4. STORM 11-13 OCTOBER 2000 - FOLLOW-UP REPORT FOR HEATHCOTE WARD

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The purpose of this report is to inform the Community Board of remedial measures already implemented and minor capital works proposed on local waterways and drains within the Heathcote ward in response to the extreme storm experienced during the period from 11 to 13 October 2000.

THE OCTOBER 2000 STORM

The October 2000 storm was an extreme event in terms of wind and rain depth and intensity falling in the south-east sector of the city including hill suburbs in the Heathcote ward. The wind generated a lot of debris which blocked waterways at pipe inlets and gratings resulting in overflows.

The maximum recorded total rainfall depth was 190mm in Bowenvale Valley just below the Summit Road. The highest ever peak discharge of 6 cubic metres/second was recorded at the flume in Bowenvale Valley.

Some hill waterways overtopped their banks which caused flooding, debris and sediment deposition on private property. The specific cause of overtopping was generally debris blockages at culvert and pipeline inlets, especially those with inlet gratings.

Problems arose in some hill waterway catchments where the contractors' normal wet weather resources became overwhelmed by the quantity of debris building up on critical inlet grates, resulting in waterway overflows. Alderson Avenue inlet grating and West Victory Drain, Albert Terrace were two locations within the area where this occurred.

With the 'epicentre' of the storm over the eastern Port Hills hill waterways discharging into the middle reaches of the Heathcote River (i.e. Waimea/Eastern Terrace reach) surcharged the middle reach which peaked between 1–2pm on 12 October 2000. Waimea and Eastern Terraces were impassable for several hours. A number of residents were evacuated as a precautionary measure. The maximum flood level was within 100 mm of the lowest house floor levels.

According to a flow gauging carried out on the Heathcote River at Buxton Terrace by Environment Canterbury staff at approximately 1pm on 12 October the observed flood water level was approximately 300 mm higher than expected for the discharge calculated. Although flood water did not enter any dwellings along the Heathcote River this issue is significant because the risk of flood water entering low-lying houses along this reach of the river would be increased significantly if this situation is exceeded during future major storms.

REMEDIAL MEASURES

Within the Community Board area the following remedial action has been taken:

(a) **Storm Emergency Procedures**

City Care, our drainage contractor, has reviewed wet weather and storm response procedures for critical inlet structures, debris traps and grates on hill waterways. A draft storm response plan which clarifies lines of communication and other procedures has been prepared and discussed with asset managers in the Parks and Waterways Unit.

Adherence to the plan will ensure that during future major storms more staff and machinery will be directed earlier to initial inlet gratings to remove accumulated debris and thus reduce the incidence of blockage and storm overflows.

(b) **Inlet Gratings and Debris Traps**

All critical inlet gratings and debris traps on hill waterways and drains have been audited and a prioritised schedule of improvement works provided for within Parks and Waterways 2001/02 draft budget.

Operation and maintenance improvements estimated to cost $10,000 in total have been identified for the Holliss Avenue inlet grating, Bowenvale Avenue debris trap, and Alderson Avenue inlet grating and waterway.

Capital works totalling $30,000 comprising the replacement of Holliss Avenue inlet grating, installation of a debris trap on West Victory Drain, Albert Terrace; and a new inlet grating, double sumps in the street and waterway improvements at Alderson Avenue are planned.

(c) **Heathcote River Middle Reaches**

A thorough investigation into the unexpectedly high peak flood levels in the Heathcote River Waimea and Eastern Terraces reach has been carried out. The conclusion is that the phenomenon was due to the cumulative effect of several factors including:

- A slight overall increase in channel bed height due to siltation.
- Frequent minor bank slumps contributing to bed siltation and bank irregularity.
- A slight overall increase in channel roughness due to longer grass on the banks since maintenance practices were modified 10 years ago and occasional recent planting on the banks.
- Fallen trees across the river removed after the storm from four sites within the reach.

All new planting on the banks of the middle reaches of the Heathcote has been suspended in the meantime. The computer model for this reach is being reviewed using recent flow measurements and revised roughness indices.

The Parks and Waterways Unit recommendations to date for this reach are that:

- New bank planting should not be undertaken at a particular site unless the waterway area is increased to provide compensatory channel conveyance.

- Plans should be prepared identifying critical reaches in terms of channel conveyance and flood-prone properties and a maintenance regime and planting criteria established which maintains or enhances channel conveyance.

- Soil from the toe of bank slumps should be removed from the channel as slumps occur.

- Increase the frequency of river cross-section surveys to monitor channel changes more closely.

The recommendation will be implemented once modelling work in progress has been completed.

Recommendation: That the information be received.

Chairman's Comment: I am concerned at the continued expectation of hard surfacing in the catchment areas which does not seem to have been effectively controlled by the City Plan.