



*caring about you & your environment*

**Report 00.788**

File: N/70/4/1

31 October 2000

Report to the Landcare Committee  
from Geoff Dick, Manager, Flood Protection (Operations)

**October 2000 Flood Damage – Western Rivers**

**1. Purpose**

- (1) To inform the Committee of flood damage incurred, and repairs required, following the flood event of Friday 29 September to Monday 2 October 2000.
- (2) To advise the Committee of the proposed funding of flood damage repairs and to recommend access to the Flood Contingency funds and River Rate Reserves.
- (3) To recommend a change to the Flood Protection 2000-2010 Operating Plan to enable programmed Otaki River capital works to be brought forward.

**2. Flood Event**

On Friday 29 September a westerly front moved onto the Tararua's and brought heavy rain to all catchments. This front then stalled over the lower North Island causing the heavy rain to continue all weekend. The rain finally ceased about midday Monday 2 October 2000. Some exceptional rainfall totals were recorded over the three day event. These included:

- 251mm at Kapakapanui – Otaki/Waikanae catchments
- 300mm at Phillips – Hutt catchment
- 373mm at Taungata – Otaki/Waitohu catchments
- 683mm at Oriwa – Otaki (northern) catchment
- 1037mm at Angle Knob – Wairarapa side of the Tararua range

The three day rainfall totals for Tararua sites on the western side of the range had return periods of about 20 years. The Angle Knob three day total had a return period of about 50 years.

Peak flood sizes at the various Council recorder sites are provided as follows:

| River                       | Date of Peak | Time of Peak (NZST) | Stage Height (m) | Flow (m <sup>3</sup> /s) | Return Period (years) |
|-----------------------------|--------------|---------------------|------------------|--------------------------|-----------------------|
| Otaki                       | 1/10         | 1115                | 6.975            | 1180                     | 6                     |
| Waikanae *                  | 2/10         | 1035                | 3.761            | 202                      | 5 approx.             |
| Waitohu **                  | 1/10         | 0930                | 1.799            | 86                       | 7                     |
| Hutt at Kaitoke             | 2/10         | 1000                | 4.070            | 359                      | 10                    |
| Hutt at Birchville          | 2/10         | 1130                | 5.845            | 1033                     | 6                     |
| Hutt at Taita Gorge         | 2/10         | 1245                | 29.414           | 1251                     | 9                     |
| Mangaroa                    | 2/10         | 1030                | 3.792            | 186                      | 5                     |
| Akatarawa                   | 2/10         | 1135                | 3.809            | 415                      | 10                    |
| Wainuiomata at Manuka Track | 2/10         | 1000                | 2.202            | 35                       | 3                     |
| Porirua                     | 2/10         | 0715                | 0.992            | 21                       | Annual                |

\* Rating curve undeveloped for high flows at new site. Flow calculated by comparison with Mike11 model

\*\* Only six years of data collected at site

The Otaki River flood had three flow peaks – Friday evening, late morning Sunday 1 October, with the third and final peak occurring at about midday on the Monday. These same three peaks show up to a lesser extent in the Waikanae and Hutt River, and Waitohu Stream records.

Overall the flood events were significantly smaller than occurred in October 1998. However, the extended duration of the event, in the Otaki River and Waitohu Stream in particular, exacerbated flood damage.

### 3. Flood Damage Assessment

Detailed flood damage assessments have now been completed for the Hutt, Otaki and Waikanae rivers. A preliminary assessment only has been completed for the Waitohu Stream.

#### 3.1 General Comment

Flood systems in the three major rivers generally performed well. The event did not test key stopbanks but certainly did test edge protection or alignment control works. Some flooding from the three major rivers occurred, but this was confined to the river corridors or unprotected areas. Notable flooding included:

- On the Hutt River the Hutt City riverbank car park, Block Road and Harcourt Werry Drive were flooded twice during the event. The Rentokil property flooded on the Monday.
- Flooding occurred at Otaihanga, Waikanae on the Monday, although no water is believed to have entered houses during this event. The two houses Council assisted to raise in Toroa Road were well clear of floodwater. A new driveway constructed by the Samuels' immediate upstream neighbour protected their house in Makora Road.

- Flooding occurred in Rangiuru Road and Atkinson Avenue, Otaki, on Monday 2 October. A combination of the flood peak in the Otaki River and high tide meant that the Rangiuru floodgates were shut at the tail end of the rain storm on the Monday. At this stage three days of stormwater combined with some flood overflow from the Waitohu Stream raised water levels in the Rangiuru Stream to the extent that it spilt over the surrounding floodplain. Our understanding is that no houses were flooded but a number of garages in both Rangiuru Road and Atkinson Avenue flooded.
- The Waitohu Stream caused flooding in Convent Road, Otaki, across State Highway 1 and across a large area of farmland downstream of the State Highway. In Convent Road the flooding surrounded at least four houses.

In general new edge protection works constructed as part of the October 1998 flood damage repair project performed well. Certainly the repairs and capital improvement works were given a good test. Some follow up work is required at State Highway 1 to Maple Lane on the Waikanae River.

A detailed schedule of flood damage is supplied in **Attachment 1**. Key damage sites are summarised as follows:

### 3.2 Hutt River

- Two existing erosion sites, at Maoribank and adjacent to Mary Huse Grove, were substantially exacerbated. Both sites now require repairs for which estimates have been prepared.

### 3.3 Otaki River

- Generally only minor damage occurred upstream of the bridges. The recently completed Upper Rahui works survived extremely well, although some willow plantings have been lost. The haul road has had to be retreated at Hughes (still in WRC owned land). Some erosion occurred at Mansell's and to the cliffs at Thurley's. The new works at Stresscrete and Traceys performed well, with only expected maintenance required.
- The major area of concern on the Otaki River is downstream of the State Highway Bridge. There are three active erosion areas on the left bank, and one on the right. The total length of unprotected bank edge downstream of the bridges is now about 1,300m or 15 percent of the total reach. In addition, 75 metres of the left bank stopbank adjacent to Katihiku X Trust land (near the river mouth) has been lost and requires reconstruction.

### 3.4 Waikanae River

- Most of the flood damage occurred in the new State Highway 1 to Maple Lane reach of the river. Although the new works generally performed well (properties at Sunny Glen and Maple Lane were not under any significant threat), observation during the flood showed some repairs and adjustments to the works are required.

The major items being the need to raise the left bank rock lining at Kebbells and to widen the adjacent bed control weir to stop the river outflanking the grade control in future.

- Some minor damage occurred to the parking area at Pukekawa Reserve.

### 3.5 Waitohu Stream

Similar damage occurred to that in October 1998. Erosion occurred to a number of farms upstream of the Waitohu Valley Road Bridge. The gravel storage area at Whakapua Farm required reconstruction to return the stream to its pre-flood course. A comprehensive stream clearing run is required from Whakapua Farm downstream to the Otaki beach area to remove debris obstructions and dislodged willow, etc. A detailed assessment of the Waitohu Stream has yet to be completed.

### 3.6 Minor Watercourses

Generally, only minor damage occurred in the smaller watercourses in the western part of the region. A bed control weir in the Mangaone Stream was outflanked and destroyed. A significant amount of debris and wind-fall trees have been removed from a number of streams.

### 3.7 Emergency Repair Works

The only emergency repair works required were on the Waitohu stream at Whakapua Farm. Here the stream was returned to its original course immediately following the event. Repair work has, however, commenced under existing budget approvals. Work underway includes channel shaping in all three major rivers, repairs to access tracks and removal of the remaining fallen trees and debris in minor watercourses.

## 4. Flood Damage Estimates

Flood damage repair cost estimates for the Hutt, Otaki and Waikanae Rivers, and the Waitohu Stream are summarised as follows:

|                |                  |
|----------------|------------------|
| Hutt River     | \$245,380        |
| Otaki River    | \$186,940        |
| Waikanae River | \$ 97,250        |
| Waitohu Stream | \$ 25,000        |
|                | <hr/>            |
| <b>Total</b>   | <b>\$554,570</b> |

In addition, \$410,000 of Otaki River capital works programmed in the Flood Protection Operating Plan for 2001/02, 2002/03 and 2003/04 is recommended to be brought forward to enable a total of **\$480,000** of new edge protection capital works to be constructed in the Otaki River in the current, 2000/01 financial year.

## 5. Flood Damage Management Strategy

The proposed strategy for repairing the October 2000 flood damage is simpler than in October 2000 because the overall damage is substantially smaller. The strategy is summarised as follows:

### 5.1 Flood Damage Repairs

The \$554,570 of proposed flood damage repairs has been cut into the existing maintenance programmes to form the proposed new work programme for the remainder of the current 2000/01 financial year. Key concepts in preparing the flood damage schedule include:

- repairing all existing assets to the appropriate standard as required by our asset management plan, e.g. rock lining and groyne repairs.
- cleaning up and repairing river berms, including access tracks, to maintain environmental standards.
- river realignment and cross-blading where appropriate.
- adjusting, extending or constructing replacement edge protection works where necessary, e.g. the adjustments required to the new State Highway 1 to Maple Lane works, Waikanae.

### 5.2 Capital Improvements

On the lower Otaki River there are four erosion sites that require work (see **Attachment 2**). Two of the sites, Sites 2 and 3, have been earmarked for permanent protection works in the Otaki River Floodplain Management Plan (OFMP), and funding provision has been included in the Flood Protection's new 10 year Operating Plan for this work. For these two sites the options are either to repair with holding measures until programmed capital funding is available or bring funding forward and complete permanent protection works now. The latter option is proposed.

At the remaining two sites, Sites 1 and 4, permanent works are not envisaged in the OFMP as failure of the stopbanks at these two locations has low consequences. At Site 1 cross-blading only is proposed immediately. This will be followed up with work to re-establish the willow lining as part of the ongoing maintenance programme. At Site 4 it is proposed to divert the river mouth to the north of the site. The stopbank and a section of the berm will be reconstructed as part of the mouth cut operation. The site will then be left to naturally re-vegetate.

## 6. Financial Considerations

### 6.1 Flood Damage Repairs

It is proposed to complete all the flood damage repair work scheduled in Attachment 1 in the current 2000/01 financial year. The total cost of **\$554,570** is proposed to be funded as follows:

|   |                  |
|---|------------------|
| Re-allocation of budgeted maintenance expenditure | \$206,650        |
| Flood Contingency Fund                            | \$173,960        |
| River Rate Reserves                               | \$173,960        |
|   | <hr/>            |
| <b>Total Funding Required</b>                     | <b>\$554,570</b> |

## 6.2 Otaki River Capital Improvement Works

The Flood Protection, 2000-2010 Operating Plan includes the following provision for capital edge improvements in the *Mouth to State Highway 1* reach of the Otaki River.

|            |         |           |
|------------|---------|-----------|
| Year 1     | 2000/01 | \$ 70,000 |
| Year 2     | 2001/02 | \$160,000 |
| Year 3     | 2002/03 | \$116,000 |
| Year 4     | 2003/04 | \$230,000 |
| Years 5-10 | 2004/10 | \$270,000 |

It is now proposed to complete a \$480,000 job (Sites 2 and 3 in **Attachment 2**) in April/May 2001. This is proposed to be funded from the existing budgets in Years 1- 4 leaving \$96,000 in Year 4 – 2003/04, and budget provision from Year 5 onwards untouched.

## 7. Reserve and Rate Implications

### 7.1 Impact on Reserves

The estimated reserve balances at the completion of the proposed flood repairs are shown in **Attachment 3**. The estimates take into account the approvals made by the Policy & Finance Committee on 26 October to fund flood repairs in the Wairarapa.

The Flood Contingency Fund is estimated to have a small deficit, up to \$43,300 overdrawn, at the completion of all flood repairs in the region. This is not an unexpected position given that the recent flood event closely followed the major October 1998 floods. Similarly River Rate Reserves for the Hutt Valley and Kapiti also either have a small deficit (Lower Hutt overdrawn \$16,000), or a small credit balance.

### 7.2 Impact on Rates

The proposed flood damage repairs will have no impact on rates provided future annual reserve contributions do not need to be increased as a result of the review requested by Councillors at the 26 October Policy & Finance Committee meeting. However, given the fact that a number of these reserves have little remaining balance (in fact some are overdrawn), it would appear that reserve contributions may need to be increased.

Bringing forward \$410,000 of capital edge improvement work on the Otaki River, from Years 2–4 budgets, into the current financial year will mean additional debt servicing costs until 2003/04 (debt servicing costs thereafter are already budgeted). The additional debt servicing costs are estimated as follows:

| <b>Year</b>  | <b>2000/01</b> | <b>2001/02</b> | <b>2002/03</b> | <b>2003/04</b> |
|--|----------------|----------------|----------------|----------------|
| <b>Additional debt servicing costs over current 2000-2010 plan</b> | \$4,765        | \$34,943       | \$20,331       | \$7,094        |

The minor additional debt servicing costs in the current 2000/01 year can be accommodated within current Flood Protection funding. However, it is unlikely that the additional debt servicing costs from 2001/02 to 2003/04 can be accommodated within the current funding envelope. This will need to be addressed at the upcoming update of business plans.

## **8. Timing of Proposed Works**

### **8.1 Flood Damage Repairs**

It is expected that all the flood damage repairs can be completed within the current, 2000/01 financial year. The work is proposed to be managed directly by Flood Protection staff as an addition to the normal maintenance programme.

The biggest risk to the completion of the work remains the supply of rock rip-rap. The Council's major supplier in recent years, the Wharfe quarry, has been shut down by an Environment Court order, and there is a strong possibility that the quarry will not be granted a new resource consent. Replacement sources are currently being actively pursued. Increased costs, and possibly reduced supply capacity are likely consequences of losing the Wharfe quarry source.

### **8.2 Lower Otaki River Capital Improvements**

A major reason for construction of the proposed capital improvements in April/May next year is to complete the improvements before the "flood season" next spring. Completion of the proposed works will substantially increase the security of the adjacent stopbanks and reduce future flood damage costs. It is proposed to engage consultants to assist in the design, tendering and supervision of the contract. However, similar to the flood damage repairs rock supply could be a factor in the timing of the works.

### **8.3 Reporting**

A special project report is not proposed for the October 2000 flood repairs. Progress will be reported through the Divisional Manager's Report to the Landcare Committee, and through the Quarterly Financial Review process.

## **9. Communications**

A press release will be issued following the Policy and Finance Committee meeting on 7 December 2000.

## 10. Recommendations

*That the Landcare Committee:*

- (1) *Receive the report and note the contents.*
- (2) *Recommend to the Policy & Finance Committee that it:*
  - (a) *Approve the expenditure of up to \$554,570 in the current 2000/01 financial year to undertake flood damage repair work in the Hutt, Otaki and Waikanae Rivers and the Waitohu Stream.*
  - (b) *Approve funding of the \$554,570 flood damage repair expenditure in 2000/01 by reallocating \$206,650 from existing maintenance budgets, and by withdrawal of up to \$173,960 from the Flood Contingency Fund and up to \$173,960 from River Rate Reserves.*
  - (c) *Note that the funding of flood damage repairs will not impact on the level of Regional rates unless the current level of reserve contributions are increased.*
  - (d) *Approve expenditure of \$480,000 on new capital improvement works on the lower Otaki River in the current 2000/01 year, an increase of \$410,000 on the existing capital budget.*
  - (e) *Approve funding of the \$480,000 capital improvement works on the lower Otaki River by a combination of the current 2000/01 capital budget – \$70,000, and by bringing forward \$410,000 of capital budget from years 2001/02 to 2003/04 in the current Flood Protection Operating Plan.*
  - (f) *Note that the impact on Regional rates of accelerating capital improvement works into the 2000/01 year will be reviewed by the Committee as part of the 2001/02 business planning process.*

Report prepared by:

Approved for submission:

GEOFF DICK  
Manager, Flood Protection (Operations)

SUSAN EDWARDS  
Acting Divisional Manager, Landcare

GREG SCHOLLUM  
Chief Financial Officer



**Attachment 1** : Flood Damage Schedules and Costings

**Attachment 2** : Erosion Sites on the lower Otaki River

**Attachment 3** : Reserve Balances