

# Storm Event Response Review

14<sup>th</sup> – 15<sup>th</sup> May 2015



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## 1. Group Controller's Commentary

No two emergency events are ever the same. The events of 14 May 2015, commenced with a rail and road blockage separating Kapiti from Porirua and staff concern at the rapid rise of river levels throughout much of the region. Emergency Operations Centres and the Emergency Coordination Centre activated early as a precautionary measure. The situation steadily escalated until large sections of Kapiti, Hutt City, Porirua and parts of northern Wellington were under water.

While the region is subject to frequent storms, the nature and localised impact of the rainfall resulted in a series of consequences that were both widespread, unusual, and significant. Simple flooding was not the only issue. With the rail network inoperable and at times both state highway one and two blocked, the region faced the distinct possibility of commuters being unable to get home as normal. The nature and fragility of the Y shaped transport corridor to the north of Wellington CBD means that there are few options when this area is so adversely affected.

The elements having abated, and as a result of some good work by contractors, agencies and council staff, most people who so chose, were able to get home by 7pm. Many commuters however, suffered inconvenience and one person tragically lost his life. This was in addition to the many householders and business owners who suffered considerable material damage.

Since 14 May 2015, those Emergency Operations Centres that activated have conducted after action reviews, as have many of the agencies who were party to the response effort. 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.

Response however, is but one element of the four Rs. In addition to the actions highlighted for further attention by Emergency Management, there will be lessons in the risk reduction, readiness, and recovery space that are more appropriately the responsibility of council, emergency services, agencies, businesses, and most importantly, people that make up our communities. While it is unlikely these aspects will receive the same level of public visibility, it is important that organisations none-the-less review their Business Continuity Plans, infrastructure owners and providers consider the adequacy of their networks, and residents ensure household plans are capable of meeting the many challenges that may keep people apart from either their home or loved ones. Emergency Management Response is merely the tip of the iceberg of all those actions, pre and post event, that contribute to a successful outcome during an emergency event.



Bruce Pepperell

**Group Controller**

## 2. Introduction

### 2.1. Scope of the report

This report is focussed on the response across the region to the 14 May 2015 storm event. It does not include an evaluation of single agency response activities unless specific comments were raised during the evaluation process.

This report:

- describes the 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

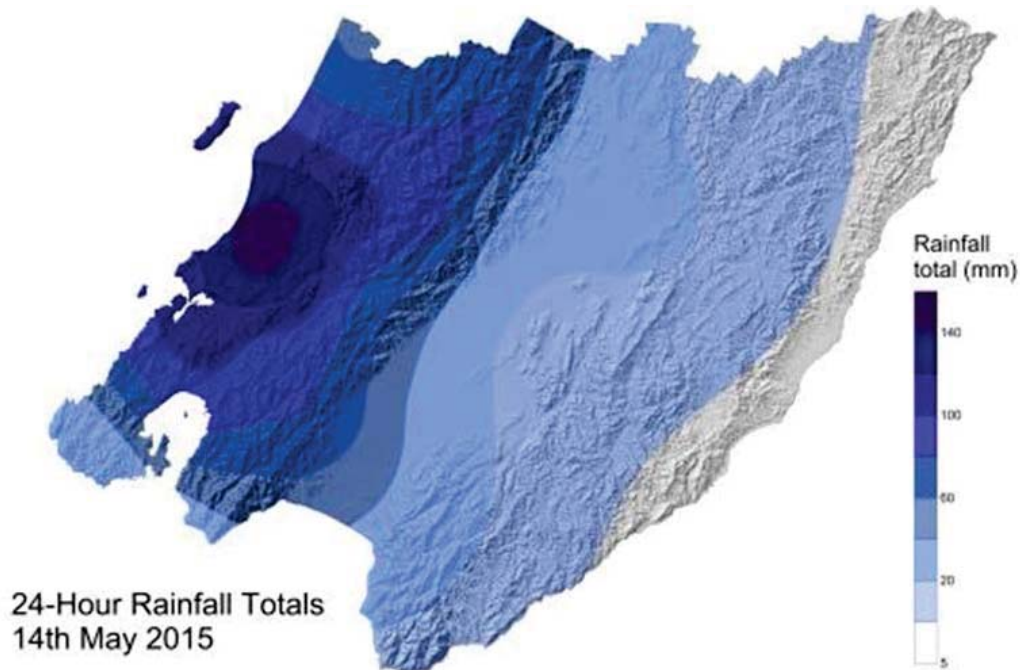
### 3.1. Storm characteristics

On 14 May 2015 a strong moist northwest flow funnelled an area of heavy rainfall and north westerly winds from the Tasman Sea over the lower North Island between the Kapiti Coast and Wellington. The front contained numerous bands of heavy rain and pockets of thunderstorms that initially hit the Kapiti Coast before slowly moving south east across Porirua, the Hutt Valley and Wellington. Because the rainfall occurred in narrow bands, or as thunderstorms, some parts of the region were affected far worse than others. The table and map below provides a summary of the localised storm characteristics in the region.

Area	Localised characteristics of storm
Kapiti Coast District	<ul style="list-style-type: none"><li>• Heavy rain started to fall in the early hours of 14 May</li><li>• 145mm recorded in 24 hours at McKay's Crossing. Rainfall of this intensity is expected once in every 40 years at this location.</li><li>• Waikanae received 102mm of rain in 24 hours. Rainfall of this intensity is expected once every 6 years.</li><li>• An intense burst of rain was recorded at Te Hapua Rd, south of Te Horo Beach, where 27mm fell in just one hour. This is equivalent to a 10 year event.</li><li>• The Waikanae River peaked at a flow of 270 cubic metres per second above SH1. This was the 3rd largest flow recorded since 1975. A flow in the river of this size is expected once every 13 years.</li><li>• The Wharemauku Stream turned into a raging torrent as it passed under SH1. Provisional data indicates this was in excess of a one in 20 year flood.</li></ul>
Porirua and Wellington City	<ul style="list-style-type: none"><li>• A number of rain gauge sites in the Porirua area recorded very heavy rainfall.</li><li>• Battle Hill recorded was 30mm in one hour. Rainfall totals of 76mm and 144mm were recorded over 6 and 24 hour periods, equating to approximately one in 30 and 50 year events respectively.</li><li>• As a result of the intense rainfall the Horokiri Stream rose rapidly and reached its highest flow since 2003. The return period for the flow was estimated at 12 years.</li></ul>

	<ul style="list-style-type: none"> <li>• The Porirua Stream peaked at a flow rate of 66 cubic metres per second which was the third largest flow seen there since the floods of 1976, and the largest since 1980. It ranks as the largest flood to have occurred since the Seton Nossiter and Stebbings flood detention dams were constructed in the upper catchment.</li> <li>• In addition to the Porirua Stream there was significant surface water flooding and many smaller streams also overtopped their channels.</li> <li>• Rainfall was very intense with (a very large total of) 62mm of rain recorded at Tawa Pool in two hours. This intensity of rainfall is expected once every 40 years.</li> <li>• A total of 115mm was recorded at Tawa Pool over 24 hours (a one in 20 year total).</li> </ul>
Hutt Valley and Wainuiomata	<ul style="list-style-type: none"> <li>• In just one hour, 42mm of rain was recorded in Avalon which is estimated to be in excess of a 50 year event.</li> <li>• Peak one hour rainfall totals at Shandon and Wainuiomata reached 33mm and 28mm respectively – expected every 10 to 30 years.</li> <li>• The Hutt River carried a large flow during the event but it only reached a level expected once in every two years. This was because it was feed largely from the Akatarawa tributary only.</li> <li>• The Akatarawa River, Waiwhetu Stream and Wainuiomata River also reached similar levels (return period flows) but all other major rivers draining to the Hutt River had insignificant flows.</li> </ul>

**24 hour rain totals for the 14<sup>th</sup> May 2015**



### 3.2. Summary of the response

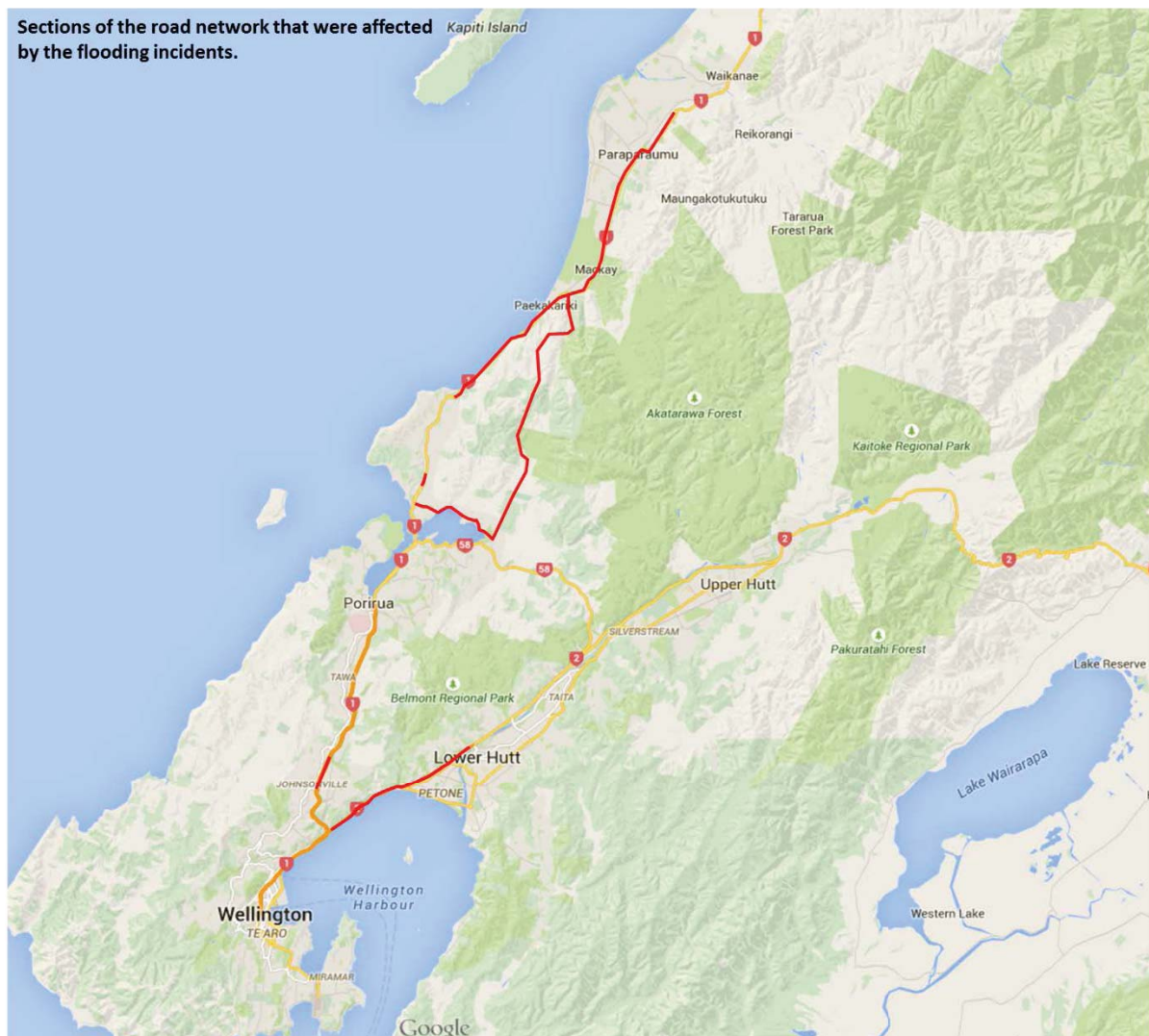
The event started with a Severe Weather Warning – Heavy Rain Update for the Tararua Range at 06:10 on 14 May 2015. This escalated very quickly to multiple river alarms. This included the Akatarawa River at 06:15, and the Waikanae River at 06:30. There were also reports from the NZ Fire Service of multiple flooding events in Paraparaumu and Raumati Beach at this time.

Calls were then made by the WREMO duty officer to the Metservice, Greater Wellington (GW) Flood Manager, the Group Controller and the relevant WREMO Area Advisors. Information from both the Metservice and GW indicated that the rain was unlikely to ease in the short term.

In addition to the Horokiwi Stream alarming at 07:15, State Highway 1 was now blocked as a result of a landslip on Centennial Highway. This blockage was a significant event, with only Paekakariki Hill Road as a viable detour option. Trains were also suspended on the Kapiti line owing to the landslip.

The Kapiti Coast District Council Emergency Operation Centre (KEOC), Hutt City Emergency Operation Centre (HEOC) and the Emergency Coordination Centre (ECC) were activated by 08:30; the ECC, more as a precautionary measure to monitor transport blockages in Kapiti and rising river levels.

As the rain continued, Porirua Emergency Operation Centre (PEOC) activated at 11:10. Throughout the day there was considerable flooding, both surface and river flooding. Many key routes were closed or operating a reduced capacity, causing significant disruptions. The primary focus was the disruption to commuter traffic, and the potential for further river flooding, particularly in Kapiti. The map below shows the sections of the road network that were affected by flooding incidents during the day.



The table below provides a summary of the issues dealt with by each of the activated EOCs during the response:

Area	Localised issues
Kapiti Coast District	<ul style="list-style-type: none"> <li>• Significant flows in the Waikanae, Otaki Rivers and the Wharemaku, Mazengarb, Waitohu and Mangaone Streams.</li> <li>• Evacuations of houses affected by the flooding in Raumati, Otaihanga and Paekakariki.</li> <li>• Closure of Paekakariki Hill Road, Valley Road, Maungakotukutuku Valley Rd Waterfall Rd / Emerald Glen Rd and Matatua Road.</li> <li>• Distribution of sand bags across the district.</li> <li>• The provision of welfare services for displaced people.</li> <li>• Surface water contamination due to septic tanks over-flowing.</li> <li>• Closure of the Kapiti train line.</li> </ul>
Porirua City	<ul style="list-style-type: none"> <li>• Porirua's main waterways flooded (Porirua, Horokiwi and Taupo Streams), with surface water runoff overflowing at Wall Place.</li> <li>• Significant surface flooding in the CBD stemming from a blocked culvert in Raiha Stree</li> <li>• Slips closed railway from Plimmerton to Waikanae.</li> <li>• SH1 closed at various time through the day, or operating at reduced capacity.</li> <li>• Stormwater infiltration of the wastewater system across the city.</li> <li>• Depot staff were at capacity dealing with local issues. Supplementation of the staff with contractors was difficult due to access issues.</li> <li>• Consideration of welfare issues as people try to return home.</li> </ul>
Hutt City	<ul style="list-style-type: none"> <li>• Closure of Block Road.</li> <li>• Closure of SH2 at various points due to flooding throughout the day, causing significant transport disruption.</li> <li>• Closure of Riverbank Carpark until 15 May.</li> <li>• Railway networks have suspended services until 15th May 2015 midday.</li> <li>• Various slips across the city.</li> <li>• Widespread surface flooding to varying degrees around the city.</li> <li>• Wainuiamata CDC activated at the Wainuiomata library to provide support for residents.</li> <li>• Response teams conducted reconnaissance across the city to provide further situational awareness.</li> </ul>
Wellington City	<ul style="list-style-type: none"> <li>• Some EOC staff activated as part of the ECC to develop options for people potentially stranded in Wellington City due to road closures and congestion.</li> <li>• The provision of two drop in centres to cater for those unable to get home.</li> <li>• Situation in Tawa was discovered late in the afternoon from information available from social media.</li> </ul>
Regional (ECC)	<ul style="list-style-type: none"> <li>• Situational awareness across the region.</li> </ul>

	<ul style="list-style-type: none"> <li>• Public messaging across the region.</li> <li>• Initiating and liaising with, the Regional Transport Response Team (RTRT) to develop and manage commuter/transport solutions.</li> <li>• Monitoring the weather system and projected impacts over the next 6-12 hours.</li> <li>• Providing support to activated EOCs as required.</li> </ul>
Upper Hutt City and Wairarapa	<ul style="list-style-type: none"> <li>• No formal activation was required.</li> </ul>

#### 4. Evaluation of Response

Following the storm event, after action debriefs were held at all activated EOC locations. Debriefs/discussions were also held with RTRT members and Wellington Water. In addition, Greater Wellington initiated a separate review of public transport arrangements during the event. Each debrief included feedback on both what went well and identified further opportunities for improvement.

The following provides a summary of the collective results. Note, this is not a full summary of each debrief, but includes those items which have a wider impact than a single EOC or are related to multiple areas of operation. Lessons learned from individual debriefs have been fed back into improving future operations for that relevant EOC.

##### 4.1. What went well

Theme	Points
Roles and responsibilities	<ul style="list-style-type: none"> <li>• The forward planning function of the ECC worked well in collaboration with partner agencies to come up with potential options.</li> <li>• The standard EOC systems and process allowed people to work effectively in “another” EOC. As a result of planned BAU activities for that day, several WREMO staff members assisted at the EOC in which they were working rather than (take time to) relocate to their (home) assigned EOC.</li> <li>• Positive and collaborative environment. The operations centres worked well together</li> <li>• Contractors appeared to work quickly and efficiently.</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• The new EOC projectors able to display up to four different screens at once, was an improvement on the previous single screen with multiple whiteboards.</li> <li>• The cloud based gmail accounts worked very well (at the ECC). This should further improve with the introduction of Office 365.</li> </ul>
Public Information Management (PIM)	<ul style="list-style-type: none"> <li>• Social media located on the PIM desk (in Wellington) was much better and more integrated with PIM messaging.</li> <li>• Social media with its more frequent postings appeared to better meet the needs of more members of the community.</li> <li>• The website (<a href="http://www.getprepared.org.nz">www.getprepared.org.nz</a>) allowed information sharing across all the councils impacted. All councils were able to update the website from within their own EOC.</li> </ul>



Inter-agency liaison	<ul style="list-style-type: none"> <li>• The RTRT is in its infancy. Notwithstanding teething difficulties on the day, the concept remains the best means of coordinating transport arrangements across the region.</li> <li>• Engagement with liaison staff early on in the event is preferable. Having NZ Police and Kiwirail reps in the ECC aided the understanding of the commuter challenge.</li> <li>• Good liaison with NZTA meant messages from each organisation were consistent.</li> </ul>
Welfare	<ul style="list-style-type: none"> <li>• The set-up of the various welfare centres across the region was well done, even though not all were needed.</li> </ul>

#### 4.2. Opportunities for improvement

Theme	Points
Roles and responsibilities	<ul style="list-style-type: none"> <li>• the Controller needs to set a strong operating rhythm, to include formal briefings and coordinated set times for inter-centre liaison.</li> <li>• In addition to linking with EOCs, the ECC should include (as appropriate) the Wellington Traffic Operation Centre (WTOC) and Wellington Water as part of regular telephone conferences.</li> <li>• There is a need to more clearly and formally, assign desk roles to staff.</li> <li>• Must be mindful that some staff are less familiar than others when it comes to working in ambiguity.</li> <li>• Roles and responsibilities need to be clearly assigned where aspects of previous council business has been separated to form a new entity. A good example is sandbagging. Here requests have been passed to WREMO, the Fire Service and in some cases direct to the Group Controller. Wellington Water now provide this service for their constituent councils.</li> <li>• It is better to err on the side of too many people in the ECC/EOC and have the luxury of standing down staff not immediately required. The Group has not yet got to the stage where a full complement of two trained shifts is available for each EOC/ECC.</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• The current disconnect between council call centres and the EOC needs attention. Call centres have the potential to provide valuable intelligence and the EOC is the best means of addressing those issues in the community that are not genuine 111 candidates.</li> <li>• Information needs to be better shared visually, both inter and intra EOC/ECC. Further work here has the potential to avoid requests for further information (up and down the EOC ECC hierarchy).</li> <li>• Further work is required to enable GIS to better map the situation and share it as it unfolds.</li> <li>• Information flow was on occasions slow both within EOCs/ECC and between EOC and ECC.</li> </ul>

	<ul style="list-style-type: none"> <li>•</li> </ul>
PIM	<ul style="list-style-type: none"> <li>• You can never over-communicate in an emergency. Official information releases need to be more frequent and where previously issued information remains valid, then this should be stated at regular intervals.</li> <li>• The timely sourcing, verifying, approval and posting of official information is always a challenge.</li> <li>• The “Getprepared” website at the time was not as mobile friendly as it could be.</li> </ul>
Inter-agency liaison	<ul style="list-style-type: none"> <li>• Data-feeds of NZTA information would be useful at the ECC. Trying to verbally explain information available in a video feed is challenging and open to interpretation.</li> <li>• The RTRT requires further planning and practice.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Further training and practice is required so that EOC staff are familiar with the generic EOC ICT infrastructure and protocols.</li> <li>• Some EOC require access to BAU info held in council repositories. This must be catered for</li> <li>• Forms and templates didn’t work electronically in some areas.</li> </ul>

## 5. Conclusion and Recommendations

The storm event can be best described as high intensity for a relatively short duration. It provided an opportunity to once again test response structures across much of the region to ensure lessons from previous activations have been imbedded in practice and that recent enhancements by way of people, training, systems and facilities, worked in practice. Tragically, one life was lost, many households and businesses experienced material damage and residents were exposed to considerable inconvenience. It was again a reminder of the fragility of the transport corridors north of Wellington City. Overall, despite the challenges of the day, much of the response effort went well and previous lessons had been heeded. There remains however a number of opportunities that need to form part of future developments and Group work plans, as follows:

However, there is always an opportunity for further improvement and the following key areas of work have been developed as recommendations to further enhance the regions operational capability.

1. *Develop a formal process to reconnect the council call centres with the EOCs.*
2. *Further enhance the RTRT through continued training and refining of the roles and responsibilities of the RTRT.*
3. *Further enhancement of the EOC cloud based information system and tools.*

## Appendix A – Opportunities for improvement

#	Issue	Remedy	Desired Outcome	Action	Role			Target	Status
					WREMO	Council	NZTA		
1	Council call centres and EOCs not supporting each other to the best advantage.	Develop a process for the effective two way flow of communication between call centres and EOCs.	The process for incorporating council call centres into the EOC is identified and understood for each EOC across the region	Develop process	Lead	Support		Nov 2015	Commenced by some councils
				Communicate this process within the council	Support	Lead		Dec 2015	
				Incorporate this process in WREMO training as appropriate	Lead	-		As required	
2	The Regional Transport Response Team (RTRT) was established to better coordinate transport issues across the region. While this has been a positive step, further training and planning to develop a suite of response actions is required.	Further development of the RTRT through continued training and refining roles and responsibilities of participating agencies.	The RTRT have a clear understanding of their roles and responsibilities during activation, and regularly practice these.	Review and refine the roles and responsibilities of the RTRT	Lead	Support-	Support	Aug 2015	
				Establish regular (quarterly) training and planning meetings involving RTRT agencies	Lead	Support-	Lead	Sept - Oct 2015	
		Provide data feed directly to the ECC from the Wellington Transport Operation Centre (WTOC).	The ECC is able to view the live camera feeds from the WTOC	Liaise with NZTA and their providers to action the data feed to be viewed at WEMO.	Lead (NZTA)	-	Support	Oct 2015	
3	The EOCs in the region are not able to share files using a common platform.	All EOCs are using the same (or compatible) cloud based platform.	All EOCs are able to view and share and edit <b>all EOCs</b> information via a cloud platform in real time.	Determine the most suitable platform to be used in all the EOCs	Lead	Support		Sep 2015	
				On approval (by the CEG Subcommittee), develop an implementation plan for all EOCs	Lead	Support		Dec 2015	
		All councils have Microsoft Office installed on their EOC laptops.	All councils are using Microsoft Office and therefore can use all standardised templates.	All EOCs must have Microsoft Office installed on all computers to ensure that templates can be used on all laptops		Lead		Oct 2015	
		Development of a simple and easily shared mapping tool	All EOCs are able to quickly create and view maps across the region. This is <b>for any EOC at any EOC.</b>	Development of a mapping tool that is easy to use and can be implemented across the region	Lead	Support		Dec 2015	
4	Some councils are unable to access their BAU files when activating the EOC	Ensure all councils are able to access their BAU files	EOCs are able to access their BAU files when operating in the EOC	Ensure all EOCs have the ability to access their BAU files either through a virtual desktop connection or direct network cable.	Support	Lead		Oct 2015	

The following points will be followed up by the Group Controller as reminders to relevant EOCs and staff:

1. You can never over-communicate in an emergency. Official information releases need to be more frequent and where previously issued information remains valid, then this should be stated at regular intervals.
2. The Controller needs to set a strong operating rhythm, to include formal briefings and coordinated set times for inter-centre liaison.
3. In addition to linking with EOCs, the ECC should include (as appropriate) the Wellington Traffic Operation Centre (WTOC) and Wellington Water as part of regular telephone conferences.
4. There is a need to more clearly and formally, assign desk roles to staff.
5. Must be mindful that some staff are less familiar than others when it comes to working in ambiguity.
6. It is better to err on the side of too many people in the ECC/EOC and have the luxury of standing down staff not immediately required. The Group has not yet got to the stage where a full complement of two trained shifts is available for each EOC/ECC.