

Resilience Fund Application Form

This form provides the minimum information for the application. A detailed project plan should be developed to inform this application and may be attached.

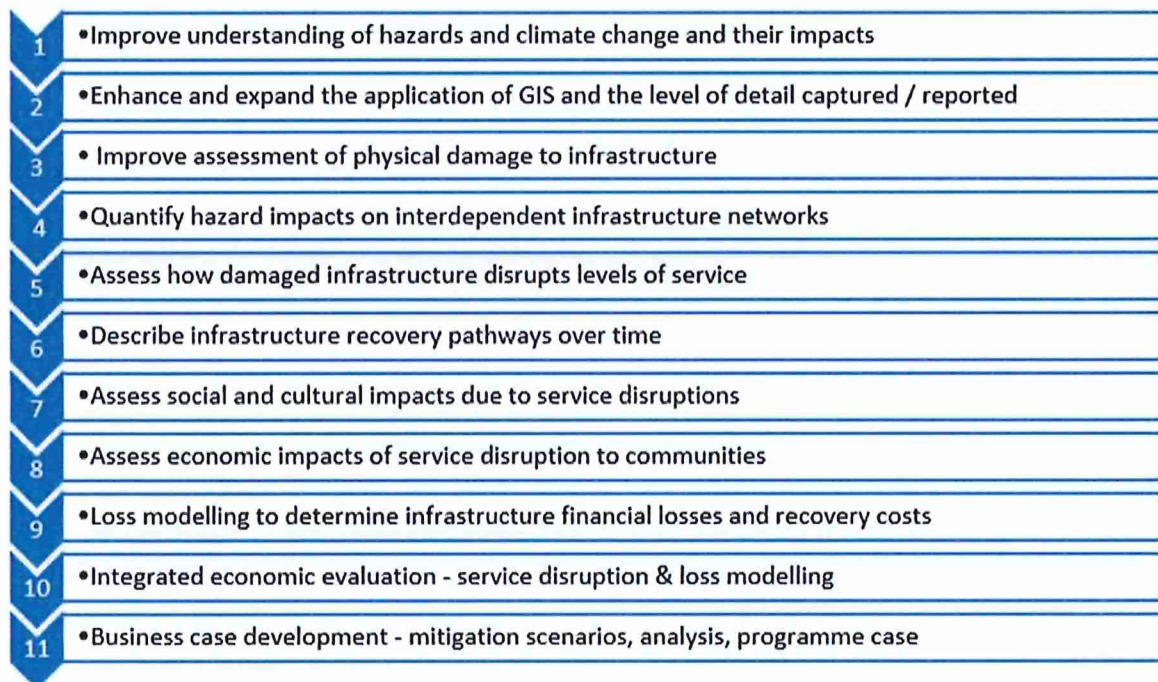
Project title	Risks & Resilience: Expanding GIS-based impacts modelling across Canterbury lifelines
Date of application	31 January 2023
Details on application	
Applicant <i>[CDEM Group must endorse/sponsor all applications]</i>	Canterbury CDEM Group
Sponsoring CDEM Group	Canterbury
Other local authorities, Groups or organisations supporting this proposal	Canterbury Lifeline Utilities Group member agencies
Project description	
Executive summary <i>[200 words maximum]</i>	
<p>The purpose of this application is to build on the outcomes of the currently funded Risks & Resilience project, expanding coverage to the wider Canterbury region and encompassing additional lifelines sectors, in particular Ports, Airports, Fuel, and FMCG. It also involves the enhancement of the modelling approach to improve interdependency and cascade failure impacts analysis across multiple well-beings, the use of fragility curves, outage estimation, recovery capacity, and the optimisation of recovery.</p> <p>It will leverage off University of Canterbury PhD research and provide a natural link to “emergency levels of service”. As with the current project, infrastructure asset data and hazard layers (likely to be selected from flooding, tsunami, AF8 / earthquake) will be brought together in the GIS-based portal. A series of workshops will ensure the involvement and input of lifeline utilities and CDEM stakeholders.</p> <p>Impacts analysis is to be broadened beyond economic to include asset value loss analysis, social, and cultural, thus implementing more of the maturity pathway.</p> <p>This project potentially has wider South Island appeal, and neighbouring groups will be invited to participate in workshops as appropriate to improve their awareness and understanding of the work.</p>	
Challenge/opportunity <i>[200 words maximum]</i>	
<p>This proposal follows on from a currently funded project – <i>Risks & Resilience: Using a new GIS portal, MERIT tool and existing body of knowledge base to standardise and advance the maturity of vulnerability assessments and resilience-focussed investment business cases.</i></p> <p>This project is expected to be completed in early 2023, delivering a “proof of concept” approach within the North Canterbury pilot area. It covers three territorial authority areas, Waimakariri,</p>	



Hurunui, and Kaikoura Districts, the lifelines sectors being Electricity, Telecommunications, Water Supply, Wastewater, Roads, and Rail.

This work described a maturity pathway, shown in the image below, with the work flow of the project focussed on flooding and tsunami hazards and the economic impacts of disruption, time to recovery, and potential mitigations. The primary outputs include a geospatial Risk & Resilience Explorer and MERIT economic impacts.

There are however other aspects of the maturity pathway that can be enhanced, such as interdependent cascade impacts (both direct and indirect), infrastructure value loss analysis, and social and cultural disruption reflecting Treasury's wellbeing framework. Furthermore, the modelling approach can be extended to include other sectors not covered in the pilot, together with enhancements to asset fragility relationships and the use of more granular asset data. There is also the opportunity to link this work with that of the AF8 Programme.



Alignment with priorities and objectives of the National Disaster Resilience Strategy (NDRS) [200 words maximum]

1. Managing risks	1. Identify and understand risk and use this knowledge to inform decision-making	Improves our understanding of natural hazard risk across the Canterbury region and the impacts on critical infrastructure networks and systems. Outputs can be used at an agency, local or regional level to support investment decision-making.
	6. Understand the economic impact of disaster and disruption, and the need for investment in resilience; identify and develop financial	Improves the robustness of damage, disruption and recovery timeframes information to support economic analysis using MERIT.



	mechanisms that support resilience activities	
3. Enabling, empowering, and supporting community resilience	16. Address the capacity and adequacy of critical infrastructure systems, and upgrade them as practicable, according to risks identified	Collaboration and leverage University of Canterbury PhD research into linkages between risk assessments and fragility curves, and recovery optimisation modelling based on either economic loss or social impacts and constrained by cost, recovery team capacity, etc.
Alignment with Principles and Allocation Preferences <i>[200 words maximum]</i>		
Alignment with National Disaster Resilience Strategy and NEMA key focus areas	Particularly aligns with Objectives 1, 12 and 16 as described above	
Achieving equity of outcomes for Māori	The project will have a particular focus on the social and cultural impacts of hazard events, including the involvement of Iwi in the modelling process.	
Outcome focused	Improves understanding of economic, social and cultural impacts for nominated hazard events, providing tools and GIS based applications to support CDEM, lifeline utilities and decision makers.	
Applicable in other regions	GIS based Risk & Resilience Explorer tool and associated models can be used anywhere in New Zealand, given the appropriate hazard and asset data for the locality. It may be possible, with the agreement and participation of other South Island regions, to widen the geographic coverage of the project.	
Supports national consistency	Methodology transferable to other events and hazard scenarios. Involvement of Urban Intelligence and ResOrgs also provides alignment with initiatives elsewhere.	
Wider funding / resource commitment	The project will draw from closely related PhD research work being carried out by the University of Canterbury. This work is not being funded through the project.	
Builds on existing work	Extends the coverage of the current Risks & Resilience proof of concept pilot project in North Canterbury to the whole of the region, plus enhances models and addresses more elements in more depth within the maturity pathway.	
Application of outcomes/benefits to sector <i>[200 words maximum]</i>		



The project, together with outputs from the current project, will deliver a structured methodology, improved modelling capability, tools, and GIS-based Explorers that integrate hazard layers, infrastructure layers (networks and nodes), and the outputs of impacts analysis. It will utilise this methodology across the Canterbury region in assessing the impacts of specific hazards (e.g., flooding, AF8, tsunami).

These outputs can be applied or further developed by CDEM groups and lifeline utilities to improve their understanding of interdependent, cascade impacts of different hazard events and the economic, social and cultural impacts on their communities.

For lifeline utilities, this information can improve resilience investment decision-making and be reflected in their Asset Management Plans.

For CDEM groups, this will help inform planning for response and recovery.

Sharing the progress and outcomes of the project will include:

- Report(s) being made available to the wider lifelines community and NZ Lifelines Council
- Presentation(s) to National Lifelines Forum and other stakeholder groups

Ongoing costs (post-project) and how it will be funded *[200 words maximum]*

The outputs of the project will be absorbed into BAU activities for Canterbury CDEM and the members of the Canterbury Lifeline Utilities group as applicable to their business needs.

Further opportunities for Resilience Fund support may be sought where specific, related opportunities are identified. This might include further development within the maturity pathway linked to initiatives within the research sector.

Project design


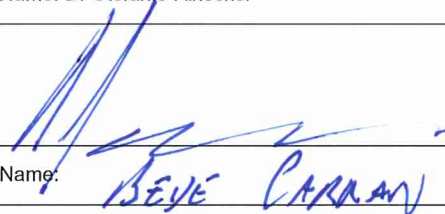
Project manager	Mark Gordon (Canterbury Lifelines Group Project Manager)
Other project members	Steve Ferriss, Martyn Wooster
External providers/contractors	Urban Intelligence, ResOrgs, Market Economics
NEMA resource (if needed)	NEMA Infrastructure Resilience team

Deliverables *[Note: payments will be made after successful completion of milestones identified]*

Key milestones	Date for completion	Cost (invoice amount)
Project Management	July 2023 - June 2024	\$5,000
Milestone 1 – Stocktake. Review the outcomes and recommendations of the current Risks & Resilience project, the status of relevant research initiatives, tools to be utilised, hazard(s) to be assessed, and opportunities for collaboration. Confirm scope and focus areas based on expected availability of research outputs and key data. Document findings and confirmed scope.	31 July 2023	\$8,000



Milestone 2 – Workshop 1. Plan for and facilitate workshops in Timaru and Christchurch with representatives of Canterbury lifeline utilities and CDEM to discuss the project and initiate involvement (while some are involved in the North Canterbury pilot, most will not be familiar with the outputs, especially those in the Ports and Fuel sectors). This workshop will demonstrate the Risk & Resilience Explorer developed by Urban Intelligence and discuss the project methodology and expectations (e.g., data needs). Document workshop process and results.	31 August 2023	\$5,000
Milestone 3 – Impact models. Interact and collaborate with UC research work to enhance the models developed in the 2022 Risks & Resilience project. Incorporate improvements to cascading failure impacts, fragility curves, outage times, and new recovery optimisation functionality linked to emergency level of service definitions. Continue to assess the role of tools such as RiskScape 2.	31 December 2023	\$50,000
Milestone 4 – Impacts analysis. Obtain geospatial data from lifeline utilities and for the hazards to be assessed. Apply the updated impact models to predict damage levels, direct and indirect outages, and service restoration timeframes across the region. Assess the economic (using MERIT), social and cultural impacts. Document results.	31 March 2024	\$50,000
Milestone 5 – Workshop 2. Further workshops to share the results of the modelling and analysis. Interactive use of the Risk & Resilience Explorer to view and test results sector by sector. Refine assumptions as appropriate. Identify potential mitigations to improve resilience taking account of interdependent effects. Document workshop process and results.	30 April 2024	\$8,000
Milestone 6. Update analysis and final report. Repeat the assessment of impacts based on the mitigation interventions being in place, identifying the investment benefits. Document the findings and produce final report.	30 June 2024	\$15,000
Identified risks		
Risks	Suggested mitigation / management	
Time and cost exceed budget estimate	Milestone cost reviews and revise scope to stay on budget	

Key staff become unavailable	Ensure other team members are able to take over roles		
Data accessibility – e.g., confidentiality	Work with lifeline utilities to fine-tune data needs and prepare Non-Disclosure Agreements as applicable		
Lack of commitment or availability of key stakeholders (e.g., lifeline utility staff)	Maintain close liaison and foster participation, work with NZLC and NEMA as appropriate to secure national agency participation		
Funding request and use			
CDEM Resilience Fund contribution	\$150,000		
Local authority / organisation contribution	\$20,000		
Other sources of funding or support	University of Canterbury research – time in kind Lifeline utilities – time in kind		
Budget <i>[please supply spreadsheet]</i>	\$TBC (Will be included with the application)		
Applies if application exceeds \$100,000 over the life of the project	Are you prepared to attend an interview in support of this application (if needed)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Application confirmation			
Is this application from an individual or other organisation	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Does the CDEM Group support this application? <i>[sign off below confirms support]</i>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Approval of Chief Executive [Chief Executive or Head of the organisation receiving the funding]	 Name: Dr Stefanje Rixecker		
Approval of CEG Chair	 Name: Beve Carran		
All communications regarding the application, including approval decisions will be addressed to the Chief Executive and CEG Chair			
CDEM Group comment			
As a continuation of the current Lifeline resilience work this will bring in the important nationally significant areas of Ports, Airports, Fuel, and FMCG. These all become critical assets or services that need to continue to operate, as best they can, during and after an emergency.			

This work process will be shared with other CDEM Groups and does contribute to the Canterbury component of AF8 planning.

Note: Only complete forms will be considered for assessment. All completed forms and supporting documents must be emailed to NEMA at resilience.fund@nema.govt.nz

NEMA Assessment [internal use only]		
Principles	Yes	No
Local / regional focus	<input type="checkbox"/>	<input type="checkbox"/>
Values the role of Māori in the Emergency Management System	<input type="checkbox"/>	<input type="checkbox"/>
NEMA involvement required	<input type="checkbox"/>	<input type="checkbox"/>
Allocation Preferences		
Alignment with NDRS	<input type="checkbox"/>	<input type="checkbox"/>
Achieves equity of outcomes for Māori communities, marae, hapū, iwi and Māori organisations	<input type="checkbox"/>	<input type="checkbox"/>
Outcome focused	<input type="checkbox"/>	<input type="checkbox"/>
Applicable in other regions / CDEM Groups	<input type="checkbox"/>	<input type="checkbox"/>
Supports national consistency	<input type="checkbox"/>	<input type="checkbox"/>
Wider funding / resource commitment	<input type="checkbox"/>	<input type="checkbox"/>
Build on existing work	<input type="checkbox"/>	<input type="checkbox"/>
Operational expenditure (Opex)	<input type="checkbox"/>	<input type="checkbox"/>
Capital expenditure (Capex)	<input type="checkbox"/>	<input type="checkbox"/>
Other		
Application from individuals or other organisations endorsed/sponsored by CDEM Group		
NEMA Subject Matter Expert Comment	Supported <input type="checkbox"/>	Not supported <input type="checkbox"/>

NEMA Regional Emergency Management Advisor Comment Supported Not supported

NEMA Review Panel Comment Supported Not supported

NEMA Director Decision Sign-off Approved Declined

Director of Civil Defence Emergency Management

Appendix A Report Template

CDEM Resilience Fund Project Status Report		Date: DD MMMM YY
Project title	Project number	
Project manager	Contact details	
Executive summary of status		
Progress of deliverables		
Milestones	Status (on track, delayed, etc.)	Progress this quarter and next steps



Identification of any issues (actual or potential)						
	Issue					Mitigation
Schedule						
Staff resources						
Budget						
Dependencies						
Stakeholders						
Quality						
Other						
Budget						
Activity	Expenditure to date	Budget to date	Full year budget	Budget forecast		Variance

Comment on variance

Confirmation

I confirm the status report is accurately reflected and the invoice amount is correct.

Project Manager

Chief Executive

CEG Chair

Comment by Resilience Fund Coordinator



2023 RESILIENCE FUND APPLICATION

South Island Priority Routes Project – Project Plan Summary

Date: 16 January 2023

Milestone Stage	Key Task	Resources	Approach	Resilience Fund (excl GST)	Timing
Project management	Project management	Project Team	Project tracking, monthly invoicing, quarterly reporting to NEMA	\$5,000	30 June 2024
	1. Identify priority sites	Project Team. Regional Lls Group Programme Managers working with CDEM stakeholders.	Facilitate initial engagement. Includes planning steps / development of contact lists / outreach to stakeholders. CDEM Groups – BAU/in kind	\$5,000	31 August 2023
2. Assess road network vulnerability	Project geospatial intelligence (collection, analysis, dissemination) and planning tools using ArcGIS	Eagle Technology Emergency Management Geospatial Specialist. AF8 Group ArcGIS Intelligence & Insights Analyst. CDEM Group ArcGIS Specialist(s).	Eagle Tech. creation, setup platform. AF8 Programme / CDEM Group hosting and GIS support - BAU/in kind	\$10,000	31 August 2023
	Confirm Methodology and information needs	UoA led on-line workshop involving AF8 Programme lead, CDEM Ls Group PMs, Project Team members.	CDEM Groups – BAU/in kind	\$0	31 July 2023
	Collect additional information	Regional Lls Group Programme Managers & GIS Specialists working with Waka Kotahi (NZTA) and TLAs.	CDEM Groups – BAU/in kind TLAs, NZTA – BAU/in kind	\$0	31 August 2023
	Undertake Road Network Vulnerability Assessment	UoA PhD researcher working with Project Team, Regional Lls Group PMs, TLAs, NZTA, KiwiRail and GIS resource.	Supporting tasks – \$10k AF8 Programme GIS support - BAU/in kind. TLAs, NZTA, KiwiRail, CDEM Groups – BAU/in kind.	\$10,000	31 October 2023
	Local / Regional Workshops	Project Team, Regional Lls Group PMs, GIS resource(s), stakeholders	Planning and facilitation of regional workshops – \$20k. CDEM Groups / others – BAU/in kind	\$20,000	31 December 2023

Milestone Stage	Key Task	Resources	Approach	Resilience Fund (excl GST)	Timing
		(incl. TLAs, NZTA, CDEM, NEMA, others as required).			
	Finalise Damage / Outage Maps	Project Team, GIS resource(s), other stakeholders as above	Facilitate the process, coordinate, agree mapping outputs. CDEM Groups – BAU/in kind.	\$5,000	31 January 2024
3. Identify Priority Routes	Priority Routes - Workshops	Project Team, Regional Lls Group PMs, GIS resource, stakeholders (incl TLAs, NZTA, CDEM, NEMA, others as required).	Plan and facilitate second round of regional workshops	\$20,000	31 March 2024
4. Collate and Moderate	Mapping of Priority Routes	Project Team, AF8 Programme / CDEM Group GIS resource	Facilitate the process, coordinate, agree mapping outputs	\$5,000	30 April 2024
	Moderation and finalisation	Project Team. Inter-regional moderation – e.g., on-line workshop. .	Facilitate the process, coordinate, agree final priorities	\$5,000	31 May 2024
	Finalise mapping	AF8 Group ArcGIS Intelligence & Insights Analyst, CDEM Group ArcGIS Specialist(s).	BAU/in kind	\$0	31 May 2024
	Produce AF8 Priority Routes Intel & Planning applications using GIS technology hosted by AF8 for data flow and future AF8 planning.	Eagle Technology Emergency Management Geospatial Specialist. AF8 Group ArcGIS Intelligence & Insights Analyst	Produce AF8 Priority Routes Intel & Planning applications using GIS technology hosted by AF8 for data flow and future AF8 planning – BAU in kind	\$5,000	30 June 2024
	Project report	Project Team, Regional Lls Group PMs, AF8 Programme Manager	Document the project outcomes, including summary of methodology, assumptions, stakeholder involvement, prioritisation results, selected mapping outputs.	\$10,000	30 June 2024
TOTAL				\$100,000	