Advisor, New Zealand Lifelines Committee, for further information:

Chair: Dave Brunsdon

Phone: +64 21 679 338

Email: db@kestrel.co.nz

Principal Advisor: Tony Fenwick

Phone: +64 4 293 8493

Mobile: 021 550 423

Email: tony.fenwick@ihug.co.nz