

9. CHRISTCHURCH WASTEWATER TREATMENT PLANT UPGRADE

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Corporate Plan Output: Liquid Waste	

The purpose of this report is to update the Committee on progress with the \$33.7m upgrade of the Christchurch Wastewater Treatment Plant, review priorities for elements of the upgrade, and to agree a course of action for the next stages of the work.

INTRODUCTION

In August 1996, Beca Consultants presented a report to this Committee on the capacity and upgrade options for the Christchurch Wastewater Treatment Plant. Since that time the upgrade has progressed steadily as major elements have been tendered for construction. The third and fourth major tenders are now over half way through the construction phase. Commissioning these works in October/November this year will see a major improvement in the quality of effluent to the oxidation ponds. Works completed so far include upgrading of the trickling filter air flow, installation of new screens including bypass screen, odour control at the headworks, screenings area and grit bins, and covering and odour control at the pre-aeration tanks. The major contracts at present underway involve:

- (a) the construction of a first two of four new clarifiers, aeration and sludge pumping building and bypass channel and
- (b) the conversion of the first two of four secondary tanks to aeration basins, waste sludge thickening building and equipment plus associated electrical and mechanical services.

FUTURE MAJOR WORKS

The major elements of future works are set out below:

Item	Cost	Construction Timing
• third and fourth clarifiers;	\$6.0m	2001/03
• conversion of the third and fourth secondary tanks to aeration basins;	\$1.0m	2002/03
• upgrade of trickling filter distributors;	\$0.9m	2001/03
• the new trickling filter pumps station;	\$1.6m	Currently 2001/02
• refurbishing of the current trickling filter pump station discharge valving and pipe work (separately budgeted);	\$0.225m	2004/05
• covering of the primary tanks;	\$1.5m	2004/05
• replacement of biosolids lagoons with enclosed tanks;	\$0.9m	2003/04
• pond baffles and wetlands	\$1.6m	*2005/06
• shoreline diffuser	\$0.7m	*2003/04

*Dependent on consent application outcome.

REVIEW OF PROGRAMMING OF MAJOR ELEMENTS OF THE UPGRADE

The upgrade programme was reviewed by the Council in October 1999 when the last major contract was approved. At that time some changes to the programme were approved. One of the changes made was to bring forward the trickling filter upgrade and trickling filter pump station. The main reason for this was the more rapid deterioration of the distributor assembly inside the harsh atmosphere under the domes of the trickling filters. A recent development that has hastened the need for this work is the deterioration and tightening up of the main bearing in No 2 Filter. Modifications have been made to increase the driving force on the distributor but there is no way of telling how long the bearing will last. Supply only of a new bearing costs \$50,000, and the replacement of the bearing takes about six months. The distributors and bearings are programmed for replacement in 2001/02 and 2002/03 including a larger flow capacity system and larger bearings. It would not make economic sense to replace an existing bearing now for it to be totally replaced again in two years time. Prior to bearing and distributor replacement it is necessary to have the new trickling filter pump station operating to give sufficient capacity over one trickling filter while the other is undergoing planned upgrade. If this is not achieved severe odours are likely to prevail from over loading of the ponds for the upgrade period until both filters are refurbished. The solution to this is to proceed with the building of the new trickling filter pump station immediately, that is one year earlier than currently programmed. This will require moving \$1.6m from the 2001/02 budget to the current year, 2000/01.

DESIGN AND CONSTRUCTION

Agreement has been reached with City Design on the detailed professional design work and this is proceeding. Preliminary design has already been completed by Beca/City Design as part of detailed design of the adjoining waste sludge thickening building.

The construction work will be tendered and could commence at about the same time as the current major contracts are completed, (ie around November). There is potential therefore for the contractors currently on site to follow on with this new work. The civil/structural work is estimated at \$256,000, underground piping at \$183,000, with the remainder of the \$1.6m total made up of mechanical equipment purchase, and mechanical and electrical services.

It would be possible to determine schedule rates for the civil/structural and piping components of the work from the tender rates for the current two contracts in progress and to select one of these contractors on that basis and extend one of the current contracts.

Purchase of the mechanical equipment would be tendered or quoted for as usual.

SUMMARY

While the various contract works are progressing satisfactorily there is a need to bring forward the new trickling filter pump station works as bearing failure is imminent in No 2 Trickling Filter. Detailed design has commenced for this work, and several options exist for having this work completed expeditiously. It would be beneficial to have a subcommittee review the options for awarding a construction contract for this work for recommendation to this Committee.

Approval is sought to implement this work earlier by moving \$1.6m budgeted in 2001/02 forward into 2000/01.

- Recommendation:**
1. That the \$1.6m budgeted in 2001/02 for the new Trickling Filter Pump Station be brought forward to the current year, 2000/01. (Note that it is likely that the effect of a \$1.6m bulge in year 2000/01 will in the final event be softened by a carryover of around \$0.6m into the following 2001/02 year.)
 2. That the detailed design proceed for this new pump station and a subcommittee be set up to consider options for awarding a construction contract for the work.

- Chairman's Recommendation:**
1. That the above recommendation be adopted and recommended to the Strategy and Resources Committee.
 2. That the Subcommittee consist of the Chairman and Councillors David Close and Ron Wright.