Otorohanga Community Board

AGENDA

10 November 2011

Members of the Otorohanga Community Board

Mr R Prescott (Chair)
Mrs EM Cowan (Deputy Chair)
Mrs AC Laws
Mr AG Ormsby
Mr PD Tindle
Mr DR Williams

Meeting Secretary: Mr CA Tutty (Governance Supervisor)

OTOROHANGA COMMUNITY BOARD

10 November 2011

Notice is hereby given that an ordinary meeting of the Otorohanga Community Board will be held in the Council Chambers, Maniapoto St, Otorohanga on Thursday 10 November 2011 commencing at 4.00pm.

3 November 2011

DC Clibbery
CHIEF EXECUTIVE

AGENDA

ORDER OF BUSINESS:

PRESENT

IN ATTENDANCE

APOLOGIES

ITEMS TO BE CONSIDERED IN GENERAL BUSINESS

CONFIRMATION OF MINUTES - 13 OCTOBER 2011

REPORTS

Item-57 REVIEW OF PROPOSED UPGRADE WORKS - OTOROHANGA WASTEWATER WETLANDS

To: **Chairperson and Members**
Otorohanga Community Board

From: **Engineering Manager**

Date: **10 November 2011**

Relevant Community Outcomes

- Ensure services and facilities meet the needs of the Community
- Manage the natural and physical environment in a sustainable manner

---

Executive Summary

The tenders for the contracts for the upgrading of the Otorohanga wastewater treatment plant were considered by Council on 25 October 2011. Council requested that a review be undertaken of the proposed works for the wetlands and this then be referred to the Board for consideration.

Staff Recommendation

It is recommended that:

1. The necessary upgrading works in the wetlands as part of contract 971 at an estimated price including contingencies and engineering etc. of approximately $100,000 be undertaken by Inframax Construction Limited, subject to suitable negotiation.
2. The works are included within the approved increased budget allocation of $1,150,000.

Report Discussion

At the Council meeting on 25 October 2011 a report on the tenders received for the upgrading of the wastewater treatment system was considered. The works had been separated into 3 contracts to allow for contractor to tender for all or part of the work and achieve the best overall price. These contracts are 969 earthworks, 970 ponds and 971 wetlands. The works involved in each contract are as set out in the report to the Board on 13 October 2011.

Council approved the acceptance of the tenders for contracts 969 and 970 together with some material and engineering / supervision costs. It was agreed to raise the level of expenditure in

the current financial year from $720,000 to $1,150,000 to allow for these works. Council's LTP and budget estimates had included allowances of $25,000 in 2010/11 for the Frederick Street pump station and $26,000 in 2012/13 for the replacement of one of the aerators. These two items were additional to the $720,000 but are now included in contract 970 and therefore in the approved increased budget.

Council also requested that a review be undertaken of the proposed works at the wetlands and the future maintenance required in retaining the wetlands. The lowest tender price received for contract 971 was from Inframax Construction for $299,685.39.

Discussions have been held between the consultant project managed (Cliff Boyt) and Council's Chief Executive and Engineering Manager on the proposed works at the wetlands and their priorities. Since those discussions, Cliff Boyt has prepared a report on the options for the wetlands which is attached to this report.

Preliminary discussions have also been held with Inframax who will be undertaking the earthworks contract to see if they are prepared to negotiate a reduced contract to only undertake part of the works scheduled in the wetlands contract. They have indicated that they are happy to work with Council in this way.

Part of the resource consent application and discussions with iwi included the retention of the wetlands for their part in the treatment process and providing ground contact, as was agreed as part of the previous resource consent. This latter function of the wetland will remove the need to re-instate a rock / ground contact system at the stream outlet which is clogged and beyond repair. A minor modification to the pipeline and tidy up only is now proposed for the stream outlet.

After receipt of Cliff Boyt's report, further consideration has been given by Council's CE and EM to the work needed to the wetlands to meet the expectations of Waikato Regional Council and iwi. A number of items are considered necessary at this time to meet these expectations while some will assist with maintenance requirements. These items can be upgraded in the future if necessary. The importance is to achieve consistency of the quality of the treated effluent. There will however be the need for ongoing maintenance work to keep the wetlands working to an acceptable standard. This comment does also apply to the other parts of the wastewater treatment system.

The works on the wetlands considered necessary at this time are:

- Modifying the outlet systems to both the surface and subsurface flow wetlands to control water levels and flows through the wetlands.
- Modifying the inlet system to the subsurface wetlands to control flows
- Formation of flow channels through the gravel beds of the subsurface wetlands
- Addressing weed control within the wetlands.

It is expected that these works can be undertaken by Inframax in conjunction with their other contracted works on the oxidation ponds. Inframax's tender price for these elements of the wetland works, plus contingencies and engineering overheads amounts to approximately $100,000.

As stated in Cliff Boyt's report, there are also possibilities for some further reduction of this cost by negotiation with Inframax. This should allow the upgrading works required at present to be completed for the increased allocation of $1,150,000 as approved by Council.

It should be noted that the recommendation of this report does not exactly align with the attached report of Cliff Boyt, which recommends that a somewhat greater package of works on the wetlands is undertaken, including desludging and replanting of the eastern wetland cell. Council staff do however believe that the agreed improvements to the oxidation ponds will substantially improve effluent quality and will contribute to more efficient operation of the wetlands, and that

there is therefore not a strong case for immediate improvements to the wetlands that go beyond those identified as being 'urgent' in Cliff Boyt's report.

If the targeted improvements in effluent quality are not achieved it could be necessary to conduct further works on the wetlands in the future, but it does not appear likely that the deferral of such works would substantially increase the associated cost, and as such a progressive approach towards such potential additional works appears prudent.

It is therefore recommended that the necessary works from contract 971 be undertaken by Inframax Construction Limited, subject to suitable negotiation and that the works are undertaken within the approved increased budget allocation of $1,150,000.

Roy Chadwick
ENGINEERING MANAGER

Attachments

a. Cliff Boyt - report on options for work on the wetlands

MEMO

To **Roy Chadwick – Otorohanga District Council**
From **Cliff Boyt – Consultant**
Date **1 November 2011**
Subject **Options Related to Contract 971 – Upgrade of Wetlands**

Introduction

This report is in response to the Council consideration of the tenders received for the three contracts for the upgrade works at the Otorohanga WWTP as addressed in my report on tender evaluation dated 20 October 2011.

At their meeting on Wednesday 26 October the council approved acceptance of tenders for contracts 969 and 970, but were reluctant to accept a tender for contract 971 as the cost for upgrading the wetlands was a surprise. The tenderers have been advised that no tender is being accepted for the wetlands work at present.

This report is to advise on the options for moving forward on this matter.

History and Value of the Wetlands

The wetlands were installed in 2000 following the resource consent renewal process, which included discussions and agreement with local Iwi. For the first 3 to 4 years the performance of the wetlands was good, but the performance gradually deteriorated. Analysis of the performance for the year July 2009 to June 2010 showed that the wetlands provided virtually no treatment to the ex-oxidation pond wastewater.

In July 2010 the maintenance of the treatment plant was taken back in-house and some significant maintenance was undertaken in the wetlands. The treatment performance of the wetlands was monitored by weekly "before and after" sampling through the last summer. The results showed a significant improvement from the previous summer. The following table shows the median results for 3 key parameters:

Parameter	After Oxidation Pond	After Wetland
E Coli – cfu / 100mls	**1800**	**500**
Suspended Solids – mg/l	**126**	**30**
cBOD – mg/l	**59**	**15**

The wetlands have little effect on nutrients.

The AEE for the current resource consent renewal process has been prepared taking account of the plant performance over the past summer, including the wetlands. The set of proposed conditions has been set on the basis of these results, with the upgrade works planned to provide more consistent performance.

The recent discussions with Iwi have been on the basis of retaining the wetlands as part of the treatment process. There has been an acceptance by Iwi that modifications to the gravel bed (subsurface-flow) wetlands will provide the "ground contact" that was provided by the buried rock-bed discharge system that has become totally clogged beyond redemption.

The Need to Maintain the Wetlands

Wetlands are a living environment. They operate by utilising the growth of the plants to absorb organic material (measured as cBOD), trap suspended material (Suspended Solids) by filtering and disinfect bacteria (E Coli) by exposure to sunlight.

Since their installation in 2000 there was very little maintenance work applied to the wetlands until 2010. The wetlands gradually became overgrown and the outlets gradually became clogged. The result was that the normal depth of water in the wetlands became much deeper than designed and some of the planted species failed to survive. There is now generally only one of the original species remaining.

As wetlands treat the wastewater the plants grow and tend to become "clumped". Some of the plant matter dies and rots, forming sludge on the floor of the wetland cells. The sludge and vegetation material is largely responsible for clogging the outlet system. As these changes occur the effectiveness of the wetlands deteriorates and maintenance is needed to restore them to good performance.

Maintenance and Modification Required Now

Urgent Maintenance

The wetlands at the Otorohanga WWTP are desperately in need of some maintenance so that they can be restored to "near new" condition and performance. Particular attention needs to be urgently given to:

- Modifying the outlet system for the surface-flow wetlands to allow water depths to be consistently managed within the design range.
- Modifying the outlet system of the gravel-bed cells to allow for consistent management of the water depths within the design range.
- Modifying the gravel-beds by cutting a series of channels through the cells - as "agreed" with Iwi.
- Addressing weeds and other unwanted species (e.g. willow and bull-rush) in both the surface-flow and gravel-bed cells.
- Modifying the inlet system to the gravel-bed cells to ensure even distribution of the effluent across the full extent of the two cells and to eliminate the blockages that currently occur.

Important Maintenance

When the surface-flow wetlands were constructed an intermediate bund was installed between cells 1 & 2 and between cells 3 & 4. These intermediate bunds were to allow for one cell to be isolated, taken out of operation and dried out to allow desludging and replanting of that cell while the other 3 cells continued in operation. The intermediate bunds have deteriorated and are not capable of performing the role they were designed for. There is a strong need to construct new bunds that will perform the required duty so that an individual cell can be isolated as proposed.

The inlet system to the surface-flow cells does not distribute the inflow evenly across the cells, it becomes clogged regularly and it is very difficult for the operators to clean out. Modifying this inlet system is desirable.

Desirable Maintenance

The assessment of the wetlands by Wetland Solutions Ltd in July identified that one of the four surface-flow cells (the eastern-most cell 4) is badly clogged with sludge, while the sludge depth in the other three cells is near to the desirable depth. A task to dewater this cell, remove all excess sludge, replant the cell and then bring it back to full operation over the next year was included in the tender documents. This work could be deferred, but only for one or two years at most. Once the outlet systems in the surface-flow cells is modified and the water depth lowered to the design range the extent and effect of sludge build-up in cell 4 will become very evident and the contribution of this cell to the treatment performance will be minimal at best. There is advantage in doing this work as part of the current works. Carrying the work out in isolation in a future year will inevitably cost more than the currently tendered cost.

Other work that was included in the wetlands package and the wetlands component of the earthworks package can be deferred until a future year. They could probably be carried out in conjunction with the planned 2017 stage 2 upgrade works.

Costs of the Upgrade Works Considering the Various Wetland Options

The work that has been committed by the acceptance of the tenders for contracts 969 and 970 (earthworks and oxidation pond) has an expected cost as shown below:

-	Contract 969 – Earthworks (excluding Wetlands component)	$ 246,440.67
-	Contract 970 – Oxidation Pond	$ 680,149.58
-	Add allowance for contingencies (5%)	$ 46,000.00
-	Add cost of pumps and aerator	$ 40,352.00
-	Allow for work at discharge point (cost reassessed)	$ 10,000.00
-	Design fees	$ 67,112.00
	Total	**$1,090,054.25**

There are provisional items in the earthworks and oxidation packages to a total value of $25,000 of which we could anticipate about $19,000 will not be required. That will bring the current commitment down to $1,071,000. It is also important to note that the pumps and aerator (total of $40,000) were provided for as separate items in the Council LTP as essential maintenance items so could be removed from the upgrade project cost.

The cost of the "urgent" wetlands work listed above, based on tendered prices and allowing for contingencies at 5% is likely to be $83,000 but there are opportunities for reduction that may bring that down to $58,000.

If we were to also include the "important" work on the intermediate bunds and the inlet to the surface-flow cells then the total cost for the wetlands package would be $155,000, with a possibility to reduce this to $130,000.

If we were to add the "desirable" work on desludging and replanting of cell 4 then the total cost for the wetlands package would be $253,000, with a possibility to reduce this to $210,000.

Summary of Wetlands Options

There are a number of options available for carrying out some works on the wetlands. Recognising that some "commitment" has been made to Iwi to retain the wetlands there is a "commitment" on Council to maintain them and to ensure that they operate in "near new" condition.

The total upgrade cost if we add the "urgent" wetlands work to the "likely" committed cost will be between $1,129,000 and $1,154,000.

If the intermediate bunds and inlet works in the surface flow cells are added then the total upgrade cost will be between $1,201,000 and $1,226,000.

If the work to desludge and replant cell 4 is also included then the total upgrade cost will be between $1,281,000 and $1,326,000.

It is also important to note that at least $40,000 funding is available from separately funded maintenance items in the LTP.

Other Options for the Wetlands

There have been suggestions of other options for the wetlands, including turning them into shallow oxidation ponds with no planting and complete decommissioning.

The Community Board was advised in July that the wetlands had performed well through last summer after some work the previous year and that the wetlands were part of the proposed treatment process going forward. It was at least implied that the wetlands will need regular maintenance to keep them operating at an effective level. The Board was advised that a full assessment of the wetlands would be carried out before determining what work would be needed.

At the public information day and the hui with Iwi representatives the wetlands were an accepted part of the treatment process. The proposal to modify the gravel-bed cells instead of renovating the buried rock-bed was proposed and accepted. That work at least is a "commitment".

There would be a possibility to turn the surface-flow cells into shallow ponds with no planting. The modification would entail significant cost and there will be a significant risk of algae blooms in the warm pond water in summer. The ponds would need to be weeded and desludged regularly.

There is also a possibility to decommission the surface-flow wetland cells completely. That would require some significant cost to modify the pipework to feed wastewater to the gravel-bed cells and to kill the wetland plants, remove the sludge and the embankments and to restore the area to grassland. There would be minimal ongoing costs related to the surface-flow wetland cells.

The preferred option would be to retain and maintain the surface-flow wetland cells.

Future Maintenance Requirements

Wetlands need to be maintained regularly. Weed management will be an annual exercise. However this will be a simpler and cheaper exercise with managed shallower water depths and will be at relatively low cost and carried out by the operators. If cell 4 is desludged and replanted this year it should have a viable life before the work needs to be repeated of at least 12 to 16 years. If there is a need for a 12 year cycle then one of the 4 cells will need to be desludged and replanted every 3 years. The current cost of this work is $90,000 which represents an equivalent annual cost of $30,000. The actual cycle required may prove to be longer than 12 years and will be revealed through annual assessment and recording of the condition of each cell. It has taken 11 years for cell 4 to reach the current condition and the other 3 cells appear to be fine with no pressing need for this attention. Therefore I would be confident that a 12 year cycle would be a "worst-case" situation.

Recommendation

It is recommended that:

1. The tender of Inframax Construction Ltd for contract 971 "the wetlands package" be accepted in part.
2. That the work set out above for renovation of the wetlands up to and including desludging and replanting of cell 4, yielding a total cost of upgrade works of between $1,281,000 and $1,326,000 be approved and that staff be authorised to negotiate the best way to implement the wetlands with Inframax.
3. As a "fall-back" option the work outlined above, but with deferring the desludging and replanting of cell 4, be approved at a total upgrade cost of between $1,201,000 and $1,226,000.

Cliff Boyt
Consultant

Item-58 OCB MATTERS REFERRED FROM 13 OCTOBER 2011

To: **Chairperson and Members**
Otorohanga Community Board

From: **Governance Supervisor**

Date: **10 November 2011**

Executive Summary

1. CHAIR

13 October 2011

i. To organise a suitable date for Members of the Board, Engineering Manager and Community Facilities Officer to walk over the Stopbanks.

ii. To organise a suitable date for Members of the Board and appropriate staff to walk through the Bob Horsfall Reserve.

2. MRS COWAN

13 October 2011

i. To go back to the i-Site staff for them to define their request as to what is required for a Community Notice Board then report back to the Board.

3. ENGINEERING MANAGER

13 October 2011

i. To arrange for staff to investigate a proposal to provide public car parking in the area adjacent to the Otorohanga Club and to utilise the existing entranceway off Maniapoto Street.

CA Tutty
GOVERNANCE SUPERVISOR

GENERAL