



CDEM Resilience Fund project application form

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

Project title	Development of Products and Procedures for the Mitigation Tsunami Hazards at Maritime Facilities in Northland
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Date of application	30 Sept 2017
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Details on application

Applicant	eCoast Marine Consulting and Research in conjunction with Northland Regional Council
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CDEM Group/s affected	Northland Regional Council
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Other local authorities, Groups or organisations supporting this proposal	
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Project description

Executive summary

This project aims to develop decision making tools for the mitigation of tsunami hazards in ports, marinas and maritime facilities in the Northland Region. The Northland Region is vulnerable to local, regional and distant source tsunami. This area is also a very popular area for maritime based tourism, recreational boating and is home to one of New Zealand's most important commercial ports and fuel refineries.

The products will be designed for use by local emergency management officials and harbourmasters during a tsunami to guide their response activities as the event unfolds. The products, based on detailed hydrodynamic modelling of tsunami heights and currents, will be a series of hazard maps and 'playbooks' for use by the Northland Regional Council which will enable them to respond appropriately and in a timely manner to a particular tsunami event. The hazard maps will include tsunami heights, current speeds and estimates of the duration of the tsunami hazard for a wide range of potential tsunami events. Other maps will demarcate areas deemed to be safe for vessel evacuation. The results of this study will then serve as a template or blueprint for the development of port and marina-specific tsunami response plans throughout New Zealand.

Challenge/opportunity

During a tsunami event, there can be great deal of uncertainty as to what the effects will be at a specific site. Ports and marinas are particularly vulnerable and may suffer damage from tsunami induced currents without the tsunami causing any overland flooding. This was the case in both California and New Zealand during the 2010 Chile and 2011 Japan events where tsunami induced currents either caused damage or created dangerous situations that could have been avoided if operators had been better informed.

We presently have the capability to accurately predict a tsunami's effects in ports and marinas, and this has been demonstrated on numerous occasions, most recently during the September 2017 Chiapas, Mexico tsunami.

The products to be developed will be based on products already in use in California and Oregon, USA. Developed over the past several years, these tools are just now reaching operational use. New Zealand stands to benefit from these efforts by utilizing the results of research activities conducted in the USA. Project leader Jose Borrero has published extensively on tsunami hazards and worked on the development of the California tsunami hazard mitigation products. He will transfer this knowledge and experience to the New Zealand context.

Alignment with identified goals and objectives identified in the CDEM sector

This project fits with the goals and objectives of the Resilience Fund. Firstly this project enhances New Zealand's disaster risk resilience through the development of regional capability and practices. This project is the logical extension of a project funded in 2012 by the Ministry of Science and Innovation. That project developed a methodology for assessing maritime hazards at New Zealand ports. The information and techniques developed in that study will be put in to direct practice in this project.

The project promotes and enables the sharing of data previously produced for Marsden Point in Northland.

This project will promote and enable community resilience by assisting the NRC in critical decision making during a tsunami event.

This project will promote and enable consistency in that the computer model (ComMIT) used in this study has been used for evacuation planning and maritime hazard assessment throughout New Zealand. Furthermore, this model has recently been adopted by GeoNet and the Tsunami Experts Panel as a means of evaluating a tsunami's hazard in a real time context.

This project will result in material change in that it will establish an updated protocol for the NRC to respond to a tsunami event.

Dissemination of benefits to sector

This project will develop a prototype set of tsunami response plans and tools that will be used by the Northland Regional Council for coordinating their response during a tsunami event.

This project is based on previously funded research work that developed the methodology and represents the important final step of transferring these research outputs in to practice.

The experience gained from this project will guide the development of a national standard for maritime warning and guidance during tsunami events.

Once these tools and techniques have been established, they can be readily adapted and developed for other vulnerable maritime sites throughout New Zealand.

****Please see the accompanying documentation for a more detailed description of the project methodology and outputs ****

Project design

Project manager(s)	Jose Borrero, eCoast Marine Consulting and Research Jim Lyle, Regional Harbourmaster, Northland Regional Council
Other project members	eCoast staff
External providers/contractors	

Deliverables

Milestones	Date for completion	Cost
1. Site visits, kick-off meeting	1. July 31, 2018	1. \$ 3,300.00 + exp.
2. Develop bathymetry grids, model set up	2. August 17, 2018	2. \$ 8,000.00
3. Run numerical models, analyse data, create output plots	3. September 14, 2018	3. \$ 18,000.00
4. Progress meeting and workshop	4. September 28, 2018	4. \$ 2,100.00 + exp
5. Develop maritime products	5. November 30, 2018	5. \$ 45,000.00
6. Project delivery meeting and training workshop	6. December 14, 2018	6. \$ 3,300.00 + exp

Identified risks

Risks	Suggested management
Overall, the risks to the project are relatively small. Risk 1: For the analysis and production of the guidance products, eCoast will be using established tools and techniques. The work to be done is largely desktop and computer based and will be done in an office setting. The largest risk here would be computer failure and/or the project manager (Jose Borrero)	Risk 1 Management: eCoast computer systems are backed up regularly. This ensures that data will not be lost and that the project can continue if there is a disk drive or computer failure. Additionally, the budget provides for two external hard drives for the back-up of model runs and project data. One copy will remain with eCoast and the other will be delivered to the NRC.

<p>becoming incapacitated during the project.</p> <p>Risk 2: A second source of risk is in the delivery and uptake of the final product to the Northland Regional Council Staff.</p>	<p>As for staff continuity, eCoast will have two staff member assigned to this project. Project leader Jose Borrero as well as another staff member who will be kept abreast of the project and who would be able to take over and deliver the project if necessary.</p> <p>Risk 2 Management: To mitigate this risk, we will work to ensure frequent communication between eCoast and the NRC stakeholders. This will ensure that the NRC is aware of the project progress and is actively engaged in the development of the final product. This will in turn ensure that the relevant stake holders will be ready and able to use them should the need arise.</p>
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Funding request and use	
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CDEM resilience fund contribution	\$84,650						
Local authority/organisation contribution	n/a						
Other sources of funding or support	n/a						
Budget	Included in the attached detailed project proposal.						
Applies if application exceeds \$100,000 over the life of the project	<table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">Do you wish to attend a hearing in support of this application?</td> <td style="width: 20%; text-align: center;">Yes</td> <td style="width: 20%; text-align: center;">No</td> </tr> <tr> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	Do you wish to attend a hearing in support of this application?	Yes	No		<input type="checkbox"/>	<input type="checkbox"/>
Do you wish to attend a hearing in support of this application?	Yes	No					
	<input type="checkbox"/>	<input type="checkbox"/>					

Application confirmation	
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Approval of Chief Executive	
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CDEM Group comment

Comment: The Northland Region CDEM group supports this proposal.
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