

# Risk Frontiers

quarterly newsletter

insurable. Whilst stock and business interruption cover was offered, only a small part of the damage to rural properties, crops and land will be picked up by insurance. One farmer, I spoke to, estimated his losses to be NZ \$60,000-70,000 but was only able to claim \$5,000 for boundary fences from the Earthquake Commission (EQC). Apparently this sort of ratio is quite common amongst hill country farmers, where virtually every hillside has seen some sort of landslide. Cover for internal fencing, culverts, roads, bridges, etc, was difficult or impossible to obtain, unless it was part of the main driveway. Also farmers will have to do immense amounts of work to move soil from landslides so as to make the area safe for their stock. This situation is undesirable for both the insurance agencies, since they are losing out on potential business, and the affected people, who are forced to pay for damages out of their own pocket.



In the country North-East of Palmerston North, every hillside looks like this.

## Rising River Levels

When the flood waters came down out of the hills, they carried with them huge amounts of silt. Aside from covering the ground up to 60cm deep in places, large amounts have been deposited on the beds of all major rivers. Whilst it is hard to quantify this exactly, since, at the time of my visit, the rivers were still running high, there is a general opinion that the level of the riverbeds are now 1-2 metres above what they were originally. This causes problems since the river bed is now higher than the land around it in many cases and also because the height of levees has not been increased to compensate. Unless serious dredging of the rivers is done, or the levees built up, it is likely that the 1 in 100 year flood just seen, is now going to have a return period of 20 or 30 years. Whilst the cost to fix this problem is likely to be large and it is generally not covered by insurance, it may well be in the industry's best interests to look at working with councils to make sure something is done, and thus reduce the chances of a repeat (or worse event) back to acceptable levels.



Courtesy of Mat Weir <http://www.ourregion.co.nz>  
The landslides were often on a quite spectacular scale.

## Effective use of Stop Banks.

The other issue concerns effective land planning. At the town of Scott's Ferry, problems with the levee system actually contributed to the scale of the disaster. According to residents the water broke through the levee some distance upstream from the village and flowed North West across the fields until it hit the wrong side of a different levee and was then unable to get back into a proper course. It was thus channeled into the village. The water still has nowhere to go and a field behind Scott's Ferry is now a small lake. It will take weeks or months to drain away.

Whilst the levee system is very effective when it works and the situation across most of the area would have been far worse had they not been there, it is clear that they are not perfect. Some mechanism needs to be put in place for controlling or getting rid of the water once it has actually breached the levee, rather than letting it flow uncontrolled.



The new "lake" behind Scott's Ferry

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## This Issue

Relative Risk Ratings for Local Government Areas

Some Issues Arising from the New Zealand Floods

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## Relative Risk Ratings for Local Government Areas

In 2000, Risk Frontiers produced PerilAUS II relative risk ratings (RRR) for 2,573 postcodes and 49 CRESTA zones nationwide. Comprehensive data on historical hazards and damage between 1900 and 1999, together with hazard potential maps, were used to derive risk ratings that are specifically concerned with damage to buildings. Ratings are available for nine perils – bushfires, hailstorms, floods, earthquakes, tropical cyclones, tornadoes, gusts, landslides and tsunamis (see NHQ Volume 6, Issues 2-4, 2000).

Since early 1999, more than a dozen major events, including the April 1999 Sydney hailstorm and the January 2003 Canberra bushfires, caused significant damage. To incorporate these events, we have updated PerilAUS risk ratings at the postcode level. Events between 1999 and middle 2003 with an insurance loss in excess of \$10 M were included.

As a result, the distribution of losses between different perils nationwide changes, albeit slightly. According to the initial study, tropical cyclones caused the largest proportion of total building losses, followed by floods, bushfires, etc. (Fig. 1). The overall trend remains similar with tropical cyclones, floods and bushfires still dominating total losses. However, because of large losses associated with the two catastrophic events mentioned above, percentages of hailstorms and bushfires increase (especially hailstorms), and accordingly, the relative percentages of other perils are slightly smaller.

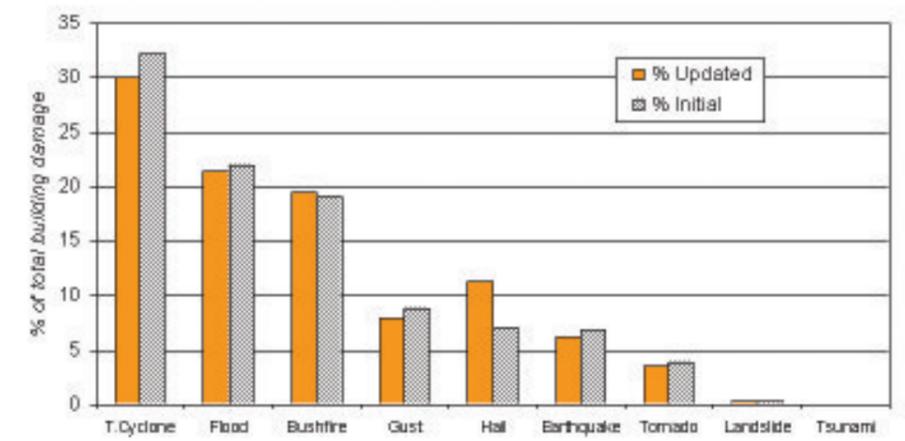


Fig. 1: % of the total building damage attributable to each peril

Updated risk ratings at the postcode level were used to derive ratings at the Local Government Area (LGA) level. Similar to previous relative risk ratings, the new ratings can be interpreted in two ways (Table 1):

- (1) For each LGA, we can identify which peril is more important in terms of damage contribution. Taking Alpine as an example, bushfires are the most significant threat (the rating is 24.1).
- (2) For each peril, we can know which LGA is most at risk. Taking flood as an example, Alpine is most prone to floods. The maximum peril-specific ratings are also given for comparison. Fig. 2 shows the spatial distribution of bushfire risk ratings at LGA level in Victoria. Note that different thematic mapping methods may display quite different spatial patterns, while the underlying ratings are unchanged.

# Some Issues Arising from the New Zealand Floods

RRR is concerned only with damage to buildings and so is not a true indicator of the complete costs of natural perils. Economic losses such as business interruption are ignored. Nonetheless, RRR serves as the only tangible and direct indicator available for quantifying historical hazard risks and extrapolating into the future. The risk ratings at LGA level can provide a useful decision support tool for risk managers who are concerned with broad geographical scales.

In line with the work reported here, Risk Frontiers has so far produced PerilAUS scalable risk ratings across a range of spatial areal units – from a fine postcode level to CRESTA zones, LGA, statistical subdivisions, statistical divisions, and State and Territory levels.

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Table 1: RRR of some LGAs in Victoria

LGA_Code	LGA_Name	Bushfire	Flood	...	Sum
	( Max ratings)	30.9	25.7		
20110	Alpine	24.1	11.1	...	...
20660	Banyule	9.8	1.4	...	...
20830	Baw Baw	25.6	2.3	...	...
...					

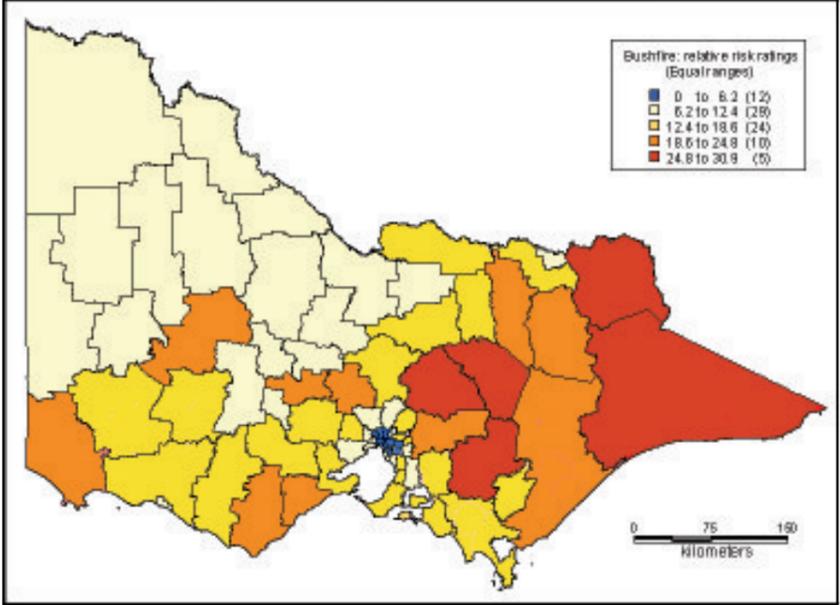


Fig. 2: Spatial distribution of bushfire risk ratings at LGA level in Victoria



Courtesy of: <http://www.ourregion.co.nz>

During February, New Zealand was inundated with the worst floods that it had experienced in over 100 years. They were largely restricted to the North Island in the areas around Palmerston North and Wellington. Picton on the Northern tip of the South Island also suffered severe damage.

This article does not attempt a comprehensive review of the floods, but rather reports on some issues that arose from a short field trip to the area in the week following the disaster. The issues relate to rebuilding operations and future planning so as to ensure that the chances of a repeat event are kept to a minimum.



## Underinsurance

Underinsurance is not a new problem and the New Zealand floods are a classic example of the difficulties that it causes. Damage to contents was often total and in these cases the insurer usually just ends up paying out the maximum specified under the policy. However there were many cases where this amount is likely to come to NZ\$10,000-20,000 less than the actual value of the contents.

On the building side, it is the insurers who are most affected. Even when the flooding has been severe, the destruction is usually not total and so if it is only insured for ¾ of its actual value, then the insurer will end up recording an almost total loss. This is despite the fact that large parts of the building may still be salvageable, such as the foundation, framework and, in some cases, the roof.

In addition, careless underwriting practices can create problems. Some building policies had no maximum cap to the damage payable and only specified full replacement value up to a certain floor area. This is obviously a very risky policy for the insurer. In some cases, building codes may even have changed or new planning regulations may not allow dwellings to be rebuilt in the same location. In this situation, the insurer will end up paying far more than the value of the original building in order to fulfill their obligations under the policy.

## Non insurance

Non insurance was also a significant issue for many people. It is estimated that about 25% of all people affected by the floods were not covered and this is similar to the situation that exists in Australia. Such people are obviously devastated. What is of much more concern to many people, however, is that much of the damage was not



The contents of a Scott's Ferry House

# Risk Frontiers Seminar Series 2004

Please note this date and change of venue in your diary

To be held on  
**Thursday 26th August, 2004**  
 at  
**Museum of Sydney**  
 (cnr Phillip & Bridge Streets, Sydney)

