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	Emergency Telecommunications at Community Emergency Hubs - Pilot
Date of application	27 January 2023
Details on application	
Applicant *[CDEM Group must endorse/sponsor all applications]*	Wellington Region Emergency Management Office (WREMO)
Sponsoring CDEM Group	Wellington Region CDEM Group
Other local authorities, Groups or organisations supporting this proposal	Ministry of Education
Project description	
Executive summary *[200 words maximum]*	

In a major event like an earthquake or storm, telecommunications connectivity (such services as mobile phone coverage and internet access) can be adversely impacted by damaged infrastructure and power outages. Members of the public can lose situational awareness (knowledge of what is going on) and the ability to communicate with friends, family and/or local service providers, including councils and emergency services. Such outages can adversely impact the effectiveness of any response and recovery, and the health and wellbeing of those affected.

If community members can go to a local school or similar facility (Community Emergency Hubs or CEH) to get connectivity when such events occur, communication and the health and wellbeing of those affected will be enhanced. This being the case, WREMO has initiated a project to explore how such connectivity can be provided either through Starlink (a satellite internet service provided by SpaceX, who is aiming to start providing a global mobile phone service after 2023) and car batteries, or solar power and batteries at CEH that already have WiFi and fibre optic cabling (which usually withstands such adverse events).

The intent of the project is to test Starlink and car batteries at a small number of CEH, and investigate the provision of batteries at several others with existing solar electricity generation, to test and compare the viability of both approaches to help improve community communication in an emergency. It is expected that the project will require some investigation and work on the power and telecommunications networks in the CEHs to connect the power source to the service provider and the local WiFi network on each site.

The purpose of this initiative is to:

- provide the public with Wi-Fi access at CEHs to be able to understand what is going on around them and inform friends and family that they are safe,
- provide emergency connectivity between CEHs and their respective EOCs, and

- potentially enable some emergency services telephone calling (i.e., 111 calls) at CEHs (although the bandwidth required to do this will be balanced against data transfer objectives).

Challenge/opportunity *[200 words maximum]*

The main challenge being addressed is that the telecommunications network is wholly dependent on power to function. While most cell sites have battery packs that will work for between 4 and 24 hours in a major power outage, after that time they will not be functional (unless road access and generators are available for the sites). Most telephone exchanges have standby generators and fuel stocks to enable operation for some days. Landlines currently require power to be on at both the exchanges and at homes (to allow modems/routers to work). This means that in a prolonged power outage, unless they have their own standby power, the public will not be able to use their landline phones or their mobile phones (due to lack of availability of the cell network and as the batteries in their phones will drain).

To enable emergency telecommunications, if power can be provided at CEHs, this would allow cell phones to be charged and WiFi connectivity at those CEHs. If the wider telecommunications network (internet) is working and accessible via satellite (Starlink) or landline (fibre), then it should be possible for people to connect to it and communicate as they need to.

This project aims to run a pilot to understand the relevant telecommunications connectivity issues, the wiring of systems at CEHs, and the viability of both approaches.

For example, the installation of solar powered batteries at schools has the potential to help schools minimise power bills in BAU as well as provide valuable power supplies and internet connectivity for the wider community in emergencies.

The availability of a low-orbit telecommunications systems (such as Starlink) can also be investigated for BAU and emergency uses.

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

This application aligns with the following objectives of the National Disaster Resilience Strategy (NDRS):

Objective 7: “Ensure that the safety and wellbeing of people is at the heart of the emergency management system”.

Objective 13: “Enable and empower individuals, households, organisations, and businesses to build their resilience, paying particular attention to those people and groups who may be disproportionately affected by disasters”.

Objective 14: “Cultivate an environment for social connectedness which promotes a culture of mutual help; embed a collective impact approach to building community resilience”.

Objective 16: “Address the capacity and adequacy of critical infrastructure systems, and upgrade them as practicable, according to risks identified.”

While this project aligns with objectives 7, 13 and 14 at a high level, it particularly addresses objective 16 in that it is focussed on a known infrastructure vulnerability. This provides improved planning for and response to, and recovery from, infrastructure failure.

Alignment with Principles and Allocation Preferences *[200 words maximum]*

This application aligns with the following NEMA Resilience Fund Principles:

- It will be a Wellington CDEM Group monitored project
- It will have 'a local/regional focus' – the project will enable some CEHs to achieve greater telecommunications resilience, therefore providing greater local/regional resilience.
- If successful, it could them be applied nationally.
- It allows for NEMA involvement (collaboration with NEMA's Team Leader, Operational Systems – National Operations, is welcomed).

It aligns with the following Allocation Preferences:

- Alignment with the NDRS objectives (as shown in the section above).
- As a pilot for delivering infrastructure, it is outcome focussed.
- As a pilot, carried out in conjunction with both NEMA and the MoE, it serves as an example of how this may be carried out in other regions/CDEM Groups going forward.
- It also has the potential to achieve better outcomes for Maori and Pasifika and the communities their support by providing emergency connectivity with marae and other community support facilities that might otherwise be isolated in an emergency.

Application of outcomes/benefits to sector *[200 words maximum]*

As a pilot, the project will demonstrate how emergency telecommunications might be delivered through different approaches – low initial capital cost but potentially higher ongoing operational costs (Starlink) versus moderate initial capital cost with very low operational costs (solar and fibre). The viability of charging cell phones, and the actual cost and complexity of wiring and installation at CEHs cannot be adequately understood until a pilot such as this is carried out, hence the value of this pilot to better inform the outcomes and benefits to both the community, Emergency Management and telecommunications sectors.

In addition to the above, an assessment on the capabilities of both approaches will be made to determine the number of potential users that can connect at CEH, data exchange rates and connectivity speeds.

While the above approaches will inform the viability of these approaches with the Ministry of Education and schools which are currently CEHs, this concept could later be expanded (in another project) to install such systems at community centres and/or marae.

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

It is anticipated that trials will be only be carried out at CEHs (schools) where there are both WiFi systems and solar panels installed (or being installed). This means that the only items being installed that would require ongoing maintenance would be the electrical inverters and battery packs proposed by this project. As these items have no moving parts and nominal operational lives of 10 years, it is anticipated that ongoing costs would be minimal.

It is proposed that battery packs that are purchased for the trial be 'gifted' to the participating schools, to ensure that long-term ownership of the battery packs is clear. To offset any costs to the school, the business-as-usual benefit of having a battery pack providing power throughout the night at the schools will help lessen their electricity bills, providing further benefit from this initiative.

Testing of the Starlink solution would not require the purchase of Starlink systems. Instead, existing Starlink units (owned by the emergency management sector in the Wellington region) would be used for testing.

Initially, it is intended to test 2 to 3 Starlink units and install 2 to 3 batteries (connected to solar) at schools. Once done, it will be possible to establish how many units could potentially be installed within the budget for this pilot.

Project design	
Project manager	Richard Mowll, Lifeline Utilities Co-ordinator, WREMO
Other project members	MoE Engineering/Asset Management Team Member (advice and linkage to schools) A PhD student currently carrying out research on emergency telecommunications (to carry out testing and liaison with Chorus and other key stakeholders)
External providers/contractors	At each school, electricians will have to be engaged to carry out any wiring. A supplier of the battery packs to be identified, through Greater Wellington Regional Council procurement rules.
NEMA resource (if needed)	NEMA Team Leader, Operational Systems – National Operations (for advice and linkages to NEMA's work)

Deliverables *[Note: payments will be made after successful completion of milestones identified]*		
Key milestones	Date for completion	Cost (invoice amount)
Write detailed project plan	July 2023	$5,000
Identification of schools (CEHs) to work with	September 2023	$5,000
Design and implement electrical work	March 2024	$30,000
Procure and install batteries	March 2024	$50,000
Test systems and handover to schools	June 2024	$5,000
Produce 'how to' document so other regions could follow similar approaches	June 2024	$5,000

Identified risks			
Risks	Overly complex systems or requirements mean that installation at schools is not possible. Mitigation: install whichever batteries are possible, and document (for future reference for other Groups) limitations and constraints.		
Overly complex wiring systems at individual schools (CEHs)	If not feasible, use this as a learning and focus on a different school (CEH)		
Funding request and use			
CDEM Resilience Fund contribution	$100,000		
Local authority / organisation contribution	$0		
Other sources of funding or support	$0 (although input in kind from MoE and NEMA)		
Budget *[please supply spreadsheet]*	$100,000 (as this is a pilot, it is difficult to provide a more detailed breakdown than given above)		
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** ☒	No ☐
Application confirmation			
Is this application from an individual or other organisation		Yes ☐	**No** ☒
Does the CDEM Group support this application? *[sign off below confirms support]*		**Yes** ☒	No ☐
Approval of Chief Executive [Chief Executive or Head of the organisation receiving the funding]	*J Holmes*		
	Name: Jeremy Holmes		
Approval of CEG Chair			
	Name: Peter Kelly		
All communications regarding the application, including approval decisions will be addressed to the Chief Executive and CEG Chair			
CDEM Group comment			
The Wellington CDEM Group is very supportive of this proposal which, we think, could have major implications for impacted communities during and after emergency events – effectively giving them an alternative means of communication when the local power supply or telecommunications infrastructure is not working.			

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	☐	☐
Values the role of Māori in the Emergency Management System	☐	☐
NEMA involvement required	☐	☐
Allocation Preferences		
Alignment with NDRS	☐	☐
Achieves equity of outcomes for Māori communities, marae, hapū, iwi and Māori organisations	☐	☐
Outcome focused	☐	☐
Applicable in other regions / CDEM Groups	☐	☐
Supports national consistency	☐	☐
Wider funding / resource commitment	☐	☐
Build on existing work	☐	☐
Operational expenditure (Opex)	☐	☐
Capital expenditure (Capex)	☐	☐
Other		
Application from individuals or other organisations endorsed/sponsored by CDEM Group		

NEMA Subject Matter Expert Comment	Supported ☐	Not supported ☐

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