



Asset Management Group

Technical Report

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Engineering Section

**Flood Report
Central Hawke's Bay
February 15-16, 2004**

**August 2004
AM 04/17**

Asset Management Group
ENGINEERING DESIGN, ASSET MANAGEMENT, CIVIL DEFENCE, BIOSECURITY
P R O F E S S I O N A L S

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Technical Report
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Engineering Section
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Asset Management Section
Section 11 Courtesy of Central Hawke's Bay District Council

**Flood Report
Central Hawke's Bay
February 15-16, 2004**

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**August 2004
AM 04/17**

HBRC Plan Number 3389

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Flood Report for Event of February 15-16, 2004:

Central Hawke's Bay

1. Introduction

On Sunday, February 15, 2004, a rainstorm hit the Central Hawke's Bay area from the Ruataniwha Plains out to the coast at Porangahau. This rainstorm was part of a larger event which severely affected the Central North Island of New Zealand. The Manawatu Region was the worst affected, with large areas flooded due to stopbank overtopping or breaches.

The first heavy falls in Central Hawke's Bay occurred around noon to 1 pm on Sunday, February 15, then another intense period occurred just prior to midnight and continued on until about 2 or 3 am the morning of Monday, February 16. By 1 am Porangahau village was in trouble and evacuating people. Met Service issued the first weather watch at 12 noon on Sunday, with an estimate of 60 to 80 mm of rainfall in the next 15 hours for the area of Hawke's Bay south of Napier. Rainfalls totals (for 24 hours) of over 200 mm in the area east of Waipawa, near Patangata, and just under 200 mm in the Porangahau Catchment were recorded by automatic rain gauges. An unsubstantiated reading of 300 mm was recorded by a manual rain gauge in the Mangaorapa area. These totals appear to be the highest on record, and have return periods of over 100 years (for the 24 hour duration). Over much of the Ruataniwha Plains, approximately 140 mm of rain fell over the 24 hours, equating to a return period of around 10 to 20 years. Despite the intensity, the storm subsided fairly quickly, with the last recorded heavy burst of rain occurring at around 6 am on Monday, February 16. Figure 1 shows the location map with 24 hour rainfall totals.

The destructive force of the heavy rain was felt and seen in numerous areas, with many slips occurring, and low lying valleys suffering from debris deposits, fences and gates demolished and tracks and roads being closed or completely destroyed.

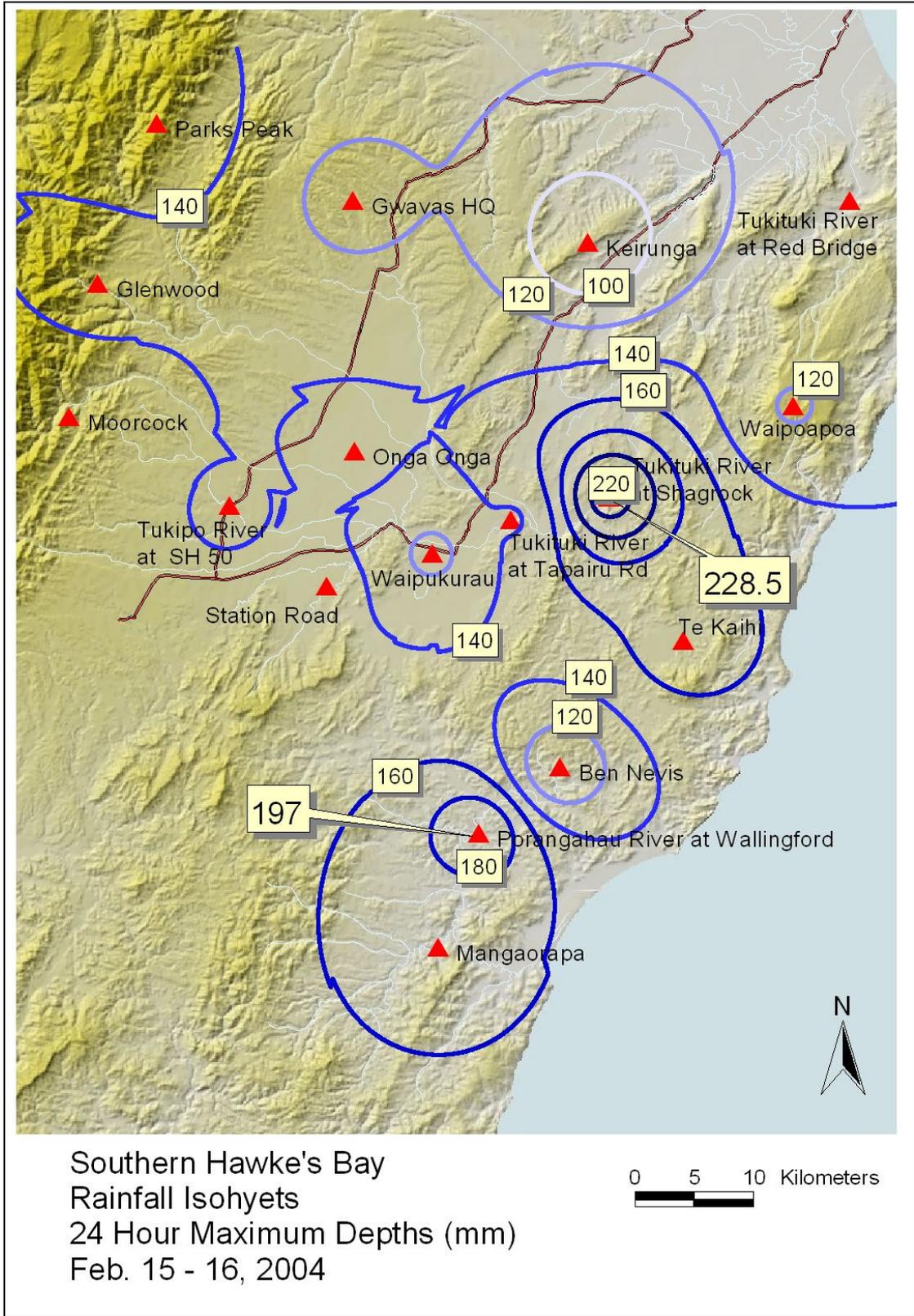


Figure 1: Locations of Rainfall Recorders and Rainfall Isohyet Map

2. Rainfall

The rainfall measured by the HBRC telemetry system indicated a fairly severe event was occurring, with 1 hour maximums ranging from 10 mm to 48 mm, with approximately 5 to 10 mm/hr of rain falling over the area for around 20 to 24 hours. The rainfall totals for 24 hours ranged from about 120 mm to 228.5 mm. The event had a variable return period (for the 24 hour duration) of between 5 and 150 years (based on HIRDS V2.0), depending on the location. The 1 hour totals generally had lesser return period, apart from the extreme event measured at Tukituki River at Shag Rock. A summary of totals and return periods is provided in the following table:

Station	Easting	Northing	1 hour Rainfall (mm)	Return Period - Years (for 1hr duration storm)	24 hour Rainfall (mm)	Return Period - Years (for 24 hr duration storm)
Ben Nevis	2822400	6110400	21.5	5	103.0	5
Mangaorapa	2812200	6095200	17.0	5	161.5	50
Moorcock	2781400	6139900	21.0	5	155.0	10
Porangahau River at Wallingford	2815600	6104800	29.5	40	197.0	125
Parks Peak	2788700	6164600	14.5	2	151.0	2
Tukipo River at State Highway 50	2794800	6132400	14.5	2	138.5	30
Tukituki River at Shagrock	2826500	6133100	48.0	150	228.5	150
Tukituki River at Tapairu Rd	2818300	6131200	21.0	5	139.0	40
Glenwood	2783800	6151100	17.0	2	134.0	2
Keirunga	2824700	6154600	10.5	2	83.5	5
Station Road	2802911	6125648	21.0	5	144.0	60
Gwavas HQ	2805100	6158100	14.6	2	113.6	5
Waipukurau	2811700	6128400	13.2	2	115.2	20
Waipoopoa	2841901	6140800	24.0	2	119.0	5
Onga Onga	2805200	6137000	18.0	2	144.0	60
Te Kaihi	2832700	6121000	32.0	20	167.0	20

As a comparison to other extreme events, for a 1 hour duration, 95 mm was recorded in Tauranga in 1948, and 107 mm in Leigh in 2001. For a 24 hour duration, approximately 600 mm was recorded in Arawata in 1972, and 950 mm at Mt. Holdsworth in 1980. The depths recorded at Tukituki at Shag Rock (48 mm for 1 hour and 228.5 mm in 24 hour) are extreme for the location.

It has been noted that the Ben Nevis rainfall recorder may have been under catching in this event. Only 103 mm of rain was recorded at this station, while the Porangahau River at Wallingford recorder had 197 mm of rain. These stations are approximately 9 km apart. The severity of the flooding that occurred in Porangahau indicates that the recording of 103 mm may be slightly low. The Ben Nevis recorder is situated on the top of a hill area that is affected by wind. During this event, high winds likely caused the low rainfall catch. It has also been noted that the rainfall during this event was patchy, which could also be the reason for the low catch at Ben Nevis.

The return periods around Shag Rock and Porangahau of over 100 years indicate that it was a very severe event. Figure 2 shows the return periods for the area. These values have been derived based on the statistics available from HIRDS V2.0 (Niwa).

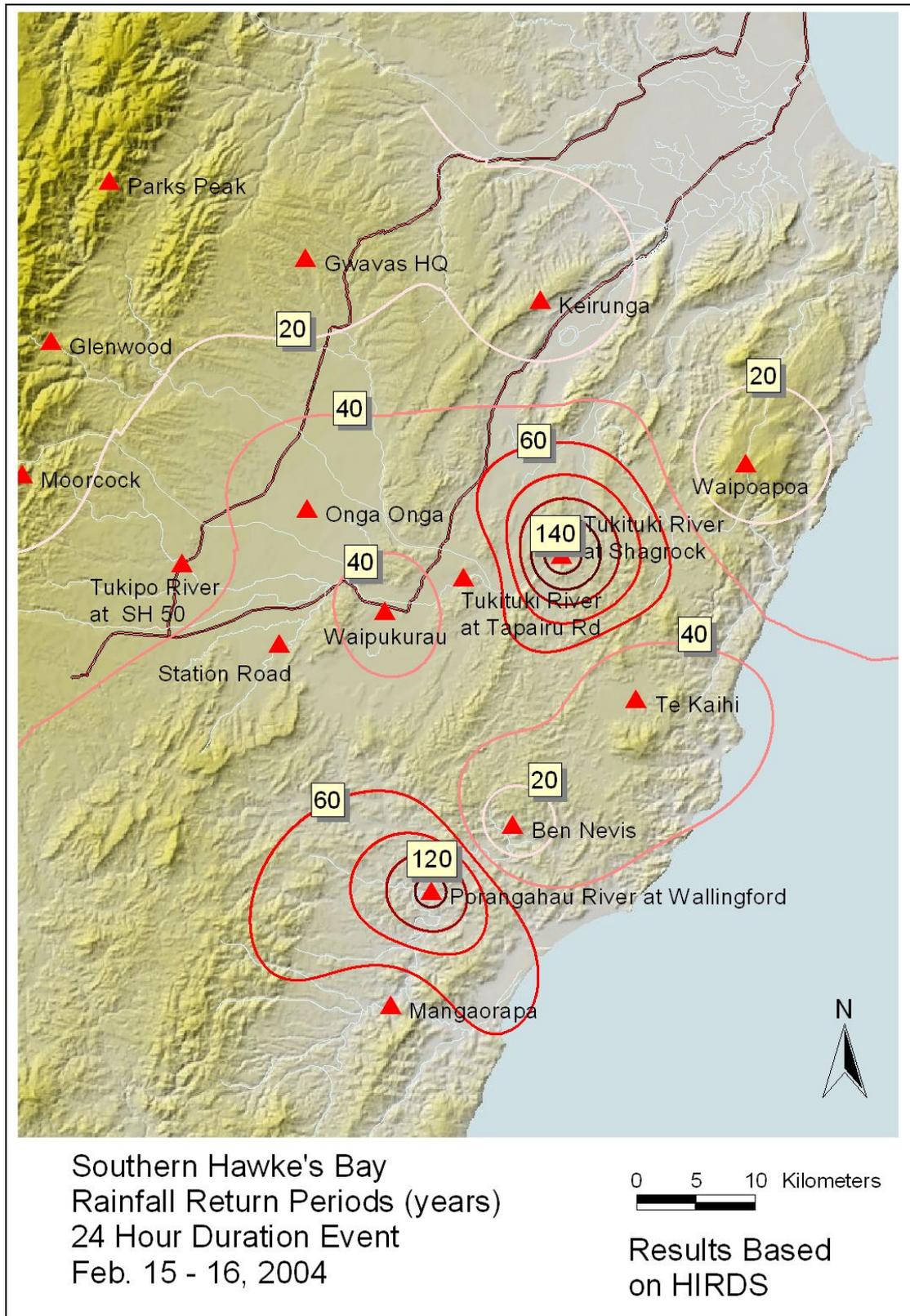


Figure 2: Return Periods for 24 Hour Duration Event (Based on HIRDS)

The return periods derived from HIRDS indicate the event was extreme over a wide area. As a comparison to HIRDS, return periods from Technical Publication 19 (National Water and Soil Conservation Organisation, 1980) were derived. The results of this analysis is shown in Figure 3.

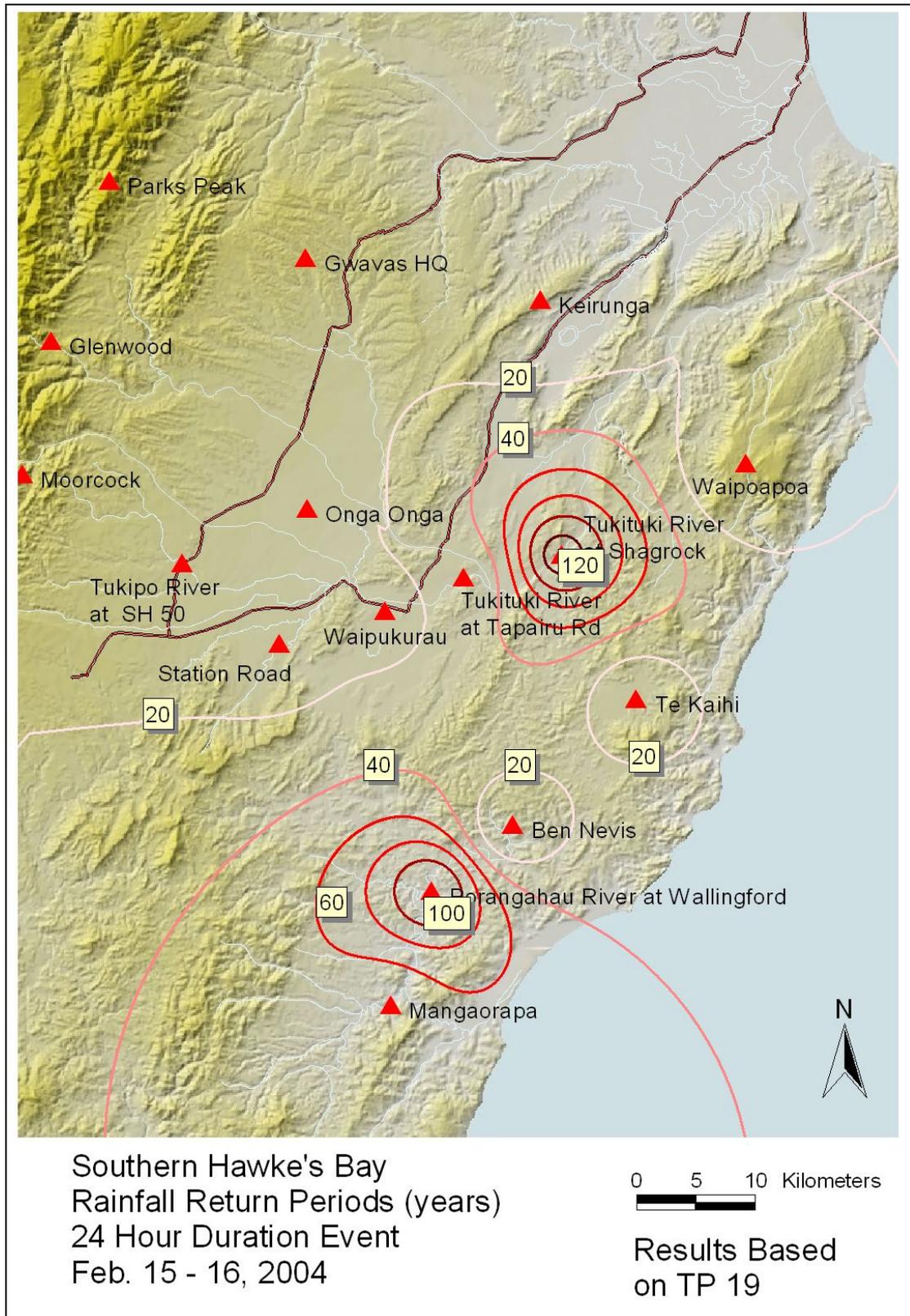


Figure 3: Return Periods for 24 Hour Duration Event (Based on TP19)

The comparison of the two methods (HIRDS vs. TP19) indicate that the return period derived using HIRDS results in values approximately 20 years greater (i.e. 20 year return period derived from TP19, same location gives 40 year return period derived from HIRDS).

3. Water Levels and Flows

Water level records in the Porangahau River indicate the event was severe, with a rise in level of over 10 m at Wallingford. The recorder at Mangaorapa shows the water level had risen over 6 m, at which point the range of the recorder was surpassed. A pegged flood level at the site indicates the water rose to 8.1 m.

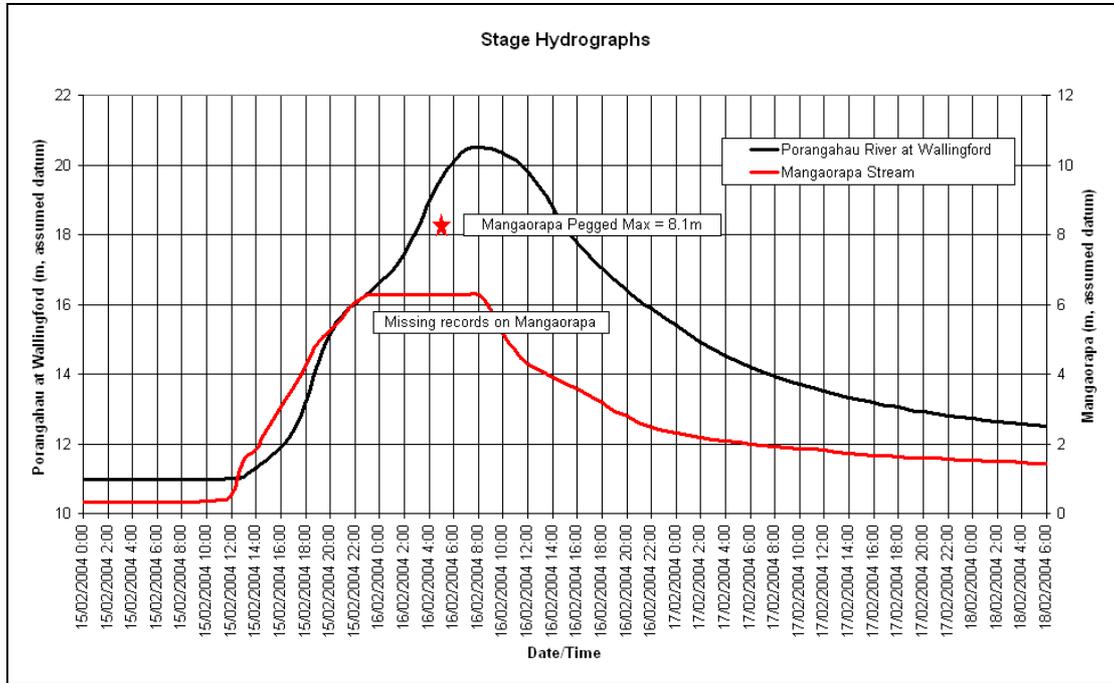


Figure 4: Stage Hydrographs – Porangahau and Mangaorapa



Figure 5: Mangaorapa Water Level Recorder with pegged maximum flood level.

The stage hydrographs for the Tukituki at Shag Rock and at Red Bridge indicate a flood with a return period of about 5 years. This appears reasonable considering the rainfall pattern showed the heavy rain was relatively localised around Shag Rock and Porangahau. There was very little rain in the headwaters of the Tukituki catchment.

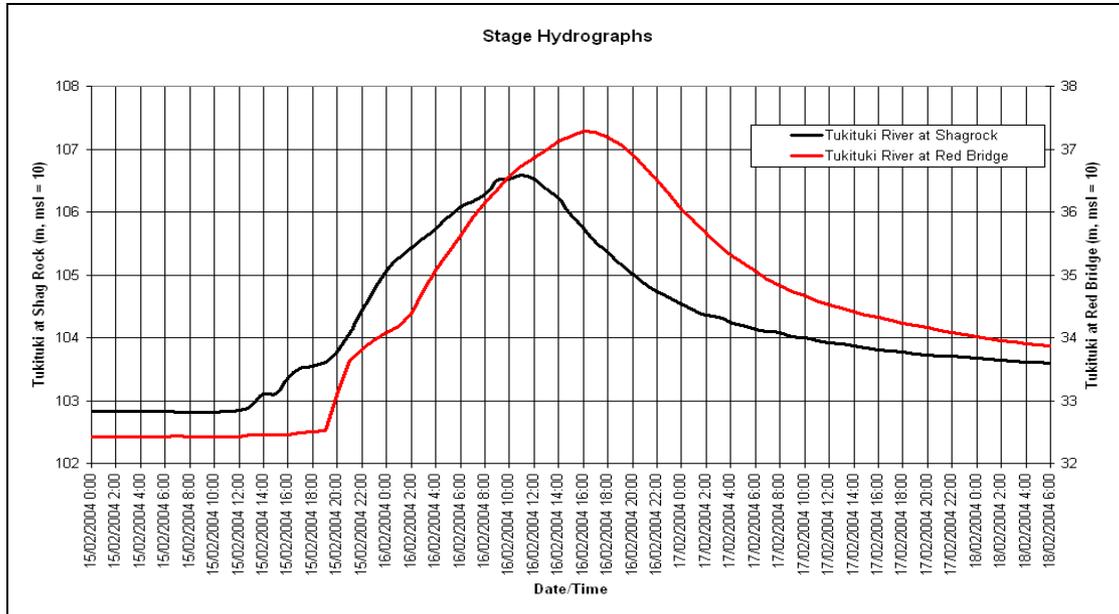


Figure 6: Stage Hydrographs – Tukituki River

The discharge hydrograph for the Porangahau River at Wallingford indicate a severe event, with the peak being approximately 550 m³/s. Normal flow is usually less than 1 m³/s, and a mean annual flow is likely to be around 50 m³/s.

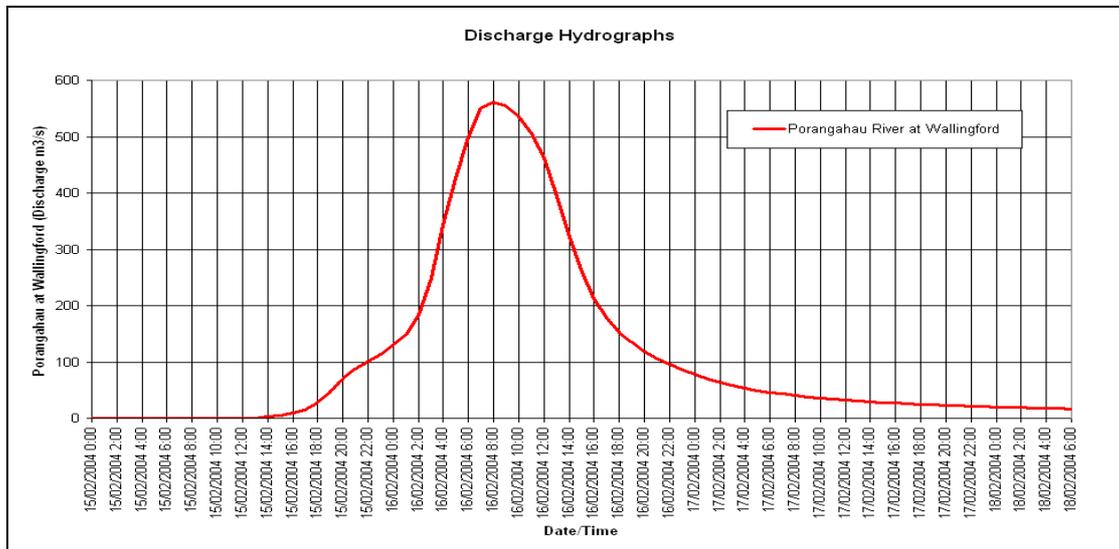


Figure 7: Discharge Hydrographs – Porangahau River

The discharge in the Tukituki equated to a 5 year discharge. The peak at Shag Rock of around 2500 m³/s took about 6 hours to travel through the Middle Tukituki valley down to Red Bridge, which equates to an average water speed of about 2 m/s. The distance between these locations is 43.4 km.

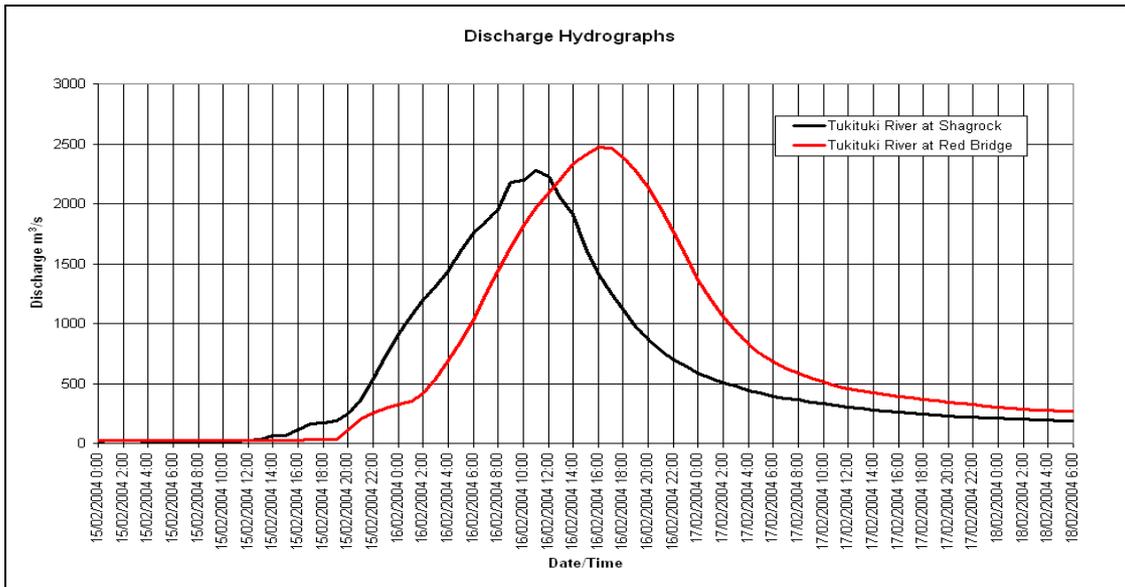


Figure 8: Discharge Hydrographs – Tukituki River

4. Affected Areas

4.1. Porangahau

The intense rain falling in the Porangahau Catchment travelled quickly towards the coast, with the water level recorder at Wallingford peaking over 10 m above normal level at approximately 8 am on Monday, February 16. The river distance from Wallingford to Porangahau is approximately 28 km, and early Monday morning, the town of Porangahau was inundated with flood waters, as shown in Figure 9.



Figure 9: Porangahau: Flood Extents

Water was present in the cemetery, and several streets through the town. Many houses and businesses suffered flood damage.



Figure 10: Porangahau: Franklin St toward river from Abercrombie St



Figure 11: Porangahau: Abercrombie St



Figure 12: Flood water at Douglas' property, Franklin Street, Porangahau



Figure 13: View of Porangahau River from Old Hill Road

(note: Porangahau Town is on left)

Along with flooding in the township of Porangahau, the surrounding farmland was severely affected by overland flow and erosion. The following photos show the effects.



Figure 14: Aftermath of Flood, Mangaorapa Valley (Robinson)

The Porangahau Road was flooded from the Wanstead Swamp (Figure 15), where the water was approximately 1 m deep over the road (Figure 16).

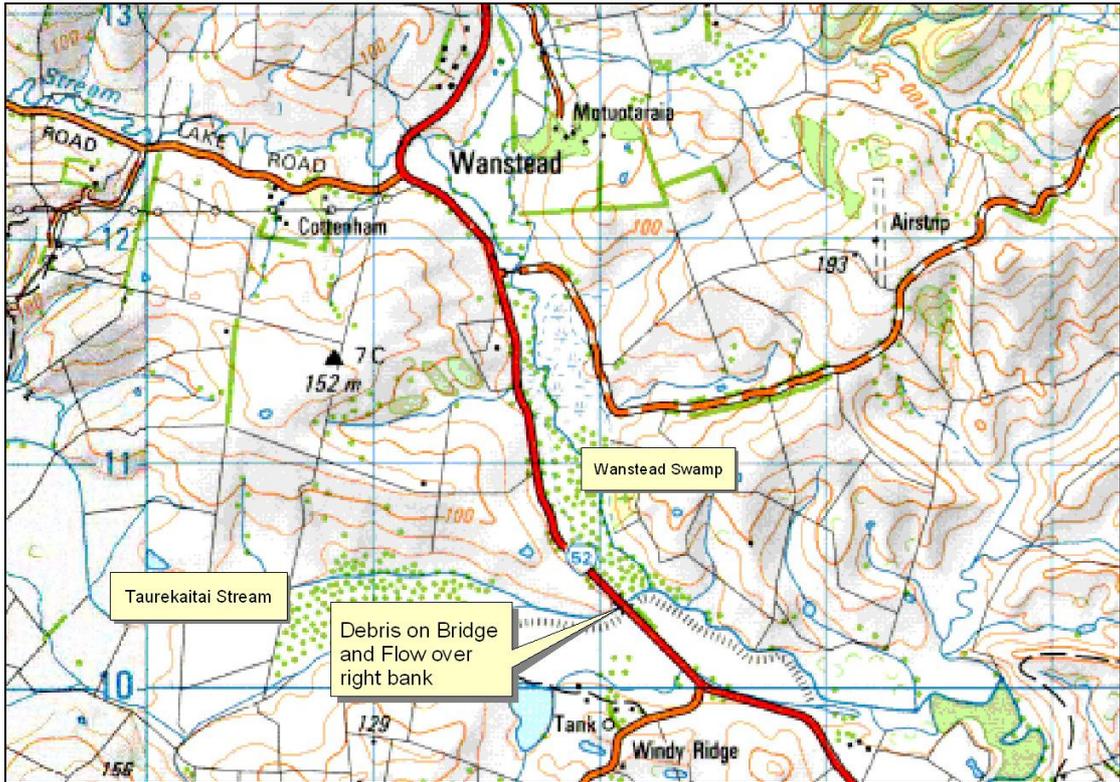


Figure 15: Location of Flooding Near Wanstead and Taurekaitai Stream



Figure 16: Flood water over main road near Wanstead

There was severe debris buildup on the Flaxmill Bridge over the Taurekaitai Stream (see Figure 17), and the water overtopped the small stopbank on the right bank.

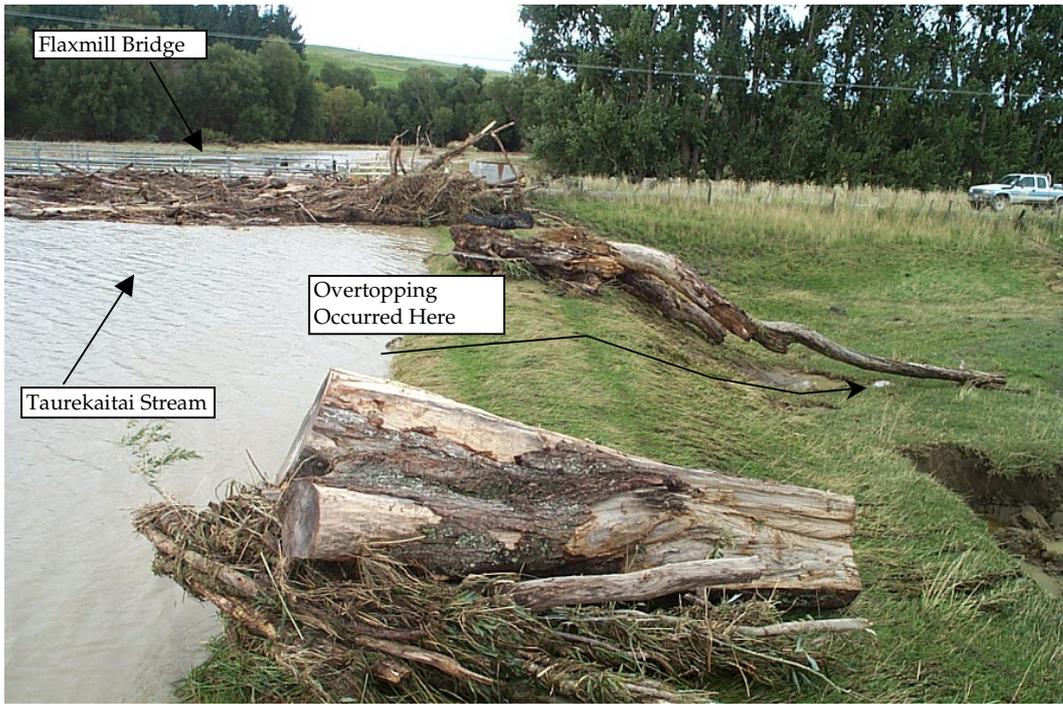


Figure 17: Porangahau Road, Flaxmill Bridge over Taurekaitai Stream

4.2. Takapau

The Takapau area sustained moderate damage during this event, with out of channel flow from the Te Matau Stream causing localised erosion and ponding problems. The stream is normally narrow with a very windy path, which quickly overtops its banks and spreads out to about 10 or 20 m wide, when the flow level rises. Figure 18 shows the general area and location of problem areas.

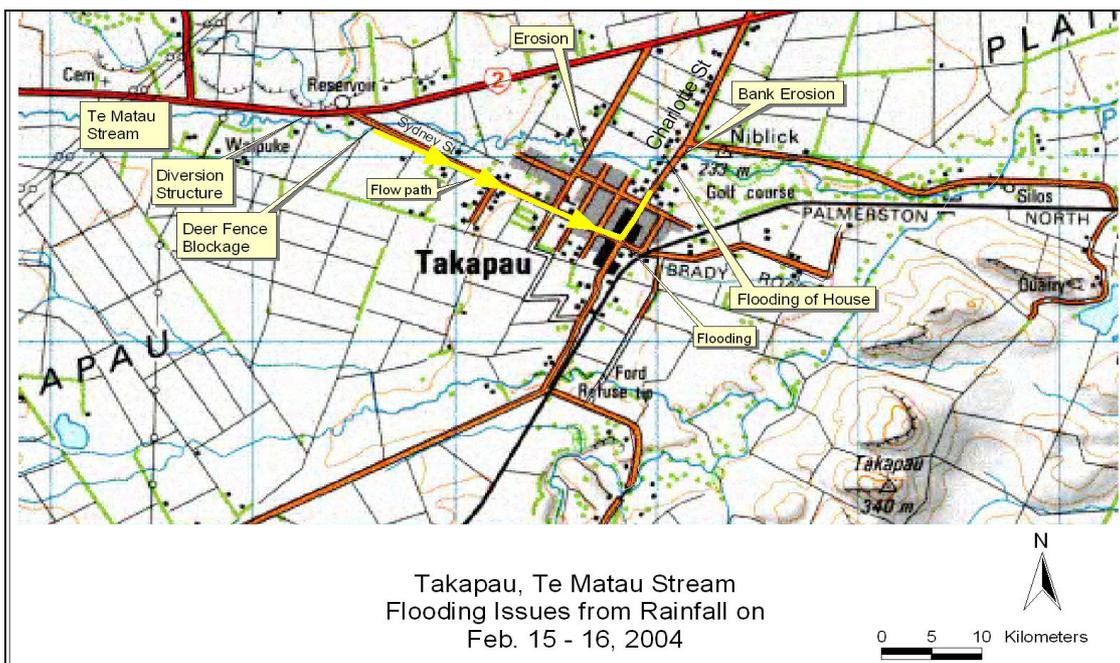


Figure 18: Takapau: Areas with Flood Issues

The Te Matau catchment has a relatively short time of concentration (around 2 to 3 hours). The 24 hour storm duration is estimated to have a return period of about 60 years, however, this relatively long duration (24 hours compared to 3 hour time of concentration) generally does not cause many flood related problems. The average of the 24 hour total (about 144 mm in this area) is only about 6 mm per hour. The rainfall records for Station Road show two hours of intense rain at 2 am and 3 am on the morning of the 16th. The rainfall depths for this time were 21 mm then 13 mm. It is likely this is the rainfall that caused the flood problems. A comment from a local resident (Mr. John Jeffcoat – Charlotte Street) indicated that at midnight the water level near Charlotte Street was up a bit, but not of great concern, then at 4 am, their house was flooded. The return period for this shorter duration event is about 10 years.

Figure 19 shows the rear of the Jeffcoat’s house, with the approximate flood level.



Figure 19: Approximate Flood Level at Jeffcoat House, Charlotte Street, Takapau

Just downstream of the Jeffcoat’s house, the stream passes through very heavy vegetation, and several 90 to 180 degree bends. Once it passes through the box culvert under Charlotte Street, the channel is still very heavily vegetated, and during this storm it appears several trees fell into the stream and caused severe blockage, which resulted in higher water levels upstream.

The diversion structure from the Te Matau Stream to the Makaretu Stream was possibly not working to it’s full potential during this event. Design notes for the structure indicates about 5.9 m³/s should pass through it during a 10 year event. A fence on the upstream side was apparently causing some blockage. The fence was cut at some time during the night of the 15th in order to relieve the blockage. A

computer model of the Te Matau Stream, including this structure was used to examine this event. Indications are that only about 4 m³/s were passing through the diversion structure during this event.

The location where the Te Matau Stream crosses Sydney Street was also blocked by debris building up on the deer fence on the upstream side. This resulted in water flowing down Sydney Street, and through the town of Takapau. Local accounts indicate the water was approximately 30 cm deep at the corner of Charlotte and Sydney Streets.

4.3. Maharakeke Stream

A dwelling on the Maharakeke Stream at Aorangi Road had approximately 0.5 m of flood water through it (Figure 20). It has been reported that this house has been flooded previously.



Figure 20: Flooding from Maharakeke Stream, Aorangi Road.

4.4. Tukituki River

An initial assessment of the Tukituki system has shown little damage to scheme assets in general and that the flood protection works have performed as designed.

The following list highlights areas of concern and general observations made from an aerial survey on the 17th :

4.4.1. Lower Tukituki River.

- A third river mouth developed adjacent to the Haumoana groyne causing some toe erosion of the stopbank, concrete and rock were placed temporarily
- the 'concrete slab job' suffered more erosion with scouring occurring along the full length of the site
- major damage to edge protection at x/s 14 RB, approx 200m x 10m width of edge lost
- previous repairs downstream of Black Bridge LB have held but a few more trees need to be slotted to fully protect the edge
- previous repairs above Black Bridge on the RB have held, with no damage evident at present
- minor edge damage at x/s 19 LB downstream of River Rd, lopping and or slotting required
- significant damage to fences, access tracks and gates on both banks from Black Bridge to River Rd
- water up to one metre deep on the berm in places on the right bank

4.4.2. Middle Tukituki

- noticeable areas of damage between River Rd and Rochfort Rd
- 251 project works at Phillips and Fox's have performed well and have not suffered any noticeable damage
- the bottom third of the Fields/Brownrigg's slotting job has been destroyed
- repair works on Mangatipiri Station appear to have suffered more damage
- Camp David stopbank held
- reasonable size flood in the Papanui

4.4.3. Upper Tukituki

- no damaged identified at present, an odd tree has fallen out of the edge protection but there is no noticeable damage anywhere
- floodgate at Coughlin Rd had to be physically closed to prevent river water flowing back into the industrial area. Previously, there was a substantial flow from the industrial area to the river.
- large area of poplar trees blown over the stopbank behind the depot
- several lombardi poplars blown over and into the edge protection at Pukeora
- possible scouring of edge downstream of S H 50, RB, further inspection required
- farmer reported water boiling up on the landward side of the stopbank downstream of Lindsay Rd (x/s 34-38 LB)

4.5. Waipawa River

- major scour at x/s 49 LB (Worsnops) requires urgent attention – no edge protection left!
- areas of pole planting at Plantation Rd have been lost
- culvert at Mangaonuku confl. blown out so needs repairing
- the odd tree out of place but no other areas of concern

4.6. Tukipo River

- poplars blown over u/s LB Burnside Rd
- again the odd tree out of place but no other problems noticed

4.7. Makaretu River

- most of golf club flooded
- several poplar trees blown over at Mabins, u/s Speedy Rd
- Speedy Rd inundated in two places on LB, Rowlands at x/s 16 and at the culvert west of the sharp bend past the bridge. Flow a few inches deep and about 15-20m wide at x/s 16 and about 0.5m deep and about 50m wide at the culvert when Dave C inspected (after peak). Complaint from Sue Rowlands as to why there is no stopbanking along the Makaretu.
- scour at x/s 26 RB (Dalbey's) needs urgent attention

4.8. Maharakeke Stream

- stopbanks overtopped downstream of the S H 2 bridge.
- damage to the landward toe of the stopbank along the golf course, trees and debris on top off the banks
- 200m of boundary fence downstream of the horse track, LB, has been demolished

4.9. Ongaonga Stream

- fallen trees at Mackie's, Fletchers, Bradley's

4.10. Kahahakuri

- poplar trees blown over at Hamilton's and Smith's
- significant flooding over Ongaonga Rd approx 1.5km west of Swamp Rd intersection (twin culverts under Rd not coping)

4.11. Makara

- Makara only flowing half full, Dam no. 1 had about 1m of ponding
- dam no.4 (Tylees) inlet silted up
- fallen trees at Lambing's, d/s no.1 and at Elsthorpe township

4.12. Mangaorapa

- several locations where trees have fallen into the stream, bank scours etc
- major flooding at Hutana, side creek diverted itself, major siltation

4.13. Mangamaire

- several locations where trees have fallen into the stream, bank scouring etc
- rockwork at Grant's culvert has disappeared!

4.14. Taurekaitai

- Stopbanks overtopped at Flaxmill bridge both u/s and d/s, landward batters scoured in several places and need repairing
- major debris blockage at bridge, channel scouring d/s of bridge
- several locations where trees have fallen into the stream, debris blocks etc

5. Rainfall Records

The following table shows the hourly rainfall totals for the duration of the storm.

	Porangahau River at Wallingford	Ben Nevis	Manga orapa	Waipo apoa	Moor cock	Tukipo River at State Highway 50	Parks Peak	Tukituki River at Shagrock	Waipu kurau	Tukituki River at Tapairu Rd	Onga Onga	Glen wood	Station Road	Keiru	Gwavas	Te Kaihi
15/02/2004 3:00	0.0	0.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
15/02/2004 4:00	0.0	0.0	2.5	0.0	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
15/02/2004 5:00	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
15/02/2004 6:00	0.5	0.0	0.5	0.0	1.0	0.5	0.0	0.5	0.4	1.0	0.0	1.0	1.0	1.5	0.2	0.5
15/02/2004 7:00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.5
15/02/2004 8:00	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.5
15/02/2004 9:00	2.0	0.5	0.5	0.0	2.0	1.5	2.5	0.0	1.0	0.5	1.0	2.0	2.0	1.0	1.8	0.0
15/02/2004 10:00	1.0	1.0	3.0	3.5	6.0	5.0	5.0	1.0	2.8	0.5	1.5	2.5	2.0	1.5	6.4	1.0
15/02/2004 11:00	2.0	1.5	4.5	1.0	4.0	4.5	5.5	6.5	3.0	7.5	9.0	2.5	2.0	1.0	0.2	3.0
15/02/2004 12:00	9.5	3.5	12.0	7.5	8.0	9.0	3.0	36.0	3.4	8.0	18.0	6.5	4.0	0.0	3.0	7.5
15/02/2004 13:00	29.5	21.5	14.0	8.0	7.0	14.5	7.0	47.5	10.0	16.5	12.5	9.5	16.0	7.5	8.4	26.0
15/02/2004 14:00	10.0	10.5	7.0	24.0	6.5	9.0	10.5	48.0	12.4	21.0	13.5	8.5	9.0	8.5	9.4	32.0
15/02/2004 15:00	2.5	5.5	8.0	0.0	9.5	4.0	14.0	2.0	3.4	3.0	4.5	10.5	6.0	3.0	13.4	3.5
15/02/2004 16:00	9.0	5.0	5.0	1.0	10.0	5.0	13.0	5.5	4.2	4.0	3.5	6.0	3.0	1.5	3.4	6.0
15/02/2004 17:00	8.5	9.0	5.5	4.5	10.0	5.0	13.0	3.5	11.6	11.5	10.5	9.0	8.0	1.0	5.0	4.5
15/02/2004 18:00	4.0	4.0	14.5	2.5	7.0	8.0	14.5	1.5	5.2	4.5	7.0	10.5	8.0	7.5	14.6	1.5
15/02/2004 19:00	8.0	2.0	11.5	13.0	14.5	4.0	10.5	5.5	5.6	4.0	4.5	10.0	3.0	1.5	5.6	16.5
15/02/2004 20:00	5.5	3.0	3.0	7.5	8.0	5.5	10.0	5.5	2.6	4.5	5.0	8.0	5.0	2.5	2.0	7.0
15/02/2004 21:00	5.5	2.0	10.0	4.5	5.0	4.0	3.5	4.0	2.8	3.0	2.0	5.0	4.0	2.0	2.4	5.5
15/02/2004 22:00	10.0	3.5	6.5	3.0	6.5	7.0	3.5	4.0	5.2	4.0	5.0	5.5	6.0	1.0	2.4	6.0
15/02/2004 23:00	10.5	3.0	7.5	5.0	6.5	6.5	5.0	6.0	4.2	5.5	5.0	5.5	6.0	2.0	5.0	6.0
16/02/2004 0:00	10.5	3.5	17.0	3.5	4.5	6.5	3.5	6.0	5.0	4.0	5.0	3.5	7.0	3.0	3.4	5.5
16/02/2004 1:00	14.0	2.5	9.5	5.5	6.0	8.0	5.0	8.5	5.8	6.0	4.5	6.0	7.0	6.0	4.4	6.5
16/02/2004 2:00	27.0	3.0	7.5	5.0	12.5	13.0	6.5	6.5	4.4	4.5	4.0	7.0	21.0	5.0	4.4	5.0
16/02/2004 3:00	12.0	3.0	8.5	5.0	10.5	9.5	8.0	7.0	13.2	8.0	12.0	9.5	13.0	3.0	7.0	7.5
16/02/2004 4:00	15.5	3.0	4.0	4.5	3.5	1.5	5.0	7.0	6.8	8.5	4.0	3.5	5.0	6.0	3.6	6.0
16/02/2004 5:00	0.0	3.5	0.5	5.5	1.5	0.5	1.0	13.5	1.0	8.5	2.0	1.0	2.0	6.5	2.0	8.0
16/02/2004 6:00	0.0	3.0	0.0	3.5	1.5	1.5	0.0	2.5	0.0	0.5	0.0	0.5	0.0	10.5	0.2	1.0
16/02/2004 7:00	0.5	3.0	0.5	0.0	3.0	4.5	1.5	0.0	0.0	1.0	6.0	1.0	2.0	1.5	5.4	0.5
16/02/2004 8:00	0.0	2.5	0.5	0.0	1.5	1.0	0.0	1.0	1.6	0.0	4.0	0.5	3.0	0.5	0.2	1.0
16/02/2004 9:00	0.0	1.0	1.5	1.5	2.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	1.0	0.5	0.2	0.0
16/02/2004 10:00	0.5	0.0	2.5	0.0	1.0	1.0	0.0	1.0	1.0	0.5	0.5	0.0	2.0	0.5	0.0	0.0
16/02/2004 11:00	0.0	1.0	0.5	0.5	1.5	0.5	0.5	0.0	0.6	0.5	0.5	0.5	0.0	0.0	0.6	0.5
16/02/2004 12:00	0.5	2.0	2.0	1.0	2.0	0.5	0.0	0.5	0.2	0.0	0.0	0.5	0.0	0.5	0.0	0.5
16/02/2004 13:00	0.0	1.0	1.0	1.0	2.5	0.0	0.5	1.0	0.2	0.5	0.0	1.5	1.0	0.0	0.0	0.5
16/02/2004 14:00	0.5	1.0	0.5	0.0	3.0	0.0	1.0	0.0	0.0	0.0	0.0	2.0	0.0	0.5	0.0	0.5
16/02/2004 15:00	0.0	1.0	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0

6. Incident Manager's Log

Date	Day	Time	Description of Action or Information	Staff Involved
15-Feb-04	Sunday	12.05	Call received from MetService - Heavy Rain Watch. Duty Manager (DM) rang TLA's (Copy Attached)	Tim
	Sunday	12.30	TC from WDC rang re Watch	Tim
	Sunday	12.35	Bruce Kitto - CHBDC - rang re Watch. He advised he was in Porangahau which had had 1 inch of rain every hour all morning.	Tim
	Sunday	12.46	Alarm received by Hydrology staff for Shag Rock Rainfall Depth (83.0 mm over 666 mins)	Peter Davis
	Sunday	13.15	Shag Rock Rainfall Depth (102.0 mm over 666 mins)	Peter Davis
	Sunday	13.40	Faxed Rain Watch	Tim
	Sunday	13.45	DM phoned Graeme Hansen, Mike Adye, Larry Withey, Gary Clode re Watch. Only Graeme Hansen home	Tim/Ganz
	Sunday	14.00	EMO Kitto contacted by GM Fox about possible problems in Waipawa with surface flooding affecting a known problem area. Travel to Waipawa and evacuate one family of 5 from house in Guy Street due to surface flooding mixed with overflowing sewage. Extensive surface flooding in low lying parts of Waipawa but no houses in danger of flooding entering dwellings. Notified of extensive flooding on SH 2 near Otane. Assisting Police for 2 hours with traffic control until Transit NZ staff arrive. Three houses on SH 2 Otane surrounded by water half metre deep but internal dwellings not affected.	CHBDC - Bruce Kitto
	Sunday	15.00	MetService called Heavy Swell Warning for Monday morning - rang Charlie Rycroft	Tim/Charlie
	Sunday	15.45	Rang NCC, HDC, & CHBRC re Swell Warning	Tim
	Sunday	17.46	Porangahau Water Level Alarm 13000mm @ 15/2/04 17:45	Peter Davis
	Sunday	19.20	Notified by FIRECOM that rising surface flooding in BlundellAve/Svensons Rd area of Waipukurau threatening several residences. Fire pumping out street. Water rising so fast that one house inundated by 150mm water by 2030hrs and people self evacuated prior. House will be unusable for some months. Fire pumping with 2 appliances and 2 portable pumps 1000gals/min and not keeping up. 12 houses surrounded but no other awash inside.	CHBDC - Bruce Kitto
	Sunday	20.00	Vivienne Leach rang to advise Mt Herbert Road Culvert half blocked - back of Gunsons property - rang Ganz	Tim/Ganz
	Sunday	20.01	Porangahau Water Level Alarm 15,122mm @ 15/2/04 20:00	Peter Davis
	Sunday	20.30	Heavy Rain warning received from MetService and passed onto normal recipients locally. Area had already had up to 100mm of rain in some areas by this time.	CHBDC - Bruce Kitto
	Sunday	20.55	MetService called Watch upgraded to Warning Status for Heavy Rain	Tim
	Sunday	21.35	Shag Rock Water Level (4042 mm @ 15/2/04 21:00)	Peter Davis
	Sunday	22.45	Police advise of flooding in Otane - Wanted TLA's number	Tim
16-Feb-04	Monday	0.16	Mangaorapa Rainfall Depth (46.0 mm over 240 mins)	Peter Davis
	Monday	1.15	Shag Rock Water Level (5305 mm @ 16/2/04 1:15)	Peter Davis
	Monday	1.31	Porangahau Rainfall Depth (53.5mm over 240 mins)	Peter Davis
	Monday	2.46	Porangahau Water Level Alarm 17,969mm @ 16/2/04 2:45	Peter Davis
	Monday	3.16	Porangahau Rainfall Depth (66.0 mm over 240 mins)	Peter Davis
	Monday	3.37	Porangahau Water Level Alarm 18,545mm @ 16/2/04 3:30	Peter Davis
	Monday	3.45	EMO Kitto contacted by Porangahau Police Constable Singer. Advises that Porangahau completely isolated by large road slips on Porangahau Rd and surface flooding on all other ways in or out. Porangahau Beach village isolated by surface flooding at camping ground on Beach Rd. Porangahau River rising alarmingly and threatening houses. Water lying in many parts of village and rising. People evacuated as precaution from houses. Fire brigade and Police have situation under control as far as possible. Watching river levels etc. etc. Didn't require any other assistance at that time but would keep in contact. Total evacuations by emergency services: 5 elderly from Kaumatua Flats near marae, 7 adults and 5 children from 3 houses in village, 2 adults and 3 children from 1 house near Porangahau Beach. All taken to family and friends in village. Also approx. 25 people self evacuated in village and near Porangahau Beach, again to family or friends locally. Total houses affected: Porangahau Beach settlement: 5 houses inundated, 4 bottom storey only inundated by surface flooding with total loss of	CHBDC - Bruce Kitto
	Monday	4.00	Fontera advise of major milk spill in Manawatu/Rangatiki area	Tim
	Monday	4.10	Pete Davis rang to advise of river situation	Tim/Pete
	Monday	4.46	Porangahau Water Level Alarm 19,463mm @ 16/2/04 4:45	Peter Davis
	Monday	5.00	Shag Rock Water Level (5900mm @ 16/2/04 5:00)	Peter Davis
	Monday	5.50	Bruce Kitto rang re situation	Tim
	Monday	7.15	Faxed update of Rain Warning and Swell Warning to Groups	Tim
	Monday	9.40	Rick Sloman HDC advised shingle bank breached at Haumoana from sea into lagoon - Rang Graeme Hansen	Tim/Ganz
	Monday		Major surface flooding in rural areas from overflowing streams and creeks in Otane, Patangata, Omakere, Wanstead, Flemington, Wallingford, Mangaorapa and Porangahau areas. Major slips on Porangahau Rd and most rural roading infrastructure in the above areas damaged in some way from minor to major. Damage at first estimate by roading contract engineers to District roads at \$M2.5. Many roads initially closed but reopened during afternoon as water receded.	CHBDC - Bruce Kitto
	Monday	10.30	Hans from McDEM rang re bridge carrying gas pipeline out in Manawatu affecting HB. Passed on to Mike Adye	Tim/Mike
	Monday	11.00	Brett NGC re gas pipeline and affect on HB supplies - passed to Mike Adye	Tim/Mike
	Monday	11.25	Porangahau District overflowed by EMO, GM and Mayor in helicopter from 1125hrs - 1300hrs.	CHBDC - Bruce Kitto
	Monday	11.45	Call to advise Middle Road, Papanui Stream end 1.5 m under water - rang Graeme Hansen. Sally rang CHBDC	Tim/Ganz
	Monday	14.00	Call re Y-puk and Waipawa ox ponds overflowed - transferred to Bryce	Tim/Bryce
	Monday	14.55	Mr Cooper called to advise concrete rubble dumped on beach opposite 134 Beach Road Haumoana	Tim
	Monday		Three roads remained closed at end of 16 Feb, Porangahau Rd blocked in several places by slips or flooding, Oruawhoro Rd near Takapau closed at bridge which was badly underscored and Old Hill Rd near Porangahau closed on top of hill by slips and trees. All other roads passable but with extreme care.	CHBDC - Bruce Kitto
	Monday		Surface flooding in Takapau township from overflowing drains and a creek but no houses inundated. Fire brigade patrolling township and in constant contact to EOC until flooding starts to fall late morning.	CHBDC - Bruce Kitto
	Monday		Major slumping on farm land with the Wallingford, Mangaorapa and Porangahau areas being worst affected. Major damage to rural fences and tracks in these areas.	CHBDC - Bruce Kitto
	Monday		Stock losses considered to be serious but no figures available yet. Fed Farmers now coordinating the rural assistance programme with Council advertising phone numbers, email addresses etc on local radio, through school newsletters etc etc.	CHBDC - Bruce Kitto
	Monday		Water in Porangahau area starts to recede during Monday afternoon.	CHBDC - Bruce Kitto
	Monday		Other areas with surface flooding recede quickly on Monday afternoon and overnight.	CHBDC - Bruce Kitto
	Monday	18.20	Sara Williams McDEM Update of Situation - gas pipeline - asked who would be on duty	Tim
	Monday	22.20	Woman wanting road information	Tim
17-Feb-04	Tuesday	9.00	Faxed cancellation of swell warning	Tim
	Tuesday		CHBDC contractors start moving into affected areas to start clean up. Council officers go door to door in Porangahau village and Takapau to assess damage to residences etc. Each residence has data sheet completed for collation. Locals in Porangahau cleaning up properties and houses etc. Thick mud surrounding 9 houses in Porangahau village and 2 at Beach settlement. Things quickly returning to as normal as possible for those who can stay in houses. Insurance assessors starting to move into village. Council opens transfer station all day and for next 2 weeks for free disposal of flood damaged goods. Only roads still closed are Oruawhoro Rd and Old Hill Rd	CHBDC - Bruce Kitto

7. Media Articles and Releases

Several articles appeared in the Hawke's Bay Today newspaper on Monday, February 16. Details included:

- Flood waters closed SH2 near Otane
- Slip closed Wimbledon Road
- High winds around Omakere uprooted large trees
- Water up to 1 m deep on roads around Porangahau
- Sydney Street flooded in Takapau

Unofficial rain gauge readings:

- Hugh Ritchie, Otane: 91 mm in 5 hours
- Derek Brownrigg, Poukawa: 106 mm in 24 hours
- Richard Harding, Waipukurau: 132 mm up to 8 am Monday, 16th
- Rob Hunter, Porangahau: 284 mm in 24 hours
- Steve Wyn-Harris, Hatuma: 140 mm up to 3 am, then another 25 mm to 8 am on Monday 16th
- Steve Wilson, Wakarara: 160 mm over 24 hours
- Mangaorapa: 300 mm in 24 hours

Hawke's Bay Today, Tuesday, February 17, 2004

- Middle Road near Otane closed (on Monday, 16th) from high levels in Tukituki.
- Central Hawke's Bay resident Karen Beaumont's car was swept off Middle Road near where the Papanui Stream enters the Tukituki River.
- In Otane, the fire brigade pumped floodwater from 3 properties in Ross Street, and from the Otane School.
- Comments about cost of damage in terms of insurance assessments indicate flood damage to houses including carpets, appliances, floorboards and walls would be at least \$30,000 per house.
- Reports from Porangahau that at 3 am, residents Eric & Moya Douglas had water on front lawn. By 5 am, the depth had increased to 0.5 m. Low tide was at 8 am, which assisted flood water to flow out. By 10 am the water had drained from the Douglas (Moya) property, leaving 20 to 30 mm of silt.

Media Release from Central Hawke's Bay 24th February 2004

Stories from Porangahau, a small Central Hawke's Bay coastal town, detailing miraculous escapes from a 'one in fifty year' flood, farms being totally wiped out by mountainous slips, and trees uprooted by tornado-like winds are still being told in CHB today.

Porangahau town's people and the surrounding farming community are cleaning up after twenty families and a still to be assessed number of farms were totally isolated and devastated by last week's storm. Thirty people were evacuated from the township in total darkness early Monday 16th morning. Central Hawke's Bay

District Council co-ordinated emergency management response and are still assisting those in need.

One flood victim gave an account of a young deaf boy alerting a local family that he 'heard the river coming,' subsequently allowing time for the family to evacuate their home safely. The local fire brigade are still amazed how their engine kept going after driving through water over the exhaust pipe when evacuating Kaumatua Flat residents. Some residents are citing a miracle that the tide turned just in time for the coastal township otherwise the town would have been lost.

**Recovery Update Report from Ministry of Civil defence and Emergency Management
1500 hrs 11 May 2004**

This report describes the ongoing recovery for the floods of the lower North Island. Included is a comment that as of May 10, 2004, in Central Hawke's Bay, there are still 8 individuals out of their homes, 5 family units out of their homes, 11 Houses are uninhabitable, and 0 homes have been destroyed.

8. Met Service Weather Warnings

Date, Time	Description
15-Feb-2004, 11:59	<p>Severe Weather Watch for Hawke's Bay South of Napier Burst of heavy rain possible in Hawke's Bay south of Napier Sunday night and Monday morning. In the 15 hours from 9pm Sunday to noon Monday 60 to 80 mm of rain may accumulate, especially about the eastern hills and ranges.</p>
15-Feb-2004, 15:56	<p>Severe Weather Watch for Southern Hawke's Bay, Wanganui and Southern Taranaki. Risk of heavy rain A deepening area of low pressure is directing rain and gale southerlies over the lower North Island, with heavy rain and severe gales as per the latest warning. Some heavy falls are also likely in the hill country of Wanganui, about Mt. Taranaki, and in southern Hawke's Bay south of Napier, until midday Monday. It is uncertain if accumulations will reach warning criteria, however, Met Service forecasters will continue to monitor the situation to determine if a Severe Weather Warning is warranted.</p>
15-Feb-2004, 20:34	<p>Severe Weather Warning Heavy Rain and severe southerly gales set to continue over the north island until midday Monday. An area of low pressure is deepening just east of Wairarapa tonight directing rain and gale southerlies over the southern half of the North Island. Heavy rain is expected to continue in Wairarapa, the eastern hills of Wellington, Taihape, Mt. Taranaki, and the Wanganui Hill Country and spread to southern Hawke's Bay in the morning, with 80 to 120 mm possible during this time. Heavy Rain Warning, Hawke's Bay south of Napier In the 12 hours from midnight Sunday until midday Monday, 60 to 80 mm of rain if possible, mainly about the ranges and coastal hills south of Cape Kidnappers.</p>
16-Feb-2004, 08:25	<p>Severe Weather Warning, The worst has passed The deep low off the Wairarapa Coast that brought stormy conditions over the lower North Island is forecast to move away to the southeast from late morning, with the rain and severe southerly gales easing. However, another 20 to 30 mm of rain is still possible in parts of Wellington, Wairarapa, Wanganui, Taihape and southern Taranaki until midday today. Also severe gale southerlies are still likely in exposed parts of Wellington, Wanganui, and coastal Wairarapa until late morning, with gusts of 140 km/h possible, however, the winds should rapidly ease from midday. Heavy Rain Warning: Areas affected: Wairarapa, Eastern hills of Wellington, the Wanganui hill country, Mt. Taranaki, Taihape and Hawke's Bay south of Napier. Forecast: In the 4 hours from 8 am to midday Monday, another 20 to 30 mm of rain is possible in some places, before clearing this afternoon</p>
16-Feb-2004, 13:08	<p>Severe Weather Warning, The severe weather has eased. Heavy rain warning has lifted.</p>

9. Notes from Regional Council Meeting on Wednesday, February 24, 2004

STORM EVENT WEEK COMMENCING 15 FEBRUARY 2004

Mr Caseley briefed Councillors on the storm event that occurred during the course of the week commencing 15 February 2004, its assessed impact on the Hawke's Bay Region and the assistance being provided to other Councils in the North Island. The event is believed to be the most significant natural disaster to hit this country for a considerable time.

Chairman Bramwell then updated Councillors on the current situation for each district following the storm event.

Mr Caseley outlined the support the Regional Council had given to the Manawatu-Wanganui and Rangitikei to date, this included Susan Wylie giving assistance to the Rangitikei District Council for four days and Graeme Edmondson and Norm Olsen providing expertise also. This assistance was provided at the expense of the Hawke's Bay Regional Council.

Mr Adye then updated Councillors on the regional situation of the flood protection systems for the upper Tukituki and Te Matau rivers. He advised a meeting had been organised at Central Hawke's Bay for the people affected by the storm at Porangahau to find out the extent of problems for the farmers in this region.

Cr Williams noted that a Civil Defence emergency was not declared in Central Hawke's Bay as Civil Defence staff were able to cope with the event themselves. Chairman Bramwell advised that the Mayoral funds which have been set up were to be combined together in one package and called the Regional Disaster Relief Fund, trustees are being appointed to determine the allocation of the funds.

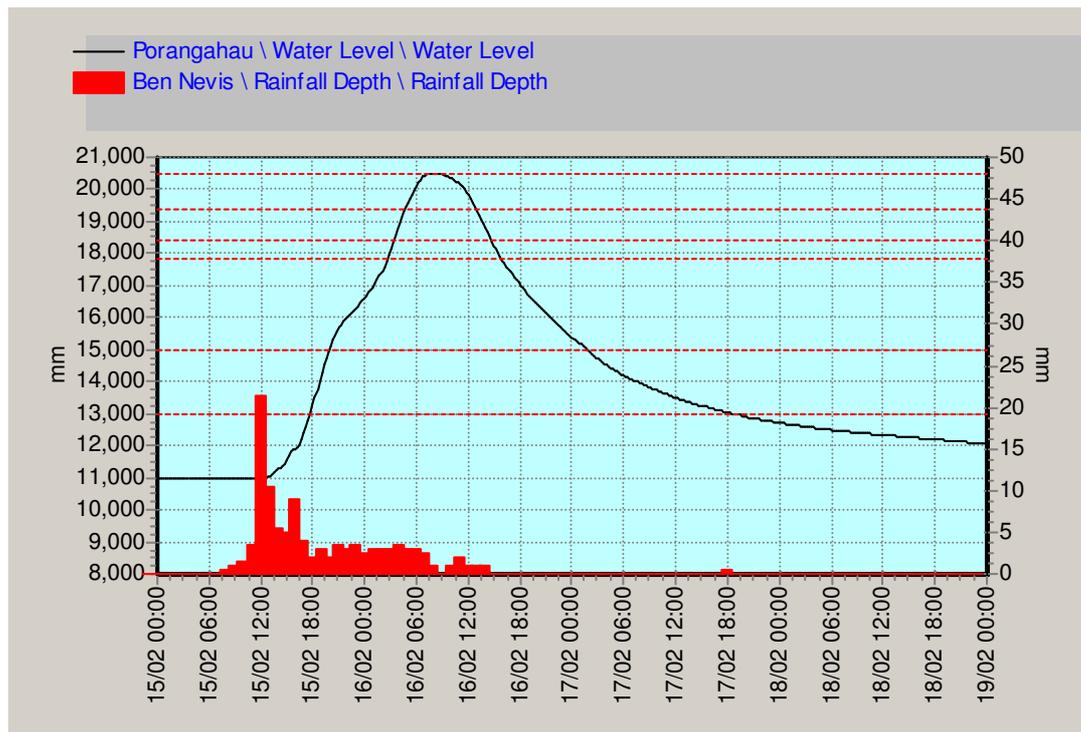
Councillors then discussed the level of contribution from the Hawke's Bay Regional Council and decided to allocate \$60,000 to the Regional Disaster Relief Fund and \$5000 to the Central Hawke's Bay District Mayoral Relief Fund.

Resolution

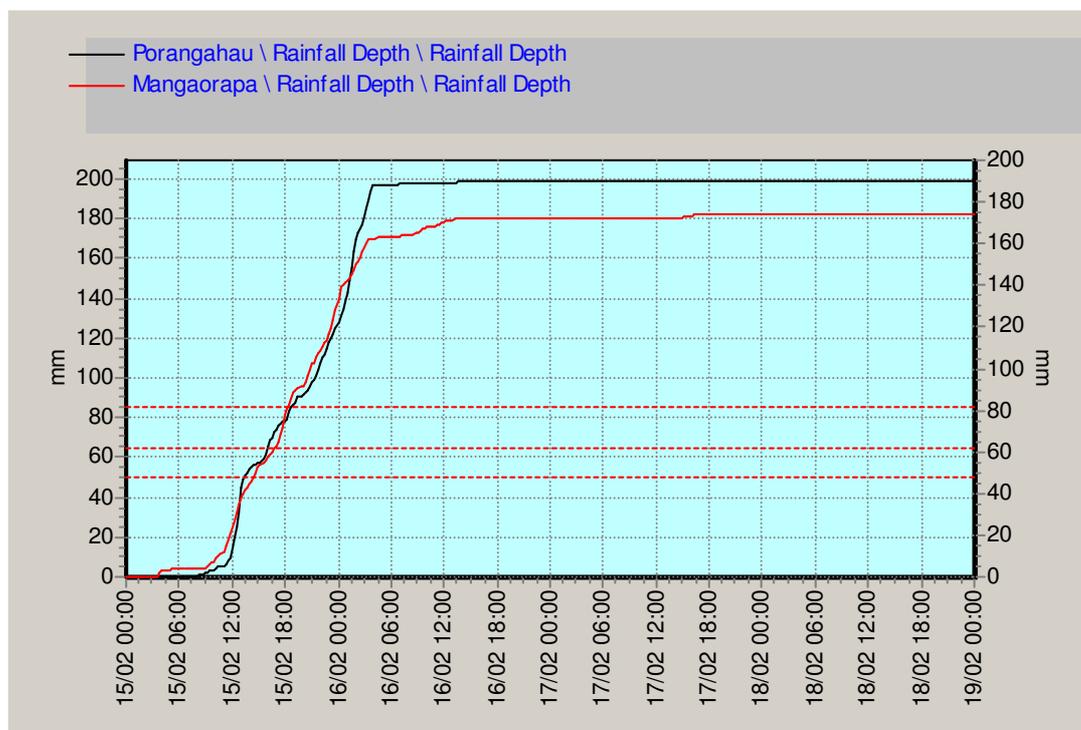
That Council :

- 1. Agree that the decisions to be made are not significant under the criteria contained in Council's adopted policy on significance and that Council can exercise its discretion under Sections 79(1)(a) and 82(3) of the Local Government Act 2002 and make decisions on this issue without conferring directly with the community and persons likely to be affected by or to have an interest in the decision due to the nature and significance of the issue to be considered and decided.*
- 2. Note the assistance that has been provided by the Hawke's Bay Regional Council to various parts of the Region and the North Island as response and recovery efforts proceed following the storm event which commenced on 15 February 2004.*
- 3. Provide \$60,000 from Council's operating reserves to the Manawatu-Wanganui Regional Disaster Relief Fund for the relief efforts from the catastrophic flooding in the Central/Lower North Island.*
- 4. Provide \$5000 from Council's operating reserves to the CHB District Mayoral Relief Fund for the relief efforts from flooding in the Central Hawke's Bay District.*

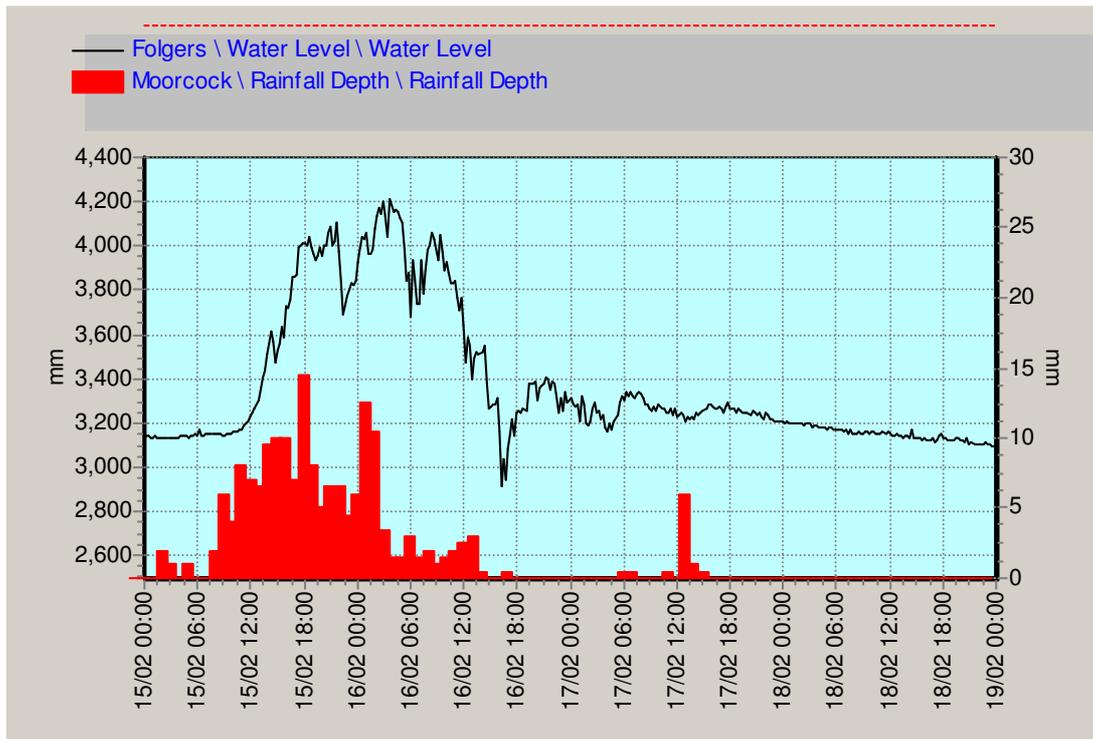
10. Telemetry System Readings



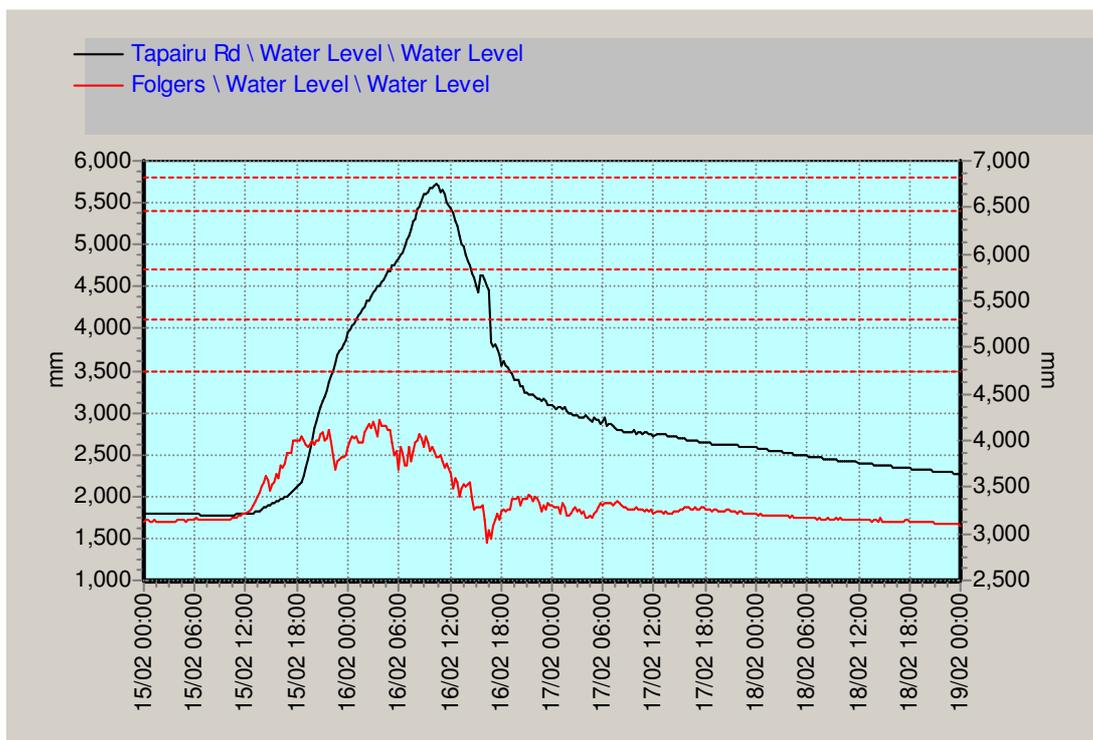
Max Stage 20510mm on 16/02/04 @ 0800 hrs
 Max Flow 562m³/s on 16/02/04 @ 0800 hrs
 Max 1 hour rainfall 22.5mm from 15/02/04 @ 0830 hrs
 Max 24 hour rainfall 103.5mm from 15/02/04 @ 0830 hrs



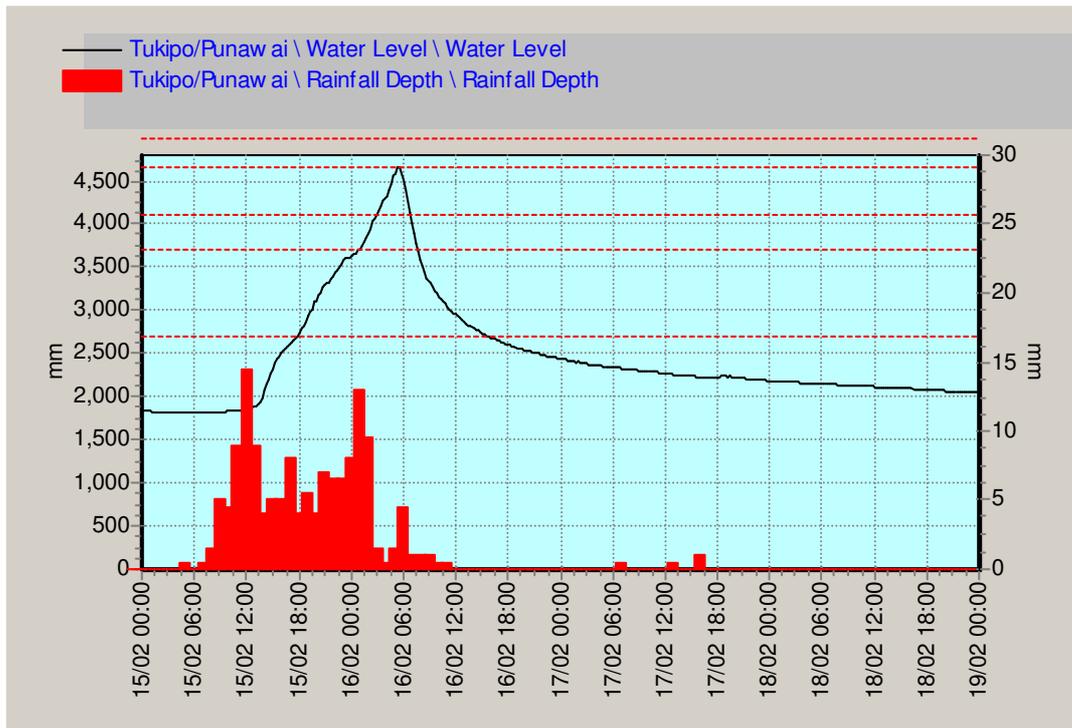
Porangahau Max 1 hour rainfall 29.5mm from 15/02/04 @ 1200 hrs
 Max 24 hour rainfall 197.0mm from 15/02/04 @ 0400 to 0800 hrs
 Mangaorapa Max 1 hour rainfall 20.0mm from 15/02/04 @ 2315 hrs
 Max 24 hour rainfall 162.0mm from 15/02/04 @ 0330 hrs



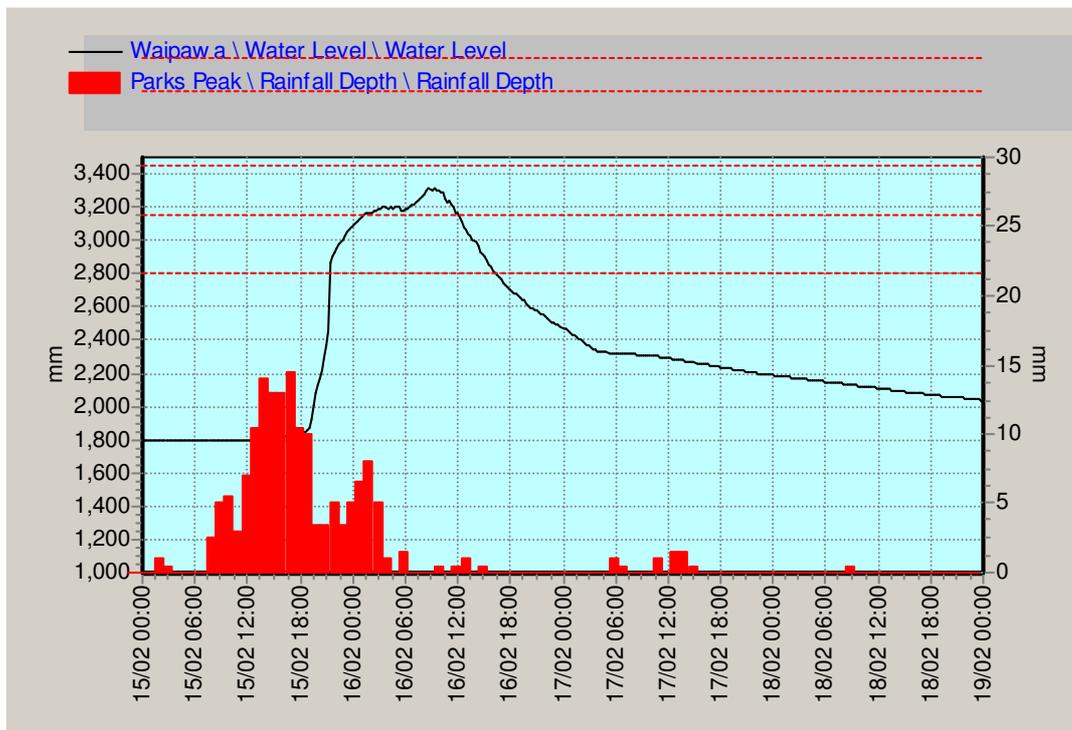
Max Stage 4215 mm on 16/02/04 @ 1615 hrs
 Max 1 hour rainfall 14.5mm from 15/02/04 @ 1745 to 1800 hrs
 Max 24 hour rainfall 156.5mm from 15/02/04 @ 0830 hrs



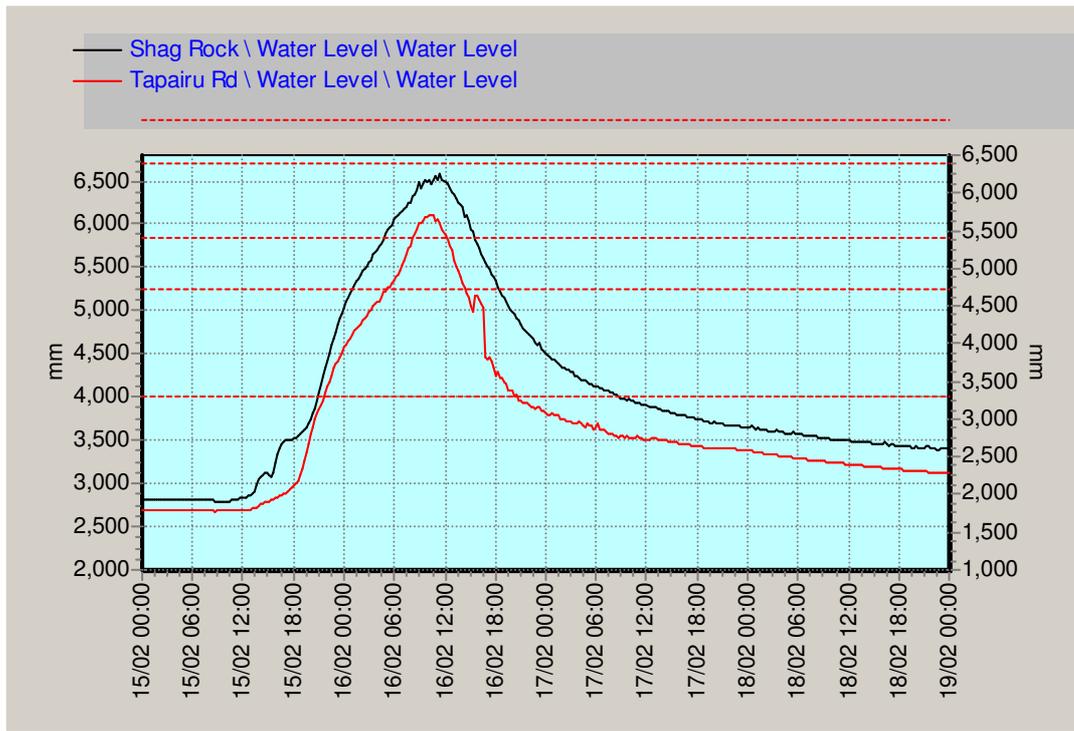
Tapairu Rd Max Stage 5718 mm on 16/02/04 @ 1030 hrs
 Max Flow 1006 m³/s on 16/02/04 @ 1030 hrs



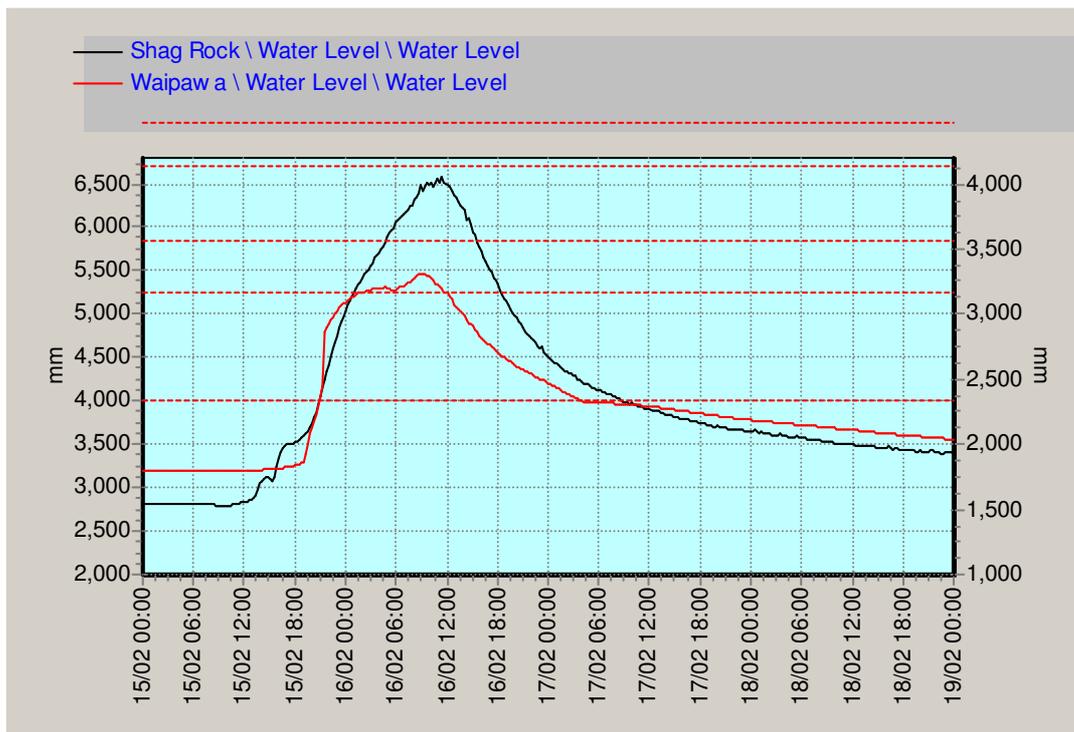
Max Stage 4667mm on 16/02/04 @ 0530 hrs
 Max Flow 202m³/s on 16/02/04 @ 0530 hrs
 Max 1 hour rainfall 15.0mm from 16/02/04 @ 0130 hrs
 Max 24 hour rainfall 139.0mm from 15/02/04 @ 0730 to 0845 hrs

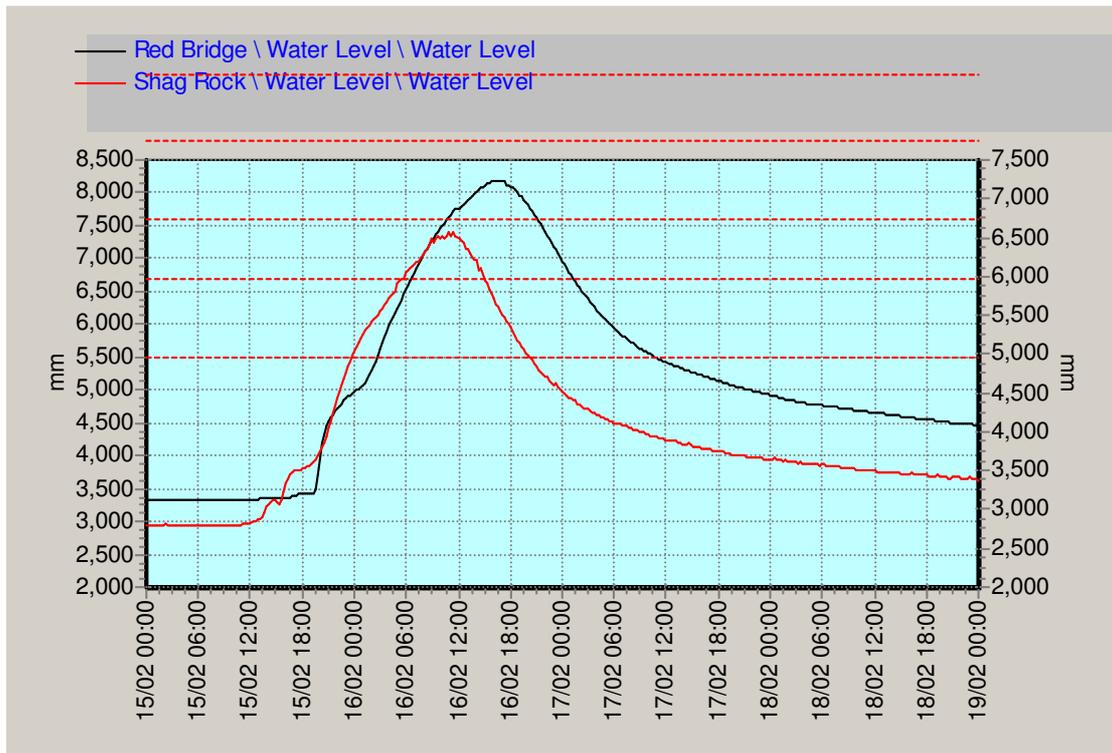


Max Stage 3312mm on 16/02/04 @ 0915 hrs
 Max Flow 544m³/s on 16/02/04 @ 0915 hrs
 Max 1 hour rainfall 16.5mm from 15/02/04 @ 1430 hrs
 Max 24 hour rainfall 151.0mm from 15/02/04 @ 0700 to 0830 hrs



Shag Rock Max Stage 6579mm on 16/02/04 @ 1130 hrs
 Max Flow 2334m³/s on 16/02/04 @ 1130 hrs





Red Bridge Max Stage 8179mm on 16/02/04 @ 1600 hrs
 Max Flow 2472m³/s on 16/02/04 @ 1630 hrs

11. Debrief Report: Central Hawke's Bay District Council

Prepared by Bruce Kitto

REPORT ON DEBRIEF CONDUCTED INTO
THE RESPONSE TO THE
CENTRAL HAWKES BAY STORM INCIDENT
FEBRUARY 15 & 16 2004

Debrief: Held on Thursday June 24 2004 at the Waipawa Fire Station meeting room at 2010hrs.

Present: Ken Fox (CHB District Council General Manager and Civil Defence Controller),
Bruce Kitto (CHB District Council Emergency Management Officer),
Sergeant Ross Gilbert (Officer in Charge CHB Police),
Ray Brown (Chief Fire Officer representing Eastern Fire Region)
Gary Weaver (Chief Fire Officer Waipukurau Fire),
Jim Burne (Chief Fire Officer Waipawa Fire),
John Oliver (Chief Fire Officer Otane Fire),
James Ward (Chief Fire Officer Takapau Fire),
John Lane (Chief Fire Officer Tikokino Fire),
Tony King, Bruce Parker & R Parker (CHB Ambulance),
Max Birdsall & Frank Butler (Omakere Rural Fire),
Ron Bell (Elsthorpe Rural Fire),
Gordon Annand (Waipawa Fire),
Bob Grover (Telecom Civil Defence Liaison),

Apologies: Constable John Singer (Officer in Charge Porangahau Police),
Mike Adam (Chief Fire Officer Ongaonga Fire),
Scott Pedersen (Ashley Clinton Fire),
Jim Macaulay (Elsthorpe Fire),
Shelley Burne-Field (CHB District Council Civil Defence Public Information Manager),
Julie Irvine (CHB Victim Support Group),
Brian Fletcher and James Lovey (CHB Ambulance).

Debrief Facilitated and Planned by:

Bruce Kitto (CHB District Council Emergency Management Officer)

Bruce Kitto told the meeting that aims for the debrief were clearly set out in the 'agenda' document and the 'planning' document that each person had a copy of.

He pointed out that this incident was not a declared 'Civil Defence' emergency but was actually an Emergency Services 'business as usual event' which had local Civil Defence Emergency Management overview and some associated coordination.

He then advised the meeting of what he had been done at the start of the incident:

- Sun 15 Feb 2004 1030hrs
Heavy rain starting falling over much of Central Hawkes Bay with main concentrations from State Highway 2 to the east.
- Sun 15 Feb 1400hrs
Emergency Management Officer Kitto contacted by Council General Manager Fox about possible problems in Waipawa with surface flooding affecting the known problem areas in Victoria/Bibby Street area. Travel to Waipawa and evacuate one family of 5 from house in Guy Street due to surface flooding mixed with overflowing sewage. Extensive surface flooding in low lying parts of Waipawa but no houses in danger of flooding entering dwellings.

Notified of extensive flooding on SH 2 near Otane. Two separate nose to tail motor vehicle crashes occurred on the 'Otane straight' caused by drivers reacting to flood waters. Otane Fire and Police attended these. EMO Kitto assisted Police for 2 hours plus with traffic control until Transit NZ staff arrived. Transit notified at approx. 1600hrs via their after hours emergency listing. First response was an answer phone. Call was returned within 10 minutes. *Unfortunately it took over two hours for Transit emergency response vehicle and staff to arrive. NOT ACCEPTABLE.*

Three houses on SH 2 Otane surrounded by water half metre deep but internal dwellings not affected.

- Sun 15 Feb 1920hrs
Notified by FIRECOM that rising surface flooding in BlundellAve/Svensons Rd area of Waipukurau threatening several residences. Fire pumping out street. Truck load of suitable gravel ordered with a view to forming a bund around the affected property but the water was rising too quickly by the time it arrived (within 15 minutes). In consultation with the property owner it was decided not to use the gravel as putting it in place would have created a wave which would have caused more damage to the threatened house. Water rising so fast that the house was inundated by 150mm water by 2030hrs with occupiers self evacuated prior. Fire pumping with 2 appliances and 2 portable pumps 1000gals/min and not keeping up. 12 houses surrounded but no other houses had water anywhere near going inside.
- Sun 15 Feb 2030hrs
Heavy Rain warning received from MetService and passed onto normal recipients locally. This 'Warning' said we could expect up to 80mm of rainfall overnight!!!! Area had already had up to 100mm of rain in some parts by this time.
- EMO Kitto off at home at approx 2300hrs
- Mon 16 Feb 0345hrs

EMO Kitto contacted by Porangahau Police Constable Singer. (See separate report from Constable Singer) Advises that Porangahau completely isolated by large road slips on Porangahau Rd and surface flooding on all other ways in or out. Porangahau Beach village isolated by surface flooding at camping ground on Beach Rd. Porangahau River rising alarmingly and threatening houses. Water lying in many parts of village and rising. People evacuated as precaution from houses. Fire brigade and Police have situation under control as far as possible. Watching river levels etc. etc. Didn't require any other assistance at that time but would keep in contact.

- EMO Kitto travels to Wanstead to assess state of Porangahau Rd in that vicinity. Got to the Wanstead Church before being forced back by axle deep flood waters.
- EMO Kitto travels to Waipawa Office and starts calling back suitable staff, including the General Manager/ CD Controller and CD Public Information Manager, in order to set up an initial EOC response and maintain overview of the situation. Council phone system was switched back to local answering once staff arrived at the office.
- Contact maintained with Constable Singer at Porangahau. Total evacuations by emergency services: 5 elderly from Kaumatua Flats near marae, 7 adults and 5 children from 3 houses in village, 2 adults and 3 children from 1 house near Porangahau Beach. All taken to family and friends in village. Also approx. 25 people self evacuated in village and near Porangahau Beach, again to family or friends locally.

Total houses affected: Porangahau Beach settlement: 5 houses inundated, 4 bottom storey only inundated by surface flooding with total loss of everything on that storey, the other a single storey with total loss inside, inundated by overflowing creek. Level of inundation from 100mm to 500mm.

Porangahau Village: 13 houses with water into dwelling, varying depths from 100mm – 250mm, with another 17 with water through other buildings on property e.g. garages, sleep outs, assorted sheds etc. Most houses in Village had either surface flooding from drainage or rising river on their properties.

Contact maintained between Constable Singer and EMO Kitto throughout morning via phone or Police r/t. Constable Singer was confident that he and fire brigade had situation under control.

Power and reticulated water was cut to both village and beach settlement from approx 0130hrs. Power restored 1200hrs, water mid afternoon.

- EMO Kitto contacts manager of local radio station, Central FM. Council EOC started issuing Public Information via that radio station at 0700hrs with an initial message for CHB residents to stay at home unless travel was absolutely necessary, due to the condition of many roads.
- EMO and EOC and PIM contact principal of CHB College and other schools strongly suggesting that schools should be closed.

- Surface flooding in Takapau township from overflowing drains and a creek but no houses inundated. Fire brigade patrolling township and in constant contact to EOC until flooding starts to fall late morning. Takapau Fire stood themselves down approx 1100hrs.
- Otane Fire and Waipawa Fire made contact with EMO and the EOC approx 0630hrs after being called to severe flooding on SH2 at Otane turnoff due to Kaikora Stream overflowing. Over the next half hour or so several trees brought down across and blocking SH2 on the Otane straight by very strong winds. Otane Fire clear these in order to keep road open. Contact maintained between EOC and these units. A request at approx 0930hrs was made to EOC by Waipawa Fire for permission to close the road around the Otane turnoff due to the dangerous manner that drivers were reacting to Fire Service staff attempts to keep traffic moving one way at a time. Road cones were sent to the area by EMO to affect this closure. It was not required to be in place more than an hour as flood water receded enough to open the road both ways. Otane and Waipawa stood themselves down by 1100hrs.
- District overflown by EMO, GM and Mayor in helicopter from 1125hrs – 1300hrs.

Major surface flooding seen in rural areas from overflowing streams and creeks in Otane, Patangata, Omakere, Wanstead, Flemington, Wallingford, Mangaorapa and Porangahau areas. Major slips on Porangahau Rd and most rural roading infrastructure in the above areas damaged in some way from minor to major. Many roads initially closed were reopened during afternoon as water receded.

- Water in Porangahau area starts to recede during Monday morning after river drains due to low tide at approx 0800hrs.
- Other areas with surface flooding recede quickly on Monday afternoon and overnight.

Recovery measures were put in place immediately and by late afternoon action had begun as detailed below:-

- Council's roading and facilities maintenance contractors tasked with opening blocked roads throughout the District and carrying out any other immediately necessary work such as drain clearance etc. and checking on the integrity sewage systems in areas affected by flooding. By Tuesday afternoon, all District's roads were passable except Oruawharo Road near Takapau where a bridge had been seriously damaged and Old Hill Road near Porangahau where a large slip and trees had blocked through traffic. However the roading network was still badly damaged and extreme care was required when driving especially in the Flemington, Wallingford, Mangaorapa and the greater Porangahau area. This message was being conveyed to the public via regular radio broadcasts.

- Publicity commenced mid-afternoon Monday 16 February using local media sources, e.g. radio and newspapers, advising people to contact Council if they had been adversely affected by the storm event. The aim was to coordinate and provide assistance as soon as possible and to build up a data base of damaged areas.
- Tuesday 17 February, door to door enquiries carried out in Porangahau village and Takapau township by Council officers with the aim of ascertaining the extent of storm/flood damage to residential properties, especially dwellings and associated buildings. Each property had a data sheet completed detailing the affects of the event.
- Tuesday 17 February EMO asks for priority to be placed on clearing of roadside drains in Porangahau village, Te Paerahi (Porangahau) Beach settlement and other townships where surface flooding occurred leaving silt and other rubbish blocking drains and gutters. This work commenced on the afternoon of that day and had an immediate positive psychological effect on the residents of Porangahau village.
- Wednesday 18 February, door to door enquiries carried out in much of the Te Paerahi (Porangahau) Beach settlement and some Otane properties as per the previous paragraph.
- The data gained from the enquires mentioned above and any other messages received via Council's offices were collated by Council's building inspectors and they started visiting all properties where dwellings or associated buildings had received water inundation. Appropriate advice was passed on to affected residents with written advice left with them as well.
- The dire plight of many farming families was becoming evident late Tuesday 17 February. Emergency Management Officer started making contact with local farmer organisation representatives with the aim of having them coordinate assistance for farmers. Federated Farmers national office contacted EMO Wednesday 18th and advised that Rural Coordinator would be appointed by MAF Policy using a central government initiative. Publicity maintained asking affected township and rural people to contact Council so they could be put in contact with appropriate assistance.
- Wednesday 18th, Thursday 19th, Friday 20th and Saturday 21st, EMO in Porangahau area almost all of the time carrying out welfare visits and obtaining more information on the welfare type requirements of residents. Afternoon tea supplied to contractors and locals assisting with the clean up of private property and Council roads, footpaths, gutters etc. This personal contact and gestures like morning teas are received very positively by workers and residents alike.
- Contact maintained constantly with farmer organisations and MAF Policy over the appointment of a Rural Coordinator.
- Thursday 19th February a short notice meeting facilitated in Porangahau Hall with staff from WINZ employment and welfare sections present along with

Council EMO and PIM. More information on welfare requirements obtained and WINZ were able to assist some with emergency food and income payments.

- Monday 23rd February quantity of non-perishable food items obtained from the Hastings Salvation Army foodbank. Contact made with local Victim Support Group person who undertook to deliver food to affected residents as she continued with her visiting. A second lot of food from the same source was uplifted on Wednesday 25th February. Positive feedback was received from recipients of the food.
- A CHB Storm Mayoral Relief Fund was established towards the end of the week of Friday 20th February. This fund was boosted by donations from the Napier City and Hastings District Councils of \$10,000 each and the HB Regional Council of \$5,000 on Wednesday 25th February. Council staff began working through the policy for the administering of this fund.
- Wednesday 25th February EMO delivers donated furniture to Porangahau resident who had 2 metres of water through bottom story of house and is now living in top floor.
- Tuesday 24th February work commenced on organising a public meeting in the Porangahau Hall timed for Thursday 26th February 1900hrs. Aim of the meeting is to inform affected people, both urban and rural, of the various assistance packages and programmes that are available and how they can access them.
- Many hours spent by EMO and PIM organising speakers and publicity for this meeting including a mail drop of a pamphlet detailing the meeting and other information on all rural deliver runs covering the worst affected areas, pamphlet delivered to four schools in the affected area for sending home with children, newspaper adverts and press releases to both radio and newspaper, posters advising of meeting and pamphlets delivered to dairies, garages and hotel in the area.
- Welfare work continues by EMO in Porangahau on Wednesday 25 and Thursday 26 February.
- Two local farmers groups contact EMO advising they are organising farmers who are able to assist with labour on affected farms. They were referred to Neil Kittow, Rural Coordinator, to be used as a resource by him.
- Public meeting held as mentioned above. Attended by over 80 residents and they were addressed by appropriate staff from CHB District Council, WINZ, MAF Policy, Public Health Unit and HB Regional Council. Application forms were made available for all the various assistance programmes at the meeting.
- Friday 27 February, publicity with local newspapers and radio stations continued asking affected people from throughout CHB to make contact with Council or the Rural Coordinator if they require assistance.

- Official figures supplied to MCDEM on Friday 27 February

District	Out of their homes now	Domestic houses affected by flood water	Houses Unsafe - unlikely to return before 22 March 04	Houses destroyed / condemned	Houses with potential damage-yet to be assessed	Schools closed
Hawkes Bay	12	34	6	1 est	0 est	0
CHB District Council	12	34	6	1 est	0 est	0

In addition to the above there are also 7 houses, including 4 holiday homes, where the bottom storeys will be unusable for at least the next month or so. People are still using the top storey.

15 Schools were closed 16 February only.

Over the weeks after the incident most of these people returned to houses etc. as they were repaired. However at the time of the debrief there were still four family groups not living in their home.

Mayoral Relief Fund money was distributed to residential applicants in April and a meeting to disburse money to rural applicants was held in early May. However at the time of the debrief Council were still waiting on the Government contribution to the fund so that disbursements could be made. With the expected Government one for one contribution a final figure of approximately \$95,000 was available for disbursement to applicants.

EMO was still carrying out welfare type work right up until the time of the debrief with some donated goods and other individual requirements of displaced residents being stored in Council sheds awaiting the return to homes of some.

One 'problem' that was encountered was the unexpected arrival of a large quantity of goods from a neighbouring Council area. Any items of clothing, household items etc., that had been required by residents had been specifically requested via radio messages etc. The arrival of a large truck and trailer loaded with a wide range of goods was really not required and the donors request that what we did not require should be on-shipped to the relief centres in the Manawatu was not possible as they did not require anything further to that which they had received from all over the country. Some of the goods were distributed to residents with a specific need. However much was given to the Salvation Army and St. Vincent de Paul Society in Hastings for disposal through their normal welfare work. Some bedding and other similar goods have been stored locally for future use if required.

Bruce Kitto concluded that from Council's point of view the response and recovery had gone well with each organisation involved getting their specific tasks done with professionalism and expertise. He attributed how well everyone had worked together to all Emergency Services continuing to meet and liaise at the CHB

Emergency Services Co-ordinating Committee meetings and to the fact good ongoing contact and liaison was maintained between all players on an ongoing basis.

Gary Weaver then outlined what Waipukurau Fire had done during the response phase. He said that there was only one area of concern in Waipukurau and that was Blundell Avenue. Despite pumping with two pumps continually for one and a half hours, rising surface flooding inundated one house and forced the occupants to self evacuate. He raised the issue of the availability of sandbags in a flood. His initial request of the local Council had been for sandbags to try to protect the house in danger of flooding. The EMO when he arrived said there were none and alternatives were arranged. *Bruce Kitto* pointed out that Council had no sandbags. The Regional Council had them available for river protection. The issue was that sandbags had to be filled at the time of use, they could not be stored full, apparently, as they rotted.

Jim Burne outlined Waipawa Fires response. They had a busy Sunday in the usual areas where surface flooding affected Waipawa but there were no major problems. On the Monday they were deployed fully from just before 0700hrs until around 1100hrs assisting Police with traffic control on SH 2 near Otane, work that Transit should have been doing. There were issues with drivers not being prepared to carry out instructions of firemen directing traffic, especially when the roadway was down to one lane. The SH was closed for a short time after drivers ignored instructions and tried to drive at oncoming traffic while the road was down to one way due to flooding. The danger to other drivers was too risky, so in consultation with Council's EMO, the road was closed to avoid an accident. Jim said that his team were pleased with the lines of communication and that overall, apart from the Transit response, things had worked well.

John Oliver outlined Otane Fire's response. Busy on Sunday afternoon with two accidents on SH2 near Otane caused by vehicles encountering surface water. Also involved with traffic control on Monday morning but no major problems. Several trees also came down across the SH between Otane and Waipawa early in the morning, around 0700hrs, and these were cleared by his staff

Sergeant Ross Gilbert said that he only had three Constables to deploy on Monday at the height of the incident. They were generally involved in assisting with traffic flow at affected SH areas. Constable John Singer at Porangahau had been involved fully in the main incident as it affected Porangahau right from the start. He had liaised closely with the EMO throughout. He could not be present at the debrief due to prior commitments but provided a written report as follows:-

The Following portion of the CHBDC Report is Courtesy of John Singer, Constable at Porangahau

24/6/04

Beginning Sunday afternoon 15/2/04 1400hrs an intense SE wind and driving rain dumping a good soaking.

Some minor problems in the Village with surface flooding due to sudden intensity and drainage blocking/unable to cope.

Weather cleared briefly at 2100hrs

Alerted to rain and surface flooding at 0100hrs 16/2/04. Steadily increased in intensity this time from the NW (complete 180-deg turnabout). Peak falls between 0200hrs-0400hrs.

0230hrs Mangamaire Stream on Wimbledon Rd breaks over road 5km sth Porangahau, cutting off sth route.

Porangahau River filling very fast, and at 0300hrs with the assistance of three available Fire Service members, evacuated as a precaution the elderly at the Kaumatua Flats and one other in the village.

River burst banks at 0430hrs at the end of Franklin Rd, flowing across Abercromby St (Main St Porangahau) and back into the river downstream.

Two houses on the Beach Rd toward Porangahau Beach were inundated with water to approx. 150mm. Difficulty in accessing the Porangahau Beach area.

Porangahau Rd covered with a large slip 3km nth of Village (Transfer Station)

Power outage 0500hrs.

Rain stopped at 0530hrs and water levels quickly recede. Porangahau still cut off due to slips and flooding on main routes in and out.

Ten households evacuated in total as a precautionary measure.

Thirteen homes flooded with silt, and numerous garages, including local Service Station flooded.

No immediate danger to any persons, but could have been more serious if another inch (1/2 hr) rainfall.

The CHBDC Emergency Manager was kept informed of the situation throughout.

STRENGTHS

- Good communication throughout event within the Police, Fire Service and CHB Emergency Manager.
- Co-operation between the agencies and the public very good.
- Ongoing support and information to the public regarding water and other services (e.g. Buildings and aid remedy) by the CHBDC very good.
- Roadworks to open the road in the following days was very prompt.
- (Access within two days)
- WORKS personnel and equipment to clear silt and roads supplied quickly and efficiently.

- Relief and support to those affected organised by CHBDC and Victim Support very well. Media coverage and appeals very good at providing volunteers for initial clearing.

WEAKNESSES

- No initial weaknesses can really be identified given that these events happen without warning and can sometimes only be addressed as events happen given all the variables. (E.g. road closures, hour of day, staff availability)
- There was some concern regarding the drainage issues at Porangahau Beach.
- It seems that over the years more emphasis for concern was placed on flood and high water protection from the seaward side, thereby building a 'dike' type protection in the sand dunes. However, there was little protection from the heavy rainfall runoff from the hills behind the properties. This caused some pooling around the lower areas amongst the homes at the Beach area.
- Overall the situation was very well handled both at the time and in the days following by the CHBDC Emergency Team, and all others involved. 10/10.
- My thanks to all involved.

John Singer
 Constable at Porangahau
 24/6/04

Ross said that he was happy with the way the incident had been handled at Porangahau given the Emergency Services staff available there.

He was very dissatisfied with the Transit NZ response to the flooding on Sunday and Monday. He supported the EMO's assertion that Sunday's response had been abysmal. This was the second time, in his opinion, that CHB had been let down by Transit in an emergency situation. The snow storm in June/July last year was the first. However he could understand that response to a certain extent as they had been involved all over the province at the same time and had limited staff to work with. However on this occasion it was only one part of CHB that was affected from a Transit perspective and they should have been able to respond better. His three police staff were spread thinly throughout CHB and this meant that Fire Service volunteers were assisting with what should have been Transits work especially at Otane. Police Comms had repeatedly called Transit but they just didn't turn up. This left Fire Brigades doing traffic control and they were spread all over the place. This left some areas very exposed if there had been a real fire incident. A fire appliance would have had to travel to various points to uplift personnel to attend a fire incident which could have been a disaster. Apparently Transit put a road block in at Paki Paki which was a totally inadequate response to localised flooding on the SH at Otane. Ross said that the matter had been taken up at a District level by the Police.

Ray Brown on behalf of Eastern Fire Region said that the Transit system of undertaking their own emergency work on the SH network was a pilot project in Hawkes Bay. As a result of these incidents Transit were looking closely at the

location of their 'Emergency Response Vehicles' and whether or not needed more of them in the province.

James Ward outlined the Takapau Fire response. They were involved on Monday on the SH where water was causing problems. It was flooding there and then flowing down into the township. There was a lot of water in many different places but none actually got into any houses in the township. The fire appliance patrolled through the township from approx. 0700hrs until 1100hrs keeping an eye on what was happening with surface flooding. Another problem with the roading network was the number of trees that came down when the wind got up early in the morning. The main road to the freezing works had been blocked by a bridge closure. Main task had been monitoring and keeping in touch with EMO at Council. James felt their response had gone well and that all lines of communication between agencies worked well.

Tony King said that local Ambulance staff had had a quiet time during the event with no major jobs.

Bob Grover said that Telecom staff were full of praise for the timely manner in which roads were made passable as this greatly assisted their ability to affect repairs to the phone network.

CD Controller Ken Fox and *EMO Bruce Kitto* both said that there was some really good work done by Work and Income in the District. WI staff were in Porangahau assisting affected residents with emergency vouchers very early on. The deployment of TaskForce Green into the Porangahau area had been a very positive thing with a lot of good work being done by the twelve workers in the seven week deployment. There was some concern early in the recovery phase that CHB was not being recognised as an area with major flood issues due to the overwhelming nature of the incident in the Manawatu/Wanganui area. However some not so subtle contact with various agencies in Wellington saw CHB get full recognition and the area was offered all the government assistance packages that were made available in other areas. There can be no doubt that CHB got its fair share of government and other non-government organisation assistance, e.g. Red Cross. A paid Agricultural Recovery Facilitator, Neil Kittow, was appointed by the end of the first week and he did a great job with coordinating the assistance to those adversely affected in rural areas.

EMO Bruce Kitto pointed out that the Porangahau Fire Brigade had done a fantastic job assisting with the response and recovery effort in Porangahau. Exceptionally long hours had been put in during the initial response with Constable Singer, who is also a member of Porangahau Fire. They also were heavily involved in assisting with the cleanup on affected properties both in Porangahau Village and at Te Paerahi (Porangahau) Beach over many days after the initial incident. Much of their work had gone un-noticed by the Fire hierarchy as there was only one callout logged onto the incident for the first day but personnel had stayed out for long hours on that initial callout.

He also added that a Victim Support volunteer in the Porangahau area, Marion Stoddart, had given time and effort way above and beyond what would normally be expected of someone in her position. Marion had started visiting affected residents very early on and had liaised with the EMO constantly so that any requirements of

those affected could be obtained if at all possible. She had distributed a large amount of non-perishable food obtained from the Hastings Salvation Army foodbank over a period of many weeks during the recovery phase. He could not speak highly enough of the task she had undertaken.

SUMMARY

The general feeling was that the incident as it affected CHB had been handled well by all concerned.

It was acknowledged that as no Civil Defence Emergency had been declared the response was an 'Emergency Services business as usual' to a large extent.

Council's Emergency Management had carried out a monitoring and coordination role and thanks was expressed by many of the participants for the manner in which they had been allowed to get on with their role in their own area knowing that this monitoring and coordination was taking place competently.

It was acknowledged that a good communication and rapport had been built up by all the Emergency Services in CHB over many years and there was a good understanding by each group of its role in such an incident. It was felt that this contributed greatly to the efficient manner in which the incident had been handled during the response phase.

Good support had been given to those affected, both urban and rural, by government agencies like Work and Income and other groups like Victim Support, Red Cross, Country Women's Institute. The government appointed Agricultural Recovery Facilitator had also performed a very valuable role in the recovery phase for farmers affected by the incident. His job had been made easier by the many offers of volunteer labour that came from other CHB farmers and others from all over the country for many weeks after the initial incident. The Taskforce Green scheme also played a vital role in the rural recovery.

It was acknowledged that all groups must continue to maintain the lines of communication that currently exist as these were seen as a real strength in CHB when such incidents occur.