



**Annual Activity Summary and Status Report
from Lifelines Groups and the
National Engineering Lifelines Committee**

31 October 2009



National Engineering Lifelines Committee

The activities of the National Engineering Lifelines Committee (NELC) for the 2008/09 financial year are summarised in the Annual Report issued in September 2009. Additional copies of this report can be obtained from the National Engineering Lifelines Co-ordinator at db@kestrel.co.nz

The past year for the National Engineering Lifelines Committee (NELC) has involved two principal areas of focus:

- ◆ Promoting the need for central government to take a leadership role in developing and co-ordinating infrastructure resilience arrangements at a national level
- ◆ Supporting the regional Lifelines Groups in terms of their strategic direction and activity programmes, and their interface with national utilities

Work on promoting infrastructure resilience has involved working with central government's infrastructure agencies, and making submissions to the new Government's Infrastructure Ministers and the newly established National Infrastructure Unit. In the face of the current economic situation and changes due to the new government, this continues to be a 'long game'. This will continue to be the strategic focus of the NELC during 2009/10.

The NELC undertook two specific projects during 2008/09, both following on from Exercise Ruaumoko in March 2008. The first project consolidated the key learnings for lifeline utilities from the exercise, and was undertaken in conjunction with the Auckland Engineering Lifelines Group. The second looked at scoping up a process for identifying nationally significant infrastructure, and was undertaken in conjunction with MED.

The annual two-day National Lifelines Forum has continued to be strongly supported, with a record number of participants registering for the 2008 Forum in Wellington.

The workplan of the NELC for 2009/10 follows the same structure and basis as the previous year's activities. The key theme remains supporting the enhancement of infrastructure resilience, with work being undertaken within the following principal activity areas:

1. Promoting Infrastructure Resilience - Supporting Engineering Lifelines Groups
2. Facilitate greater interaction between national lifeline utilities, and with CDEM
3. Active research linkage between the lifeline utility and research sectors to enable the effective transfer of research (science to practice)
4. Co-ordination of specific projects (including identifying nationally significant infrastructure)

Water NZ (formerly NZ Water and Wastes Association) has joined the NELC during this year. The current members of the NELC are:

- | | | | |
|------------------|--------------------------|--------------------|--------------------|
| • Dave Brunsdon | <i>NELC Co-ordinator</i> | • Hugh Cowan | <i>EQC</i> |
| • Ian Cox | <i>NZTA</i> | • Alan Walker | <i>MCDEM</i> |
| • Ian Burgwin | <i>Transpower</i> | • Peter Whitehouse | <i>Water NZ</i> |
| • David Reason | <i>Telecom</i> | • Andrew King | <i>GNS Science</i> |
| • Steve Ilkovics | <i>Vector</i> | | |

Significant inputs into the work of the NELC are provided by Tony Fenwick and Mark Constable.

Northland Lifelines Group

The Northland Lifelines Group (NLG) was convened by the Northland Regional Council in 2004 and continues to have sixteen organisations actively participate in the group.

Over the last year the NLG has been working on:

- Updating the *Northland Priority Utility Sites* report and maps, in line with the revised criticality criteria developed by AELG for 'national', 'regional' and 'local' significant assets.
- Arranging for access to DoC radio channels as an emergency back-up for lifelines/CDEM communication. A protocol for using the DoC channel has been developed.
- Developing an 'infrastructure risk profile' for the region, assessing at a high level the impact on infrastructure from hazards and interdependencies between Northland's networks.

The risk profile enabled us to identify the highest hazard risks to our infrastructure. This has led to the development of a regional power outage contingency plan (in progress) which outlines utility preparedness and response to a significant regional power outage.

The NLG adopted a business plan in July this year, effective through to Jun 2011. The business plan sees continuation of the approach of sequentially assessing the impact of the high risk hazards (as identified in the risk profile) and identifying mitigation actions and developing contingency plans where appropriate. Tsunami assessment is next on our list.

Key Contacts:

Simon Weston

Chair

simonw@wdc.govt.nz

Graeme McDonald

Convenor

GraemeM@nrc.govt.nz

Lisa Roberts

Project Manager

laroberts@xtra.co.nz



The Auckland Engineering Lifelines Group is still an active group with 24 funding organisation members (soon to be a lot less!). The Volcanic Impact Study Group (a committee of AELG) continues to be very active in promoting research into volcanic ash impacts on infrastructure. The AELG Chair continues to represent utilities on CEG.

Over the last year we have:

- In association with NELC, prepared a report summarising the 'Exercise Ruaukoko' impacts on utilities and potential mitigation actions that would have reduced the impact (a result of sector workshops held post-exercise).
- Updated our website with the addition of a members-only area for details such as contact lists, confidential project information, draft documents for member review, meeting times/minutes, etc.
- Completed a project on the volcanic ash impacts on electricity and telecommunications / broadcasting networks, followed by a poster for electricity managers responding to an ash event.
- Held a breakfast seminar in 2009, which included an MfE-led workshop to assess the impacts of climate change on Auckland's infrastructure.
- Carried out a detailed review of tools and methodologies available for us to carry out the *Auckland Engineering Lifelines Project Phase 2*.

As part of the latter piece of work, we then sought a proposal for the implementation of AELP 2 using 'Riskscape'. We also carried out a review of utility data available to implement Riskscape, reviewed our categorisation of 'critical assets' and prioritised the hazard risks to utilities.

We are now committed to moving forward with AELP 2 and updating our 'Lifelines Project Report' using more traditional tools; ie, the GIS to overlay hazards and utilities and a workshop-based approach to assessing the impact on hazards, recovery times and interdependencies. We have not eliminated the possibility of using more sophisticated technology in the future (such as Riskscape), but have determined it is not a good short-term option for us.

Another challenge over the next year will be adjusting our model and business plan to work with the new local government structure.

Lisa Roberts
Project Manager
laroberts@xtra.co.nz

Allan Mordecai
Chair
Allan.Mordecai@kordia.co.nz



The Utility Vulnerability Assessment & Prioritisation Project continues and will be substantially completed by the end of this financial year.

The Emergency Communications Plan has been updated and is in the process of being installed on individual password protected USB sticks. The purpose of the change is to allow updating to be carried out more easily, direct access to email addresses, security, while retaining the ability to have a hard copy. It also significantly reduces overall costs to produce and maintain the information.

In terms of the originally proposed Regional Climate Change Impact Project, it was decided that a staged approach was more desirable, commencing on a broad-brush basis and followed by detailed assessments of the potential impacts of climate change on specific utilities, especially those critical utilities identified in the Utility Vulnerability Assessment Project.

The Lifelines Group has been involved, primarily through the Project Manager's participation in the Pandemic Working Party, in the current influenza A (H1N1) pandemic.

A Waikato Region Fuel Supply Status Project has been developed and implemented to determine approximate quantities of fuels that may be available in the Region at any one time, the locations of fuel outlets, their respective abilities to operate without power and sources of bulk fuel. The intention is for this information to be collated with the Utility Vulnerability Assessment Project. To date some responses from the fuel industry have been received.

The year culminated in a well received Annual Seminar in Thames in July 2009 and was combined with the Bay of Plenty Lifelines Advisory Group. The combined seminar appears to be a very successful model and will be continued. As with all seminars, the success, or otherwise, is largely dependent on the presenters and we were again fortunate to have high calibre presenters, including the Minister of Civil Defence. The seminar was rounded off with a trip around the Thames area to view areas that have been impacted by severe weather events and also works being completed to reduce potential impacts.

John Harris
 Waikato Engineering Lifelines Project Manager
john.w.harris@xtra.co.nz

Bill Ashurst
 Chairman
bill.ashurst@genesisenenergy.co.nz

Bay of Plenty

Lifelines Advisory Group



The Utility Vulnerability Assessment Project is underway and has involved workshops around the Region to introduce the project and provide guidance as to its objectives and outcomes and instructions on providing the relevant information. Some completed forms have already been received.

A Bay of Plenty Region Fuel Supply Status Project has been developed and implemented to determine approximate quantities of fuels that may be available in the Region at any one time, the locations of fuel outlets, their respective abilities to operate without power and sources of bulk fuel. The intention is for this information to be collated with the Utility Vulnerability Assessment Project. To date some responses from the fuel industry have been received.

The Lifelines Group has been involved, primarily through the Project Manager's participation in information sharing, in the current influenza A (H1N1) pandemic.

Development on the Emergency Communications Plan continues.

The year culminated in a well received Annual Seminar in Thames in July 2009 held in conjunction with the Waikato Engineering Lifelines Group (refer to previous page).

John Harris

Bay of Plenty Lifelines Project Manager
john.w.harris@xtra.co.nz

Greg Wilson

Chairman
greg.wilson@envbop.govt.nz

Gisborne Engineering Lifelines Group

Dave Hadfield

Lifelines Group Co-ordinator
Daveha@gdc.govt.nz

Hawke's Bay Engineering Lifelines Group

Nigel Simpson

Hawke's Bay CDEM Group Co-ordinator
Simpson@hbrc.govt.nz

Taranaki Lifelines Advisory Group

The Taranaki Group has representatives from Methanex, New Plymouth District Council, Stratford District Council, South Taranaki District Council, Contact Energy, PowerCo, Trust Power, ABB Ltd, TransPower, Vector, Chorus, Port Taranaki, Liquigas, Shell Todd Oil Services, Origin Energy, NZTA, and KiwiRail.

The group meets regularly on a quarterly basis and also meets at each member's site to get an understanding of each others' role and interoperabilities.

In the last 12 months the Taranaki Group has undertaken/ achieved the following:

- Adopted new Lifelines Advisory Group Standard Operating Procedures
- Held a Tier 2 CDEM operational exercise to test the Standard Operating Procedures. This exercise "Exercise Billow" was a volcanic eruption of Mt Taranaki played out on 13 November 2008. Overall the exercise was successful but did expose some system inadequacies.
- Held a training session "Electricity 101" for Group members to gain an understanding of how the electricity networks in Taranaki operate.

Additionally the Group has commenced the following projects:

- Priority infrastructure sites: Identification of key sites and creation of GIS layers for these sites at Taranaki's EMO.
- Generator Review: A stock-take of generator needs and sources.
- Disaster Reconnaissance: Planning for co-ordinated reconnaissance following a disaster.

John Sutton

Lifelines Co-ordinator
suttonj@npdc.govt.nz

John Jones

Lifelines Co-ordinator
jjones@stratford.govt.nz

Mike Langford (EMO)

Mike.Langford@trc.govt.nz

Manawatu Wanganui Lifelines Advisory Group

The Manawatu Wanganui Region Lifelines Advisory Group (LAG) had a very successful meeting on 17 April 2009 at the Horowhenua District Council offices with about 20 attendees. The main focus of the meeting was to discuss the EMNet GIS Web Portal (emergency management web portal) concept that Adrienne Bonnington and others at Horizons Regional Council are developing in conjunction with the Hawkes Bay group. A comprehensive proposal was presented and feedback provided by the Group.

A comprehensive updating of the LAG membership contact list details was undertaken in April 2009.

Braden Austin

Chair
bradena@horowhenua.govt.nz

Shane Bayley

Convener
Shane.bayley@horizons.govt.nz



At the WELA AGM held in Masterton on 3 July 2009, Colin Wright, CEO Carterton District Council, was re-elected Chairman of the Executive Committee. The feature session at the AGM was a presentation on Tsunami by Dr Iain Dawe, Natural Hazard Analyst for Greater Wellington Regional Council. The presentation consisted of an overview of Tsunami, the risk to the Wairarapa coastline, the significance to engineering lifelines and the inundation mapping he has been working on with partner agencies.

The Wairarapa Engineering Lifelines Association (WELA) has made some steady progress during the past year on several projects.

Six projects were adopted at the 2007 Annual General meeting as the basic work plan for the following three years. Work on two of these projects – Priority Emergency Routes and Priority Utility Sites for Response and Recovery – is now substantially complete. The current emphasis is on the Audit, Mitigation, and Upgrade project which involves updating the comprehensive 2002 WELA Report.

Some progress has also been made on the other remaining projects which are:

- Local Lifelines Interaction during Response and Recovery
- Fuel Supply in the Wairarapa.

In addition, WELA is following the WeLG methodology to produce a Critical Areas or 'Hotspots' summary.

George Butcher
WELA Project Manager
fernleigh@xtra.co.nz

Craig Hamilton
Secretary WELA
Craig.Hamilton@gw.govt.nz



The 2008/09 year for Wellington Lifelines Group commenced with a Discussion Paper which established criteria to assist in identifying and selecting future projects to be undertaken by WeLG. This document also reviewed all of the major projects previously undertaken by WeLG, thereby providing a good background for newer members.

The following prioritisation and decision criteria were identified:

- The degree to which the project outcomes can or should be implemented directly by sectors and individual lifeline utilities
- The number of lifeline utilities (and sectors) that would benefit from the project
- The number of local authorities that would benefit (geographical parameter)
- The range of hazard categories that the project would apply to
- The degree to which the impact of a hazard or risk would be reduced as a result of the application of the project outcomes (level of mitigation)
- The degree to which the time to restore basic and normal levels of service would be reduced as a result of the application of the project outcomes
- The urgency of the issue (and potential for the risk to increase)

This work highlighted that the development of a framework to quantify the benefits and justify mitigation for 'low probability/ high consequence' events was still the area of greatest need for most members. A significant project to address this is being undertaken jointly with Greater Wellington Water and GNS Science, and is in the second of three stages. A Discussion Paper has highlighted the likely duration of disruption of utility services following a Wellington Fault Earthquake. Current work includes the development by BERL of a framework to determine the economic cost of disruption due attributable to Lifeline Utilities. Further work will include consideration of extended workforce effects on the lifeline restoration process (eg. if schools closed), and categorisation of post-earthquake levels of service during the recovery process.

An update of the Critical Areas (or hot spots) listed in the 1993 WELG Report has been undertaken to reflect the risk reduction measures that have been implemented since then. There has been a wider debate in other regions and at national level as to what constitutes a 'critical area', and the level of analysis to apply in a collaborative project of this nature, and a uniform approach has yet to emerge. The WeLG work has focused on qualitatively reviewing whether the risk profile of the original critical areas has reduced, is unchanged or worsened, and has looked at flooding and coastal hazards in addition to earthquake. Five critical areas (Thorndon, Petone foreshore, Paekakariki to Pukerua Bay, Haywards and Seaview) are highlighted as having the highest risk across these hazard categories.

As part of this work, maps of all utility trunk networks in electronic form are being collected for storage and use by Greater Wellington Emergency Management. This information is a fundamental building block for any emergency management planning and lifelines activities, and will have a much wider application than just this project.

Dave Brunsdon
Project Manager
db@kestrel.co.nz

Cr Ian Buchanan
Chair
ian.buchanan@gw.govt.nz

Marlborough Engineering Lifelines Group

The Marlborough Engineering Lifelines Group was established in February 2008. A workshop at the inaugural meeting was used to map the critical infrastructure in the region and identify any 'hotspots.' Maps of the critical infrastructure have been published in a secure area of the Marlborough District Council website. During 2008/09, MELG have worked on improving the quality and usability of the critical sites maps and have co-operated with MDC whilst they completely revised and updated their website.

During 2008/009 there has been a focus on investigating and evaluating the risk of tsunami to the Marlborough coastline. In June/July Lifelines members assisted in the preparation for a major civil defence exercise. They were asked to consider the scenario and consequences on their assets of a major tsunami striking the east coast, and devise realistic injects for the exercise. Marlborough Civil Defence team coordinated the individual specialist contributions of the service providers into an overall exercise. The exercise held in August 2009 tested the emergency services, utility operations and civil defence emergency event management.

In May 2009 MELG commissioned a report on Tsunami Risk Gap Analysis in Marlborough. The report was a desktop review of the published research and other sources of information on tsunami hazard in New Zealand and interpreted the information that was relevant to the Marlborough coast. The report identified the deficiencies in available knowledge and suggested priorities for further work and investigation.

Discussions were held with the Local Authorities Protection Programme on the funding opportunities for detailed tsunami inundation modelling of the Cloudy Bay area.

A report prepared by CEG "Fuel Storage in Marlborough" was tabled at the MELG meeting in November 2008. The report included a survey of the fuel stored in the region by retailers, service organisations, businesses and contractors. It also investigated fuel transport routes, road and sea tanker availability, emergency pump availability and restocking routines. Copies of the report were distributed to assist members with their contingency planning.

Marlborough District Council co-operated with a research student at Auckland University to model the vulnerability of the Blenheim sewer network to major earthquake. A number of different models were used for several different earthquake events and a range of possible consequences established. The information will be used for contingency planning.

Preparations are being made for a Lifelines meeting and workshop in December 2009. The workshop will develop the technique used for tsunami exercise where service providers assist in devising the likely outcome of a major earthquake to their infrastructure. The utilities will consider their outcomes independently but present them to the group over a developing timeline. Participants will be encouraged to challenge the assumptions of the service providers and explore the interdependencies.

Mark Nelson

Lifelines Co-ordinator

Mark.Nelson@marlborough.govt.nz

Nelson Tasman Engineering Lifelines (NTEL)

The NTEL Group, working through and as a sub-group of the Nelson Tasman CDEM Group's Reduction Committee, has continued to consolidate throughout 2009. The Group includes representatives of 15 member organisations.

Group meetings were held on 31 March 2009 and 11 August 2009. The meetings have involved presentations and discussion of relevant topics. Information gaps continue to be identified and prioritised into potential and specific research projects, to be completed as funding permits.

A desktop study of back-up fuel supplies across the region was completed and presented to the group by Lea O'Sullivan of Opus International Consultants. The recommendations of the study are to be investigated for future implementation.

The completed revised NTEL Report was republished and adopted by the CDEM CEG Group. The report revision included completing reviews of key individual vulnerability issues, and review of Natural Hazards information.

Upcoming Meetings:

- 2 Dec 2009: NTEL Group meeting
- March 2010: NTEL Group meeting

Potential and specific projects proposed for the next 12 months, include:

- Development of a database/register of emergency backup generator availability;
- Understanding of regional communication systems;
- Research into the findings of the Regional Fuel Study and implementation of the reports recommendations.

Aside from voluntary time, limited funding is made available for Lifelines work within the Nelson Tasman region. The survival, activities and ongoing project work are dependent on the availability of funding from external sources, and for the funding provided for by EQC, the group is greatly appreciative.

Kim Arnold

Nelson Tasman Engineering Lifelines Group Co-ordinator

Kim.Arnold@tasman.govt.nz

West Coast Engineering Lifelines Group

The WCELG is continuing to meet twice a year with a very high commitment from its thirteen member organisations. The meetings provide for effective sharing of knowledge and integrated future planning.

Following on from the completion of the West Coast Engineering Lifeline Reports, member organisations are committed to implementing the resulting recommendations. Progress is reported to the WCELG at each meeting.

The Group has established a close link with the West Coast Co-ordinating Executive Group (CEG), with the Chair of the WCELG now attending CEG meetings as the CDEM Manager.

A joint project with the CEG resulted in a Fuel Storage Report being completed for the West Coast in 2008. Seed funding from MCDEM and EQC enabled this project to take place. The Fuel Storage Report provided:

- A snapshot of the types, quantities, and locations of fuel storage in the Region;
- Identified major transporters and main distribution routes of fuel;
- Identified alternative options to transport fuel into the region should road routes be cut;
- Established which organisations/business were able to access fuel without power; and,
- The current arrangements in place to provide fuel in emergencies.

A series of recommendations have been developed for both the CEG and Lifelines Group to progress with to ensure better access to fuel in emergencies. Progress is being made with standby generator connections installed in some service stations. More work is required in this area, with support at a national level from MCDEM and the fuelcos.

The local authorities incorporated standby generators, anti-burst valves on reservoirs and reticulation renewals in their 2009-2019 LTCCP's, all of which contribute to lifeline resilience. NZTA continues to place strong emphasis on route security for the essential State Highway lifelines serving the West Coast. Power, telco and rail authorities have reported steady improvements to infrastructure during the year. Replacement of the Arahura road/rail bridge has dramatically increased the resilience of State Highway 6 and the Hokitika rail link. Solid Energy has made a positive contribution to the West Coast Lifelines Group, with offers of significant fuel reserves, plant and skilled staff in case of emergency. Use of diesel locomotives as standby generators has been discussed.

Steady improvement in Lifelines resilience will continue to be the focus for the coming year, plus improving access to fuel supplies in emergencies. Maintaining up to date Lifeline Utility Response and Recovery Protocols is an ongoing task.

The October 2009 Exercise Ru Whenua, based on an Alpine Fault earthquake, demonstrated the likely scenario that lifelines co-ordination at the GEOC is going to be understaffed early in the emergency, with those persons identified as co-ordinators fully committed to their own organisations.

Rob Daniel
Lifelines Co-ordinator
rob.daniel@westlanddc.govt.nz

Nichola Costley
Emergency Management Officer
nc@wcrc.govt.nz

Canterbury Engineering Lifelines Group (Soon to be “The Canterbury Lifeline Utilities Group”)

This report follows the same format as previous years as it also serves as a brief introduction to Canterbury Engineering Lifelines Group (CELG) for newer members, not only for the National Lifelines Forum. The initial Christchurch Engineering Lifelines Project was completed and reported in “Risk and Realities” in November 1997. This book continues to be sold as a reference for new projects and for new staff. Since then the work was extended with the object of covering the whole of Canterbury.

Retirement of John Lamb as CELG Manager

The changing over of responsibilities to Mark Gordon is now nearly complete. John Lamb now has no role in response and shortly Mark Gordon will have the new title of Project Manager.

Lifelines & Emergency Management

The CELG Manager is a member of the Co-coordinating Executive Group (CEG) of the Canterbury Civil Defence and Emergency Management Group and this link has had very real benefits in that funding is now being provided for several Engineering Lifelines projects. These projects have been the main focus of activities this year.

Four major projects were included in the 2008/9 budget - Hazard Assessment for Petroleum (storage transportation and supply) Phase 2, Priority Sites and Routes for Recovery, Critical Infrastructure Manual Back-up and an Interdependencies Project. Workshops were held to consider the progress and results of these projects. These will be the subject of a presentation at the National Lifelines Forum in October.

Annual Monitoring

Works of lifelines significance are being done as part of normal planned works as part of Asset Management Plans (AMPs) with some annual monitoring of progress.

Asset Management Plans

Asset management plans are one of the principal outputs of lifelines work. However, this process omits several of the benefits of a full lifelines project, meaning some utilities never will do one and the interdependencies are often overlooked.

Disaster Resilience Summaries

Some further progress has been made on the preparation of Disaster Resilience Summaries and most of the larger utilities having completed these.

Pandemic planning

The role of CELG assisting utilities in dealing with the H1N1 pandemic has continued to be mainly as a conduit passing on the information from various sources as it becomes available.

Lifelines Response Co-ordinators

The Canterbury CDEM Group now has two Lifelines Co-coordinators appointed to assist/advise the Group Controller in the Emergency Co-ordination Centre and two more are also involved. Regular meetings are held with the Group Controller and Emergency management team of the ECC.

Conclusion

There is no doubt that the application of engineering lifelines principles has contributed significantly to the resilience of Canterbury in the face of adverse events.

John Lamb
Manager
john.lamb@xtra.co.nz

Otago Engineering Lifelines Group

Due to key staff changes earlier in the year, the Otago Lifelines Project has not yet commenced. It is hoped that a regional plan can be formulated over the next few months.

Scott McNaughton

Otago CDEM Group Co-ordinator
scott.mcnaughton@orc.govt.nz

Southland Engineering Lifelines Project

Last year's report outlined that Southland Lifelines project was due to be re-launched in 2009 once funding had been secured from the four Territorial Authorities concerned. This funding has been secured to employ a person on 0.5 FTE to be project manager for the next 3 years. However other events namely a proposed restructuring of CDEM in Southland have conspired to further delay restart of the project.

At the time of writing this report the position will still be filled but it is likely to be delayed until the end of 2009. The Southland CDEM Group is still hopeful of having a joint workshop with the Otago CDEM Group to restart the project.

In the interim, the Coastal Hazards report for Southland is in the process of being completed. This in conjunction with previously commissioned NIWA Meteorological and GNS Geological Hazards reports means a comprehensive level of hazard information exists. It should be noted this information exists at the following web address <http://lifelines.southlanddc.govt.nz/default.aspx?page=Reports> should any lifelines organisation wish to use the information. Further to this, a GIS project is continually being modified as information is gained from lifelines organisations in anticipation of the wider Lifelines project restart.

Neil Cruickshank

Southland CDEM Group Co-ordinator
neil.cruickshank@es.govt.nz