



Kaikoura Earthquake Response Review

14th November 2016

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1. Group Controller's Commentary

This was not the “big one” but it was the largest and most complex series of events for the region since, perhaps 1855. In the space of 48 hours, we experienced the top three hazards listed in the Group Plan – an earthquake, flood, and tsunami. Add to that landslides, and we had a recipe for challenging times.

The situation faced in the early days after 14th November 2016, was exacerbated by the complex nature of the earthquake. It was three days before we understood the full magnitude and extent of the rupture, and during the initial hour, we were unaware that there were in fact multiple ruptures, with one at sea resulting in a small tsunami.

The response effort was managed through a network comprising an Emergency Coordination Centre (ECC) and up to five Emergency Operations Centres (EOC), with the Wellington EOC remaining activated for 12 days before handing over to the City Recovery Team.

This report provides a summary of the region-wide aspects of that response effort and highlights several opportunities for improvement to be incorporated into future Emergency Management plans and Emergency Operations Centre systems. This is in addition to those actions that are being managed, intra-council.

Whilst this report primarily deals with response, it is useful to remember that this is but one element of the four Rs. In addition to the response actions highlighted for further attention by Emergency Management, there will be lessons in risk reduction (particularly for the port area, utility networks, and the region's building stock), readiness (community and organisational BCPs), and recovery (port and city CBDs). These are more appropriately the responsibility of central government, councils, emergency services, District Health Boards, welfare agencies, businesses, and most importantly, the people in our communities. While it is unlikely their actions will receive the same level of public visibility, it is important that all organisations review their Business Continuity Plans; infrastructure owners and providers consider the adequacy of their networks/supply chains along with any impact for customers; and residents ensure household plans are adequate for the challenges that may arise.

Emergency Management response is merely the tip of the iceberg for all those actions, pre and post event, that contribute to a successful outcome during an emergency.



Bruce Pepperell
Group Controller

2. Introduction

2.1. Scope of the report

This report is focussed on the response across the region to the 14th November Kaikoura Earthquake (and associated tsunami) along with the storm event the following day. It does not include an evaluation of single agency response and recovery activities unless specific comments were raised during the evaluation process.

This report:

- describes the earthquake, tsunami and storm event;
- provides a summary of the response;
- provides an evaluation of the response; and
- identifies opportunities to further enhance response activities across the region.

3. The Response

3.1. Event Characteristics

Kaikoura Earthquake and tsunami warning – 14th November 2016

At 0002hrs on Monday 14th November, a large earthquake (Magnitude 7.8, 10km deep) occurred near Kaikoura in the South Island. Shaking was felt across almost all of New Zealand. This earthquake was extremely complex involving multiple faults resulting in a significant surface rupture that extended off shore. The large fault rupture led to a localised tsunami in the area, and tsunami warnings issued for a large portion of the east coast including the Wellington region.

Storm event – 15th November 2016

As the aftershocks continued, heavy rain warnings were issued for the Wellington region. This heavy rain caused a number of rivers to alarm in the Hutt Valley, Porirua and Kapiti Coast. Transport corridors already disrupted due to the earthquake, were further impacted leading to multiple road closures and diversions during the day. The rainfall coupled with the shaking also increased the incidence of landslides in the region.

3.2. Summary of the response

The event commenced with a large magnitude earthquake in Amberley (South Island) at 0002hrs 14th November 2016. Initially recorded as magnitude 6.5, this was progressively modified until it was confirmed 3 days later as a magnitude 7.8. Numerous aftershocks followed. A NO TSUNAMI THREAT was issued by Ministry of Civil Defence & Emergency Management (MCDEM) at 0040hrs. This was replaced by a NATIONAL WARNING: TSUNAMI at 0050hrs following unusual tidal gauge activity recorded at Kaikoura. Wellington City, Kapiti Coast, Hutt City, Porirua City and the Regional Emergency Coordination Centres (ECC) activated. The main issues emerging were power outages, inconsistent public messaging and communication regarding tsunami evacuations, challenges associated with the assessment of damage to infrastructure and establishment of cordons. The TSUNAMI WARNING stayed in effect until 1502hrs.

A SEVERE WEATHER WARNING was received on 14th November, advising of heavy rainfall in the Tararua Ranges overnight and the following day (Tuesday), in addition to severe wind gusts of 140Km/hr in Wellington and Wairarapa. Emergency Operations Centres (EOCs) not already activated put in place standby teams ready to respond to the impacts of the rain. At 0619hrs 15th November the SEVERE WEATHER WARNING included specific detail pertaining to Wellington, in addition to the Tararua Range. Hutt City, Upper Hutt, Kapiti Coast and Porirua City EOCs activated in response to the rain event. Sustained heavy rain caused many of the Hutt tributaries to alarm from 0800hrs. From 0900hrs flooding closed many state highways and roads, greatly restricting access across the region. Rain began to ease over the afternoon of the 15th November.

The Wellington EOC and ECC continued to remain activated in response to the Kaikoura Earthquake until the official transition to recovery at 1400hrs on Friday 25th November.

3.3. Key decision points

The response required many decisions to be made. Four have been identified as key to the overall response based on the threat to life and impact on a large number of people. These are summarised below whilst the detail pertaining to the factors known at the time, the assumptions made, options available and actions taken are shown in Appendix A.

Key Decision One – Evaluation of initial earthquake and tsunami threat. 14th November 0002hr.

Key Decision Two – Re-evaluation of initial earthquake and tsunami threat. 14th November 0040hrs.

Key Decision Three – Declaration discussion and decision to strongly recommend avoiding the Wellington CBD. 14th November 0315hrs.

Key Decision Four – Declaration discussion and decision to allow a controlled return to the Wellington City CBD. 14th November 1530hrs.

3.4. Community Engagement and Capacity Building

Over the past four years, in addition to building official response capability and capacity, WREMO has worked in the community promoting messages of empowerment, preparedness, and connectedness.

During that time, social media channels have grown to provide credible information about preparedness and response. The table below highlights the volume of traffic through these channels during the period 14th to 27th November 2016.

Channel	Activity
Website (getprepared.org.nz)	408,505 page views (62% on mobile devices) Top 3 pages by number of page visits: <ul style="list-style-type: none"> • Tsunami Zone Maps 172,872 unique visits • Homepage 63,327 unique visits • Status page (What’s Happening) 27,641 unique visits
Facebook	203 Facebook posts 14,595 new likes Total reach for the first week – 1,267,623 Total impressions of posts for the first week – 10.7 million
Twitter	1.4 million impressions
Red Cross Hazard App	Downloads per quarter (cumulative) <ul style="list-style-type: none"> • 30 Jun 16 – 5,167 • 30 Sep 16 – 8,627 • 31 Dec 16 – 14,288

In addition, one of WREMO key preparedness enablers, 200L water tanks has seen a significant growth in response to the earthquake event:

Quarter	30 Jun 16	30 Sep 16	31 Dec 16
Number of tank sales (cumulative)	8,408	8,990	10,989

This equates to approximately 6.5% (occupied dwellings) and 7.5% (average household size in region) who have purchased a 200-litre water tank, providing an additional capacity of 2,197,800 litres of water (an additional 360,000 litres since 14 November).

4. Evaluation of Response

Following the event, after-action debriefs were held at all activated EOC locations. Debriefs/discussions were also held with Regional Transport Response Team (RTRT) members and emergency services. Each debrief included feedback on both what went well and identified further opportunities for improvement.

The following provides a discussion of the themes that have a wider impact than a single EOC or are related to multiple areas of operation. Opportunities for improvement identified as a result of individual debriefs have been fed back into improving future operations for that relevant EOC.

4.1. Roles and responsibilities

To assist the response, the Wellington City building team was assigned to work from the designated ECC facility in the Royal Society building. As a result, the ECC remained in its initial temporary location, in the back office of the Wellington EOC. Later in the response, during the second week, the WCC building team was relocated into the Wellington EOC; and the EOC and ECC were combined into a single response entity.

Comments from the evaluation highlight some uncertainty over roles and responsibilities due to the co-location and combination of what are normally separate entities. In addition, some staff had an unclear view on overall authority and management for some activities, particularly the building response effort.

Comments also identified some constraints to ECC operational capacity, for example insufficient communication and information flow. However, other comments suggest the Controllers' teleconferences added considerable value in understanding priorities and issues across the region. In addition, the ECC was not operating out of its designated location, therefore limiting staff numbers able to perform necessary tasks. In future, an alternative location for the Wellington City building team will need to be found.

A state of emergency was not declared and whilst the decision-making process was robust, Controllers operated without powers and therefore relied heavily on established relationships to manage the response. Generally, this worked well, however in Wellington City, the evaluation suggests further clarity was required on the linkages and support from the EOC to the building engineering assessment, cordon and traffic management processes.

4.2. Communications and situational awareness

The response to the earthquake was prompt. EOCs and ECC staff, along with other agencies, responded rapidly to the demands of a complex situation. Communicating the operating picture and providing situational awareness across the range of agencies was demanding during the initial phase of the response. The 111 system was disrupted, text messages (including notifications to activate) were subject to network delays and the volume and timing of information from official and non-official sources across social media and traditional media was challenging to digest. Whilst this is not unprecedented for an earthquake event, the threat of a tsunami from a seemingly land-based earthquake was a dynamic that further clouded the picture and actions required, from responders and the public. It also meant the focus immediately shifted to evacuation, with lesser priority being immediately applied to the impact of building damage. Early reconnaissance in the Wellington CBD identified obvious areas of damage, however, the full extent of the damage did not become apparent

until several days later and continued to evolve over the two weeks the Wellington EOC was activated. Even now, nearly three months after the event, authorities continue to deal with emerging information.

The key to effective decision-making is accurate and timely situational awareness. In addition to the challenges here, understanding the nature of the rupture and then the existence of a tsunami, the situation in those early days regarding the status of collective and individual buildings, resulted in considerable uncertainty for those managing the response. This could be partially overcome for future events, by expanding the range of indicator buildings to cater for a broad spectrum of earthquake events and pre-instrumenting them to provide real-time data.

Some breakdown in communication did occur during the response. This led to some agencies not receiving timely situation reports (despite reminders within the EOC) and more importantly as indicated above, agencies reported challenges providing notifications to staff.

The establishment of the Regional Transport Response Team (RTRT) and its inclusion in the Controllers' teleconferences significantly improved information sharing with regard to the transport operations throughout the region, particularly as to the weather impacts for SH1 and SH2. In addition, regular communication from the Group Welfare Manager to the Regional Welfare Committee agencies, including Local Welfare Managers, enabled them to keep abreast of response activities and align the size and scale of their own actions as necessary.

The infrastructure used to send National Warning System (NWS) messages is the same as the mechanism for sending situation reports. Whilst the EOC and ECC Intelligence desks digest these, clearly the outcome and urgency required from a warning message and a situation report demands a different delivery mechanism. Given the volume of information flow during a response and the reality of human behaviour, there is a risk of warnings received through the NWS during a response being treated with the same urgency as a situation report.

4.3. Community Response

Personal preparedness and community resilience is a critical part of the Wellington Region Emergency Management Office (WREMO)'s work. While there has long been an emphasis on preparedness messages, the team has also built a practical framework, based on research and international evidence, for communities to plan and practice how they will work together and solve challenges during a response through the Community Response Planning process. The programme has been rolled out in more than 35 areas across the region with broad support from community leaders. The end product is a guide for a local Community Emergency Hub which serves as a gathering place for people to work together using the resources in their own neighbourhood.

This concept was tested during the November 14th earthquake followed by the floods. Local communities from the South Coast of Wellington to Porirua took action in one form or another to activate their local Hubs in ways the community saw fit. For example, when Porirua was hit hard by flooding and slips, one of the local Hubs opened its doors in the response. The Porirua EOC was notified of people being stranded at the Plimmerton Train Station, as the train services had stopped running and they did not have access to a vehicle or place to go. The Hub at the Plimmerton School was opened by three local residents to give people a place to shelter and have a cup of coffee. These residents had been part of the Plimmerton Hub activation practice only two months earlier so knew how to access the facility and open the Hub. It would have been difficult for the Welfare team at Porirua EOC to set up an Emergency Assistance Centre in the area due to heavy traffic across the city.

4.4. Staffing

The staffing requirement for an EOC and ECC is dependent on the scale and duration of the event. The Wellington EOC/ECC was operational for approximately 12 days. Other EOCs were operational for a lesser time, reflecting the scale and impact of their response and recovery.

An earlier decision at the Coordinating Executive Group (CEG) was that two shifts would be trained to support EOC/ECC operations. This is considered sufficient to cater for the majority of operations, however not one requiring 12 days activation. The extended activation resulted in a need to supplement EOC staffing during the period, something that occurred although not to the level desired. Observations during the period raised a number of other considerations. Supporting the community is the number one priority for council and agency staff during an emergency. It is therefore critical that those high calibre staff made available for the task have received adequate training and are freed from BAU activities for the duration. Further attention also needs to be given to enhancing levels of personal resilience. Some people find it difficult to adjust to a routine of shift work under constant pressure. Staff rotations also need to promote the establishment of a sustainable routine.

After-action debrief feedback reinforced several of these issues. In particular, fatigue, the need to supplement numbers with untrained staff (and the challenges that brings), and the difficulties of drawing staff from other locations. While this last measure is facilitated by our common approach to ECC/EOC training, systems and processes across the region, it would appear that numbers were not available in the quantity desired.

4.5. Information and Communications Technology (ICT)

The evaluation process has clearly highlighted the effectiveness of the investment by Councils in modern, standardised ICT equipment across the region which aided the response. Multipurpose computers, visual display screens, projectors and connectivity within the facility and to the internet, were emphasised as examples that assisted staff to carry out their duties in a productive way as well as facilitating the sharing of information across the ECC / EOCs.

Staff also identified ICT challenges. The absence of sufficient documentation to support users (particularly untrained staff) came up in all EOC debriefs and whilst the WREMO website received hits worldwide, users found the system difficult to navigate and manage information. Whilst the ECC deployed their laptops to support Wellington EOC, a supply of new batch of Wellington EOC laptops already purchased and on-site had yet to be configured for EOC use.

The most concerning aspect of feedback in the evaluation process related to ICT staff support for EOCs. Those staff who performed the role during the response were acknowledged in high regard. However, the capacity over time, to sustain ICT support for EOC operations will be challenged without a greater understanding and involvement by Council ICT staff.

4.6. Training and documentation

The evaluation supported WREMO observations that everyone has a considered and relevant view on the need for training and how it can be delivered.

In some areas, it was recognised that the region-wide training programme, the build-up and participation in Exercise Tangaroa was invaluable to staff performing during the response. It was an enabler for staff moving to a different EOC and providing an effective and confident ECC / EOC workforce. Notwithstanding this, the challenges identified in staffing levels (section 4.4) and the impact of a longer activation period, would have necessitated staff external to the region being employed. To support this a shift toward function specific, nationally based training may be required.

The evaluation also highlighted the absence of sufficient templates, Standard Operating Procedures (SOPs), and documentation to support staff, although some feedback suggested that staff had not

recently read documentation that does exist. Ultimately, documentation to address the gaps will need to be developed, tested and included in training. Key areas identified for development were cordon management, staff rostering, de-activation and Emergency Assistance Centres (EACs).

4.7. Transition to Recovery

This event has continued to highlight the ongoing demands and ambiguities associated with recovery. On the 15th November, WREMO staff began implementing recovery assessments and planning in the impacted areas. Using the draft Strategic Recovery Framework, it was determined that the event required a Level 3 activation, which involved multiple jurisdictions affected with regional support services. The majority of impacts occurred in Wellington City, Hutt City and Porirua as well as the Port, which is a regional asset. Pre-event Recovery Planning was already underway before the earthquake.

WREMO is currently in the process of learning from the lessons of this event, amending the existing draft Framework and establishing a Steering Committee to guide the councils, community groups and private sector partners through a shared planning process that sets out to achieve three goals.

- a) **Pre-event Resilience Evaluation** – Prioritise investments to address current vulnerabilities and enable better post-event performance;
- b) **Post-event Recovery Management** – Clarify roles, responsibilities, decision-making processes and required partnerships across the range of government, non-government and private sector partners; and,
- c) **Post-event Governance** – Develop an agreed approach to developing a long-term recovery organisation with shared local and central government leadership.

4.8. Additional influences

Whilst the evaluation process focussed on the response, the level of follow-on emergency management activity following the deactivation of all EOCs has been considerable. Officials Committee for Domestic and External Security Coordination (ODESC) has established a number of priority work streams for Central and Local Government. Amongst these (and of direct relevance for a future response to a Wellington based earthquake) is the Wellington Earthquake National Initial Response Plan (WENIRP).

The WENIRP work stream requires a rewrite of the current document, to include a joined up approach from National, Regional and Local CDEM activities. At the regional and local level, a number of outputs are required to contribute to operational success. These include:

- a) Reconnaissance Plans are developed, trained and tested:
 - Informs constraints and freedoms regarding key assets and key network nodes (land/sea/air);
 - Assists with the prioritisation of evacuation and rescue operations and resource allocation; and
 - Informs operating picture and situational awareness.
- b) Supply Chain Plan is established:
 - Complete enabler to response activities and supporting the community;
 - Linked land/sea/air operations to national supply chain operations;
 - Supports existing organisations e.g. Fast moving consumer goods, provide BAU activities that support community; and
 - Movement of critical staff within the region.
- c) Staging Area / Assembly Area Management Plans are developed, trained and tested:

- To support supply chain; and
 - Management for resources in and evacuation out.
- d) Evacuation Plans are developed, trained and tested:
- Evacuation of tourists, commuters, vulnerable groups and hospital patients to reduce demand on welfare support systems and increase capacity to support welfare in the community; and
 - Utilises Reconnaissance Plan, Supply Chain Plan and Assembly Area Plans.
- e) Needs Assessment Process is developed, trained, and tested (in conjunction with Registration):
- Supports a coordinated approach to the collection, collation, action, and sharing of information pertaining to individuals affected by the emergency; and
 - Supports the management of evacuees out of the region and movement and support of evacuees within the region.
- f) Emergency Assistance Centres (EACs) Management Plans are developed, trained, and tested:
- Enables the facility, systems, and staff management arrangements to support the community.
- g) Communication linkages are documented, mapped and displayed:
- All communications systems in all EOCs;
 - Visual displays in all EOC communication rooms;
 - Gap analysis completed; and,
 - Programme for enhancement developed.

5. Conclusion and Recommendations

This series of events saw the region impacted by the top three risks identified in the Group Plan within the space of 48 hours. Earthquake, tsunami and flood responses require some common and other unique, actions to be taken. The complex nature of the earthquake sequence and subsequent tsunami evacuations tested decision making in a dynamic environment and required an intensively managed and sustained response for 12 days. Staff responded to the challenge fresh from a comprehensive training programme and Exercise Tangaroa.

Previous lessons, from the Seddon Earthquake in 2013; in relation to the advice to the public, decisions regarding the Wellington City CBD, and the challenges of a brittle transport network had been heeded; however, this was an emergency event on a different scale, which exposed a fresh set of challenges. The RTRT response to the severe weather demonstrated the value added by a more joined up approach locally and regionally.

Overall, despite the multitude of challenges faced, much of the response effort went well, however once again it is important to acknowledge that notwithstanding the size, complexity, and impact of this series of events; this was not Wellington's "big one" and we will need an even higher level of capability and capacity if we are to adequately meet this challenge.

Any successful organisation needs to constantly strive to improve. Accordingly, the following have been identified as areas for further development:

1. *Develop the Wellington Region Earthquake Plan to support the WENIRP;*
2. *Expand the range of appropriate guidance to support common response activities, including cordon management, staff rostering, de-activation and managing Emergency Assistance Centres;*
3. *Continue the development and implementation of a regional training programme whilst keeping engaged with national training initiatives;*
4. *Continue to establish and grow the links between EOCs (official response) and Community Emergency Hubs (unofficial response);*

5. *Achieve a more collaborative approach (WREMO and Council) to provide the necessary ICT support capacity for emergency response; and,*
6. *Investigate opportunities to provide real-time data to improve situational awareness, in particular for understand building impacts arising from earthquakes.*

Appendix A – Key Decision Points

A number of key decision points have been identified as critical to the response. These are summarised below:

Key Decision One
Theme: Evaluation of initial earthquake and tsunami threat – 14 th Nov 0002hrs to 0040hrs
Aim of decision: To determine the initial scope and scale of the impact and therefore risk to the community
<p>Known Factors:</p> <ul style="list-style-type: none"> • Strong wind warning place for Wairarapa and Wellington – Northwest winds gusts 140km/h from Monday evening until late Tuesday morning. • Middle of the night. First light approx. 0545hrs. <p>14 Nov 0002hrs</p> <ul style="list-style-type: none"> • Earthquake occurs <p>14 Nov between 0015hrs and 0040hrs</p> <ul style="list-style-type: none"> • Initial GeoNet assessment Mag 6.5, depth of 25kms, inland on South Island • PTWC Tsunami statement 1: Magnitude 7.4 depth of 10kms, inland on South Island. Based on all available data there is No Threat of tsunami from this earthquake. • Initial assessment with respect to a possible tsunami was conducted prior to key WREMO staff travelling to their EOC. • WREMO and some EOC staff conducting intelligence gathering operations to better understand the impacts and therefore formulate response. Signs of glass and masonry reported in Wellington CBD, power outages in some areas, but not consistent over a large area. • USGS alert: Magnitude 7.4 depth of 10kms, inland on South Island • MCDEM: Earthquake Advisory: Magnitude 6.6 and depth of 16kms, inland of South Island • MCDEM: National Advisory: No tsunami threat to New Zealand and reiterated Magnitude 6.6, depth of 16kms, inland of South Island. • Public messaging was put out by MCDEM that No threat of tsunami in social media and followed by WREMO.
<p>Assumptions:</p> <ul style="list-style-type: none"> • Evolving magnitude of the earthquake but considered likely to have an impact on public safety and confidence • Aftershocks would continue • Time of day restricts useful reconnaissance • No threat of tsunami – PTWC / MCDEM • King tide information available
<p>Options:</p> <ul style="list-style-type: none"> • Only responsible option - Activate all ECC and EOCs to ascertain scale and scope of earthquake.
<p>Action taken:</p> <ul style="list-style-type: none"> • Considerable phone traffic by key WREMO and EOC staff with external authorities • Key EOC/ECC staff commence activations • WREMO posted on Facebook pointing people to GeoNet website 5 minutes after the quake • Some EOCs immediately (partially) activated based on the ‘felt’ nature of the earthquake

and early signs of damage (Wellington).

- Red Cross Hazard App notification sent out by WREMO to advise of the earthquake and No tsunami threat to Wellington region. Pointed people to our website, 25 minutes after the earthquake

Key Decision Two

Theme: Re-evaluation of initial earthquake and tsunami threat – 14th Nov 0040hrs to 0201hrs

Aim of decision: To determine the requirement for and nature of, a response to the tsunami threat

Known Factors:

- No threat of tsunami during the first 40 minutes of the event and public messaging to support this. Severe wind warning in place for Wairarapa and Wellington.
- 0046hrs Update to tsunami threat posted by WREMO repeating info provided by MCDEM that threat only to South Island
- 0052hrs PTWC issued revised earthquake magnitude to 7.9 at depth of 10kms, inland on South Island and also observation of tsunami action recorded at Kaikoura tidal gauge.
- 0056hrs MCDEM Tweeted that situation had changed and tsunami possible.
- 0100hrs MCDEM issued a National Warning: Tsunami Threat. Advises that tsunami is possible, MCDEM are still accessing and provide more information within the next hour. Showed Magnitude 6.6 at depth of 16kms and Inland of South Island.
- 0101hrs MCDEM tweet that threat is for eastern coast of South Island.
- Considerable confusion within the Group as to how there can be a tsunami generated from a land based event – discussion between Gp Controller and region’s science advisors and eventually with GNS panellist as not clear where the point of origin for tsunami is.
- 0128hrs MCDEM issued a National Warning: Tsunami imminent threat. This has no further detail than the previous message at 0100hrs. They also tweeted that tsunami threat is for all east coast of New Zealand.
- 0134 WREMO commenced issuing repeated tsunami warnings on social and other media however at this stage threat limited to East Coast
- Discussions between Group Controller, Group science advisors determine that regionally this is at worst a ‘Red Zone’ tsunami threat.
- 0150 WREMO advice narrowed to red zone (beaches and tidal estuaries)
- 0201hrs MCDEM issued National Warning: Tsunami Threat to Marine and Beach (Red Zone for our Region).
- Group red zone decision reviewed in light of very broad spectrum of advice by national tsunami panel (1 to 3 metres). Group decision reconfirmed - supported by tide gauges
- EOCs had begun checks on some key roads. Isolated power outages reported nothing widespread, telecommunications operational, as were water networks. No reports of any injuries for the earthquake or damage to hospital. Rail closed for assessment as standard practice.

Assumptions:

- National v regional messaging, Off/On advice, and individual and variable timings will likely confuse public
- Confusion would likely be exacerbated by rogue media operators
- Expectation that those living in the vicinity of beach should self-evacuate, but knowing that many won’t.
- Time of day limits reconnaissance activity and also mitigates risk of tsunami impact for people on the beach/red zone.

Options:

- Await and respond to NCMC direction, noting likely time delays
- Make regional decision on response in advance of NCMC direction.
- Activate all affected ECC/EOCs and/or EOC staff to deal with tsunami threat.

- Allow EOCs to manage actions associated with Red Zone tsunami threat given that in many areas there is no threat to life or property.

Action taken:

- Group Controller directed Red Zone threat. Blanket public messaging for the region
- Wairarapa staff instructed to contact coastal communities
- EOCs managed operations locally in support of Group Controller's direction
- Group red zone decision reviewed in light of very broad spectrum of advice by national tsunami panel (1 to 3 metres). Group decision reconfirmed - supported by tide gauges
- Followed messaging on social media from MCDEM.
- Red Cross Hazard App used for Red Zone threat for Wellington Region at 0130 and 0245

Key Decision Three

Theme: Declaration discussion and decision to strongly advise public to avoid coming into the Wellington CBD. 14 November 0315hrs.

Aim of decision: To determine whether additional powers required to manage the immediate situation and buy time to obtain greater situational awareness and avoid placing members of the public at risk.

Known Factors:

Transport

- Trains and ferries have been cancelled (0318)
- Motorways are jammed (HCC 0337)

People

- Reports of self-evacuation occurring (0210) and reports of hundreds of people in the CBD and in coastal areas due to tsunami threat (0220) WCC log
- No reports of significant injury or fatalities (0315)

Buildings

- No reports of building collapse
- Advice from structural engineers was that the type of earthquake meant that its effect would be particularly severe on building of eight stories or more, potentially leading to pounding of the buildings concerned
- Initial build assessment by two structural engineers reported that damage to buildings (stats, BNZ, shed 39) and liquefaction in the port area.
- Rapid assessments had not yet been completed and had been scheduled to commence first light.
- Broken glass from building present in the CBD and being managed.

Weather/Tsunami

- Weather forecast = Severe wind warning in place for Wairarapa and Wellington
- MCDEM: Threat to Marine and Land areas
- MCDEM reported Magnitude at 7.5 and depth 23kms.

Utilities/Lifelines (power/water)

- No widespread impact on utilities except for CentrePort

Precedent was set in 2013 Seddon earthquakes to recommend that people and traffic stay out of the Wellington CBD to enable assessments to be completed.

Assumptions:

- Most people in the region would have been aware of the earthquake and would be wanting advice on how this would affect the working day in sufficient time to plan the mornings activities
- Aftershocks still occurring, and 'likely' to continue
- Likely to be some impact on buildings across the region, particularly Wellington City; but extent, unknown

Options:

- Declare state of local emergency to obtain legislated powers.
 - Limitations of the act in determining the state of buildings therefore adding little value at this stage
 - No known apparent epicentre of damage for the region
 - Extremely difficult to cordon the entire Wellington CBD – approx. 9.2 km
 - Enforcement difficulties
 - Eq could possibly affect other parts of the region however they are likely more manageable
- As occurred in 2013, strongly discourage commuters from coming into the Wellington CBD
 - Can rely for a short time on the general cooperation of people
 - Further decisions/recommendations can be made once situation clarified following Rapid Impact Assessments and Rapid Building Assessments

Action taken:

- Discussion held –controllers, REMA, and senior EOC staff/officials
- Declaration checklist followed
- 0345 Final decision: to strongly recommend for people to avoid coming into the Wellington CBD - passed out through social media and news agencies
- By this time, EOCs fully operational in Wellington, Kapiti, Lower Hutt and Porirua.
- Inspections of infrastructure commenced
- WCC CEO and Mayor informed

Key Decision Four

Theme: Declaration discussion and decision to allow controlled access to the CBD. 14 November 1530hrs.

Aim of decision: To determine if a state of local emergency should be declared, and/or if we should advise the public that they may return to the Wellington CBD

Known Factors:

EOCs

- Most de-activated but provided standby or skeleton staff in response to heavy rain forecast.

Transport

- Some bus routes diverted to avoid CBD and risk of falling glass
- Train services have been impacted, with some bus replacements due to damage, normal service to resume by 15 Nov
- NZTA confirmed all SH open (with exception of SH58)

People

- No serious injuries or fatalities

Buildings

- Some building damaged identified, not significant risk to the public and being managed.
- Rapid assessment continuing and encouraging the owners to get assessments by structural engineers.
- Featherston Street structurally sound, but some buildings pose a risk to the public, some contractors refusing to work because of the conditions.
- Risk of falling glass, especially with the forecasted 140km winds.

Weather/Tsunami

- Tsunami threat cancelled
- Rain will become more persistent and heavy falls possible. Northerly gusty wind will continue to increase becoming severe this evening with gusts up to 140km in exposed places (due at 1700 hrs).
- Heavy rain warning in place for Tararua Ranges (note: not Wellington)

Utilities/Lifelines (power/water)

- No major issues

Aftershocks

- 5.7 aftershock 20km East of Seddon at 1333
- 6.3 aftershock 35km North of Seddon 1334
- Most likely GNS scenario: A normal aftershock sequence that is spread over the next few months. Felt aftershocks (e.g. M>5) would occur from the M7.5 epicentre near Culverden, right up along the Kaikoura coastline to Cape Campbell over the next few weeks and months. This is the most likely scenario.

Assumptions:

- Aftershocks still occurring, and 'likely' to continue

- Transport network operating at reduced/limited capacity as the inspections are completed, and may be impacted by forecasted weather (wind/flooding etc)
- Building owners are responsible for doing internal structural assessments will inform if there are significant issues or risk to public safety
- If no state of local emergency is declared, building owners will be 'cooperative' and the public will be respectful of closed areas/cordons
- At 1530 there are still approx. four hours of daylight to continue to undertake assessments

Options:

- Declare state of local emergency
 - Keep people and traffic from Wellington CBD
 - Use of blanket cordons and messaging to keep people out of high risk areas
 - Limitations of the act in determining the state of buildings therefore adding little value at this stage
 - No known apparent epicentre of damage for the region
 - Extremely difficult to cordon the entire Wellington CBD – approx. 9.2 km
- Allow a controlled re-entry into the CBD
 - Cordon off areas of risk
 - Staff able to return to buildings once building owners/employers have given the all clear
 - Manage the situation intensively to respond immediately as further information comes to light

Action taken:

- Declaration not considered necessary at this time.
- A meeting held at 15:20 with the Controllers, Mayor, police and members of WCC ELT on behalf of the CE to discuss declaring a state of emergency. The checklist was considered. Determined that declaration not required at this time and messaging re people checking with employers about safety of buildings and safe to go back to work.
- Public messaging across radio, social media initiated.
- This course of action was then challenged and confirmed on a daily basis and as fresh information on the state of buildings came to hand in order to determine if an alternative strategy would guarantee a more safety centric outcome without prejudice to recovery operations