



# **Exercise Tangaroa 2016**

## ***(Regional Source Tsunami Scenario)***

Post-exercise Report  
Ministry of Civil Defence & Emergency  
Management

June 2017

## Foreword

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New Zealand's location in the Pacific, astride a plate boundary, means that it experiences many large earthquakes, some of which cause tsunami. Tsunami generated by large earthquakes at distant locations, such as South America or western North America, could be damaging in New Zealand but one of the most significant threats we face comes from tsunami generated within one to two hours travel time from the nearest New Zealand coastline. Exercise Tangaroa 2016 was designed to test the civil defence emergency management (CDEM) sector's ability to respond to such a regional-source tsunami (that is, a tsunami in which the waves are expected to take between one and three hours to arrive).

The Exercise, built around a magnitude 9.1 earthquake near the Kermadec Trench northeast of New Zealand, was conducted over three days in August and September 2016. Nearly 100 government and non-government agencies participated, including 5 international organisations – the largest collaboration to date under the National CDEM Exercise Programme. A stark reminder of the relevance of exercise practice came two days after the Exercise started on 2 September 2016, when a magnitude 7.1 earthquake near the East Cape of the North Island resulted in small tsunami waves reaching the East Coast of New Zealand. During a local source tsunami (that is, a tsunami generated close to the New Zealand coast) there is very little time to issue official warnings, highlighting that people need to know the natural warning signs of tsunami and what action to take, without waiting for official advice.

It became clear during Exercise Tangaroa that in such a scenario New Zealand's CDEM response, including emergency services, would be stretched as thousands of people were displaced in most regions across New Zealand, requiring alternate accommodation, food, and personal and medical care. Services and transport networks were likely to have suffered significant damage, making response and then recovery more challenging.

This report provides an overview of Exercise Tangaroa 2016 and summarises the strategic and operational findings derived from evaluation and feedback provided about the Exercise. The report includes high-level recommendations for how individual agencies and across-Government systems involved in major natural hazard events can enhance their readiness, response and recovery for future events.



National Controller's Team Meeting with National Crisis Centre Management function managers and Liaison Officers from support agencies.

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# Section 1 Executive summary

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## 1.1 Introduction

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New Zealand's coasts are exposed to tsunami from submarine and coastal landslides, island and submarine volcanoes, local earthquakes and large earthquakes at distant locations, such as South America, or western North America.

Due to intense coastal development over recent decades, a large tsunami today is likely to be very damaging. One of the most significant threats comes from tsunami generated within one to two hours travel time from the nearest New Zealand coastline. No part of the New Zealand coastline is completely free from a tsunami threat.

Exercise Tangaroa 2016 was conducted under the National CDEM Exercise Programme. The programme was established in 2006 to provide a formal framework for exercises in New Zealand. The 2016 Exercise was based on a regional-source tsunami originating near the Kermadec Trench northeast of New Zealand. It was designed to build on Exercise Tangaroa 2010, which was based on a distant-source tsunami originating from South America.

## 1.2 Overview of exercise

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Exercise Tangaroa was conducted in three phases over three days during August and September 2016. One hundred-and-one agencies registered to participate in the exercise, with 96 agencies undertaking facilitation or full participation. Participants included all 16 regional CDEM Groups plus an additional 15 local authorities, and 20 lifeline agencies. Sixteen national agencies participated, along with four non-governmental organisations. Five international organisations also took part, including the Federal Emergency Management Agency from the United States and Emergency Management Australia.

The scenario was built around a regional-source tsunami originating from a magnitude 9.1 earthquake near the Kermadec Trench. The scenario was designed to provide some, but not a lot, of warning time and to impact as much of the New Zealand coastline as possible. The aim of the exercise was *“to test New Zealand’s arrangements for preparing for, responding to, and recovering from a national tsunami impact”*. The national objectives were to:

1. Lead a coordinated interagency response.
2. Support a coordinated interagency response.
3. Conduct effective high-level ‘All-of-Government’ decision-making.
4. Initiate the transition from response to recovery including planning and arrangements.
5. Effectively manage information horizontally and vertically.
6. Deliver effective public information management.
7. Implement business continuity arrangements.
8. Integrate lessons identified from previous events and exercises in order to engender a culture of continuous improvement.
9. Further develop collaborative relationships, to enhance interagency knowledge and understanding; creating capability and resilience.

## 1.3 Strategic findings

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New Zealand has a relatively small but interconnected CDEM sector. The relationships that now exist in the sector should be cultivated further as agencies develop their preparedness for real events.

There remains a question about whether MCDEM (MCDEM) is the appropriate agency for issuing tsunami warnings, given that GNS Science is the agency with responsibility for making tsunami threat assessments. In most other countries, tsunami warning is the responsibility of a science agency. It is also evident that the New Zealand public, and in some cases the media, may not have sufficient understanding of tsunami science to differentiate between local, regional and distant-source tsunami, and hence also of the different response challenges and considerations.

During the Exercise it was clear that the CDEM response, including emergency services, would be stretched in almost all respects and that there are not enough trained staff across the emergency management sector to fulfil all roles in Emergency Coordination Centres if all central and local government agencies were affected at the same time (meaning that resources could not be shared).

## 1.4 Operational findings

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### **Threat identification and activation in response was effective**

- Warning messages were issued on time, or before they were due, in response to Exercise injects.
- A state of national emergency was notionally declared and the majority of CDEM Groups completed a local declaration process.
- GNS Science provided scientific information that was fit for purpose to enable appropriate warnings to be disseminated.

### **Some agencies did not give appropriate priority to the Welfare function**

- Some agencies that have responsibilities under the new welfare services arrangements struggled to balance welfare services roles and responsibilities with business continuity activities.
- Some were spread too thin across the number of welfare services sub-functions that they were responsible for, and/or supported, and were not engaged with Group Welfare Managers on welfare services sub-function prioritisation.
- There is a need for further work on welfare services sub-function planning to ensure the effective and coordinated delivery of welfare services in a response.

### **A review of the current strategic approach to fuel supply is warranted**

- Tsunami waves such as those predicted from Exercise Tangaroa would very likely have caused significant damage to fuel infrastructure, including Marsden Point Oil Refinery, the pipeline from the Refinery to Auckland, fuel tank farms at some ports, and to wharves at most major ports, leaving few available points of entry for refined fuel products towards the south.
- New Zealand holds limited fuel stocks onshore with strategic stocks of fuel held offshore. It might not be possible to access the offshore stocks or obtain other refined products and ship them to New Zealand before onshore fuel stocks were depleted, even if onshore fuel stocks were restricted to CDEM priority users only (i.e. no sales of fuel to the public).

### **Action Planning is time and resource intensive and under-resourced**

- A number of agencies require strong guidance and support for action planning during emergencies.

### **All-of-Government decision-making was generally effective**

- The flow of information between the entities within the National Security System was effective.
- Coordination with domestic stakeholders reflected a practiced approach to coordinated response management.

### **Response and recovery planning needs to be more integrated**

- Not all CDEM Groups and support agencies considered recovery as part of response planning.
- Recovery needs to be driven from the regional level to best utilise local and regional knowledge.

### **Some standard procedures for managing information were not followed under the pressure of the Exercise**

- There were inconsistencies in the way that agencies transmitted and stored information during the Exercise and, due to time pressures and an inundation of requests for information, processes for verifying information were not always followed.

### **Public information was disseminated through a wide variety of channels and extensive 'reach' was achieved.**

- Various platforms for providing public information were used effectively.
- The suite of key messages developed was appropriate and was utilised by other agencies for their own public information purposes.
- Considering the popular appeal of the various GeoNet information platforms, GNS Science's communications capabilities could be utilised more effectively during tsunami events.

### **Business continuity planning requires attention**

- Focus on business continuity was variable across agencies.
- There would be considerable strain on personnel resources over the extended response time of an event on the scale of Exercise Tangaroa.
- Reliance on technology to complete critical functions, presents a risk.

### **Exercise Tangaroa has strengthened collaborative relationships between agencies**

- Planning for the Exercise (over 12 months) and related activities during the Exercise have strengthened relationships between support agencies at the national level and the linkages between agencies and CDEM Groups at the regional level.
- The operability of the new Welfare Services arrangements in the National Civil Defence Emergency Management Plan was effectively tested for the first time.
- The International Function was exercised at full capacity for the first time in a national level CDEM exercise.
- Skill development, information sharing and collaboration in the sector has enhanced New Zealand's response and recovery capability for future events.

## Section 2 Introduction

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### 2.1 New Zealand's tsunami risk

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All of New Zealand's coast is at risk of tsunami. Large tsunamis have occurred in New Zealand within written history, but have resulted in few casualties and relatively modest damage. However, Maori oral history records that there have been several large tsunami killing many people within the last 1000 years. Archaeological evidence indicates that several coastal settlements around New Zealand were abandoned for higher ground in the mid-1400s and there is also geological evidence of a large tsunami affecting the coast within the last 6000 years, with run-up heights possibly as high as 60m at one location.

New Zealand's location astride a plate boundary means that it experiences many large earthquakes. Some cause large tsunami. New Zealand's coasts are exposed to tsunami from submarine and coastal landslides, island and submarine volcanoes, local earthquakes and large earthquakes at distant locations, such as South America or western North America and the Aleutians in the North Pacific Ocean.

Tsunami with run-up heights of a metre or more have occurred about once every 10 years on average somewhere around New Zealand, a similar frequency to Hawaii and Indonesia, but about one third of that in Japan. Smaller tsunami occur more frequently, the smallest of which are only detectable on sea-level recorders.

With intense coastal development over the last few decades, a large tsunami today is likely to be very damaging. One of the most significant threats comes from tsunami generated within one to two hours travel time from the nearest New Zealand coastline.

The risk of tsunami in NZ is real, and to be expected. Some coasts are more at risk than others because of their proximity to areas of high local seismic activity, or exposure to tsunami from more distant sources. No part of the New Zealand coastline is completely free from tsunami hazard.<sup>1</sup>

### 2.2 Exercise Tangaroa 2016

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Exercise Tangaroa 2016 was conducted under the National CDEM Exercise Programme, established in 2006 to provide a formal framework for exercises in New Zealand. MCDEM is the overall sponsor of the National CDEM Exercise Programme. The CDEM programme is part of a wider interagency National Exercise Programme, established in 2013 with the aim of ensuring New Zealand is prepared to effectively respond to national security events on or offshore.

The Exercise was based on a regional source tsunami impacting the New Zealand coastline. It was designed to build on Exercise Tangaroa 2010, which was based on a distant-source tsunami originating from South America. The 2010 exercise focused on the lead-up to a tsunami arrival but not the ensuing response and recovery. The 2016 exercise tested the CDEM sector's ability to respond to a regional source tsunami with less than three hours travel time to the nearest New Zealand coastline.

The Exercise also served as a preliminary test for post-impact recovery plans. Since 2010, amendments have been made to national welfare and recovery arrangements and MCDEM and CDEM Groups across New Zealand have continued to develop their capabilities in these areas.

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<sup>1</sup> For more on New Zealand's tsunami hazard, see Power, W. L. (compiler). 2013. Review of Tsunami Hazard in New Zealand (2013 Update), *GNS Science Consultancy Report 2013/131*.

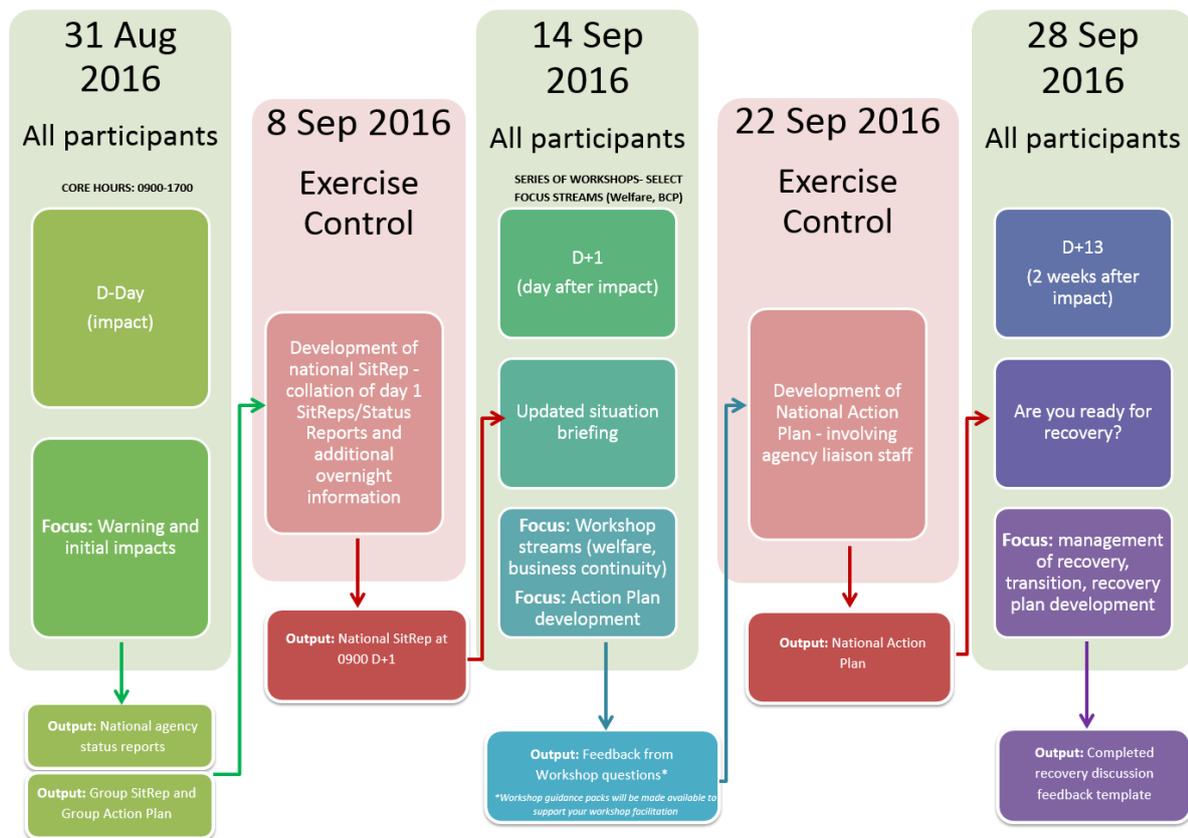
# Section 3 Overview of exercise

## 3.1 Structure of the exercise

Exercise Tangaroa was conducted in three phases over three days for most participants. Day One (31 August) was a full-scale functional exercise. Days Two and Three (14 and 28 September) were undertaken as table-top discussion exercises.

The Exercise was structured to test pre-impact response (from notification through to tsunami impact) and post-impact response, including the transition from response to recovery.

Figure 1: Exercise activity days



## 3.2 Participation

### 3.2.1 Participating agencies

One hundred-and-one agencies registered to participate in the exercise, with 96 agencies undertaking facilitation or full participation. Participation was typically through table-top or operational exercising, or a combination of both. The Exercise was conducted principally during work hours with participating agencies making their own decisions about operating hours and participation levels as follows:

Category	Description	No. of Agencies.
<b>Full</b>	Agency committed to participating in all exercise activities.	44
<b>Partial</b>	Agency participated in a specific part(s) of the exercise.	35
<b>Facilitation</b>	Agency personnel were made available to facilitate exercise injects or enquiries (i.e. a control function).	17
<b>Total:</b>		96
<b>Not engaged</b>	Agency was not involved in exercise play.	5

Participants included all 16 regional CDEM Groups plus an additional 15 local authorities, 20 lifeline agencies, and five international organisations. Nineteen national agencies participated along with four non-government organisations. The national agencies that participated were:

National agencies	
Ministry for Primary Industries	New Zealand Customs Service
New Zealand Fire Service	Inland Revenue
Earthquake Commission	Ministry of Justice
New Zealand Defence Force	New Zealand Police
New Zealand Transport Agency	Ministry of Business, Innovation and Employment
Department of Internal Affairs	Child, Youth and Family
Ministry of Transport	Ministry of Education
The Ministry of Civil Defence & Emergency Management	Department of the Prime Minister and Cabinet
Department of Corrections	Ministry of Foreign Affairs and Trade
Ministry of Health	

### 3.2.2 International involvement

The Federal Emergency Management Agency (FEMA) from the United States and Emergency Management Australia (EMA) both participated in the Exercise. The Director of International Affairs (FEMA) and the Director, Crisis Coordination Centre Operations (EMA) and Assistant Director, International Engagement (EMA) attended Day One (31 August) as Exercise Control staff. Both FEMA and EMA created injects regarding offers of international assistance to be used to test the National Crisis Management Centre's International Function.

On Day Two of the Exercise an International Function workshop was held between New Zealand and Australia to identify and address issues associated with the end-to-end process of international resource movement during an event (including the request, authorisation, deployment, reception, departure and repatriation of resources). The following agencies participated:

New Zealand Agencies	Australian Agencies
Department of the Prime Minister and Cabinet	Emergency Management Australia
Ministry of Civil Defence & Emergency Management	Department of Foreign Affairs and Trade
Ministry of Foreign Affairs and Trade	Department of Health
Ministry of Health	Australian Defence Force
New Zealand Defence Force	Queensland Fire and Emergency Services
New Zealand Fire Service	Fire and Rescue New South Wales
Ministry for Primary Industries	Department of Immigration and Border Protection
New Zealand Customs	Australian Federal Police
Ministry of Business, Innovation & Employment	
CARITAS (NGO)	

### **Virtual OSOCC**

The United Nations Virtual Onsite Operations Coordination Centre is an on-line disaster information exchange that allows disaster managers from government and response organisations around the world to share information in real-time in peace time and during a major disaster. A simulation tab was placed on the information exchange to mimic real-time offers and requests for international assistance during Day One of the Exercise.

### **Embassies**

The Australian and British High Commissions and the United States Embassy used the Exercise to test their crisis planning arrangements and how these align and will work within the New Zealand system, to examine information exchange processes, responsibilities for assisting dual New Zealand and other-country permanent residents, and to assess crisis management capability and capacity across posts in New Zealand.

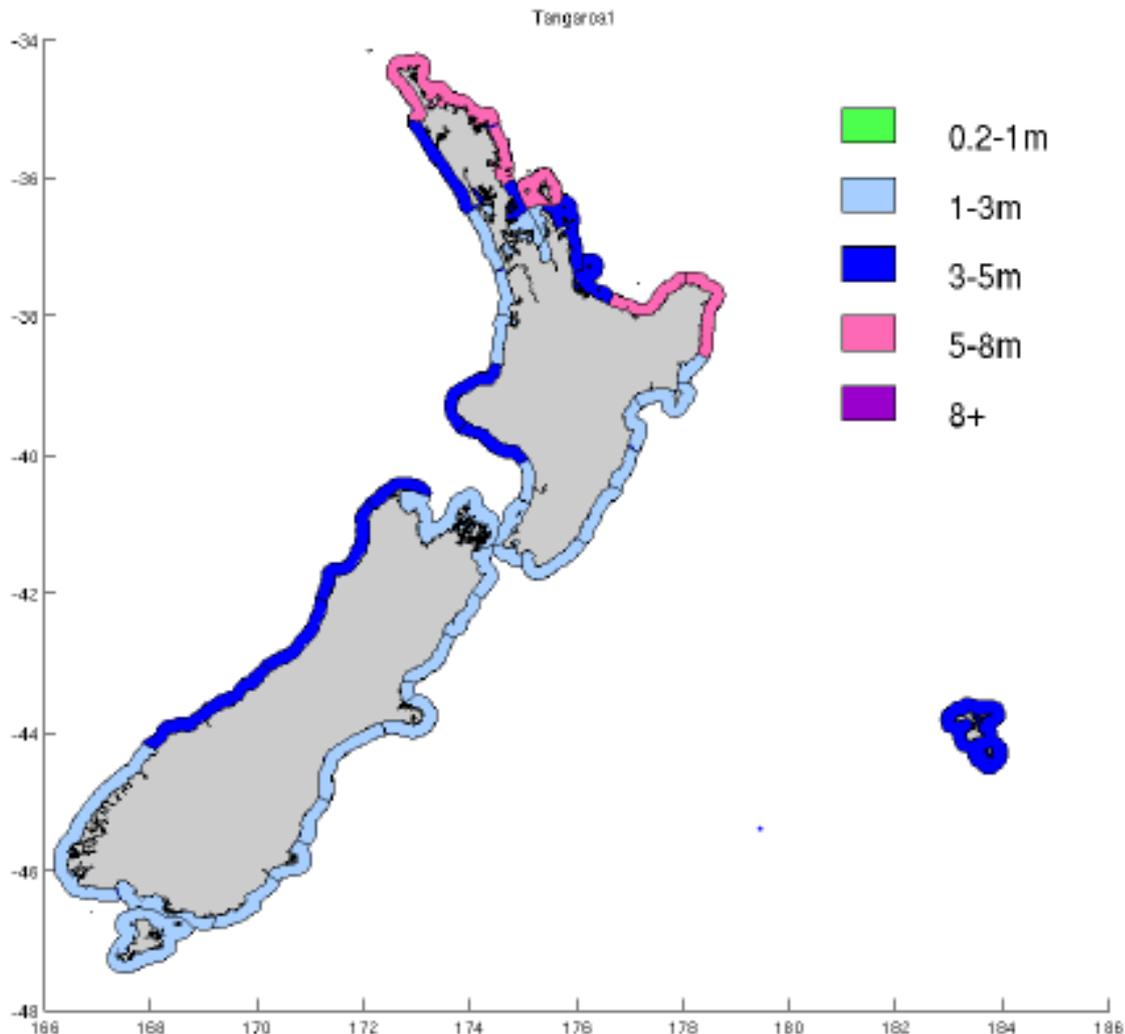
### **3.2.3 Observer agencies**

Aside from media companies, a number of non-government agencies expressed interest in observing the conduct of the Exercise, in particular the use of the Emergency Management Information System. To accommodate them an Observer Programme was developed enabling controlled access to the National Crisis Management Centre on Day One of the Exercise. Escorted access was provided to the University of Waikato, the Joint Centre for Disaster Research at Massey University and employees from Core Logic, an analytics provider interested in mapping capabilities.

### 3.3 The Exercise scenario

The scenario for Exercise Tangaroa was a regional-source tsunami originating in the Kermadec Trench region affecting the entire New Zealand coastline. The scenario was built on a magnitude 9.1 earthquake centred near Raoul Island. The epicentre for the earthquake was 29.8°S, 177.5°W, just to the east of the island.

**Figure 2: The modelled tsunami threat level around New Zealand from the scenario event**

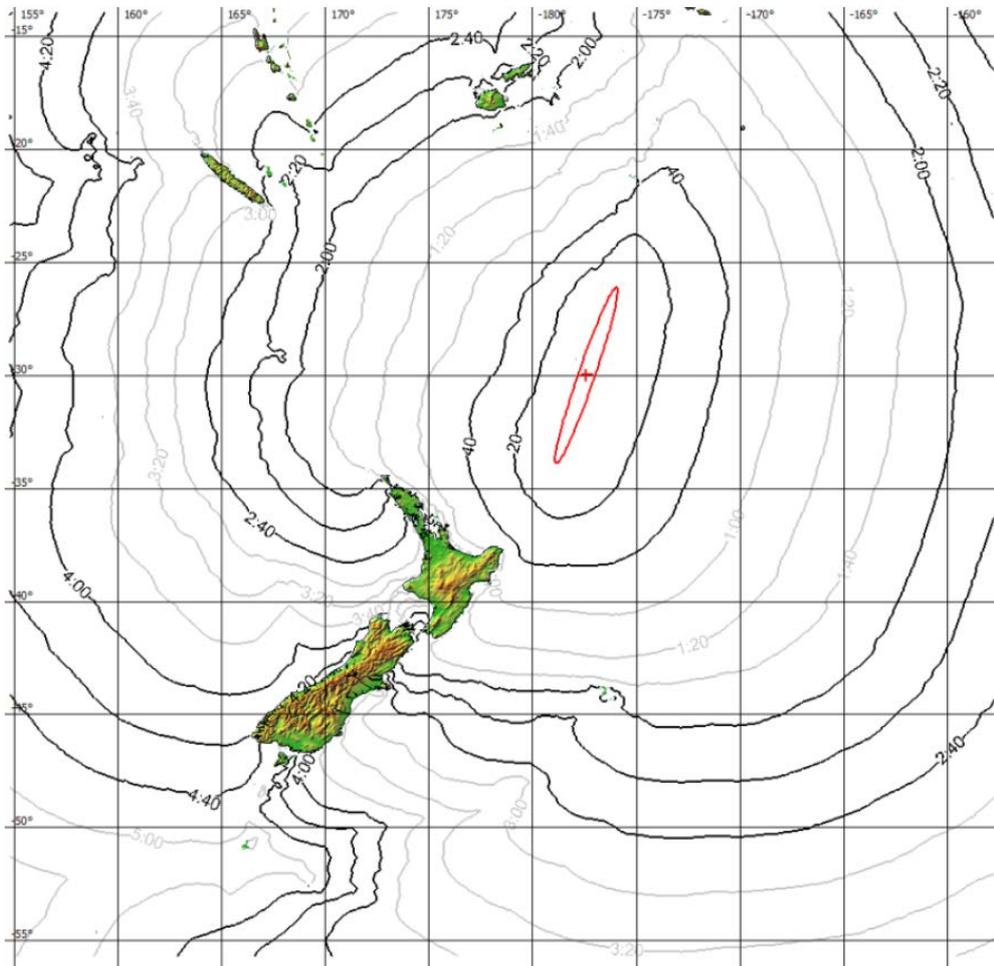


GNS Science created the scenario with a fluctuating magnitude, in order to mimic the complexity of detecting and confirming the parameters of such a large earthquake. The characteristics of the event were chosen so that the event was similar to, but not the same as, any other event previously modelled by GNS Science. This allowed GNS scientists to participate in the exercise in real-time. The scenario was designed to provide some, but not a lot, of warning time and to impact as much of the New Zealand coastline as possible.

Though the scenario chosen would also have had significant impacts on the East Coast of Australia and throughout the Pacific, those impacts were not exercised so that participating agencies could focus more specifically on the New Zealand response. In addition, the scenario was designed to exclude any large aftershocks as this would have added unnecessary complexity.

**Figure 3** below shows the location and approximate time (in hours: minutes) of arrival of tsunami following the earthquake.

**Figure 3: Tsunami travel time map**



The red **x** in **Figure 3** is the epicentre of the earthquake. The red ellipse is the approximate size of the sea-floor disturbance. The black lines show tsunami wave travel time. Note: the highest tsunami wave will typically arrive later than the time shown by the black contours. In this case, it would take about an hour for the first tsunami wave to reach the northeast coast of the North Island and over four hours to reach the southern coast of the South Island.

## 3.4 Exercise aim and objectives

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The aim of the exercise was “to test New Zealand’s arrangements for preparing for, responding to, and recovering from a national tsunami impact”. The national objectives were to:

1. Lead a coordinated interagency response.
2. Support a coordinated interagency response.
3. Conduct effective high-level ‘All-of-Government’ decision making.
4. Initiate the transition from response to recovery including planning and arrangements.
5. Effectively manage information horizontally and vertically.
6. Deliver effective public information management.
7. Implement business continuity arrangements.
8. Integrate lessons identified from previous events and exercises in order to engender a culture of continuous improvement.
9. Further develop collaborative relationships, to enhance interagency knowledge and understanding; creating capability and resilience.

Section 5 of this report discusses the overall performance of the participating agencies in relation to the objectives.

## 3.5 Evaluation

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A comprehensive programme of evaluation and debriefing was established to assess the effectiveness of the exercise; how well the exercise met its objectives; and to collect, collate and analyse lessons identified by exercise participants. The evaluation process covered planning, conduct and post-exercise activities.

Participating agencies appointed their own exercise evaluators to assess exercise performance in accordance with the *CDEM Exercises: Director’s Guideline for Civil Defence Emergency Management Groups [DGL 010/09]*. Separate evaluation forms were developed for MCDEM, GNS Science, CDEM Groups and support agencies.

Agencies were required to conduct ‘hot’ and ‘cold’ debriefs to capture feedback on the Exercise. Post activity reporting through debriefing was also included in the Exercise key performance indicators. Hot debriefs enabled exercise participants to provide immediate feedback and assisted in identifying general themes and lessons. Cold debriefs focused more on organisational issues – strengths, weaknesses and opportunities for improvement.

## Section 4 Strategic findings

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### **Strategic finding 1: Collaboration between agencies was enhanced by pre-existing relationships.**

New Zealand has a relatively small but interconnected CDEM sector, and recent emergency events, such as the Canterbury earthquakes in 2010 and 2011, have consolidated the existing history of collaboration between emergency management professionals. Planning for Exercise Tangaroa, over a period of 12 months before the Exercise has similarly benefitted engagement between CDEM agencies.

Overall, the relationships between agencies that have been developed and tested in recent National CDEM Exercise Programme exercises and actual events have been a major contributor to the success of responses to emergency events and the benefits of this were evident during Exercise Tangaroa. Further, the nature of the Exercise, as part of the National CDEM Exercise Programme, naturally expanded the number of parties with contributions to make to exercise activities, for example the International function was exercised fully for the first time under the National CDEM Exercise Programme. The relationships that now exist in the sector should be cultivated further as agencies develop their preparedness for real events and look towards future exercises.

### **Strategic finding 2: Review agencies' responsibilities for tsunami warning**

GNS Science is the agency with responsibility for making tsunami threat assessments yet MCDEM is the agency responsible for issuing tsunami warnings in New Zealand. In most other countries, tsunami warning is the responsibility of a science agency. A notable New Zealand contrast is that MetService is responsible for both assessing weather threats and issuing warnings.

The Ministry's dual role as the warning agency for tsunami events and as an emergency response coordinator for such events, creates challenges. The analysis of threat information and subsequent issue of timely and accurate warnings (potentially over a period of 24 hours or more) is labour intensive and diverts resources from the Ministry's response coordination role – it is currently not resourced to perform both functions optimally at the same time. Effective warnings are also impeded by the fact that neither GNS Science nor the Ministry conduct their responsibilities from a dedicated 24/7 monitoring and warning centre.

### **Recommendations**

- Consider other models for the dissemination of tsunami warnings, i.e. determine whether MCDEM is the appropriate agency to issue warnings and explore options for 24/7 monitoring and warning.
- In the interim, enhance engagement between MCDEM and GNS Science duty teams to ensure swift two-way communication during events and improve National Warning System (NWS) capability to automate some aspects.

### **Strategic finding 3: The scale of the scenario stretched CDEM resources**

Although exercise play was limited to the first eight hours of the Exercise scenario it quickly became clear that the CDEM response, including emergency services, would be stretched in almost all respects. Thousands of people would be displaced in most regions across New Zealand, requiring alternate accommodation, food, and personal care, and medical capacity would be exhausted. Almost all affected CDEM Groups signalled that their response staff numbers were inadequate for a response on the scale anticipated and would require supplementation by Day Two of the response.

Services (lifeline utilities) would be damaged, potentially rendering them inoperative or operating sub-optimally, so that significant coordination would be required for re-instatement. This would occur in an environment where fuel stocks would be limited to pre-event levels due to the inoperability of Marsden Point Oil Refinery and delays associated with receiving supplies from offshore.

Exercise Tangaroa illustrated that there are not enough trained staff across the emergency management sector to fulfil all roles in Emergency Operations Centres and Emergency Coordination Centres if all central and local government agencies were all affected at the same time (meaning that resources could not be shared).

## **Recommendations**

- Seek approval to establish arrangements for the automatic triggering of international support (e.g. from Australia and the USA) for tsunami events, including resources such as fuel, staffing (response and medical), medical supplies, and the establishment of field hospitals.

## **Strategic finding 4: Public understanding of regional and local source tsunami is limited**

MCDEM and GNS Science are constrained in their ability to issue timely and effective tsunami warnings because of the limited response time available following local and regional source events. Furthermore, threat assessment is not an exact science - the East Cape earthquake event on 2 September 2016 proved complex for scientists, both here and in the USA, so that both initially underestimated the magnitude of the earthquake. Similar challenges were experienced after the Kaikoura earthquake and tsunami of 14 November 2016.

The New Zealand public, and in some cases the media, may not have sufficient understanding of tsunami science to differentiate between local, regional and distant-source tsunami, and hence also of the different response challenges and considerations. As the responsible agency for tsunami warnings for regional and distant-source events, MCDEM's resources can be diverted by an expectation from some media to respond to criticism during the initial stages of a time-critical warning, which distracts focus from response.

## **Recommendations**

Review the tsunami warning threshold and assessment process for all events.

- Investigate (with GNS Science) the creation of a website containing public education and tsunami hazard information, and up-to-date threat maps during events.
- Consider ways to further inform the public and media about different kinds of tsunami and the right actions to take, both before and during events.
- Support CDEM Groups to conduct robust risk assessments of tsunami evacuation zones to determine the number and location of people at risk, so they may use this information for appropriate evacuation planning

## Section 5 Key operational findings

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This section summarises the key operational findings from the Exercise in terms of each of the objectives set before the Exercise commenced.

### 5.1 Objective 1: Leadership of interagency response

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The aim of this objective was to measure a coordinated interagency response through the identification of a major emergency; the processes for declaration of a state of emergency; activation of coordination centres; development of action plans; and leading the coordination of response.

#### **Operational finding 1: Threat identification and activation in response was effective.**

For the purposes of Exercise activities, an earthquake in the Kermadec Trench occurred at 9.02am on 31 August 2016. The first warning message from the Pacific Tsunami Warning Centre was received by MCDEM's Duty Team at 9.09am, after which the National Crisis Management Centre and the National Security System were activated at 9.15am. Following discussion with the Duty Officer at GNS Science, the first tsunami warning was issued at 9.20am. This initial warning and subsequent warnings were all issued on time, or before they were due, in response to Exercise injects – the Tsunami Advisory and Warning Plan has a benchmark of hourly updates.

Following consultation with the Minister of Civil Defence and the Prime Minister, a state of national emergency was notionally declared at 10.20am and stakeholders were formally advised of the national declaration. The majority of CDEM Groups also completed a local declaration process including consultation and completion of the appropriate declaration form, though with varying degrees of compliance with Director's Guidelines, noting that local states of emergency were superseded by the national declaration.

Overall, GNS Science provided scientific information that was fit for purpose to enable appropriate warnings to be disseminated. GNS Science and MCDEM have identified some areas for improvement in relation to the process for producing threat maps and engagement with the Tsunami Experts Panel (a panel of experts convened by GNS Science at short notice when there is a credible threat or a remote possibility that an event might cause a tsunami).

#### **Recommendation**

- GNS Science and MCDEM to review procedures for producing threat maps and engagement with the Tsunami Experts Panel.

#### **Operational finding 2: Some agencies did not give appropriate priority to the Welfare Function.**

Exercise Tangaroa presented the first opportunity to test the newly strengthened welfare services arrangements in the National Civil Defence Emergency Management Plan (Plan) in a real-time scenario. Response elements with a welfare focus were tested on Day Two of the Exercise.

This included activities covering the entire welfare spectrum, from the realistic operation of sub-functions (at the national, regional and local level) to the needs of the community, and community-led response. The requirement for interagency coordination, information sharing, public information messaging and an understanding of agency roles and responsibilities under the new welfare services arrangements were also tested.

It was apparent during the exercise that some agencies with welfare services roles and responsibilities did not fully engage with their welfare services arrangements, but were rather

focused on ensuring the continuity of their essential services, rather than contributing to the wider welfare provision.

It was also identified that those agencies that did prioritise their welfare services responsibilities, were spread too thin across the number of welfare services sub-functions that they were responsible for, and/or supported, and were not engaged with Group Welfare Managers on welfare services sub-function prioritisation.

Also, due to the fact that welfare services sub-function arrangements are at varying stages of operational development, this impacted on the effectiveness of the coordination and delivery of welfare services arrangements.

### **Recommendations**

- Work with agencies that have responsibilities under the new welfare services arrangements to balance welfare services roles and responsibilities with business continuity activities.
- Work with agencies and Group Welfare Managers to further develop cross-agency and CDEM relationships to support the appropriate prioritisation of welfare services sub-function activities during and following an emergency.
- Work further with agencies and Group Welfare Managers on welfare services sub-function planning to ensure the effective and coordinated delivery of welfare services in a response.

### **Operational finding 3: A review of the current strategic approach to fuel supply is warranted**

Following an event on the scale of Exercise Tangaroa, roads, electricity and fuel would be the main priorities for service restoration. Fuel is a critical resource as loss of supply would greatly increase the restoration time for other lifeline services and would hinder the mobility of response agencies.

New Zealand's sources of refined petroleum product are the Marsden Point Oil Refinery in Whangarei and imported fuel from Singapore. Fuel stocks physically held in New Zealand are generally commercial stocks stored in coastal tank depots at ports or fuel tanks located near key infrastructure (such as the Wiri terminal in Auckland). Fuel is transported around New Zealand by pipeline (such as the one from Marsden Point to Wiri), or by coastal tanker from Marsden Point to other ports, and then distributed by road tanker wagons to retail outlets and other direct consumers.

Tsunami waves such as those predicted from Exercise Tangaroa would very likely have caused significant damage to fuel infrastructure, including:

- severe damage to the Marsden Point Oil Refinery, estimated at more than 12 months to rebuild.
- damage to oil pipelines, leaving Auckland isolated for fuel supply (especially aviation fuel).
- damage, or partial damage, to fuel storage tanks located next to import facilities at most major ports.
- damage to wharves at most major ports, leaving few points of entry for refined fuel products - the few ports that would open with the ability to import refined products would be towards the bottom of the South Island meaning transportation of fuel to the rest of the country would be a major concern.

The Exercise highlighted that a significant portion of New Zealand's strategic stocks of fuel (90-days' supply required for compliance with the International Energy Agency's (IEA) International Energy Programme Agreement) are held offshore under 'ticket contracts', which provide the Government with an option to purchase petroleum in the event of an emergency. These stocks would not be immediately available in an emergency, and delivery of them would be subject to ports

being operational. During an emergency event on the scale of Exercise Tangaroa, it might not be possible to access the offshore stocks or obtain other refined products and ship them to New Zealand before onshore fuel stocks were depleted, even if onshore fuel stocks were restricted to CDEM priority users only (i.e. no sales of fuel to the public).

#### **Recommendation**

- Review fuel storage policies, including where the strategic stocks required under the IEA are held.

#### **Operational finding 4: Action Planning is time and resource intensive and under resourced**

A National Action Plan was developed between Day One and Day Two of the Exercise, covering the first week of the response, focusing on bringing immediate relief to affected communities. Action planning is a resource intensive exercise that involves multiple agencies; it usually takes more than one day to develop a plan. In the case of Exercise Tangaroa, it took the National Crisis Management Centre one day to work through the planning process to produce a single planning option for consideration - ideally three options should be developed. It was evident that MCDEM does not have sufficient resources to fully deliver on this component of response. It was also clear that a number of agencies require strong guidance through the planning process.

The majority of CDEM Groups did conduct an action planning process but not all CDEM Groups consulted other agencies as part of that process. The time and resource constraints experienced at the national level also impacted CDEM Groups so that the development of Action Plans by some CDEM Groups was rushed.

#### **Recommendation**

- Leverage the existing experience of the New Zealand Defence Force to lead operational planning (and training for operational planning) in response on behalf of All-of-Government.

## **5.2 Objective 2: Coordinated interagency response**

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The aim of this objective was to measure support for a coordinated interagency response through support agency identification of a major incident; activation of coordination centres; and supporting the development of action plans and response.

In relation to this objective, there are gaps in the evaluation data received from support agencies due to commitments arising from their response to the East Cape earthquake and tsunami of 2 September 2016 (two days after the initial day of Exercise Tangaroa) and the Kaikoura earthquake and tsunami that followed on 14 November 2016. However, the feedback received from support agencies indicates that the agencies partially met this objective, for example, evidence indicates that not all agencies informed the National Crisis Management Centre that they had activated Emergency Operations Centres and Emergency Coordination Centres or contributed to lead agency planning processes.

GNS Science identified potential for improvements in their processes in support of interagency response, such as improving the speed of production of threat maps and the timeframes for detailed modelling.

### 5.3 Objective 3: 'All-of-Government' decision-making

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The aim of this objective was to measure the effectiveness of 'All-of-Government' decision-making through activation of the National Security System (NSS), and communication with key stakeholders both domestically and internationally.

#### **Operational finding 1: 'All-of-Government' decision-making was generally effective**

It was evident from the commencement of the Exercise, after the NSS was activated at 9.15am on Day One of the Exercise, that the information flow to and from the entities within the National Security System (including the Officials' Committee for Domestic and External Security Coordination (ODESC) was effective.

Coordination with domestic stakeholders was undertaken in accordance with standard operating procedures and reflected a practiced approach to coordinated response management, for example through National Controller-led team meetings; Watch Group meetings; ODESC, Group Controller teleconferences and National Welfare Coordination Group meetings.

International coordination was supported by the International Assistance function in the National Crisis Management Centre. Exercise Tangaroa was the first time this function had been fully tested in a national level exercise. As a result, a number of offers of international assistance were received and presented to the ODESC for consideration.

Collectively, these interactions denote confidence in the decision-making of, and engagement from, NSS entities for future events.

### 5.4 Objective 4: Transition from response to recovery

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The aim of this objective was to measure the level of recovery arrangements included in response planning.

#### **Operational finding 1: Response and recovery planning needs to be more integrated**

It was evident during the Exercise that not all CDEM Groups and support agencies, including GNS Science, considered recovery as part of response planning. Some CDEM Groups and local authorities appointed Recovery Managers but this was not standard across CDEM Groups. On review, a number of agencies and CDEM Groups acknowledged that recovery should be considered as part of response from Day One.

Some agencies noted that some existing recovery arrangements were *ad hoc* in planning and execution, and felt that the current framework for recovery was out-of-date and did not incorporate lessons identified from recent emergencies such as the Canterbury earthquakes. It was, however, recognised that new legislation with a focus on recovery was expected to alleviate some issues associated with the current guidelines. On 15 November 2016, following the Kaikoura earthquake and tsunami, planned amendments to the Civil Defence Emergency Management Act 2002 were brought forward and passed into law to support recovery and the transition from response to recovery.

Some agencies commented that recovery should be led and driven at the regional level to best utilise local and regional knowledge. The role of the National Recovery Manager would then be to support national consistency and coordination. A key enabler was identified with people with recent response and recovery experience.

## Recommendations

- MCDEM to initiate discussions with CDEM Group Recovery Managers on recovery work streams and the development of the framework for recovery arrangements.
- MCDEM to consider the scheduling of a recovery-focused exercise as part of the National CDEM Exercise Programme in order to effectively test recovery arrangements at national and regional levels.

## 5.5 Objective 5: Information management

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This objective was designed to measure the management of information across the CDEM spectrum, both horizontally and vertically, through the communication of incident information to agencies involved in the response; management of support requests; and the production and dissemination of agency situation reports.

### **Operational finding 1: Standard procedures for the dissemination and storage of information were not followed consistently under the pressure of the Exercise**

There were inconsistencies in the way that agencies across the CDEM spectrum transmitted and stored information during the Exercise. This resulted in the level of situational awareness by agencies being sporadic in some cases, leaving some participating agencies under-prepared to fully support the overall response.

At the national level this was evident when, due to time pressures and an inundation of requests for information, processes for verifying information were not always followed, meaning that some unverified information was included in formal products. The same pressures affected the information outputs of agencies more generally - not all agencies were able to produce and disseminate situation reports or status reports as required by Standard Operating Procedures. Use of the Emergency Management Information System (EMIS) for access to and storage of information was similarly inconsistent, meaning that all agencies were not using the same information platform.

The lack of a spatial tool for showing and sharing rapid disaster impact assessments (to provide a situational picture) was identified as a key issue.

## Recommendations

- Review the National Crisis Management Centre information management process.
- Develop a spatial tool for showing and sharing rapid disaster impact assessments.

## 5.6 Objective 6: Public information management

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The aim of this objective was to measure how participating agencies were able to prepare tailored information for an audience, provide timely, accurate and clear information to the public; and align and coordinate messages reflecting response priorities and government priorities across a range of platforms.

It should be noted that a number of participating agencies elected not to exercise or test this objective in full or in part. Only the National Crisis Management Centre had the physical presence of simulated media.

### **Operational finding 1: Public information was disseminated through a wide variety of channels and extensive 'reach' was achieved.**

The Exercise scenario of a regional-source tsunami originating in the Kermadec Trench region would affect the entire New Zealand coastline. In such an event the dissemination of accurate

information to the general public is time critical initially, and continuously demanding as the event develops, response commences, and the public's awareness and appetite for information increases.

The Exercise provided an opportunity to test Public Information Management (PIM) procedures across a range of platforms, including video and media briefings, and social media (Facebook and Twitter) and web-based activity. A suite of key messages was pre-prepared and distributed via the Broadcast MOU, which provides arrangements for national radio and television messaging. The Director CDEM, as media spokesperson, provided regular updates to media on the event. At the CDEM Group level, public information was disseminated via traditional and social media, web-based services, SMS text, the New Zealand Red Cross Hazard App (used for educational information dissemination, not as an alerting tool), and radio and news media. On review, it was evident that the suite of key messages was appropriate and was utilised by other agencies for their own public information purposes.

The Exercise raised questions about whether GNS Science's communications capabilities could be utilised more effectively. GNS's GeoNet web platform is a resource that is used for communications about earthquakes but does not extend to tsunami because GNS is not the official provider of warnings and advice. Considering the popular appeal of the various GeoNet information platforms (99,000 Facebook users, 62,000 Twitter followers and 320,000 mobile app users), this was identified as a lost opportunity.

### **Recommendation**

- In conjunction with GNS Science, review the ability of MCDEM to better utilise the communications capability of GeoNet.

## **5.7 Objective 7: Business continuity**

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The aim of this objective was to measure business continuity arrangements within agencies through identification of essential and non-essential business outputs; and the capacity to meet essential business requirements simultaneously in response, adjusting any business continuity plans if appropriate.

### **Operational finding 1: Business continuity planning requires attention**

Focus on the business continuity objective was variable across agencies - the majority of CDEM Groups and support agencies did not test this objective as part of their exercise activities. Only one CDEM Group (Auckland CDEM Group) met the all KPIs for this objective.

The CDEM Groups and support agencies that did consider business continuity, used the exercise as a mechanism to improve on their existing plans. Auckland CDEM Group advised that, overall, the structured approach to business continuity management worked well, though gaps were identified in the depth of personnel resources needed for both CDEM and business continuity responses.

Strain on personnel resources over the extended response time of an event of the scale of Exercise Tangaroa was a consistent theme from evaluators as was reliance on technology to complete critical functions. More specifically, MCDEM is reliant on the National Crisis Management Centre to complete its functions during an emergency (to varying extents this applies to other agencies that maintain a physical presence in the National Crisis Management Centre). The Ministry is currently leading work to explore alternative arrangements for national coordination during large-scale emergencies.

## Recommendations

- Consider the scheduling of a business continuity exercise as part of the CDEM Exercise Programme to test business continuity arrangements at national and regional levels.
- Develop alternative arrangements to the National Crisis Management Centre in Wellington for national coordination during large-scale emergencies.

## 5.8 Objective 8: Continuous improvement

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The aim of this objective was to measure whether there was integration of previous lessons identified from events and exercises in order for continuous improvement through coordinated evaluation processes, post activity reporting and information sharing.

For this purpose, a coordinated evaluation process was developed with clear requirements and a suite of evaluation forms tailored to specific agencies and phases of the exercise. Evaluators were appointed at the national and regional level, however, due to the number of agencies involved in the Exercise there was some difficulty in sourcing suitable evaluators, which meant that some agencies' staff had dual roles in response and evaluation.

Some support agencies did not complete evaluations. This was partly because, following the Exercise, agencies were occupied responding to the East Cape earthquake event in September 2016 and the Kaikoura earthquake and tsunami of 14 November 2016. The majority of support agencies did not test information collection and sharing for the purposes of continuous improvement as part of their Exercise activities.

### Recommendation

- Communicate and establish evaluation activities for all agencies in future CDEM exercises.

## 5.9 Objective 9: Collaborative relationships

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The aim of this objective was to measure whether relationships between agencies had been developed through information sharing and best practice in order to enhance interagency knowledge, capability and resilience.

### **Operational finding 1: Exercise Tangaroa has strengthened collaborative relationships between agencies.**

Planning for Exercise Tangaroa took place over a period of 12-months leading up to the Exercise. At the national level, preparation included workshops for staff from CDEM Groups and government agencies, exercise writing courses for CDEM Groups, and structured practice in the National Crisis Management Centre for Liaison Officers from agencies participating in the Exercise. At the regional level, CDEM Groups engaged with local partner agencies as part of their planning for the Exercise. Collectively these engagements strengthened relationships between support agencies at the national level and the linkages between agencies and CDEM Groups at the regional level.

Features of the Exercise were testing of the operability of the new Welfare arrangements in the National Civil Defence Emergency Management Plan, and the exercising of the International function at full capacity for the first time in a national level exercise. It was evident during Exercise activities (and the response to the East Cape earthquake and tsunami event that occurred during the Exercise schedule) that the resulting skill development, information sharing and collaboration in the sector has enhanced New Zealand's response and recovery capability for future events.

The improvement cycle is ongoing. Post-Exercise workshops have been conducted with CDEM Group representatives and a corrective action plan has been developed.

## Section 6 Concluding observations

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Exercise Tangaroa 2016 was developed to test arrangements for preparing for, responding to, and recovering from a national tsunami impact originating from a regional-source. Overall, the Exercise provided an insight into the required levels of response to a tsunami event that impacted multiple regions.

The Exercise was a joint local government and central government exercise with an emphasis on multi-agency coordination. As well as response, the Exercise tested preparedness through the exercise planning process with agency pre-planning and tsunami and other response plans being updated in order to conduct an accurate test as part of the response. The high level of effective engagement and multi-level collaboration between agencies was a highlight of the Exercise.

The Exercise was a very well organised, documented and executed national level exercise. It was the largest exercise of this scale conducted under the National CDEM Exercise Programme and involved the testing of the operability of the new Welfare arrangements in the National Civil Defence Emergency Management Plan, and the exercising of the International function at full capacity for the first time.

The lead-up preparation and coordination of participating agencies was excellent and, overall, the execution of the exercise was efficient and timely. In-depth detailed planning by the Exercise Coordinators was a major contributor to the success of the Exercise.

Exercise Tangaroa did not meet all of its objectives and KPIs and the reasons for this have been documented in this report, however, the Exercise has substantially improved New Zealand's preparedness for future real events. Since the Exercise, a Corrective Actions Plan has been developed and a number of projects and initiatives addressing the recommendations in this report have been commenced or completed. Some of these include:

- investigation of options for a 24/7 'awake' warning centre.
- launch of a new tsunami campaign "Long or Strong, Get Gone" in early-December 2016 <http://www.civildefence.govt.nz/get-tsunami-ready>
- establishment of an alternative National Crisis Management Centre in Auckland (should the Wellington facility be rendered inoperable for any reason).
- CDEM training for an additional 200-300 staff across government.
- upgrading of the National Warning System, to improve the process for warning and providing information to the CDEM sector and the media.
- introduction of a Cell Broadcast warning system, with the capability to provide warnings directly to the public.
- establishment of a National Crisis Management Centre Information Management Project, to focus on enhancing information management processes.

# Annex A: Objectives and Key Performance Indicators (KPIs)

Exercise Objectives	Sub-objectives	Key Performance Indicators
1.0 Lead a coordinated interagency response.	1.1 Identify threat of major incident.	1.1.1 Incident identified as a major incident requiring the activation of the National Security System
		1.1.2 Incident identified as a threat according to the MCDEM thresholds
		1.1.3 Incident identified as a threat according to CDEM Group and local authority thresholds
	1.2 Processes for considering and declaring a state of emergency are followed at all levels.	1.2.1 Identify criteria for making a declaration and apply this criteria to the decision making process
		1.2.2 If making a declaration, the correct process is followed (gazetting, current forms, etc.)
	1.3 Activate coordination centres at all required levels in accordance with standard operating procedures.	1.3.1 Lead agency activates a coordination centre in accordance with standard operating procedures.
		1.3.2 Key stakeholders are identified and informed of the activation(s).
		1.3.3 Liaison arrangements are activated in accordance with standard operating procedures.
		1.3.4 Welfare arrangements are activated in accordance with standard operating procedures.
		1.3.5 Lifelines arrangements are activated in accordance with standard operating procedures.
	1.4 Develop an effective action plan in accordance with standard operating procedures.	1.4.1 Planning processes are followed by the lead agency as established in standard operating procedures.
		1.4.2 The systems, processes and resources are appropriate for developing the action plan.

		<b>1.4.3</b> Options, analysis of threats and associated risks are embedded in the development of the action plan.
	<b>1.5</b> Coordinate a tsunami response in accordance with the lead agency's emergency plan, the action plan, CIMS, and legal/policy frameworks.	<b>1.5.1</b> Liaison arrangements are established and maintained as required throughout the duration of the response.
		<b>1.5.2</b> Response is managed in accordance with plans and within mandated frameworks.
		<b>1.5.3</b> Lead agency is able to delegate tasks to support agencies within legal frameworks.
		<b>1.5.4</b> Agencies confirm their ability to carry out the delegated tasks in a timely manner in accordance with standard operating procedures.
		<b>1.5.5</b> As appropriate, implement site, local, regional and national levels of coordination.
	<b>1.6</b> Lead coordination centres in accordance with standard operating procedures.	<b>1.6.1</b> Lead agency manages an interagency coordination centre.
		<b>1.6.2</b> Lead agency is able to sustain an operational response for the length of time required.
		<b>1.6.3</b> Lead agency can demonstrate there is a process in place to be able to return to business as usual following a response to a major incident.
<b>2.0</b> Support a coordinated interagency response.	<b>2.1</b> Support identification of threat of major incident.	<b>2.1.1</b> Agency supports the identification of a threat as a major incident requiring the activation of the National Security System
		<b>2.2</b> Activate coordination centres at all required levels in accordance with standard operating procedures.
		<b>2.2.1</b> Support agency activates a coordination centre, where required, in accordance with standard operating procedures.
		<b>2.2.2</b> Lead agency and other key stakeholders are identified and informed of the activation(s).
		<b>2.2.3</b> Liaison arrangements are activated in accordance with standard operating procedures.

		<p><b>2.2.4</b> Welfare arrangements are activated in accordance with standard operating procedures.</p>
		<p><b>2.2.5</b> Lifelines arrangements are activated in accordance with standard operating procedures.</p>
	<p><b>2.3</b> Support the development of an action plan in accordance with standard operating procedures.</p>	<p><b>2.3.1</b> Support agency contributes to the lead agency planning processes as established in standard operating procedures.</p>
		<p><b>2.3.2</b> Threats and associated risks identified by the support agency are considered in the development of the action plan.</p>
		<p><b>2.3.3</b> Support agency develops an action plan to detail the tasks assigned to it by the lead agency.</p>
	<p><b>2.4</b> Support a tsunami response in accordance with the lead agency's emergency plan, the action plan, CIMS, and legal/policy frameworks.</p>	<p><b>2.4.1</b> Liaison arrangements are maintained as required throughout the duration of the response.</p>
		<p><b>2.4.2</b> Response is supported in accordance with plans and within mandated frameworks.</p>
		<p><b>2.4.3</b> The systems, processes and resources are appropriate for implementing the action plan.</p>
		<p><b>2.4.4</b> Agencies confirm their ability to carry out the delegated tasks in a timely manner in accordance with standard operating procedures.</p>
		<p><b>2.4.5</b> As appropriate, implement site, local, regional and national levels of support.</p>
	<p><b>2.5</b> Support coordination centres in accordance with standard operating procedures.</p>	<p><b>2.5.1</b> Support agencies are able to support the inter-agency coordination centre as required by the lead agency.</p>
		<p><b>2.5.2</b> Support agencies are able to sustain an operational response for the length of time required.</p>

		<b>2.5.3</b> Support agencies can demonstrate there is a process in place to be able to return to business as usual following a response to a major incident.
<b>3.0</b> Conduct effective high level All of Government decision making.	<b>3.1</b> National Security System activated and effective within acceptable period of time.	<b>3.1.1</b> NSC, ODESC and Watch Groups (National Security System) established as appropriate in a timely manner in accordance with standard operating procedures.
		<b>3.1.2</b> Relevant National Security System Groups provide strategic direction to relevant agencies, allowing comprehensive operational planning as required.
		<b>3.1.3</b> Decisions are communicated to key stakeholders in a timely manner in accordance with standard operating procedures.
		<b>3.1.4</b> Relevant National Security System groups monitor and evaluate decisions throughout the incident.
	<b>3.2</b> Effective communication with key stakeholders	<b>3.2.1</b> Coordination of domestic and international stakeholders as appropriate in accordance with standard operating procedures.
<b>4.0</b> Initiate the transition of response to recovery including planning and arrangements.	<b>4.1</b> Effective integration of response and recovery planning	<b>4.1.1</b> Demonstrate that consideration of early recovery is incorporated into response planning
		<b>4.1.2</b> Planning documents demonstrate an awareness of likely medium and long term impacts of response actions and decisions
	<b>4.2</b> Consider appropriate recovery arrangements.	<b>4.2.1</b> Establish recovery arrangements that demonstrate an understanding of current frameworks and processes
		<b>4.2.2</b> Conduct a transition from response to recovery in accordance with established recovery arrangements.
		<b>4.2.3</b> The systems, processes and resources are appropriate for developing the recovery plan.

		<b>4.2.4</b> Options analysis of threats and associated risks is embedded in the development of the recovery plan.
<b>5.0</b> Effectively manage information horizontally and vertically	<b>5.1</b> Incident information is effectively managed and communicated by all agencies involved in the response.	<b>5.1.1</b> A strategic communication plan is developed.
		<b>5.1.2</b> A strategic communication plan is implemented.
		<b>5.1.3</b> Accurate information is communicated internally in a timely manner in accordance with standard operating procedures.
		<b>5.1.4</b> Information is communicated across appropriate internal and external stakeholders in a timely manner to create a common operating picture.
		<b>5.1.5</b> Information is appropriately stored in accordance with standard operating procedures.
		<b>5.1.6</b> Each agency has the appropriate equipment and resources to share and manage information effectively.
		<b>5.1.7</b> Lifeline utilities make contact with CDEM and provide status reports and establish an appropriate line of contact.
	<b>5.2</b> Support requirements are effectively communicated.	<b>5.2.1</b> Domestic support requests are effectively managed in accordance with standard operating procedures.
		<b>5.2.2</b> International support requests are effectively managed in accordance with standard operating procedures.
	<b>5.3</b> Situation reports effectively fused from various sources and promulgated in a timely manner to relevant stakeholders.	<b>5.3.1</b> Situation reports accurately disseminated to key stakeholders in accordance with standard operating procedures.
<b>6.0</b> Deliver effective public information management	<b>6.1</b> Public communications reinforce confidence in the response and provide appropriate levels of public assurance	<b>6.1.1</b> Provide timely, accurate, and clear information to those who need it in accordance with standard operating procedures.

		<p><b>6.1.2</b> Messages align with and support the operational response and government priorities.</p>
		<p><b>6.1.3</b> Proactive messaging across the full range of platforms meets the demand for accurate information.</p>
		<p><b>6.1.4</b> Public information/messaging is coordinated and consistent across agencies.</p>
<p><b>7.0</b> Implement business continuity arrangements.</p>	<p><b>7.1</b> Agency is able to continue to effectively meet essential business as usual outputs.</p>	<p><b>7.1.1</b> Essential and non-essential business outputs are identified.</p>
		<p><b>7.1.2</b> Agency has, or is able to acquire from other agencies, the capacity needed to meet essential business requirements whilst simultaneously meeting response requirements.</p>
		<p><b>7.1.3</b> Each agency's business activities are adjusted and communicated in accordance with business continuity plans.</p>
<p><b>8.0</b> Integrate lessons identified from previous events and exercises in order to engender a culture of continuous improvement.</p>	<p><b>8.1</b> Evaluation and post activity reporting of the inter agency outcomes is undertaken.</p>	<p><b>8.1.1</b> Evaluation is coordinated by the lead agency against relevant national objectives.</p>
		<p><b>8.1.2</b> Supporting agencies provide relevant information to the post activity reporting.</p>
	<p><b>8.2</b> Continuous improvement processes are implemented.</p>	<p><b>8.2.1</b> Information is collected and shared with relevant agencies by the lead agency to allow continuous improvement across government.</p>
		<p><b>8.2.2</b> During the development of inter-agency exercises, previous lessons identified are integrated by the lead agency.</p>
<p><b>9.0</b> Further develop collaborative relationships, to enhance interagency knowledge; creating capability and resilience.</p>	<p><b>9.1</b> Agencies share information to engender an all hazards, all of government approach to response management.</p>	<p><b>9.1.1</b> Information is shared and utilised across agencies to assist in relationship and resilience building.</p>
		<p><b>9.1.2</b> Best practices are discussed and shared across agencies.</p>