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Committees Landcare and Environment
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Waitohu Stream Study

1. Purpose

To update the Committees on progress with the Waitohu Stream Study, a joint divisional project.

2. Background

In February 2004 (refer to report 04.25) the Committee endorsed integrating the work streams of the Landcare and Environment Divisions to enable officers to undertake a whole stream approach to the management of Waitohu Stream.

The study has involved investigating the flood hazard posed by the stream (refer to report 02.708) and reviewing the stream's water quality and ecosystem health. To date we have completed a series of technical investigations, as well as consulted the community about our findings and their experiences and issues with the Waitohu Stream.

3. Results of consultation and investigations to data

3.1 Initial community feedback

Since February we have met with most residents, landowners and interested groups involved with the Waitohu Stream, in a combination of small group and individual meetings.

The interest shown in the study by these people and organisations has been extremely encouraging and bodes well for the future management of the stream. Feedback has been positive and generally the various parties have common objectives.

Detailed records of the meetings have been made and these will be collated to form a component report of the study. Some of the things that people have said to us to date include:

- The frequency of flooding is understood and accepted, but floodwaters need to be able to drain away as quickly as possible;
- Willows in the lower reaches have become overgrown, restricting access by canoe and hindering the escape of floodwaters. Planting of alternatives to willows should be encouraged;
- In the upper reaches, planting seems to have worked well to prevent erosion. The condition of the stream channel and banks have generally improved over time and have not suffered significant damage in recent years;
- Greater Wellington's mouth cutting policy and practices need to be reviewed;
- The dunes around the stream mouth are valued;
- Gravel build up seems to be a problem in parts of the stream;
- The poor water quality in the stream, even at the State Highway bridge, was a surprise to landowners in the upper reaches and a concern to those below;
- Both the upper reaches and the mouth area are used by the wider community for recreation (e.g. canoeing, swimming, picnicking);
- Those consulted wish to be kept informed about this study and the stream management in general;

3.2 Water quality and ecosystem health assessment

A number of investigations have been carried out to determine the ecological health of the Waitohu Stream. Some key findings about the characteristics of the stream and its catchment are highlighted below:

- There are 78 kilometres of stream in the catchment;
- Nearly half its 4580 hectare catchment is in native vegetation;
- More than a third, 1660 hectares, of the catchment is protected by covenants or in Department of Conservation or district council ownership;
- Eleven native fish species are known to live in the catchment. These are shortfin eel, longfin eel, torrentfish, giant kokopu, shortjaw kokopu, koaro, inanga, lamprey, common bully, redfinned bully, and smelt;
- Four of the fish species found in the catchment - longfin eel, giant kokopu, shortjaw kokopu, and lamprey - have such low numbers nationally that they require conservation action. Another rare species, the brown mudfish, was last recorded in 1964 and may have been lost from the catchment;

- Downstream of the railway line water leaks through the stream bed into groundwater at a rate of about 60 to 80 litres per second. This means that during low flow periods to the flow in the stream between the railway line and the golf course is about half what it is at the State Highway, and at times parts of the stream bed dry up completely. Downstream of the golf course, the reverse happens: groundwater seeps back into the stream and surface flow joins the Waitohu from the Mangapouri Stream;
- At the old water supply intake there is excellent water quality and the stream supports a diverse range of aquatic insects. The situation downstream is vastly different. Near the stream mouth at Norfolk Crescent the water quality is poor, with high levels of nutrients, ammonia and faecal bacteria, poor clarity, and low levels of dissolved oxygen;
- Water quality near the Waitohu stream mouth has been improving over the last few years. Average ammonia levels in 2000-2003 were about a third of what they were in 1995-2000. Nitrate and faecal coliform levels are going down, and water clarity has been increasing by 4 cm a year since 1998;
- These water quality improvements coincide with a change in dairyshed effluent disposal practices in the catchment. Dairyshed effluent that had been discharged directly into the stream throughout the last few decades shifted to land treatment between 1999 and 2001;
- Given that direct discharges to the stream have now stopped, it is likely that achieving further significant improvements in water quality and stream habitat will require the management of the riparian margins of the stream and its tributaries;

3.3 Flood Hazard Investigations

Computer hydraulic modelling of the stream, and a rainfall-runoff model for the catchment hydrology are now complete, and draft flood hazard maps have been produced. The five technical reports, which investigate a number of the stream's characteristics, have also been completed. The key findings are summarised briefly below:

- The 1% AEP flood¹ flow at the recorder site, near the water supply intake is now estimated at 180m³/s, compared to the previous estimate of 125m³/s. The highest recorded flow during the ten years of record has been 86m³/s, in October 2000;
- A 1% AEP flood would inundate approximately 300ha of the floodplain. Most of this land is used for dairying, grazing and lifestyle blocks. Approximately 8 houses get flooded;
- Extensive flooding also occurs in more frequent floods;

¹ By definition, there is a 1% chance of getting a 1% Annual Exceedence Probability (AEP) flood or a larger flood in any given year. This is more commonly known as the "1 in 100 year" flood, or more simply as the "100 year" flood.

- In addition to the land at risk of inundation, flooding also poses risk to the eight bridges (including State Highway One and the NIMT railway) across the stream, and to assets such as water supply lines and fibre optic cables. Several instances of bridge abutment damage have occurred in the past;
- The stream is steep above State Highway One and during floods the channel actively moves from side to side;
- Between State Highway One and the railway, the grade flattens and gravel is deposited. The best estimate of gravel supply is an average of 1500m³ per year;

4. Reporting

As indicated in the February report, the technical investigation findings and consultation feedback will now be digested and a summary report prepared by December 2004. This report will include a summary of:

- Technical investigations;
- Consultation;
- Community expectations/aspirations;
- Issues;
- Recommendations on where too next;

5. Communication

A further newsletter and press release will be prepared to report the Waitohu Stream Study findings, and progress to date, to the community.

6. Recommendations

That the Landcare Committee:

1. *receive the report*
2. *note the contents of the report*

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