



AUDIT OF RIVER MANAGEMENT ASSET MAINTENANCE STANDARDS

- Audit of:** River Schemes managed by the Flood Protection Group, Landcare Division of the Wellington Regional Council
- Audit by:** Ranjan Cyril, Widana Gamage & Dave Sim of the Operations Department of Wairarapa Division, Wellington Regional Council
- Locations:** Waikanae and Otaki Rivers
- Guides:** Steve Murphy and Gary Baker of the Flood Protection Group, Landcare Division, Wellington Regional Council
- Date:** 5 August 1999

1.0 Introduction

Annual Peer reviews are undertaken of river asset management programmes in the Wellington and Wairarapa areas. The peer reviews provide an audit of maintenance standards and procedures.

To do this audit, inspections of randomly selected sites from the Flood Protection Group asset register/list were carried out. Maintenance responsibility for these assets lies with the Flood Protection Group.

This year's inspection of the Wellington river assets concentrated on the Waikanae and Otaki River works on the Kapiti Coast.

2.0 Waikanae River

The Waikanae River Scheme works extends from the river mouth for a distance of 5.5 kilometres to State Highway 1 Bridge, and is managed by the Wellington Regional Council. The main purpose of the scheme is to provide flood protection to the Waikanae Township and rural floodplain area.

The Wellington Regional Council, together with the Kapiti Coast District Council and the Waikanae community, have developed the Waikanae Floodplain Management Plan (WFMP). The cost of the capital works in the Plan is estimated at \$6.5 million. Implementation of the SH1 to Maple Lane project (current WFMP capital work priority), is six months behind schedule, but is expected to commence soon.

For the purpose of this audit the following 3 sites were inspected.

2.1 Sunny Glen

Extensive bank erosion had occurred during the October 1998 floods threatening the houses nearby. Large rock had been dumped during the floods as an emergency measure.

Temporary repairs had been carried out by cross blading and construction of a series of rock barbs pointing upstream. The key feature of the barbs is the large concrete blocks that form the base of the barbs. These barbs appear to be working well with silt already deposited on the gravel. 'Tree Lucerne' that had established appears to be helping to catch silt.

The series of barbs constructed appear to be working well. The permanent protection proposal for this reach of the river is a series of large rock groynes with willow planting. The rock from the existing barbs will be recovered and used in the permanent groynes. The reviewers agree with the selected option to protect the bank and the houses at the Sunny Glen site.

2.2 Maple Lane

This was another section of the Waikanae River that suffered damage during the October 1998 floods similar, to Sunny Glen. Here too the rock barbs and concrete blocks had been successfully utilised to arrest further bank erosion. At this location the bank erosion had also threatened a few houses.

One of the barbs has extended almost to the gravel beach on the other side making it act as a weir in low flows. Perhaps a shorter barb would have been better.



Series of rock barbs at Maple Lane Site

Maple Lane site is similar to Sunny Glen. Here too the series of barbs constructed appear to be working well. The rock from the existing barbs will be recovered and used in the groyne that will be constructed as part of the capital works to provide permanent protection to the bank. The reviewers agree with the selected option to protect the bank and the houses at the Maple Lane site.

Some \$11 is necessary behind the barb that acts like a weir.

2.3 Kauri/Puriri Road Stopbank

The new stopbank, completed about 2 years ago to a 100 year standard, replaced the old stopbank, which had only a 10 year capacity. The stopbank is being maintained in an excellent condition. Part of the old channel and excavations for the stopbank had been converted to a wild life habitat area, enhancing the environment.

The river had been straightened and widened in this section, and seems to be depositing gravel on the bed, and silt on the berm. This trend could reduce the flood capacity of the stopbank with time.

The reviewers are happy with the maintenance standard of the stopbank. However they feel that the aggradation and the siltation trends need to be monitored closely, and the flood capacity of the stopbank checked at suitable intervals.

3.0 Otaki River

The Otaki River Scheme works extend from the river mouth for a distance of 11.5 kilometres upstream to the lower gorge, and is managed by the Wellington Regional Council.

The main purpose of the scheme is to provide flood protection to the Otaki Township, State Highway 1 and to the rural floodplain area.

The Wellington Regional Council together with the Kapiti Coast District Council and the Otaki community have developed the Otaki Floodplain Management Plan. The cost of the capital works in the Plan is estimated at \$12 million, and a couple of projects have already commenced.

For the purpose of this audit the following 4 sites were inspected.

3.1 Winstone Aggregates Plant

The Winstone screening plant is situated on land abutting the stopbank on the right bank. As the screening plant is causing operational problems for the maintenance of the stopbank, the long-term plan is to shift it elsewhere.

This stopbank was constructed by the former Public Works Department in the late 1940's using a Tower Dredge to simply excavate gravel from the riverbed and dump it on the northern side of the river. The Wellington Regional Council is now responsible for the maintenance of this bank.

The stopbank was never finished to an even shape or soiled to establish a grass cover. It therefore, has uneven crest levels and steep batter slopes on the landward side. Some parts of the stopbank have been eroded.

Extraction of gravel forms an important part of the river management plan, both in terms of controlling the river channel and getting revenue.

Rail groynes constructed by the Catchment Board were visible at some places, but most of them had either been damaged or had become redundant.

Toe rock lining had been carried out recently on a section of the left stopbank to reduce erosion. The permanent solution under the Floodplain Management Plan is to realign the stopbank away from the river edge to give a sufficient berm width.

The reviewers agree that it is desirable to relocate the screening plant away from the stopbank vicinity.

They were also pleased to note that gravel extraction is being used effectively in the Otaki River to maintain a desirable alignment for the river channel.

Some sections of the right bank stopbank appeared to be too steep or too close to the river edge. The reviewers feel that this issue needs to be addressed in the near future.

3.2 Chrystalls Bend Realignment

The site was viewed from the road. Heavy rock lining has been used to keep the channel in its realigned position. A series of debris fences has been constructed, and extensive planting carried out on the landward side of the rock lining to reclaim and stabilise the bend.

After last year's floods, some repair work and extension to the rock lining had been carried out. This is an important site in the Otaki Floodplain Management Plan, as any breach in the stopbank will put Otaki Township in grave danger of flooding.

Under the Floodplain Management Plan the stopbank at Chrystalls Bend will be realigned and upgraded to a 100 year standard from the current 25 year standard.

At the time of inspection the heavy rock lining and the stopbank was in good condition, The reviewers endorse the plan to upgrade the stopbank to 100 year standard, and are happy with the efforts being put into this important site.

3.3 Upper Rahu Capex Project

This project consists of channel widening through gravel extraction, edge protection with debris fences and planting, and realignment of the stopbank further inland from the edge of the river.

At the time of review the realignment of the stopbank had been completed, and the extraction of gravel and edge protection work was in progress. The reviewers endorse the approach taken by Flood Protection staff.

3.4 Upper Taylor's

At upper Taylor's, a series of rock barbs and debris fences has been constructed to reclaim an eroded bank and to prevent further erosion. The rock barbs and the fences have been constructed alternately and appear to be working well.

Rooted shrub willows have been planted extensively. Damage to plants by debris is a concern, but as the plants are already rooted and not rigid like poles, it is felt that some will survive.



Series of rock barbs, debris fences and planting to reclaim an eroded section at Upper Taylor's

The reviewers are happy with the work being carried out, and endorse the approach taken by staff. Due to the aggressive nature of the river at this location, it is important to continue planting until the willows that survive are well established.

4.0 Summary

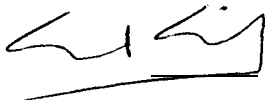
Seven sites of Waikanae and Otaki River Works in the Kapiti Coast were randomly selected for this year's audit of the rivers managed by the Flood Protection Group of the Land Care Division. These inspections were considered to provide a reasonably representative overview of river asset maintenance standards for the Kapiti Coast rivers.

The reviewers are pleased to note that some capital works of the Floodplain Management Plan of both schemes have commenced or will commence shortly, however, they would like to see full implementation of the Plans. They are of the view that adequate resources are being applied to maintain the scheme assets to an appropriate standard.

The few areas that we recommend the scheme managers give attention to are:

- The possible reduction of the flood capacity of the Kauri/Puriri Road stopbank due to aggradation of the river and the silting of the berm area
- The improvement of the batter slope and/or the berm width of part of the stopbank near the Winstone screening plant area, and
- Continuation of planting willows at Upper Taylor's until they are well established.

Report prepared in August 1999 by:



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