

# Historic Flood Events in Canterbury

Major flooding disasters have affected Canterbury at regular times throughout its brief history. Virtually all of Canterbury's towns and settlements located on the floodplain have been affected by a serious flood at least once.

## 28 January 1975 - Kowhai Stream, Blandswood Settlement – Flash flood



Aerial Photograph of Blandswood Settlement – Kowhai Stream runs from left to right.

On the 28 January 1975, an extreme, localised dump of rain fell over the Kowhai Stream catchment, ultimately causing a surge of debris-laden floodwater to overwhelm the stream banks and severely inundate Blandswood settlement resulting in the tragic loss of four children staying in one of the nearby holiday homes.

Blandswood is a settlement of approximately 60 - 70 allotments, with 10 of those located on the floodplain of the adjacent Kowhai Stream. Kowhai Stream is a steep, highly mobile, gravel stream that runs dry for much of the time but can rapidly flood in response to heavy rain and blockages caused by erosion of vegetation and debris from the streams steep mountainous sides.

Estimates are that 150mm of rain may have fallen between 9 am on the 28th and 9am on the 29th January 1975 with the majority of

that rain falling at very high intensity around 5 - 6 pm on the evening of the 28th. This thunderstorm had occurred after a period of wet weather, with records indicating as much as 300mm of rain may have fallen over the 20 days preceding the 28th. The antecedent rain acted to saturate the Kowhai Stream catchment therefore increasing the speed and amount of runoff that was generated during the thunderstorm of that day.

By 6pm on the 28th January, Kowhai Stream was in flood and had become strongly discoloured. The flood flow scoured stream banks causing debris/vegetation dams to form temporarily, before bursting and sending two large surges toward the settlement. The first, and smaller of the two surges, swept a footbridge from its foundations and pinned it against a large tree further downstream. The second and larger surge sent metres of water out of the stream banks and across Lookout

Road (located between the Blandswood dwellings and the stream).

These surges carried debris, silt, vegetation, heavy logs and even deposited a boulder 550mm - 650mm in diameter outside of the streambed. The second surge completely overwhelmed stream banks, surged into the settlement, demolished one house, severely damaged another, and flooded all the other dwellings located "on the flats" to depths of up to 1.5m.

The flooding happened so quickly that by 8pm, just 2 hours after it had first started flooding, the stream had receded to a point where it was back within its banks.

Since 1975, further flood defence structures have been constructed at Blandswood.

However, the constant gravel movement in Kowhai Stream, steep stream gradient and inevitable risk of future thunderstorms mean that the risk of similar flash flooding remains. Early evacuation and a strong awareness of the risk are the keys to avoiding future disasters.

Environment Canterbury now closely monitors rainfall in the Kowhai Stream catchment and uses a warning sign system based on antecedent rain levels and other education measures to keep the residents informed of the flood risk. When the warning sign is on "high" it means that antecedent rain conditions are likely to have saturated the Kowhai Stream Catchment leaving it vulnerable to extreme runoff and flash flooding should a heavy thunderstorm occur. The residents of this area know to evacuate or move to higher ground immediately if heavy or prolonged rainfall occurs.

**Note:** Many of the above comments are taken from "An Approach To Natural Hazard Assessments and Hazard Reduction -Volume One". A thesis by R J Hall 1993.

## 13 March 1986: Flood in South Canterbury



13 March 1986 flood - flooding of property and houses in South Canterbury.

The March 1986 flood flows were the largest recorded in the south Canterbury foothill rivers over the 20th century.

They caused damage of around \$120 million (2010 dollars) to property, roads, river control works, and loss of crops and livestock. Hundreds of homes had water through them but remarkably just one life was lost. Had the flooding peaked in the night, it is widely believed that many more lives may have been lost as the rescue and evacuation of people

would have been much more difficult.

Flooding of property and houses occurred in many locations around South Canterbury but most notably in Pleasant Point Township and the hut settlements adjacent to the Ophi River, Levels Plains and Seadown, parts of Geraldine and Fairlie townships, the Washdyke industrial area, the Pareora Valley and Pareora Huts, Waihao Valley, Willowbridge and Morven areas and Hakataramea Township.

### Weather conditions and river flows

In the month leading up to the flooding, 100–250 mm of rain fell in the region, which saturated catchments and raised average river flows.

On Monday 10th March 1986, a ridge of high pressure extended onto the North Island from the east and a weak, cold front over Fiordland was slow moving. By Wednesday 12 March a shallow depression over the central Tasman Sea had intensified and had almost become stationary. This was accompanied by anticyclones centred on Tasmania and to the southeast of the Chatham Islands.

By the end of the 12th, a front had developed within the extensive low pressure system lying over the North Tasman Sea, and a small low pressure centre had formed in Pegasus Bay, north of Christchurch. The effect of this low pressure system was to accelerate the movement of warm moist air from the north into the South Canterbury area.

Lifting of the moist air by the frontal activity, together with the orographic (mountain) influence of the South Canterbury foothills, resulted in prolonged, high intensity rainfall that lasted almost 24 hours and was concentrated against the physical barriers presented by the Hunter Hills, Two Thumb Range and Four Peaks Range.

## 19–21 February 1945: Canterbury flood

This caused the most widespread flooding in the Canterbury area in the past century.

In most rivers the flood flows during the event were lower than in the March 1986 flood, but the flood occurred at a time when the standard of flood protection works and stopbanks was much lower than in 1986. This resulted in more rivers breaking out in 1945 than in 1986.

In the weeks leading up to the 1945 flood, unsettled and wetter than average conditions prevailed in Canterbury, culminating in heavy rainfall on the 20th and 21st February. The majority of the heavy rain fell in a 36-hour period, with the worst-hit areas receiving up to 300 mm of rain.

The extreme amounts of rainfall resulted in extensive flooding and stream bank erosion throughout the Canterbury region, as well as in north and east Otago and eastern Southland.

In Geraldine County alone, many towns were isolated and communities disrupted.



1945 Flood - two feet of water flowing down Temuka's main street

Up to 600 mm of water flowed through Geraldine township and 30 homes were evacuated. Twelve bridges in the County were completely destroyed, 11 were badly damaged and impassable and a further 25 had washouts to the bridge approaches. In Temuka, two feet of water flowed down the main street and more than 100 people

were left homeless by the flooding. The 1945 flood also caused extensive flooding of the Ashburton District where an estimated 34,000 acres of land was flooded between the Hinds River and Tinwald.

Source: *Meteorological Hazard Assessment Report – Timaru District Engineering Lifelines Project*, (NIWA 2001, ECan Publication Uo1/36).