

Report to the Hutt River Floodplain Management Advisory Committee  
from Richard Minson, Hydraulic Engineer, Flood Protection (Strategy and Assets)

## **Hutt River Gravel Analysis Update**

### **1. Purpose**

To inform the Advisory Committee of the findings from the analysis of the cross-section survey carried out in April 1999.

### **2. Background**

The last full survey was undertaken between January and March 1998. In October 1998, two large flood events occurred within a week of each other. The first was recorded as a 12 year event at Taita Gorge (1210 cumecs) and the second as a 26 year event (1530 cumecs). In order to determine the effect on bed levels, and in accordance with current policy, a survey of the river was undertaken.

Table 1 details the sections which were surveyed. A total of 59 sections were included in the partial survey. A complete survey was not performed due to budget implications, and it was also considered that a limited survey would satisfactorily identify the principal trends.

**Table 1 : Cross-sections surveyed**

<b>Location</b>	<b>Cross-section Numbers</b>	<b>Number</b>
Mouth	3 - 20	5
Estuary bridge	90 - 100	2
Ava bridge	200 - 210	2
Ewen bridge	310 - 320	2
Melling bridge	430 - 470	5
KGB bridge	620 - 660	5
Nash Street	920 - 990	8

<b>Location</b>	<b>Cross-section Numbers</b>	<b>Number</b>
Pomare bridge	1070 - 1110	5
Manor Park	1210 - 1250	5
Silverstream bridges	1380 - 1400	3
Moonshine bridge	1770 - 1790	3
Gibbons Street	2000 - 2020	4
Totara Park	2150 - 2190	5
Collier's Dip (SH2)	2720 - 2730	2
Te Marua Golf Course	2870 - 2890	3

As reported to the Advisory Committee on 26 May 1999, an analysis of the survey data was carried out, and the results of the analysis are described in this report.

### 3. Interpretation of the Survey

Because the survey only covered a small selection of cross-sections, a full gravel volume analysis could not be carried out. However the most relevant measure of bed changes, a comparison of mean bed levels, is presented (see **Attachments 1-3**).

The changes in mean bed level between the last four surveys is shown colour coded in the attachments. Where the bed level has increased the bar is shown as positive, and lowering of the bed level is shown as negative. The changes shown in red denote the results at the cross sections surveyed most recently. This does not mean that bed changes did not occur at the other cross-sections.

#### 3.1 Mean Bed Levels

Minor deposition (an increase in mean bed level) has occurred around Ava, Ewen and Melling Bridges, representing a lessening of the recent trend in these areas. More significant deposition has occurred around Kennedy-Good Bridge, continuing the trend of deposition in this reach.

A certain amount of deposition can be seen around Nash Street, but this may be due to bank erosion and cross-blading that has occurred there after the October 1998 flood events.

Minor decreases and occasional increases in mean bed level have occurred in the central reaches, from Nash Street to Silverstream Bridge. This continues the inconsistent trend through this reach. In Upper Hutt, the trend of degradation has continued around Moonshine Bridge. However, at Gibbons Street the trend towards deposition has changed to degradation or bed lowering.

As a whole, the changes in mean bed level over the single year between recent surveys are comparable to the changes recorded over the previous five year periods.

### 3.2 Mouth Bed Levels

The survey of the mouth area indicates a varying response to the flood events. Deposition has occurred in the area near the end of Port Road, while the mouth of the River displays a trend of degradation. This is fairly consistent with the trend between the last two full surveys (in 1993 and 1998). It should be noted that this area is affected by the extraction operation which is selective.

### 3.3 Implications for Flood Levels

Due to the continuing trend of deposition in the lower reaches, increasing flood levels are likely to result. Therefore, to maintain an optimum bed level, existing policies for extraction should be fully implemented.

### 3.4 River Management Policies

The existing policy for gravel management is for up to 10,000m<sup>3</sup> of gravel to be extracted per year. The Operations Group will soon be calling for registration of interest to achieve the 50,000m<sup>3</sup> of extraction over the next five years.

This policy was endorsed by the Landcare Committee in September 1998 and based on the results of the latest survey analysis, this policy is still appropriate.

## 4. Summary

- Minor build up has continued to occur in the lower reaches since the last full Hutt River survey, particularly around Kennedy-Good Bridge.
- Gravel extraction should continue in the lower reaches at the existing recommended rate of 10,000m<sup>3</sup> per year.
- Continue the five yearly monitoring surveys and with additional surveys after significant flood events. Consideration should be given to a more extensive survey than the recently completed 59 cross-sections, where the flood exceeds the '25 year' return. event

## 5. Recommendations

*That the Advisory Committee:*

- (1) *Receive this report and note its contents.*
- (2) *Endorse the continuation of the existing river management policies.*

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Attachments 1-3 : Charts showing comparative bed level increase