

## 20. APPROVAL OF TENDER FOR PUMP STATION CONSTRUCTION

<b>Officer responsible</b> Water Services Manager	<b>Author</b> Engineering Officer, David Somerville
Corporate Plan Output: Water Supply Capital Works	

The purpose of this report is to request approval for the acceptance of the tender of McNab & Sons to construct the Woolston Pumping Station.

### BACKGROUND

Woolston Pumping Station is one of only two stations serving the Ferrymead supply zone, which has recently been isolated from the City zone. Primary pumping capacity from this zone also supplements the Heathcote zone, especially during peak summer conditions.

Built in 1927, the station is being replaced and upgraded as a result of the Asset Management Plan investigation and recommendations. The pump station capacity is being increased from 140 to 230 litres/sec to account for the closure of Council wells in the Chapman's Road area and to cater for urban growth in the hill suburbs from Ferrymead to Sumner. Further growth in this area will be met by the future upgrade of the St Johns Pumping Station.

The cost of the total pump station replacement, including well drilling, pump purchase, building construction and fees was originally estimated at \$745,500. To date, two wells have been drilled and the necessary Resource Consents have been granted. City Design has recently completed the civil, mechanical and electrical design and has called for tenders to undertake the construction component of the project, originally estimated at costing \$400,000. Five sets of tender documents were uplifted from Civic Offices and three received by the closing date.

### TENDERS

The following tenders were received:

McNab & Sons	\$655,454
Graeme Martin Contracting	\$680,445
Bushnell Builders Ltd	\$688,000

All three tenders are considerably higher than the \$400,000 originally estimated. The following comparisons clarify the major differences between the original estimate and the lowest tender price:

(a) **Demolition: \$20,250 over estimate**

The original cost was based on a site meeting with a demolition contractor who gave an estimate for demolition and removal of the existing pump station and suction tank.

(b) **Building Construction: \$25,710 over estimate**

The original estimate was based on the final costs of the Marshlands Pumping Station completed by Graeme Martin Contracting approximately 15 months ago. The building is essentially the same construction as the Woolston Pumping Station and was built at a cost of approximately \$1,200 per square metre. The tendered rate for the Woolston Pumping Station is approximately \$1,600 per square metre. This is an increase in rates of 33% and in this we are at the mercy of the current tendering/market climate.

(c) **Suction Tank Construction: \$96,635 over estimate**

The original estimate for the suction tank construction was \$95,000, which did not allow for any liquefaction mitigation measures. Following site testing, the Geotechnical Consulting Engineers reported that silt and loose sand layers are present down to a depth of approximately 3.5m below ground level. These are considered to have a medium to high probability of liquefaction in an earthquake event.

The report recommended that a raft foundation be adopted below the suction tank involving excavation of the sand and silt layers to a depth of 3.5m below ground level followed by installation of a compacted pitrun stabilisation filling. The report also noted that significant post-earthquake settlement in the order of 100mm to 200mm is predicted at the site and that careful consideration needs to be given to services entering and exiting the suction tank and pumping station building. This requires more complicated articulated flexible joints in pipeline connections.

The recommended tender has estimated the cost of the extra excavation, sheet piling to retain the walls of the excavated area, dewatering and installation of the stabilisation layer amounts to approximately \$100,000, which is over and above that allowed for in the original estimate.

(d) **Pipework: \$99,509 over estimate**

As stated earlier, the original estimate was based on the final costs of the Marshlands Pumping Station. During the course of finalising the design brief and completing the design, a number of additional items were included that were not allowed for in the original estimate, including:

- additional pipework to improve flow into and out of the station;
- more scour assemblies and drain fittings on pipework, and
- complex flexible joints in pipework to account for possible settlement due to liquefaction.

**POSSIBLE COST REDUCTIONS**

A number of options for reducing some of these costs have been explored with City Design. For example, the suction tank could be eliminated, but the cost reduction would be offset by:

1. the cost of an additional well instead of the storage buffer provided by the tank,
2. the cost of sand filters (which have a higher operating cost),
3. more stress on the aquifer system during pump start-up and peak pumping, and
4. greater operational difficulty in managing the well field.

After careful review it is considered there is no viable alternative to the proposed design and it is recommended that the existing design be retained and the lowest tender accepted.

**RECOMMENDED TENDERER**

The recommended tender is that of McNab and Sons (\$655,454) who have successfully completed a number of projects for Council previously including McCormacks Bay No 2 and Clifton No 4 reservoirs. They have also recently completed a reservoir and associated pipework for Banks Peninsula District Council. The mechanical subcontractor proposed for the project is Chubb Building Services who have also been involved in many projects for the Council including the Stewart Fountain and the Civic Offices essential supply fuel system. The electrical subcontractor proposed is Newpower/Streat Electrical who recently completed the electrical works for the Marshlands Pumping Station trading as Streat Electrical and also designed, supplied and installed the Civic Offices essential power generator system trading as Newpower Electrical.

All of these companies are considered to have the relevant experience, track record, resources and management skills to successfully complete this project by the specified date of 15 September 2000.

## FUNDING

The tender price of McNab & Sons is included in the following summary of the revised project budget. The current cost estimate based on the tender price is now \$1,002,835 compared to the original (pre-tender) budget of \$745,500. This difference represents an increase of \$257,335 and an overall shortfall in the budget of \$172,277.

	<b>Estimated Pre-Tender Budget</b>	<b>Post-Tender Estimated Cost</b>
<b>1. Funding</b>		
1998/1999 Year	10,000	15,558
1999/2000 Year	365,000	365,000
2000/2001 Year	450,000	450,000
<b>TOTAL</b>	<b>825,000</b>	<b>830,558</b>
<b>2. Expenditure</b>		
Well Drilling	100,000	100,000
Pump Station Construction	395,000	*655,454
Equipment (Pumps, fittings, electrical, etc)	147,000	143,496
Fees (Consultants, Consents, etc)	103,500	103,885
<b>TOTAL</b>	<b>745,500</b>	<b>1,002,835</b>
<b>Balance (projected deficit)</b>	<b>\$79,558</b>	<b>(\$172,277)</b>

\* Recommended tender of McNab & Sons Ltd

The 2000/2001 headworks budget is already committed with the programmed replacement of Riccarton Pumping Station and several electrical units and diesel storage tanks. For this reason it is proposed to meet the extra cost of Woolston Pumping Station with adjustments to both the 1999/2000 budget and the 2000/2001 capital works programme.

For the current year (1999/2000) it is proposed that \$100,000 be substituted from the mains renewals budget. Tenders for main laying have continued to be very competitive, resulting in the mains replacements identified in the Asset Management Plan being met at approximately \$100,000 under estimate.

For the 2000/2001 year, an increase of \$70,000 over the 1999/2000 capital programme has been identified in the Draft Budget. Other capital items have been adjusted to keep the overall capital works budget to within the 2% target increase. These are detailed in the Draft Annual Plan.

- Recommendation:**
1. That the tender of McNab & Sons for \$655,454 to construct the Woolston Pumping Station be approved.
  2. That additional funding for the project be met by a substitution of \$100,000 within the 1999/2000 capital budget, and the remainder from adjustments to the capital programme for the 2000/2001 year already signalled in the draft budget.

**Chairman's**

**Recommendation:** That the above recommendation be adopted.