



Finance Committee Meeting Date: March 18, 2010

To: Finance Committee

FROM: Jim Rusnak, Chief Financial Officer, Finance and Administration Department

Date: February 23, 2010

Subject: **The Liquid Waste Management Plan Secondary Treatment Timelines**

Recommendation:

That the GVS&DD Board adopt the updated Liquid Waste Management Plan that includes timelines to provide secondary treatment within 10 years for the Lions Gate Wastewater Treatment Plant and within 20 years for the Iona Island Wastewater Treatment Plant.

1. PURPOSE

To provide further information as requested by the Committee on the matter of secondary treatment timelines in the Liquid Waste Management Plan.

2. CONTEXT

At the November 27, 2009, GVS&DD Board Meeting, it was resolved that the Board:

- a) refer the establishment of an appropriate timeline for the Iona Wastewater Treatment Plant upgrade and the funding for various timelines for the Iona Island and Lions Gate Wastewater Treatment plant upgrades to the Finance Committee for its consideration; and
- b) direct staff to report back on the Finance Committee findings and on legal implications of establishing the timelines for the Iona Wastewater Treatment Plant for 2020.

Subsequently, at the January 29, 2010, Finance Committee, it was resolved:

“That the Finance Committee refer the report titled “Secondary Treatment Timelines in the Liquid Waste Management Plan” back to staff to provide further information on the following:

- a) expand the “Financial Plan” portion of the Liquid Waste Management Plan (LWMP) to indicate that Metro Vancouver will only commit to accelerating the completion of both the Lion’s Gate and Iona Wastewater Treatment Plant’s by 2020, upon assurances by the Provincial and Federal Governments that they will each contribute 1/3 of the total capital cost, by way of grants;

- b) expand the “Financial Plan” portion of the LWMP to include data on the impact per household, emphasizing the burden if senior government financing is not provided; and
- c) provide further information on:
 - i. the impact of alternative capital debt amortization periods
 - ii. “pessimistic” scenario assumptions where no funding is received by other levels of government should be reflected in the staff report
 - iii. analysis of financial considerations of committing to providing secondary treatment by 2020 for the Iona Island Wastewater Treatment Plant; and Lion’s Gate Wastewater Treatment Plant by 2030; and
 - iv. environmental components of the Liquid Waste Management Plan, including the original basis for previously considering the Iona Wastewater Treatment Plan by 2020.”

In order to address all of these issues, this report will be organized into four broad sections:

1. **Environmental Analysis.** This section will provide a historical perspective of previous LWMP and an overview of the process by which current regulations were derived.
2. **Legal Analysis.** This section will examine the legal and regulatory implications that flow from commitments made in the LWMP.
3. **Financial Analysis.** This section will examine the financial implications of the various timing options, and provide sensitivity analysis over a wide range of assumptions and amortization periods.
4. **Amendments to Draft Liquid Waste Management Plan (LWMP).** This section will propose amendments to the draft plan, as requested by Finance Committee.

1) ENVIRONMENTAL ANALYSIS

Environmental Basis of Secondary Treatment Timelines

In 2002, the Minister of Environment approved the *Liquid Waste Management Plan* for Metro Vancouver and the members of the Greater Vancouver Sewerage & Drainage District. As part of the approval, the Minister specified timelines for the upgrade of the Iona Island and Lions Gate Wastewater Treatment Plants. These timelines were in addition to the Plan’s requirement to establish a comprehensive environmental monitoring program with a review system, including the Environment Monitoring Committee (which includes members from each Sewerage Area, Simon Fraser University, University of British Columbia, BC Ministry of Environment, BC Ministry of Agriculture and Lands, BC Ministry of Health, Environment Canada, and the Port Authority). The Minister set the Iona Island upgrade for 2020 and the Lions Gate upgrade for 2030 based on the rationale that the Iona Island Wastewater Treatment Plant is closer to reaching the limits of its existing permits.

As part of the 2002 Liquid Waste Management Plan, Metro Vancouver developed and implemented a comprehensive environmental monitoring program. It also developed a series of environmental triggers. This program has not shown any negative environmental effects in the vicinity of either the Iona Island or the Lions Gate Wastewater Treatment Plants.

Metro Vancouver engaged the services of Dr. Michael Paine, an independent environmental consultant to examine the data from the Iona Island and Lions Gate monitoring programs and to render his opinion (summarized in his memorandum dated November 16, 2009 as Attachment 2) as to whether there was any basis for favouring one facility or the other in terms of upgrade priority. Based on his extensive analysis, he concluded that although the Iona Island facility was five times larger than the Lions Gate facility, environmental data did not support giving it preference. In fact, Dr. Paine noted that the Burrard Inlet sediment environmental data overall was somewhat worse and on this basis one could argue for upgrading Lions Gate first to ensure it was not negatively contributing to the loading in Burrard Inlet, which is subject to numerous other inputs.

When Dr. Paine presented his findings to the Environmental Monitoring Committee, they concurred with his analysis, and in fact the Chair stated that the results indicated a preference for upgrading Lions Gate first.

This is a reversal from the order of upgrading established by the Minister of Environment's Liquid Waste Management Plan approval. However, the dates set by the Minister of Environment were decided in the absence of environmental data gathered, and analyses undertaken in recent years by Metro Vancouver, and in the absence of the recently developed *Canada-wide Strategy for the Management of Municipal Wastewater Effluent*.

Applying the Criteria Defined by the Canada-wide Strategy for the Management of Municipal Wastewater Effluent (CWS-MMWE)

The Canadian Council of Ministers of the Environment endorsed their *Canada-wide Strategy for the Management of Municipal Wastewater Effluent* on February 17, 2009. The purpose for the 14 Federal, Provincial and Territorial Ministers in developing the Strategy was to produce a harmonized national approach that is protective of human health and the environment while providing wastewater facility owners with regulatory clarity.

Part of the strategy was the introduction of Minimum National Performance Standards corresponding to secondary treatment equivalency. Implementation of these performance standards is to take place over a thirty-year timeframe. Facilities in need of upgrading will be classified as low, medium or high priority. A process for making this determination of priority is included in the *Canada-wide Strategy for the Management of Municipal Wastewater Effluent* documentation.

The ranking process was applied to the Iona Island and Lions Gate Wastewater Treatment Plants (Attachment 3). The primary difference between the two outcomes relates to the nature of the water body into which the wastewater treatment plant is discharging. In the case of Lions Gate the discharge is into an embayed body, Burrard Inlet; in the case of Iona Island the discharge is into an open marine environment (defined by the Ministry of Environment *Municipal Sewage Regulation*). The consequence is that Lions Gate receives a ranking of high (ten year implementation schedule) whereas Iona Island receives a ranking of medium (twenty year implementation schedule).

Upgrading the Iona Island and Lions Gate wastewater treatment plants to secondary treatment requires approximately \$1.4 billion dollars. Using the *Canada-wide Strategy for the Management of Municipal Wastewater Effluent* prioritization methodology, the maximum timelines for completing the upgrades are within 10 years for Lions Gate and within 20 years for Iona Island.

2) LEGAL ANALYSIS

Part 3 of the Environmental Management Act (SBC 2003) c. 53 governs the obligations of local governments with respect to waste management plans. Pursuant to section 24 of the Act the minister has required the GVS&DD to provide an updated liquid waste management plan.

The minister has the authority to approve any plan created, approve part of a plan or approve a plan or part of a plan with conditions. In addition the minister may amend or cancel a plan and the plan must comply with the regulations in order to receive ministerial approval. The power granted to the minister by the Act is broad and consequently the province may unilaterally alter timelines.

The Act sets out the consequences of the approval of a waste management plan with respect to: (a) the affect on existing permits and approvals; (b) the authority to issue permits or approvals; and, (c) the authority of districts and municipalities to adopt bylaws. By implication, once a waste management plan is approved by the minister it is in force.

The Act sets out the effects of the approval on existing permits and rights in section 24. So, for example, if a provision in an existing permit conflicts with a requirement in an approved waste management plan, that provision in the permit no longer has any force or effect (s.24(9)). A director may only issue an operational certificate that is not in conflict with an approved waste management plan.

The authority granted to the GVS&DD and to municipalities to make bylaws respecting the direct or indirect discharge of liquid waste (s.30) is limited once a waste management plan is approved as all subsequent bylaws are without effect to the extent that they conflict with an approved waste management plan (s.37(2) and s.37(4)). To the same extent, all permits, approvals or orders issued by a district director are without effect to the extent that they conflict with an approved waste management plan (s.37(3)).

As a result, if the GVS&DD obtains ministerial approval of a liquid waste management plan that sets a timeline for the upgrade of both the Lions Gate and the Iona WWTP by 2020, the permits and approvals that currently permit the discharge of waste water from those treatment plants will no longer be in force or effect after 2020 as they will be in conflict with the waste management plan. Any discharge from a plant that has not received the upgrade required by the waste management plan would be contrary to the Act and regulations. No permit could be issued to permit the discharge as such permits would be contrary to the waste management plan. In such a case the GVS&DD would be subject to fines and criminal sanction for discharging without a permit. Those fines and sanctions can be significant.

If the waste management plan is approved with a 2020 timeline for both facilities, any subsequent amendment of the plan to alter the timelines will be subject to the same consultation processes and approvals as the current plan. In addition, as set out above, there is no guarantee that the minister would approve an amendment that seeks to alter a timeline.

3) FINANCIAL ANALYSIS

We have done an extensive amount of financial analysis, and the details are included in Attachment #4 to this report. This analysis looks at three possible timelines for these projects:

- Lions Gate 2020, Iona 2030 (compliant with CWS-MMWE)
- Lions Gate and Iona 2020 (complaint with CWS-MMWE – Iona fast-tracked)
- Iona 2020, Lions Gate 2030 (non-compliant with CWS-MMWE)

Each scenario has been modelled against three sets of assumptions with respect to inflation, senior government cost sharing, long term debt interest rates, etc:

- Optimistic
- Moderate
- Pessimistic

Further, we vary the amortization period for the debt associated with each project:

- 15 year amortization
- 20 year amortization
- 25 year amortization
- 30 year amortization

From this, we derive a projected sewerage levy, by sewerage area, and finally calculate the estimated cost per average household within each sewerage area.

As can be seen by the volume of this attachment, there are many variables, making it quite difficult to draw precise conclusions from this data. For sake of discussion, and to focus the information, it may be useful to look at some worst case scenarios. This is also consistent with the direction from the Finance Committee.

The most significant variable between our three ranges of assumptions is the degree of senior government financial participation in these projects. Every effort will be made at a staff and at a political level to access as much senior government financing as possible. However, at the present time, as a result of the global recession, both the Federal and Provincial governments are budgeting for record levels of deficits, and total debt at both levels is sky-rocketing. There is certainly no assurance, at this time, that any financial assistance will be available for these projects.

Under this “Pessimistic” assumption, the following tables summarize the projected impact to an average household, by sewerage area, for each of the timing scenarios, and looking at a variety of amortization periods.

Table 1
Lions Gate 2020, Iona 2030
Projected Cost per Household (\$)

	2010	2015				2030			
		15 year	20 year	25 year	30 year	15 year	20 year	25 year	30 year
Fraser (FSA)	156	192	185	181	179	504	499	481	484
Lulu (LIWSA)	157	195	188	184	181	492	487	470	477
North Shore (NSSA)	181	324	313	307	303	1,388	1,377	1,331	1,328
Vancouver (VSA)	159	265	255	250	247	1,171	1,161	1,122	1,045
<i>*Slide Reference</i>		47	48	49	50	47	48	49	50

Table 2
Lions Gate 2020, Iona 2020
Projected Cost per Household (\$)

	2010	2015				2030			
		15 year	20 year	25 year	30 year	15 year	20 year	25 year	30 year
Fraser (FSA)	156	205	196	191	188	506	526	512	498
Lulu (LIWSA)	157	206	198	193	190	502	521	507	493
North Shore (NSSA)	181	348	334	326	321	1,391	1,442	1,406	1,369
Vancouver (VSA)	159	317	305	297	293	1,172	1,215	1,185	1,154
<i>*Slide Reference</i>		84	85	86	87	84	85	86	87

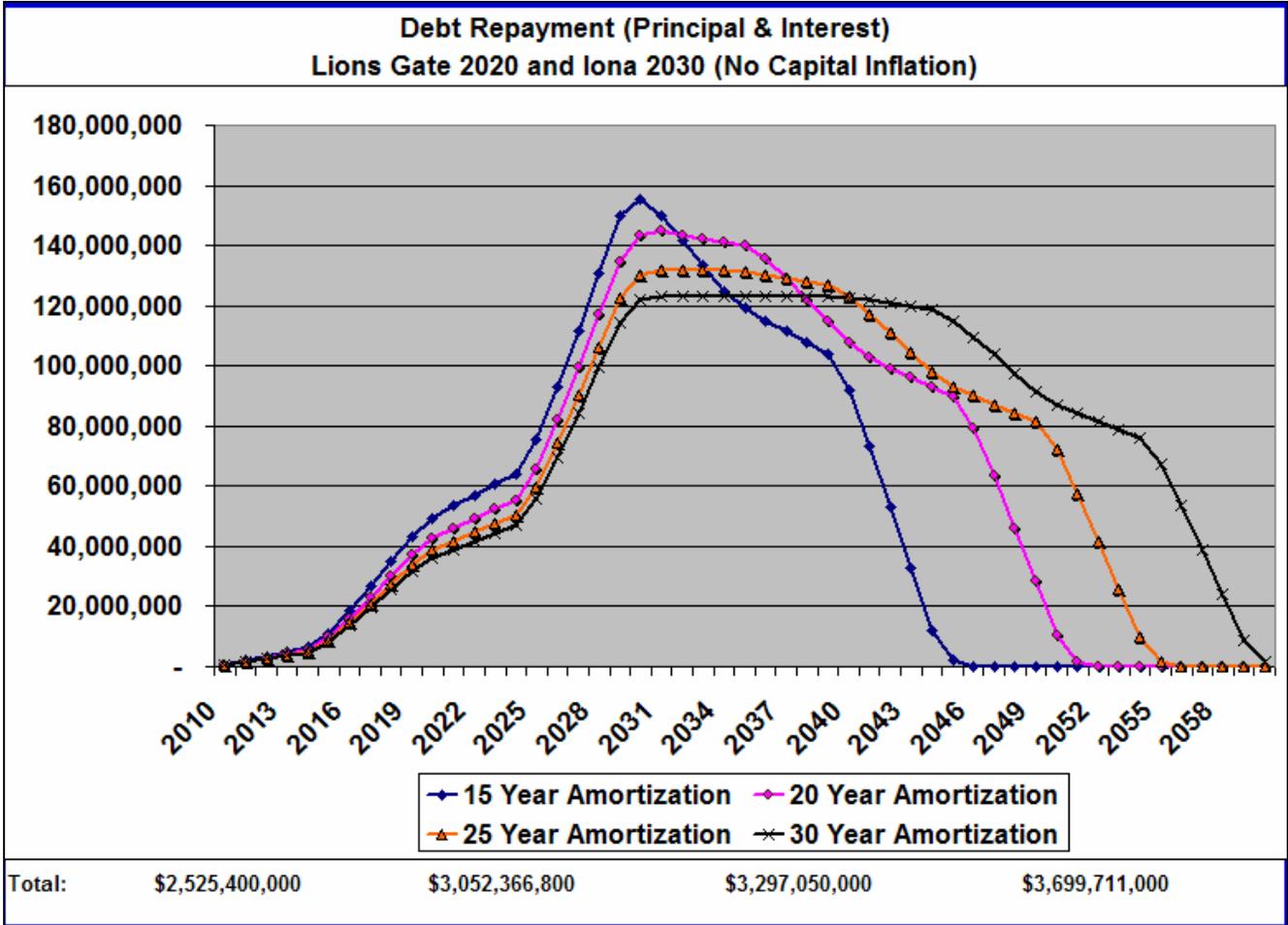
Table 3
Lions Gate 2030, Iona 2020
Projected Cost per Household (\$)

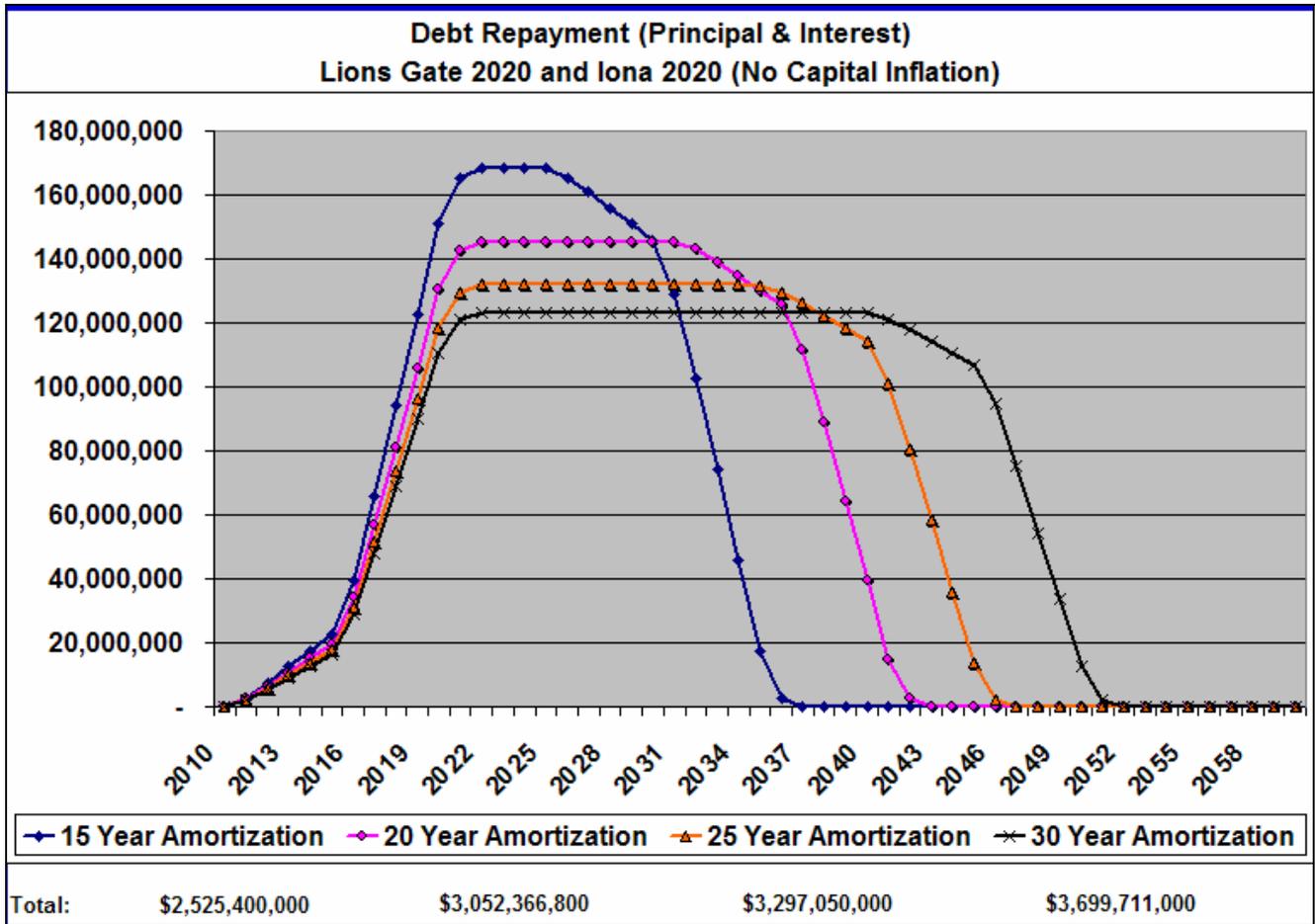
	2010	2015				2030			
		15 year	20 year	25 year	30 year	15 year	20 year	25 year	30 year
Fraser (FSA)	156	194	187	182	181	506	516	500	484
Lulu (LIWSA)	157	197	190	185	184	507	517	501	486
North Shore (NSSA)	181	289	278	271	255	1,067	1,088	1,056	1,024
Vancouver (VSA)	159	324	312	304	300	1,172	1,195	1,160	1,126
<i>*Slide Reference</i>		121	122	123	124	121	122	123	124

The three tables above are a compilation of data from slides* in the Attachment #4 to this report. It is clear from these tables that these are two very expensive projects, and the cost to the users will be significant. The above numbers should be viewed as representative of the order of magnitude of cost increases, as opposed to being seen as precise forecasts. What we have tried to estimate is the Metro Vancouver portion of an average household's utility bill for sewer services. This includes all of the operating costs of the GVS&DD including debt service.

The 2010 column shows approximately what an average household will pay in 2010, and we project that to 2015 and ultimately to 2030. Average annual costs will rise from a range of \$160 to \$180 per year, to a range of \$1000 to \$1200 per year by 2030. This is in the range of 500 to 600% increases over that time period.

Another way to look at the alternatives is to isolate the total project costs under each scenario. In other words, the aggregate debt repayment, principal plus interest until fully repaid. To get a sense of how varying the amortization period varies the total project costs, the two following graphs assume no capital inflation.





As these graphs demonstrate, the shorter the amortization period, the lower the overall project costs. The difference is simply the amount of interest being paid. In terms of the timing of the projects, again the graphs show that, while the overall project costs are ultimately the same, they are paid over a longer period of time if Iona is scheduled for completion in 2030.

It's clear that, in the absence of significant contributions from other levels of government, there will be a financial impact, particularly to the residents of the host communities. It is also clear that choosing to accelerate the timing of the Iona upgrade increases the financial burden.

4) AMENDMENTS TO DRAFT LWMP

Attachment #1 to this report proposes revised language for the Draft LWMP in response to the direction of the Finance Committee. Specifically, this revised language clearly articulates the key roles and responsibilities of all stakeholders, including the Federal Government and the Province. Further, the Financial Plan section of the LWMP has been expanded to demonstrate the financial impact on our utility payers, and to make a strong linkage between financial support from the Federal and Provincial Governments, and Metro Vancouver's ability to meet the commitments of the proposed LWMP.

3. ALTERNATIVES

Alternative 1:

That the GVS&DD Board adopt the updated Liquid Waste Management Plan that includes timelines to provide secondary treatment within 10 years for the Lions Gate Wastewater Treatment Plant and within 20 years for the Iona Island Wastewater Treatment Plant.

Alternative 2:

a) That the GVS&DD Board adopt the updated Liquid Waste Management Plan that includes timelines to provide secondary treatment within 10 years for the Lions Gate Wastewater Treatment Plant and within 20 years for the Iona Island Wastewater Treatment Plant.

b) That the GVS&DD Board amends the updated Liquid Waste Management Plan, prior to its adoption, to reflect the changes detailed in Attachment 1.

Alternative 3:

That the Committee provide alternate or additional recommendations to the Board.

4. CONCLUSION

The environmental analysis strongly suggests that a solid, scientific, risk based set of guidelines has been developed by competent authorities, and that those guidelines, once translated in to regulatory imperative will require that Lion's Gate be upgraded within ten years and Iona within twenty years.

The legal analysis confirms the risks and possible adverse consequences of committing to an accelerated timeline for the Iona upgrade.

The financial analysis indicates that it is preferential to utility payers to defer the Iona upgrade in the absence of senior government cost sharing. Therefore, Staff recommends Alternative 1. This alternative is the more prudent approach – achieving regulatory compliance by committing to Lions Gate by 2020, while maintaining the flexibility to accelerate the completion of Iona in circumstances permit.

Attachments:

- 1) Liquid Waste Management Plan Changes for Senior Government Cost Sharing
- 2) Memorandum: Paine, Ledge and Associates (PLA) - *Relative Effects of Implementing Secondary Treatment at the Metro Vancouver Iona and Lions Gate Wastewater Treatment Plants (WWTP)*, November 16, 2009
- 3) Calculation of the Timeline Requirements for Upgrading to Secondary Treatment - *Canada-wide Strategy for the Management of Municipal Wastewater Effluent*
- 4) Liquid Waste Management Plan – Financial Scenarios
- 5) Draft Liquid Waste Management Plan