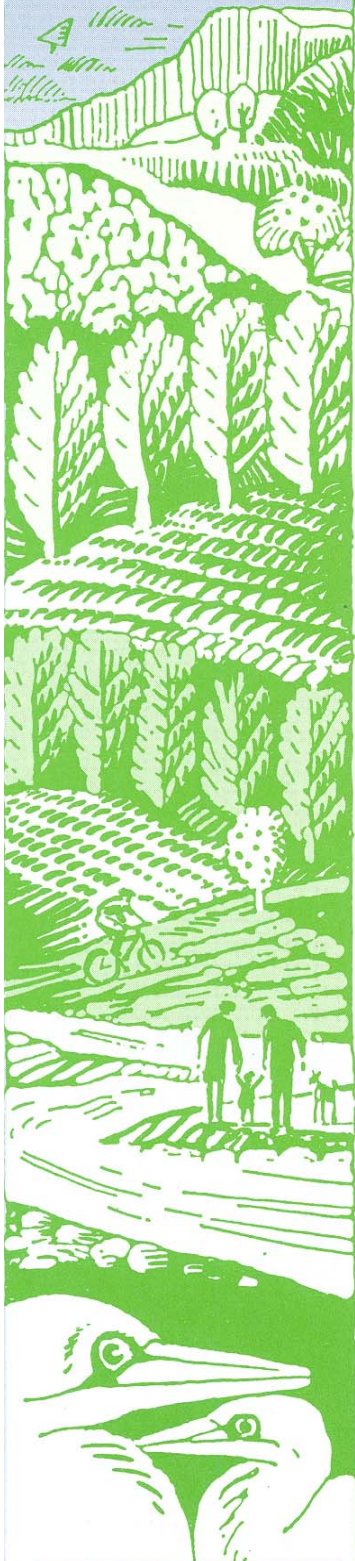


Wairoa Catchments Flood Report
Labour Weekend,
20-21 October 2005

March 2006
AM06/03
HBRC Plan Number 3836



Asset Management Group

Internal Technical Report

**ENGINEERING & ENVIRONMENTAL
SCIENCE SECTIONS**

Wairoa Catchments Flood Report, Labour Weekend, 20-21 October 2005



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2 Measured Rainfall, and River Flows

Figure 2-1 and Figure 2-2 show the 48hr rainfall totals for the Waiau and Wairoa catchments, northern Hawke's Bay. Figure 2-3 shows the measured water level in the Wairoa River at Railway Bridge and Figure 2-4 shows the measured flow rate in the Wairoa River at Railway Bridge. Figure 2-5 shows the rainfall depth measured in the Ardkeen catchment.

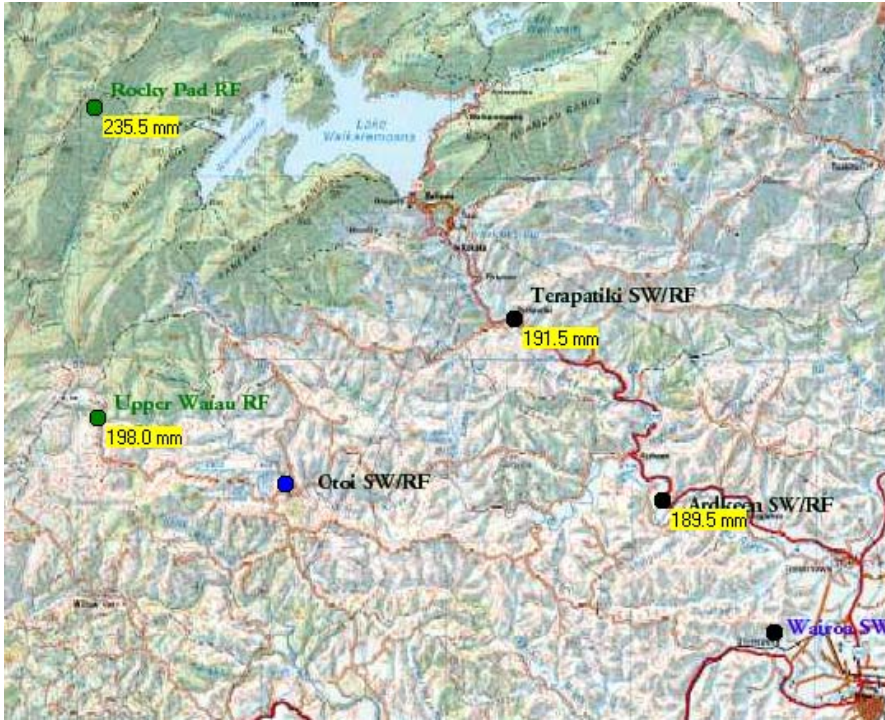


Figure 2-1: Waiau Catchments 48hrs Rainfall, 18:00 20th October 05 to 18:00 22nd October 05

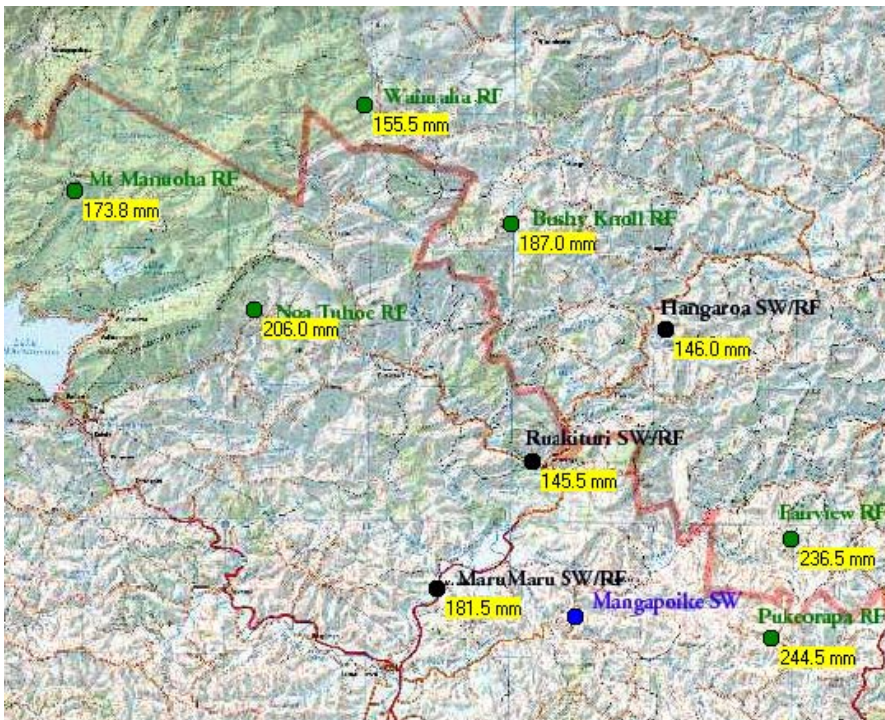


Figure 2-2: Wairoa Catchments 48hrs Rainfall, 18:00 20th October 05 to 18:00 22nd October 05

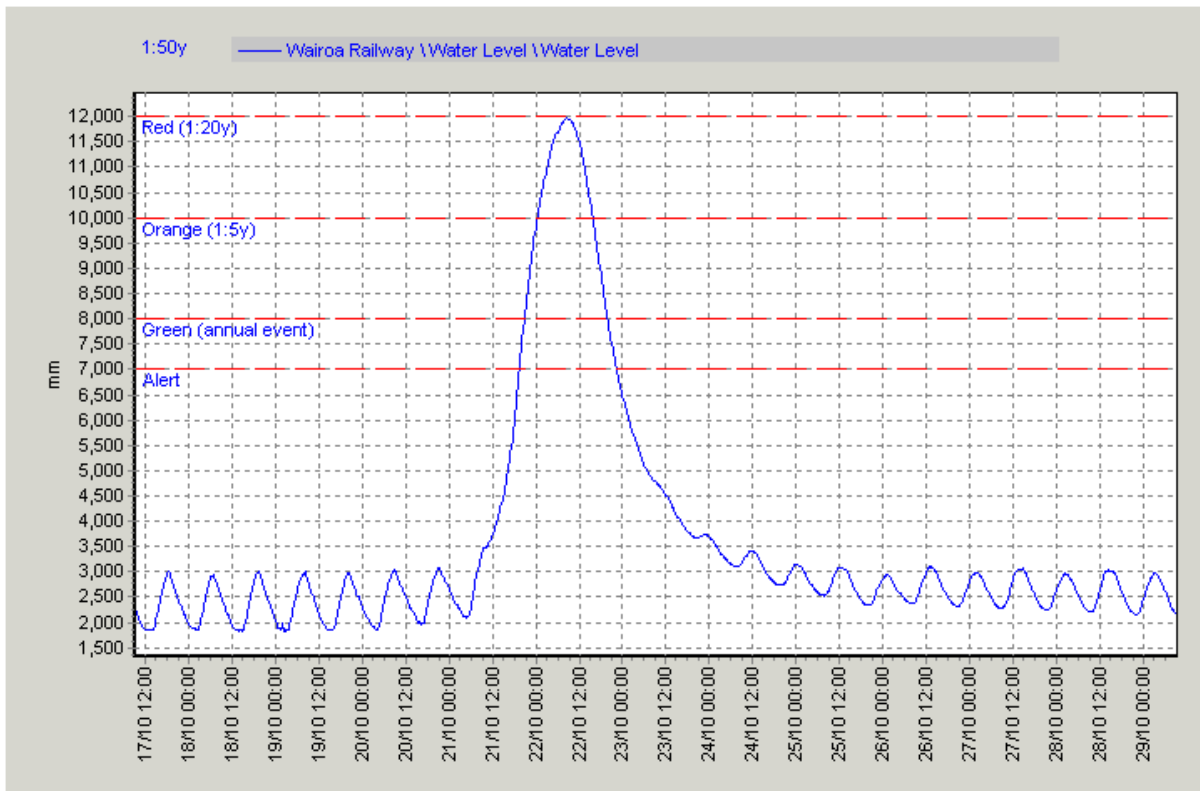


Figure 2-3: Wairoa Railway, Wairoa River Measured Water Level

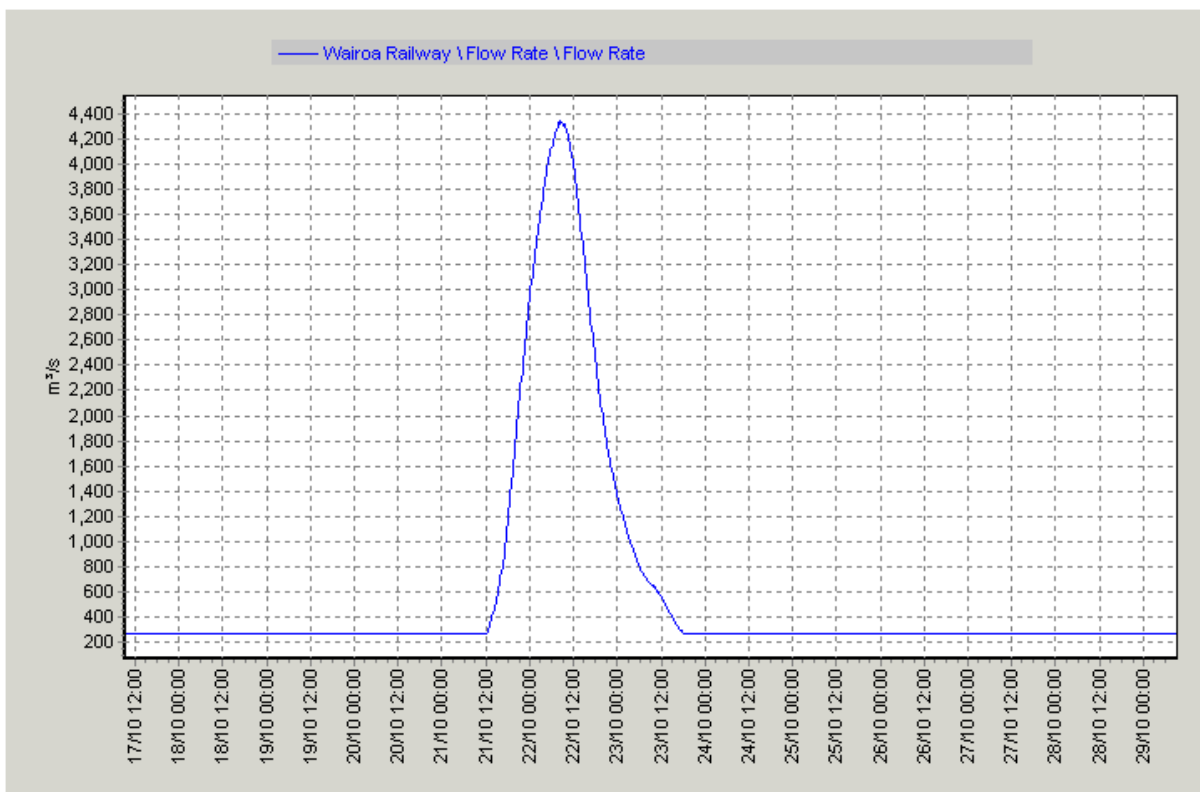


Figure 2-4: Wairoa Railway, Wairoa River Measured Flow Rate

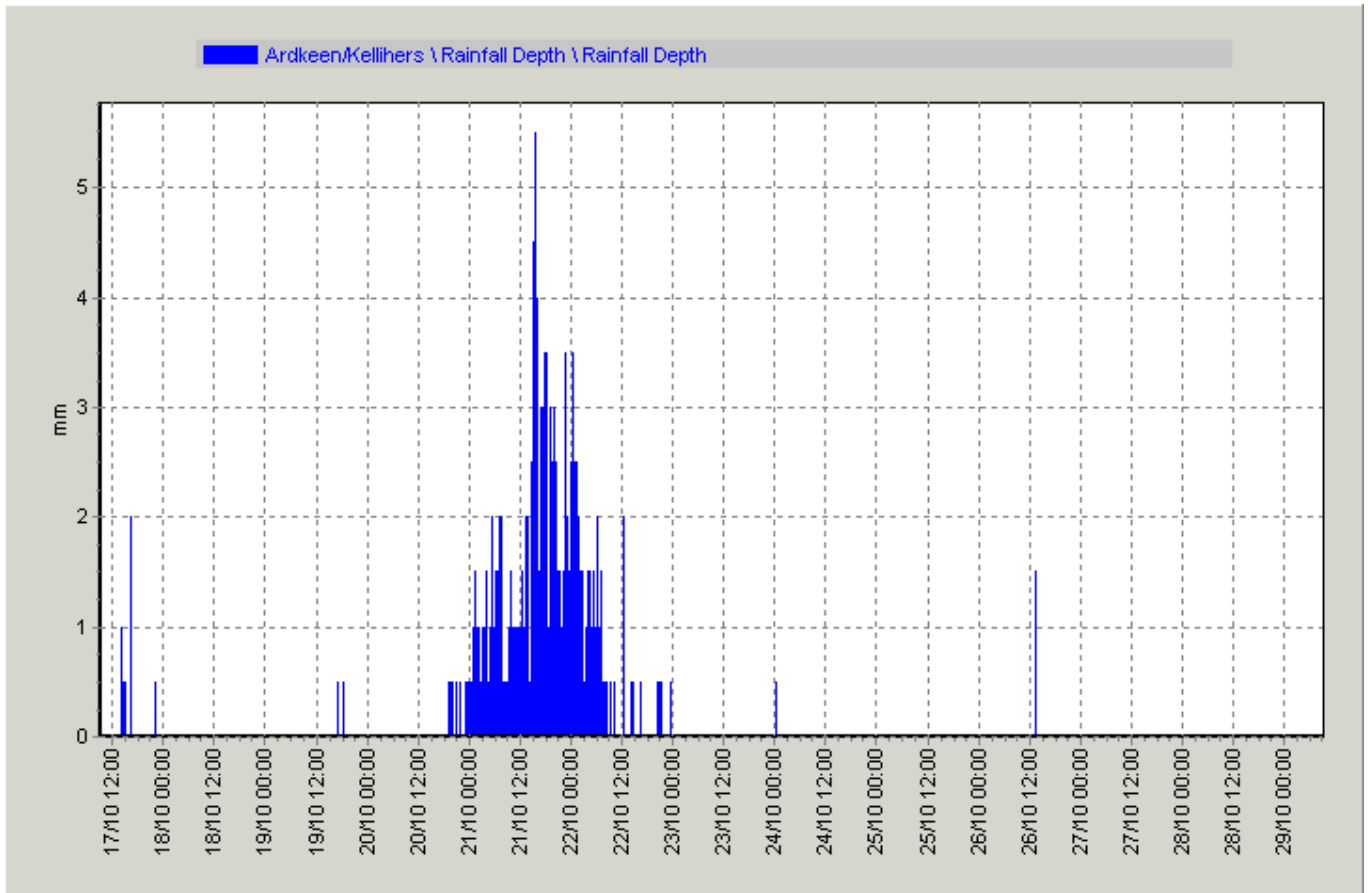


Figure 2-5: Ardkeen Catchment Rainfall Depth

3 Description of Flooding

During the weekend, SH38 between Wairoa and Lake Waikaremoana and SH2 south of Wairoa were closed due to flooding, slips and fallen trees. SH5 (Napier-Taupo Road) suffered from slips and fallen trees.

Flooding and slips in Hawke's Bay closed all three highways into Gisborne and left many Labour weekend travellers stranded. Civil Defence units and police evacuated several households in rural valleys north and south of Gisborne as a precaution. Gisborne was cut off to traffic from the north, between Gisborne and Matawai, and the south between Napier and Gisborne. The only other main highway leading to Gisborne - SH35 around the East Cape - was closed between Tokomaru Bay and Gisborne.

Farmers estimate that 3000 hectares of horticultural farmland had been damaged - 2000 hectares on the Poverty Bay Flats and 1000 at Tolaga Bay, with many kilometres of fences in need of repair, silt to be removed and crops re-planted.

In the southern Hawke's Bay, significant channel erosion in some sections of the Makara Stream resulted in damage to two grade control rock weirs and a large access culvert upstream of the Kokatewai Road bridge.

4 Appendix 1: Flood Summary from Environmental Monitoring

Flood Summary for Event of 20 – 21 October 2005:

Central and southern Hawke's Bay main river catchments (Esk, Tutaekuri, Ngaruroro and Tukituki) experienced up to about an annual flood event at some flow monitoring stations.

For northern catchments, especially the Wairoa River, flows approximated about a 1 in 20 year event with lesser return period flows at some upper catchment stations in the upper Wairoa River (Doneraille Park – 1:10yr return period) and upper Waiau River (Otoi – <1:5yr rp).

Provisional (unconfirmed) recorded flood levels and discharges are:

Hangaroa River at Doneraille Park:

peak recorded level = 5.148m (cyclone "Bola" level in Mar.1988 = 6.876m)
water level rise = approx. 4.5m
peak recorded flow rate = 810 m³/s
approximately 1 in 10 year return period flow

Ruakituri River at Sports Ground:

peak recorded level = 10.335m (cyclone "Bola" level in Mar.1988 = 11.135m)
water level rise = approx. 7.6m
peak recorded flow rate = 735 m³/s
approximately 1 in 20 year return period flow

Wairoa River at Marumaru:

peak recorded level = 14.587m (cyclone "Bola" level in Mar.1988 = 16.600m)
water level rise = approx. 14.0m
peak recorded flow rate = approx. 2400 m³/s
slightly less than 1 in 20 year return period flow

Waiau River at Otoi:

peak recorded level = 3.879m (cyclone "Bola" level in Mar.1988 = 4.914m)
water level rise = approx. 3.0m
peak recorded flow rate = 570 m³/s
less than 1 in 5 year return period flow

Waiau River at Ardkeen:

peak recorded level = 12.757m (cyclone "Bola" level in Mar.1988 = 14.700m)
water level rise = approx. 10.5m
peak recorded flow rate = 1330 m³/s
approximately 1 in 20 year return period flow

Wairoa River at Railway Bridge:

peak recorded level = 11.965m (cyclone "Bola" level in March 1988 = 16.44m {based on surveyed flood level of 21.38m RL & XS20 channel invert of 4.94m RL})

Comments are that this event was 0.5 to 1m lower than Bola levels)

water level rise = approx. 9.5m from mean tidal level

peak recorded flow rate = approx. 4300 m³/s

approximately 1 in 20 year return period flow

This site had no telemetry during the Bola event

Rainfall Depths Measured for Event of 20 – 21 October 2005:



Rainfall period: 20/10/05 1200hrs to 22/10/05 1200hrs NZST