



**SOPAC Member Countries  
National Capacity Assessments:  
Tsunami Warning and Mitigation Systems**

**Niue**



Niue



***SOPAC***



# 1. Results Outline



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## 1.1. Executive Summary

The National Capacity Assessment of Pacific Islands Applied Geoscience Commission (SOPAC) Member Countries: Tsunami Warning and Mitigation Systems project aims to work in collaboration with the member countries of SOPAC to assess their capacity to receive, communicate and respond effectively to tsunami warnings. The Tsunami Capacity Assessment of the ability of Niue to receive, communicate and effectively respond to tsunami warnings took place in a workshop held from 25 – 28 May 2009 in Alofi, Niue.

The workshop was facilitated by a team of visiting experts and attended by some 25 Niue Government agency representatives, Non-Government Organisations (NGOs), international organisations and the private sector to discuss key areas of tsunami warning and mitigation in Niue by completing a comprehensive questionnaire in session, presentations and site visits.

As well as outlining Niue's current status, strengths and opportunities for improvement with regard to tsunami warning and mitigation, a list of recommendations were formulated by the visiting assessment team in consultation with national participants. The aim of these recommendations is to guide further capacity development programs to target improvements in Niue's tsunami warning and mitigation system.

It has been noted that the 'initial impression would suggest that the 20-40 m cliffs provided a significant barrier to inundation by storm surge or tsunami. However, Tropical Cyclone (TC) Heta demonstrated that given the correct conditions storm surge could ramp up and overtop the cliffs. Substantial damage was caused to coastal property and infrastructure and the sea tracks on the coastal terraces' (Pearce 2007). 'Historical accounts show recorded effects of tsunami so far have been small with little recorded damage. The highest recorded event was 21 cm amplitude (42cm peak-to-trough) for the 4 May 2006 tsunami. This had an arrival time in Niue 33 minutes after the earthquake and 21 minutes after the first PTWC warning was issued. Travel times to Niue from a Tonga Trench event would be very short, providing minimal opportunity for formal warnings to be issued' (Pearce 2007). Warne (2009) however does note that the slightly more distant threats are the New Hebrides, South Solomon and Puysgur Trenches. There are a number of distant threats to the west and north of the Niue including the Kuril Islands, Russia, Alaska and South America can also impact these Islands from the Papua Trench.

Niue has a Public Emergency Act 1979 (D5) that makes a broad provision for formulation and implementation of disaster management policies and structures at a national level. There is also a National Disaster Management Plan 2008 (NNDP) (D1) that articulates the roles and responsibilities of the National Disaster Centre (NDC) as the central coordinator for all hazards. These all provide a sound foundation for the enhancement of the tsunami warning and disaster management system.

The visiting team and workshop participants concluded that the highest priority and a significant first step, towards enhancing the tsunami warning and disaster management system, is the clarification of the responsibilities and authorities for the receipt and dissemination of tsunami warnings through the legislative process. That is, inclusion in the Public Emergency Act 1979 and adoption and ratification of a proposed Meteorological Act.

The visiting team also noted that Niue should be congratulated on their proactive and committed approach to improving disaster management arrangements.

Participants in the workshop stated a number of urgent priority areas that need to be addressed and these are presented in Table 2 below.

The Niue workshop participants are encouraged to use this National Tsunami Capacity Assessment report to guide both national projects and aid funded projects to achieve targeted improvements on the Niue tsunami warning and mitigation system. In turn, this will assist in improving systems for other natural hazards such as earthquakes and cyclones. Contingent on the availability of human and financial resources, the Australian Bureau of Meteorology (Bureau) and project partners will aim to work with potential donors to bring the findings of this project to their attention on a country and regional scale. This will be done in the hope of further capacity development projects being undertaken.

## 1.2. Recommendations (including priority and resource intensity)

Table 2 outlines the priority and resource intensity for recommendations made to improve Niue’s tsunami warning and mitigation system. Both the priority and resource intensity are based on the consensus of the visiting Tsunami Capacity Assessment team after discussions held within the Tsunami Capacity Assessment Workshop. It is recognised that these rankings may not reflect the opinions of all individuals involved in the workshop as priorities vary depending on personal responsibilities and areas of interest. Each recommendation is important in its own right to achieve holistic improvements in Niue’s tsunami warning and mitigation system.

The priority ranking and resource intensity scale used as a basis for allocating a priority and resource intensity to each recommendation is explained in Table 1. The Very High priority recommendations should be seriously considered as requiring urgent completion. Low resource intensity recommendations are considered the ‘low-hanging fruit’ that are achievable with very few additional resources.

**Table 1: Priority ranking and resource intensity scale**

PRIORITY	RESOURCE INTENSITY
<b>Very High</b>	<b>Low</b> – Recommendation currently being progressed or could possibly be progressed within the capacity of existing in-country resources (funds and staff).
<b>High</b>	<b>Medium</b> – Recommendation could be progressed by existing staff or with a low to moderate number of additional staff and/or expertise and a moderate level of additional in-country funds. May or may not require external funding.
<b>Medium</b>	<b>High</b> – Recommendation would require a high level of additional staff and/or expertise and funds. External funding support is likely to be required.
<b>Low</b>	<b>Very High</b> – Recommendation would require a very high level of additional staff and funds. External funding support will be required.

**Table 2: Priority and anticipated resource intensity for completion of recommendations made for improving Niue’s tsunami warning and mitigation system.**

Priority	Recommendation	Resource Intensity	Topic	Multi-hazard or tsunami specific	Recommendation Number In Table 4
Very High	Ensure the distribution of the NNDP to all key stakeholders.	Low	Communications	Multi-hazard	13
Very High	Clarify the responsibilities and authorities for the receipt and dissemination of tsunami warnings through the legislative process. E.g: inclusion in the Public Emergency Act 1979 and adoption and ratification of a proposed Meteorological Act.	Low	Governance and Coordination	Tsunami	2
Very High	Formally endorse Telecom as a 24/7 back-up to emergency management operations and in particular, for the receipt of tsunami warnings and dissemination.	Low	Tsunami warnings	Multi-hazard	7
Very High	The provision of a satellite phone to the tsunami warning contact focal point or their delegate that will enable the 24/7 receipt of tsunami warnings from the PTWC via SMS.	Low	Tsunami warnings	Tsunami	9
Very High	In consultation with the village councils identify evacuation routes and procedures and where applicable develop signage, maps and conduct risk assessments.	Medium	Tsunami Emergency Response	Tsunami	19
Very High	Develop all-hazard village emergency plans as a sub-plan of the NNDP and conduct regular exercising and testing of the plan.	Medium	Tsunami Emergency Response	Tsunami	20
Very High	Schedule and conduct regular exercising/testing of the NNDP.	Medium	Tsunami Emergency Response	Multi-hazard	18
Very High	Development of appropriate educational/awareness programs focused on enhancing the community’s knowledge and awareness of multi-hazard events and in particular tsunami.	High	Public and Stakeholder Awareness and Education	Multi-hazard	24

Priority	Recommendation	Resource Intensity	Topic	Multi-hazard or tsunami specific	Recommendation Number In Table 4
Very High	Provide staffing levels that will enable the Meteorological Service to provide an appropriate 24/7 tsunami and multi-hazard response, whilst enhancing the overall provision of Meteorological Services to the Niue community.	High	Tsunami warnings	Multi-hazard	6
Very High	Develop the capacity within the Government of Niue, including but not restricted to Police, Meteorology and Telecom, through the provision of emergency management education, training, planning and Standard Operating Procedures (SOPs).	High	Tsunami Emergency Response	Multi-hazard	17
Very High	Ensure the provision of an external reliable non-break mains power supply to all tsunami warning agencies.	High	Tsunami warnings	Multi-hazard	10
Very High	Establish an all hazard risk profile for all sectors of the community of Niue that identifies the risk to the population, critical infrastructure including lifelines (water, power, and communications) and in particular those elements at risk from wave impact.	High	Tsunami Hazard, Vulnerability, Risk and Mitigation	Multi-hazard	23
High	Ratify the Meteorological Service as the official receiver and disseminator of tsunami warnings underpinned by a Meteorological Act.	Low	Governance and Coordination	Tsunami	3
High	NDC to develop a procedure that ensures the community receives the correct and timely information during any emergency including tsunami events.	Low	Communications	Multi-hazard	16
High	The development of an alternative communications and or broadcasting system to provide redundancy in the event of failure during an emergency event.	Medium	Communications	Multi-hazard	14
High	The reinstatement of the Aeronautical Fixed Telecommunications Network (AFTN) system for all relevant stakeholders.	Medium	Communications	Multi-hazard	15



Priority	Recommendation	Resource Intensity	Topic	Multi-hazard or tsunami specific	Recommendation Number In Table 4
High	Review and complete the current Niue National Disaster Plan (NNDP) in line with recognised international concepts and standards and develop a tsunami specific contingency plan. Ensure the tsunami contingency plan articulates a comprehensive decision-making process (flow diagram) for the receipt and dissemination of a tsunami warning.	High	Governance and Coordination	Multi-hazard	1
High	The realisation of the draft Niue Integrated Strategic Plan (NISP) in reference to the full resourcing of the Meteorological Service to enable timely provision of weather services to the community.	High	Tsunami warnings	Multi-hazard	12
High	To provide comprehensive tsunami awareness training to Police, Telecom and Meteorological staff combined with the development of Standard Operating Procedures (SOPs) for tsunami information dissemination to the community.	High	Tsunami warnings	Tsunami	8
Medium	The installation of appropriately signed roadway barriers at the highest entry points to the Sir Roberts Wharf and other identified sea access points to restrict pedestrian and vehicular entry in times of emergency.	Low	Tsunami Emergency Response	Multi-hazard	21
Medium	Niue to seek membership of the International Oceanographic Commission (IOC) to actively participate in the Intergovernmental Coordination Group of the PTWS and the Southwest Pacific Tsunami Working Group (SWPWG).	Low	Regional and International Coordination	Tsunami	4
Medium	The ongoing participation in the international monitoring of tsunami instrumentation whilst ensuring data products are provided to Niue.	Low	Tsunami Monitoring Infrastructure	Tsunami	5
Medium	To pursue the provision of a graphical based tsunami warning product from the PTWC.	Low	Tsunami warnings	Tsunami	11

Priority	Recommendation	Resource Intensity	Topic	Multi-hazard or tsunami specific	Recommendation Number In Table 4
Medium	Recognise and promote the traditional knowledge of tsunami and multi-hazard events.	Low	Public and Stakeholder Awareness and Education	Multi-hazard	25
Medium	Conduct inundation modelling to identify the tsunami hazard and elements at risk for given extreme scenarios.	Very High	Tsunami Hazard, Vulnerability, Risk and Mitigation	Tsunami	22