

# Environment Bay of Plenty

**Report From:** Ken Tarboton  
Group Manager Rivers and Drainage

**Date:** 6 May 2008

**File Reference:** 5810 01

---

## The Chairman and Members

### Operations Committee

### Meeting of 15 May 2008

## Rivers and Drainage Group Report

*The purpose of this report is to provide Council with information on the 14 - 17 April 2008 storm event and other key activities in the Rivers and Drainage group.*

### 1 14 – 17 April storm

*5-10% in East  
20% event in WHK  
upper catchment.*

A severe storm from 14 to 17 April 2008 brought 100 - 300 mm of rain to the Bay of Plenty region. The event, Environment Bay of Plenty's response, details of the river flows and rainfall amounts are summarised and compared to the July 2004 storm which was of similar magnitude and caused millions of dollars of flood damage.

#### Event

On Sunday 13 April 2008 a strong low pressure cell located over the central Tasman Sea and a large high pressure system to the east of New Zealand formed a block, stalling the front associated with low pressure over the land bringing 100 - 300 mm of rain to the Bay of Plenty region from 14 - 17 April 2008

Met Service issued severe weather and thunderstorm warnings and forecast rainfall intensities of up to 40 mm/hr for the Eastern Bay of Plenty. Up to 25 mm/hr was measured during the event which ended with all warnings lifted on the evening of Thursday 17 April 2008.

#### Rainfall compared to July 2004 flood

Rainfall for the three days of the event is compared with the three and four day totals from the 15 - 18 July 2004 event Figure 1. While the 2008 event was as wet as the July 2004 event, preceding river levels were considerably lower and catchment conditions much drier than in 2004. These conditions worked in our favour minimizing flooding from this event.

The event was notable for the high intensity cells of rainfall that occurred, at Tuapiro, close to Katikati which received a total of 53 mm in 1 hour (20 mm in 15 minutes) in the mid afternoon of the 15 April 2008.



## **River flows and flooding**

River flows reached the 5 year return period for the Kaituna, Mangorewa, Rangitaiki and Waimana Rivers and the 2 year return period for the Tarawera and Whakatane Rivers.

Minor flooding occurred in the Waimana and Whakatane floodplains and water levels came close to overtopping Waimana Road at the Gorge. Some inundation occurred in Opotiki due to a faulty flood gate. Minor damage is expected to be found to have occurred once post event inspections are complete.

## **Response**

Duty flood managers responded to automatic alarms during the event including 81 rainfall alarms (intensity > 10 mm/hr) and 11 operational alerts (when specific river level thresholds are exceeded). Different river flows were simulated following the initial rainfall warnings to provide estimates of the expected annual exceedance probabilities and the timing of flood peaks. The catchments were very dry prior to the event making estimation of catchment response difficult however the predictions and timing of peaks were very useful during the event.

Pre-emptive warnings were issued on Tuesday 15 April 2008 to farmers on low lying land adjacent to the Waimana, Waioeka and Otara Rivers to move stock to higher ground since these rivers were estimated to peak on Tuesday evening. The Waimana, Waioeka and Otara Rivers responded very slowly due to the dry conditions, pushing flood peak times out. The Mangorewa River (tributary to the Kaituna) rose rapidly on the evening of Tuesday 15 April 2008 and a warning was issued immediately to farmers advising them to move stock to higher ground.

Our works staff were placed on shift to provide 24 hour coverage during the event monitoring local pumps and flood gates. Two additional staff were stationed in Opotiki overnight on 15 April 2008 to assist with flood relief in the event that access to Opotiki was cut off.

## **NIWA flood prediction**

NIWA has been providing a flood prediction service in the Rangitaiki catchment since December 2007. They combine a meteorological prediction model with a rainfall runoff model to predict flows at locations on the Rangitaiki. This was the first event that allowed good testing of their models' predictive capabilities. Results were disappointing with the event being under-predicted. Staff are following up with NIWA to recalibrate their models and if necessary make more use of measured data to provide better predictions during the event.

## **Lake Rotoiti**

Lake Rotoiti was around 50 mm below its target range prior to the storm. Levels rose quickly and the Okere gates were opened from their minimum openings to close to their maximum opening as the levels approached the upper level of the target range. Careful management since the peak has been exercised to keep the lake within its target range (see Figure 2).

## **Matahina Dam**

Good liaison was undertaken with Trustpower throughout the event. Matahina Dam spill gates were opened as the lake levels rose in response to the event dropping the lake level by 1 m overnight on 16 April 2008. Spilling was reduced and then ceased on 17 April 2008.



## **Summary**

The 14 - 17 April 2008 storm had similar rainfall to that of the July 2004 storm that caused significant flooding and flood damage. The exceedingly dry conditions and low river levels prior to the event meant that flooding was minimal compared to 2004.

Flood manager and staff response was excellent with the event proving a good opportunity to test flood response procedures and systems.

A photographic presentation of the event will be presented to Council on 15 May 2008.

## **2 Matata Regeneration Works – Waitepuru Resource Consent**

The Waitepuru Debris and Stream Management Works and Awarua Drain Stop Banks resource consent application was heard in Matata from 16 - 18 April 2008 by independent commissioner Alan Bickers. The project is a joint effort between Environment Bay of Plenty and the Whakatane District Council to provide Matata residents with protection from future floods and debris flow hazards following the disastrous events in May 2005. The key component of the proposal is a floodway to divert dangerous over-flows away from the residential areas of Matata across farmland to the Tarawera River. The hearing was a key milestone after nearly 3 years of design and community consultation. The commissioner's decision is expected around the second week of May 2008.

## **3 River Engineer Practitioners Seminar**

Environment Bay of Plenty hosted a very successful seminar for river and drainage engineering practitioners from 27 - 29 April 2008. There were 28 participants from around New Zealand coming from as far as Invercargill. Highlights of the programme were visits to Rotorua Lakes control structures (and new diversion wall), Edgecumbe/Rangitaiki flood mitigation project and Opotiki Harbour proposals. Presentations were provided regarding the 2004 flood recovery project, alternative drain maintenance techniques and flood barrier demonstrations. This was a great opportunity for field based staff to share valuable knowledge with other river engineering practitioners. We look forward to continued participation with the seminar being hosted by another council next year.

## **Recommendation**

**That the Regional Council:**

- 1 Receives the report.**
- 2 Recognises the excellent job done by our staff in responding to the April 2008 storm event, particularly the flood managers, Graeme O'Rourke, Bruce Crabbe and Roger Waugh.**



**Ken Tarboton**  
**Group Manager Rivers and Drainage**



6 May 2008

## 2004 storm vs 2008 storm rainfall

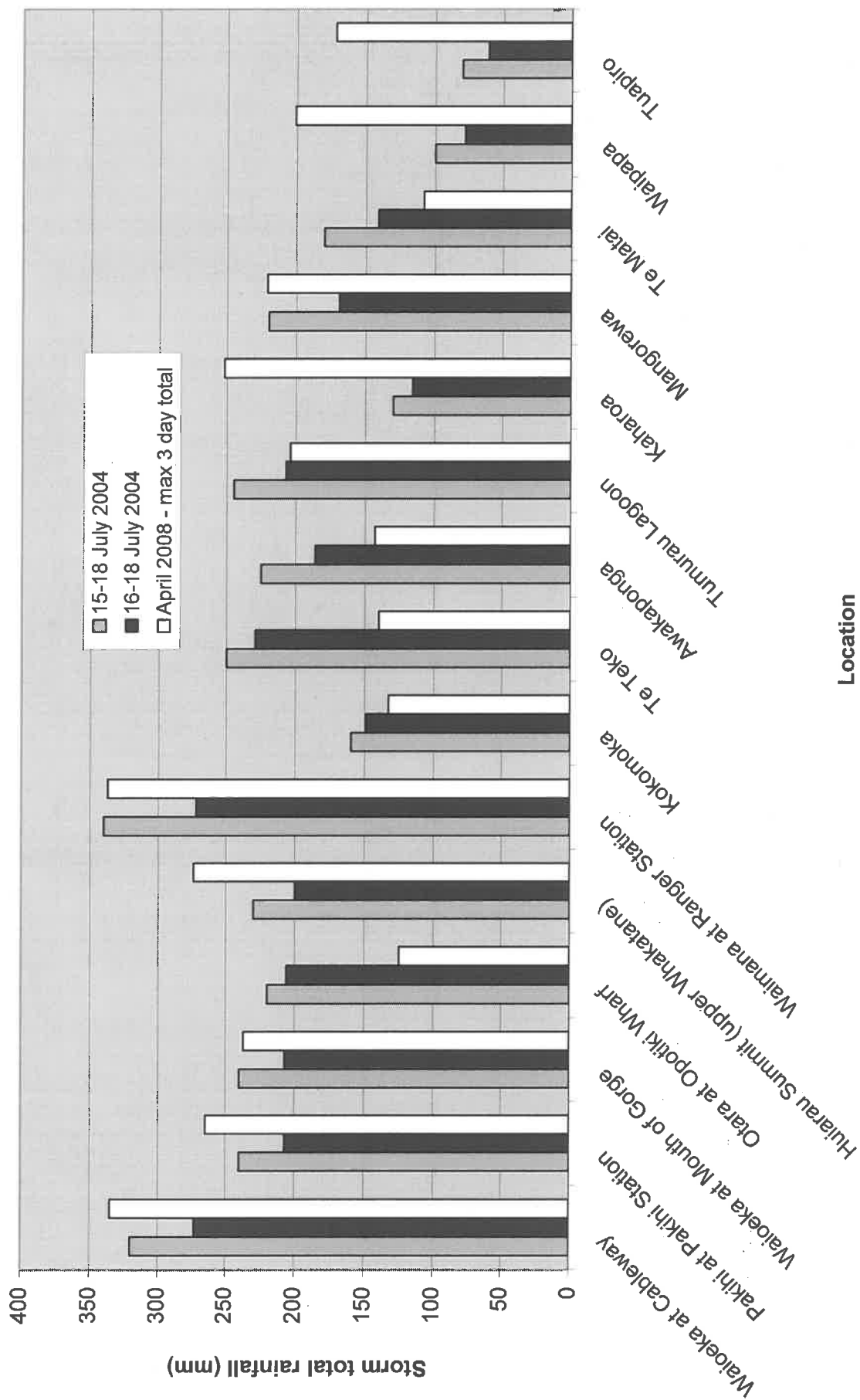


Figure 1. Comparison of 2004 storm 3 and 4 day rainfall totals with 2008 storm 3 day maximum rainfall total





6 May 2008

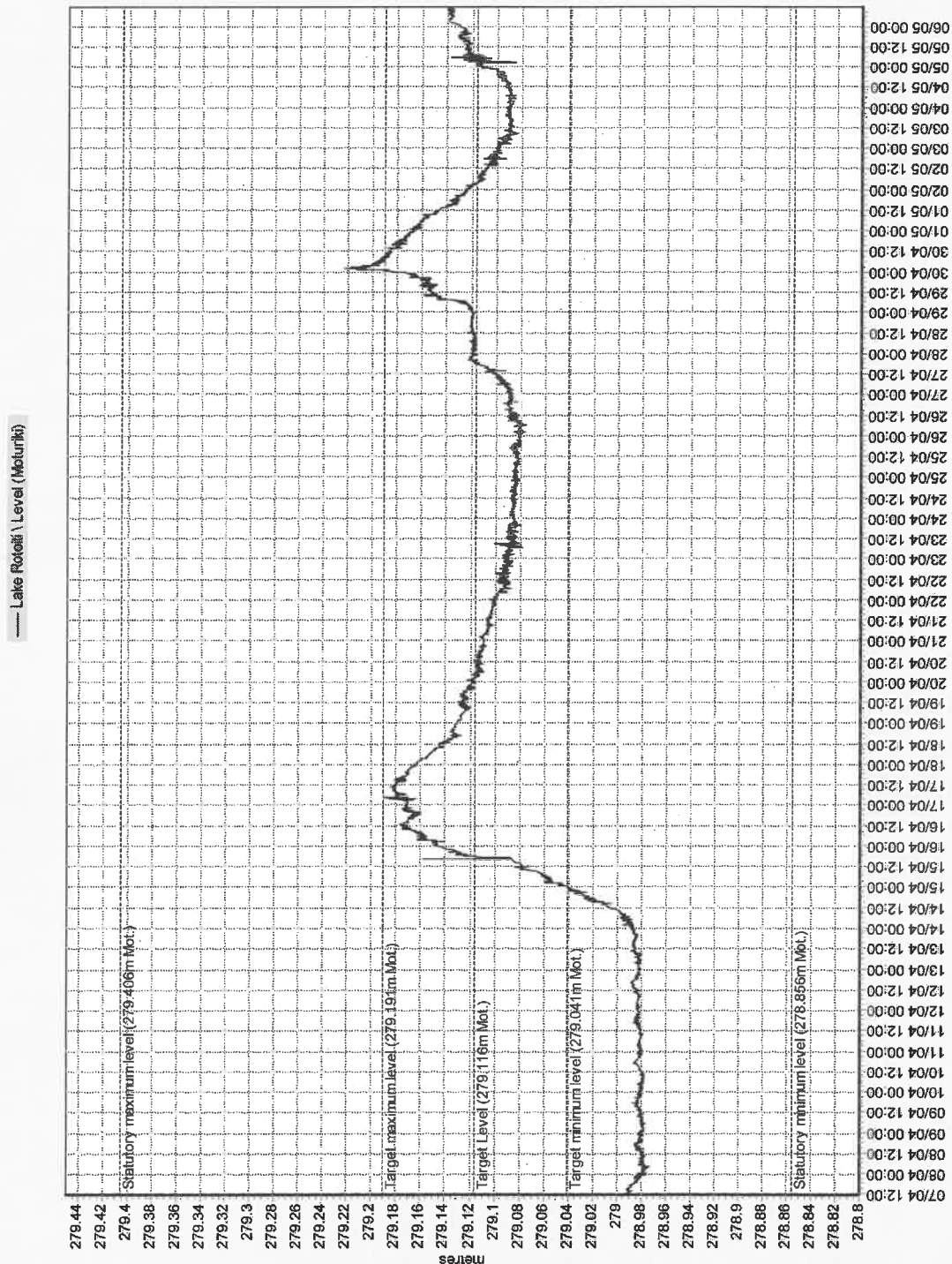


Figure 2. Lake Rotoiti levels

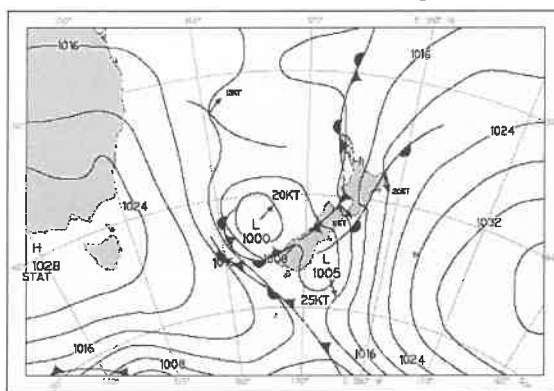


## 14-17 April Storm

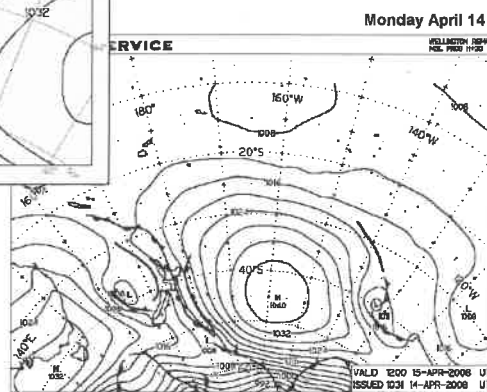
### Council Briefing 15 May 2008

Prepared by Ken Tarboton

## 14-17 April 2008 Storm



Sunday April 13



Monday April 14

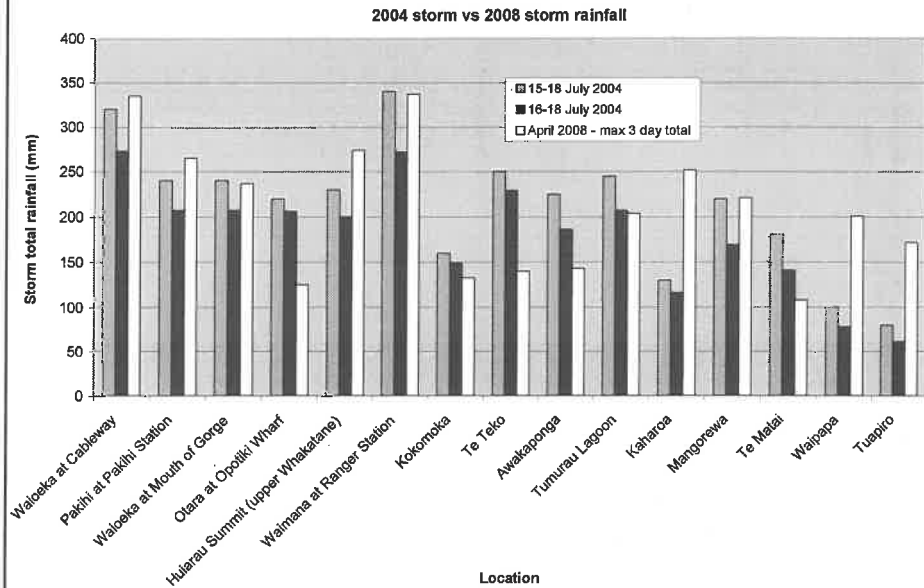
SERVICE

WILLIAMSTON 1000  
HOL 1900 11-20

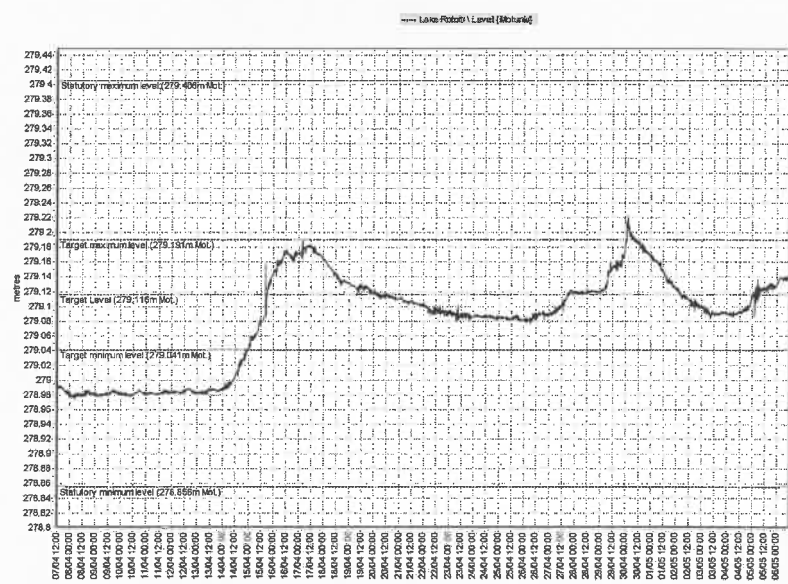
VALID 1200 15-APR-2008 UTC  
ISSUED 1031 14-APR-2008 UTC



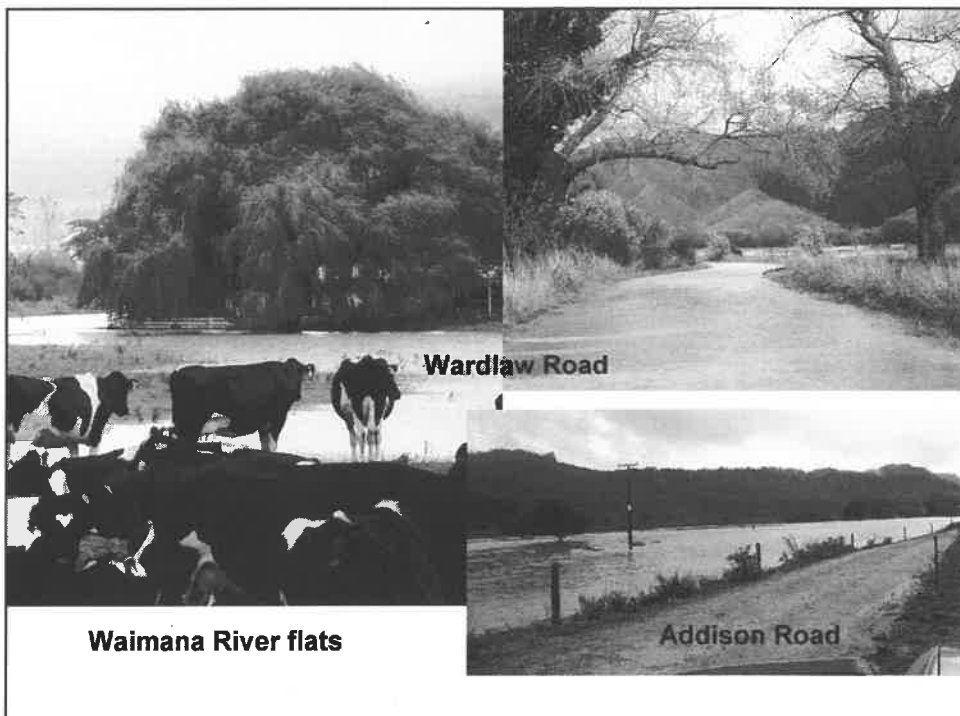
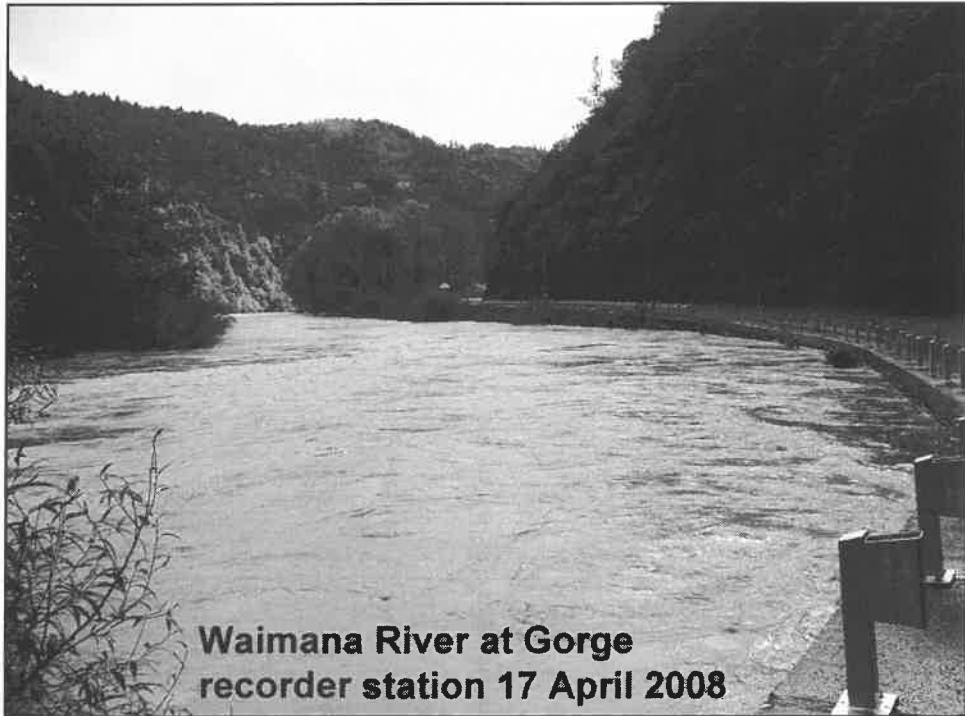
### 3 Day Rainfall (2008) vs 3 & 4 Day Rainfall (July 2004)



### Lake Rotoiti levels









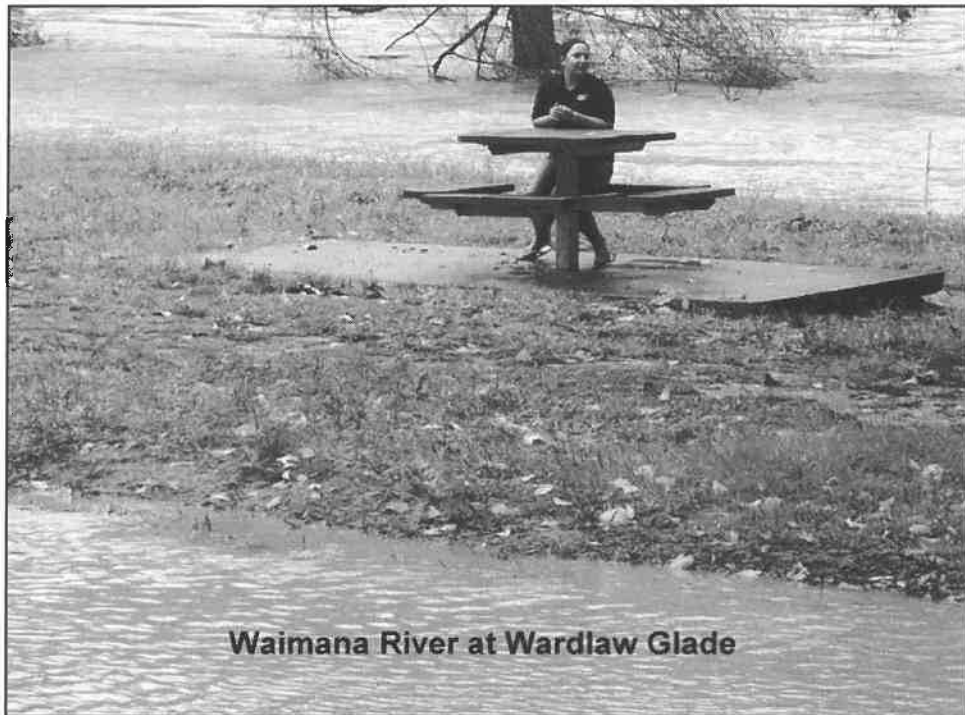


**Upper Whakatane River - Ruatoki  
Bridge**



**Owhakatoro Road  
Ruatoki, Ohana  
Stream feeding into  
Whakatane River**





**Waimana River at Wardlaw Glade**

