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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Utilities Committee

From: Utilities Subcommittee for the Lions Gate Secondary Wastewater Treatment Plant

Date: January 31, 2014 Meeting Date: February 18, 2014

Subject: **Lions Gate Secondary Wastewater Treatment Plant Project Procurement**

RECOMMENDATION

That the GVS&DD Board direct staff to:

1) Proceed with Design-Build-finance (extended warranty) as the preferred procurement approach for the design and construction of the Lions Gate Secondary Wastewater Treatment Plant.
2) Apply for grant funding for the Lions Gate Secondary Wastewater Treatment Plant under the new Building Canada Plan as the top priority infrastructure project for Metro Vancouver.

PURPOSE

To present the Subcommittee's findings and seek the Board's approval to proceed with design and construction of the Lions Gate Secondary Wastewater Treatment Plant utilizing the Design-Build-finance (extended warranty) (DBf) procurement approach, subject to receiving grant funding from the New Building Canada Plan. The DBf procurement approach will be used as the basis for senior government funding applications.

BACKGROUND

In accordance with the Integrated Liquid Waste and Resource Management Plan approved by the BC Minister of Environment in 2011, the Lions Gate plant requires upgrading to secondary treatment by 2020. The Board authorized funds in the 2011 budget to proceed with the initial project work, including the Project Definition Phase.

At the Utilities Committee's request (October 3, 2013), the Board Chair appointed a Utilities Subcommittee consisting of five Committee members: Directors Mussatto (chair), Corrigan, Stewart, Rasode and Vice Chair Louie representing the Utilities, Finance, and Intergovernmental and Administration Committees, to work with senior Metro Vancouver staff to review and make recommendations on the business case and value-for money assessment for procurement of design and construction of the new Lions Gate Secondary Wastewater Treatment Plant.

On November 7th, 2013 the Board endorsed the Indicative Design for the new Lions Gate Secondary Wastewater Treatment Plant, estimated cost of $ 700 M, as developed through the Project Definition Phase and as summarized in the report titled "Lions Gate Secondary Wastewater Treatment Plant Indicative Design Summary Report". The Board also directed staff to utilize the Indicative Design as the basis for senior government funding applications and for the procurement work for design and construction of the new plant.

DISCUSSION

The subcommittee met on December 12, 2013 and Metro Vancouver staff presented the findings of the project procurement analysis, which included:

- Available funding programs
- Traditional versus alternative procurement approaches, including the DBf and a public-private-partnership (P3) approach
- Business case requirements for senior government programs
- Value for money analysis (VFM)

The VFM assessment is a key component of the Procurement Options Analysis. The Executive Summary of the Procurement Options Analysis Report is provided as Attachment 1.

1. Project Bundling
   The Lions Gate Secondary Wastewater Treatment project has been separated into three distinct bundles, each requiring its own procurement considerations:
   - Lions Gate Secondary Wastewater Treatment Plant (subject of this report)
   - Conveyance – moving wastewater from the existing wastewater treatment plant to the new treatment plant and the effluent from the new treatment plant to the existing outfall. Considering the level of coordination and negotiations with a number of third parties for executing this work, Metro Vancouver will retain full management control and implement this work through a design-bid-build approach.
   - Decommissioning of the existing Lions Gate Wastewater Treatment Plant involving deconstruction and site cleanup after the new treatment plant is commissioned. Metro Vancouver will implement this work through a request for proposals from qualified proponents to deconstruct and clean up the site to the specified standards.

2. Procurement Options
   For the Lions Gate Secondary Wastewater Treatment Plant, the following procurement options have been identified for detailed evaluation:
   - Design-Bid-Build (DBB); this option represents the Public Sector Comparator (PSC) and best reflects Metro Vancouver's current practices.
   - Design-Build-finance (extended warranty) (DBf); involves contracting with a single entity for the design and construction of the new treatment plant and includes a longer holdback and extended warranty provisions for additional contract security.
   - Design-Build-Finance-Operate-Maintain (DBFOM); where a P3 consortium would also operate the wastewater treatment plant and provide long term financing over the term of the contract for a portion of the initial capital costs, as additional security.

3. Senior Government Funding Programs
   Currently two funding programs are applicable:
   - P3 Canada Fund
   - Building Canada Fund

   The P3 Canada Fund is a merit based program, designed to incentivize the use of P3 procurement in the delivering of public infrastructure projects. Eligible projects can receive up to 25% of the direct capital cost of construction through non-repayable contributions,

repayable contributions, loans or loan guarantees. The call for the next round of applications is expected in the spring of 2014. To qualify for this program it is expected that the project will require both an operate and a finance component. The DBFOM model described in the project procurement options complies with this expectation.

The 2013 Government of Canada budget includes a new Building Canada Fund. This provides $14 billion over 10 years to support infrastructure of national, regional and local significance. $4 billion is allocated for a National Infrastructure Fund, whereas the remaining $10 billion is allocated to a Provincial-Territorial infrastructure fund that will support a broader range of infrastructure projects including wastewater.

To access the Building Canada Fund on projects worth more than $ 100 million, the projects are required to be screened for P3 procurement. If the analysis shows that a project can be successfully delivered as a P3 and generate positive value for money, the Federal government may require a P3 procurement as a condition of its contribution towards that project. This is independent from the P3 Canada Fund. Similar requirements exist for projects involving more than $ 50 million funding by the Province of British Columbia.

At this time, the application process for the Building Canada Fund has not been established. However, the application is a merit based program that will also require the Province's support and identification as a priority project. Therefore, Metro Vancouver and its member municipalities must continue to work together and clearly communicate to the Province and the Federal Government that the Lions Gate Secondary Wastewater Treatment Plant is the top priority infrastructure project for Metro Vancouver.

4. Value for money analysis

Value for Money (VFM) analysis is the quantitative component of the procurement options analysis required as part of the business case required for federal and provincial funding of large infrastructure projects. The objective of the VFM analysis is to assess how alternative procurement models (DBf and DBFOM) compare to the traditional Public Sector Comparator model (DBB) in terms of value to Metro Vancouver over a defined term, typically the contract term of the P3 alternative. The VFM analysis involves calculating the estimated cost of the project for each of the procurement models. A financial model is created to calculate the cost in terms of the Net Present Value (NPV). The NPV estimate includes the cost estimates for the lifecycle of the project, the value of the project allocated risk, efficiencies for each delivery model that could be realizable, and the cost of financing. The NPV is calculated based on the cash outflow of the capital costs as opposed to the true impact to Metro Vancouver based on debt service payments of the capital cost. This methodology is as prescribed by P3 Canada and Partnerships BC. The VFM analysis involves the following process:

- Identification of base assumptions (discount rate, schedule, inflation)
- Identification of costs (capital, operations & maintenance, lifecycle, transaction and financing)
- Risk identification and assessment
- Efficiencies identification and assessment
- Payment structure analysis (progress, milestone, completion and/or annual concession)

- Financial model development
- Value comparison of models

The results of this quantitative comparison between the alternative delivery models are used to determine the procurement method that provides the best potential value for money. The procurement options are analyzed in order to estimate their financial impact from the perspective of Metro Vancouver, who will be paying for the project. These costs are then compared in order to determine the procurement approach with the greatest potential to provide value for taxpayer dollars. The results of the VFM analysis are summarized in Table 1:

Table 1: Value for Money Results

	DBB	DBf	DBFOM
Procurement, Construction and Contract Management	$ 504 M	$ 474 M	$ 472 M
Incremental Financing	-	$ 1 M	$ 30 M
Operations and Maintenance	$ 101 M	$ 101 M	$ 98 M
Retained Risk Allocation	$ 6 M	$ 7 M	$ 7 M
Transferred Risk Allocation	-	$ 2 M	$ 2 M
Total Net Present Value	**$ 611 M**	**$ 585 M**	**$ 609 M**

Based on the Value for Money analysis, Design-Build-finance (extended warranty) has the lowest Net Present Value (NPV) and provides the greatest VFM of the options presented.

5. Sensitivity Analysis

As part of conducting a robust analysis, a sensitivity analysis was conducted to assess the impact due to changing the discount rate, payment structure (milestone payments compared to progress payments), O&M repair and replacement efficiency, level of private financing, private sector borrowing rates, Metro Vancouver's approach to debt servicing and associated levy impact, and inflation during construction.

Primarily due to the efficiencies gained as a result of an integrated delivery model and regardless of the scenario's tested, the DBf procurement option, always results in the lowest NPV /highest value for money. Changing assumptions does influence the results with respect to the relative ranking of DBB and DBFOM options.

6. Additional considerations

Metro Vancouver operates a major integrated sewer utility consisting of five wastewater treatment plants, several hundred kilometers of sewers and numerous wastewater pump stations. It has a trained complement of operations and maintenance staff as well as full management, technical and administrative support. By virtue of the number of facilities operated, Metro Vancouver is able to achieve significant operational efficiencies and economies of scale with respect to management and technical support, purchasing of goods and services, staff training and development, centralized maintenance activities, and the ability to remotely monitor and control. Operating the wastewater system as an integrated system provides significant value to the communities served by Metro Vancouver that includes the ability and flexibility to adapt to changing conditions over time without the added complexity of a contracted third party operator.

ALTERNATIVES

1. That the GVS&DD Board direct staff to
   1) Proceed with Design-Build-finance (extended warranty) as the preferred procurement approach for the design and construction of the Lions Gate Secondary Wastewater Treatment Plant.
   2) Apply for grant funding for the Lions Gate Secondary Wastewater Treatment Plant under the new Building Canada plan as the top priority project infrastructure project for Metro Vancouver.

2. That the Board provide alternate direction to staff.

FINANCIAL IMPLICATIONS

The LGSWWTP program has an estimated capital program cost of $ 700 M (2018 dollars). A breakdown of the costs is provided on Table 2.

Table 2

	LGSWWTP	Conveyance	Decommissioning of existing WWTP	Total
Construction	$ 375 M	$ 33	$ 10.7 M	$ 418.7
Professional Fees	$ 56 M	$ 5	$ 1.6 M	$ 62.6
Management & Administration	$ 19 M	$ 2	$ 0.6 M	$ 21.6
Subtotal	***$ 450 M***	***$ 40***	***12.9 M***	***$ 502.9***
Contingencies	$ 100 M	$ 13	$ 2.6 M	$ 115.6
Escalation (to time of construction)	$ 70 M	$ 7	$ 4.5 M	$ 81.5
Total	**$ 620 M**	**$ 60 M**	**$ 20 M**	**$ 700 M**

In consideration of efficiencies, procurement costs and additional financing costs for the procurement alternatives, the anticipated difference in capital costs between the recommended procurement option (DBf) and the alternatives (DBB and DBFOM) is within 5 % of the total program costs.

Both the DBf and DBB approaches are not considered P3 projects and would not be eligible for P3 Canada funding, but would remain eligible for the Building Canada Fund. For projects receiving significant funding by the Government of Canada and the Province of British Columbia, a P3 business case is required. Based on the VFM analysis, the DBf model provides the most robust business case of the three alternatives. Selection of the DBB approach does not meet this requirement and could result with a lower chance of success in securing senior government cost funding.

DBFOM would be eligible for P3 Canada funding and would also remain eligible for the Building Canada Fund. However, the VFM for DBFOM is not robust, considering the efficiencies gained in the capital program under the DBf model and the operating flexibility and efficiency provided through the current economies of scale and operation of an integrated system by Metro Vancouver.

To increase the likelihood of a successful Building Canada Fund application, the project requires the Province's support and identification as a priority project. This resolution makes it very clear to the Province and the Federal Government that this is the top priority infrastructure project for Metro Vancouver.

SUMMARY / CONCLUSION

Metro Vancouver has conducted a comprehensive project procurement analysis. The Design-Build-finance–extended warranty (DBf) approach results in the lowest NPV (greatest value for money) for all scenario's tested. By integrating the design and construction process, DBf as a delivery approach provides single point accountability for the design and construction of the new Lions Gate Secondary Wastewater Treatment Plant. This approach provides, through a qualification based selection and design competition, greater opportunity for innovation and efficiency gains, fewer change orders and earlier price certainty for the project. The new LGSWWTP would continue to be operated by Metro Vancouver as part of the integrated utility and continue benefitting from the robust systems established for the utility. This will ensure Metro Vancouver continues to manage liquid waste safely, affordably and effectively.

After careful review of the three value for money options for project delivery, the Utilities Subcommittee unanimously agreed to recommend to the Utilities Committee and the GVS&DD Board that they support Alternative 1 and approve proceeding with the DBf option and identify the Lions Gate Secondary Wastewater Treatment Plant Project as Metro Vancouver's highest priority infrastructure project for grant funding under the new Building Canada plan.

Attachments and References:

Attachment 1: Project Procurement Options Analysis Report, KPMG January 2014, Executive Summary

Attachment 2: Project Procurement Options Analysis Report, KPMG January 2014, Full Report

Attachment 3: Lions Gate Secondary Wastewater Treatment Plant Project Phases and Timeline *(Provided On Table at Committee)*

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