

SOUTH WAIRARAPA DISTRICT COUNCIL

18 SEPTEMBER 2019

AGENDA ITEM H2

PUBLIC EXCLUDED

MANGANESE REMOVAL PLANT UPDATE

Purpose of Report

To inform members of progress in the procurement of the manganese removal plant and potential to exceed the budget.

Recommendations

Officers recommend that the Council:

1. Receive the Manganese Removal Plant Update Report.
2. Resolve that this report and minutes are released at the conclusion of the Manganese Removal Plant construction.
3. Request that officers provide regular updates regarding the forecast total cost of the project and seek Council approval if it is determined the project will run over budget.

1. Executive Summary

In April 2019, Council agreed to temporarily chlorinate the Martinborough water supply, to enable the boil water notice to be removed. This was made possible by supplying the township from a single bore that has the lowest manganese concentration so that the water does not discolour when chlorine is added.

The June 2019 Assets and Services Committee meeting recommended that council approve the cost estimate for the Manganese Removal Plant (MRP) developed by Wellington Water for \$2.052 million. Council approved a capital budget of \$2 million in the 2019/20 year to cover this project.

Subsequent to these approvals a preliminary estimate for the proposal received in September 2019 indicated an increased cost to \$2.52 million.

As this was significantly over the amount budgeted, an alternative proposal was developed through a local consultant, Southern Cross Consulting (SCC) to provide the equipment and install based on the preliminary design. The estimated cost for the proposal was \$2.23million.

The Tenders working party met on 5 September 2019 and agreed to proceed with the SCC proposal as this was closer to the amount budgeted. Officers advised that further cost savings may be possible during the detailed design, but these are not yet known or quantified. It is therefore necessary to make Council aware of the risk of the project being overbudget.

2. Manganese Removal Plant

2.1 Locations considered

A preliminary design was organized with Filtec, a specialist water treatment company, on the basis they would be subcontracted to Fulton Hogan to deliver the work as part of the alliance contract with Wellington Water.

There are two pipelines that run from the plant to the main network, and this allows a supply that has few connections so only a connection to the MRP is required. A number of locations were identified in close proximity to the Martinborough water treatment plant (MWTP) to minimise the cost of the pipeline to the MRP. There were a number of options considered (pictured below), however each had different constraints, such as an overhead power cable, not council-owned land, proximity to neighbours, etc.



Figure 1 Map of Locations considered

After a couple of meetings with designers it was decided that in order to meet the tight timelines, a temporary containerized plant was needed. This would cover any risk of delay for any land purchases. The preferred location was identified as Option 6.

A temporary installation allows the plant to be uplifted and relocated to land that the council owns and allows alternative locations to be evaluated further without the pressure of time. A lease agreement will be arranged with Palliser Vineyard for a section adjacent to council owned land at the end of New York Street West.

2.2 Cost Estimates

A cost estimate for the Manganese Removal Plant (MRP) developed by Wellington Water for the June 2019 Assets and Services Committee was \$2.052 million \pm 25%. This was an update from the initial estimate for a report to council in December 2018, and presented to council who approved a budget of \$2 million.

Wellington Water worked with Filtec and Fulton Hogan to develop a preliminary design proposal for the construction and installation of the MRP, which estimated an increased cost of \$2.52 million.

This cost increase was indicated in August. As this estimate was considerably over the budget approved, an alternative proposal was sought from a local consultancy, Southern Cross Consulting, who were working with council to progress the preliminary design to completion.

Below is a summary of the various pricing options:

Item	13-May-19	FH, Filtec	SSC proposal	Change SSC vs Base	Note
Consents	\$ 20,000.00	\$ 26,292.00	\$ 26,292.00	131%	
Project Management	\$ 269,647.08	\$ 43,037.94	\$ 62,000.00	23%	1
Preliminary and General	\$ 146,914.88	\$ 412,901.90	\$ 150,000.00	102%	
Civils Design	\$ 36,340.00	\$ 586,624.65	\$ 586,624.65	1614%	2
MEICA Design	\$ 123,922.40	\$ 130,356.59	\$ 125,000.00	101%	
Pipework	\$ 146,882.91	\$ 850,394.40	\$ 413,034.00	281%	
Mechanical	\$ 625,038.12	\$ 26,292.00	\$ 128,052.00	20%	
Electrical and Automation	\$ 428,589.86	\$ 193,388.00	\$ 493,388.00	115%	
Power Supply	\$ 70,000.00	\$ 16,450.00	\$ 16,450.00	24%	
Commissioning and Testing	\$ 140,386.91	\$ 102,057.73	\$ 75,709.00	54%	
Chlorine Upgrade	\$ 45,000.00	\$ 11,292.00	\$ 20,000.00	44%	
Other, including contingency		\$ 123,413.52	\$ 133,506.29	-	3
Total	\$ 2,052,722.16	\$2,522,500.73	\$2,230,055.94	109%	
Notes – There is					
1 – Project management incorporated in design, no comparable in detailed breakdown					
2 – Based on Fulton Hogan costs for design and construction					
3- No contingency					

There may be further savings with value engineering, to bring it closer to the \$2.052 M in the initial Wellington Water estimate. There is more detailed design around:

- The level of civil works required to secure the container.
- Detailed design around the pumps.
- Detailed design around the control and interaction with the existing infrastructure

2.3 Management of Summer Peak flows

Neither proposals will meet the timeline of the installation of the MRP by Christmas, with both indicating late January delivery. Council officers are developing mitigation measures to manage this risk:

These are:

- Continued and increased water conservation messaging to community.
- Discussions with large water users about minimising their usage.
- Improved pump control to allow possible blending of water from other bores.

3. Conclusion

The alternative proposal from local consultant, Southern Cross Consulting was accepted to procure all items of the plant separately \$2.23 M including a 5% contingency. This report is to keep Council informed of the risk of a budget overspend.

There may be further savings with value engineering, to bring it closer to the approved \$2M budget which was based on the initial Wellington Water estimate.

4. Appendices

Appendix 1 – Martinborough Water Scheme Upgrade – Cost Comparison

Written by: Lawrence Stephenson, Assets and Operation Manager

Reviewed by: Jennie Mitchell, Group Manager Corporate Support

Appendix 1 – Martinborough Water Scheme Upgrade – Cost Comparison

MARTINBOROUGH WATER SCHEME UPGRADE - COST COMPARISON

ESTIMATE RISK
HIGH - ESTIMATE
MEDIUM - QUOTE
LOW - FILTEC PRICE

Filtec Prices		
Item	Bill Description	Amount
2		
	P&G	\$ 307,060.56
3	Design Work	\$ 130,356.59
3.1	Meetings	\$ 17,141.00
4	Container fitout and chlorine	\$ 389,954.47
5	Pipework	\$ 173,454.83
6	Greensand Filters	\$ 30,534.66
7	Pumps	\$ 50,501.27
8	Blower	\$ 7,611.39
9	Valves	\$ 99,499.72
11	Instruments	\$ 54,289.03
12	Analysers	\$ 60,207.01
14	Chlorine relocation	\$ 11,706.46
16	Site tanks	\$ 98,838.06
17	Electrical install	\$ 56,729.69
19	Pre-commission	\$ 24,049.37
19.1	Commissioning	\$ 78,008.36
20	Training	\$ 11,650.95
21	Trial Pilot Plant	\$ 14,245.99
	SUB-TOTAL	\$ 1,577,676.86

Filtec Exclusions		
	New Mains Power Supply	\$ 16,450.00
	Comms to reservoirs and SWDC	\$ 11,144.00
	SWDC SCADA changes	\$ 119,694.00
	Generator connection point	\$ 2,500.00
	Telemetry hardware & software	\$
	New bore pumps & installation	\$ 60,000.00
		\$ 209,788.00

FULTON HOGAN & FILTEC	\$ 1,787,464.86
	\$ 1,787,464.86

Fulton Hogan Prices		
	Preliminary & General	\$ 105,841.34
	Connection to/from MRP	\$ 77,815.96
	MRP platform	\$ 87,875.44
	Wastewater main	\$ 10,484.54
	Wastewater pump station	\$ 12,385.62
	Stormwater connection	\$ 2,280.00
	Landscaping	\$ 21,870.20
	GHD fees	\$ 110,304.00
	Subcontractor mark-up (10%)	\$ 157,767.69
	Contingency (10%)	\$
		\$ 586,624.79

FULTON HOGAN & FILTEC	\$ 2,374,089.65
	\$ 2,374,089.65

WWL Management Estimate		
	Preliminary Design	\$
	Bonds	\$ 2,000.00
		\$ 2,000.00

Other		
	Consultation (Geotech)	\$ 20,000.00
	Building Consent	\$ 5,017.00
	Resource Consent	\$ 1,275.00
		\$ 26,292.00

FULTON HOGAN & FILTEC	\$ 2,402,381.65
----------------------------------	------------------------

Project Risk Contingency (5%)	\$ 120,119.08
--------------------------------------	----------------------

FULTON HOGAN & FILTEC TOTAL	\$ 2,522,500.73
----------------------------------------	------------------------

Water Treatment Plant Upgrade		
	WTP Software	\$ -
	WTP UV valve automation	
	WTP design	
	WTP Telemetry	
	Reservoir Telemetry	

Total Including WTP Upgrade	\$ 2,522,500.73
------------------------------------	------------------------

Plan 'B' Estimate - LS			
Item	Quoted	Risk	Comment
	\$ 1,287,180.00		
P&G		MEDIUM - QUOTE	included in SCC price
Design Work		MEDIUM - QUOTE	included in SCC price
Meetings		MEDIUM - QUOTE	included in SCC price
Container fitout		MEDIUM - QUOTE	included in SCC price
Electrical Panels, VSD etc		MEDIUM - QUOTE	included in SCC price
Control System MRP		MEDIUM - QUOTE	included in SCC price
Other	\$0.00		Container sub-total
Pipework (external)		MEDIUM - QUOTE	included in SCC price
Greensand Filters	\$ 86,860.00	MEDIUM - QUOTE	
Pumps		MEDIUM - QUOTE	included in SCC price
Blower		MEDIUM - QUOTE	included in SCC price
Valves		MEDIUM - QUOTE	included in SCC price
Instruments		MEDIUM - QUOTE	included in SCC price
Analysers		MEDIUM - QUOTE	included in SCC price
Chlorine System		MEDIUM - QUOTE	included in SCC price
Site tanks		MEDIUM - QUOTE	included in SCC price
Electrical install		MEDIUM - QUOTE	included in SCC price
Pre-commission		MEDIUM - QUOTE	included in SCC price
Commissioning		MEDIUM - QUOTE	included in SCC price
Training		MEDIUM - QUOTE	included in SCC price
Trial Pilot Plant		HIGH - ESTIMATE	not included
	SUB-TOTAL	\$ 1,374,040.00	

Filtec Exclusions				
	New Mains Power Supply	\$ 16,450.00	MEDIUM - QUOTE	PSCL quote
	Comms to reservoirs and SWDC	\$ 11,144.00	MEDIUM - QUOTE	SCC price - provisional item
	SWDC SCADA changes	\$ 119,694.00	MEDIUM - QUOTE	SCC price - provisional item
	Generator connection point	\$ 2,500.00	HIGH - ESTIMATE	SCC price - provisional item
	Telemetry hardware & software	\$	MEDIUM - QUOTE	SCC price - provisional item included SCADA
	New bore pumps & installation	\$ 60,000.00	MEDIUM - QUOTE	Fulton Hogan Quote 23 Aug
		\$ 209,788.00		

ALTERNATIVE	\$ 1,583,828.00
	\$ 1,583,828.00

Fulton Hogan Prices				
	Preliminary & General	\$ 105,841.34	MEDIUM - QUOTE	Fulton Hogan Quote 23 Aug
	Connection to/from MRP	\$ 77,815.96	MEDIUM - QUOTE	Fulton Hogan Quote 23 Aug
	MRP platform	\$ 87,875.44	MEDIUM - QUOTE	Fulton Hogan Quote 23 Aug
	Wastewater main	\$ 10,484.54	MEDIUM - QUOTE	Fulton Hogan Quote 23 Aug
	Wastewater pump station	\$ 12,385.62	MEDIUM - QUOTE	Fulton Hogan Quote 23 Aug
	Stormwater connection	\$ 2,280.00	MEDIUM - QUOTE	Fulton Hogan Quote 23 Aug
	Landscaping	\$ 21,870.20	MEDIUM - QUOTE	Fulton Hogan Quote 23 Aug
	GHD fees	\$ 110,304.00	MEDIUM - QUOTE	Fulton Hogan Quote 23 Aug
	Subcontractor mark-up (10%)	\$ 42,885.70	HIGH - ESTIMATE	Fulton Hogan portion
	Contingency (10%)	\$		
		\$ 471,742.80		

ALTERNATIVE	\$ 2,055,570.80
	\$ 2,055,570.80

WWL Management Estimate		
	Preliminary Design	\$ 62,000.00
		\$ -
		\$ -
		\$ 62,000.00

Other		
	Consultation	\$ -
	Building Consent	\$ 5,017.00
	Resource Consent	\$ 1,275.00
		\$ 6,292.00

ALTERNATIVE	\$ 2,123,862.80
--------------------	------------------------

Project Risk Contingency (5%)	\$ 106,193.14
--------------------------------------	----------------------

ALTERNATIVE TOTAL	\$ 2,230,055.94
--------------------------	------------------------

Water Treatment Plant Upgrade			
	WTP Software	\$ -	included
	WTP UV valve automation	\$ -	included
	WTP design	\$ -	included
	WTP Telemetry	\$ -	included
	Reservoir Telemetry	\$ -	included

Total Including WTP Upgrade	\$ 2,230,055.94
------------------------------------	------------------------

\$2,052,722.16