

## Decision

Case Number: 398418

## BACKGROUND

### The Issues as Raised in the Complaint:

The complainant suggests that taxpayer costs with respect to water reuse are not mentioned in the survey or supporting documents on wastewater options; whereas potential water reuse revenues are identified.

Specifically, the complainant raises the following two issues regarding water reuse costing:

1. That the CALWMC failed to ensure that the findings of the independent consultant on water reuse are fairly presented to the public (presumably this is in reference to the survey and the accompanying guide). In particular, that the practical challenges and the cost assessments in Section 3.6 of Tech Memo #3 have not been summarised for the public; and
2. That the CALWMC has failed to obtain and publish information from the Regional Water Supply Commission on revenue losses resulting from sewage treatment water reuse. The complainant claims that these extra taxpayer costs more than offset the water reuse revenues.

## FINDINGS

There are two main issues raised in this complaint. I turn now to the first issue.

1. **That the CALWMC failed to ensure that the findings on water reuse are fairly presented and that the practical challenges and cost assessments in Technical Memo #3 have not been summarised for the public**

In order to assess this issue, we must turn to the survey instrument itself to determine what information is provided to the public with respect to this issue.

### What does the survey say about revenue and expenses related to water reuse?

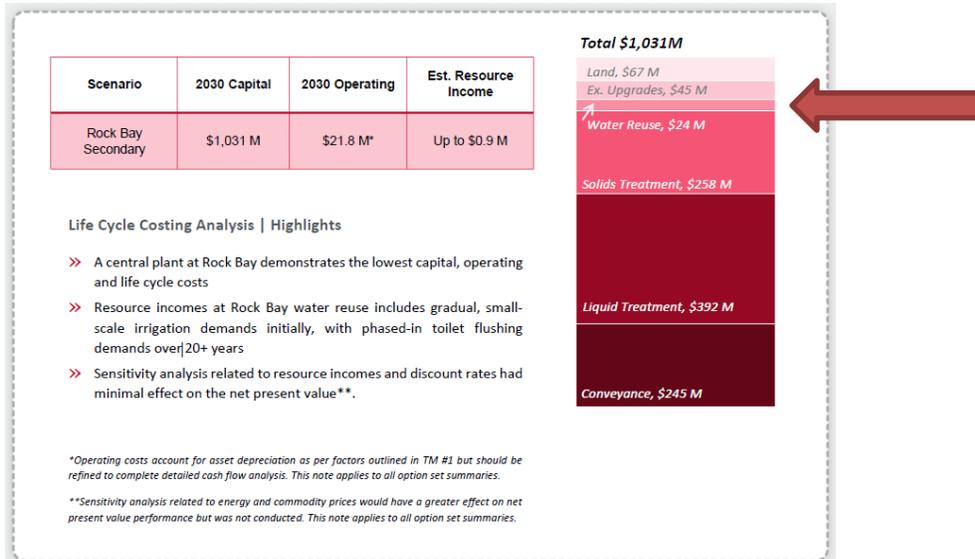
The survey provides information in three distinct ways:

The first is within the survey itself as part of the body of the survey text, (information is provided on various metrics associated with the options). Secondly, a respondent can access more detailed information about a particular option and resource recovery through links provided in the survey to some sections of Technical Memo #3 (not the full memo). Each link brings the reader to the page(s) of the memo relevant to that particular section of the survey. Thirdly, there is a link to a Citizen's Guide which helps the respondent to understand wastewater issues more broadly.

### Information within the survey

With respect to the information provided within the survey itself, summary cost information is provided on **capital** and **operating costs** as well as **estimated annual resource income by 2030** ("heat/water"). The survey further provides a breakdown of annual costs per household by municipality however water reuse costs are hidden or otherwise not distinguished within these costs.

Each option set in the survey includes a link to a section of TM#3 that provides a breakdown of life cycle costs, including water reuse, for each option. For example, this breakdown for Option 1a Rock Bay - Secondary is provided below:



However, the survey itself is silent on costs specifically associated with water reuse.

### Information provided in the Citizen’s Guide

The Citizen’s Guide is a document that is provided for the benefit of respondents to provide background information on the project, including briefing the public on the “basics” of wastewater treatment and resource recovery options. The Guide introduces the options – including key information, benefits and implications for each option – and technologies that are currently being considered by the CRD as possible solutions to wastewater treatment in the Core Area.

The complainant specifically raises a concern that the supporting Citizen’s Guide to Wastewater Options document identifies potential water reuse revenues but avoids any mention of taxpayer costs.

The Guide provides much of the same information as the survey. A review of the Guide does confirm that the estimated annual resource *income* by 2030 (“heat/water”) is provided for each option set, as well as estimated capital costs and annual operating costs. However, the estimated *costs* for water recovery are not provided.

The complainant suggests that *“the practical challenges and the cost assessments in Section 3.6 of Tech Memo #3 should have been summarised for the public, not just the potential revenues.”*

The FTA found limited discussion of the challenges and costs associated with water reuse in either the survey itself or the Citizen’s Guide (other than statements suggesting that cost outweigh benefits). However, a link is provided within the survey to section 3.0 “Resource Recovery Feasibility Analysis” of Technical Memo #3, which includes a sub-section on water recovery, including challenges.

The Guide offers more information than the survey does on the key considerations (e.g., pros and cons) for the various option sets. The forensics behind the full life cycle costing associated with water reuse, however, is not provided. Rather, the Guide directs the public to refer to other publically available documents for more detailed costing.

In summary, no information is provided in the Guide on the costs specifically associated with water recovery.

### *Information provided in Technical memo #3*

The memo presents the life-cycle project costing for each of the seven option sets with respect to treatment and water recovery and touches on key areas of note related to costing with respect to water reuse.

In particular, the memo discusses:

- Increase in operating cost (associated with water reuse);
- Cost-benefit (as it pertains to water reuse);
- Performance assessment (water reuse ratio of cost to income);
- Water reuse capital vs. operating cost comparisons; and
- Net Present Value analysis.

These are examined below.

#### Increase in operating costs

Throughout the memo, we find multiple statements related to potential water reuse income as well as reference to the fact that water reuse systems will result in an overall increase in capital operating costs, even when incomes are considered.

For instance, page 2 states:

*“... Overall, while treating to tertiary levels has some appeal, it does come with higher capital and operating costs...”*

Further, page 5 states:

*“While resource recovery provides for some cost-offsets by way of new incomes, water and heat recovery systems demonstrate **an overall increase in costs** associated with higher levels of service... The drivers for resource recovery ultimately go beyond financial, in terms of environmental stewardship and water innovation: public sentiment for increased levels of service and their costs is an important outcome of upcoming public consultation. Further public input can shape the direction for services in the Core Area beyond the base expectations of meeting the regulations” [emphasis added].*

#### Cost-Benefit

Technical Memo #3 also points the reader’s attention to the fact that the costs related to water reuse will outweigh the financial benefits.

Table 3.6 in Technical Memo 3 lays out capital, operating and revenue information and summarizes those findings from a life cycle perspective. The general finding as it relates to water reuse is that costs far outweigh potential incomes:

### Cost-Income Summary

Table 3-6 outlines the capital and operating costs plus potential revenues for two reuse scenarios (however, life cycle costing for water reuse was conducted for all seven option sets). Example treatment capital and operating costs are included given the intention to achieve tertiary effluent for water reuse.

Table 3-6: Cost-Income Summary

SCENARIO	2030 CAPITAL COST	2030 OPERATING COST	2030 Revenues
1 Plant Sidestream Reuse	\$24.2M	\$300K to \$400K/year	Up to \$800K/year
7 Plant Option Set with 5 Water Reuse Systems	\$205M <sup>6</sup>	\$2.5M to \$3.0M/year	Up to \$4M+/year

### Performance Assessment

Option set summaries identify performance criteria related to the ratio of costs to incomes for water reuse. All of findings point to a ratio less than 1 demonstrating that costs outweigh incomes. Example, Option Set 1a for the proposed secondary treatment plant at Rock Bay:



### Capital vs. Operating Costs Comparisons

Appendix C of Technical Memo #3 presents a series of tables detailing the costing analysis for each of the seven option sets. Item 4 within each table includes water reuse capital costs as well as operations cost projections. The excerpt below shows the cost components for Option 1a.

Cost Components for Option 1a - One Secondary Plant (x 1,000)

Cost Component	Capital Cost Incurred <sup>(1)</sup>		Operating Cost <sup>(1)</sup>		
	2015	2030	at 2015	at 2030	at 2045
1. Conveyance					
(a) Clover Pt PS and Foremain to Rock Bay	\$ 51,400	N/A	\$ 540	\$ 640	\$ 730
(b) Macaulay Pt PS and Foremain to Rock Bay	\$ 65,400	N/A	\$ 620	\$ 730	\$ 840
(c) Effluent PS and Foremain to Clover Point	\$ 83,900	N/A	\$ 1,000	\$ 1,190	\$ 1,400
(d) Replace Clover Outfall	\$ 32,500	N/A	incl. in (c)		incl. in (c)
(e) Reline Macaulay Outfall	\$ 11,100	N/A	incl. in (b)		incl. in (b)
Conveyance Subtotal:	\$ 244,300	\$ -	\$ 2,160	\$ 2,560	\$ 2,970
2. Liquid Treatment (Secondary)	\$ 362,000	\$ 162,000	\$ 7,000	\$ 10,100	\$ 12,650
3. Solids Treatment - AD at Rock Bay	\$ 258,000	\$ 90,800	\$ 5,000	\$ 8,800	\$ 10,300
4. Reuse					
(a) Tertiary Slipstream	\$ 8,100	N/A	\$ 230	\$ 230	\$ 230
(b) Effluent Pumping/Piping/Controls	\$ 16,100	N/A	\$ 70	\$ 75	\$ 80
Reuse Subtotal:	\$ 24,200	\$ -	\$ 300	\$ 305	\$ 310
5. Existing System Capacity Upgrades					
(a) Craigflower PS - Constructed	\$ 12,100	N/A	N/A	N/A	N/A
(b) Arbutus Attenuation Tank - incl land	\$ 20,000	N/A	N/A	N/A	N/A
(c) Siphon Extension (1600 m)	\$ 7,500	N/A	N/A	N/A	N/A
(d) Upgrade Currie St PS	\$ 2,300	N/A	N/A	N/A	N/A
(e) Upgrade East Coast Interceptor (1400 m)	\$ 3,100	N/A	N/A	N/A	N/A
Existing System Subtotal:	\$ 45,000	\$ -	\$ -	\$ -	\$ -
6. Land Costs	\$ 67,200				
<b>Total:</b>	<b>\$ 1,030,700</b>	<b>\$ 252,600</b>	<b>\$ 14,460</b>	<b>\$ 21,765</b>	<b>\$ 26,230</b>

<sup>(1)</sup> Includes all contingencies, engineering, etc. outlined in TM #1

## Net Present Value Analysis

A Net Present Value (NPV) analysis compares cash inflows and outflows for each option set, further demonstrating that incomes do not outweigh the costs for water reuse over the 30-year life cycle costing. The NPV for Rock Bay secondary treatment plant option shows an overall deficit from 2015 to 2045, and is provided below for illustrative purposes:

### Net Present Value

Assumptions	
Interest Rate	7%
Inflation	2%
Real Discount Rate	5%
Time period	2015 to 2045

A real discount rate is used because we are using constant dollars.

### Resource Income (from 2015 to 2045)

	Total Revenue (no discounting)	Present Value
<i>Reclaimed water use</i>	\$ 23,300,000	\$ 8,600,000
<i>Heat recovery</i>	\$ -	\$ -
<i>Carbon credits</i>	\$ -	\$ -
<b>Total</b>	<b>\$ 23,300,000</b>	<b>\$ 8,600,000</b>

### Costs (from 2015 to 2045)

	Total Costs (no discounting)	Present Value
<i>Capital Costs</i>	\$ 1,283,300,000	\$ 1,097,300,000
<i>O&amp;M</i>	\$ 633,900,000	\$ 287,900,000
<i>Borrowing Costs</i>	\$ -	\$ -
<b>Total</b>	<b>\$ 1,917,200,000</b>	<b>\$ 1,385,200,000</b>

<b>Net Present Value (2015 to 2045)</b>	<b>-\$ 1,376,600,000</b>
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### Water reuse costing metrics presented in the technical memos

While costing metrics are provided across all three technical memos, the FTA was unable to fully uncover and comprehend the full metrics that factored into the water reuse costing analysis presented in TM#3.

**Technical Memo #1** provides the following costing metrics of relevance to water reuse:

- construction unit costs for various diameters of pipe and sizes of pumping facilities; and
- water distribution / service costs.

There are other metrics presented in section 5.8 “Life Cycle Costing” (e.g., operations and maintenance costs) but it is not clear whether these would be factored into water reuse costing.

**Technical Memo #2** presents water reuse related metrics for each of the wastewater treatment sites. These include:

- length of water reuse pipe required,
- level of service / demand for water reuse applications (irrigation, aquifer and toilet);
- pump system capacity requirements (represented in m<sup>3</sup>/day and MLD) to meet anticipated demand; and
- pricing for reclaimed water<sup>1</sup>.

In **Technical Memo #3**, the option sets were costed (including water reuse capital and operating costs and revenues for each site) presumably based upon the metrics presented in TM#1 and 2. However, the TM#1 and 2 metrics that went into the water reuse cost-benefit performance indicators described above are not all clearly laid out in TM#3. TM#3 provides particular metrics for water reuse capital costs,

<sup>1</sup> Water pricing is set at 80% of potable water retail rates for potential irrigation and toilet flushing revenues; it is noted that aquifer recharge application will not create any revenue.

(i.e., pipe and pumping facilities) and revenues (based on anticipated water rates and demand), but other water reuse metrics are less evident.

The option set costing tables laid out in Appendix C of TM#3 note that the following TM#1 metrics have been factored into both **capital and operating costs** for each option set:

- “contingencies” (as a percentage value of capital costs);
- “engineering”;
- “etc.”

This is shown in the cost component tables for each option set. The table for Option 1a is provided below for demonstration:

Cost Components for Option 1a - One Secondary Plant (x 1,000)

Cost Component	Capital Cost Incurred <sup>(1)</sup>		Operating Cost <sup>(1)</sup>		
	2015	2030	at 2015	at 2030	at 2045
<b>1. Conveyance</b>					
(a) Clover Pt PS and Foremain to Rook Bay	\$ 51,400	N/A	\$ 540	\$ 640	\$ 730
(b) Macaulay Pt PS and Foremain to Rook Bay	\$ 65,400	N/A	\$ 620	\$ 730	\$ 840
(c) Effluent PS and Foremain to Clover Point	\$ 83,900	N/A	\$ 1,000	\$ 1,190	\$ 1,400
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Conveyance Subtotal:	\$ 244,300	\$ -	\$ 2,180	\$ 2,560	\$ 2,970
<b>2. Liquid Treatment (Secondary)</b>	\$ 392,000	\$ 182,000	\$ 7,000	\$ 10,100	\$ 12,650
<b>3. Solids Treatment - AD at Rook Bay</b>	\$ 258,000	\$ 90,800	\$ 5,000	\$ 8,800	\$ 10,300
<b>4. Reuse</b>					
(a) Tertiary Slipstream	\$ 8,100	N/A	\$ 230	\$ 230	\$ 230
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(a) Craigflower PS - Constructed	\$ 12,100	N/A	N/A	N/A	N/A
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Existing System Subtotal:	\$ 45,000	\$ -	\$ -	\$ -	\$ -
<b>6. Land Costs</b>	\$ 67,200				
<b>Total:</b>	<b>\$ 1,030,700</b>	<b>\$ 252,600</b>	<b>\$ 14,460</b>	<b>\$ 21,765</b>	<b>\$ 26,230</b>

<sup>(1)</sup> Includes all contingencies, engineering, etc. outlined in TM #1

This note in TM#3 Appendix C implies that “contingencies, engineering, etc.” have been applied to water reuse costing as a line in the cost component tables. However, there are a number of metrics presented for the entire project life cycle costing in Section 5.0 of TM#1 that do not clearly apply to water reuse, such as trucking and labour costs. Overall, it is unclear which of these inputs have been applied to water reuse costing other than contingencies and engineering.

TM#3 Appendix C tables also note that the following costs were factored into the **operating costs** for each option:

- “O&M” (‘operations and maintenance’) and
- “borrowing”.

However, these are not further explained. The FTA assumes that these costs are derived using metrics presented in TM#1 but that is not stated. As such, the full forensics behind the water reuse costs are not entirely clear.

## Conclusion

As it relates to water reuse, there is ample evidence that the CALWMC was provided with clear information that water reuse, from a purely financial perspective, was not advantageous. I can also state that Urban Systems has suggested that water reuse is an issue that will require policy direction as from a purely financial perspective; the costs cannot be fully recovered.

While it is absolutely true that the information which was available in the technical memos was not summarized in the survey instrument itself or in the Citizen's Guide, what was in the memos, was available to the CALWMC and to the public.

### What would characterize "fair" presentation of the information?

The purpose of fairness in administrative law is to guarantee better decision-making in terms of the uncovering of facts; the resolution of issues and concerns of the decision-maker; and due consideration being given to the interests at stake.

An important aspect of assessing whether the information presented was "fair" is determining the boundaries of procedural fairness in a given case. I believe that it is important to bring it back to the purpose of the information and its role in the decision at hand, to determine whether a particular procedural measure is justified in a given situation.

### What decision is being made at this juncture; and what role does water reuse have?

Here I explore the extent to which the topic of water reuse is integral to the present decision or rather is integral to a future decision.

The FTA understands that opportunities for water recovery are tied to the specific options sets. Levels of treatment and plant siting for each option set shape opportunities for water reuse over the project's life cycle. As such, the decision before the CRD at this juncture to recommend an option for wastewater treatment includes consideration for water reuse costs and benefits.

The option sets include complex and varied considerations, and as revealed in TM#3 and the public consultation materials (the survey and Citizen's Guide), there are challenges and benefits (e.g., financial, environmental, etc.) built into each. While it is true that all options have included water reuse as part of the information provided, the recovery portion of the option sets remain somewhat conceptual as they will be shaped by emerging demands. As stated in section 1 of Technical Memo #3:

**"[r]esource incomes are conceptual estimates** only based on potential payments for treated effluent reuse and they are highly contingent on securing new utility customers" [emphasis added].

The CRD has provided the public with estimations on water reuse costs and benefits over the project's life cycle. The technical memos speak to the fact that water reuse revenues are not given, and that annual incomes will likely change (i.e., gradually increase) over time. Taken together, the memos and the consultation materials indicate that overall, the costs from water reuse would not be recovered through revenues. Rather, water reuse and more broadly speaking, resource recovery, are objectives of the project for environmental benefit as laid out in both the 2015 TOR for the feasibility and costing analysis and the Phase 2 Project Charter.

It is likely that further deliberations will have to occur to discuss water reuse. At this juncture, individual respondents to the survey have information about the potential for water reuse and the cost/benefit info for each option – so it can form part of their deliberations in choosing their preferred options – which meets the intent of this stage of the process.

It is my view that choosing to prioritize overall costs in the survey instrument was appropriate. It is clear from the materials reviewed, that further public consultation on the water reuse issue will be necessary. As noted earlier in this decision, page 5 of Technical Memo #3 provides the following:

*“While resource recovery provides for some cost-offsets by way of new incomes, water and heat recovery systems demonstrate an overall increase in costs associated with higher levels of service... Further public input can shape the direction for services in the Core Area beyond the base expectations of meeting the regulations.”*

I do not believe that the current consultation process diminishes fairness. Information on water reuse costs is available (albeit not in one convenient place and not in sufficient detail to enable an informed decision on the economics of water reuse). The complainant proposes a specific remedy; it is proposed that comprehensive and fair information on water reuse costs and benefits be provided to the public through the CALWMC.

The complainant is seeking to understand the forensics behind the assertions that water reuse, from a financial perspective, is a net cost as opposed to benefit. It is my recommendation that next steps related to any decisions relative to water reuse include consolidated, summarized, and easy to understand information on costs and benefits of water reuse, in one single location. Having to wade through lengthy documents is not ideal. While I do not believe it was necessary for this stage of consultation (given that the decision at hand is on selecting an option set) to have detailed the estimated projections on water reuse, I do believe that in moving forward, provision of these data would be essential for a fully informed decision-making process.

## **2. That the CALWMC has failed to obtain and publish information from the Regional Water Supply Commission on revenue losses resulting from sewage treatment water reuse.**

The Regional Water Supply Commission is listed as a CRD local and regional utilities body.

A review of the bibliography for Technical Memo #3 suggests that documentation from the Regional Water Supply Commission was not reviewed as part of the preparation of Technical Memo #3. The FTA is unable to provide any further comment with respect to this issue as no details were provided by the complainant with respect to the relevance and impact of any information on water reuse as provided by the Regional Water Supply Commission.