



Report **05.35**
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Committee **Environment Committee**
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January 2005 flood hydrology and meteorology

1. Purpose

To inform the Committee of the completion of a technical report on the hydrology and meteorology of the January storm event, and to summarise its key findings.

2. Background

Hydrological analysis of floods can help us to issue appropriate flood warnings in the future, and to design effective flood protection measures. The storm on 5-6 January 2005 produced very high river flows in parts of the western Wellington region. A technical report analysing the rainfall and river flows that resulted from the storm, including the estimated return periods, has been produced.

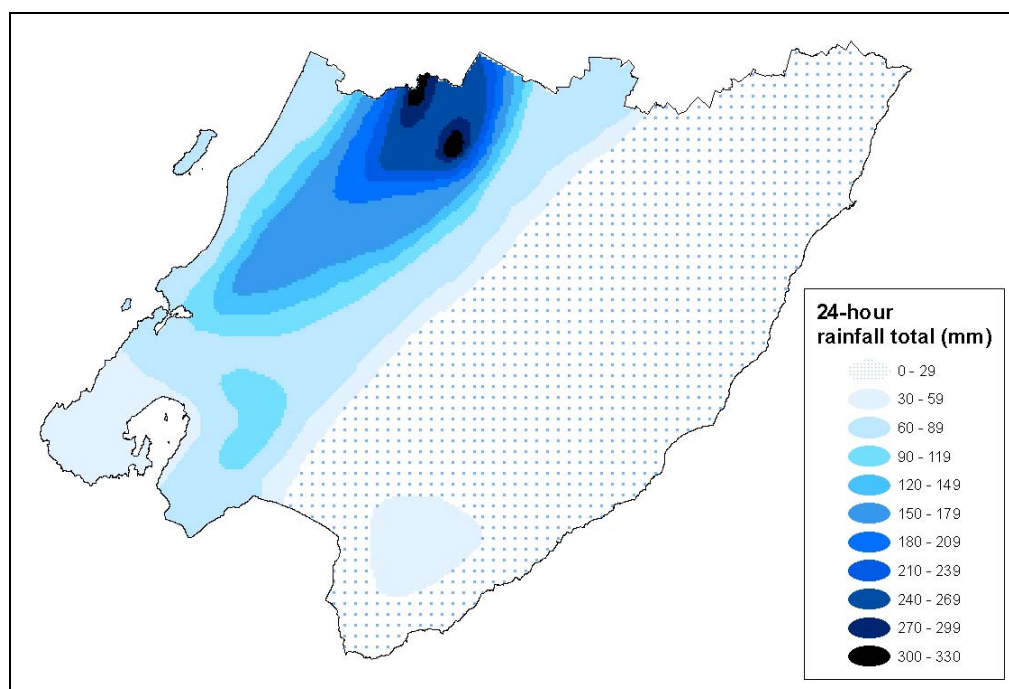
3. Strategic context

This work supports the Take 10 Safety & Hazards success measure of *no major damage or loss of life from flooding*.

4. Summary of findings

The January 2005 storm was caused by a moist northwesterly airstream and a quasi-stationary front embedded within this airstream moving over the lower North Island. Heavy rain fell in parts in the Akatarawa and Whakatikei hills, the Kapiti coast, Lower Hutt, Porirua and the Orongorongo range in the few hours leading up to midnight on 5 January as a weak southwest change affected the front. As the quasi-stationary front moved north again, sustained heavy rainfall fell in the northern Tararua range from midnight until about 4 am on 6 January. As shown by the map below, the most rainfall occurred in the Tararua range and in the hills between the Hutt valley and the Kapiti coast. The Wairarapa received very little rainfall in comparison.

Figure 1: Rainfall totals for the 24-hours from 8am on 5 January 2005



Although the storm lasted for about 12 hours, it was characterised by significant rainfall over a 4 to 6 hour period, making it a relatively short storm compared to other recent flood-producing storms. The return period of the rainfall for this duration was up to 35 years in the Tararua range, 40 years in the upper Akatarawa and Waikanae catchments, 70 years in the upper Whakatikei catchment, and 25 years in the western foothills of the Tararua range.

The resulting floods were most significant in the Kapiti and Hutt catchments. The highest flows on record were measured in the Otaki, Waikanae, Akatarawa and Whakatikei Rivers, and in the Hutt River at Birchville. The return period of the peak river flows resulting from this storm are estimated to be:

- 80 years for the Akatarawa and Waikanae Rivers;
- 60 years for the Whakatikei River;
- 40 years for the Otaki River;
- 25 years for the Hutt River;
- 12 years for the Mangaroa River;
- 10 years for the Mangaone Stream; and
- 5 years for the Waiwhetu Stream.

All other monitored water ways in the Wellington region had less than a 5-year return period flood.

5. Communications

The report has been distributed to relevant departments within Greater Wellington, and to the affected territorial authorities. Copies of the report are available to councillors on request.

6. Recommendation

It is recommended that the Committee:

1. *receive this report; and*
2. *note its contents.*

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