Auckland Engineering
Life
Lines

Auckland Engineering Lifelines Group

Framework to Implement Lifelines Strategies
(To assist lifelines organisations to gain maximum benefit from Lifelines Projects)

Project AELG/12

VERSION 1.0

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Note to Readers

Disclaimer

While the information contained in this report is believed to be correct at the time of publication, the Auckland Engineering Lifelines Group and its working parties and agents involved in preparation and publication, do not accept any liability for its contents or for any consequences arising from its use.

Acknowledgements

1.0   Introduction

Background

For all Lifelines Projects and Groups there is a need to ensure that regional level information is appropriately conveyed to and acted upon by individual utility organisations.

The Auckland Engineering Lifelines Group (AELG) wish to ensure that the work that it has and continues to develop can be readily used by lifelines organisations to improve their risk management and emergency response processes.

The National Lifelines Co-ordination Committee has the same objective to see that the regional level recommendations from Lifelines Projects and Groups are translated into actions by individual lifeline utility organisations in all parts of New Zealand.

Project Objectives and Benefits

The objectives and expected benefits from this project include:

1. For individual lifelines organisations (both current and future lifeline group members), the objective is to provide a simple, relevant approach for lifelines organisations to address lifelines hazards and which will help those organisations:
    - Maximise benefits from lifelines group work
    - Minimise process demands
    - Assist with getting internal buy-in for lifelines work
    - Demonstrate participation in regional emergency management initiatives

2. For Lifelines Groups and Civil Defence Emergency Management (CDEM) Groups, the objective is to provide a strategy for communicating/disseminating lifelines work.

3. To demonstrate the benefits of using Lifelines Group outputs for both members and non-members.

4. To provide a feedback loop to Lifelines Groups on the usefulness of information provided from projects.

5. To support a closer working relationship between emergency managers and operations/asset managers in implementing lifelines strategies.

2.0   Process for Using Lifelines Project Outputs

The following diagram illustrates a process for ensuring that lifelines project information and recommendations are appropriately acted on. It is obviously important that each organisation has clear allocated responsibilities for managing lifelines risk strategies.
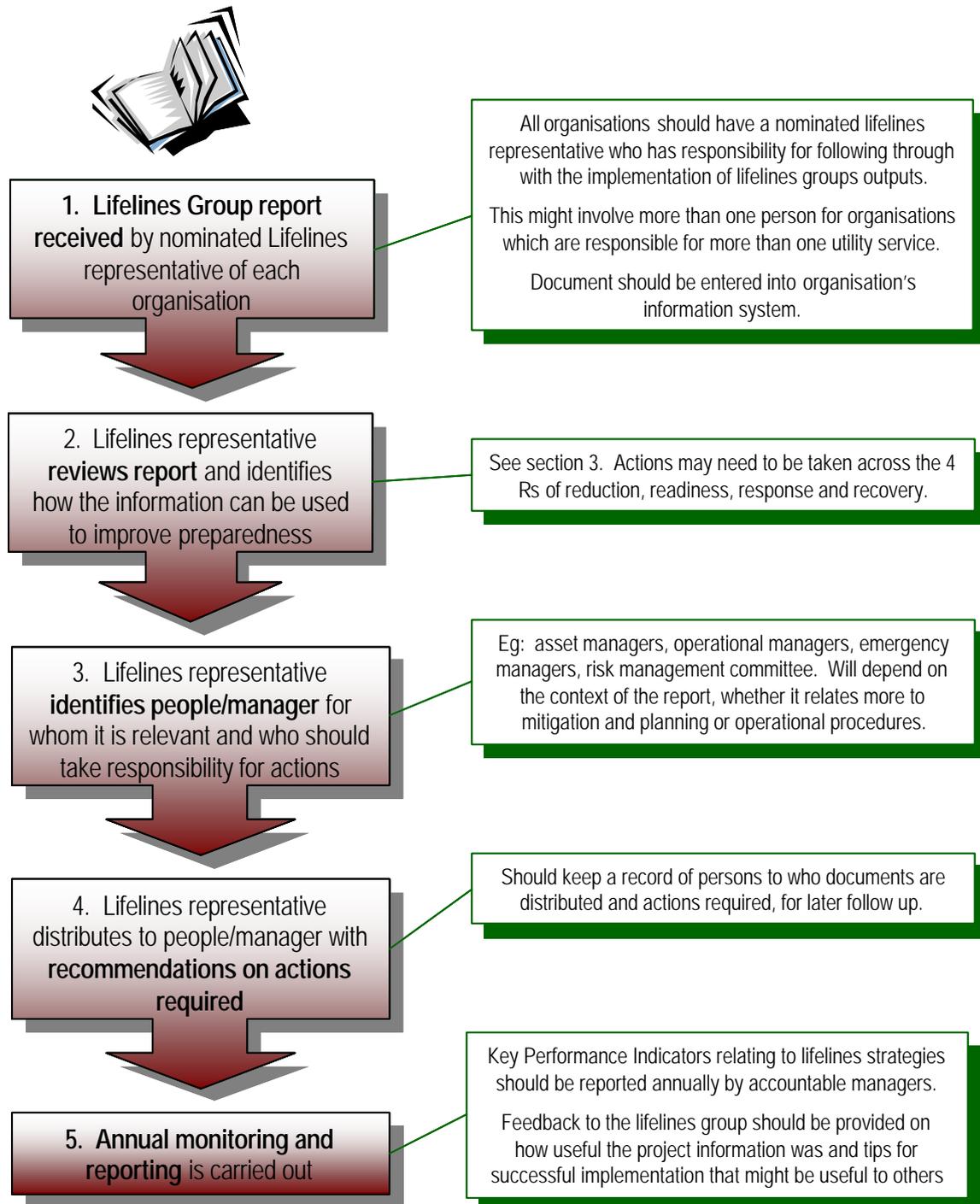
1. Lifelines Group report received by nominated Lifelines representative of each organisation

All organisations should have a nominated lifelines representative who has responsibility for following through with the implementation of lifelines groups outputs.

This might involve more than one person for organisations which are responsible for more than one utility service.

Document should be entered into organisation's information system.

2. Lifelines representative reviews report and identifies how the information can be used to improve preparedness

See section 3. Actions may need to be taken across the 4 Rs of reduction, readiness, response and recovery.

3. Lifelines representative identifies people/manager for whom it is relevant and who should take responsibility for actions

Eg: asset managers, operational managers, emergency managers, risk management committee. Will depend on the context of the report, whether it relates more to mitigation and planning or operational procedures.

4. Lifelines representative distributes to people/manager with **recommendations on actions required**

Should keep a record of persons to who documents are distributed and actions required, for later follow up.

5. Annual monitoring and reporting is carried out

Key Performance Indicators relating to lifelines strategies should be reported annually by accountable managers.

Feedback to the lifelines group should be provided on how useful the project information was and tips for successful implementation that might be useful to others

Figure 1 – Process for using Lifelines Project Outputs

3.0 Applying Project Information into the Organisation's Risk Management Framework

At step 2 of the overall process in Figure 1, it is recommended that organisations review Lifeline Project or Group reports within the context of their organisation's risk management framework (the framework from the AS/NZ Standard NZS 4360 is used here).

The following template is provided for guidance.

Risk Management Framework		Consider how the information in the report could affect your organisation:	For Example:
Establish risk context		Overall risk policy	• *Are risk treatment matrices appropriate?* • *Are overall strategies affected (eg: insurance cover)*
Identify Risks		Risk register	• *New risks that need to be added.*
Analyse and Evaluate Risks		Risk ratings or profile	• *Changes to the probability or consequences of existing or newly identified risks.*
Treat Risks	Reduction	Mitigation measures	• *Day-to-day operational procedures.* • *CAPEX mitigation projects.* • *Minor mitigation works (quick fixes, eg: securing key equipment to walls with brackets)*
	Readiness/ Response	Response plan Business Continuity Plans Exercises Mutual Aid Agreements	• *Impact assessment procedures.* • *Damage assessment procedures.* • *Communications lists/ procedures.*
	Recovery	Recovery profile Recovery priorities	• *Times for recovery.* • *Interdependencies with other organisations.* • *Designation of critical sites.*
Communicate/ Monitor and Review		Communication procedures for risk management Monitoring and review procedures	• *Information that can be used to educate or profile raise both internally and externally* • *Annual risk review procedures*

Figure 2 – Applying Lifelines project information in the risk management framework.

This process has been applied to existing Auckland Engineering Lifelines Group reports to provide specific guidance on how information in those reports should be used (refer Attachments).

Attachment A – Project Checklists

Each project prepared by the Auckland Lifelines Engineering Group has been reviewed in accordance with the process described in this report. These checklists are attached. A blank checklist also follows, and electronic copies can be downloaded from www.aelg.org.nz.

It is recommended that Lifelines Projects and Groups attach project checklists to the front of each report to assist organisations with the application of information contained in the report.

It is also recommended that Lifelines Projects and Groups include a glossary with every project report to assist readers with any unfamiliar or technical terms.

Volcanic Ash Review – Part 1 (May 2001) - ARC Technical Publication No. 144

This study reviews the impact of volcanic ash on utilities and public facilities.

OVERALL RISK FRAMEWORK	RISK ELEMENT TO CONSIDER	WHAT RELEVANT INFORMATION IS CONTAINED IN THE REPORT	HOW COULD THE INFORMATION AFFECT YOUR RISK MANAGEMENT STRATEGY?	
			FOR EXAMPLE:	FOR VOLCANIC ASH REVIEW
Establish risk context	Overall risk policy	Information on probability and hazards of volcanic event, from • Auckland Volcanic Field (resulting in hazards from ash falls, lava extrusions, and volcanic earthquakes). • Central North Island volcanic centres (resulting in up to 60 cm ash in Auckland).	• *Are risk treatment matrices appropriate?* • *Are overall strategies affected?*	• Check volcanic (and other widespread disaster events) are recognised in risk policy.
Identify Risks	Risk register	Information on specific hazards to each lifeline utility, for example:	• *New risks that need to be added.* • *Changes to the probability or consequences of existing or newly identified risks change.*	• Review hazards identified for your utility and add to risk register
Analyse and Evaluate Risks	Risk ratings or profile	• volume of ash on roads • sructural deformation or collapse from ground shaking • clogged / damaged air conditioners, water filters, etc. • blocked drains • reduction in visibility and traction on roads • equipment damage from ash abrasion and corrosion • short circuit electricity • close airports • staff health hazards • etc		
Treat Risks *Reduction*	Mitigation measures	Little information provided on risk reduction activities – most relate to readiness and response.	• *Day-to-day operational procedures.* • *CAPEX mitigation projects.* • *Minor mitigation works.*	• Review risk reduction opportunities.

OVERALL RISK FRAMEWORK	RISK ELEMENT TO CONSIDER	WHAT RELEVANT INFORMATION IS CONTAINED IN THE REPORT	HOW COULD THE INFORMATION AFFECT YOUR RISK MANAGEMENT STRATEGY?	
			FOR EXAMPLE:	FOR VOLCANIC ASH REVIEW
Readiness/ Response	Response plan Business Continuity Plans Exercises Mutual Aid Agreements	Guidance is provided on measures that can be undertaken during response, eg: • personal protection equipment for response personnel • servicing of equipment to prevent abrasion from ash. • clearance of ash to temporary storage areas • prevention of ash entering stormwater systems. Some recommendations made with respect to coordination of cleanup activities and advice to the public.	• *Impact assessment procedures.* • *Damage assessment procedures.* • *Communications lists/ procedures.*	• Check these response measures are identified in response plans • Consider appropriate high priority items that might be stored for the possible event. • Ensure information is available to those responsible for public communications.
Recovery	Recovery profile and priorities	Little specific information provided in this area, however hazard information can be used to infer information on recovery times.	• *Times for recovery.* • *Interdependencies with other organisations.* • *Designation of critical sites.*	• Check most critical equipment is prioritised for recovery and protection from ash.
Communicate/ Monitor and Review	Communication procedures Monitoring/ review procedures	Little information relating to the method of communicating and monitoring the organisation's risk management strategy.	• *Information that can be used to educate or profile raise both internally and externally.* • *Annual risk review procedures.*	• Regional plan participation to ensure coordinated response with other utilities.

Volcanic Field Trip – Kagoshima City (August 2001) – Science Report 2001/20

Impacts of, and responses to, ashfall in Kagoshima, from Sakurajima Volcano – lessons for New Zealand.

OVERALL RISK FRAMEWORK	RISK ELEMENT TO CONSIDER	WHAT RELEVANT INFORMATION IS CONTAINED IN THE REPORT	HOW COULD THE INFORMATION AFFECT YOUR RISK MANAGEMENT STRATEGY?	
			FOR EXAMPLE:	FOR VOLCANIC ASH REVIEW
Establish risk context	Overall risk policy	Many years of historical scientific data on actual ashfall and responses of key infrastructure to ashfall events.	• *Are risk treatment matrices appropriate?* • *Are overall strategies affected?*	• Is volcanic ash specifically addressed in the organisation's risk management policy and plans?
Identify Risks	Risk register	Information on effects of ash on each lifeline utility, • Stormwater, Wastewater, Water supply • Gas supply	• *New risks that need to be added.* • *Changes to the probability or consequences of existing or newly identified risks change.*	• How will lifelines utilities deal with the operational staff working in ashfall conditions? • What are the risks associated with ashfall?
Analyse and Evaluate Risks	Risk ratings or profile	• Electricity supply • Transportation networks, Vehicles • Communications • Buildings • Private and commercial property • Computers and information technology • Disposal of ash and lahar debris	• What key infrastructure could be affected by ashfall?	
Treat Risks *Reduction*	Mitigation measures	Information provided on monitoring and mitigation including public health	• *Day-to-day operational procedures.* • *CAPEX mitigation projects.* • *Minor mitigation works*	• Review risk reduction opportunities in light of Kagoshima experience.
Readiness/ Response	Response plan Business Continuity Plans Exercises Mutual Aid Agreements	Information is provided on emergency management systems.	• *Impact assessment procedures.* • *Damage assessment procedures.* • *Communications lists/ procedures.*	• Check response measures are identified in response plans • What plant and equipment is required? • Protection of plant and equipment? • Ensure information is available to those responsible for public communications.

OVERALL RISK FRAMEWORK	RISK ELEMENT TO CONSIDER	WHAT RELEVANT INFORMATION IS CONTAINED IN THE REPORT	HOW COULD THE INFORMATION AFFECT YOUR RISK MANAGEMENT STRATEGY?	
			FOR EXAMPLE:	FOR VOLCANIC ASH REVIEW
Recovery	Recovery profile and priorities	Little specific information provided in this area as the fall of ash is ongoing and has little impact on daily life. Information on the removal of large volumes of volcanic ash is included.	• *Times for recovery.* • *Interdependencies with other organisations.* • *Designation of critical sites.*	• Check most critical equipment is prioritised for recovery and protection from ash. • Ensure disposal sites are predetermined.
Communicate/ Monitor and Review	Communication procedures Monitoring/ review procedures	Monitoring information is included. Considerable effort is put into monitoring the volcano and its effects.	• *Information that can be used to educate or profile raise both internally and externally.* • *Annual risk review procedures.*	• Monitoring systems • Test scenarios to ensure coordinated response with other utilities. • Communication systems

Priority Emergency Routes Project (May 2001) - ARC Technical Publication No. 145

This study identifies the transportation routes, which will be cleared as a priority following disaster events.
Specific information provided includes maps of the routes for the Auckland region and a list of priority emergency services sites.

OVERALL RISK FRAMEWORK	RISK ELEMENT TO CONSIDER	HOW COULD THE INFORMATION AFFECT YOUR RISK MANAGEMENT STRATEGY?	
		FOR EXAMPLE:	FOR EMERGENCY ROUTES REPORT
Establish risk context	Overall risk policy	• *Are risk treatment matrices appropriate?* • *Are overall strategies affected?*	• Unlikely to impact on risk management policy.
Identify Risks	Risk register	• *New risks that need to be added.* • *Changes to the probability or consequences of existing or newly identified risks change.*	• Does the report change the risk to any of your assets which now may or may not be near a priority route?
Analyse and Evaluate Risks	Risk ratings or profile		• Does the report change the risk to any of your organisation's functions which might require road access to carry out?
Treat Risks *Reduction*	Mitigation measures	• *Day-to-day operational procedures.* • *CAPEX mitigation projects.* • *Minor mitigation works.*	• Review and re-prioritise risk reduction/ mitigation measures for at-risk structures (roading and other utility structures) on priority routes. If the structure is identified as being on a priority route, this may assist in obtaining funding for updgrading the road/structure or undertaking retrofitting work. • Incorporate works resulting from above process into asset management plans.
Readiness/ Response	Response plan Business Continuity Plans Exercises Mutual Aid Agreements	• *Impact assessment procedures.* • *Damage assessment procedures.* • *Communications lists/ procedures.*	• Include a copy of the maps with your response plans, so you will know which roads will be given priority for restoration • Provide a copy of maps in the report to your maintenance personnel and/or network management contractors. • Consider impact if a strategic asset is not located near a priority route? How does this affect your response to assessing or fixing any damage?
Recovery	Recovery profile and priorities	• *Times for recovery.* • *Interdependencies with other organisations.* • *Designation of critical sites.*	• Will the report change your estimates as to how long you can return to normal service levels after a disaster? • Should you change any contractual arrangements for service re-instatement? • Does the report affect your understanding of your interdependency on roads (and your relationship with Road Controlling Authorities)?
Communicate/ Monitor and Review	Communication, monitoring, review procedures	• *Information that can be used to educate or profile raise internally and externally.* • *Annual risk review procedures.*	• Who needs to know about this information in your organisation? • Who has responsibility for following up on any actions resulting from the above?

Lifelines Co-ordination (Response) Project AELG-2 (May 2002) – ARC Technical Publication No. 173

This project examined appropriate Lifelines Co-ordination mechanisms for the initial phase of a regional scale emergency. The report highlights the various interagency co-ordination mechanisms (existing and proposed) that require specific utility planning and involvement.

OVERALL RISK FRAMEWORK	RISK ELEMENT TO CONSIDER	HOW COULD THE INFORMATION AFFECT YOUR RISK MANAGEMENT STRATEGY?	
		FOR EXAMPLE:	FOR LIFELINES CO-ORDINATION REPORT
Establish risk context	Overall risk policy	• *Are risk treatment matrices appropriate?* • *Are overall strategies affected?*	• Highlights that inadequate planning effort is typically given by utilities and emergency services to 'extended Business as Usual" incidents
Identify Risks	Risk register	• *New risks that need to be added.* • *Changes to the probability or consequences of existing or newly identified risks change.*	• Unlikely to affect a risk register, ratings or profile
Analyse and Evaluate Risks	Risk ratings or profile		
Treat Risks *Reduction*	Mitigation measures	• *Day-to-day operational procedures.* • *CAPEX mitigation projects.* • *Minor mitigation works.*	• Ensure that operations staff have clear procedures for escalating events and notifications both internationally and externally.
Readiness/ Response	Response plan Business Continuity Plans Exercises Mutual Aid Agreements	• *Impact assessment procedures.* • *Damage assessment procedures.* • *Communications lists/ procedures.*	• Review your current Civil Defence Liaison Officer designations – are they current? Are the individuals capable of fulfilling this role? Do they understand their obligations & roles? • Update your contact list information to provide at least two points of contact • Participate in the AELG tabletop exercise focusing on a non-declared emergency incident (to be arranged) • Review the appropriateness and effectiveness of your day-to-day communications systems in different levels of emergency situations (refer AELG Emergency Communications project underway)

OVERALL RISK FRAMEWORK	RISK ELEMENT TO CONSIDER	HOW COULD THE INFORMATION AFFECT YOUR RISK MANAGEMENT STRATEGY?	
		FOR EXAMPLE:	FOR LIFELINES CO-ORDINATION REPORT
Recovery	Recovery profile and priorities	• *Times for recovery.* • *Interdependencies with other organisations.* • *Designation of critical sites.*	• No impact
Communicate/ Monitor and Review	Communication procedures Monitoring/ review procedures	• *Information that can be used to educate or profile raise both internally and externally.* • *Annual risk review procedures.*	• Who needs to know about this information in your organisation? • Who has responsibility for following up on any actions resulting from the above?

BLANK CHECKLIST

OVERALL RISK FRAMEWORK	RISK ELEMENT TO CONSIDER	WHAT RELEVANT INFORMATION IS CONTAINED IN THE REPORT (use this column when appropriate)	HOW COULD THE INFORMATION AFFECT YOUR RISK MANAGEMENT STRATEGY?	
			FOR EXAMPLE:	FOR SPECIFIC PROJECT
Establish risk context	Overall risk policy		• *Are risk treatment matrices appropriate?* • *Are overall strategies affected?*	
Identify Risks	Risk register		• *New risks that need to be added.* • *Changes to the probability or consequences of existing or newly identified risks change.*	
Analyse and Evaluate Risks	Risk ratings or profile			
Treat Risks *Reduction*	Mitigation measures		• *Day-to-day operational procedures.* • *CAPEX mitigation projects.* • *Minor mitigation works*	
Readiness/ Response	Response plan Business Continuity Plans Exercises Mutual Aid Agreements		• *Impact assessment procedures.* • *Damage assessment procedures.* • *Communications lists/ procedures.*	
Recovery	Recovery profile and priorities		• *Times for recovery.* • *Interdependencies with other organisations.* • *Designation of critical sites.*	
Communicate/ Monitor and Review	Communication procedures Monitoring/ review procedures		• *Information that can be used to educate or profile raise both internally and externally.* • *Annual risk review procedures.*	