



**Report To
Auckland Civil Defence Emergency Management
Group Controller**

**Review of Response to Tsunami Threat by Auckland
Civil Defence Emergency Management Group on 30
September 2009**

KEY FINDINGS

- 1 The current arrangements for warning Aucklanders of a tsunami threat are not adequate.**
- 2 Information management systems across the CDEM sector are not adequate to provide the level of data gathering, analysis and distribution to enable effective response.**
- 3 The provision of detailed science information to enable the impact time and height of a tsunami threat to Auckland (and wider New Zealand) is not adequate.**

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1 Executive Summary

The Auckland Civil Defence Emergency Management Group (Auckland CDEMG) activated its response processes to a tsunami threat generated by an earthquake near Samoa on 30 September 2009. This threat resulted in a devastating tsunami in Samoa and other nearby Islands in the Pacific.

The Group activated its emergency operations centre as did the local authorities in the region. Other agencies (e.g. Police and Fire) likewise implemented response actions.

Information on the tsunami impact on Auckland was based upon information initially sent from the Pacific Tsunami Warning Centre followed by GeoNet via the National Crisis Management Centre (NCMC).

A decision was made not to declare a local state of emergency for the Auckland region, with local authorities undertaking local assessment of information on impact affects for their communities, with regional coordination led by the Group Controller.

The key areas of response from the Group Emergency Operations Centre (GEOC) were:

- Determine the level of tsunami inundation likely based on limited information from GeoNet via the NCMC, information developed from within the Auckland GEOC Planning and Intelligence Team, along with other sources such as TV news
- Assessment of the potential tsunami impacts by Auckland Regional Council technical staff for the Auckland region
- Arrangements with local authorities and agencies to warn people in low lying areas to relocate to high ground
- Communications from the GEOC to local authorities and agencies on the developing situation as tsunami wave impacts were identified.
- Provision of public information to the community.

Key issues that were identified in the Auckland CDEMG response were:

- Lack of timely information of tsunami arrival time and wave height.
- The difficulty in providing adequate warnings to the community.
- The lack of an integrated all agency electronic information management system
- Whether the full command and control of tsunami incident in the region should be with the Group Controller
- The need to review a range of documentation relating to tsunami response

Overall the Auckland CDEMG responded well within the limited level of information available. Connections between agencies in Auckland were appropriate and functioned well.

The main areas of concern relate to the lack of early data on the impacts of a near based tsunami and the ability to deliver early and complete warnings to the community.

2 Recommendations

Warning Systems

- 1 That an urgent review be undertaken of the types of public warning systems needed for the Auckland region with the objective of planning and implementing an integrated warning system plan that identifies the range of systems needed to give adequate warning to Aucklanders of an impending tsunami at any time of the day or night. (It is noted that the Auckland CDEMG committee resolved at its meetings of 3 March 2006 and 29 February 2008 for urgent attention to be directed at this issue).

Information Management

- 2 That the Auckland CDEMG evaluates its requirements for an integrated electronic information management system. This evaluation to be completed once the Ministry of Civil Defence Emergency management has completed its assessment in December 2009 of the system it will be considering procuring.
- 3 That WebEOC be considered for use in the GEOC until a full evaluation of the electronic information management needs of the GEOC has been completed and a system procured.

Science Information

- 4 That the Auckland CDEMG discuss with MCDEM and their science advisors the need to obtain real time sea level gauge data from Land Information New Zealand gauges. This information should be added to the real time data being transmitted by the Pacific Tsunami Warning Centre gauges in the Pacific enabling Auckland to determine the tsunami wave height and arrival times in a timelier manner.
- 5 That the process for gathering and using data from sea level measuring gauges provided by Land Information New Zealand (LINZ) and other sources, such as the deep ocean assessment reporting of Tsunami (DART) buoys of the Pacific Tsunami Warning Centre ((PTWC) close to shore around NZ and including the Auckland region be reviewed by Auckland CDEMG staff as to its application in a tsunami event.

Public Education and Information

- 5 That a review be undertaken to identify the best methods to educate Aucklanders on what to expect when tsunami threats occur, including the types of warnings that will be issued and the action they should take to protect themselves.
- 6 That a review be undertaken of the level of resources, skills and processes needed from the Group Public Information Team to:
 - Monitor and update alternative media channels (web, Face book, Twitter, TV, radio)
 - Engage with Local EOC Public Information Teams and other agency public information people.

- 7 That a review be undertaken of who should be engaging with the media for tsunami information and messaging for the Auckland Group, Local Authorities and agencies to ensure that communication with the media is effective and coordinated.
- 8 That consideration be given to undertaking community research as a result of the tsunami threat to understand what the public expectations for response are in relation to public information and in particular the types and forms of messages issued by the Auckland CDEMG.

Communication

- 9 That a formalised teleconference operation and testing process be developed to ensure:
 - The capability of all participants are developed to a high level,
 - Users gain confidence in the use of teleconferences
 - The procedures become ingrained as business as usual
- 10 That the matter of confusion relating to national advisory message number four (where the title of the message indicated a cancellation but the body of the message refers to secondary waves) be raised by the Auckland CDEMG with MCDEM. This could be done as part of the MCDEM reviews of the tsunami threat and targeted to identify practices that the entire emergency management sector can use to ensure this sort of confusion is avoided in the future.
- 11 That the Auckland CDEMG raise with MCDEM the use of teleconferencing led by the National Controller with Group Controllers. This could have provided a quick and efficient method to advise Groups of the gaps in information that the NCMC were dealing with and to check any immediate areas of concerns that Groups may have had.

Tsunami Response

- 12 That all emergency services review their procedures for calling staff off low lying areas in time to ensure their safety from a tsunami.
- 13 That the Tsunami evacuation mapping project based on 10 metre contours, that was put on hold in 2008 be reviewed to determine the opportunities the outcomes from that project could have for tsunami response planning.
- 14 That a review of the accountability for control of a tsunami threat prior to a Group declaration for the Auckland region be undertaken, with particular focus on an option that the Group Controller take that role for the region instead of it sitting with each local authority. Should this option be accepted after the review, a process needs to be implemented to document that outcome e.g. via a memorandum of understanding or some other binding agreement across the region.
- 15 That the Group Draft Tsunami Contingency Plan dated December 2007 be reviewed in light of the 30 September 2009 tsunami response, and that it be approved as a final Plan.

Group Emergency Operations Centre (GEOC)

- 16 That an a annual after hour's call out exercise be implemented for GEOC staff to ensure that response to an afterhours call out meets the requirements of the Auckland CDEMG standard operating procedure for GEOC activation.
- 17 That consideration be given to the future options for the operation of the GEOC as a 24 hour operation in conjunction with emergency services partners and that this matter be addressed in the review of the Group Plan. This was forwarded as a suggestion for further investigation during the Capability and Capacity project of 2007
- 18 That a review be completed on the process issues identified in section 6.6 Auckland CDEMG Specific Matters and determine outcomes for each issue identified

Business Continuity Planning

- 19 That the Auckland CDEMG continue to promote the need for quality business continuity planning, training and exercising for business, government, local government, utilities and agencies in the Auckland region.

Recovery

- 20 That a review be completed on recovery requirements (particularly economic impacts) that would have been needed should the tsunami threat have resulted in a severe impact to Auckland to ensure that quality planning, training and exercising is in place and effective.

Community Response Planning

- 21 That a strategy be developed to implement a process to launch community response planning for communities in the Auckland region; this to enable local communities to identify risks and develop response plans that that they take ownership e.g. the local Residents and Ratepayers Group or Neighbourhood Watch Group.

Report Recommendations – Prioritisation and Funding

- 22 That the recommendations from this report (subject to their acceptance) be prioritised for action along with the allocation of any budget needed for their implementation.

3 Key Findings

The following is a summary of the key findings from this review:

The Auckland CDEMG response to the tsunami has benefited from lessons learned from exercises that the Group has participated in over the last 5 years. The occurrence of another tsunami incident near Vanuatu on 8 October 2009 resulted in activation for the Group and it did demonstrate improvements in response between the 30 September and 8 October 2009 incidents.

Warning System

The current warning system arrangements in place for a tsunami generated from a regional (less than 3hours) source (such as the Samoan tsunami on 30 September 2009) are not at a level to provide Aucklanders a complete and robust range of warnings.

Note.1 3 hours is generally accepted as the minimum time frame to successfully complete an evacuation.

Note 2 A near source is less than 30 minutes, and the evacuation requirement is immediate.

Information Management

Information needs to be managed through an integrated electronic information management system to address access to the same information across the sector and to reduce the time taken to transmit information at a Local, Group and National level. It is encouraging to note that MCDEM are in the process of evaluating an electronic information management system.

In the interim it is noted that as the Auckland City Council has an EMIS (WebEOC) which is licensed for the Group and that it could be used for the GEOC.

Public education and information management needs to be well resourced and cover a range of computer, television and radio media. Media management for a tsunami should be reviewed in terms of who should manage tsunami media engagement for the Group and Local Authorities.

Science Information

Clear, definitive national guidance regarding scientific advice was not available to Auckland CDEMG in a timely manner that would have enabled the commencement of an effective evacuation operation.

Scientific data on wave information was not provided in a timely enough manner to assist local decision making.

Public Information and Education

Increased public education on how warning systems operate and what to do when a warning is given will improve the likelihood of people being able to move out of the way of danger (reference 10 year old NZ school girl Abby Wutzler who ran the length of Litia Sini Beach in Samoa immediately prior to the tsunami occurring, calling to people on the beach that the sea was going out and a tsunami was coming, alerting her family and other holidaymakers to head for higher ground).

Communication

A national advisory message created confusion to the Group because the title of the message did not match the content – the heading had the word “cancellation” in it yet the body of the message containing information about secondary waves. It is proposed that practices are put in place to avoid this confusion.

Teleconferences have become a key means of communication, issue identification, information collation and broadcast of decisions. The teleconference process in the 30 September 2009 event was not to the level it should have been although improvements were noted in the 8 October 2009 Vanuatu response.

Group staff may wish to consider options to enhance the use of audio visual telecommunication systems. This could include the permanent activation and operation of the audio visual system during a response situation (e.g. open channel) during the event to enhance cross sector communication.

Tsunami Response

Emergency services staff deployed to warn people in low lying areas were potentially at risk from the tsunami if it arrived at any major height and they did not have accurate information of its arrival time. Early relocation of emergency services staff to safe areas before a tsunami arrives is imperative to protect these staff. Emergency response personnel need to know where the safe zones will be and what time they need to get to them.

The lack of knowledge of likely inundation areas restricted the Groups ability to assess those inundation areas and the impacts on communities (including safe evacuation routes). The Contour mapping project that was deferred by the Group in 2008, until the probabilistic modelling is completed in May 2010 should be revisited to assess the opportunities the outcomes from that project could have to immediate tsunami response planning.

A tsunami is a regional threat and it is suggested that the Group review the response arrangements to a region wide tsunami and confirm that the operational response across the region should lie with the Group Controller. If that is agreed by all partners, a process needs to be implemented to document that outcome e.g. via a memorandum of understanding or some other binding agreement.

Group Emergency Operations Centre

The GEOC is not staffed 24 hours a day. Options for support after hours with emergency services and the creation of a “Super GEOC” for all emergency responders including CDEM should be considered. This matter was previously advised for consideration by the Group in 2007.

Business Continuity Planning

Business continuity planning for business, government, local government, utilities and agencies is critical to ensure that those organisations are able to respond effectively to an incident that threatens the safety of their staff, their services and business delivery. The development and implementation of business continuity planning and preparedness appears to be variable across all sectors in Auckland.

Recovery

It is noted that the recovery element of emergency planning was not required in this case. Group, local and agency recovery arrangements need to continue to be identified and developed including the confirmation that organisations have allocated roles for recovery that are going to support a recovery operation. This includes the implementation of quality planning, training and exercising.

Identifying the economic impacts of a destructive tsunami in Auckland as part of recovery planning will provide important data to assist in the enhancement of pre-event recovery planning.

Community Resilience

The development of Community Response Plans for the geographic communities around the Auckland region will enable those communities to identify risks and develop response plans that the local community take responsibility for – for example by the local Residents and Ratepayers Group or Neighbourhood Watch Group.

4 Background

An earthquake exceeding magnitude 8.0 occurred in the Pacific Ocean south of Samoa at 648am New Zealand time on the morning of 30 September 2009 and generated a tsunami that caused considerable damage to Samoa, American Samoa and remote islands in the Tonga group.

The Pacific Tsunami Warning Centre (PTWC) sent warning information about a possible tsunami soon after the earthquake, following which the Ministry of Civil Defence Emergency Management (MCDEM) activated the National Crisis Management Centre (NCMC) and commenced response actions in relation to the warning.

The Auckland CDEMG activated its GEOC as did the Local Authorities in the region (Manukau City, Papakura District and Franklin District operated as a zone from the Manukau City Emergency Operations Centre).

Emergency Planning Limited (EPL) was asked on Friday 2 October 2009 to complete an independent review of the Auckland CDEMG response to the tsunami and associated matters including:

- Timely receipt of advice and action taken with that advice
- Processes, systems and resources used to disseminate public warnings and information
- The quality and timeliness of scientific information
- Coordination processes engaged throughout the Region.

The terms of reference for the review are attached at **Appendix One**.

The key elements of the terms of reference for the final report that EPL was engaged to consider were:

- a. National Warning System – advice received by the Group throughout the event, method of delivery, timing & effectiveness
- b. Decision making – was there sufficient information available to enable an effective group response to the event
- c. Warning messages to the public. How was this achieved? Was it timely, relevant & effective?
- d. Scientific advice – was there sufficient quality and timely advice received to enable timely and effective decisions in response to the threat?
- e. National information flow between GEOC, TLA EOC's & partner agencies. How did information flow? Was it relevant, timely & effective?

This report sets out the findings of the review that was undertaken from 2 October – 4 November 2009.

5 Review Methodology

The process used to develop this report was as follows:

Document Reviews

Review of Auckland CDEMG Plan and relevant SOP's

Review of the Auckland CDEMG Draft Tsunami Contingency Plan

Review of previous Auckland CDEMG exercise reports

Review of GEOC logs and records

Post Event Debriefs

Auckland CDEMG post event debriefs:

- GEOC and Local Emergency Management Officer's (EMO's) by teleconference held Monday 5 October
- GEOC staff debrief held Tuesday 6 October 0900
- Controllers, Emergency Services, utilities and Territorial Authorities debrief held 7 October 2009

Interviews and Meetings

Meeting with Group Controller (Harry O'Rourke) and Auckland Regional Emergency Management Office staff (Ben Stallworthy, Russell Croker, Kiri Maxwell, Dave Neil, Jim Stephens and Lauren Valentine) 2 October 2009.

Subsequent meetings with the Group Controller and various Auckland Region Emergency Management Office (AREMO) staff.

Interviews with GEOC staff Greg Holland and Chris Bailey (Planning and Intelligence and Operations respectively).

Interviews with Local Emergency Management Officer's were as follows:

Jane Lodge	Auckland City
Bill Morley	Waitakere City
David Key	North Shore City Council
Wade Harrison, Judy Fowler, Shane Webb	Manukau City
Kelvin McMinn	Papakura District
Andy Baker	Franklin District
Scott Marchant, Paul Green	Rodney District

Other interviews or information requests included:

Ross Henry	Police
Wayne Highet	Fire
John Cavanagh	Auckland Welfare Advisory Group

John Hamilton and John Titmus

MCDEM

Note - the positive level of engagement across the Auckland Group from the staff named above was excellent and made a significant contribution to enable this report to be compiled.

Report Development

Report drafting and review with Group Controller and AREMO advisor Jim Stephens

Finalise report and submission of the report to the Group Controller.

6 Auckland CDEMG Tsunami Response Review

The following section of the report addresses matters established in the terms of reference for the review in relation to the response of the Auckland CDEMG to the threat of tsunami.

Where relevant other matters have been identified in regard to ongoing planning, resourcing and implementation of civil defence emergency management services for the Auckland region they have been included in this section of the report.

6.1 Warning Systems

6.1.1 Integrated Warning System

Existing warning systems across the Auckland region were activated with various levels of success for example:

- The Rodney DC “OPTN” text system failed due to a technical problem
- The Rodney District Council did not activate its siren warning system because public education on their application had not been undertaken.
- The North Shore City automated dialling service where people register a phone number and an automated message is sent to that number such as “you need to evacuate your home and move to higher ground” was not used because homes didn’t need to be evacuated. Measures have been put in place to have a suite of messages that an appropriate warning message can be chosen from
- Waitakere City fully activated their siren system

The current warning arrangements for Auckland of a tsunami do not provide a comprehensive and coordinated warning system for the region. This would be particularly so if the tsunami threat had occurred in the middle of the night when many residents were asleep and not listening to radio or TV. This demonstrates the need for a range of warning methods.

Developing a fully integrated warning system that includes warnings generated through a civil defence electronic information management system will increase the capability to give Aucklanders an early warning to a tsunami threat.

All forms of warning systems need to be included in overall warning message planning e.g. sirens, radio and TV broadcasts, face to face warnings (such as delivered by Police on beaches), and the use of Neighbourhood Watch etc.

There is no one warning system for a tsunami threat – a “toolkit” of systems is required that is coordinated and used in an integrated manner across the region.

6.1.2 Public Understanding of Warnings

Any warning system that the Group or Local Authorities want to use must be accompanied by an appropriate level of public education (and where possible practice) to ensure that communities are aware of what they need to do when a warning system is activated.

Reviewing the manner in which Aucklanders understand tsunami warnings and then what they do to get to safe ground should inform the development and implementation of future public education programmes.

6.1.3 Safety of Response Personnel Issuing Warnings

Police, Fire, Council staff and volunteers were sent to beaches and low lying areas across the region to warn people in person. Ensuring the safety of those personnel is paramount, especially in this situation where information on wave arrival times and heights was unknown.

There was the potential for emergency responders to be in danger if the tsunami arrived while they were undertaking their warnings because the wave arrival times were not accurately known.

6.2 Decision Making

6.2.1 Statutory Provisions

This report has been prepared in light of a significant amount of discussion post the incident. A key issue that has been identified in relation to the level of control needed at local and regional level for the response to a regional incident such as a tsunami.

A declaration under Section 68 of the Civil Defence Emergency Management Act 2002 provides a Group Controller the power under section 28 to “direct and coordinate ... the use of personnel, material, information, services, and other resources made available by departments, Civil Defence Emergency Management Groups, and other persons.”

In this case a civil defence declaration was not made for very valid reasons.

The Auckland CDEMG Group Plan refers to event types and status¹. This event was a level 4 event type which is:

- Imminent state of local emergency that is regionally significant.
- Due to the magnitude or geographic spread of the incident, the GEOC has been activated to manage the emergency and coordinate regional resources, or
- A warning of a significant event that will have a regional impact has been received, or
- Coordinated assistance is required to support an adjoining CDEM Group

The Group Plan in this section notes that the role of the Group Controller is to exercise statutory power with Local Controllers responding to priorities set by the Group Controller.

The issue here is whether the Group Controller has the power to exercise statutory powers in an incident where there is no declaration of a local emergency in the Auckland region. Whilst the Group Plan appears to infer that this is the case the Act as referred to above appears to be clear that the Group Controller can only institute statutory powers where there is a local declaration.

However, a number of staff from local authorities in Auckland in the debrief process have raised the need for Group control, command and coordination in a tsunami response.

¹ Auckland CDEMG Group Plan, May 2005, Page 65, table 3.2

It is suggested that the Group review the response arrangements to a region wide tsunami to consider whether the operational response across the region should lie with the Group Controller. If agreed by all partners, a process should be implemented to document that outcome. A mechanism for this could, for example, be via a memorandum of understanding or some other binding agreement.

6.2.2 Declaration Option

Section 6.2.1 above refers to the provisions relating to a declaration.

Whilst a threat of a tsunami was received and the level of the event status in the Group plan was level 4, a decision was made not to make a declaration based on:

- The threat was managed using resources, systems and process that did not require additional support through a declaration
- Definitive information was not received that the threat would become a reality
- A declaration if the threat became a reality and was needed could be undertaken very quickly and would not hinder the response.

The making of a declaration in anticipation of a threat becoming a reality has been the subject of discussion at many emergency forums in recent years. There is a concern that declaring a local state of emergency where the threat does not eventuate could result in the community taking the view that authorities are “crying wolf”. In other words, being perceived to declare unnecessarily and then the next time a declaration is required the community being less responsive to the declaration and associated warnings etc.

In this case, the response actions were not impacted at all by the decision not to declare.

As set out in the last paragraph of section 6.2.1 above, it is proposed that the Group review response arrangements to a regional tsunami.

6.2.3 Teleconferences

There is a high level of agreement that teleconferences provide a very important communication channel in a response phase. They have, to some degree, provided a verbal situation report particularly early on in the response phase.

The Group have a documented protocol for teleconference call management and participation. It would appear that the protocol was not adhered to by a number of parties with the result being:

- People joining the teleconference late or not all
- Dealing with less important issues than should be dealt with on a teleconference
- Teleconferences taking too long (getting into too much detail) and diverting key management staff away from information assessment and analysis
- Lack of structure and discipline

If teleconferences are replacing or supporting the situation report process early in an event it is important that decisions and discussion are documented. The Group have implemented a process to record teleconferences – refer **Appendix Two**.

It is recommended that the Auckland CDEMG consider instituting a monthly test of teleconference equipment and the procedures that are documented – this will result in better trained and confident users.

It is noted that general feedback from various parties confirmed that the 8 October 2009 Vanuatu teleconferences were significantly improved from 30 September 2009.

As a footnote to this section it is noted that teleconferences are acting as an oral situation report. The content and decisions from teleconferences need to be recorded which is addressed in the matters already documented by the Group – refer **Appendix Two**.

6.2.4 Contour Maps Project

This matter was reported to the Group Committee in 2008. At that time the project was put on hold pending further modelling of inundation projections. The tsunami threat on 30 September 2009 highlighted the need to get people off low lying areas to high ground to ensure they were safe in the event of the tsunami arriving.

A number of people spoken to in relation to this matter have indicated that the development, implementation and public education of the contour maps project (but redefined as a “coastal evacuation area” or the like) should be revisited as soon as possible and refined once the probabilistic Tsunami modelling that is underway now, is completed in May 2010

6.2.5 Draft Tsunami Contingency Plan

The Group has had a Draft Tsunami Contingency Plan since December 2007.

The draft document should have been either adopted or amended since that date. It does contain a section specifically relating to short term arrival tsunamis. This document should be reviewed in light of the 30 September 2009 tsunami response by the Group and then completed as a final Plan.

6.2.6 Electronic Information Management System

Decision making is heavily reliant on accurate and timely information.

Information sent to and from agencies was done in a number of ways through email, text, and fax - often by sending the same message by each of these channels.

On occasions, the message using one or more of the channels was unsuccessful in getting to the recipient.

The same message was sometimes sent to the same person by a number of persons e.g. from Operations and Public Information resulting in the same message being received many times by one person through various channels. This caused confusion to the receivers who had to check that they had not previously received the message.

Previous Group exercises have identified the need for an integrated electronic information management system to address these issues at a Local, Group and National level. Such a system will only be as good as the capability of the personnel using the system. Appropriate training will need to be provided to those personnel.

MCDEM have a current project for such a system and it is understood that tenders have closed and are being evaluated for the system.

The Auckland CDEMG should consider its requirements and options for such a system once MCDEM have made a decision for its preferred system.

6.2.7 Police, Fire Service, Volunteers and Council Staff

It is acknowledged that the liaison staff from and Police and Fire provided quality information and input into response planning in the GEOC and to local authorities.

Staff on the ground from these Services, along with Council staff and volunteers played an important part in the delivery of warnings to people in low lying areas of Auckland.

The safety of these staff is addressed in section 6.1.3. of this report.

6.3 Public Information

6.3.1 Public Information Approval Process – Group Controller

Updating the web page or issuing media releases has until now required the sign off of the Group Controller. The need to be able to act quickly and responsively to a given situation requires the preparation and release of timely information.

To address this pre-prepared media releases have been drafted. In a time of immediate or urgent response all that is then needed is for the technical data relating to the tsunami to be added in to the media release and/or web page which can be released without any delay waiting for the Group Controller sign off.

6.3.2 Public Information Team - GEOC

At the commencement of the response on 30 September 2009 the Public Information Team was not fully assembled as it was felt that the threat would not require a number of people in the team to manage the information processes related to the threat.

Public information requirements were higher than expected and the Public Information Team operated with under strength numbers.

It is acknowledged that the Public Information team were operating in an environment of little accurate knowledge of the tsunami arrival time, height, and likely inundation areas. In spite of this, there was a considerable range of monitoring and assessing of the media information required.

Managing the information flow through the Public Information Team requires appropriate staff resources.

With the modern day access by the community to electronic channels there is a need to be highly proactive in this area. The following are examples of what the Public Information Team should consider resourcing and using for public information:

- The web page needs to be constantly updated,

- Other agency web sites need to be monitored
- Interactive web sites such as Face book and Twitter need to be actively used and monitored
- Television and radio news needs to be monitored

There is also a need for public information teams within Local Emergency Operations Centres, the GEOC, and other agencies to work collaboratively as per the Auckland CDEMG Functional Plan for Public Information.

It would be timely for the Public Information Manager from the AREMO to consider a review of the resources, skills and processes needed for the Public Information Team to:

- Monitor and update alternative media channels
- Engage with Local EOC Public Information Teams and other agency public information staff.

6.3.3 Media Relationships

It is important that the media are seen as an important source of data and a channel to use to broadcast messages from agencies. As with any element of emergency management, relationship management and ongoing rapport is necessary to build those links that may be effectively used in a crisis.

6.3.4 Media Engagement

A number of local authorities engaged directly with the media on information for the community – for example advising the media that the threat was cancelled as a result of the National Advisory Message number 4.

The advisory message was headed “National Warning – Tsunami: Cancellation Message”.

This was interpreted to mean that the tsunami threat was cancelled and media were contacted at local authority level to advise them of this information. Later on in the advisory it states:

“A wave recording of 40cm was recorded at the East Coast tidal gauge. However, the first wave is sometimes not the largest. We recommend local areas remain vigilant.....”

A number of Councils initially used this advisory to advise the media they were downgrading the warnings to their communities which could have had serious implications to personal safety.

The fact that the advisory still contained warning information was confusing when considering the advisory message title as described above. (This matter is also referred to in section 5.5 National Information Flow).

The important issue is to understand who should engage with the media for a tsunami event public information.

This matter is recommended for further review.

It is noted that MCDEM advised media nationally that all responses would be at the local level. The views established from various CDEM and local authority staff in Auckland who contributed information to this report were that the information provided from the NCMC:

- Did not provide information early enough,
- Did not provide enough accurate data,
- Did not identify or communicate the gaps in the information that the NCMC were trying to obtain to be able to pass on to the CDEM sector

6.3.5 Public Expectations for Public Information

Now that the Auckland region community has been through a serious threat of tsunami, it may be an opportune time to gain feedback from the community to understand what the public expectations for response are in relation to public information. In particular, the types and forms of messages issued by the Group need to be evaluated.

If this suggestion is accepted it should be done in the context of the community research undertaken with the community in exercise Ruaumoko in 2008.

6.4 Scientific Advice

6.4.1 Assessment of Scientific Advice

The Planning and Intelligence Team of the GEOC has a team member assigned the role of Science Liaison.

The ability of the GEOC staff and the Group Controller to assess the threat and implications of a tsunami rely heavily on information that the Planning and Intelligence Team are able to get from a range of sources. Principally this information is sourced from GeoNet who provide scientific information to the NCMC. The information from GeoNet is provided from the NCMC to Groups through Advisory Notices.

The following is the list of advisory notices and media releases received from the NCMC by the GEOC:

National Message	Sent by NCMC ² (using pre set email address for Auckland CDEMG)	Received by the Auckland GEOC
1	0735	0742
2	0843	0850
3	0958	1033
4	1025	1105
5	1111	1116
6	1216	1222

² This is the time the NCMC “hit” the send button to transmit the information. The 500+ addresses that each message is sent to typically take between 2 and 6 minutes to be delivered.

National Message	Sent by NCMC ² (using pre set email address for Auckland CDEMG)	Received by the Auckland GEOC
7	1325	1330
8	1452	1458
9	1615	1620
Media Release	Sent by NCMC (using pre set email address for Auckland CDEMG)	GEOC
1	0802	0950
2	1030	1231
3	1225	1228
4	1330	1333
5	1500	1503
6 ³	1459	
7 ⁴	1618	

Table 1 – National Messages and Media Releases

Note – Advisory Number 3 was not received electronically by the GEOC – a fax copy was sent by the NCMC shortly after 1000 hours, but was not cleared from the fax in the GEOC until 1033 hours. This matter has been addressed by relocating the fax – refer **Appendix Two**.

The GEOC science team noted that a tsunami arriving in 1-3 hours from the point of generation is a very short time to warn the public. Science information, the MCDEM assessment of that information, and receipt and interpretation by the Group needs to be early and decisive to enable evacuation decisions to be made.

The first advice of a potential tsunami came initially from the Pacific Tsunami Warning Centre (in accordance with Group and National procedures) shortly after the earthquake in Samoa. This information was the initial data that the GEOC staff worked on to assess the potential impact of any tsunami resulting from the earthquake.

The first advisory notice contained information that the threat of a tsunami would generate wave arrival times that were specified in the advisory. Wave height data was not known at that time.

The second advisory notice received at 0850 hours included the following information:

³ As at 2 November this data is still being checked for completeness

⁴ As at 2 November this data is still being checked for completeness

Arrival of first wave to impact NZ estimated to be at 0922 hours at Bay of Plenty East Cape at 1.00 metre in height. "Wave heights outside of these regions will be advised as soon as possible but territorial authorities may need to extrapolate using this initial information."

The third advisory notice (as identified above in table 1 was not received in the GEOC until 1033 hours) indicated an estimated arrival time of 1012 hours on the east coast and 1039 hours on the west coast of Auckland.

Clearly, if the scientific staff in the GEOC relied only on the advisory information provided from MCDEM, the time to provide appropriate response measures to evacuate people from low lying areas would not have not been sufficient.

As stated above, the NCMC advised that territorial authorities may need to extrapolate information received from advisory number two in assessing their response.

The information from the GEOC science staff is that they relied on a number of sources of information separate from that coming from the NCMC, including:

- The pictures from live TV of the effects of the Samoan tsunami
- The information on the huge impact resulting from the tsunami.
- Anecdotal information that wave heights to hit Samoa were a number of metres in height.

GEOC science staff used information gained from the 2008 work undertaken as part of the initial contour project study.

Estimation of wave heights for Auckland on 30 September 2009 was done to determine areas that would fall into a category as a low lying area. That data was used to form the basis for the decision to warn people in low lying areas of the region to move to higher ground.

GEOC staff also directly called the GeoNet staff (having personal knowledge of the people working within the GeoNet team). Thus, they were able to compare data assessment and evaluate potential impacts on Auckland.

It is suggested that the Group discuss with MCDEM and their science advisors the level of tsunami detection equipment and what additions may be needed to improve the capability of the sector to better identify, analyses and determine tsunami wave height and arrival times. The implication is the deployment of more measuring equipment in the Pacific. If it is determined that more equipment is needed, agreement will need to be established as to the costs and who will fund those costs.

This will avoid the situation that occurred during the Samoan tsunami event where the call to warn the Auckland public (to move from low lying areas) was held up as MCDEM wanted the Auckland CDEMG to wait for more accurate scientific information. Evacuations are time critical and decisions need to be made with the required time frames in mind, rather than waiting for more accurate scientific evaluation. Critical timeframes need to be decided prior to tsunami events and processes to work to the timeframes should be rigorously adhered to.

Decisions during a tsunami event will then need to be made based on the scientific information available at the pre determined, critical point in time for each location in New Zealand.

In addition to the tsunami detection equipment is the need to review the real time data that is currently provided from LINZ sea level gauges as set out in section 5.4.2 below.

It was also noted that the Auckland CDEMG and MCDEM web sites had different wave arrival times which was due to the latest information from advisory data not being updated at the same time by both agencies.

6.4.2 Sea Level Measuring Gauge - Auckland

Sea level measuring gauges on the main land coast around NZ will not provide early warning information to the areas where they are located. They will provide essential data for locations further down the coast during a tsunami as well as for post tsunami evaluation and therefore historical data for future comparison.

Sea level gauges at Raoul (available now) and Great Barrier (to be installed in 2010) Island's will be important for Auckland only if there is access to real time data.

Appendix Three sets out the sea level measures recorded by NIWA gauges. As can be seen there is no data recorded for Auckland.

The Auckland Port Company does have their own tide gauges. This information needs to be incorporated into the data assembled by NIWA so that comparisons with various locations around NZ can be made with Auckland data. This may provide information relevant to future tsunami response planning e.g. identification of geographical areas where people will need to move from low ground to areas that are safe from tsunami impact.

It is suggested that Auckland CDEMG staff review this matter further.

6.5 National Information Flow

6.5.1 Electronic Information Management System

Section 6.2.6 of this report deals specifically with the issue of a nationally integrated emergency management electronic information management system.

The delay in message transmission, duplication of messages and lack of instant access to information is a major barrier to improving the response capability of the sector.

It is encouraging to see the lead from MCDEM in procuring such a system (refer to section 6.2.6.).

6.5.2 National Advisory Messages

The importance of clear communications is obvious for any emergency response. The fact that confusion developed over the title and content of national advisory message number four (as detailed in section 6.3.5 of this report) suggests that there needs to be a review of the content of these critical messages.

Reviewing the title of a message and then the content to make sure they are not contradictory, is of prime importance. Peer reviewing of messages before they are sent is another tactic to ensure that messages are clear.

This matter should be raised with MCDEM (if it has not already been done) as part of their reviews of the tsunami response.

6.5.3 National and Group Teleconferences

It is noted that the National Controller did not call a teleconference with Group Controllers. If a teleconference(s) had been used it could have provided a quick and efficient method to advise Groups of the gaps in information that the NCMC were dealing with and to check any immediate areas of concerns that Groups may have had.

6.5.4 Time to Receive National Advisories One and Two

The time difference between receipt of National Advisory Message number one and National Advisory Message number two was about 1 hour.

The Group and Local Authority staff have expressed concern that this was a significant gap in time.

It is understood that the NCMC needed to wait for the evaluation of scientific data that was not readily available (in particular wave information travelling across the Pacific).

Had the Auckland CDEMG and the wider community been advised as to the fact that the NCMC were waiting for information and the reasons why they didn't have it, it would have stopped questions about why information was not forthcoming from the NCMC. When the NCMC (or the Group, Local EOC's, other agencies etc) have gaps in information that they are trying to fill advising the wider CDEEM sector of that fact would be useful.

Understanding what information is not known (especially if that information is soon to arrive), provides an important level of understanding to other "players".

A number of staff interviewed as part of the process to develop this report commented that an early assessment from the NCMC of media reporting of the Samoan tsunami impact in that country and what various media were reporting would have helped the Group to understand the overall level of media knowledge of the event.

This underpins the important role that the media have in often providing immediate information on what has occurred at a specific disaster site.

6.6 Auckland CDEMG Specific Matters

6.6.1 Actions Implemented Post 30 September 2009 at Group Level

Initial matters identified from the post incident debriefs have been documented and a number of actions implemented.

These are set out in **Appendix Two**.

6.6.2 GEOC and Local EOC Activation

Activation and establishment of the GEOC and other EOC's was relatively fast, but if the event had occurred at, say, 300am on a Sunday morning it is questionable whether the response would have been as quick.

This is an inevitable consequence of not having a fully staffed GEOC 24 hours a day, seven days a week, 365 days a year. However, emergency services (Police and Fire in particular) operate permanent fully staffed operations centres within the region.

Reviewing the way in which the GEOC activation is undertaken particularly with regards to the support that emergency services can provide after business hours should be a priority.

Two call out exercises in 2008 indicated that functional GEOC can be established in 90 minutes which is the maximum key performance indicator time provided in the Standard Operating Procedure G101 for GEOC activation.

When considering the options for the establishment of a GEOC about three years ago, the Group Committee did consider the establishment of a "Super GEOC" that incorporated CDEM and emergency services functions and was staffed 24 hours a day.

Such an arrangement would ensure that initial information about a regionally sourced tsunami (such as the Samoan tsunami) would generate, is analysed and managed quickly whilst the GEOC is being established.

Activation of GEOC could be improved with implementation of an electronic staff call out system. This could be part of the electronic information management system referred to in this report. In the mean time the Group should consider an unannounced after hours call out for GEOC staff to test and confirm that the activation is within acceptable time frames.

6.6.3 Other Group Related Findings

A range of Operations matters have been identified as part of the interview process and are noted as follows for further consideration by Auckland Regional Emergency Management Office staff:

6.6.3.1 Alternate Group Controller

In the event the Group Controller is absent, an Alternate Controller needs to be able to take that role quickly. It is suggested that the Group Controller reviews this matter especially to suit fast hitting events such as Tsunami

6.6.3.2 GEOC Staff Training

It is noted that the GEOC staff are all volunteers, primarily from the Auckland Regional Council. The response and capability of the staff in the GEOC was very good and should be complimented, as was that of staff at the local EOC's.

GEOC staff have clearly signalled their commitment to the roles that they hold in the GEOC and have indicated that they want to receive further training to improve their capability, knowledge, and confidence

6.6.3.3 Zones

The Group Plan provides for three “emergency response zones” to improve coordination and integrated planning at a local level as follows:

North-West	Rodney, North Shore, Waitakere
Central	Auckland
Counties-Manukau	Manukau, Papakura, Franklin

The Central zone functions easily because it is based upon the Auckland City Council boundary.

The Counties-Manukau Zone was used in the tsunami response on 30 September 2009 with Manukau City Council activating its EOC. The Emergency Management Officers for Papakura and Franklin utilised the coordination arrangements from the Manukau EOC to support their work in the response phase.

The North-West Zone was not used – each of the three Councils developed their response independently of each other.

Reviewing the use of zones, particularly for the North-West could identify opportunities for shared management and resources.

6.6.3.4 Communication – Radio and Email

Radio contact during the 30 September 2009 threat from the GEOC to local EOC’s was not fully responded to by every EOC. A review of the procedure for radio engagement and implementation and testing is suggested.

Emails were sent to a range of agencies. Operations staff were not sure whether their emails arrived. The implementation of an electronic information management system will address this issue.

Pre set email address distribution lists for known agencies were not available to the Operations Team – this required them to establish those lists during the response. Implementing a review of this process is necessary as it is understood by EPL that these lists do exist.

6.6.3.5 GEOC Desk Files

A number of GEOC staff indicated that desk file checklists needed to be available as an aide memoir for staff – it is understood that these do exist and this process needs to be reviewed.

6.6.3.6 Activation of Auckland Welfare Advisory Group (AWAG)

The AWAG through the Chair of that Group was not formally contacted in accordance with Standard Operating Procedure 101 Activation by the GEOC in relation to the threat of the tsunami and the potential to establish welfare arrangements and plans.

The early advice to the AWAG should be developed as part of any standard response to any threat or incident.

6.6.3.7 Auckland Engineering Lifelines Group

Similar to the AWAG, the Lifelines Utility Coordinator was not proactively contacted in accordance with Standard Operating Procedure 101 Activation by the GEOC in regard to the 30 September 2009 threat. It is noted that this was done for the 8 October 2009 Vanuatu threat. The early advice to the Lifelines Utility Coordinator should be developed as part of any standard response to any threat or incident.

Actions as a result of the tsunami threat from a Lifelines perspective include:

- Check with MCDEM the contact information for all Auckland Lifeline Utilities to ensure the correct contact data is loaded in the MCDEM systems for national warnings
- Reminding Auckland Utilities they need to register with the Auckland CDEMG web site to receive status notification changes

7 Other Matters

As a result of the tsunami threat the following matters have been identified with suggestions for further consideration:

7.1 Importance of Business Continuity Planning

Business, government, local government and agencies have variable levels of business continuity planning and capability in place to deal with an incident that severely impacts their capability to deliver their services even at a reduced level.

Promotion by the Auckland CDEMG is suggested for the need for quality business continuity planning, training and exercising to be implemented at Local Government, utilities and agencies within Auckland.

7.2 Recovery

If the tsunami threat had developed into an actual incident where severe damage was caused, the question arises as to the capability of Auckland to recover effectively from such an incident.

In this case the recovery element was not required following the threat. Recovery arrangements need to continue to be identified and developed, including the confirmation that organisations have allocated roles for recovery to support a recovery operation. This includes the implementation of quality planning, training and exercising.

Understanding the likely impacts of a tsunami from an economic perspective is important to enable proactive pre-event recovery planning.

7.3 Community Response Plans

Community resilience has been developed over the years in NZ on the basis that there is no “great army” of responders who are necessarily going to be available to assist or even get to communities at risk from or subject to the effects of a disaster.

Communities, particularly in rural and provincial NZ have been proactive in developing community response plans where the local community (supported by the Group or Local CDEM and emergency services) identifies community risks and develops response plans that the local community take responsibility for – for example by the local Residents and Ratepayers Group or Neighbourhood Watch Group.

Rural and urban communities in the Auckland region could take the same approach, if this is supported by the CDEM and emergency services sectors.

The benefit would be communities well versed in understanding risks to themselves but more importantly, understanding how to deal with threats or incidents where the direct support or resources from the CDEM/emergency services were not available.

Appendix One – Terms of Reference

Terms of Reference for Review of Auckland CDEMG Response to Samoan Tsunami Threat

1. To review the group's response to the national warning Tsunami threat to NZ on Wednesday 30 September 2009
2. Specific attention is to be given to;
 - a. National Warning System – advice received by the group throughout the event, method of delivery, timing & effectiveness
 - b. Decision making – was there sufficient information available to enable an effective group response to the event
 - c. Warning messages to the public. How was this achieved? Was it timely, relevant & effective?
 - d. Scientific advice – was there sufficient quality and timely advice received to enable timely and effective decisions in response to the threat?
 - e. National information flow between GEOC, TLA EOC's & partner agencies. How did information flow? Was it relevant, timely & effective?

Recommendations:

Make recommendations on opportunities for improvement

Liaison:

Jim Stephens is the advisor to assist for this review but not in an investigative capacity

Review activation and staffing of GEOC

Report deadlines:

1. Interim report to the group controller by Thursday 22 October 2009
2. Final report to the group controller 2 days following the interim report being returned to you.

Appendix Two – Initial Actions Implemented by AREMO

The following action in relation to a range of operational areas identified in the debrief process by the Auckland CDEMG staff have been implemented or identified for further work as follows:

Subject	Description	Action taken or identified
Audiovisual System	Cutting out & no volume on middle office TV	Repairs completed
Website Status Updates	Not being able to update the public website with current information without the Group Controllers Approval	Group controller has delegate AREMO staff with the authority to update web page based on pre arranged templates
Teleconference Recording	Not having accurate minutes from teleconferences	Log book obtained and purchased a teleconference unit that records everything
Fax Machine	Not being checked frequently enough	Have moved the fax out of the Comms. room to the main office
Photocopier	Far too slow, taking up to 2 mins to get documents	New copier to be ordered
Media releases, Advisories, Situation reports	Need better system for management of data in Group Controller area	Trays for paper management in place
World time	GEOC staff constantly having to make time conversions	Clocks showing world time installed in the GEOC
Phones	Not all phones in the GEOC were logged on	Initiated system check and regular phone checks
Contact lists	Email contact groups missing or not up to date	Office Manager to update lists and implement regular review
Computer's automatic updates	PC's taking 10 mins to boot up	Process established to boot up all computers every fortnight
Event Documentation	Use of logs etc	Not well documented – need to implement a review. Hard copy folders established
Desk E-mail contact lists	E-mail contacts laminated on desktop with all key outside contacts i.e. NCMC	Prepare lists and place in GEOC
Contacts Lists	Add contacts lists to the ARC database.	Implemented contact lists into ARC database
Emergency status block on website	The status block could be a lot bigger or pulsing	Identified as a project for action by Dave Neil
Comms room	Does the comms room need to be isolated from the GEOC proper? The comms team are insulated from what is happening	Radio traffic is handled by headphone and foot pedal. Background noise should not be a problem. Review location in GEOC
Projector screens	Split screen for the multiple & critical information updates.	New software requires to be purchased to enable screens to be split
Projector screens	Need better instructions for the screens	Visible instructions on how to change large projectors implemented

Subject	Description	Action taken or identified
Tsunami to do list	List of key tasks should be readily available	Hazards Team have agreed to make a list
Emergency Status Board	There is no status that is readily available to GEOC staff as they report for duty	Install a new screen and projector (similar to boardroom) in GEOC. Screen to drop down in front of Copy Centre paper store. Develop a series of event templates that get displayed by the 2 nd Call duty officer.
Registration board for GEOC volunteers	When the volunteers arrive there is no check in process	Install a whiteboard in the GEOC kitchen facing the entry door. As volunteers arrive they can place their name in the appropriate team space. Date, Name, Time in and team section (Ops, Logs, P&I and Comms)

Appendix Three – Sea Level Measures

Measured parameters of recorded tsunami waves in New Zealand, with elapsed time from the time of the earthquake (at 05:48 30 September 2009 NZST) and other times in NZST.

Station	Elapsed arrival time [hrs]	Arrival time [NZST 30 Sept]	Peak wave height (crest-to-trough) [m]	Peak wave height above tide level [m]	Wave period for peak wave [min]	Elapsed time of peak [hrs]	Time at peak wave [NZST 30 Sept]
Kaingaroa	4.22	10:01	0.89	0.39	11	5.37	11:10
Moturiki Is.	5.23	11:02	0.54	0.37	8	9.18	14:59
Marsden Pt.	5.95	11:45	0.13	0.08	8	11.57	17:22
Whitianga	5.53	11:20	0.27	0.17	21	12.28	18:08
Sumner Head	7	12:48	0.24	0.14	14	18.97	00:46 [1 Oct]
Lyttelton Port	7.22	13:01	0.43	0.24	11	13.53	19:20
Timaru Port	7.2	13:00	0.55	0.32	11	12.88	18:41
Green Island	7	12:48	0.21	0.12	10	8.92	14:43
Charleston	8.02	13:49	0.41	0.23	12	11.75	17:33
Jackson Bay	7.93	13:44	0.61	0.26	9	11.85	17:39

Port Taranaki	6.77	12:34	0.31	0.16	11	19.93	01:44 [1 Oct]
Kapiti Island	-	-	negligible	negligible	-	-	-