



Standard Operating Procedure

SOP 3

Warnings & Advisories

SOP 3—Warnings and Advisories

Overview

This Standard Operating Procedure (SOP) outlines the procedure for receiving, analysing and issuing emergency warnings and advisories for Tauranga City.

This SOP conforms to;

1. Coordinated Incident Management System, 3rd Edition
2. Response Management; Directors Guideline for CDEM Group and Local Controllers (DGL 06/14)
3. Public Information Management; Director's Guideline for CDEM Groups (DGL 14/13)
4. Public Alerting: Options Assessment; Information Series, (IS 10/09)
5. Tsunami Advisory and Warning; Supporting Plan (SP 01/20)

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Specific Hazard Authorised Warning Agencies

The following table outlines risks and the monitoring agency responsible for issuing warnings.

Particular Risk	Monitoring Agency	Comment
Severe Weather Watch or Warnings <ul style="list-style-type: none"> • Storms • Cyclones • Flooding • Wind 	Meteorological Service of New Zealand (Met Service).	Met Service collects and analyses meteorological data from around New Zealand and the world, from which the many different types of weather forecasts are made.
Tsunami	Pacific Tsunami Warning Centre (PTWC) forward tsunami information to the National Emergency Management Agency.	Monitored by the Pacific Tsunami Warning Centre and reported to NEMA. Within New Zealand, NEMA is responsible for the issue of any Tsunami Advisory or Warning.
Volcanic activity and geothermal events	GNS Science	Monitored by GNS Science who are responsible for issuing 'Scientific Alert Bulletins' and related advice to NEMA and CDEM Groups
Public Health Warnings	Ministry of Health and District Health Boards (Bay of Plenty DHB and Lakes DHB)	Monitor public health issues and disseminate through Medical Officer of Health appropriate alerts and warnings to CDEM Groups and the general public.
Flood warnings for major rivers	Environment Bay of Plenty	Monitor river levels. The Bay of Plenty Regional Council will disseminate river flood warnings to the public, emergency responders, and landowners at risk.
Wildfire	Fire and Emergency NZ	Adverse weather conditions likely to increase the possibility of wildfire are monitored by the FENZ , which will institute appropriate fire bans and if necessary disseminate warnings.
Animal disease outbreaks	Ministry of Primary Industries	MPI will disseminate appropriate alerts and warnings to CDEM Groups and the general public.

National Warnings

National warnings and advisories provide information about the potential or actual threat to people, property, areas, or social or economic activities. They are issued to enable agencies, CDEM Groups, local authorities, organisations and individuals can take action to reduce loss of life, injury, and damage.

The National Emergency Management Agency (NEMA) is responsible for issuing National Warnings for hazards for which CDEM is the lead agency to CDEM Groups and key emergency response agencies. These events could include regional and distance tsunami warnings, increased/ing volcanic activity or any event that may lead to, or worsen an emergency.

Warnings or advisories may be issued when:

- a. a hazard poses a threat or potential threat to people and/or property and may result in an emergency, or
- b. when NEMA considers there is sufficient public interest to state that a hazard does not pose a threat

Warnings are issued via the National Warning System (NWS), a 24/7 process for communicating hazard information to recipients with regard to need for readiness and possible response to a potential or an imminent threat that may result in an emergency. The system utilises a multi-channel platform that uses text and phone calls to alert organisations of a national advisory/ warning, the content of which is provided via email.

Each local authority is allocated three recipients within the NWS distribution list. For Tauranga City Council, the recipients include:

- Duty EMO—s 7(2)(f)(ii) Mobile: s 7(2)(f)(ii) (also the organisational Single Point of Contact for the NWS)
- Group distribution list—s 7(2)(f)(ii)

NEMA will send a NWS test message four times per year:

- tests could be at any time, including out of office hours, and
- tests are conducted without prior notice.

A test message is not followed up by a cancellation message.

Only the Duty EMO is to respond to a NWS test.

Tsunami Warnings

The responsibility for the initiation and issue of national official tsunami notifications in New Zealand rests with NEMA.

NEMA receives tsunami notifications directly from the Pacific Tsunami Warning Center (PTWC), and earthquake (or other potential tsunami sources e.g. offshore volcano) reports from GeoNet.

All CDEM Groups and CDEM Group members receive official national tsunami advisories and warnings via the NWS. When time and expertise is available, CDEM Groups are responsible for further local threat assessment and deciding on appropriate local public alerting and response for regional and distant-source tsunami. For example, designating which evacuation zones are relevant to evacuate, dependent on the threat.

Tsunami threats to New Zealand are categorised to three regions:

- Region 1 (Local) — <1 hour wave travel time: New Zealand, including Hikurangi Trench, Kermadec Trench and Puysegur Trench
- Region 2 (regional) — 1-3 hour wave travel time: South-West Pacific, including Loyalty Islands, Samoa, Tonga, Kermadec, Auckland Islands, Macquarie Islands
- Region 3 (distal) — >3 hour wave travel time: Solomon islands, New Guinea, Japan, East Philippines, Kamchatka / Kuriles, Alaska / Aleutians, Cascadia, Mexico / Central America, South America.



Figure 1 Tsunami Origin Locations (Regions 1-3*)

Earthquake Tsunami Thresholds

NEMA uses “Response indicators” to initiate national tsunami advisories or warnings. The table below details the thresholds for respective tsunamigenic earthquake origin locations, and the possible notifications that may be issued by NEMA if the thresholds are met.

NB: As the characteristics of each earthquake can differ, NEMA may issue national tsunami advisories or warnings that do not meet the thresholds of the response indicators.

Region	Location	Thresholds	Possible notification issued via the NWS
1	New Zealand (0-1 hour to nearest coast Local source)	$M \geq 6.5$ and $< 100\text{km}$ depth	<p>Natural, felt signs are the primary warning for local source tsunami (Region 1). If possible and as appropriate, NEMA will issue one or a sequence of the following Advisories and Warnings:</p> <ul style="list-style-type: none"> • National Advisory: Earthquake Being Assessed (“Long or Strong, Get Gone” holding message) • National Advisory: Tsunami Activity – Strong Unusual Currents • National Warning: Tsunami Threat • Emergency Mobile Alert (to areas where land inundation is forecast) • National Advisory: No Tsunami Threat • National Advisory: Earthquake – No Tsunami Threat
1	Southern Kermadec (<1 hour to nearest coast Local source)	$M \geq 7.9$ and $< 150\text{km}$ depth	<p>Natural, felt signs are the primary warning for local source tsunami (Region 1), however Southern Kermadec earthquakes located between 25°S and 33°S may not be widely felt in New Zealand. If possible and as appropriate, NEMA will issue one or a sequence of the following Advisories and Warnings:</p> <ul style="list-style-type: none"> • National Advisory: Earthquake Being Assessed (local/regional boundary holding message) • National Advisory: Tsunami Activity – Strong Unusual Currents • National Warning: Tsunami Threat • Emergency Mobile Alert (to areas where land inundation is forecast) • National Advisory: No Tsunami Threat
2	South-West Pacific (1-3 hours Regional source)	$M \geq 7.5$ and $< 100\text{km}$ depth	<p>Initial message: National Advisory: Large Pacific Earthquake Being Assessed (holding message)</p> <p>Followed by (as appropriate, once confirmed data and advice received from GNS Science):</p> <ul style="list-style-type: none"> • National Advisory: Tsunami Activity – Strong Unusual Currents
3	Wider Pacific (>3 hours Distant source)	$M \geq 8.0$ and $< 100\text{km}$ depth	<ul style="list-style-type: none"> • National Warning: Tsunami Threat • National Advisory: No Tsunami Threat to New Zealand • Emergency Mobile Alert (to areas where land inundation is forecast)

Coastal Regions used for Tsunami threat forecasts

GNS Science will apply tsunami modelling to provide information about the expected tsunami threat for specific coastal regions along the New Zealand coast. The Bay of Plenty is split into two coastal regions:

- Region 8—Waihi Beach to Matata (**includes Tauranga**)
- Region 9—Matata to Cape Runaway.



Forecast maps will use these coastal regions to show wave amplitude forecasts, illustrated in a coloured scale for different threat levels for the coastal regions. They are used for local, regional and distant-source events to support local level assessments.

Maximum expected amplitude at shore	Threat definition
<0.3m	No threat
0.3-1m	Land & Marine Threat
1-3m	
3-5m	
5-8m	
>8m	

Beach and Marine Tsunami Advisory Actions

Input	Actions			Output
	Duty EMO	Controller	CDEM Group	
National Advisory: Earthquake Being Assessed alert received	<ul style="list-style-type: none"> Identify if earthquake parameters > national thresholds Cross-check with PTWC website Ring Local Controller Support PIM to send holding messages via local/ social media publication via PIM on Controller approval Prepare to establish EOC 	<ul style="list-style-type: none"> Confirm earthquake parameters with Duty EMO Confirm if PIM to be immediately activated Group Controller teleconf Confirm if EMBOP providing local public information Teleconf with Exec and Mayor Confirm if EOC to be activated Confirm holding message publication 	<ul style="list-style-type: none"> Activate CDEM Group alerting procedures (including public information) 	<ul style="list-style-type: none"> Immediate PIM activation (Y/ N) EOC Activation (Mode 2-4) Local / social media messaging—“Long or Strong, Get Gone” holding message
National Advisory: Tsunami Activity – Strong Unusual Currents advisory received	<ul style="list-style-type: none"> Ring Local Controller Activate public messaging (safe to return; remain out of water, harbours and estuaries) via PIM on Controller approval Prepare to disestablish the EOC Prepare for hot-debrief 	<ul style="list-style-type: none"> Group Controller teleconf Confirm if EMBOP providing local public information Teleconf with Exec and Mayor Confirm if EOC to be deactivated Confirm public messaging 	<ul style="list-style-type: none"> Activate CDEM Group alerting procedures (including public information) 	<ul style="list-style-type: none"> EOC Activation (Mode 1-4) Local / social Media messaging—“safe to return; remain out of water, harbours and estuaries”
National Advisory: No Tsunami Threat advisory received	<ul style="list-style-type: none"> Ring Local Controller Activate public messaging (safe to return; no tsunami threat/ risk) Disestablish the EOC Conduct hot-debrief 	<ul style="list-style-type: none"> Group Controller teleconf Confirm if EMBOP providing local public information Teleconf with Exec and Mayor Confirm EOC deactivation Confirm public messaging 	<ul style="list-style-type: none"> Activate CDEM Group alerting procedures (including public information) 	<ul style="list-style-type: none"> EOC Activation (Mode 1) Local / social Media messaging—“safe to return; no tsunami threat/ risk”

Land and Marine Tsunami Warning Actions

Input	Actions			Output
	Duty EMO	Controller	CDEM Group	
<p>National Advisory: Earthquake Being Assessed alert received</p>	<ul style="list-style-type: none"> Identify if earthquake parameters > national thresholds Cross-check with PTWC website Ring Local Controller Support PIM to send holding messages via local/ social media publication via PIM on Controller approval Prepare to establish EOC 	<ul style="list-style-type: none"> Confirm earthquake parameters with Duty EMO Confirm if PIM to be immediately activated Group Controller teleconf Confirm if EMBOP providing local public information Teleconf with Exec and Mayor Confirm if EOC to be activated Confirm holding message publication 	<ul style="list-style-type: none"> Activate CDEM Group alerting procedures (including public information) 	<ul style="list-style-type: none"> Immediate PIM activation (Y/ N) EOC Activation (Mode 1) Local / social media messaging—“Long or Strong, Get Gone” holding message
<p>National Warning: Tsunami Threat received</p>	<ul style="list-style-type: none"> Confirm receipt Ring Local Controller Confirm activation of EOC Confirm if evacuation partners are to be activated Activate local evacuation plans Transfer Warning into email for .Executive release (map first, then warning instructions for evacuation areas) Provide call centre with public messaging information 	<ul style="list-style-type: none"> Group Controller teleconf Confirm if EMBOP providing local public information Teleconf with Exec & Mayor Confirm public messaging Confirm EOC activation scale Confirm partner activation Confirm activation of local evacuation plans <ul style="list-style-type: none"> Close TEL 	<ul style="list-style-type: none"> Activate CDEM Group alerting procedures (including public information) Issue Emergency Mobile Alert evacuation warning to impacted coastal regions 	<ul style="list-style-type: none"> EOC Activation (Mode >2) Partner agencies activated <ul style="list-style-type: none"> NZ Police FENZ DHB/ PHUs St Johns Local / social media messaging—“Long or Strong, Get Gone”, “follow official CDEM messaging”, “stay out of tsunami evacuation zones until official all-clear is provided; do not assume that after one wave the danger is over” Messaging to confirm: “wave arrival time, zones to be evacuated, welfare centres open, instructions to evacuate to friend’s/ relative’s place if possible”.

<ul style="list-style-type: none"> • National Warning: Tsunami Threat Cancelled received 	<ul style="list-style-type: none"> • Ring Local Controller • Activate public messaging (safe to return; no ongoing tsunami threat/ risk; listen to official broadcasts for further information) • Disestablish the EOC • Conduct hot-debrief 	<ul style="list-style-type: none"> • Group Controller teleconf • Confirm if EMBOP providing local public information • Teleconf with Exec and Mayor • Confirm EOC deactivation • Confirm public messaging 	<ul style="list-style-type: none"> • Activate CDEM Group alerting procedures (including public information) 	<ul style="list-style-type: none"> • EOC Activation (Mode 1) • Local / social Media messaging—“safe to return; no ongoing tsunami threat/ risk; listen to official information broadcasts”
<p>National Advisory: No Tsunami Threat advisory received</p>	<ul style="list-style-type: none"> • Ring Local Controller • Activate public messaging (safe to return; no tsunami threat/ risk) • Disestablish the EOC • Conduct hot-debrief 	<ul style="list-style-type: none"> • Group Controller teleconf • Confirm if EMBOP providing local public information • Teleconf with Exec and Mayor • Confirm EOC deactivation • Confirm public messaging 	<ul style="list-style-type: none"> • Activate CDEM Group alerting procedures (including public information) 	<ul style="list-style-type: none"> • EOC Activation (Mode 1) • Local / social Media messaging—“safe to return; no tsunami threat/ risk”

Severe Weather Warnings

Outlooks, Watches and Warnings of widespread severe weather

Message	Issued
Severe Weather Outlook	Every day—It describes the likelihood of widespread heavy rain, heavy snow or severe gales occurring in the 3–6-day period.
Severe Weather Watch	<ul style="list-style-type: none">Whenever it is likely that conditions will deteriorate to those requiring the issue of a Severe Weather Warning after the immediate 24-hour period but within 48- 72 hours, orWhenever it is possible that conditions will be close to severe within the next 24-48 hours, particularly if there is a high level of uncertainty.
Severe Weather Warning	<p>Whenever it is likely that widespread heavy rain, heavy snow or severe gales will occur in the next 24-36 hours.</p> <p>Severe Weather Forecasters discuss significant aspects of the weather situation with key stakeholders as appropriate. Severe Weather Watches and Warnings may be issued any time but are usually issued around 0900 and 2100 hours.</p>

Outlooks, Watches and Warnings of local severe weather.

Message	Issued
Severe Thunderstorm Watch	Whenever there is a moderate or high likelihood that severe thunderstorms bringing localised heavy rain, heavy hail or strong winds (including tornadoes) will occur over the New Zealand landmass within the next 24 hours.
Severe Thunderstorm Warning	Whenever information from the MetService weather radar or some other reliable source indicates that a severe thunderstorm (bringing localised heavy rain, heavy hail or strong winds (including tornadoes)) exists within a 150 km radius of a MetService weather radar and it is possible to track and predict the expected path of the thunderstorm

Severe weather outlooks, watches and warnings and severe thunderstorm watches and warnings are published on MetService's website and via their smart phone app.

Input	Actions			Output
	Duty EMO	Controller	CDEM Group	
<p>Receive Severe Weather Warning or Severe Thunderstorm Watch or Severe Thunderstorm Warning</p>	<ul style="list-style-type: none"> • Confirm warning directly applies to all or significant part of Tauranga City • Review information available at MetConnect • Determine the times of sunrise/ sunset & high/ low water • Determine if also a King Tide via NIWA website • Determine if rainfall consistently > 12mm/hr • Ring Local Controller • Update internal stakeholders with warning details and key public messages • Maintain monitoring event and updating stakeholders • Seek further information from EMBOP Duty manager or MetService On-call forecaster (especially for Events Team) 	<ul style="list-style-type: none"> • Confirm public messaging • Determine if EOC to be partially activated (\leq Mode 2) • Confirm internal stakeholders informed (waters, contact centre, roading, TTOC, events, communications) 	<ul style="list-style-type: none"> • Activate CDEM Group alerting procedures (including public information) 	<ul style="list-style-type: none"> • EOC activation (Mode \geq2) • Internal and external messaging <ul style="list-style-type: none"> • take preventative measures • keep up to date via MetService official information sources • Clear gutters/ sumps/ drains • As storms approach people should: <ul style="list-style-type: none"> ◆ take shelter ◆ put vehicles under cover ◆ remove any debris or loose items from around your home and outbuildings • During and after the storm people should: <ul style="list-style-type: none"> ◆ beware of fallen trees and power lines ◆ avoid creeks and drains as you may be swept away ”

Volcanic Warnings

GNS Science, through the GeoNet Project, is the national source of volcanic monitoring.

GeoNet issues notifications of any change in volcanic alert level status through Volcanic Alert Bulletins to NEMA, other agencies, and the media.

The New Zealand Volcanic Alert Level System is illustrated below:

New Zealand Volcanic Alert Level System		
Volcanic Alert Level	Volcanic Activity	Most Likely Hazards
Eruption	5	Major volcanic eruption
	4	Moderate volcanic eruption
	3	Minor volcanic eruption
Unrest	2	Moderate to heightened volcanic unrest
	1	Minor volcanic unrest
	0	No volcanic unrest
<p>An eruption may occur at any level, and levels may not move in sequence as activity can change rapidly.</p> <p>Eruption hazards depend on the volcano and eruption style, and may include explosions, ballistics (flying rocks), pyroclastic density currents (fast moving hot ash clouds), lava flows, lava domes, landslides, ash, volcanic gases, lightning, lahars (mudflows), tsunami, and/or earthquakes.</p> <p>Volcanic unrest hazards occur on and near the volcano, and may include steam eruptions, volcanic gases, earthquakes, landslides, uplift, subsidence, changes to hot springs, and/or lahars (mudflows).</p> <p>Volcanic environment hazards may include hydrothermal activity, earthquakes, landslides, volcanic gases, and/or lahars (mudflows).</p> <p>*Ash, lava flow, and lahar (mudflow) hazards may impact areas distant from the volcano.</p>		
<p>This system applies to all of New Zealand's volcanoes. The Volcanic Alert Level is set by GNS Science, based on the level of volcanic activity. For more information, see geonet.org.nz/volcano for alert levels and current volcanic activity, gns.cri.nz/volcano for volcanic hazards, and getthru.govt.nz for what to do before, during and after volcanic activity. Version 3.0, 2014.</p>		

Input	Actions			Output
	Duty EMO	Controller	CDEM Group	
<p>Volcanic Alert Bulletin received</p>	<ul style="list-style-type: none"> • Confirm warning directly applies to all or significant part of Tauranga City • Ring Local Controller • Seek further information from EMBOP Duty Manager if requested • Update internal stakeholders with warning details and key public messages • Maintain monitoring event and updating stakeholders • 	<ul style="list-style-type: none"> • Determine if EOC requires activation <ul style="list-style-type: none"> ◆ If ash won't reach Tauranga, maintain monitoring ◆ If ash will reach Tauranga, activate on Group Controller request) • Confirm public messaging • Confirm internal stakeholders informed (waters, contact centre, roading, TTOC, events, communications) 	<ul style="list-style-type: none"> • GECC activated to monitoring mode • Confirm EOC activation based on threat model from GNS 	<ul style="list-style-type: none"> • EOC activation (Mode ≥ 2) • Internal and external messaging <ul style="list-style-type: none"> ◆ Take preventative measures; ◆ keep up to date via official information sources; ◆ wear masks if outside; turn off aircon units; ◆ Listen to a local radio station for official emergency information; ◆ If warning is given before ashfall starts, go home from work; ◆ if there is ash in your water, let it settle and then use the clear water; ◆ If there is a lot of ash in the water supply, do not use your dishwasher or washing machine; ◆ If indoors, close all window, doors, and dampers to limit the entry of volcanic ash