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Committee Rural Services and Wairarapa
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Flood Damage, Wairarapa - February 2004

1. Purpose

To obtain approval for the use of Council's Flood Damage Contingency funds to undertake flood damage repairs within the Wairarapa's river management schemes.

2. Background

2.1 The Wairarapa Division has responsibility for maintaining 9 river management schemes in accordance with Council policy and approved asset management plans. These schemes have a total asset valuation of \$73 million and a current maintenance budget of \$1.4 million annually.

2.2 Significant flood damage has occurred in these schemes as a direct result of four specific intense rainfall events on:

- 11-12 February 2004
- 15-16 February 2004 (the largest event)
- 19-20 February 2004
- 28-29 February 2004

Fuller details on these events are presented elsewhere in the order paper.

2.3 Exceptional river levels were recorded on 15-16 February, as follows:

- Kopuaranga River at Palmers - 20-30 year return period
- Waipoua River at Mikimiki - 20 year return period
- Whangaehu River at Waihi - 27 year return period
- Ruamahanga River at Wardells - 35 year return period
- Tauweru River at Te Weraiti - 20 year return period
- Mangatarere Stream at Gorge - 15 year return period

- Ruamahanga River at Waihenga - 50+ year return period (highest on record)
- Huangarua River at Hautotara - highest on record by the order of 1 metre
- Lake Wairarapa at Burlings - highest on record since the completion of the Barrage Gates in 1973.

2.4 Most of the western rivers, Waiohine, Waingawa, Waipoua and Upper Ruamahanga Rivers had return periods of the order of 10-20 years in the first event on 11-12 February. Only the Tauherenikau River suffered significant damage in this event although floodwaters also crossed the Te Whiti floodplain on that occasion.

2.5 The catchments were in a super-saturated condition following the first event.

2.6 The combination of frequent and significant sized flood events, especially the long duration of the second event, has produced serious flood damage in the tributary rivers from the Tararua, Rimutaka and Aorangi Ranges. For example, a portion of stopbank was breached in the lower Huangarua River causing the flooding of at least two houses, erosion in the lower Tauherenikau River threatened serious course changes, significant active erosion occurred upstream of the Masterton Oxidation Ponds, at the downstream end of the Gold stopbank in the Waipoua River, and in the vicinity of the Stuart's property in the Upper Ruamahanga River. Masterton's water pipeline in the upper Waingawa River was also threatened. In the Turanganui River the main road bridge became partially blocked by debris, and the river left its channel and flowed directly across Richard Warren's property. The high Lake Wairarapa levels have seen large areas of low-lying farmland adjacent to the lake flooded for up to three weeks.

2.7 The flood damage repair requirements are estimated and itemised on a scheme by scheme basis in the attached schedules. The items have been prioritised depending on the relative risk to life and property. In addition, all non-essential programmed work has been deferred and some flood damage repair work has been absorbed into scheme maintenance programmes for this year and also next year. Note that the earlier flood in October 2003 caused some of the current year's work programmes to be changed to accommodate flood damage from that time. Also given the size of the damage and the shortage of some machinery, etc, the full work programmes and flood damage repairs are very unlikely to be completed within this financial year.

2.8 To date, there have been no advisory scheme meetings held to discuss the implications of the flood damage. The attached schedules indicate staffs' provisional recommendations to the various advisory committees. The total flood damage estimates are summarised in Table 1.

Table 1 – Wairarapa Schemes Flood Damage

Scheme	Total Damage (\$)	Claim from Contingency Fund (\$)
Upper Ruamahanga River		
Mt Bruce section	118,000	26,500
Te Ore Ore section	110,000	28,000
Gladstone section	35,000	17,500
Waipoua River	101,000	35,000
Waingawa River	72,000	13,500
Waiohine-Mangatarere	80,000	40,000
Lower Wairarapa Valley Development Scheme	612,000	284,500
Total	1,128,000	445,000

- 2.9 Included within the Lower Wairarapa Valley Development Scheme figures are additional flood damage repairs to protect some South Wairarapa District Council’s infrastructure assets. These repairs are estimated at \$45,000 with a 50% contribution from the Flood Contingency Fund of \$22,500.

Although these assets are not strictly scheme responsibilities, the Regional Council has previously contributed towards flood protection in these areas and they are within the scheme areas.

3. Observations

The Ruamahanga River system was subject to high river levels for about 20 days. Over this period there were four intense flood events. The highest river levels occurred in the first two events. This prolonged flooding has severely tested the river schemes. Gravel has been on the move throughout this time. When gravel is mobile erosion processes are very destructive. Despite this the river schemes have coped remarkably well.

One way of assessing how well each river scheme has performed is to compare the actual flood damage incurred with estimates for flood damage for the same return period events that were developed in 2001/02 as part of a Council-wide review of flood damage reserves.

Table 2 –Estimated Vs Actual February 2004 Flood Damage

River Scheme	Return Period	Flood Damage Estimate (\$)	Actual Flood Damage (\$)
Waipoua	20	90,000	101,000
Ruamahanga at: • Wardells • Mt Bruce • Te Ore Ore • Gladstone	35 <10 35 35	} 260,000	118,000 110,000 35,000 } 263,000
Waingawa	20	75,000	72,000
Waiohine	10	275,000	80,000
Lower Wairarapa Valley Development Scheme ¹	50+	700,000	683,500

The above table shows in terms of flood damage that we are generally below or close to our estimates. In the Waiohine the damage is significantly reduced below that expected following a larger works programme over the past 3 to 4 years.

A detailed assessment of the Lower Wairarapa Valley Development Scheme's performance can also be made. There are approximately 190km of stopbanks in this scheme. The following table lists the stopbanks, their flood capacities, the actual flow and a comment on their performance.

River	Flood Capacity (years)	Actual Return Periods	Comments
Ruamahanga (Onoke to Tuhitarata)	100	50+	No particular problems.
Ruamahanga (Tuhitarata to Waihenga)	20	50+	Frequent overtopping of stopbanks and bank slumping. Damage to overflow sills.
Ruamahanga (Waihenga to Waiohine confluence)	5	>20	Bank erosion, course change.
Tauherenikau (below SH53)	5	2?	Overtopping stopbanks, course change threat, channel alignment.
Turanganui (below Lake Ferry Road bridge)	5	20?	Damaged stopbanks, debris problems.
Abbotts Creek	10	10-20?	Bank erosion, course change threat.
Huangarua	20	>30	Repairing stopbanks.
Western Tributaries	5	10-20?	Bank erosion, course change, removal of debris.
Eastern Tributaries	5	20?	Bank erosion, removal debris.
Oporua Floodway	100	50+	No reported damage.
Hikinui & Awaroa Sills	20	50+	Damage to sills.

¹ Note the highest levels were observed on the Huangarua River and Lake Wairarapa

The table shows that in most parts of the Lower Wairarapa Valley Development Scheme this was a significant over-design event. As seen in the aerial photographs, there was –

- One stopbank breach on the lower Huangarua
- Widespread overtopping of the stopbanks

All of the stopbanks on the Ruamahanga River upstream of the Tuhitarata Bridge were designed for a flow of 1500 cumecs. The peak flow in these floods was assessed to be approximately 2000 cumecs. It is remarkable then how the Lower Wairarapa Valley Development Scheme has withstood such flows. Given that the scheme is currently being reviewed, there will clearly be issues such as the design standards to discuss.

Points to note are –

- That up until the Government's main loan for scheme construction was paid off two years ago, the rates for the Lower Valley Scheme had always been adjusted for inflation despite the objections by some farmers at times. This inflation adjustment was a condition of the discounted loan interest rate. As a result, there has always been a significant maintenance programme undertaken with the Scheme.
- The scheme has a healthy reserve of over a million dollars.
- The redesigned Oporua Floodway, which was implemented in 1990, continues to perform very well.
- That properly designed and constructed stopbanks with a moderate batter and a good cover of grass can survive some overtopping. How long they would hold up is still an open question.
- That the management and maintenance of the stopbanks is critical. In some areas stock or vehicular traffic may have over time lowered some stopbank levels.
- The 50% contribution by Greater Wellington reaps huge dividends in large events such as this as it has encouraged local ratepayers to also invest in flood protection.
- That landowners, given a little notice, have an extraordinary capacity to achieve some short term protection, such as sand bagging.
- Lake Wairarapa, although reaching a very high level, was well below the height of the disastrous 1947 flood event. The peak flow in 1947 is thought to have been about 1500-1600 cumecs but the opening to the sea at Lake Onoke was blocked during some of that event.
- The opening to the sea at Lake Onoke developed and stayed open throughout these flood events despite the very high seas at times.

It is interesting to note the success of the willow clearing schemes completed on the Taueru and Whangaehu River schemes. Despite the Taueru reaching 12.5 metres (20 year return period), the river stayed within its channel and there was no "out of river" flooding.

The Te Whiti area suffered extensive flooding from the Ruamahanga River. Staff have been negotiating with landowners to extend and upgrade an existing stopbank

on the upstream side of Te Whiti for some time. A number of farmers have expressed their frustration at the slow rate of progress being made on this capital work which has been planned to be completed as a capital work in the past two financial years. A meeting with the landowners is scheduled for mid-March 2004.

4. Discussion

- 4.1 In the event of significant flood damage, the 50% regional funding component is normally obtained from the Council's Flood Contingency Fund. The 50% local share in the Wairarapa is obtained from the scheme rating district and other beneficiaries. The Divisional Manager can approve withdrawals on the Flood Contingency Fund of up to \$100,000 under delegation for emergency works. Other withdrawals need to be approved by Council. In this instance, works totalling \$82,500, or \$41,250 from the Contingency Fund, were approved under the Divisional Manager's delegation to allow the commencement of some urgent works following the largest event on 16-17 February. These numbers have now been included within the numbers in this report to simplify the situation.
- 4.2 As the itemised schedules have yet to be considered by any of the scheme advisory committees, it is suggested that a sub-committee be given delegated authority to approve the final schedules after the scheme advisory committee meetings have been completed. Suitable sub-committee members could be Crs Buchanan and Long, and also Mr Benton who has a particular knowledge of the Lower Wairarapa Valley Development Scheme.
- 4.3 The process of presenting proposed flood damage repair programmes to scheme advisory committees is seen as being particularly robust, as the priorities and affordability of the programmes are carefully checked and approved by people who are very directly paying for a share of the cost involved. Inspections of the damage will normally occur in the presence of some of the committee members as Councillors Long and Buchanan usually attend all of these inspections and scheme advisory committee meetings.
- 4.4 The Council's Flood Contingency Fund has a current balance of \$426,000 as at 30 June 2003 plus \$200,000 - this year's budgeted contribution, giving a total of \$626,000. This fund is for flood damage repairs to Council administered schemes within the Wellington Region as a whole. Note however, that there has been a previously approved claim for flood damage from the Flood Contingency Fund following the October 2003 floods of \$56,000. If the Flood Contingency Fund withdrawals being recommended in this report are approved, there will be approximately \$125,000 in the Flood Contingency Fund at year-end, excluding any demands on the fund from the western part of the region.

Damage from the western part of the region will be reported to the Landcare Committee on 23 March. It is likely that the Flood Contingency Fund will be close to zero or negative when this damage is also included. The total situation with the Flood Contingency Fund will be clearer when

recommendations from both the Landcare and Rural Services & Wairarapa Committees are considered at the Council meeting on 20 April.

4.5 Despite the size of the flood event in some rivers, it is not proposed to make withdrawals from the Council’s Major Flood Damage Reserve at this point. This reserve is intended for dealing with major damage from 25 year plus return events. It was commenced about 3 years ago after a major review of Council’s risk management arrangements. The Major Flood Damage Reserve is intended to build up slowly over time and currently hold approximately a million dollars.

4.6 The funding requirements from the attached schedules are summarised in the following table –

River Scheme	Total Flood Damage (\$000’s)	Accommodated in Work Programmes (\$000’s)	Council Flood Damage Contingency Fund (\$000’s)	Scheme Contribution (\$000’s)	District Council Contribution (\$000’s)
Upper Ruamahanga:					
- Mt Bruce	118	65	26.5	26.5	
- Te Ore Ore	110	54	28	28	
- Gladstone	35	-	17.5	17.5	
Waipoua	101	31	35	35	
Waingawa	72	45	13.5	13.5	
Waiohine-Mangatarere	80	-	40	40	
Lower Wairarapa Valley Development Scheme	612	43	284.5	262	22.5
Total	1,128	238	445	422.5	22.5

4.6 The situation with the local funding share for some of the flood damage is very tight. The Waipoua and Upper Ruamahanga-Mt Bruce River Schemes may not approve the full provisional flood damage work programmes although non-essential work has already been programmed for next financial year. The Waipoua Scheme already has a deficit of about \$30,000, so completion of the provisional works programme will increase the deficit to around \$81,000. This would normally have to be paid off within three years in accordance with Council policy. The only schemes with significant reserves following the floods will be the Lower Wairarapa Valley and Waiohine-Mangatarere River Schemes. It is possible that some schemes will delay at least some work until next financial year.

5. Communications

The provisional flood damage schedules will be fully discussed with the relevant River Scheme Advisory Committees.

6. Recommendation

That the Committee resolve to recommend to Council:

- (1) That expenditure of up to \$1,128,000 and the withdrawal of up to \$445,000 from the Council's Flood Contingency Fund be approved for flood damage repairs in the Upper Ruamahanga – Mt Bruce, Te Ore Ore, Gladstone, Waipoua, Waingawa, Waiohine-Mangatarere River Schemes, and the Lower Wairarapa Valley Development Scheme.*
- (2) That a Wairarapa Flood Damage Sub-Committee of Cr Buchanan, Cr Long and Mr Alex Benton be established to approve the final work programme schedules for flood damage repairs following completion of the appropriate River Scheme Advisory Committee meetings.*

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