

MASTERTON DISTRICT COUNCIL COMMUNITY REPORT

JULY 2003

WASTEWATER SERVICES

Interim upgrade work completed

This is the first of our six-monthly bulletins reporting to the community on progress with upgrading Masterton's wastewater services, including the Homebush sewage treatment facility.

As most of you will be aware, in January 2003 Greater Wellington Regional Council granted interim resource consents, subject to a number of conditions, that allow Masterton District Council to operate the treatment facility for a further seven years. The conditions included implementing a range of interim enhancements. The Council has already completed these upgrades within six months as required by the consent, and has submitted its first six-monthly progress report to the regional council.

A separate monitoring report submitted to the regional council on 30 May 2003 (*Annual Monitoring Report for 2002/03*) confirms that the

Masterton District Council wastewater operator Walter Jones checks the operation of the new aerator.



The first of the five new cage aerators installed in the oxidation ponds at Homebush is lowered into place. Two have been installed in each of the primary treatment ponds and one in the secondary treatment pond.

effluent flow from the treatment plant complies with the maximum allowable limits and that effluent quality complies with all the limits specified in the consent conditions.

How wastewater is treated

Wastewater from the Masterton urban area is collected through a reticulation system and piped to the Homebush treatment plant.

At the plant the wastewater is first screened to remove solids such as plastics, rags and other items bigger than 6 mm from the flow. These items are then *dewatered* and taken to the landfill for burial along with other domestic rubbish.

After screening the wastewater flow splits equally into two *primary oxidation ponds*. These ponds allow the solids to settle out of the wastewater and natural aerobic and anaerobic processes break down organic matter.

Both ponds discharge into a third pond, known as the *secondary oxidation pond*, from which the treated effluent discharges into the Makoura Stream and then into the Ruamahanga River.

(See diagram on page 3)



Work has been completed to construct a solid bund, together with a rock filter, across the secondary treatment pond, effectively creating a smaller fourth pond.

In response to the Council's consent compliance Greater Wellington's senior resource advisor, Stephen Yeats, has reported:

"We consider that all of the Masterton treatment plant consent conditions have been fully complied with to date and that the standard of reporting has been excellent. Masterton District Council has gone the extra mile in making improvements that weren't specifically required by the consent".

Interim upgrade work

The recently completed interim enhancements involved improving the treatment process within the ponds by various means.

- The inlet pipes to the two primary ponds have been shortened so that the flow discharges close to the embankments and rock baffles have been constructed to direct the inflow in the direction of the desired circulation pattern around the ponds. These measures ensure the wastewater remains in the ponds longer, providing more effective treatment.

- Five new low-speed cage aerators have also been installed in the oxidation ponds (see photos). Two aerators have been installed in each of the primary ponds and one in the secondary pond. Their function is to set up a directional flow pattern to

assist with increasing the retention times in the ponds and to provide oxygen to the wastewater. The mixing provided by the aerators should also help to reduce blue-green algae growth that causes the discharge to have a bright green colour in the summer months.

- A screen has been installed on the outlet of the secondary pond to limit the possibility of any floatable debris discharging to the Makoura Stream.

- The most visible part of the work so far undertaken has been the construction of a solid bund (an embankment) and a rock filter across the secondary treatment pond, effectively creating a smaller fourth

The completed bund across the secondary treatment pond.



pond. As the wastewater passes through the rock filter, it receives additional treatment. The new pond has a retention time of around one and a half days, which helps limit the regrowth of algae and should result in improved colour and clarity of the wastewater. This in turn allows greater sunlight penetration and thus improved disinfection, which kills bacteria and viruses.

Measuring inlet and outlet flows

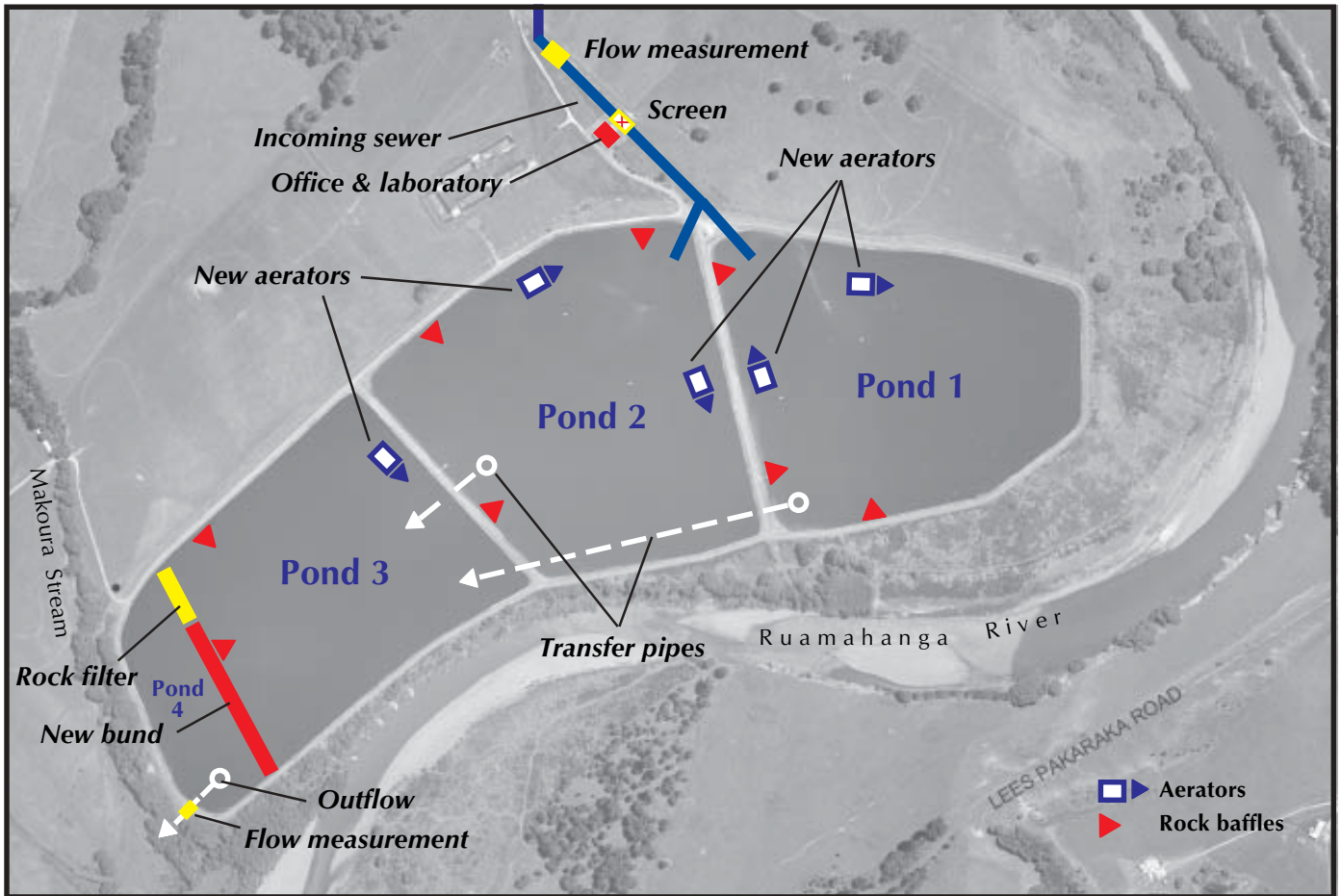
One condition of the consent for the Homebush treatment plant states that the margin of error of the inflow and outflow measuring devices should be no greater than plus or minus 10%.

While the existing measuring devices met this requirement, they are currently being upgraded to further improve the accuracy.

The improved accuracy will be required as work progresses on investigations for the longer term upgrade work, and will assist in determining the extent of leakage from the oxidation ponds.

Reticulation system

Seasonally, parts of the urban reticulation system are submerged below groundwater and this causes infiltration into the system, resulting in higher than expected inflows at the treatment plant. Investigations have been carried out to establish the



Aerial photograph of the wastewater treatment facility at Homebush, showing key features, including the interim upgrade work.

extent of this problem and as a result a long-term programme of replacing sections of the sewer will be put in place.

Long term upgrade

Before expiry of the seven year interim resource consent, the Council has to seek consent for the proposed long-term upgrade of the wastewater treatment and disposal system. A considerable amount of work has been carried out reviewing a range of treatment and disposal options for Masterton, and determining a suitable shortlist of options for more detailed investigation. Further on-site investigations and trials need to be carried out to determine the optimum system for the future.

This work falls basically into two categories - the options for *treatment* of wastewater, and the options for *disposal* of the resulting effluent. Investigations have already commenced into two treatment options and three disposal options.

Treatment options

Options being examined for future treatment of Masterton's wastewater are:

- **Dissolved air flotation (DAF).** This is a tertiary treatment method, in other words it would supplement the primary and secondary treatment in the oxidation ponds, and would result in greater removal of algae and could also be used to remove phosphorus. This upgrade could be constructed within the existing Homebush site.
- **Maturation cells.** Maturation "cells" can be constructed within existing ponds, in the same way that the new bund across the secondary pond has created another smaller pond, or cell. This option would involve construction of a number of further cells and rock filters – the more cells and filters, the higher the level of treatment. This system is used at a number of treatment plants around New Zealand, is simple to construct and maintain, and has a relatively low capital and operating



The flowmeter at the outlet to the Makoura Stream has been upgraded to improve the accuracy of monitoring.

cost. This upgrade could be used in conjunction with the DAF process.

Disposal options

The disposal method for the treated effluent has wider community

implications than the type of treatment method that is selected.

Land disposal, given the right soil conditions, is very effective in removal of solids, bacteria, viruses and other contaminants, resulting in higher effluent quality. The depth to groundwater and the soil permeability are very important considerations in determining the feasibility and effectiveness of land disposal.

The method of disposing to land currently being investigated is known as **rapid infiltration (RI)** and involves discharging the effluent – following treatment to reduce solids and algae – into large shallow basins constructed in porous soils. The basins are flooded with effluent, which seeps through the soil and eventually reaches groundwater. The effluent receives further treatment by filtration and biological processes as it passes through the soil.

Advantages of RI include relatively low operating and maintenance costs and the fact that it provides additional treatment as the effluent filters through the soil.

Two possible sites are under consideration for land based disposal, one on Council-owned land in Manaia Road and one on a Homebush property adjacent to the treatment facility. Monitoring bores are being drilled at the Manaia Road site to determine groundwater quality and



Outflow from the secondary treatment pond. The small building above houses the upgraded monitoring equipment.

direction, and the results from these bores are currently being analysed.

While land disposal is the method preferred by Masterton District Council and by the community, the Council will also continue its assessment of the alternative option of discharging treated effluent to surface water. A discharge to surface water may be required in the event that land disposal is not feasible.

Community consultation

A consultation strategy has been prepared and is currently being reviewed by the Council. It consists of consultation at three levels which

will commence later this year, and will involve:

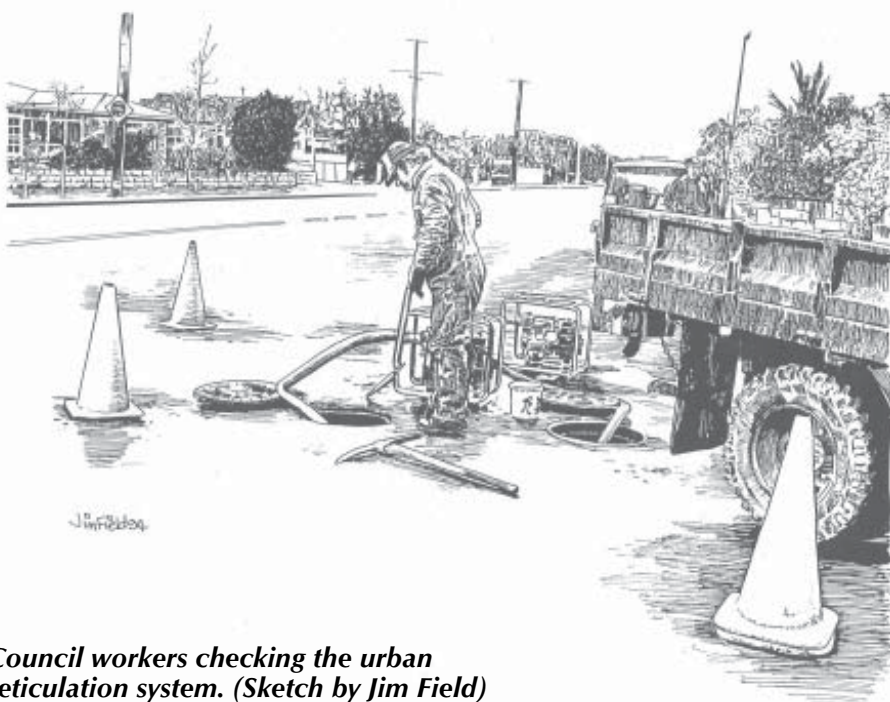
- setting up a Consultation Task Group comprising representatives from key community interest groups;
- consultation with *tangata whenua* and other key stakeholders; and
- community consultation.

The purpose of the consultation strategy is to enable the Council to meet the requirements of the Resource Management Act and the Local Government Act 2002, and to provide the opportunity for comment from all those who may be affected by any stage of the proposed works.

For further information

Future issues of this six-monthly newsletter will provide regular updates on investigations for the long term treatment system and resource consent compliance. However, if you would like clarification on any issue concerning Masterton's urban wastewater services, please make contact with the Council's Call Centre to register your enquiry:

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Council workers checking the urban reticulation system. (Sketch by Jim Field)