



**REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE  
MEETING OF WEDNESDAY 10 MARCH 2010**

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**SUBJECT**      **PEER REVIEW OF DRAFT BUSINESS CASE FOR PROVINCIAL FUNDING – CORE AREA WASTEWATER TREATMENT PROGRAM**

**PURPOSE**

To provide the peer review team report of the draft business case for provincial funding to the Core Area Liquid Waste Management Committee (CALWMC) for consideration.

**BACKGROUND**

The purpose of the business case is to present sufficient information regarding the program to allow decision makers to commit to moving forward with the procurement phase of the program. The primary audiences of the business case are:

1. the CALWMC.
2. relevant agencies within the provincial government including the Ministry of Community and Rural Development, Partnerships BC and the Ministry of Environment.
3. federal government agencies including Infrastructure Canada.

Given the complexity and scale of the program, the business case analysis must be comprehensive and well supported with expert information and data, plus third-party validation of findings and recommendations. This includes implementation of a peer review process.

At its 02 June 2009 the CALWMC carried the following motion:

*That staff report back on the commissioning and completion by an independent peer review of all financial options for the construction, management and ownership of this utility and associated resources, ranging from fully public, P3, to full private, including a regulated utility, and using Triple Bottom Line analysis.*

The CALMWC subsequently approved Gordon Culp as the Chair of the peer review team (PRT) to engage additional members for the peer review team based on qualifications to address the items listed in the 02 June 2009 motion referenced above. The PRT includes; Gordon Culp (engineer), Arn van Iersel (financial), Don Lidstone (legal), Eric Petersen (legal) and George Raftelis (financial).

The first meeting of the PRT took place 02 December 2009 with the second meeting taking place over a two-day period on 02 and 03 February 2010. Both meetings were held at the Capital Regional District office on Fisgard.

The PRT's observations are derived from a review of the reports prepared by the consultants Ernst & Young Orenda Corporate Finance Inc. and Stantec Consulting Ltd. The PRT report is attached as Appendix A.

**ALTERNATIVES**

1. That the CALWMC receive the PRT report for information and consideration of the draft business case for provincial funding.

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**Re: Peer Review of Draft Business Case, CAWTP**  
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2. That the CALWMC instruct the PRT to undertake further work prior to final approval of the business case.

**FINANCIAL IMPLICATIONS**

The peer review of the business case and related work is funded through the Core Area Wastewater Treatment Capital Fund and will be charge to Bylaw 3615, Liquid Waste Management Core Area and West Shore Service Loan Authorization Bylaw No.1 2009. The costs are cost-sharable under the provincial federal budget. Any additional work requested for the PRT will require additional funding.

**SUMMARY**

The CALWMC requested staff to arrange a peer review of the business case work being completed for the Core Area Wastewater Treatment Program. Chair Gordon Culp led a team including Arn van Iersel, Donald Lidstone, George Raftelis and Eric Petersen. The PRT has completed its review of the draft business case in support of provincial funding, prepared by Ernst and Young. The PRT report is attached as Appendix A.

**RECOMMENDATIONS**

That the Core Area Liquid Waste Management Committee receive the Peer Review Team report (Appendix A) for information and consideration of the draft business case for provincial funding for the Core Area Wastewater Treatment Program.

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Tony Brcic, PEng  
Project Manager, Core Area Wastewater Treatment

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Dwayne Kalynchuk, PEng  
Project Director, Core Area Wastewater Treatment

TB:hr:jta  
Attachments: 1

**REPORT  
PEER REVIEW TEAM**

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***Capital Regional District  
Core Area Wastewater Management Program  
Business Case***

***March 3, 2010***

**REPORT  
PEER REVIEW TEAM  
CAPITAL REGIONAL DISTRICT CORE AREA  
WASTEWATER MANAGEMENT PROGRAM  
BUSINESS CASE  
March 3, 2010**

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Appendix C - PRT Comments on Project Delivery Options Discussion Paper & Risk Registry
Appendix D - Agenda and Notes from Second Peer Review Team Meeting



## PURPOSE OF THE PEER REVIEW

The Capital Regional District (CRD) in Victoria, BC is in the process of developing a Business Case for its Core Area Wastewater Management Program. The purpose of this peer review is to provide an independent review of the Business Case options for the construction, management and ownership of the utility and associated resources ranging from fully public to public-private partnerships (PPP).

This report is based on a review of the *Business Case in Support of Funding from the Province of British Columbia* dated February 23, 2010 and related documents.

## THE PEER REVIEW TEAM

The members of the Peer Review Team (PRT) are:

- Gordon Culp (Chair), Professional Engineer, Principal, Smith Culp Consulting, Las Vegas, Nevada
- Arn van Iersel, Professional Accountant, Independent Consultant, Saanichton, BC
- Don Lidstone, Q.C., Attorney, Lidstone & Company Law Corporation, Vancouver, BC
- Eric Petersen, Attorney, Director, Public Contracts Group, Hawkins, Delafield and Wood, New York City, New York
- George Raftelis, CPA, CEO Raftelis Financial Consultants, Inc., Charlotte, North Carolina

The PRT members were selected to represent a broad range of disciplines and experience with the technical, legal, procurement and financial aspects of large, complex wastewater systems.

A summary of the findings and considerations of the PRT is presented in this section. The details of the findings are presented in the PRT report that follows this summary.

## PROJECT DELIVERY METHODS

The Business Case addresses the following project delivery methods:

### Traditional

- Design Bid Build (DBB)
- Construction Manager at Risk (CMAR)

### Alternative Project Delivery Methods

- Design Build (DB)
- Design Build Operate (DBO)
- Design Build Finance Operate (DBFO)

The Business Case presents three options for delivering the CRD project:

- Traditional - DBB or CMAR used for all major system elements
- Public Private Partnership (PPP) - DBFO used for all major system elements except conveyance system, tunnel and outfalls that are delivered using DBB or CMAR
- Hybrid - A mixture of the above methods and the DB method applied to different system elements

The Business Case also briefly addresses but does not evaluate the DBO method in the above three options.

## **EVALUATION OF PROJECT DELIVERY METHODS**

The Business Case conducts an analysis of project delivery options by evaluating each option using environmental, social and economic evaluation criteria. The evaluation of environmental and social criteria is qualitative as these criteria are not assigned numerical weights or numerical rankings. The relative importance of the environmental, social and economic criteria will be an important part of the discussion by the decision makers.

The economic evaluation is quantitative in nature. The Business Case presents an extensive economic evaluation with the result shown in Table S-1.

**Table S-1  
Economic Comparison of Project Delivery Options**

	Traditional	Hybrid	PPP
Design & Construction Costs	\$941,810,000	\$876,593,000	\$865,789,000
Savings	-	\$65,217,000	\$76,021,000
Annual O&M Costs	\$18,606,000	\$18,379,000	\$17,601,000
Annual Savings	-	\$227,000	\$1,005,000
Net Present Cost	\$923,787,000	\$924,566,000	\$929,139,000

The Traditional option has the highest construction and O&M costs. The inclusion of DB and DBFO in the Hybrid and DBFO in the PPP options results in design/construction costs savings of \$65 million to \$76 million and annual O&M savings of \$227,000 to \$1,005,000. However, because of the different considerations related to private financing (the Hybrid and PPP options include financing costs) versus public financing

and other conservative assumptions discussed below for the Hybrid and PPP options, the Traditional method has lower NPC.

Even though the capital and O&M cost savings from DB and DBFO in the Hybrid and PPP options shown in Table S-1 are substantial, the Business Case projections of savings that may be achievable through the use of alternative project delivery methods are conservatively low and could be significantly higher because:

- Estimates of efficiencies gained when using DB and DBFO are conservatively low
- Estimates of total project risks and of risks transferred to proponents are conservatively low
- The estimates of the savings that the CRD would experience from risk transferred to proponents in DB or DBFO are conservatively low
- There is no estimate of the cost of DBO using the same public financing as the Traditional method to avoid the higher financing costs of DBFO

### **Recommendation on Evaluation Approach**

The social and environmental advantages and disadvantages of traditional and alternative project delivery methods must be weighed by the CRD decision makers as well as the relative costs summarized above. Criteria for the evaluation of social and environmental aspects are presented in Section C.8.1 of the Business Case and discussed in Section 7 of this PRT report. To provide a broader perspective of the relative economics of the delivery methods than presented in the Business Case:

- DBO should receive equal consideration in the evaluation of project delivery methods. DBO retains most of the benefits of DBFO without the complexities, higher financing costs and other limitations of DBFO.
- Sensitivity analyses should be performed for a range of less conservative assumptions to explore the effects of potentially higher efficiencies and reduced risk costs associated with DB, DBO and DBFO.

## **PROCUREMENT CONSIDERATIONS**

### **Conveyance System Components**

The PRT agrees with the Business Case recommendation that the conveyance system components and outfalls would be best delivered by the traditional DBB method. There is a need to plan and control the entire pipeline and conveyance system, closely supervise its timing and implementation, integrate it with existing facilities and effectively handle geotechnical risks in a conventional manner. Further, these project elements do not generally involve operation performance guarantees, one of the main benefits of alternative project delivery methods.

## **Traditional DBB and Alternative Project Delivery Methods Should Receive Equal Consideration for Treatment Facilities**

Alternative project delivery methods of DB, DBO and DBFO should receive equal consideration with the DBB delivery method for treatment facilities because they:

- Expand the project competition to include design and operations rather than just competition as to construction
- Enable qualifications, not just lowest price, to be used for contractor selection
- Create collaboration among the designer and builder (and operator in DBO and DBFO) beyond what is practically possible using the Traditional DBB delivery method
- Provide early stage price certainty because the fixed DB cost (and fixed operating fee in DBO and DBFO) are known at the time proposals are submitted
- Allocate risk to the party best suited to handle the risk
- Establish a single point of responsibility for design and construction in DB and also operation in DBO and DBFO
- Reduce time to complete projects through concurrent design and construction
- Result in significantly fewer change orders
- Satisfy the provincial grant and approval requirements for diligently considering alternative delivery options

### **McLoughlin Wastewater Treatment Plant**

A key recommendation in the Business Case is the selection of DB for the McLoughlin wastewater treatment plant in the Hybrid option. The PRT recommends that DBO receive equal consideration for the McLoughlin plant if the Hybrid option receives further consideration. However, if after that consideration, the evaluation by the CRD favors DB over DBO, DB has much to recommend it over DBB for the McLoughlin plant.

### **CRD Control in Delivery Methods Involving Long-Term Operation**

The choice of DB for the McLoughlin plant in the Hybrid option results in a short-term delivery method (DB) rather than a delivery method that involves long-term operation (DBO or DBFO) for the main central plant. Typically, a major factor in selecting a short-term method is owner-agency concern about whether it can retain the desired level of control over the asset during the operating period. In addition to transferring the long-term labour relations risk to the contractor, control by the CRD can be maintained in a long-term contract through clear and detailed performance guarantees (e.g. effluent quality, odor standards, law compliance); deductions from the service fee for failure to comply with the guarantees; an obligation to pay fines and penalties to regulatory agencies for unexcused upsets or violations of requirements; holdbacks to assure long term capital maintenance and compliance with hand-back requirements; CRD step-in

rights; and, most important, CRD convenience termination rights. These elements of municipal control are common in long-term wastewater treatment project agreements and are sufficient to maintain owner-agency control.

## **DBFO Considerations**

DBFO has the advantage of transferring performance risk to equity holders and lenders in addition to the risk transfer to the designer, builder and operator. However, DBFO also introduces complexities and limitations. There are a limited number of operating service firms large enough to carry out this project and all but one have little or no experience for a project this large that also involves financing. DBFO teams are led by the equity holder, typically a financial firm. If there are problems with plant performance in the DBFO approach, the CRD must deal with the financial company rather than directly with the operating services firm that is doing the work because the CRD will have no direct contractual relationship with the operator. In the event an unworkable relationship develops with the DBFO contractor, the CRD would need to raise or borrow hundreds of millions of dollars to refinance the project to end the relationship.

## **Alternative Delivery Method Concerns**

During the process of evaluating alternative delivery methods such as DB, DBO and DBFO, the following common concerns should be considered and addressed: impact of profits of private parties on project cost, procurement lead times, amount of owner control, financing issues and potential instability of the private partner.

## **Bundling of Projects**

The Business Case suggests in the PPP option the “bundling” of the four wastewater treatment plants, together with the energy centre/biosolids facility in a single comprehensive procurement on which one DBFO team would propose and be awarded a contract for all five projects. A project of this size may be problematic to the operating services firms who have generally not dealt with contracts of this magnitude. Size considerations aside, the case for bundling is best made for projects that have some fundamental construction or operating nexus. For example, this could occur if the McLoughlin WWTP and the energy centre/biosolids facility could be located at the same site. There may also be some potential benefits to combining the Clover Point wet weather facility with the McLoughlin WWTP because of the potential for innovative approaches to combining the interrelated functions of these two facilities.

## **RISK QUANTIFICATION**

### **Optimizing Risk Allocation**

There is a risk that an event may cause the project costs to increase or the project schedule to be delayed. The amount of risk that is retained by the CRD can vary depending on the project delivery method. Alternative project delivery methods offer the opportunity to allocate risks to the private contractor or the CRD depending on the party

that can best handle each risk. In general, the CRD will retain more of the project risk in DBB than in alternative project delivery methods.

### **Risks Quantified in Terms of Cost Impact**

During the preparation of the Business Case, workshops were held to identify and discuss risks. A risk matrix was prepared that described each risk, the cause of the risk, the severity of the consequences if the risk occurs, how the risk could be mitigated, and ranked the risk relative to likelihood that it would occur. The risks were quantified in terms of their potential cost impact for the Traditional, Hybrid and PPP options; and whether the risk was retained by the CRD or transferred to the private contractor. The quantified risks were totaled to determine the risks retained by the CRD and those transferred to the private contractor. The results are shown below.

**Table S-2  
Retained and Transferred Risks**

	Traditional	Hybrid	PPP
Retained Risk	\$61,702,082	\$29,821,107	\$24,905,864
Estimated Proponent Cost of Transferred Risks	-	\$20,335,201	\$25,269,535
Total Risks	\$61,702,082	\$50,156,308	\$50,175,399

### **Significance of Risk Quantification**

In the Value For Money (VFM) analysis in the Business Case, the present cost (PC) of the Traditional, Hybrid and PPP prior to cost adjustment for risk differ by only \$779,000 to \$5,352,000 million for a project with a total PC of over \$900 million. The dollar amount of risk adjustment for a project of this size would be expected to be significantly greater than this difference in cost. As a result, the amount of risk adjustment for each delivery option is significant because the differences in risk adjustments between options may determine which option has the lowest risk adjusted cost.

### **Amount of Risk Adjustment**

The amount of Business Case risk adjustment as a percentage of project costs (6% to 7%) is low compared to those in other similar projects (16% to 26%).

### **Allocation Risks to Proponents for Hybrid and PPP Options**

The proponents submitting bids for the project will make adjustments to their bids to include some allowance for potential costs they could incur because of the risks transferred to them. Based on discussions that PRT members have had with proponents, the adjustments for transferred risks are quite low because the proponents feel they are in control of the transferred risks and they are pricing the risks in a competitive environment where a conservative approach would likely lose the job. The

Business Case estimates the proponents would include 64% to 69% of the cost of transferred risk in their DB and DBFO bids. These are higher percentages than would be expected. Reducing these conservatively high percentages would lower the cost of the Hybrid and PPP options relative to the Traditional option.

## **DELIVERY METHOD EFFICIENCIES**

### **Capital Cost Savings**

The Business Case identifies potential efficiency savings for the wastewater treatment components of the CRD program as a result of using alternative project delivery methods. The net effect was a 6.9% (\$65.2 million) savings in construction cost for the Hybrid option and an 8.1% savings (\$76 million) in construction costs for the PPP option.

### **O&M Cost Savings**

The Business Case also identifies operating efficiencies for the Hybrid and PPP options where the procurement methods include a private sector operator for part of the CRD system. These estimated savings equate to a 1.2% savings in annual O&M costs (\$227,000 per year) for the Hybrid option and a 5.4% savings in annual O&M costs (\$1,005,000 per year) for the PPP option.

### **Efficiencies are Conservatively Low, Sensitivity Analysis Recommended**

The Business Case estimates of cost efficiencies of alternative project delivery methods (7-8% savings in capital costs, 1-5% savings in O&M costs) fall within but at the low end of the range of reported savings on other alternative delivery projects (6-30% savings in capital costs, 10-30% savings in life cycle costs). Even though no two projects will be the same, given the variation in saving estimates from other reported projects, a sensitivity analysis based on a range of potential construction cost and operating efficiencies would be beneficial.

## **FINANCIAL CONSIDERATIONS**

### **Preliminary Cost Estimates Subject to Change**

The cost estimates in the Business Case are “Class C” estimates, which by definition are estimates of costs made at the 5% to 15% stage of project completion. These estimates have an accuracy range of minus 15% to plus 25%. The estimates were based on preliminary layouts that were done for each facility to establish preliminary quantities. Given the project is still in an early stage of project definition, there may yet be significant changes to the estimated cost of the project, particularly as the project proceeds to procurement and detailed design and cost estimation or if the alternative site referred to above is obtained. A 1% increase in inflation increases the Net Present Cost by approximately \$30 million for each of the delivery options.

## **Economics of Delivery Methods Sensitive to Discount Rate Assumptions**

In the Business Case the base discount rate was set at 7.5%. This figure was chosen as stated on page 74 of the Business Case to meet provincial expectations as an estimate of the average long-term Internal Rate of Return (IRR). The breakeven point between the Traditional and the PPP option is 7.66%. This observation demonstrates that a small change in the discount rate can have a significant impact on which option is most cost effective under varying assumptions. A half percent increase in discount rate to 8.00% would result in the PPP option having the lowest Net Present Cost.

## **Conduct Discussions with Government of Canada (GOC) and Province**

GOC and provincial funding is key to the affordability of the project. Considering time constraints related to GOC and provincial funding, early and ongoing discussions need to take place with the GOC and provincial governments and there should be no undue delay in proceeding with the project.

## **Conduct Added Analysis of Hybrid Option Components**

A detailed analysis for each of the major components of the Hybrid option should be undertaken. This analysis should include using a Multiple Criteria Analysis similar to that used to evaluate the Traditional, Hybrid and PPP options to ensure that each project of the wastewater program is allocated to the procurement method that offers the best overall value to the taxpayer when considering economic, environmental and social factors.

## **Allocate Annual Service Price to Project Components**

It would be useful to have the Annual Service Price (ASP) in the Hybrid and PPP options allocated to components so that the NPC of each component can be assessed individually. This allocation would enhance the comparison of the analysis of the Hybrid and PPP options with the Traditional option.

## **Reevaluate Inflation Assumptions**

Inflation assumptions used in the current analysis appear optimistic for the long term. Future iterations of the Business Case should include further analysis of the relative inflation risk of each delivery method.

## **Identify Insurance Adjustment Separately**

The Business Case competitive neutrality adjustment does not include an insurance adjustment. Construction insurance costs have not been separated out and operating insurance costs were not determined. The PRT recommends that the relative costs of insurance, including construction and operations should be separately identified and compared and its impact included in the competitive neutrality adjustment.

## **Financial Market Sounding**



Further review is needed of the current receptivity of the financial markets as well as the expected financial terms (interest rates, required guarantors, amortization period, percent equity required, etc.)

### **Affordability Considerations**

The following steps would be useful in evaluating the affordability of the project:

- Provide additional detail supporting the projected \$250 to \$450 per year charge range per equivalent residential user; refine range of charges as better data and assumptions are determined
- Identify and quantify major factors that would affect the annual service charge range, and provide sensitivity analyses to assess the extent of economic risk to which the service area and stakeholders are exposed
- Assess how the annual charge range compares to the wastewater cost of similar communities
- Assess how the annual charge range compares as a percent of Median Household Income
- Communicate to relevant stakeholders the economic risks associated with various scenarios

## **MULTIPLE CRITERIA ANALYSIS**

### **Matrix of Environmental, Social and Economic Criteria Used**

The Business Case qualitatively evaluated social, environmental and risk-related issues using the Multiple Criteria Approach (MCA) approach. A matrix was created that summarizes how each of the three procurement options (Traditional, Hybrid and PPP) compares to four environmentally-oriented criteria, seven socially-oriented criteria, and six financial and risk-oriented criteria. The criteria are not weighted or numerically scored for each procurement option. Instead, the Business Case rates the three delivery method options in a qualitative way (e.g., good, better, best) against each criterion. Much of the discussion in the Procurement and Risk Quantification Sections of this PRT report addresses topics related to the criteria in the MCA. There are many points of agreement between the PRT discussions in these sections of the PRT report with the discussion in the Business Case MCA. A few supplemental comments summarized below are offered by the PRT.

### **Permitting Issues to Address With Alternative Delivery Methods**

One of the challenges associated with alternative delivery methods of DB, DBO and DBFO is created by the concurrent nature of design and construction. Permitting agencies are accustomed to receiving 100% complete designs before granting their approval. In these alternative methods, applications to the permitting agencies will

involve a series of submittals for various phases of the project with requests for related permits. It can require significant effort to develop and implement a permitting process that is acceptable to each agency. If there are changes to the system configuration, it will be necessary for the CRD to amend the Liquid Waste Management Plan.

### **Recruiting and Retaining Staff**

In the MCA, it is assumed under the Traditional approach and portions of the Hybrid approach that management and labour can be recruited and employed for the operations and maintenance of the various wastewater treatment plants. There is risk associated with this assumption. Other large municipal utilities (Seattle, Phoenix, New York City, San Diego, Santa Fe) with a significant number of employees have assessed the challenges of staffing large new treatment plants and elected to use DBO or retain a contract operator rather than attempt to operate the new plant by adding to their own staff. The major operating firms have collective bargaining agreements with several major public utility employee unions in order to protect the interests of the utility workforce.

### **Costs/Savings from Risk Transfer**

The PRT agrees with the observation in the MCA that the CRD will pay a premium if it transfers risks to the service provider that cannot be better managed by the service provider in DB, DBO or DBFO. However, a goal of these alternative project delivery methods is to allocate risks to the party best suited to handle the risk. If the service provider is better equipped to handle a risk, then a cost savings to the CRD should occur as discussed in Section 4 of this PRT report.

### **Scheduling Issues Related to DBFO**

The MCA notes that schedule aspects of the PPP option “may be challenging.” The challenges noted are primarily related to the complexity of the financing aspect of DBFO and the PRT agrees. However, these financing challenges would not be present if DBO were used instead of DBFO.

## **BUSINESS CASE PROCESS**

### **Address Provincial Expectations**

Between 2006 and 2010, the Ministers of Community and Rural Development and of Environment corresponded with the CRD to provide provincial expectations for achieving project outcomes related to:

- environmental protection
- climate action
- resource recovery and reuse
- seeking partnerships
- smart growth

- cost effectiveness
- and the need for innovation and leadership

The CRD must recognize the provincial expectations for achieving outcomes related to these matters.

### **Ensure Consistency with Liquid Waste Management Plan**

The Province's document "CRD WWTP Business Case Requirements" gives the CRD guidance on provincial requirements for the project's Business Case format and expected outcomes from the project proposal. The outcomes include identification of how the project meets provincial and the CRD mandates related to climate, energy, water and air, in addition to environmental protection and the other expectations outlined through the correspondence from the Minister of Community and Rural Development and Minister of Environment. In order to obtain the approval of the Inspector in relation to the loan authorization bylaw, the CRD should ensure that the project particulars are consistent with the current CRD Liquid Waste Management Plan and applicable provincial policies.

## **REGULATORY CONSIDERATIONS**

### **Legislative Requirements That Must Be Met**

The CRD must address the following approval, consent and consistency requirements of the applicable legislation:

- Approval of a loan authorization bylaw by the Inspector of municipalities, noting the requirements of the Province in relation to approvals (and the guidelines published by Partnerships British Columbia since that organization has been retained by the Province to provide advice in relation to the WWTP).
- Approval by the Inspector of Municipalities of the liability in relation to the borrowing if the CRD seeks an exemption from elector approval, noting the requirements of the Province in relation to approvals of the liability by the Inspector of Municipalities to exempt the CRD from elector approval.
- Consent of each participating municipality given on behalf of the applicable municipal participating areas, unless the CRD seeks and obtains approval of the Inspector of Municipalities under the Regional District Liabilities Regulation.
- Approval by the Inspector of Municipalities of public private partnership agreements having a term exceeding five years under which a capital liability is incurred or a loan guarantee given, noting the approval requirements of the Province and the applicable guidelines of Partnerships British Columbia.
- Inclusion of loan and other liability expenditures in the financial plan, which has been subjected to a process of public consultation.

If the CRD guarantees a private financing or borrowing under DBFO, the exemption from the requirement for electoral approval under Section 2 of the *Regional District Liabilities Regulation* does not apply. The CRD would have to seek the approval of the Inspector under the Exemption Regulations.

### **Governance Options to Consider**

Governance options to be considered in addition to those discussed in the Business Case for the project development period include the following:

- Company incorporated under the *Business Corporations Act*
- Non-profit society incorporated under the *Society Act*
- Commission established by the regional board
- Joint venture (such as the Aerosmith Water Joint Venture)
- Partnership or limited liability partnership
- Utility

### **Governance During Operations**

The Business Case addresses governance during the development of the project, but does not specifically deal with governance of the continued facility operation that could include options such as:

- Direct service of the Regional District
- Commission
- Non-profit society
- Special purpose company
- Joint venture
- Utility

## **PROJECT STRATEGY CONSIDERATIONS**

### **User Pay Approach to Allocating Costs**

It will be necessary for the Regional Board to establish principles of allocating liquid waste costs among the member municipalities. The apportionment must be consistent with the CRD Financial Plan, must be administered by way of a cost apportionment bylaw, and should be structured to satisfy provincial funding and approval conditions. It may be useful for the Regional Board to appoint a task force of individuals with experience, expertise and qualifications in cost apportionment to recommend appropriate options for Regional Board consideration. Furthermore, each option should be evaluated as to the economic impact on customers and/or stakeholders within each member municipality. The options are driven by considerations related to dry weather

flows versus wet weather flows, industrial flows, member municipality growth as a function of service area population growth, the user pay principle, and special considerations such as local inflow/infiltration problems or combined sewer overflow problems. The CRD has implemented some user pay principles in relation to the regional water bulk supply and distribution program. This experience may be instructive in relation to cost apportionment for the wastewater costs.

### **Other Options for Allocating Costs**

In addition to a user pay method, the Regional Board could consider the option of apportionment on the basis of the Greater Vancouver Sewerage and Drainage District (GVSD) model. Under the GVSD scheme, the local government pays for the cost of growth (in relation to any required secondary or tertiary treatment) by borrowing and then apportioning among the member municipalities on the basis of a formula. Under that formula, the member municipality population growth is divided by the sewerage area population growth, which is in turn multiplied by the amount to be apportioned. Non-growth costs are apportioned on the basis of dry weather flow. The non-growth costs are apportioned among member municipalities in the same proportion that the assessed value of the lands of each member municipality bears to the assessed value of all lands within the service area. Under the GVSD model, the costs of operation and maintenance are apportioned on the same basis as the apportionment of non-growth costs (based on dry weather flows) and further apportioned among the member municipalities on the same basis as the apportionment of non-growth capital costs.

Each cost allocation method should be evaluated considering the criteria presented in Section 10 of this PRT report.

## **LABOUR CONSIDERATIONS**

### **Successorship Issue**

The CRD must be sensitive to the successorship and collective agreement issues arising under a DBO or DBFO. If the CRD considers proceeding with a DBO or a DBFO, it should establish an effective, collaborative approach with the employees to see if they wish to continue in the WWTP service, move to other positions, or be bought out. This process would follow negotiations with the DBO or DBFO proponent team to arrange for the successful proponents to take care of the cost of dealing with the employees as determined by the collaborative process.

### **Contracting Out Provisions of Collective Agreement**

To the extent any procurement model involves potential contracting out, it should be noted that Article 36 of the collective agreement, entitled "Contracting Out", provides that no regular employee shall be laid off and placed on the recall list, terminated, or failed to be recalled to their classification as a result of contracting out. As well, it should be noted that Article 29 entitled "Sub-contractors" states that all sub-contractors of the

regional district must provide wages which are at least equal to those specified in the collective agreement when work of a similar or same nature is performed.

*The above summary is a general overview of the material presented in this PRT report. For detailed information, please refer to the relevant sections to the PRT report that follows.*

The Capital Regional District (CRD) in Victoria, BC is currently in the process of developing a Business Case for its Core Area Wastewater Management Program. At the request of the Core Area Liquid Waste Management Committee (CALWMC), an external Peer Review Team (PRT) was formed. This report contains the findings of the PRT.

## **PURPOSE OF THE PEER REVIEW TEAM**

As described in the motion approved by the CALWMC requesting this peer review, the purpose is to provide an independent review of options for the construction, management and ownership of the utility and associated resources ranging from fully public to public private partnerships (PPP).

The PRT's observations and findings are derived from a review of the reports prepared by the consultants (Ernst & Young, Stantec) for the CRD and two review meetings held in Victoria with these consultants and the CRD staff. The PRT comments on the Business Case are based on the report "Business Case in Support of Funding from the Province of British Columbia" Draft 3.8 dated February 23, 2010.

## **PRT MEMBERSHIP**

The PRT is comprised of five members:

- Gordon Culp (Chair), Professional Engineer, Principal, Smith Culp Consulting, Las Vegas, Nevada
- Arn van Iersel, Professional Accountant, Independent Consultant, Saanichton, BC
- Don Lidstone, Q.C., Attorney, Lidstone & Company Law Corporation, Vancouver, BC
- Eric Petersen, Attorney, Director, Public Contracts Group, Hawkins, Delafield and Wood, New York, New York
- George Raftelis, CPA, CEO, Raftelis Financial Consultants, Charlotte, North Carolina

The PRT members were selected to represent a broad range of disciplines and experience with the technical, legal, procurement and financial aspects of large, complex wastewater systems. Brief biographies of the PRT members are found in Appendix A.

## **PRT MEETINGS AND PRELIMINARY COMMENTS**

The first PRT meeting was held on December 2, 2009 at the offices of the CRD in Victoria. The purpose of the first meeting was to discuss the CRD consultants' approach to the Business Case and for the PRT to offer suggestions relative to the approach. The agenda and notes from this meeting are found in Appendix B.

Following the first meeting, the PRT was provided a copy of a discussion paper "The CRD Core Area Wastewater Management Program, Potential Delivery Options" dated January 6, 2010 and a draft Risk Registry dated January 10, 2010. On January 15, 2010, the PRT provided comments on these two documents. These PRT comments are found in Appendix C.

The second PRT meeting was held on February 2 and 3 also at the offices of the CRD in Victoria. The purpose of the second meeting was to discuss the CRD consultants' draft Business Case and for the PRT to prepare an outline and work plan for preparation of its report. The draft Business Case was a work in progress at the time of the meeting. The agenda and notes from this meeting are found in Appendix D.

In addition, the PRT reviewed several other working drafts of the Business Case and related discussion papers. During the course of these reviews, the PRT offered comments and suggestions, some of which are addressed in the Business Case.

## **THE PROPOSED CRD WASTEWATER SYSTEM CONFIGURATION**

The Business Case reviewed by the PRT is based on the Option 1A wastewater system configuration as defined by the CRD and as described in the Business Case. The CRD is currently exploring the opportunities available for an alternative treatment plant site for biosolids processing facilities. The site may allow wastewater treatment and biosolids processing facilities to be located on one large central site rather than on the two separate sites currently a part of Option 1A. If such a major change is made to the system configuration, amendments to the Business Case would be required.

## **PROJECT DELIVERY METHOD TERMINOLOGY**

The Business Case defines three project delivery approaches:

- **Traditional** - Design Bid Build (DBB) or Construction Manager at Risk (CMAR) used for all major system elements
- **Public Private Partnership (PPP)** - Design Build Finance Operate (DBFO) used for all major system elements except conveyance system, tunnel and outfalls that are delivered using DBB or CMAR
- **Hybrid** - A mixture of the above methods and the Design Build (DB) method applied to different system elements



When the term “Alternative Project Delivery Methods” is used in this PRT report, it includes DB, Design Build Operate (DBO) and DBFO.

## **REPORT ORGANIZATION**

This report is organized into the following sections:

1. Introduction
2. Project Delivery Methods
3. Procurement Issues
4. Risk Quantification for Delivery Methods
5. Delivery Method Efficiencies
6. Financial Issues
7. Multiple Criteria Analysis
8. Business Case Process
9. Regulatory/Legal Issues
10. Project Strategy Considerations
11. Labour Considerations

## **PROJECT DELIVERY METHODS**

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This section provides an overview of project delivery methods that are under consideration for the CRD's wastewater treatment program. Further details are found in Section 3 of this PRT report.

### **INTRODUCTION**

The Business Case presumes the reader is fully familiar with the Traditional and Alternative Project Delivery Methods and only summarizes a few of the pros and cons of each method in an Appendix. This section of the PRT report presents an overview of the delivery methods under consideration. Section 3 of this PRT report "Procurement Considerations" presents additional information on the key attributes of each alternative method, how they compare to the Traditional approach, and how they affect the procurement approach.

### **ALTERNATIVE VERSUS TRADITIONAL PROJECT DELIVERY METHODS**

Project delivery methods described in this section are:

#### Traditional

- Design Bid Build

#### Alternative Project Delivery Methods

- Design Build
- Design Build Operate
- Design Build Finance Operate

Procurement is the acquisition of project resources and services for the realisation of a project and its associated infrastructure. The CRD, as owner of a project and its infrastructure, has the option of procuring resources and services in a traditional manner, or according to one of the alternative models. These alternative models are different from traditional methods because they, in varying degrees and at different stages, involve the private sector in the project.

Traditional procurement is the historic public sector method of administering a project, where the local government owns and operates the service. Contractors and sub-contractors such as designers and engineers are hired to assist in specific aspects of the project. The local government retains the responsibility for the design and the project team. Following engineering design and a tender or negotiated procurement, a contractor will be retained that will manage the construction of the project. The contractor works to a defined scope of work for a fixed price. Once the project's

construction phase is complete, the contractor has no remaining connection with the project (some elements, such as a one or two year warranty period or engineers' liability may remain), and the local government maintains full responsibility for ownership and operation.

Alternative procurement involves varying degrees of private sector participation or control in the design, construction, financing or ownership of the project. The options range from DB to DBFO to a complete turnkey operation. All are considered to be partnership structures as they are designed to involve some degree of private financing, and responsibility for operations and life cycle performance. Alternative procurement models are enforceable with a performance-based payment mechanism for the duration of the contract term. The theory is that the financial incentive that is brought to bear through the length and enforceability of the payment mechanism is key to providing a stronger, more effective means of optimizing the life cycle costs of a project in a way that meets program and performance requirements.

## **OVERVIEW OF DESIGN BID BUILD (DBB)**

### **Description**

An owner develops contract documents with an engineer consisting of a set of plans and detailed specifications. Bids are solicited from contractors based on these documents; a contract is then awarded to the bidder who meets all the qualifications stipulated in the tender, typically at the lowest overall cost.

### **Advantages**

DBB is a well understood, widely used method for public agency projects. Agencies typically have developed standard contracts and procedures based on experiences from many projects and are comfortable with the DBB approach. The owner maintains a high level of control, in particular over the design phase. The bid phase uses competition to improve the efficiency and quality for the owner and opens up the field to a large number of players who are qualified and familiar with completing public sector projects using this method. The DBB model works especially well for a small project approach to infrastructure construction. Linear projects such as water pipelines, involving very repetitive construction for long length are particularly amenable to this method. The advantages of these projects include open tendering, expeditious construction and spreading of the work amongst several contractors.

### **Disadvantages**

DBB requires the longest time for design and construction because design and construction are sequential steps with no overlap. There is a lack of emphasis on life cycle costs as well as innovative processes and technique. The inefficiencies in the DBB approach are described in Section 5 - Delivery Method Efficiencies of this PRT report. The DBB approach requires careful up-front planning so that all tender

documents are in accordance with tendering law. Failure of the design team to be current with construction costs, and any potential cost increases during the design phase could cause project delays if the construction documents must be redone to reduce costs.

## **OVERVIEW OF DESIGN BUILD (DB)**

### **Description**

In DB, the public entity contracts with a private entity to design and build public infrastructure. The operation of the facility of is transferred to the public entity after it is completed. With DB procurements, owners execute a single, fixed-fee contract for both engineering services and construction. The DB entity may be a single firm, consortium, joint venture or other organization assembled for the project.

### **Advantages**

The DB entity assumes responsibility for the design work and all construction activities, together with the risks associated with providing these services for a fixed fee. DB eliminates the situation where it may be unclear whether the designer or constructor is responsible for a problem. The design builder is responsible regardless of whether the reason for the problem is due to design or construction issues. Concurrent design and construction reduce project schedules.

### **Disadvantages**

There is a possibility that the DB entity may reduce quality to save cost because the DB entity has no continued interest in the project following construction and the warranty period. Reduced construction quality may create long-term operating issues for the owner. DB, as well as DBO and DBFO, contracts will require the use of outside, specialized experts to assist in the procurement and negotiation process. They will be dealing with proponents who have been through the process of negotiating alternative delivery contracts many times.

## **OVERVIEW OF DESIGN BUILD OPERATE (DBO)**

### **Description**

The public sector finances the project and sets performance objectives. A private partner is engaged to design, construct and operate the facility for a specified period that typically includes maintenance services. The private partner may be a single firm, consortium, joint venture or other organization assembled for the project. Ownership of the assets remains with the local government.

## **Advantages**

All parties and all disciplines are committed and integrated from the start. The potential to overlap some design and build activities can minimize delays and optimize the smooth flow of construction activities. Because cost restraints and commitments and other risks are being carried by the contractor, there is less risk of price over-runs. Because the DBO contractor is also the operator, the contractor has an interest to design and build to a high quality while maintaining low operation and maintenance costs. The DBO contractor is the single party responsible for design, construction or operation issues.

## **Disadvantages**

Depending on how the contractual relationship is set up, the local government may have less control over details of project design, construction and operation. There are fewer contractors available who have the operations capability for a DBO project as large as the CRD project, which will result in less competition than if DBB or DB were used. DBO projects are tied to the limits of public sector financing which, although somewhat insulated from the marketplace, could impose constraints.

## **OVERVIEW OF DESIGN BUILD FINANCE OPERATE (DBFO)**

### **Description**

The private sector designs, finances and constructs a new facility, under a title (subject to a long-term option or reverter) or under a long-term lease, and operates the facility during the term. The private partner transfers the new facility to the local government at the end of the term.

### **Advantages**

Retains the advantages described for DB and DBO plus increased value for money to the taxpayer achieved through a combination of transfer of risk to the equity holders on top of risk transfer to the designer, builder and operator.

### **Disadvantages**

Higher costs of financing, added procedural and contractual complexities as discussed in Section 3 - Procurement Considerations and less accountability directly to the public for potential ongoing operational issues. There are fewer contractors available who have the capability for a DBFO project as large as the CRD project, which will result in less competition when compared to the other methods.

## **PROCUREMENT CONSIDERATIONS**

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This section presents additional information on the key attributes of each alternative project delivery method and how each compares to the Traditional DBB approach.

### **CONVEYANCE SYSTEM COMPONENTS**

The PRT agrees with the Business Case that the conveyance system components and outfalls would be best delivered by the traditional DBB method. DBB or CMAR has been recommended in the Business Case as the preferred delivery method in the Traditional, Hybrid and PPP options for the construction of the collection and transmission portions of the project particularly because of the need to plan and control the entire pipeline and conveyance system, closely supervise its timing and implementation, integrate it with existing facilities and effectively handle geotechnical risks in a conventional manner. Further, these project elements do not generally involve operation performance guarantees, one of the main benefits of alternative delivery.

### **DESIGN-BUILD-OPERATE SHOULD RECEIVE EQUAL CONSIDERATION FOR TREATMENT FACILITIES**

The Business Case does not give detailed consideration to DBO for any project component. DBO is listed in the a Discussion Paper accompanying the Business Case, and its advantages and disadvantages are briefly noted. Some of the potential DBO advantages over DBFO are also noted in the Business Case Multiple Criteria Analysis. But overall the Business Case makes only passing reference to the DBO delivery method.

As addressed in Section 6 - Financial Issues, DBO results in lower financing costs than DBFO leading to lower Net Present Cost than DBFO. Also, as discussed later in this section, DBFO introduces complexities and limitations not found with DB or DBO. The rationale is not discussed in the Business Case for favoring DBFO over DBO in the PPP model. This is a significant omission given the higher interest rates associated with DBFO (project financing) over the lower interest rates involved in DB and DBO (government financing) and the added complexity of DBFO.

The omission of DBO could be problematic because:

- The “operating” component of a DBO induces the successful project proponent to design and build facilities that will endure during the operating term. As a result, it is less likely there will be issues after the warranty period than if the proponent has no long-term obligation.

- In comparison with the DBFO alternative, the DBO approach would allow the CRD to proceed with a design build with financing from the Municipal Finance Authority of British Columbia instead of the DBFO private placement financing. This could result in financing savings on the regional district portion of capitalization, which could be substantial given the project capital cost and the CRD's portion.
- The point spread in interest rate referenced above is amplified (doubled) if the Province requires the CRD to also borrow the provincial portion of capitalization instead of granting its portion outright.
- It is arguable the CRD would be out of compliance with the Province's Capital Asset Management Framework. This obligates a public sector funding recipient to review the use of alternative procurement methods in its business case including public private partnership, which should include the DBO alternative.
- If the CRD proceeds with a DBFO, a limited number of teams will compete for the assignment. The industry has seen a distinct drop-off in interest if the financial component is included in such projects, as there are a limited number of credible teams with financing available on a scale of the CRD project (especially in the current economic climate).
- Ernst & Young stated in a memorandum to the CRD dated January 11, 2010 that based on feedback received from the CRD Committee and the Province, the DBO option could be added back into the plan. For this reason, Ernst & Young retained the DBO column in the risk registry but did not include it in the delivery options paper.

In the context of a project as large as the CRD project, a DBFO approach may not appear as attractive as a traditional or "hybrid" approach. On the other hand, a DBO option could compare favourably with the Traditional or Hybrid approaches. This concern is underlined by the understanding that all DBFO options are anticipated to generally use a maximum of up to one-third private sector financing for capital costs. Not only is the private sector financing more costly overall, but the Province may conceivably require the CRD to finance the provincial one-third portion of the financing as a condition of the grant scheme.

DB is proposed in the Business Plan for the McLoughlin wastewater treatment plant in the Hybrid option. The rationale for favoring DB over DBO for the McLoughlin plant is not discussed. As described later in this section, DBO offers some advantages over DB. The relative advantages and disadvantages of DB and DBO should be given equal consideration before the final determination of the delivery method best suited for the McLoughlin plant is made if the Hybrid option is selected.

The PRT recommends that DBO receive equal consideration for those project elements where DB and DBFO are currently proposed in the Business Case. DBO retains most of

the benefits of DBFO without the complexities, higher financing costs and other limitations of DBFO.

## **DESIGN-BUILD**

All alternative project delivery methods are based on DB contracting. DBO and DBFO simply add operations, or operations and financing and operations to the DB foundation. The principles of DB, accordingly, are discussed most fully.

### **General**

Under the DB method of project delivery, a governmental agency contracts with a single entity to provide both design and construction services for a project. The owner, the CRD in this case, provides long-term operation after the plant passes an acceptance test.

In selecting the DB contractor, the governmental agency employs a competitive proposal process, which generally consists of the issuance of a request for qualifications, followed by the issuance of a request for proposals. The DB contractor is selected based on the overall value of the proposal, considering factors such as qualifications, performance guarantees, the quality of the proposed design, as well as price, rather than price alone.

The typical DB contract requires the DB contractor to design and construct a project in accordance with a basic set of design requirements and to demonstrate that the project can achieve a defined set of performance standards through the successful completion of an acceptance test.

Design and construction services are generally completed in concurrent phases, enabling the DB contractor to achieve efficiencies in the design and construction schedule. Following acceptance of the project, the primary responsibility for the project, including project operations, transfers to the owner-governmental agency, subject to basic warranties of construction for a limited period (typically one to two years).

### **Transfer of Design Liability**

A critical function of the DB contract is the transfer of design liability to the DB contractor. The DB contractor proposes the preliminary design for the project as part of the procurement process and, once the DB contract is signed, develops the detailed plans and specifications for the project in a manner that is fully consistent with the contractual design requirements. In this way, the DB contractor is fully responsible for the design of the project and therefore bears all risk associated with design errors or defects.

The design-builder will be “on the hook” under the contract until the project passes the acceptance test, subject to relief only in the event of the occurrence of circumstances beyond the design-builder’s control. Problems can arise, however, where a governmental agency is overly prescriptive in developing its project requirements. The



transfer of design liability is premised upon the fact that the design-builder is responsible for developing the design from the preliminary design level to the detailed plans and specifications. The owner-governmental agency runs the risk of negating this transfer of design liability where detailed plans and specifications are included in the procurement documents.

### **Single Point of Responsibility**

A well drafted DB contract establishes the DB contractor as the single point of responsibility for all aspects of design and construction, with the sole responsibility for disputes between design subcontractors and construction subcontractors. If the project fails to perform, the owner-governmental agency has a contract claim against the DB contractor without the need to establish the negligence of the design subcontractor or to become involved in disputes between the design subcontractor and the construction subcontractor.

### **Risk Transfer**

The DB contracting method enables the owner-governmental agency to transfer risks associated with design liability and disputes between design subcontractors and construction subcontractors to the design-builder. This is in contrast to the traditional DBB method of contracting where the owner-governmental agency must enter into separate contracts for design and construction.

In general, when an owner-governmental agency furnishes plans and specifications to a construction contractor, as under the traditional DBB method, there is an implied warranty that the furnished design is capable of construction. Accordingly, the extent of the obligation of a construction contractor in the DBB approach is the construction of the project in accordance with the furnished plans and specifications. The construction contractor bears no liability for the furnished design. Moreover, the design engineering contract in a DBB project is generally not a performance-based contract, which means that an owner-governmental agency must establish the negligence of the design engineer in order to prevail in a claim if there are design issues encountered in a project. This negligence standard creates a bar to relief for an owner-governmental agency which is significantly higher than the claim available under a DB contract in the event design issues cause a project to not operate properly or otherwise fail.

It is often unclear as to whether issues that cause a project to fail originate from a project's design or from its construction, which can leave an owner-governmental agency under in the DBB approach forced to pursue claims against both the design contractor and the construction contractor, with each "pointing the finger" at the other. Under a DB project, one party (the design-builder) is responsible for making the project work. If the project does not work, absent carefully defined uncontrollable circumstances, the design-builder is responsible, regardless of whether the reason for the failure is due to design or construction issues.

## **Prequalification**

The procurement process for a DB project generally enables the owner-governmental agency to pre-qualify potential DB firms through the issuance of a request for qualifications preceding the issuance of the request for proposals. Through this process, the owner-governmental agency is able to narrow the field of respondents to the request for proposals to those firms possessing the best financial and technical qualifications for the project.

Prequalification is particularly important in wastewater treatment facility projects, which involve sophisticated technology and can take a number of years to implement. The prequalification process can provide assurance to the CRD that its contracting partner has the technical expertise to address challenges as they arise and the financial wherewithal to sustain a long-term project effort.

## **Competition on Factors Other than Price**

The request for DB proposals process enables competition on factors other than price, which can result in innovative proposals and enable an owner-governmental agency to tap into private sector ingenuity to solve the particular design challenges of a given project. This is particularly useful in the context of a project involving a public utility asset such as a wastewater treatment facility that involves complex operations as contrasted to an office-building project or road project that does not. Through the request for proposals process, an owner-governmental agency can stipulate a basic set of performance requirements for the completed facility and require the DB firms to compete on proposed design solutions in their proposals. As price is also a factor in the selection process, the DB method generates competition over the optimal way to achieve the performance requirements in the most cost-effective manner.

## **Collaboration on Design and Construction**

The DB contracting method enables collaboration between the design subcontractor and the construction subcontractor in the development of the proposal. The exchange of ideas between these parties can avoid problems down the road when the construction subcontractor actually begins to implement the design. In contrast, under the DBB method and to a lesser extent the CMAR method, the construction contractors have no involvement in the development of the design or in constructability issues. Therefore, there can be a greater risk of encountering problems in the implementation of the owner-governmental agency's design.

## **Early Stage, Lower Cost Price Certainty**

Both DBB and DB contracting offer fixed pricing - DBB for the construction work, and DB for both design and construction services. The key difference is that under the DB method, the lump sum price for the project can be ascertained by the owner-governmental agency much earlier in the procurement process, and for a much lower "transactional" cost.

DB contractors will propose a fixed price in response to a request for proposals based on a 20% to 30% complete design. DBB contractors, by virtue of the nature of the procurement method, must await a 100% complete design from the owner in the request for bids. Further, DB transaction costs (primarily the owner-governmental agency's procurement and engineering advisors) typically are between 1% to 3% of the project's construction cost, while DBB transaction costs can be from 8% to 12% of construction cost (mostly engineering fees for the 100% complete design). Using these benchmarks for a hypothetical \$200 million treatment plant, an owner-governmental agency can ascertain the actual cost of the project under DB within approximately nine to 12 months (the time for project planning, design to 20% to 30%, and receipt of proposals), with procurement transaction costs of \$3 million to \$5 million. However, contract negotiations may extend the time.

Under the DBB method, actual project costs will not be known for 18 to 24 months (the time for project planning, design to 100%, and bidding), with transaction costs of \$16 million to \$24 million (project design, engineering and procurement costs). Estimated project costs are prepared at the preliminary stage under either method, but under DB, the owner-governmental agency is in a much better position than it is under DBB in the event actual pricing is unexpectedly higher than the early planning estimates.

### **Schedule Compression**

DB contracting is particularly useful in the context of a project where schedule is a key concern. As contrasted with the DBB method where the design must be fully developed under a separate contract prior to the procurement of the construction contract, the DB method involves concurrent design and construction of the project, which enables the DB contractor to achieve efficiencies in the design and construction schedule. Indeed, more rapid project delivery is often cited as the key reason for selecting the DB project delivery method.

### **Minimization of Change Orders**

Design changes under a DB contract are generally the responsibility of the DB contractor. In the event that the DB contractor determines that a change to the design is required in order to meet the performance requirements of the DB contract, the DB contractor must make such changes at its own expense and without schedule or performance relief. Change orders under a DB contract generally issue only in the event of uncontrollable circumstances, the owner-governmental agency's project requirements change, or in other very rare circumstances. Conversely, change orders are common under the DBB and CMAR methods of contracting where the owner-governmental agency retains liability for the furnished design and where, as a practical matter, modifications to the complete design are required due to inadvertent errors or newly determined objectives.

## **Lack of Full Design Control**

Concern is often expressed that the owner-governmental agency under DB would have limited control over the development of the final design for a project. In a typical DB transaction, the owner-governmental agency develops only a basic description of the project and its requirements, focusing primarily on the performance standards that the completed project will be required to meet, and on construction quality standards. While an owner-governmental agency may include prescribed design elements in a request for DB proposals, an overly prescriptive request for proposals runs the risk of negating the transfer of design liability. Accordingly, the nature of DB does require an owner-governmental agency to relinquish some control over the final details of design development. This makes the development of the performance requirements and construction quality standards for the completed facility in the request for proposals all the more important, as such performance requirements can serve to dictate the nature of the facility design.

## **Lack of Long-Term Vested Interest**

A potential disadvantage of implementing a project such as a wastewater treatment facility on a DB basis is the lack of a long-term stake on the part of the DB contractor with respect to the operations of the facility. Respondents to a request for proposals are motivated by the competitive process to propose the lowest cost facility that will achieve the performance standards. However, the DB contractor's responsibility with respect to project performance effectively ends at the completion of the acceptance test and the turnover of operational responsibility to the owner-governmental agency. Accordingly, while the CRD can be confident that the DB process will result in a facility that will pass the acceptance test, the risks associated with post-acceptance elements, including project functionality and operations, maintenance, repair and replacement costs, will remain with the CRD.

Risk following the acceptance test can be mitigated by carefully developed selection criteria, prescribed design elements and performance standards. However, there are risks associated with these mitigation measures. For example, while the CRD can include items such as project operability and life cycle costs as evaluation factors in the selection criteria, there is no way to contractually guarantee such items. The DB contractor has no control over project operations following acceptance and will therefore not ordinarily assume risks associated with such operations. While the CRD can attempt to develop performance standards that will form the basis of an acceptance test to measure long-term operability and cost efficiency, the acceptance test will be time limited and, by its nature, can only be a long-term indicator. It is important to note that the absence of a long-term vested interest in the project on the part of the contractor is also a fundamental characteristic of the traditional DBB method.

The risks associated with project operations are mitigated through the DBB method of project delivery by developing a project design tailored to the CRD's particular operating concerns. However, in the DBB context, the CRD will ultimately bear the operating risk, as well as the design and construction risks discussed above. In determining which

method will best serve the CRD's needs, the risks associated with project operations in the DB context will need to be weighed, along with the mitigation measures discussed above, against the advantages and benefits of DB. One way to solve the operations risks associated with DB while retaining its advantages and benefits, is through the DBO method discussed below.

## **DESIGN-BUILD-OPERATE**

### **General**

The DBO project delivery method combines long-term operation and maintenance services with project design and construction services into a single service contract. The primary purpose for combining design, construction and operations into a single contract is to integrate all three areas of expertise and responsibility during every phase of the project. The aggregation of these services allows for an "operator-driven" design and permits a full level of cooperation between the designer, builder and operator. By partnering on all aspects of the project, an optimal design can be created and optimal pricing established by the reduction of the pricing contingencies typically included by market participants when they work individually, without the opportunity to collaborate, in the typical DBB process. The DBO contractor serves as the single point of responsibility for all aspects of design, construction and operation for the term of the service contract (typically 15 to 20 years following project acceptance).

### **The DBO Service Contract**

A typical service contract incorporates the DB contract provisions generally discussed above and further requires the DBO contractor to operate and maintain the facility for the term in accordance with carefully defined performance guarantees. The service contract will provide for the payment of an annual fixed service fee for the performance of the operations and maintenance services, subject to an indexed inflation adjustment factor. Accordingly, in addition to assuming the risks associated with design and construction, the DBO contractor assumes risks associated with project operations, including the risks of project performance and the costs of operations and maintenance. As under the DB method, the typical service contract provides for price, schedule and performance relief only in the event of carefully defined uncontrollable circumstances.

### **The Selection Process**

An owner-governmental agency typically uses the same competitive proposal procedures in selecting a DBO contractor as are used in selecting a DB contractor. As such, many of the same considerations discussed above with respect to the DB method apply to the structuring of a DBO project and the evaluation of its advantages and disadvantages. Accordingly, the following discussion will focus primarily on the operations considerations associated with DBO projects, while pointing out the differences in design and construction considerations between the DB and DBO methods.

## **Structuring the DBO Project - The Project Description and Performance Guarantees**

An owner-governmental agency will consider similar factors in developing the project description as considered under the DB method. However, as the contracting entity will assume long-term operations and maintenance responsibility for the project, prescribed design elements are generally less of a concern, enabling the owner-governmental agency to rely on the performance requirements to generate competition for the most cost-effective design. Additionally, the DBO method enables owner-governmental agencies to anticipate changes in law in developing the operating performance guarantees. "Enhanced standards" can be included in a DBO contract to capture standards expected to be required under applicable law in the future.

### **Risk Transfer**

In addition to the transfer of design liability and the risk of disputes between various subcontractors, the DBO method enables the owner-governmental agency to transfer significant operating risks to the contracting entity. The basic obligation of the DBO contractor with respect to operations is to operate and maintain the facility in accordance with applicable law, including all permit requirements and stipulations. In the event of a failure of the contractor to comply with applicable law in the operation of the facility, the contractor is ordinarily responsible for all fines and penalties assessed by the applicable governmental bodies and must indemnify the owner-governmental agency from any and all third-party claims. The contractor bears the basic risks associated with the operation and maintenance of the facility, including the risk that the facility simply costs more to operate and maintain than anticipated by the contractor in developing its proposal and offering its fixed service fee.

In a typical DBO contract, the DBO contractor's fixed service fee will be subject to adjustment only in accordance with the indexed inflation adjustment factor or in the event of the occurrence of carefully defined uncontrollable circumstances. If, for example, the DBO contractor requires more chemicals in the operation of the facility than originally budgeted, or must implement a more aggressive maintenance schedule than originally planned, the associated operating costs are the responsibility of the contractor and not the owner-governmental agency.

### **Operator Collaboration in the Preparation of the Design - Vested Interest in Long-Term Operations**

The DBO method enables the development of an operator-driven design which will involve significant attention to project operability. The risks assumed by the DBO contractor in the operations phase help to ensure that the project will be designed and constructed in a manner that will produce a highly operable, cost-effective facility. When the owner-governmental agency steps in upon expiration or earlier termination of the service contract, it can do so with a high level of confidence in the operability and cost-effectiveness of the facility.

## **DBO Companies**

The companies that compete in the DBO industry are strong companies that specialize in providing the services required for a DBO project. More often than not, these companies have investment grade credit ratings, which enable them to provide the financial security required in connection with major capital improvement projects. Owner-governmental agencies can be confident that sufficient resources will be brought to bear on the successful completion of a DBO project, given the nature of the companies in the industry and the prequalification procedures authorized under local law.

## **DB Advantages Apply**

In addition to the foregoing, the advantages discussed earlier for the DB method of contracting apply equally under the DBO method.

## **Control by Contract**

The DBO method of project delivery requires owner-governmental agencies to relinquish direct operating control of a critical public asset to the DBO contractor. While the governmental agency remains the owner of the asset and retains the power to set the associated rates, control of the day-to-day operations transfers to the contractor. In the event service issues arise affecting ratepayers or the general public, the owner-governmental agency must work within the parameters of its rights in the DBO contract to address such issues. For this reason, it is critical that the DBO contract clearly defines the service responsibilities of the contractor and provides real enforcement mechanisms for the owner-governmental agency. Additionally, the owner-governmental agency must understand that it will have a continuing contract administration and monitoring role for the life of the contract.

## **DESIGN-BUILD-FINANCE-OPERATE**

The Business Case PPP option proposes the Saanich East WWTP, McLoughlin Point WWTP, the Clover Point WWTP, and the Energy Centre/Biosolids Facility be procured under one DBFO package. This section discusses some of the benefits, complexities and limitations involved in using DBFO for this package of projects.

## **DBFO Benefits**

DBFO is the default procurement option under provincial policy and large numbers of major DBFO projects have been successfully implemented in the Province in recent years. DBFO has the clear advantage of transferring performance risk to equity and lenders (on top of the risk transfer to the design-builder, surety and operators), for a price (consisting of the equity return and the higher cost of a project-secured debt over government recourse debt).

## **The Operating Services Contractor Market**

A challenge of using DBFO for the CRD project is the size and nature of the contractor market for the operation of large wastewater treatment plants. These market limitations make consideration of the project delivery method more than simply an abstract proposition of risk transfer versus cost. The PRT is aware of only five major operating services firms with the technical and financial strength and expertise to handle major wastewater treatment facilities such as those proposed for the project. These firms are Epcor (Canadian-based); United (US based, French owned); Veolia (US based, French owned); American Water (US based); and CH2M-Hill (US based). Several smaller operating services firms are in existence, but they are unlikely to be able to carry out the scope of work required by the project.

The above firms, aside from Epcor, have little to no experience participating in large DBFO water and wastewater projects in North America. Veolia completed a sizable DBFO water reclamation project in Hawaii, but such projects have been rare. The French parents of United and Veolia routinely do concession projects in Europe (which are similar to a DBFO) but, as far as the PRT is aware, have not done major DBFOs in North America. Some of these firms express enthusiasm about the prospect of DBFO opportunities while others express hesitation or reservations. Selection of DBFO may reduce the number of firms who will compete for the CRD project.

### **Team Leader**

Another facet of DBFO involves the prominence of the “F” (financing) component of the services. The operating services firms, apart from Epcor, are not experienced in being project equity sponsors or arranging private project financing. Therefore, if they do elect to participate, they are much more likely to “team” with an equity sponsor (an investment or development firm) to provide the financing component. This is the conventional structure of a DBFO, and it results in a “financially led” team, rather than an “operating services contractor” led team. Subcontracting to the project company (created by the financial lead), rather than dealing directly with the CRD as the municipal owner, may be highly problematic for some of the operating services firms. These firms are used to leading a DBO, not subcontracting under a DBFO. While the DBFO model may be very familiar to the Province and the equity sponsors, the unfamiliarity of wastewater operating services firms with this approach could create learning curve issues.

### **Lack of CRD Privity with Service Provider**

The DBFO structure has practical consequences for the CRD, ones that are often underappreciated. If there are performance issues, such as odor or a failure to meet regulatory effluent requirements, the CRD will have to deal with the project company (the equity sponsor’s entity), rather than with the operating services firm that is actually doing the work, since the CRD will have no direct contractual privity with the operator. On other DBFO wastewater projects where there have been performance issues municipal owners have expressed concern about this access limitation.



## **Difficulty of Convenience Termination**

An under-appreciated facet of DBFO contracting for a municipal utility asset like a wastewater plant is the practical obstacle facing the owner in terminating the DBFO contract for its convenience, without having to prove contractor default. One of the most important elements of owner “control” in a long term DBO or DBFO contract is the ability to terminate for convenience. Any CRD contract of this nature will certainly have a convenience termination right. In a DBO, convenience termination fees can range from \$1 million to \$5 million, depending on the size of the operations portion of the contract. In a DBFO, however, the convenience termination fee will not only need to cover operator contract breakage costs, but must also cover equity, equity return and outstanding loan balances. These amounts for the larger CRD projects will range into the hundreds of millions of dollars. Their payment in effect represents, in simple terms, a payment for the purchase of the asset. In the event an unworkable relationship develops, the CRD will need to raise or borrow huge sums to essentially refinance the project and end the relationship. The practical difficulties with this are evident. This barrier to convenience termination is not present in the DBO structure.

## **Risk Transfer**

The risk transfer difference between a DBO and a DBFO may not be as great as the Business Case suggests. Both provide a single point of responsibility for long-term project performance and guaranteed life-cycle cost (subject to indexed inflation and relief for events beyond the contractor’s control). In DBO, that single point is the operating services firm, which executes a parent company guaranty of the entire DBO contract. All of the water service company parent firms generally carry investment grade credit ratings on their debt (or shadow ratings). By guaranteeing the entire DBO contract, the operating firm “covers” for the non-performance of the DB firm or joint venture. This powerful security for performance has been utilized effectively for dozens of projects in North America, nearly all of which have been successfully executed without a change order or performance breach. The surety bond provided by the parent guarantor further assures that the intended DB performance risk transfer will occur successfully. The operating firms specialize in the water industry, in most cases exclusively, and conduct due diligence into the technology, design and constructability capabilities of its DB partner, knowing that their own balance sheets are on the line through the parent guarantee and performance bond.

The equity sponsor investment and the bank lender’s loan repayment will clearly be jeopardized if wastewater service is not properly provided. Accordingly, their involvement represents an extra layer of due diligence beyond that provided by the operating services firm, and a financial “cushion” to absorb the risk of actually collecting damages from the design-build and operating services contractors should they fail to perform. This “collection risk” has rarely occurred on dozens of projects implemented by the five major operating service firms. And in DBO, because the operating services firm is the single point of accountability and has the resources to absorb any reasonably conceivable damage amount, the need for an extra cushion (in the form of the project financing parties) to take the collection risk is open to question. It should be noted, in

contrast, that in projects in other sectors, such as roads and hospitals, there is no established market for operating services firms to take on the full project risk and guarantee the design and construction work. Accordingly, the DBO project delivery method for projects in those sectors is not a realistic possibility, and DBFO must be implemented to achieve the single point of accountability result that a life-cycle project implementation strategy requires.

## **COMMON CONCERNS ABOUT ALTERNATIVE PROCUREMENT**

Public sector owners of major projects may be more comfortable, or at least familiar with, the risks and benefits of a traditional DBB approach to procurement. The traditional approach offers a competitive open tendering process for project contractors and a guaranteed lump sum price (if the owner is careful about stipulating “extras”). Some public sector owners are risk adverse to some of the variables and uncertainties that can accompany alternative procurement models. There are numerous examples of alternative procurement models used in the provision of municipal servicing throughout Canada, with varying degrees of success. Kevin Ryan’s 2007 review<sup>(1)</sup> of those unsuccessful Canadian examples indicates common themes, all of which can be mitigated: poor planning and poor implementation as expressed through cost overruns, increased risk and loss of practical control over and accountability in respect of the asset.

Typical criteria used to assess a particular public-private partnership is appropriate include: risk allocation, cost-efficiency, and technical feasibility and compliance, policy objectives that may militate against the proposal, legislative or regulatory barriers, practical transition and implementation, and whether the proposal can meet the public sector partner's timing. Generally, a public entity will choose a public-private partnership mechanism with a view to saving money and maintaining or improving service, while keeping a level of control and benefiting from private innovation.

Below are some common concerns about alternative procurement methods.

### **Profit**

The concern is that involving private partners will increase the profit that different parties are making on the project. Under the traditional DBB approach, contractors are retained to carry out various phases of the work and they, as businesses, also make a profit. Even if a project is completed using entirely in-house resources and employees, there may be the concern that the owner did not attempt to use competitively priced labour or materials.

The private sector demands a higher rate of return than public agencies for overhead and administration. However, if the procurement model is structured appropriately to the type and size of the project, then the private sector can also take on a proportionate amount of the risk. By partnering with the private sector for larger and longer-term projects, and by achieving cost efficiencies not viable for traditional procurement

models, the public sector debt can also be minimized, which results in long-term costs savings.

In an alternative procurement model, the owner may maintain a powerful position whereby they can control, to some degree, the payment mechanisms to the private partners. There are several situations where payments can be reduced or withheld, or where penalties can be imposed, for example, where the private partners are not in compliance with terms of the contract or with local laws. This allows the owner not only a degree of control over profit but also over risk and liability.

## **Delay**

Some alternative procurement models have long lead times that are the result of the procurement process as well as pre-design and pre-planning with the private partners. These lead times are typically offset by time savings realized by concurrent design and construction in DB, DBO and DBFO. Under an alternative procurement method, the private partner typically begins to receive service payments for operations and maintenance only when the project is available for use. Therefore, there is an incentive for private partners to stay to schedule once the project is underway. To realize its investment objective as a result of any private finance component, the private partner must ensure that the project does not cost more or take longer than planned, which provides greater certainty to the owner around the cost and schedule of a project. Alternative procurement processes usually lead to less time spent on managing multiple organizational interfaces.

Adopting the traditional DBB approach based on full drawings and bills of quantities should give the client a firm, fixed price for construction but in practice very few DBB projects are actually completed within the tendered price. Indeed, the crux of the matter is that full drawings and a complete bill are often not available when the project goes to tender.

## **Control by Owner**

Often of concern to the public and elected officials is whether privatization will result in a loss of control and accountability, as may be demonstrated through increasing costs to the public sector and poor service delivery.

A concern is that under privatization accountability will vanish and the public will lose control of the asset in question. When an asset is owned and operated by a local government there is often a belief that there will be a transparent and direct accountability for that asset through a publicly-elected board or council. However, while public accountability is desirable, it is not always the reality. There can be high rates of non-compliance by public agencies or publicly operated utilities without any sanctions being applied, as is the case with Ontario's public water and wastewater utilities.

Accountability in the private sector can be achieved through implementation agreements designed to ensure accountability, which may include provisions addressing access to records, upset limits on profits and criteria for determining that the desired service level is maintained. Private sector operators also enjoy fewer legal protections than publicly operated assets (where statutory protections apply to local government policy decisions and to operational decisions made without negligence or intent), and they will be held accountable by the market and their shareholders.

Alternative procurement can be modeled so that local government only has to negotiate with one partner. This can offer a greater degree of control in reporting lines and a greater control on accountability. The key to productive procurement relationships is strong project management. Inevitably, local governments will need to give up some control, and thus consistent communication is essential throughout all project phases, especially if major changes are made.

In terms of accountability or loss of control over an asset, accountability appears to be an element of proper implementation, rather than of privatization. A successful, accountable infrastructure project of any kind requires a thorough identification of all issues, including implementation, technical, regulatory, operational, managerial and reporting issues, regardless of whether the project is undertaken by way of public-private partnership.

### **Labour Issues**

Some of the labour issues relate to successor employers, contracting-out provisions in collective agreements and the status of employees (whether employees are properly public sector employees or private sector employees). Labour issues are more fully addressed in Section 11, "Labour Considerations."

### **Financing Issues**

Limits on and rates of private sector financing can be a concern, as they can limit the scope of a project and increase its financing costs significantly. A project's financial objectives will be a major factor in deciding which procurement model is chosen. Only a small number of constructors have the ability to obtain bonding for large scale projects.

The CRD as owner is in an opportune position with respect to partnering with the private sector for design, building and operating while maintaining its ability to finance through public sector lending mechanisms. The Municipal Finance Authority (MFA) provides financing at often two to three points less than rates available to the private sector; however, there are restrictions on the type of projects the MFA will support. Twice a year the clients of the MFA present Ministry-approved requests to the MFA for funding. Taking into consideration market and economic conditions, the MFA may authorize the issue and sale of securities in an amount sufficient to meet these requests.

Subject to the concern about higher private rates, financing relationships in alternative procurement are not more risky than in traditional methodologies, as both have rigid rules so the process and relationship are predictable, legal and transparent. Part of the attraction of alternative procurement models is that there is a transfer of risk from the public to the private; without that, there is less benefit to the public in moving away from the traditional procurement model.

### **Disappearance of Private Partner**

This concern can be dealt with by way of contract and by tying not just a corporate shell company to the project, but also including some collateral from either the people behind the companies involved or their financiers or both. Bonding and warranty arrangements can be used to ensure cost and performance guarantees are met. In addition, penalties and curative strategies for default of performance can be integrated into the procurement agreement ahead of time so that parties have certainty around how to deal with unforeseen circumstances. There should also be a dispute resolution mechanism built into the agreement and structured in such a way that all parties will find using that dispute resolution process to be a more attractive option than dissolving the company or abandoning their interest in the project.

## **OTHER PROCUREMENT CONSIDERATIONS**

### **Progressive Design-Build vs. Performance Design-Build**

The Business Case draws a distinction between “progressive DB” and “performance DB”, while the accompanying Discussion Paper (Appendix C) discusses DB in conventional terms. We understand from conversations with the CRD’s advisors that “progressive DB” is intended to describe a procurement in which competitive DB proposals are received based on a 20% to 30% design provided by the CRD. The Business Case recommends “progressive DB” on the basis that CRD would have a substantial, but not overly prescriptive, involvement in conceptualizing project design.

The PRT suggests that the distinction between these two terms be dropped, and that “design-build” is sufficiently descriptive of the approach CRD intends to implement if this delivery method is selected for any project component. The DB approach that progressive DB is intended to connote in the Business Case is generally the approach summarized in the DB discussion above. In substance, CRD would set performance standards to be demonstrated in an acceptance test, along with design requirements, construction quality standards, and possibly required and prohibited technologies. These are generally seen as sufficient to protect an owner, while not undermining the intended transfer of design liability and opportunity for innovation.

“Progressive DB” (or “collaborative DB”) as used by others outside of the Business Case is a term of art that describes a different type of procurement process and risk transfer regime. Under this method, a DB firm is selected on a qualifications basis, without submitting a DB price proposal. The firm is then compensated to advance the design to approximately the 60% level, in close collaboration with the owner and its

technical advisor. This allows detailed owner input, and saves the design-builder the considerable expense of providing a design that can be priced at an early stage. If the owner accepts the price proposed at the 60% stage, a DB contract is negotiated. The price is often composed of a negotiated “self-perform” element (for example, 20%), and “bid” element (for example, 80%), under which bid packages will be prepared and conventionally bid. Design-builders in this approach often accept performance responsibility for the facility, guaranteeing the passage of an acceptance test, and typically offer a guaranteed maximum price (GMP) before bids are sought.

Progressive DB as the term is used by others outside of the Business Case has several drawbacks. There is no price or design competition on the overall project, which may cause issues under applicable procurement law. Design liability may not be transferred because of the extent of the owner’s participation as the design progresses. Finally, it is often asserted that there is an “off-ramp” if the parties cannot agree on a fixed DB price or contract terms at the 60% design stage. In such circumstances the owner could take the design, have it completed, and traditionally bid it out. This is generally understood to be impractical because DB designs are prepared differently than DBB designs.

If the CRD selects DB for the McLoughlin WWTP as suggested in the Hybrid option in the Business Case, the issue of the more prescriptive version of progressive DB can be reconsidered, if its attributes have potential appeal. These attributes include particularly heavy owner involvement in advancing the design, and attracting greater DB contractor interest because of the low cost and low risk inherent in such an approach from a private sector perspective.

## **Dual Procurement**

It is conceivable that a dual procurement could be structured for the PPP option, one that would allow proposers to make either a DBO or DBFO proposal, or both. This arguably would allow the CRD to make the decision as to DBO or DBFO based on actual proposals, not theoretical assessments. However, the PRT is skeptical that such a “dual” procurement would yield meaningful results. As noted earlier, DBO proposals are “operating contractor” led, and DBFO proposals “financially led”. It is doubtful that financial firms would devote resources to a transaction where there is a possibility that no financially led proposer team would be selected. Further, as noted earlier, DBO from the operator’s standpoint is generally preferable, and if there is a chance a DBFO team will be selected, the operator may decline to participate. In general, proposers tend to not participate in a process where the owner appears fundamentally undecided as to the basic transaction structure it prefers.

## **Honoraria**

Honoraria are common in the DBFO method in light of the magnitude of the proposal effort that is involved. Four separate firms typically team together, with the financing member expending large amounts of money to arrange the entire package. Honoraria are less common with DB and DBO, and in general are not required to attract sufficient interest when those delivery methods are employed. Most DB and DBO participants in

water sector projects state that honoraria are helpful but not indispensable in their decision to propose. In the US, three or four states mandate the payment of honoraria for DB and DBO projects. The amounts range from 0.2% to 0.6% of the DB price.

## **Bundling**

The Business Case suggests in the PPP option the “bundling” of the four wastewater treatment plants with the energy centre/biosolids facility. Presumably “bundling” means procuring these assets in a single comprehensive procurement where one DBFO team would propose on, and be awarded, a contract for all five projects.

A project of this size may be problematic to the operating services firms (and potentially to their sureties and to the design-builders and their sureties), who have generally not dealt with contracts of this magnitude. The interest charged by the bank project financing market for a project this large under current conditions will also have to be confirmed. Individual banks generally face \$50 million to \$75 million maximum limitations for their participation in projects such as this.

Size considerations aside, the case for bundling is best made for projects that have some fundamental construction or operating nexus. For example, this could occur, if the McLoughlin WWTP and the energy centre/biosolids facility could be co-located at the same site. There may also be some potential benefits to combining the Clover Point wet weather facility with the McLoughlin WWTP because of the potential for innovative approaches for combining the interrelated functions of these two facilities.

## **REFERENCES**

1. Ryan, Kevin J. “Public-Private Partnerships: Delivering Health Care, Education and Municipal Servicing”, *Municipal and Planning Law Reports*, 35 M.P.L.R. (4th) 179, (2007).

## ***RISK QUANTIFICATION FOR DELIVERY METHODS***

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There is a risk that an event may cause the project costs to increase or the project schedule to be delayed. The objective of the Business Case risk analysis is to identify these risks, quantify them in terms of potential dollar impacts and to evaluate the probability of their occurrence and compare the results for the Traditional, Hybrid and PPP approaches. The PRT reviewed the Business Case risk analysis in regard to the identification and quantification of risks. This section presents the PRT's observations and conclusions and is organized into the following sections.

- Risk Retention
- Business Case Approach to Risk Quantification
- PRT Review of Risk Quantification
  - Significance of Risk Quantification
  - Amount of Quantified Risk Adjustment
  - Risk Adjustments for Hybrid and PPP Options
  - Monte Carlo Analysis
- Conclusions

### **RISK RETENTION**

The amount of risk that is retained by the CRD can vary depending on the project delivery method. Alternative project delivery methods offer the opportunity to allocate risks to the private contractor or the CRD depending on the party that can best handle each risk. In general, the CRD will retain more of the project risk in the Traditional method than in alternative project delivery methods. For example, in DBFO the private contractor bears the risk of properly maintaining all equipment for the duration of the operating contract, typically 15 to 20 years. The risk of incurring costs due to improper maintenance is borne by the private contractor. In the Traditional alternative, the CRD bears this risk.

### **RISK QUANTIFICATION**

Partnerships British Columbia<sup>(1)</sup> describes a process for quantifying risks in its document which includes the following steps:

1. Identifying and clearly describing the major potential risk events for a project
2. Analyzing the range of possible consequences of the risks identified
3. Evaluating the likelihood and potential impact of those consequences



4. Quantifying, where possible, the dollar value of these outcomes to the project
5. Developing mitigation and treatment strategies of identified risks
6. Recording the results of this process in a risk matrix

## **THE BUSINESS CASE APPROACH TO RISK QUANTIFICATION**

The Business Case identifies a wide range of risks that could affect the CRD's project and describes how these risks could be allocated in the Traditional, Hybrid and PPP alternatives. The Business Case also presents the results of the quantification of these risks. The related Discussion Paper "Risk Report Update" dated February 23, 2010 (Appendix 9 to the Business Case) presents added details.

Workshops were held during the preparation of the Business Case to identify and discuss risks. A risk matrix was prepared that described each risk, the cause of the risk, and how the risk could be mitigated. It ranked the risks relative to likelihood of occurring on a scale of 1 to 5, with 5 being most likely to occur. Probable consequences were ranked on a scale of 1 to 5 with 5 being the most severe consequence. The likelihood rating and consequence rating were multiplied to determine risk rankings. Those with a ranking of 9 and above were chosen for potential quantification. Risk matrices were completed for three categories of risks: (1) wastewater treatment plant and energy center, (2) conveyance components and (3) resource recovery components. There are a total of 201 risks in these three categories, 98 of which had a ranking of 9 and above. Of these, 44 risks were quantified. Of the 44 quantified risks, 33 were associated with the wastewater treatment plant.

The risk quantification was done for Traditional, DB and DBFO delivery methods for the major components of the CRD system. Whether the risk was retained by the CRD or transferred to the private contractor was established for each of the 9 high risks. The quantified risks were totaled to determine the total development and operational phase risks retained by the CRD and those transferred to the private contractor for the Traditional, Hybrid and PPP alternatives. The Business Case results are summarized below for the construction and planning phase risks.

**Table 4-1  
Business Case Construction and Planning Retained, Transferred and Total Risks**

	Traditional	Hybrid	PPP
Retained Risks	\$61,702,082	\$29,821,107	\$24,905,864
Estimated Proposed Cost of Transferred Risks		\$20,335,201	\$25,269,535
Total Risks	\$61,702,082	\$50,156,308	\$50,175,399

# PRT REVIEW OF RISK QUANTIFICATION

## Significance of Risk Quantification

In the VFM analysis in the Business Case, the present value (PV) of the Traditional, Hybrid and PPP prior to cost adjustment for risk differ by only \$779,000 to \$5,352,000 for a project with a total PV of over \$900,000,000. The dollar amount of risk adjustment for a project of this size would be expected to be significantly greater than this difference in PV. As a result, the amount of risk adjustment for each delivery option is significant because the differences in risk adjustments between options may determine which option has the lowest risk adjusted PV.

## Amount of Quantified Risk Adjustment

The number of risks quantified (44) is within the expected range. The PBC document (page 54) notes: "There is no minimum or maximum number of risks that must be quantified, although typically there are between 20 and 40 risks that are calculated."

The amount of quantified risk adjustment for construction and planning costs shown in the Business Case as a percentage of the project total PV prior to risk adjustment is summarized below (source of values is Section B.8.1. of Business Case).

**Table 4-2  
Business Case Risk Adjustment as Percentage of Project Costs**

CRD Project	Traditional	Hybrid	PPP
Costs Prior to Risk Adjustment	\$880,108,000	\$826,437,000	\$815,614,000
Risk Adjustment	\$61,702,000	\$50,156,000	\$50,175,000
Risk Adjustment as % of Costs	7.0	6.1	6.2

The risk adjustment as a percentage of project costs is low compared to those experienced in other similar projects. For example, an evaluation of alternative delivery methods for a new Pima County regional wastewater treatment plant serving the Tucson, Arizona area was recently completed. In the Pima County study, 25 risks were quantified for each delivery method. The results are summarized below.

**Table 4-3  
Risk Adjustments as Percentage of Project Costs as Estimated at Pima County,  
Arizona for Traditional, DBO and DBFO**

Pima Co. Project	Traditional	DBO	DBFO
Costs Prior to Risk Adjustment	\$336,085,000	\$302,009,000	\$376,108,000
Risk Adjustment	\$87,695,000	\$54,368,000	\$60,083,000
Risk Adjustment as % of Costs	26.1	18.0	16.0

The risk adjustments in the Business Case of 6.1% to 7.0% are considerably lower than the 16% to 26.1% in the Pima County study. Other studies of alternative delivery methods have also identified larger risk adjustments than those in the Business Case.

The dollar amount of the risk adjustments in the Business Case is lower than expected.

### **Allocation of Risks to Proponents for Hybrid and PPP Options**

An advantage of alternative project delivery methods is the ability to allocate risks to the private contractor or the CRD depending on the party that can best handle each risk. As noted in the PBC document (page 4):

“Improved value from this type of risk transfer is achieved when the party taking responsibility for a particular activity is better able to manage the associated risks (i.e., the likelihood of the risk occurring is reduced, or the expected cost if the risk does occur is reduced), and when the ability to manage the risk is supported by the added incentive of a long-term, fixed-price, performance-based contract.”

And also as noted in the PBC document (page 24) when comparing the alternative delivery costs (Shadow Bid) with the cost for the traditional approach (Public Sector Comparator or PSC):

“A risk that is transferred to a private partner determined to be better able to avoid or mitigate that particular risk, would have a lower value under the Shadow Bid than the same risk under the PSC.”

The contractors bidding the project will make adjustments to their bids to include some allowance for potential costs they could incur because of the risks transferred to them. As noted in the Discussion Paper, Risk Report Update (February 23, 2010): “It was assumed the CRD would transfer the risks to the proponent for a payment equal to the overall expected cost of the risk to the proponent.”

The approach that proponents take to adjust their pricing for the transferred risks when bidding a DB, DBO or DBFO project is a closely held secret. Based on discussions that PRT members have had with proponents, the adjustments for transferred risks are quite low. The proponents feel they are in control of the transferred risks and they are pricing the risks in a competitive environment where a conservative approach would likely lose the job.

The amounts of bid pricing adjustments are expected to be considerably less than if the CRD had retained the risks for the reasons cited above. Yet, the Business Case risk adjustments recognize only modest savings from such risk transfer to the private contractor for the Hybrid or PPP options as illustrated below (source of Business Case values is Discussion Paper, Risk Report Update, February 23, 2010).

**Table 4-4  
Business Case Estimate of Proponent Costs as Percentage of Transferred Risks**

	Hybrid	PPP
Transferred Risk	\$31,880,975	\$36,796,218
Proponent Cost Adjustment for Transferred Risk	\$20,335,201	\$25,269,535
Proponent Cost Adjustment as % of Transferred Risk	63.8%	68.9%

The Business Case estimates the proponents would include in their DB and DBFO bids 63.8% to 68.9% of the cost of the transferred risk as estimated the Business Case. These are higher percentages than would be expected based on comments of proponents who have pursued other alternative delivery projects. It is not clear how the expected proponent cost adjustments were determined in the Business Case. Reducing these percentages would lower the cost of the Hybrid and PPP methods relative to the Traditional method. The PRT recommends that documentation be provided on the adjustments for proponent costs of transferred risks on a risk-by-risk basis. Also, it would be useful to perform a sensitivity analysis for a range of proponent costs for transferred risks.

**Monte Carlo Analysis**

The risk quantification process typically identifies 20 to 40 risks, each of which has a range of probable effects on cost and differing probabilities of occurrence. The Monte Carlo analysis uses a computer program that can run thousands of combinations of these variables. As noted in the PBC document (page 61): “In order to show the values of risks and the whole cost of the public sector comparator and Shadow Bid as a range, it is essential to perform a Monte Carlo distribution.”

The results of the Business Case Monte Carlo analysis is shown in Section C.6.2.1 of the Business Case and in the Discussion Paper Risk Report Update (February 23, 2010). The results are expressed in terms of mean values for the cost of risks, maximum and minimum risk costs, and 5% and 95% confidence intervals. To illustrate results of a Monte Carlo analysis, the results for risk retained by the CRD as estimated in the Business Case are shown below.

**Table 4-5  
Example Output of Business Case Monte Carlo Analysis  
Costs of Risks Retained by the CRD**

	5% Confidence	Mean	95% Confidence
Traditional	\$52,423,000	\$72,399,000	\$93,660,000
Hybrid	\$23,080,000	\$38,762,000	\$54,892,000
PPP	\$9,262,000	\$29,874,000	\$49,765,000

In other words, for the Traditional method, there is a 5% chance that the retained risk will be less than \$52,423,000 and a 95% chance the retained risk will be less than \$93,660,000. The Business Case compares the retained and transferred risks for the Traditional, Hybrid and PPP options using the Monte Carlo analysis. The results show that the Traditional method will have the greatest retained and total risk for the CRD. This is consistent with the PRT's experience.

## **CONCLUSIONS**

- The amount of risk adjustment for each delivery option is significant because the differences in risk adjustments between options may determine which option has the lowest risk adjusted cost.
- The risk adjustment as a percentage of project costs is low compared to those experienced in other similar projects.
- The Business Case estimates of the costs that the proponents would include in their DB and DBFO bids for transferred risk are higher than would be expected. Reducing these estimates to what is typically seen in the marketplace would lower the cost of the Hybrid and PPP methods relative to the Traditional method.
- The results of the Business Case Monte Carlo analysis show that the Traditional method will have the greatest retained and total risk for the CRD. This is consistent with the PRT's experience.

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## ***DELIVERY METHOD EFFICIENCIES***

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This section discusses the Business Case evaluation of the efficiencies associated with alternative project delivery methods and compares that evaluation with reported experiences on other similar projects.

### **BUSINESS CASE APPROACH TO EFFICIENCIES**

The Business Case identifies potential efficiency savings for the wastewater treatment components of the CRD program as a result of using alternative project delivery methods. These estimated savings range from 3% to 4% for capital construction, 1% for administration and management allowances, 2% on equipment costs and 3% to 4% for project efficiencies and innovation. The Business Case also estimates a 1% construction savings from doing one large DBFO. The net effect was a 6.9 % (\$65.2 million) savings in construction cost for the Hybrid option and a 8.1% savings (\$76 million) in construction costs for the PPP option.

The Business Case also identifies operating efficiencies for the Hybrid and PPP options where the procurement methods include a private sector operator for part of the CRD system. These estimated savings equate to a 1.2% savings in annual O&M costs (\$227,000 per year) for the Hybrid option and a 5.4% savings in annual O&M costs (\$1,005,000 per year) for the PPP option. As indicated in the Business Case, the wage rates of management and staff were assumed to be the same as under Traditional procurement. The savings came from assumed efficiencies in the number of staff required.

As discussed in the remainder of this section, the Business Case estimates of cost efficiencies fall within but at the low end of the range of reported savings on other alternative delivery projects. Even though no two projects will be the same, given the variation in saving estimates from other reported projects, a sensitivity analysis based on a range of potential construction cost and operating efficiencies would be beneficial.

### **FACTORS AFFECTING DELIVERY METHOD EFFICIENCIES**

The DBB approach is a well-proven approach and remains the most widely used delivery method for public agency capital projects. It is well understood by public agencies and their extensive experience with DBB has typically led to well developed procurement and contract documents. DBB achieves open, aggressive competition for construction that is the largest element of project cost. But, the involvement of multiple parties in DBB each having their own interests and liabilities to protect can result in conservative project design and construction that increases project cost. There is normally an efficiency gain from the use of an alternative project delivery method when compared to the traditional DBB approach. Cost savings can result from several factors:

- Not all of the information generated during the DBB process is needed to construct the project. The designer often assumes that the least qualified contractor will build the project and the designer will go to extremes to make certain that the most basic information is available. Protective information is added to limit claims. A maximum amount of detail is provided so that even the least qualified contractor has the detail needed to complete the project in accord with the design intent.
- The designer may have to account for multiple equipment choices and “or equal” considerations instead of designing for a specific piece of equipment.
- Routing of piping, conduits, HVAC is often designed twice – once by the designer and once by the detailers responsible for preparing the fabrication and material ordering documentation.
- Technical specifications are often quite detailed to include protective language and to completely describe material and equipment.
- Redesign often results from changes to selected equipment or details provided during the shop drawing process.

## REPORTED COST EFFICIENCIES

In a comparison of costs for 351 buildings, Sanvido and Konchar<sup>(1)</sup> found the DB approach provided an average of 6.1% reduction in unit construction costs with a 99% level of certainty when compared to DBB. They also reported DB had 12% faster construction speed when compared with DBB. Larger cost savings have often been reported for water and wastewater projects.

An analysis of several case studies developed estimates of capital cost savings from five water/wastewater projects that used the DB approach<sup>(2)</sup>. These savings in capital costs from those estimated for the DBB approach ranged from 14% to 43% with an average of 29.4%.

William Reinhardt, editor of Public Works Financing, surveyed municipal water and wastewater DB projects and reported that the average capital cost-savings of 19 projects was 39%<sup>(8)</sup>. Public Works Financing, also surveyed municipal water and wastewater projects using the Design Build Operate (DBO) method and reported that the average life cycle cost-savings of 22 projects was 26%<sup>(8)</sup>.

The City of Longmont, Colorado reports construction cost savings of \$2.8 million for a DB water treatment plant project with a \$43 million budget, a savings of 6.5%<sup>(7)</sup>.

The City of Seattle estimates that it reduced the construction costs of the new 454 ML/day Tolt water treatment plant by at least 30% by using DBO and reports a net present worth savings of 47% including operating cost savings<sup>(4)</sup>. The savings at Seattle were based on a comparison of the actual DBO costs with a benchmark cost estimate

based on a 30% design of the Tolt plant. The 30% design had been prepared in anticipation of using the DBB delivery method before the City decided to change to the DBO method. The project delivered with the DBO method has the same capacity and meets the same finished water quality and reliability standards as the DBB project that had been planned. The benchmark DBB design had been subjected to two value engineering reviews. A lot of thought and creativity had gone into the DBB design including cost estimates by the VE team and a third independent cost estimate. Although the DBO savings are based on comparing an estimated cost with an actual bid, the benchmark cost estimate had been carefully scrutinized.

Seattle also chose DBO for a second water treatment plant, the Cedar River Project, where life-cycle savings compared to the benchmark project were reported to be 31% (\$50 million savings relative to a \$159 million benchmark)<sup>(8)</sup>. The City of Lynn, Massachusetts reported<sup>(9)</sup> a life cycle savings of 45% for DBO approach for its wastewater treatment plant.

The City of Phoenix used the DBO approach for the 303 ML/day Lake Pleasant Water Treatment Plant. The plant has been constructed and is in operation. The table below summarizes the three DBO bids and the benchmark project costs of net present value of design, construction and 20-year operating costs. The benchmark costs were based on a 20% design.

**Table 5-1**  
**Phoenix, Arizona Lake Pleasant Water Treatment Project Life Cycle Costs**  
**Using DBO Compared to Benchmark Estimate**

	All American	Bradshaw	EarthTech
DBO Price Proposal Net Present Value	\$336,701,630	\$361,636,969	\$286,709,244
City Benchmark	\$366,492,876	\$366,492,876	\$366,492,876
Difference from Benchmark	(\$29,791,246)	(\$4,855,907)	(\$79,783,632)
% Difference from Benchmark	8.1%	1.3%	21.8%

Earth Tech was selected but withdrew because of financial problems of its parent company, Tyco. At the completion of construction by the All American team, final costs were 8.1% below the City's benchmark costs.

Pima County, Arizona (Tucson area) recently completed an evaluation of alternative delivery methods for a new \$240 million 120 ML/day regional wastewater treatment plant<sup>(11)</sup>. They estimated a 7.5% savings in construction costs and 13% in operation and maintenance cost for DBO. The net result was a 10% reduction in life cycle costs.

A limitation of extrapolating the savings reported in the above examples is that they compare the actual cost of alternative delivery methods with estimated costs of the project delivered by DBB. The only way to precisely determine the relative capital cost



of a project delivered by DBO and traditional DBB is to bid the project using both DBO and DBB. There are very few cases where this has happened and the PRT knows of only two. In one case where this occurred (Washington Borough, New Jersey) the savings for the DB approach were 12.1% on a \$9.9 million wastewater treatment project<sup>(3)</sup>. In another case in Lee, Massachusetts involving a 5.6 ML/day sequencing batch reactor wastewater treatment plant, the DBO bid was 35% less than the \$21 million DBB bid<sup>(10)</sup>.

## **CHANGE ORDER EFFICIENCIES**

In the conventional DBB approach, the contractor is usually entitled to a change order if the project is disrupted by the owner's actions, if project conditions change or if design problems occur. In the DB approach, the first two occurrences may result in change orders while the third ordinarily does not. Because the DB contractor is responsible for the plans and specifications, it cannot use errors in them to expect a change order. Of course, if the owner changes the project criteria, the need to change the design may result in a change order. A study of 104 public sector DB projects found that cost growth during construction was 3% to 4%<sup>(5)</sup>. Another study of 351 projects found that the cost growth for DB projects was 5.2% less than for DBB projects<sup>(1)</sup>.

## **CONCLUSION**

The Business Case estimates of cost efficiencies fall within but at the low end of the range of reported savings on other alternative delivery projects. A sensitivity analysis based on a range of potential construction cost and operating efficiencies would be beneficial.

## **REFERENCES**

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## INTRODUCTION

A major component of the Business Case is the financial analysis of the three identified procurement options. The overall objective of the financial analysis is to help the CRD select the preferred procurement approach.

The PRT reviewed the financial analysis from several perspectives:

- Assessing whether the assumptions and analysis in the Business Case are providing the CRD with the best information to select the appropriate delivery methods for the CRD's "Core Area & West Shore Wastewater Treatment Programs" ("Programs");
- Understanding the structure, input, and output of the Business Case Financial Model (Model) which forms the basis of financial results in the Business Case;
- Confirming at a high level that the Model is working correctly;
- Assessing whether the element of risk has been properly identified and taken into consideration; and
- Identifying areas in which the PRT believes that the analysis can be enhanced.

The observations and conclusions of PRT's evaluation are organized into the following topics:

- Options under Consideration: Traditional, Hybrid and PPP
- Basis of Financial and Cost Information
- Business Case Financial Model
- Discount Rate
- Inflation Rate
- Competitive Neutrality – Taxes and Insurance
- Financing
- Affordability

These topics are discussed in order on the following pages.

## **OPTIONS UNDER CONSIDERATION: TRADITIONAL, HYBRID and PPP**

In a typical procurement options analysis, the Public Sector Comparator (PSC) is contrasted against a shadow bid representing the PPP (Alternative Procurement) option. The Net Present Cost (NPC) is calculated for each option, and based on this economic analysis, and an evaluation of social and environmental factors, a preferred procurement approach is established.

In contrast to the above, the Business Case analysis for the CRD Wastewater Treatment Program has offered three options for consideration. In addition to the typical PSC and PPP options, the Business Case has introduced a Hybrid option which utilizes a variety of procurement methodologies.

The Hybrid option generally recommends that the Design-Build (DB) approach be used for the wastewater treatment facilities, and that a Design-Build-Finance-Operate (DBFO) approach be used for the Energy Centre and West Shore treatment plant. Traditional methods of Construction-Management-at-Risk (CMAR) or Design-Bid-Build (DBB) are assumed for the conveyance system, outfalls and tunnel. Depending on scheduling requirements, it is also possible that some of the treatment facilities could be delivered using CMAR.

Appendix D to the Core Area Wastewater Management Program-Potential Program Delivery Options paper summarizes how each major component of the Program was evaluated for the three options using Multiple Criteria Analysis (MCA). It appears that the Hybrid option was offered as a compromise procurement approach, given the competing views from the affected stakeholders. In essence, the Hybrid option allows the evaluation to weigh heavily non-economic factors, specifically environmental and social factors, in selecting a preferred option.

The PRT recommends that a detailed financial analysis for each of the major components of the Hybrid option should be undertaken. The results of this analysis should then be evaluated with a similar MCA. This process would ensure that each project of the wastewater program is assigned to the procurement method that offers the best overall value to the taxpayer, when considering economic, environmental and social factors.

## **BASIS OF FINANCIAL AND COST INFORMATION**

The financial inputs to the Business Case were based upon construction and operating costs developed from engineering work done by Stantec Consulting Ltd. (Stantec). The PRT was advised that the estimated budget figures were valid as of December 31, 2009.

The estimated costs are based on the selection of Option 1A by the Core Area Liquid Waste Management Committee (CALWMC). The estimates are "Class C" estimates, which by definition are estimates of costs made at the 5% to 15% stage of project

completion with an accuracy range of minus 15% to plus 25%. The estimates were based on preliminary layouts that were done for each facility to establish preliminary quantities. Vendor quotes were obtained for all major equipment and design drawings were completed up to 10% (see appendix to December 8, 2009 Option 1A report).

Given that the project is still in an early stage of project definition, there may yet be significant changes to the estimated cost of the project, particularly as the project proceeds to procurement and detailed design and cost estimation. There also may be significant potential savings if the CRD is successful in obtaining an alternate site that would allow the reconfiguration of some of the wastewater and biosolids treatment components and improve overall efficiency. An alternate site is currently under review by the CRD.

## **BUSINESS CASE FINANCIAL MODEL**

The heart of the financial analysis is a financial computer model called the Business Case Financial Model (Model). The Model processes a number of financial inputs, called variables, and produces its major output - Net Present Cost (NPC) of the three alternatives. The lower the NPC, the higher the value for money.

Major inputs to the Model include:

- Estimated construction cost and operating cost inflation
- An appropriate rate for discounting projected cash flows (discount rate)
- Senior debt interest rate for PPP borrowing
- Level of grant funding from GOC and the Province
- MFA interest rate for the CRD's borrowing
- Estimated cost impact of transferring or retaining risk
- Capital and operating cost efficiencies under alternative delivery methods

The Model also provides the mechanism to efficiently conduct sensitivity analyses whereby different NPC values can be calculated for a broad range of input amounts. The Model with relevant variables used for the Business Case is discussed below. As discussed further in this section, the PRT is concerned that the Business Case has not demonstrated the full range and potential magnitude of cost/input variable changes on the NPC. A relatively small change in a variable may have a significant negative or positive financial consequence.

The Model calculates the NPC of each of the three delivery method options. In general, the Model develops and discounts "cash flows" under each of the options from the pre-construction period through operation of all facilities. As noted above, Stantec has provided most of the operating and construction cost information for the cash flows. Specifically, Stantec has developed estimates of construction and operating costs for each major component of the project (Conveyance, West Shore, East Saanich, etc.). In addition, estimates have been prepared for membrane replacement and revenues from

resource recovery. Furthermore, Stantec has estimated the monthly cash flows associated with these cost and revenue components. The Model also assumes the level and timing of grant funding that will be received from the Government of Canada (GOC) and the Province of British Columbia.

The Model is comprised of the following Modules:

- “Assumptions” (providing the input from Stantec as described above)
- “Summary”: summarizing the Net Present Cost (and Nominal Cost of each of the three options (without risk adjustment)
- “Cash Flows”: provides the cost build up in the Summary by projecting and discounting cash flows each six months over the forecast period
- “S-Curves” showing costs versus time
- “Financing”: provides sensitivity analyses of the NPC assuming different senior debt interest rates, MFA borrowing interest rates, operating costs variances, and construction inflation rate variances (although the variations are relatively limited)
- “Risk” estimates the cost of risks retained by the CRD and of risks transferred in alternative project delivery methods

The following observations relate to the Model and its Modules.

The Model is complex with difficulty in navigating among the Modules. The Model could be enhanced with a “Dashboard” which would allow for enhanced navigation among Modules, and easy focus on major inputs and outputs. In addition, the Model could be enhanced by linking a Module to the Risk Analysis, and adding an Affordability Module (discussed below). Furthermore, the inclusion of graphs, tables and charts to tie with Partnerships BC’s “Methodology for Quantitative Procurement Options Analysis Discussion Paper” would improve the understanding of the analysis performed in the Model.

It appears that the NPC values in the “NPC Summary” Module tie to and agree with the NPC values in the “Cash Flow” Module. In addition, the NPC values in the Model appear to tie to and agree with the NPC values in the Business Case.

In presenting NPC in the “NPC Summary”, the NPC of costs for each component by Option cannot be compared. This lack of comparison results because the NPC of PPP in each Option is lumped into the “Annual Service Price” (ASP). It would be useful to have the ASP allocated to components so that the NPC of each component can be assessed individually. Specifically, this allocation would enhance the comparison of the analysis of the Hybrid and PPP options with the Traditional analysis.

A key part of a full NPC analysis is integrating risks into the process. Section 3 of this report discusses the Business Case risk analysis. It would be useful to link the Risk Analysis with the Model.

Consistent with PBC Guidance (See Methodology for Quantitative Procurement Options Analysis Discussion Paper, Pages 13 and 46), the Business Case assumes the Traditional option is not financed. Specifically, in the case of the Traditional option, the Model assumes that the CRD makes cash contributions at the time of cash requirements during construction.

In reality, MFA borrowing is utilized and cash payments for construction are amortized over a period of years. In calculating NPC, no interest expense is imputed for cash outlays under the Traditional option. Conversely, under a PPP option, all construction outlays are charged interest and compounded until completion of the project. At that time, permanent financing is assumed by the DBFO contractor, and debt service payments by the contractor are recovered through the annual service fee to CRD. Excluding the financing impact under the Traditional option but requiring it under the PPP option is consistent with Partnerships BC's procedures but may have an impact on the NPC. Furthermore, the difference in the way construction interest is handled under the Traditional option versus PPP underscores the need to evaluate the economics using a DBO approach. Under the DBO approach, financing during construction could be handled basically the same as under the Traditional approach. Based on the above, it would be prudent to determine how the comparison of the alternative procurement models in terms of NPC would change assuming that the Traditional Model is financed, as well as under the assumption that DBO is considered in addition to DBFO.

The costs presented in the Business Case for the three delivery options summarized below demonstrate the significant effect that Business Case assumptions related to private versus public financing have on relative Net Present Costs.

**Table 6-1  
Delivery Option Cost Summary**

	Traditional	Hybrid	PPP
Construction Costs	\$941,810,000	\$876,593,000	\$865,789,000
Savings	-	\$65,217,000	\$76,021,000
Annual O&M Costs	\$18,606,000	\$18,379,000	\$17,601,000
Annual Savings	-	\$227,000	\$1,005,000
NPC	\$923,787,000	\$924,566,000	\$929,139,000

The Traditional delivery method has the highest construction and O&M costs. However, because of the different assumptions related to private financing versus public financing in the Hybrid and PPP option, the Traditional method has a 1% lower NPC. The Business Case does not address the relative NPC if DBO using the same public financing as the Traditional method had been included in the analysis in addition to DBFO as the PPP method.

## DISCOUNT RATE

The discount rate is used to take differing cash flows from various alternatives and to express them in terms of a common reference figure that is the Net Present Cost in the case of this project. The discount rate is intended to take into account the time value of money as well as the risk premium that an investor would require to be fairly compensated for the expected risk of the project, given that they have the alternative of investing in other projects.

There are a number of alternative methods for determining the discount rate such as set out by Partnerships BC (Methodology for Quantitative Procurement Options Discussion Paper, January 2010) or as set out in the Australian National Public Private Partnership Guidelines (Discount Rate Methodology Guidance, December 2008). No one method is necessarily correct for all projects but generally speaking, the rate should be the long term Internal Rate of Return (IRR) or Weighted Average Cost of Capital for the private sector proponent. Effectively, the higher the discount rate the greater advantage to projects where costs are skewed to the later years.

It should be noted that the discount rate would not equate to the rate at which the CRD can borrow funds from the MFA. This rate is not project specific and is low in part due to the fact that the MFA guarantees the debt of each of its borrowers and the fact that municipalities have the ability to tax to repay their debts. The discount rate should be project specific, e.g., the proposed Wastewater Treatment Program, and should reflect the risks related to the project as if there were no other recourse to repay the debt.

In the Business Case the base case discount rate was set at 7.5%. This figure was chosen in the Business Case “to meet provincial expectations as an estimate of the long term project internal rate of return (IRR) for a public wastewater procurement similar to the combined program” (see page 74). It also appeared to be consistent with the IRR for other projects.

The challenge in this case is that the calculated IRR for the project is approximately 11% which is high by historical standards. Partnerships BC in its methodology for Quantitative Procurement Options Analysis acknowledges, that because of the recent financial crisis and the higher costs of debt, IRR's have been increasing away from the typical range of 6.5% to 8%, to now 9% and higher. In their view, a discount rate of 9% is too high. The discount rate recently used for the Fort St John Hospital and Residential Care Project (See Partnerships BC report of December 2009) was set at 7.32%. Based on the foregoing the discount rate used in the Business Case appears to be within an appropriate range.

The impact of varying the discount rate is shown on page 74 of the Business Case. Only a slight increase in the discount rate to 7.66% brings the Traditional and PPP procurement options into equilibrium. An increase to 8.00% would make the PPP alternative the lowest Net Present Cost. This shows that a small change in the discount rate can have a significant impact on the financial outcome.



## **INFLATION RATE**

Another key variable in the NPC analysis is the expected rate of inflation with respect to construction costs. The higher the expected inflation for these costs, the greater the NPC of each of the alternatives. As shown on page 73 of the business case a 1% increase in construction costs would increase the Net Present Cost for each of the alternatives by approximately \$30 million. A 1% increase in operating costs would increase the Net Present Cost for Each alternative by approximately \$2 million.

In the Business Case, construction costs have been escalated on the basis of 2% per year to the mid-point of construction (2014). This estimate generally appears consistent with expectations for British Columbia for the near term, but may be on the low side for the out years. For example, BTY Group (BTY), an experienced Canadian Cost and Project Management consultancy firm, in their most recent Market Intelligence newsletter, suggests that BC and Alberta will hit the bottom of the current construction decline in 2010 and will see a return of escalation in the order of 2% for this year. For 2011 the newsletter indicates potential cost increases of between 2% to 3%, and 3% to 4% for years after that. While it is clearly difficult to predict inflation, especially in the current market, BTY projections suggest there may be an upside risk to the 2% assumed in the Business Case.

The PRT recommends future iterations of the Business Case further analyze inflation risk. Where possible external construction and operating cost indices should be used. The analysis should evaluate how each project delivery method addresses the effects of inflation under assumptions that go beyond the 1% inflation variation in the Business Case.

## **RISK ADJUSTMENTS**

To make the procurement alternatives comparable they need to be compared on a risk adjusted basis. For each of the alternatives, the retained and transferred risks need to be accounted for in the value for money of that alternative. For example under the Traditional option the Public Sector Comparator needs to include the retained risks based on their expected value. Similarly the Hybrid and PPP alternatives need to include the risks retained by the CRD and the transferred risks which fall to the bidders. A review of the Business Case analysis of project risks is provided in Section 4 of this report.

## **COMPETITIVE NEUTRALITY-TAXES AND INSURANCE**

To ensure that there is an “apples to apples” comparison of the NPCs, the analysis needs to take into account two factors:

- The impact of taxes that the private sector contractor will pay in construction and operation of the asset.

- Insurance that the private contractor will take out to guard against any risks that are attributable to their responsibilities under the project.

These factors are to be taken into consideration when making a competitive neutrality adjustment for comparing a Public Sector Comparator option with a PPP option. They are adjustments to the Traditional and Hybrid options to put them on a level playing field for comparing NPC.

Although in this case the project owner is the Municipal government, and it does not directly share in any taxes paid by the private sector proponents to the provincial Government (Province) or to the Government of Canada (GOC), a tax adjustment of \$3.64 million for the Traditional option, and \$1.8 million for the Hybrid option, both expressed in Net Present Cost terms, was made. The logic in this case is based on the fact that both the GOC and Province, who benefit from the taxes paid, are significant contributors to/stakeholders in the project. The NPC amounts are small as the PPP is not assumed to start paying corporate tax until the year 2037.

With respect to insurance, no competitive adjustment figure was provided. The PRT was advised that the CRD would take out insurance for construction and operation as would a private sector proponent. It is understood that construction insurance costs were included in the general requirements section of the Model's cost estimates for each delivery method. The specific amount for construction insurance was not provided. Operations insurance costs have not been included in any of the delivery method cost estimates. As the construction insurance costs have not been separated out and operating insurance costs were not determined, the Business Case neutrality adjustment does not include an insurance adjustment.

The PRT believes that the relative costs of insurance, including construction and operations should be separately identified and compared and its impact included in the competitive neutrality adjustment.

The competitive neutrality adjustment for the CRD project appears low when compared to other projects of its size. For example the Sea to Sky highway construction project had a competitive neutrality adjustment of \$41.3 million in Net Present Cost of which \$37.1 million reflected the fact that the Province of BC self insured. We have been advised the CRD will not self insure and some of the cost as noted above is included within the operating estimates.

## **FINANCING**

In the Business Case analysis, both the GOC and Province are assumed to contribute one-third of the eligible capital costs. In the case of the GOC, it is assumed that these monies will flow as a grant during construction. For the Province, it has been assumed that the Province will contribute to all components of the combined water treatment program either by grants in the case of DB, or a commitment to pay the capital portion of any Annual Service Payments (ASPs) in the case of a DBFO. At this time, no firm

agreements have been reached on how the Province and the GOC will provide their contributions. These agreements may have an impact on the ultimate financial model for the project and the NPC comparison.

It is understood that the GOC funding commitment is to follow the provincial commitment. This means that a firm GOC commitment cannot be obtained until the Province has agreed to support the project. There is some urgency in this chain of events given that some of the potential GOC sources of funding are now being committed to other projects, and that some of these potential funding vehicles will be winding down. For example the Building Canada Fund and the Green Fund, assuming the project meets the eligibility requirements and there is sufficient funding left, both close in 2014, with advances potentially available until March of 2016.

Given the anticipated project schedule, any significant delay may impact how the GOC and provincial monies are sourced. There may be a need to have the GOC monies put into the project first, such that the project can take advantage of the currently contemplated GOC sources. Given the foregoing, it is the PRT's view that early and ongoing discussions need to take place with both the GOC and provincial governments, and that there should be no undue delay in proceeding with the project.

For its one-third share of the capital costs and any ineligible costs, the CRD will be relying on funding from the Municipal Finance Authority (MFA). These monies are to be borrowed at an expected interest rate of 5.19%, with amortization over 25 years.

Another financing question relates to the availability and cost of any private sector contribution to the project. In the Business Case, it is assumed that any DBFO components will be funded on the basis of 88% debt and 12% equity. The long-term debt is expected to have an interest rate of 7.1% and the equity return is to be 12%. A question that arises is the appetite of the private sector for financing this project. As part of a market sounding initiated in 2007 potential bidders were asked as to their interest in providing financing. Of the 29 responses received 17 firms indicated they would be interested if financing was required but several indicated that the amount of financing required may dampen their interest. Respondents that favored the traditional procurement model assumed that the financing would come from the three levels of government.

It is important to note that since the market sounding there has been a significant tightening in credit markets and that while there have been some improvements, it is still a significant challenge to obtain private sector financing at rates that support affordable projects.

A number of recent provincial PPP projects (Port Mann/Highway 1 Project, the BC Cancer Centre for the North, and the Fort St. John Hospital and Residential Care Project) have all had to be adjusted from the traditional DBFO model due to high private sector borrowing costs which would have caused the projects to breach project affordability thresholds. In the case of the Port Mann project for example, the

Province abandoned the traditional public-private partnership model, secured a fixed price design/build contract, and will finance the entire project through a crown entity. For the Northern Cancer Centre and the Fort St. John Hospital project, the Province replaced private bank debt by funding construction through milestone payments to the design/build (fixed-price) contractor and secured a wider private sector equity contribution which was first at-risk. The intent is to obtain the risk transfer associated with a DBFO while keeping the projects affordable, and generate value for money.

The receptivity and pricing of the credit markets to the project will depend on the timing of when a DBFO procurement process is launched, the perceived risks of the project (e.g., complexity, structure including provisions for security) and the experience and credit worthiness of the successful consortium members e.g., construction company, operator, equity provider.

Credit worthiness as determined by Moody's Investor Service (Project and Infrastructure Finance, December 2009) will depend on: project complexity, experience and financial health of the construction company, the security package, material liquidity and the fair allocation of construction risks between the government counter party and the private sector.

Based on a July 2009 market sounding that Ernst & Young did for another project, it has been suggested that the Canadian market can carry three committed bids with a funding in the order of \$300 million to \$500 million. It is not clear what the rates and terms would be for such a private financing. As noted above, the Province of BC itself has had difficulty in attracting competitive financing terms for its PPP projects.

The PRT believes that it is important to further review the receptivity of the financial markets, as well as the expected financial terms. It would also appear advantageous to consider the option of a DBO rather than a full fledged DBFO as this may mitigate both the availability and cost of finance issues.

## **AFFORDABILITY**

A measure of economic feasibility is customer affordability. Affordability is typically measured by the level of annual expenditures made by customers, typically through service charges. Work being conducted by other consultants in parallel to the work on the Business Case has estimated the cost per equivalent residential user (ERU) for this project will be \$250 to \$450 per year. These costs are based on one-third of the eligible project costs being funded by the Province and one-third by the GOC. As discussed in Section 10, "Project Strategy Considerations", some of the affected municipalities may elect to recover the locally borne expenditures through property taxes and/or system development fees. Although analysis of the basis for and derivation of the \$250 to \$450 range is beyond the scope of the PRT review, the PRT offers the following information that it hopes will be useful to the CRD in its subsequent considerations related to the affordability of the CRD project.

An evaluation of affordability has many benefits:

- Addresses one of the requirements of PBC's grant application.
- Demonstrates the transparency and openness of the selection process.
- Communicates to affected municipalities and customers the impact that the sewer program will have on its pocketbook. Furthermore, it allows these stakeholders to plan for the proposed impact.
- Reinforces the importance of seeking cost effective solutions by weighing the economics of various options.

Partnerships BC in its guidance, mentions "Total Project Funding Requirement" as a component of assessing affordability. It also suggests that sensitivity be done on the following key variables:

- Discount rate
- Cost of debt
- Construction escalation
- Project cost efficiencies

Although a sensitivity analysis was performed in the Business Case, additional analysis as suggested below is needed to demonstrate affordability, or lack thereof.

- Assess how the estimated annual charge of \$250 to \$450 compares to the wastewater cost of similar communities.
- Assess how the annual charge compares as a per cent of Median Household Income ("MHI").
- Provide additional detail supporting the \$250 to \$450 charge.
- Identify and quantify to the extent possible major factors that would affect the annual service charge.

These issues are discussed below:

### **Compare Annual Charges to Similar Communities**

In a survey<sup>(1)</sup> conducted by the American Water Works Association, the average wastewater bill in the United States of major surveyed communities was found to be about \$372 per year. A survey<sup>(2)</sup> of 79 US wastewater agencies by the National Association of Clean Water Agencies (NACWA) found that average residential charge in 2007 was \$302.36 per year, the median charge was \$278.28 and the maximum charge was \$693.55. On a similar survey of about 30 medium to large Canadian communities performed in May of 2009, the average was approximately \$252 per year.

The average values in the US surveys of \$302 to \$372 falls within the \$250 to \$450 range projected for the CRD project. The lower end of the estimated range (\$250) is comparable with the Canadian survey average; the upper end of (\$450) is well above the Canadian average. The NACWA survey data show that 60% of the US agencies surveyed had rates more than \$250 per year while 10 percent had rates equal to or more than \$450 per year. It should be recognized that the annual fee range is based upon numerous assumptions and the Business Case should provide some insights as to how the average fee would change should these assumptions not materialize (factors affecting the fee are discussed below).

Furthermore, some estimate of any additional costs that the municipalities might need to include above the \$250 to \$450 estimate should be considered. This amount could include internal municipal costs associated with wastewater collection or administrative costs associated with wastewater services (billing, collection, rate calculations, customer service, etc.). Capturing all costs ensures a more meaningful comparison with Canadian and US survey levels.

### **Compare Annual Charges to Median Household Income (MHI)**

Another measure of affordability is how the average wastewater bill compares with MHI. The United States Environmental Protection Agency (EPA) has as its affordability “rule of thumb” 2% of MHI. In other words, if the annual service charge does not exceed 2% of MHI, then the service fee is considered affordable. The PRT is not aware of a similar Canadian benchmark, but the US benchmark could be considered as some measure of affordability. This calculation could be easily performed by taking the estimated annual fee and divide it by MHI of relevant political jurisdictions.

### **Provide Additional Detail Supporting Charges of \$250 to \$450 Per Year**

The wastewater program will result in a series of pre-construction and construction cash outlays over the next seven years. These outlays will be covered by borrowing from the MFA, and funds from the GOC and the Province. Ultimately the portion of these costs that get allocated to the CRD will be financed through permanent financing from the MFA. The debt service on the debt issued, as well as annual operating costs, will be allocated to the municipalities, and then recovered with any “add-on” costs from the municipalities. As discussed above, the amounts that are passed on to customers represent a measure of affordability.

It is the PRT’s understanding that CRD and its financial advisors are developing a financial model that will project the allocation of annual cost to its participating municipalities. The allocation formula is being evaluated, and would have varying impacts on each municipality depending on which formula is selected. The PRT emphasizes the importance of this process and encourage sharing financial projections and estimates of various allocation approaches with the affected municipalities.

## Evaluate Major Factors Affecting Annual Service Charge

Numerous factors affect the ultimate economics of the program for its customers:

- Level and timing of funding from the GOC and the Province (federal and provincial funding is crucial to the affordability of the program)
- Which projects will ultimately be selected and constructed
- The efficiency which the projects can be constructed under different delivery methods
- Ultimate construction and operating costs
- Projected growth and economic development, resulting in different levels of equivalent residential units that costs will be allocated among
- How interim construction and pre-construction costs will be financed
- Economic variables (discount rate, inflation rate, interest rates on debt, etc.)

It would be useful to evaluate how these factors would affect the overall costs of the wastewater program, the annual cost requirements that have to be recovered from the municipalities, and the impact on customers as measured through annual service fees.

## CONCLUSIONS

1. The inclusion of financing in the DBFO appears to have a significant effect on the Net Present Cost. Consideration needs to be given to a DBO alternative in the analysis.
2. The discount rate of 7.5% is within the expected range for a long term IRR for such a project. A small change in the rate, however, i.e. an increase of .16% brings the Traditional and PPP into equilibrium and at 8% the PPP is the preferred choice.
3. In the Business Case construction costs have been escalated at 2% per year to the mid-point of construction. These allowances may be low and there is a need to do further inflation analysis.
4. The competitive neutrality adjustment appears low for this size of project. There is a need to confirm the taxation and insurance adjustments have been properly reflected in each of the alternatives.
5. Financing a project of this size may be a challenge. There is a need to further review the financial marketplace to confirm that sufficient funds are available at the appropriate terms.
6. A detailed affordability analysis needs to be completed to determine the extent of the final impact on the participating municipalities and on the taxpayers.

## REFERENCES

1. "2008 Water and Wastewater Rate Survey" Raftelis Financial Consultants, Inc., American Water Works Association (2008)
2. "2008 NACWA Financial Survey, A National Survey of Municipal Wastewater Management Financing and Trends", National Association of Clean Water Agencies (2008)
3. "Methodology for Quantitative Procurement Options Analysis – Discussion Paper," Partnerships BC (January, 2010)



## **MULTIPLE CRITERIA ANALYSIS**

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This section reviews the Business Case approach to applying evaluation criteria to the project delivery options under consideration. Much of the discussion in Sections 3 and 4 of this PRT report is relevant to these criteria. There are many points of agreement between the PRT discussion in Sections 3 and 4 with the findings of the Business Case in regard to these evaluation criteria. These points of agreement are not repeated in this section. Some supplemental PRT comments are presented.

### **TRIPLE BOTTOM LINE ANALYSIS**

Triple Bottom Line (“TBL”) is a mode of analysis and reporting that captures an expanded spectrum of values and criteria for measuring corporate achievement: economic, environmental and social.

TBL expands the traditional financial framework to encompass reporting on performance on ecological and socio-political sustainability issues such as the carbon footprint, hiring practices and other metrics in addition to economics. Planning and reporting according to TBL principles means accounting for the broader impacts of a project and finding meaningful ways of weighing short-term tangible economic factors with more elusive factors, such as social impacts and environmental sustainability. The core principle of TBL is that managing for sustainability aligns with greater efficiency and improved performance.

TBL advocates believe that social and environmental performance can be measured in reasonably objective ways, and that corporations and public agencies should use these results to improve their social and environmental performance. Moreover, they should report these results as a matter of principle, and in using and reporting on these additional bottom lines, corporations and public agencies can expect that their financial bottom line will improve in the long term.

Some of the principal benefits of triple bottom line analysis of procurement options include:

**Financial savings** – Energy, water and resource efficient products, services and buildings can significantly reduce utility bills and operating costs. The procurement of environmentally preferable products can lower waste management fees, and reduce spending on pollution prevention.

**Local environmental and health goals** – Sustainable procurement can be a very cost-effective approach to tackle local environmental problems and to achieve environmental objectives.

**Local social goals** – Key social issues such as employment generation, working conditions, and the marginalisation of certain groups, can also be addressed through procurement, particularly through the procurement of services.

**Local innovation** – Use regular local suppliers to encourage environmentally innovative approaches and provide potential markets for such products to help these suppliers gain a competitive advantage nationally and internationally.

**Public image improvement** – Implementing a policy of sustainable procurement is a very effective way to demonstrate commitment to sustainability.

**Global sustainability** – The impacts of sustainable procurement can be felt globally, from helping to reduce greenhouse gas emissions and deforestation, to improving the livelihoods of developing world producers through support of Fair Trade.

The TBL concept is typically applied by developing a list of social and environmental criteria, assigning weights to each criterion and numerically scoring each project option against each criterion. The weights and scores are multiplied for each criterion with the results added to determine an overall TBL ranking of options.

## **BUSINESS CASE APPROACH TO MULTIPLE CRITERIA ANALYSIS**

The Business Case developed social and environmental criteria in a manner similar to that described above for the TBL approach. However, the Business Case applied the criteria in a qualitative approach without assigning weights or scores and refers to the analysis as Multiple Criteria Analysis (MCA). A matrix was created to summarize how each of three procurement options (Traditional, Hybrid and PPP) compares to this list of criteria. The criteria and matrix were developed in a workshop and follow-up discussions involving representatives from the CRD and their consulting team of Stantec, Ernst & Young and Jonathan Huggett.

The Business Case MCA approach follows the guidance provided by Partnerships BC<sup>(1)</sup> in that it rates the three delivery method options in a qualitative way (e.g., good, better, best) against each criterion. The matrix includes four environmentally-oriented criteria, seven socially-oriented criteria and six financial and risk-oriented criteria. As noted above, the criteria are not weighted or numerically scored for each option. As noted in the Partnerships BC document:

“The comparison between the procurement options is not based on a single, simple decision rule – it usually requires an explicit judgment or “importance weighting” between goals or criteria....It is important to note that it is up to decision-makers for the project to decide which criteria are the most important.”

## **PRT COMMENTS ON MCA**

Much of the discussion in Sections 2 and 3 of this PRT report addresses topics related to the criteria in the MCA. There are many points of agreement between the PRT discussion in Sections 2 and 3 with the discussion in the Business Case MCA and these points of agreement are not repeated in this section. The following comments related to specific areas under each major MCA category provide information to supplement that in the Business Case MCA and in Sections 2 and 3 of the PRT report.

### **Environmentally-Oriented Criteria**

#### Permitting

One of the challenges associated with alternative delivery methods of DB, DBO and DBFO is created by the concurrent nature of design and construction. Permitting agencies are accustomed to receiving 100% complete designs before granting their approval. In these alternative methods, permit applications to the responsible agencies will involve a series of applications for various phases of the project. For example, a permit for site earthwork may be sought when the overall design is only 15% to 20% complete. It can require significant effort to develop and implement a permit application process that is acceptable to each agency. If there are changes to the system configuration, the CRD will have to amend its Liquid Waste Management Plan.

### **Socially-Oriented Criteria**

#### Impact on Existing Staff and Recruitment of New Staff

In the Business Case MCA, the Traditional approach and portions of the Hybrid approach assume that management and labour can be recruited and employed for the operations and maintenance of the various wastewater treatment plants. This is commonly referred to as “industrial relations” risk. The CRD’s confidence in assuming this risk may well be warranted based on its successful operating history.

The PRT notes, however, that this risk is not insubstantial considering the giant leap forward in terms of the number and complexities of the new facilities involved in this project. The City of Seattle (new Tolt Water Treatment Plant), the City of Phoenix (new Lake Pleasant Water Treatment Plant) and the San Diego County Water Authority (new Twin Oaks Water Treatment Project) decided to use a DBO procurement. Although each had hundreds of employees and are major municipal utilities, none felt fully confident in staffing up and managing a large new water treatment plant. Each wanted to take advantage of the private sector’s industrial relations capacities. Both used DBO contracts with low cost municipal convenience termination rights that could be exercised if the owner later decided to directly employ the plant staff. Similarly, private contract operations are now being considered by the New York City Department of Environmental Protection and by the City of Santa Fe (at least short term operations) to address the challenges of starting up and operating new large, complex water treatment plants using technology not previously managed by the cities.

The PRT also notes that the five operating services firms, through their exclusive North American plant operating experience, have collective bargaining agreements with several major public employee unions. These firms routinely agree to baseline requirements in such agreements imposed by governmental owners of utility facilities in order to protect the interests of the utility workforce.

### CRD Control and Flexibility to Make Changes

The MCA states that additional construction in the Hybrid and PPP options would be on a sole-source basis where long-term operations contracts are involved. This is not necessarily the case. DBO contracts can include provisions that preserve the owner's right to seek competitive bids for construction of added facilities during the operations period.

## **Financial and Risk-Oriented Criteria**

### Risk Allocation Goals

The PRT agrees with the observation in the Business Case MCA that the CRD will pay a premium if it transfers risks to the service provider that cannot be better managed by the service provider in DB, DBO, or DBFO. However, a goal of these alternative project delivery methods is to allocate risks to the party best suited to handle the risk. If the service provider is better equipped to handle a risk, then a cost savings to the CRD should occur as discussed in Section 3 of the PRT report.

## **Procurement and Implementation Schedule**

The MCA notes the schedule aspects of the PPP option "may be challenging." The challenges noted are primarily related to the complexities related to the financing aspect of DBFO and the PRT agrees. However, these financing challenges would not be present if DBO were used instead of DBFO.

## **REFERENCES**

1. "Methodology for Quantitative Procurement Options Analysis - Discussion Paper," Partnerships British Columbia (January, 2010).

## **BUSINESS CASE PROCESS**

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This section discusses considerations related to gaining approval and funding of the CRD project by the Province of British Columbia.

### **PROVINCIAL APPROVALS**

The CRD may need a number of approvals by the Province of British Columbia before proceeding with the WWTP Project. As discussed in Section 9 of the PRT report “Regulatory Issues”, the CRD may seek the following approvals:

- Approval of a Loan Authorization Bylaw by the Inspector of Municipalities in relation to the CRD borrowings for the WWTP project, noting the requirements of the Province in relation to approvals.
- Approval by the Inspector of Municipalities of the liability in relation to the borrowing if the CRD seeks an exemption from elector approval, noting the requirements of the Province in relation to approvals.
- Approval by the Inspector of Municipalities of any public-private partnership agreements having a term exceeding five years under which a capital liability is incurred if the CRD seeks an exemption from elector approval, noting the approval requirements of the Province.
- Approval of the Inspector of Municipalities of the incorporation of a corporation other than a society, or of the acquisition of shares in a corporation, if the governance model includes creation of a special purpose entity.

Accordingly, the CRD will require approval of the Inspector in relation to the loan authorization bylaw and may request the approval of the Inspector if the CRD seeks an exemption from elector approval. In order to obtain the approval of the Inspector, the CRD would be well advised to ensure that the project particulars are consistent with the current CRD Liquid Waste Management Plan and applicable provincial policies.

In addition, the CRD will be seeking provincial funding for the project. Since the provincial contribution would exceed \$50 million, the *Capital Standard*<sup>(1)</sup> would apply. The CRD Business Case must be consistent with the provincial policy including the *Capital Standard*.

The PRT communicated with the Ministry of Community and Rural Development to confirm the policies, guidelines and conditions related to provincial grants and Inspector approvals. The Ministry responded, and the PRT acknowledged and confirmed its understanding of the response, that the Ministry must maintain a certain level of independence from the CRD’s internal review process in order to objectively conduct its

own due diligence upon receiving the CRD's Business Case and Project Proposal for which the PRT Report may form an integral component. Various sections of the PRT Report discuss Business Case compliance with the differing aspects of provincial conditions.

## PROVINCIAL FUNDING

The Province of British Columbia at the 2006 Union of British Columbia Municipalities Convention announced a commitment to fund one third of the "best, lowest cost solution" for the CRD WWTP, subject to the condition that Partnerships British Columbia (PBC) reviews how the project may be developed as a PPP.

The Business Case discusses provincial funding in section B.17.1.

In regard to provincial funding, the Province adopted a new *Capital Standard* in 2008 <sup>(1)</sup> that requires:

- A PPP arrangement be considered as the "base case" for procurement in a business case where the Province will be contributing more than \$50 million to the cost of the project
- A rigorous examination of options in the planning stage to ensure investments provides the best value for money for taxpayers.

Between 2006 and 2010, the Ministers of Community and Rural Development and of Environment corresponded with the CRD to provide direction in regard to provincial expectations for achieving outcomes related to environmental protection, climate action, resource recovery and reuse, seeking partnerships, smart growth, cost effectiveness, and the need for innovation and leadership as a result of the WWTP Project<sup>(2)</sup>. The CRD must take cognizance of the provincial expectations for achieving outcomes related to these matters.

The obligation for the CRD to satisfy provincial funding conditions is amplified by the existence of the Tri-Party Contribution Agreement entered into among the CRD, the Province and the GOC in relation to the cost sharing of the WWTP Program. The Agreement has a schedule of provincial funding conditions and deliverables, which include the obligation to achieve provincial expectations and provide the Business Case in a form acceptable to the Province.

The Province has also delivered to the CRD a document dated April 29, 2009 entitled "CRD WWTP Business Case Requirements" to give the CRD guidance on provincial requirements for the project's Business Case format and expected outcomes from the Project Proposal <sup>(3)</sup>. The outcomes include identification of how the CRD project meets provincial and CRD mandates related to climate, energy, water, and air, in addition to environmental protection and the other expectations outlined through the correspondence from the Minister of Community and Rural Development and Minister of

Environment<sup>(2)</sup>. One of the requirements is a Multiple Criteria Analysis (“MCA”) utilizing life cycle information.

The Ministry of Community and Rural Development staff gave the CRD and its Engineering and Business Advisory Consultants a presentation outlining the Ministry’s broad program objectives and general evaluation criteria in April 2009. The objectives and criteria address the project-based level and the program-wide level. In regard to program-wide objectives, the Ministry suggested that the CRD review the Building Canada Fund (BCF) communities component to get an understanding of the typical objectives required for all municipal infrastructure projects the Ministry funds<sup>(4)</sup>. The most relevant components include “about BCF-CC” and “Program Guide” tabs; the latter contains the British Columbia “Wastewater Guide and Form”.

In regard to provincial funding, the Ministry of Community and Rural Development stated in a memo addressed to the PRT Chair dated February 12, 2010 that, noting that the Ministry must maintain a certain level of independence from the CRD internal review process in order to objectively conduct its own due diligence:

“The Ministry overlays program-wide objectives with project-specific criteria based on the project’s risks and opportunities, and the proponent’s capacity. A proponent, such as the CRD, with significant capacity and opportunity would draw higher expectations... The CRD Sewage Project is considered a stand-alone strategic project that does not form a part of an existing standard provincial grant program. Specific conditions of funding will be determined based on the Province’s analysis of the Project Proposal and Business Case”<sup>(5)</sup>.

Various sections of the PRT Report discuss Business Case compliance with the differing aspects of provincial conditions.

In regard to the *Capital Standard*, Sections 2 and 3 of the PRT Report deal with procurement considerations, including whether a public-private partnership arrangement has been considered appropriately as the “base case” for procurement in the Business Case and whether there has been a rigorous examination of options to ensure investments provide the best value for money for taxpayers. In addition to dealing with the procurement plan in Section 2, the PRT report deals with governance in Section 9 entitled “Regulatory/Legal Issues”. Market sounding, bundling and phasing of project components is addressed in Sections 2, 3 and 5 of the PRT report. Multiple criteria analysis is addressed in detail in Section 7 of the PRT Report.

Risk is addressed in Section 4, which includes discussions in relation to methodology, assumptions, mitigation, probability and consequence values, comparisons of the procurement options, and recommendations in regard to risk quantification for the delivery methods. In this PRT Report, Section 5 “Delivery Method Efficiencies” and Section 6 “Financial Issues” deal with value for money, cost effectiveness and fiscal innovation in relation to the Business Case.

## APPROVAL OF THE INSPECTOR

As stated in the Introduction above, the CRD must apply for the approval of the Inspector in regard to the loan authorization bylaw and may seek the approval of the Inspector if the CRD would like an exemption from elector approval. Statutory and other regulatory requirements in relation to approval of the Inspector are discussed in Section 9 of this PRT Report.

In regard to approval by the Inspector, the Ministry has stated the following, subject to the proviso that the Ministry must maintain a certain level of independence from the CRD's internal review process in order to objectively conduct its own due diligence upon receiving the CRD's Business Case and Project Proposal:

“While we can never commit the Inspector to a particular course of action, it would be unusual for the Inspector to refuse approval of a liability that is in keeping with a current Liquid Waste Management Plan, and the Project to be undertaken is clearly contemplated in that Liquid Waste Management Plan”<sup>(5)</sup>.

## REFERENCES

1. Province raises Capital Standard threshold for PPP's, Information Bulletin issued by Partnerships BC (November 7, 2008)
2. Archived documents, “Letters”: <http://www.wastewater.madeclear.ca/media/archived-documents/>
3. “CRD WWTP Business Case Requirements-Core Area Wastewater Management Program” draft (April 29, 2009)
4. Government of Canada, Building Canada Fund, Communities Component: <http://www.th.gov.bc.ca/bcfcc/>
5. Email message from Mike Furey, Assistant Deputy Minister, Local Government Department, Ministry of Community and Rural Development, to Gordon Culp (February 12, 2010)



This section discusses statutory requirements affecting the CRD project and options for governance during the construction and operating phases of the project.

## **INTRODUCTION**

In British Columbia, the development of a wastewater treatment plant is subject to a regulatory regime based primarily on provincial statutes and regulations, but also subject to some federal statutes and regulations. As well, governance issues are subject to the legislation applicable to regional districts as well as the policies of the CRD. Some requirements are listed in section A.6 of the Business Case. Others are discussed in this part of the PRT report.

## **STATUTORY REQUIREMENTS FOR ELECTORAL APPROVAL**

Section B.17.2 of the Business Case says the CRD has already committed to funding one third of the defined Eligible and Ineligible Costs per GOC requirements. This will require a borrowing of at least \$300 million.

Under section 818(1) of the *Local Government Act* [R.S.B.C. 1996] CHAPTER 323 (LGA) the CRD may only incur a liability under the authority of the LGA “or another Act”. Section 819(1) of the LGA provides further that section 179 of the *Community Charter* [S.B.C. 2003] CHAPTER 26 (CC) [the loan authorization bylaw requirements for long term borrowing of municipalities] applies to the CRD. Section 179(1)(a) provides that, in the case of the CRD, the Regional Board may, by a loan authorization bylaw adopted with the approval of the Inspector of Municipalities, incur a liability by borrowing for any purpose of a capital nature. Accordingly, the CRD must satisfy the Inspector of Municipalities and provincial approval criteria in relation to the project before referring the loan authorization bylaw to the Inspector for approval under section 179(1) of the CC. The provincial approval criteria, including the criteria generally considered by the Inspector of Municipalities, are discussed in detail in Section 8 of the PRT report entitled “Business Case Process” in relation to compliance with provincial requirements, and consistency with the guidelines published by Partnerships British Columbia.

In addition to approval by the Inspector of Municipalities, the borrowing is normally subject to participating area approval. Under section 823.1 of the LGA, a loan authorization bylaw normally must receive participating area approval in accordance with that section. Section 823.1(3) of the LGA provides that participating area approval may be obtained by assent of the electors, by the alternative approval process, or by

consent on behalf of municipal participating areas (in relation to the participating member of municipalities).

Despite the normal requirement for a loan authorization bylaw to receive participating area approval in accordance with section 823.1(1) of the LGA, this general requirement is pre-empted by approval of the liability by the Inspector of Municipalities under section 5 of the Regional District Liabilities Regulation [B.C. Reg. 261/2004] and section 24(7) of the *Environmental Management Act* [S.B.C. 2003] Chapter 53 which provides that if the CRD's waste management plan has been approved by the designated Minister or is required by the designated Minister, a bylaw adopted for the purpose of implementing the waste management plan does not require a petition, assent of the electors or approval of the electors. Accordingly, participating area approval normally required under section 823.1 by way of assent of the electors or the alternative approval process arguably is not required because the designated Minister has approved the CRD liquid waste management plan and the loan authorization bylaw is a bylaw to implement the waste management plan.

Section 24(7) of the *Environmental Management Act* does not, however, exempt the regional board from the requirement for consent on behalf of municipal participating areas in accordance with section 801.4 and 823.1(3) of the LGA in relation to each municipality in respect of which the entire geographical area of the municipality constitutes the municipal participating area. Section 801.4 provides that the council of the participating municipality may give participating area approval by passing a resolution or adopting a bylaw to consent on behalf of the electors to adoption of the proposed bylaw and by notifying the CRD regional board of its consent.

Accordingly, in addition to obtaining the approval of the Inspector of Municipalities before adopting the loan authorization bylaw, the CRD board must obtain the consent of the councils of the participating municipalities unless the CRD seeks and obtains approval of the Inspector of Municipalities under the Regional District Liabilities Regulation.

Section 819(1) of the LGA provides further that section 175 of the CC applies to regional districts in relation to liabilities under agreements. Section 175 of the CC provides that the regional board may not incur a liability without the prior approval of the electors under an agreement if the agreement is for more than five years or for a period that could exceed five years by exercising rights of renewal or extension. This requirement applies in addition to the requirement for approval of the loan authorization bylaw under section 823.1. This requirement for approval of the electors would apply in normal circumstances, in the absence of an exemption, to any agreement entered into by the regional board in relation to the WWTP if the agreement is for more than five years (including by exercising rights of renewal or extension), an example of which might be one or more DBO agreements or DBFO agreements. Accordingly, despite the exemption from approval of the electors under section 24(7) of the *Environmental Management Act* [or by implication under section 823.1(3) of the LGA], the regional board is also subject to the requirement to seek the approval of the electors in normal

circumstances and in the absence of exemptions in relation to a DBO or DBFO agreement where the term exceeds five years.

Under section 175(4)(c) of the CC, the approval of the electors in relation to the agreement is not required for a liability to be incurred in circumstances prescribed by regulation or in relation to an agreement or class of agreement prescribed by regulation, subject to conditions established by the regulation. In this regard, section 5 of the Regional District Liabilities Regulation and section 9 of the *Municipal Liabilities Regulation* [B.C. Reg. 254/2004] (“Exemption Regs”) provide that approval of the electors is not required under sections 819 of the LGA and 175(2) of the CC if the liability is to be incurred for the purpose of implementing all or part of, or an amendment to, a waste management plan approved by the Minister respecting the management of municipal liquid waste *so long as the Inspector of Municipalities approves the proposed liability*. Accordingly, in addition to approval of the Inspector in relation to the loan authorization bylaw and consent by the participating municipalities on behalf of the municipal participating areas for the loan authorization bylaw, the CRD may wish to seek an exemption from electoral approval by obtaining the approval of the Inspector of Municipalities in relation to a liability incurred under a DBO or DBFO agreement that has a term exceeding five years (including by renewal or extension).

Further, the obligation to seek the approval of the electors, and the corresponding ability to seek approval of the Inspector of Municipalities under the Exemption Regulations, is limited to liabilities of a capital nature, whether or not the liability is or includes a contingent commitment or a loan guarantee. This is because section 2 of the Regional District Liabilities Regulation and section 6 of the Municipal Liabilities Regulation provide that approval of the electors is not required under section 175(2) of the CC unless the liability is a liability of a capital nature (whether or not it includes a contingent commitment). This being the case, approval of the Inspector of Municipalities under the Exemption Regs is not required in relation to a liability of an operational nature but only applies to a liability of a capital nature under a DBFO or DBO agreement that exceeds the five year period. For the purposes of determining whether the liability is capital or operational in nature, it is necessary to interpret the provisions of the agreement consistently with the recommendations and guidelines issued by the Public Sector Accounting Board as authorized by The Canadian Institute of Chartered Accountants under section 1(2) of the Regulation.

## **LIABILITIES MUST ALIGN WITH FINANCIAL PLAN**

Under section 818(2) of the LGA, the CRD must not incur a liability for which expenditures are required during the planning period for its financial plan unless those expenditures are included for the applicable years in the financial plan. Under section 816(1) of the LGA, the regional board must undertake a process of public consultation regarding the proposed financial plan before it is adopted. As well, section 816(2) provides that a designated regional district officer must send a copy of the financial plan to each municipality in the regional district and to the Inspector of municipalities.

## **APPROVAL REQUIREMENTS THAT MUST BE MET**

Based on this analysis, the CRD must address the following approval, consent and consistency requirements of the applicable legislation:

- Approval of a loan authorization bylaw by the Inspector of Municipalities, noting the requirements of the Province in relation to approvals (and the guidelines published by Partnerships British Columbia since that organization has been retained by the Province to provide advice in relation to the WWTP).
- Approval by the Inspector of Municipalities of the liability in relation to the borrowing if the CRD seeks exemption from elector approval, noting the requirements of the Province in relation to approvals of the liability by the Inspector of Municipalities to exempt the CRD from elector approval.
- Consent of each participating municipality given on behalf of the applicable municipal participating areas, unless the CRD seeks and obtains approval of the Inspector of Municipalities under the Regional District Liabilities Regulation.
- Approval by the Inspector of Municipalities of any public private partnership agreements having a term exceeding five years under which a capital liability is incurred, noting the approval requirements of the Province and the applicable guidelines of Partnerships British Columbia.
- Inclusion of loan and other liability expenditures in the financial plan, which has been subjected to a process of public consultation.

It should be noted further that in relation to a DBFO, the regional board may incur a liability by borrowing in relation to lending to the private party under the agreement or guaranteeing repayment of borrowing by the private party, or providing security for the borrowing, of the private party, if this is provided under an agreement with the private party under section 179(1)(b) or (c), as applicable, of the LGA. Since the lending or guaranteeing would constitute “assistance” under section 181 of the LGA, and since the assistance would normally be prohibited under section 182 of the LGA as providing a grant, benefit, advantage or other form of assistance to a business undertaking, it would be necessary for the Board to enter into a partnering agreement under section 176(1)(c) and 183 of the LGA. The partnering agreement (which would be subject to the electoral approval exemptions discussed above) would be subject to the requirement under section 185 of the LGA to publish a notice of the assistance under the partnering agreement before the assistance is provided in a newspaper in accordance with the notice requirements.

## **GOVERNANCE**

The Business Case deals with program governance in sections C.2 through C.5. Section C.2 of the Business Case states that the WWTP Project will require a well developed governance and project management organization along with monitoring/audit functions to ensure that the project is delivered on time, within the

budget and with an uncompromised level of quality. Section C.3 recommends that a more independent and project specific body should be created to accommodate the increasing workload that will arise as the project progresses through the procurement process, and section C.4 and C. 5 then discuss the advantages and disadvantages of a project implementation board and a corporate model respectively.

Governance Option 1 discussed in section C.4 of the Business Case deals with one approach to governing the process without an intervening legal entity. Governance Option 2 under section C.5 identifies only one approach in relation to the creation of an independent entity. Other options to be considered include a:

- Company incorporated under the *Business Corporations Act* [RSBC 2002], Chapter 57
- Non-profit society incorporated under the *Society Act* [RSBC 1996], Chapter 433
- Commission established by the regional board under section 176(1)(g) of the LGA
- Joint venture (such as the Aerosmith Water Joint Venture) approved under a regulation similar to the “Additional Power Joint Venture Agreement Regulation [BC Reg. 88/97]”
- Partnership or limited liability partnership
- Utility

It should be noted that under section 195(1) of the LGA a regional district may only incorporate a corporation other than a society, or acquire shares in a corporation, with the approval of the Inspector of Municipalities.

Advantages of the corporate model discussed under section C.5 should also include the following:

- Transfer of regional district financial and legal liability and risk to the special purpose company (or other distinct legal entity established for the special purpose), subject to limitations on risk transfer imposed under the agreements entered into with the private sector.
- Elimination of political interference.
- Some potential for off-book financing, subject to a note on the CRD financial statements.

The Business Case addresses governance during the development of the WWTP Project but does not appear to deal with governance of the continued operation of the facility created that could include options such as a:

- Direct service of the Regional District
- Commission

- Non-profit society
- Special purpose company
- Joint venture
- Utility

Before recommending a governance option to the CALWMC and the Regional Board, it would be necessary to provide a comprehensive and detailed analysis of the following factors which are beyond the purview of the PRT:

- Municipal finance authority financing eligibility (subject to designation of the special purpose entity by the Lieutenant-Governor in Council) under section 11.1(1)(c) of the *Municipal Finance Authority Act* [RSBC 1996], Chapter 325 and section 4 of the *Municipal Finance Authority Regulation* [BC Reg. 67/98, as amended], and further subject to the willingness of the MFA to fund such a structure.
- Eligibility for advancement of funds from Province of British Columbia and Infrastructure Canada.
- Establishment so as to avoid conflicts of interest of special purpose entity directors who are also elected or appointed officials of the CRD.
- Implications of a special purpose entity in the context of the regulatory regime, including in relation to approval of the electors, approvals under the *Environmental Management Act*, permits/operational certificates.
- The extent to which the “corporate veil” might be pierced by a person seeking to sue the Regional District despite the existence of the special purpose distinct legal entity.
- Liability for income tax, HST, property value tax, development cost charges, or other local government fees, charges or impositions.
- Land use approvals in relation to the facilities located in municipal boundaries.
- Dispute resolution mechanisms.
- Clarification of ability of a member municipality to withdraw, in the context of the special purpose distinct entity.

## **PROJECT STRATEGY CONSIDERATIONS**

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This section discusses strategies related to apportioning costs and criteria that could be used to evaluate alternative approaches to cost allocation. A discussion of analyzing affordability is found in Section 6 “Financial Issues” of this PRT report.

### **HOW MEMBER MUNICIPALITIES WILL PAY**

The Business Case does not directly address how member municipalities will pay. There is some discussion in section 8.2 about the ownership and maintenance of the wastewater systems in the region as between the CRD and the member municipalities. As stated on page 22 of section 8.2, the CRD does not propose to alter the existing fundamental separation of ownership and maintenance responsibilities between the parties. There is also some discussion under section 8.9 in relation to “demand management”, but not in relation to how the municipal funding mechanisms relate to demand management.

### **COST APPORTIONMENT**

It will be necessary for the regional board to establish principles of allocating liquid waste costs among the member municipalities. The apportionment must be consistent with the CRD Financial Plan, must be administered by way of a cost apportionment bylaw and should be structured so as to satisfy the provincial funding and approval conditions. The public policy process for determining how the costs will be apportioned involves local politics as well as the foregoing criteria. Accordingly, it may be useful for the regional board to appoint a task force of individuals with experience, expertise and qualifications in relation to cost apportionment to recommend appropriate options for consideration of the regional board. The options are driven by considerations related to dry weather flows versus wet weather flows, industrial flows, member municipality growth as a function of service area population growth, the user pay principle and special considerations such as local inflow/infiltration problems or combined sewer overflow problems.

Before considering these options and criteria in greater detail, it is necessary to discuss the “user pay principle” since this approach is becoming more popular in the context of regional cost apportionment in both the literature and practice.

### **USER PAY PRICING**

The principle behind the user-pay or user fee system is one of general economics: that the price of a product should reflect the cost of producing it in order for a rational allocation of resources to be achieved in the market place. Where user fees are employed, they range from fixed charges unrelated to consumption to charges that vary

directly with the quantity consumed, or a mix of fixed and variable charges. In addition, the fee structure may be designed to cover all or only a portion of real production and delivery costs.

Opposition to user fees tends to be wide spread across taxpayers and local government officials. Generally, this opposition arises because user fees are alleged to be regressive; that is, they absorb a higher percentage of lower income individuals' or households' income when compared with higher income individuals or households.

### **Advantages**

- Provides rigour in analysis of capital and operating costs and in management of assets.
- Separates most management and operational decisions from the political forum.
- Reflects efficiencies of the market place allocation of resources.
- Provides the opportunity for accessing private sector capital markets.
- Charges a price that reflected all incremental costs, including capacity costs, would encourage water conservation up to the point where the value of the last cubic meter consumed was just equal to the real cost of supplying it.
- Discourages consumption of water in low-value uses and postpone the requirement for new investment for increased capacity.

### **Disadvantages**

- Equity issues – Does not ensure equal access to service regardless of income.
- Complexity for decision makers wishing to meet social objectives or needs.
- May require a third-party review agency.

### **Water Supply and Sewage Treatment**

The cost to treat wastewater from the typical residence is related to the amount of wastewater discharged by the residence to the wastewater collection and treatment system. This in turn is related to the amount of potable water used in the residence. There are a few Canadian studies that have examined the impact of meters on water consumption. In general, most of them noted a decline in water use with the introduction of water meters. The usual pattern is for water use to fall substantially after meters are installed and then to rebound somewhat as consumers become more familiar with the new pricing schemes. Although metering has proven to be an effective demand-management tool and has led to reduced residential consumption, the actual extent to which metering plays an effective role in water conservation may depend on the post-metering water-pricing regimes.



How does the economic prescription for marginal cost pricing fit the water utility? In theory, when water consumption is not limited by the capacity of the drinking water system or waste management system, the price of an additional cubic meter of water should equal the sum of the incremental operating cost of serving a customer that additional amount plus the opportunity cost of the water source. In theory, it should be relatively straightforward to implement marginal cost pricing, if the marginal cost can be determined. In practice, however, water utilities rarely use marginal cost pricing. In Canada, many water users are not even metered; instead, they pay for water and sewer services through their property taxes. When utilities do charge a per-unit price for water, it often falls short of covering the costs. This is often due to the fact that utilities are constrained to break even with respect to operating costs and amortized capital costs. Also few water utilities in Canada employ seasonal pricing or time-of-use pricing.

### **Constraints on Fees**

Section 92(2) of the Constitution Act, 1867 confers upon the Provinces the power to raise revenue for provincial purposes only by means of direct taxation.

The Court in *Re Eurig Estates*, relies on the often quoted John Stuart Mills' definition in order to distinguish between direct and indirect taxes:

A direct tax is one which is demanded from the very persons who, it is intended or desired, should pay it. Indirect taxes are those which are demanded from one person in the expectation and intention that he shall indemnify himself at the expense of another. . . .

In essence, the Supreme Court held that governments can't disguise taxes as "fees" in order to avoid having the taxation provisions approved and imposed by the legislature.

In order for a charge to qualify as a "fee" a "nexus must exist between the quantum charged and the cost of the service provided.... In determining whether that nexus exists, courts will not insist that fees correspond precisely to the cost of the relevant service."

### **COST APPORTIONMENT**

As stated, it may be advisable for the regional board to establish a task force to study the options and criteria and make recommendations to the regional board in regard to cost apportionment.

There are a number of ways apportionment may be established in the context of the user pay principle. It is feasible to establish a system based on metering/usage, the nature of what goes into the system (i.e., charging the source and not merely controlling the source) and other factors. The CRD has implemented some user pay principles in relation to the regional water bulk supply and distribution scheme, and this experience

may be instructive in relation to the cost apportionment scheme for the liquid waste costs. An effective user pay system could have the following benefits:

- Reduce load on WWTP.
- Discourage introduction of prescribed liquid wastes into the system, reducing the costs of treatment.
- Postpone a requirement for new investment for increased capacity as a result of the benefits of the two items listed above.
- Provide transparency, predictability and rigour in the analysis of capital and operating costs and in management of assets.
- Provide a more attractive scheme for a private operator under a DBO or DBFO scheme.
- Reflect efficiencies of the market place allocation of resources.

As discussed in the section “User Pay Pricing”, the political issue that always arises in this context is whether “user pay” ensures equal access to the service regardless of income. From a financial planning point of view, it would be necessary to determine the extent of which the user pay would apply to end users, member municipalities, or a combination of both. The rates charged would be a political decision. In order to enjoy the advantages and benefits of a user pay scheme, it would be preferable to have an independent governance structure (as discussed in section 9 of this PRT Report), combined with the sort of third party review discussed in the “infrastructure financing” report

In addition to a user pay scheme, the regional board could consider the option of apportionment on the basis of the Greater Vancouver Sewerage and Drainage District (GVSD) model. Under the GVSD scheme, the local government pays for the cost of growth (in relation to any required secondary or tertiary treatment) by borrowing and then apportioning among the member municipalities on the basis of a formula. Under that formula, the member municipality population growth is divided by the sewerage area population growth, which is in turn multiplied by the amount to be apportioned. Industrial treatment costs incurred to treat and dispose of industrial flows (under an industrial permit issued under the GVSD Sewer Use Bylaw) are apportioned to the applicable member municipality. The GVSD sends the applicable member municipality a statement setting out the industrial treatment costs apportioned to the member municipality. It includes the name of the industrial permittee, and the quantity, composition and other information considered relevant respecting the effluent discharged by each industrial permittee within that member municipality under an industrial permit.

In the GVSD model, non-growth costs are apportioned on the basis of dry weather flow. The non-growth costs are apportioned among member municipalities in the same proportion that the assessed value of the lands of each member municipality bears to the assessed value of all lands within the service area. In the case of the North Shore,

there is a further apportionment based on a political formula arrived at among the three North Shore municipalities. Under the GVSDD scheme, the costs of operation and maintenance are apportioned on the same basis as the apportionment of non-growth costs (based on dry weather flows) and further apportioned among the member municipalities on the same basis as the apportionment of non-growth capital costs. (1)

In selecting an appropriate cost allocation methodology several criteria should be considered and possibly scored in an evaluation matrix:

- Financial sufficiency
- Legality and defensibility
- Equity to different stakeholders
- Economic impact of stakeholders
- Economic impact of stakeholders
- Litigation potential
- Economic development
- Revenue stability
- Rate and user charge stability
- Ease of implementation and updating
- Understandability
- Acceptance by member municipalities

## **REFERENCES**

1. "Sustainable Region Initiative-proposed revisions to Metro Vancouver's Liquid Waste Fees (Sewer Use Bylaw-Liquid Waste Fee Review)," Metro Vancouver, 2009; <http://www.metrovancouver.org/boards/bylaws/pages/bylawreview.aspx>

## LABOUR CONSIDERATIONS

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This section discusses labor considerations such as successorship and the contracting out provisions of the existing collective agreement.

### SUCCESSORSHIP ISSUES

There is some discussion of labour implications of the various options in the Business Case. In relation to the existing WWTP service the CRD employs members of the Canadian Union of Public Employees Local 1978 that has a collective agreement with the CRD that terminates on December 31, 2010. The agreement continues in effect from year to year thereafter, subject to future collective bargaining.

If the CRD proceeds with a DBO or DBFO, the operator will be responsible for the employment of employees. There will need to be discussions between the CRD and the operator respecting the future of the existing employees.

The Labour Relations Board may find a successorship where there has been a transfer of a “business” which has been described as a “dynamic activity” or a “going concern”. Essentially, the Board is looking to determine where there is a “discernable continuity” in the business after the transfer. In order for there to be a discernable continuity in the business, there must be an identifiable nexus between the business of the predecessor and successor employers. The Board is more likely to find a successorship where there has been a transfer of essential assets, where there is a transfer of good will, or customers, or where there is a transfer of good will, or customers, or where control over the work rests with the successor.

Another issue that arises from a potential successorship is the CRD’s obligations to those employees who do not wish to continue working at the facility after the transfer.

The Board summarized the law in the case of *Granville Island Brewing Co.*, B.C.L.R.B. No. B322/96, which followed an earlier decision involving the British Columbia Government Employee’s Union (*Verrin*):

“When a business or part of it is sold, leased, transferred or otherwise disposed of, the predecessor employer’s employees may be terminated or laid off by the predecessor employer as a result and may choose to exercise whatever rights they have against the predecessor employer under the collective agreement in force at the time of sale, lease, transfer or other disposition: *ibid.*”

A transfer of employment from a predecessor to a successor is not automatic under Section 35 of the Code: Verin, Court of Appeal, pp 22, 23. Employees cannot be transferred against their will by a predecessor employer to a successor employer when a sale, lease, transfer or other disposition of a business, or part of it, occurs within the meaning of Section 35 of the Code: Verrin, BCLRB No. 117/87, upheld by the Court of Appeal, supra.

This, of course, would mean that they would have the opportunity to exercise their bumping rights.

The Board advised that this was a matter of contract interpretation for an arbitrator. The *Verrin* case addressed issues of if and how, in a successorship situation, employees of the predecessor employer become employees of a successor. The predecessor's employees are not assigned to the successor entity by operation of law, but only become employees of the successor entity if they so choose.

A vendor company may be responsible to provide severance pay to those employees who did not wish to continue employment with the successor (*Macdonalds Consolidated Ltd.* (1997) 61 L.A.C. (4<sup>th</sup>) 129 (McKee)). In this case, the Union grieved that the vendor failed to pay severance pay to employees on the transfer of its warehouse operations to the successor.

The Arbitrator stated that the issue of entitlement was settled and that the vendor must pay severance pay to those employees who chose not to continue employment with the successor. The Arbitrator based his decision on the particular severance pay language in the Collective Agreement at issue.

Consideration would need to be given to any notice requirements relating to the matter. Section 54 of the *Labour Relations Code* requires that 60 days notice be provided before a measure is to be effected, such as transfer of a business, which affects a significant number of employees under a collective agreement. This provision has been liberally interpreted and the CRD would wish to ensure compliance with these notice requirements. Furthermore, there may be requirements for notice under the collective agreement with the union regarding the transfer of all or part of a business. The timing of notice periods under Section 54 and the collective agreement may run concurrently. The process under Section 54 requires that the employer participate in good faith discussions with the union concerning the effect of the change on unionized employees.

The CRD would have to be sensitive to the successorship and collective agreement issues arising under a DBO or DBFO. If the CRD were to consider proceeding with a DBO or a DBFO, it would be well advised to establish an effective, collaborative approach with the employees to see if they wish to continue in the WWTP service, move to other positions, or be bought out, and this process would follow negotiations with the DBO or DBFO proponent team to arrange for the successful proponents to take care of the cost of dealing with the employees as determined by the collaborative

process. This could be done prior to, or in connection with, Section 54 notice process and any collective agreement notice requirements.

## **CONTRACTING OUT ISSUES**

To the extent any procurement model involves potential contracting out, it should be noted that Article 36 of the collective agreement, entitled “Contracting Out”, provides that no regular employee shall be laid off and placed on the recall list, terminated, or failed to be recalled to their classification as a result of contracting out. As well, it should be noted that Article 29 entitled “Sub-contractors” states that all sub-contractors of the regional district must provide wages which are at least equal to those specified in the collective agreement when work of a similar or same nature is performed.

Contracting with the private sector can result in labour relations problems if careful preventive transition measures are not implemented by the owner. By way of example, in 1995 the Region of Hamilton-Wentworth (now the City of Hamilton) entered into a 10 year operating and maintenance agreement with a private company for wastewater treatment, water purification and maintenance of numerous works and services. Before making the agreement, the community’s wastewater was poorly managed, overstaffed and often out of compliance with provincial enactments<sup>(1)</sup>. The purposes of the scheme were to afford savings and prevent labour issues. Ultimately, the savings, only 3% of Hamilton’s previous costs, were small compared to communities that went to RFP (Hamilton had sole-sourced). By 2001, Hamilton had savings of \$35 million, and a successor private entity proposed additional cost savings. It is important to note that most of the operations savings derived from staff reductions resulted from automation and new practices. This resulted in a 111-day strike in 1999.<sup>(2)</sup>

## **REFERENCES**

1. E. Brubaker, “Revisiting Water and Wastewater Utility Privatization” (Public Goals, Private Means Research Colloquium, Faculty of Law, University of Toronto, 3 October 2003) at page 2
2. Revisiting Water and Wastewater Utility Privatization, note 37 at page 4

# ***APPENDIX A PEER REVIEW TEAM BIOGRAPHIES***

**Gordon Culp (Chair)**, Professional Engineer, Principal, Smith Culp Consulting, Las Vegas, Nevada has 46 years of experience in the study, evaluation, design, operation and management of water and wastewater treatment facilities. He is a professional engineer with degrees in civil engineering and environmental health engineering. He has authored or co-authored eleven books and over 70 technical papers. Projects representative of Mr. Culp's recent experience with the evaluation of project delivery methods includes large municipal water/wastewater projects for Seattle, Phoenix, Spokane County, Pima County (Tucson) and Detroit. He was a member of an expert panel that reviewed the \$3.1 billion Boston Harbor Pollution Control Project and of an expert panel that reviewed New York City's 290 million gallon per day Croton Lake water filtration plant. He served as chair of the peer review team for the CRD's core area wastewater management plan.

**Arn van Iersel**, Professional Accountant, Independent Consultant, Saanichton, British Columbia – Mr. van Iersel has 35 years of experience and has held senior positions in finance and program delivery in a public service career with the Alberta and British Columbia governments. He is a professional accountant in good standing with the Certified General Accountants Association of British Columbia. In British Columbia, he was the Comptroller General for 8 years and just prior to leaving the British Columbia government was Acting Auditor General. He conducted performance auditing of selected government programs and services in terms of whether these programs were meeting the government's objectives and were being delivered economically, efficiently and effectively. As an independent consultant, he is a member of Environment Canada's Audit committee and has served multiple clients in Canada.

**Donald Lidstone**, Q.C., Attorney, Lindstone & Company Law Corporation, Vancouver, British Columbia – Mr. Lidstone has 31 years of experience in municipal, environmental, constitutional and administrative law. He has chaired the Sustainable Region Initiative (Governance and Finance), Metro Vancouver Liquid Waste Expert Review Panel, Fire Services Review Panel, Whistler Waste Blue Ribbon Panel and the Municipal Law Section of the British Columbia Branch of the Canadian Bar Association. He is co-founder of the Sierra Legal Defence Fund/EcoJustice and Smart Growth BC. He has consulted on the development of the British Columbia Community Charter and other municipal statutes. He has published numerous papers and manuals.

**George Raftelis**, CPA, CEO Raftelis Financial Consultants, Inc, Charlotte, North Carolina – Mr. Raftelis has 34 years of experience in financing of environmental projects, strategic planning and privatization. He has served as a consultant for over 300 government utilities in the United States, Canada, United Kingdom, Bulgaria and the Caribbean. He authored the book *Water and Wastewater Finance and Pricing: A Comprehensive Guide* that is now in its third edition. His book has become an authoritative document for establishing utility financing plans and pricing structures. He also co-authored the American Water Works Association's *Revenue Requirements Manual* and is often quoted in industry and finance publications and at industry forums.



**Eric Petersen**, Attorney, Director, Public Contracts Group, Hawkins, Delafield and Woods, New York City – Mr. Petersen has 36 years of experience in the public finance, project finance, tax and environmental aspects of projects. He is a nationally recognized leader in this field. On behalf of municipal government, he has been the lead negotiator in over 100 major public works contract procurements. He has special expertise in municipal utility facility development and planning from an integrated business, contract and financing viewpoint. He has served clients in more than two-dozen states including towns, cities, counties, districts and public authorities as well as governments of the United States and several states and foreign nations.

***APPENDIX B  
AGENDA AND NOTES OF FIRST PEER REVIEW  
TEAM MEETING***

**BUSINESS CASE PEER REVIEW TEAM  
MEETING NOTES  
DECEMBER 2, 2009**

**Attendees:** Peer Review Team – Gordon Culp, Eric Petersen, Don Lidstone, George Raffelis, Arn van Iersel; Ernst & Young – Gary Morrison; Stantec – Dave Walker; CRD – Tony Brcic

**Meeting Agenda** – see attached

**Discussion/Review of Wastewater Project**

Discussion led by Dave Walker of Stantec.

Treatment must be in operation by December 31, 2016. This date is fixed.

The Liquid Waste Management Plan (LWMP) must be submitted by December 31, 2009. It can be amended after that date if plant sites change.

A referendum may be needed to change the park designation of West Shore sites.

The CRD has determined that Option 1A is the basis for the business case. An alternate plant site in the Upper Victoria Harbour is being considered but is not confirmed. An Upper Victoria Harbour site may be large enough for both the liquid and solids treatment facilities. This is an advantage over the current version of Option 1A in which liquid treatment would be at the McLoughlin site and solids treatment would be at a separate site because of space limitations at the McLoughlin site. The biosolids site would probably be at the Hartland landfill or in the Upper Victoria Harbour area. Because of schedule requirements for provincial and Federal funding, the CRD has decided that the business case will proceed based on the current version of Option 1A and will be amended should an Upper Victoria Harbour or another site be later selected.

The Province requires a provincial Environmental Assessment. This has been done for the Saanich East site. There is also a requirement for Canadian Environmental Assessment (CEA) that can take 18-24 months to complete. A CEA is required if Federal funds are used. The CEA can be coordinated with the provincial Environmental Assessment. The CRD will not enter into a construction contract until the CEA is approved. Outfalls will require a CEA. A CEA will be required for the Clover Point plant and outfall. The CEA includes consideration of endangered species but this was an issue only at the McCauley site that is no longer being considered.

Permitting has been factored into the time line. Rezoning is not yet incorporated.

The CRD is trying to get a memo of understanding (MOU) with the Federal and provincial governments based on the likely worst case for costs (Option 1A) that has an estimated cost of \$967.5 million.

The LWMP that will be submitted by December 31, 2009 will be LWMP amendment number 7. It is anticipated that amendment number 8 will be submitted by the end of February 2010 and will clarify the West Shore site and may also include a change to an Upper Victoria Harbour site instead of McLoughlin. The business case is a separate submittal. If the McLoughlin plant site is used (Option 1A), the business case will be completed by the end of February as work on the business case is currently proceeding based on use of this site. It is anticipated that the business case will be submitted by the end of April if the site is changed to an Upper Victoria Harbour site. All expressed concern that proceeding based on Option 1A could result in added costs to revise the business case if an Upper Victoria Harbour site is later selected. However, the schedule required to obtain provincial and Federal funding must also be considered. The LWMP must be submitted by the end of 2009.

A risk workshop is scheduled for December 10, 2009.

Cash flow including design costs has been developed based on delivering the project with the conventional design-bid-build approach. Estimates include 15% contingency.

provincial funding will be based on the business case that will be completed by end of February if the plant site is not changed. The CRD hopes to have all approvals of the LWMP and the business case by end of April.

Biogas will be cleaned and injected into a natural gas line.

### **Review of the Business case Approach**

Discussion led by Gary Morrison.

Projects involving a capital investment with a project agreement longer than 5 years require elector approval. If more than 10% of voters oppose the project, it fails. The Whistler project is an example where this happened. The Minister can exempt a project from elector approval. The LWMP will be subject to approval by the Minister, no elector approval required.

The CRD will own and operate the wastewater collection system. The Province is ok with this.

The project delivery method for the liquid treatment portion of the Core Area system is likely to be hotly debated. The biosolids system may be more open to alternative delivery.

PBC has said they would attend the risk workshop, perhaps only as an observer. The PRT recommended that interaction with PBC be aggressively pursued by the CRD to promote ongoing communication to avoid any surprises when PBC reviews the business case. A goal of the risk workshop is to separate the easy-to-address issues from the really difficult issues. The difficult issues will likely require follow-up work after the workshop. It is anticipated that the risk analysis will be available to the PRT in mid January.

Cash flows for each delivery method will be evaluated.

The PRT suggested that the qualitative issues related to each delivery method be carefully evaluated in addition to the Net Present Value (NPV) of each method. Gary responded that NPV, risks and qualitative factors will be evaluated for each method.

It is anticipated that 3 deliverables will be reviewed by the PRT:

1. Governance, risk and identification of procurement options
2. Risk and financial analysis
3. Draft business case

The schedule for these deliverables was still in the process of being finalized at the time these notes were prepared. It may be necessary to have two more PRT meetings depending on the final schedule for these deliverables. The current PRT scope and budget calls for only one more PRT meeting. Should a change in scope become necessary, Gordon will prepare a revised scope and budget for consideration by the CRD.

Twenty-nine parties responded to the market sounding. Gary will forward the complete report listing these parties. The market sounding was done before the financial market problems. At that time, all respondents expressed interest in participating in the financing of the project. There are no plans to do further market sounding.

The current thinking is to allocate base costs on dry weather flows with added charges based on wet weather flows from each jurisdiction. The evaluation of cost allocation is a separate effort led by Peter Adams.

The PRT suggested the CRD should be leery about using OCPs for design flows. The CRD is aware of this and is currently reevaluating flows based on feedback from jurisdictions that flows based on their OCPs are not representative of actual flows.

In the Design Build Finance Operate (DBFO) project delivery method, the Province prefers that the CRD have the liability to pay the contractor with the Province reimbursing the CRD. The CRD has the risk of collecting dollars from the Province. The CRD will keep pushing to nail down the provincial and Federal funding.

NPV will be based on costs over a 20-25 year period with the period based on an evaluation of the useful life of the majority of the plant equipment.

Reserve operating funds will be included, more analysis on this is underway. Construction costs include 2% per year inflation to mid-point of construction (2014).

Dave Walker will forward a flow diagram and schedule of steps to be carried out by CRD. The project schedule does not include time for each jurisdiction to amend their by-laws related to cost allocations for the project.

The ongoing work should include looking at what others have done to address the requirements of successor staffing. Also, how an increase in capital investment in the plant for improved automation and SCADA will effect staffing should be evaluated. The PRT recommended that a sensitivity analysis be done on labor reductions of 0-25% in the number of staff. Studies in the US have shown that privately operated wastewater and water treatment plants use 25% less labor than in a typical municipal operation.

The CRD could consider mandating that CUPE be a part of any Design Build Operate (DBO) or DBFO project. However, this approach did not work on the Whistler project. Although CUPE local was satisfied, the national and provincial unions were concerned that over time there would be staff reductions.

A matrix will be prepared showing the potential packaging of projects and related potential delivery methods. The PRT recommended that DBO receive attention comparable to DBFO. The American companies who may be interested in this project are not comfortable with financing projects and this may reduce the response from potential bidders for DBFO. In water and wastewater facilities, it may be possible to get equivalent risk transfer to DBFO with DBO while this may not be the case in projects such as hospitals. In most DBFO projects, there can be a large payout for unamortized capital costs if the DBFO contract is terminated while DBO contracts can be terminated with a relatively small termination fee.

If poor quality equipment is installed in a Design Build (DB) contract because there is no continuing operations obligation by the contractor and begins to fail after 2-5 years, there will be substantial local costs. In this case, equipment replacement will be with 100% local funds. Good quality equipment can be installed initially with only one-third local funding. The risk of poorer quality equipment may be increased in DB where there is no ongoing, long-term obligation of the company for operation. Progressive DB where the design is carried to a high level of detail by the owner may be an option to address the concern about the quality of equipment. However, the opportunity for creativity and related cost savings by the DB firm is reduced. Progressive DB where the owner provides extensive design detail also may not effectively transfer design liability to the contractor. Under conventional DB, the contractor guarantees that the project will work as intended, assumes all design liability and can be obligated to meet certain minimum design and construction requirements to assure long term project quality.

The cost of private financing is likely to be about 3% higher than public financing because the MFA has the highest possible credit rating.

It may be possible to package the West Shore and the Saanich East plants together because they will be similar in nature.

Options to proceed with the business case:

1. Proceed as currently directed using Option 1A and revise the business case if an Upper Victoria Harbour site is obtained at a later date
2. Delay work on the business case until the Upper Victoria Harbour site alternative is resolved

The CRD has the power to expropriate site ownership and the lease interest of an Upper Victoria Harbour site for no more than fair market value plus process costs if negotiations for purchase break down. The preliminary engineering analyses indicate that an Upper Victoria Harbour site offers advantages over the McLoughlin site. The PRT is concerned that there will be potentially substantial costs to revise the business case if an Upper Victoria Harbour site is selected after the ongoing work on the business case based on the McLoughlin site (Option 1A) is complete or largely complete. The added work would occur for Ernst & Young, Stantec and the PRT. However, how a delay awaiting the resolution of the Upper Victoria Harbour site alternative would affect provincial and Federal funding needs to be considered as well.

The business case will include a year-by-year cash flow. This information needs to be communicated to the member jurisdictions so that they can develop appropriate financial plans. Peter Adams is working on cost allocations. The philosophy for cost allocation will be discussed in a mid-December meeting. Gary anticipates appending this analysis to the business case. Rita Estock of the CRD joined the meeting for a brief time to describe the cost models being used. The PRT suggested that the software "Scenario Builder" may be a useful tool in presenting this information.

Cost efficiencies in design and construction for alternative delivery methods will be developed based on input from Stantec to Ernst & Young. Gordon will forward some information on other studies and surveys on this topic to Gary. Each member of the PRT executed a confidentiality agreement.

## **Next Steps**

Issues raised today that will require follow-up by Ernst & Young were summarized by Gary:

- Sensitivity analysis on construction inflation, labor costs and discount rates
- Evaluate successorship requirements, options for complying and effects on staffing including what is in current collective agreement
- Gather data on contract operations typical levels of profit
- Insure that DB and DBO receive evaluation comparable to that provided for DBFO
- Forward market sounding details to PRT

- Forward August 20 letter about MCD requirements for business case
- Follow-up with MOE and MCD on potential consequences of delaying business case until the availability of an Upper Victoria Harbour site is known
- Follow-up with Diana Lokken on rate impacts
- Follow-up with Province about affordability analysis
- Forward CRD approval steps and schedule (Dave to do)

### **Deliverables from Ernst & Young**

- Risk registry identifying and ranking risks
- Financial and risk analysis
- Draft business case

The schedule for these deliverables was still in the process of being finalized at the time these notes were prepared.

### **Summary of PRT Preliminary Recommendations**

Based on this preliminary, initial discussion the PRT offers the following recommendations:

- The CRD should carefully consider the potentially significant costs to revise the business case if work continues on the business case based on the McLoughlin plant site (Option 1A) and an Upper Victoria Harbour site is later selected. Added work to revise the business case would be required by Ernst & Young, Stantec, the CRD staff and the PRT if the plant site is later changed. However, the schedule and related provincial and Federal funding implications of delaying work until the Upper Victoria Harbour site alternative is resolved must also be carefully considered. Because of the potential advantages of an Upper Victoria Harbour site, the CRD should take all reasonable steps to acquire an Upper Victoria Harbour site.
- Interaction with PBC should be aggressively pursued by the CRD to promote ongoing communication to avoid any surprises when PBC later reviews the business case.
- Attempts should be made to resolve any disagreements with the Province about the business case before the business case is submitted to the Treasury Board.
- Qualitative issues related to each delivery method should be carefully evaluated in addition to evaluating the Net Present Value of each method.
- The CRD should be cautious about using OCPs for design flows.
- Sensitivity analysis on cost and rate impacts should include factors such as the number of plant operations and maintenance staff, inflation, discount rates, flow of cash outlays, receipt of grant funds over the construction period and wastewater flows based upon population projections and economic development. The PRT is developing a spreadsheet that it will offer to efficiently conduct this sensitivity analysis.



- When evaluating alternative delivery methods, DB and DBO should receive attention comparable to DBFO. Traditional DB as well as progressive or collaborative DB should receive comparable attention.
- Evaluate what others have done to address the requirements of successor staffing.
- In evaluating political risk, voter approval requirements for certain types of contracts should be taken into account.
- Consider the software “Scenario Builder” as a useful tool in presenting cost allocation information.

## AGENDA

### PEER REVIEW TEAM MEETING

DECEMBER 2, 2009

Time: 8:30 AM-5:00PM

Location: CRD Building, 625 Fisgard Street, Victoria, BC

8:30-8:40	Introductions	All
8:40-10:15	Information about CRD and the Project	CRD, Stantec, Ernst & Young
10:15-10:30	Break	
10:30-Noon	Business case approach, schedule	Ernst & Young
Noon-12:45	Lunch	
12:45-2:00	Business case approach, schedule	Ernst & Young
2:00-2:15	Break	
2:15-3:00	Cost, finance and tariff issues	Ernst & Young
3:00-4:30	Review team scope, CRD expectations	CRD, Ernst and Young
4:30-5:00	Next steps, schedule for review team activities	All

(Note: Questions from peer review team and discussion will occur in each of the agenda items.)

***APPENDIX C  
PRT COMMENTS ON PROJECT DELIVERY  
OPTIONS DISCUSSION PAPER AND RISK  
REGISTRY***

**Peer Review Team Comments (January 15, 2010) on Discussion Paper “The CRD, Core Area Wastewater Management Program, Potential Delivery Options” dated January 6, 2010 and on the Risk Registry, dated January 10, 2010.**

The Peer Review Team (PRT) recognizes that the subject documents are working drafts and that some of the comments offered herein may already be in the process of being addressed by ongoing work. These PRT comments are offered at this time in hopes that they will be helpful in the continuing work on the business case.

**Delivery Options Discussion Paper Comments**

1. DBO is not discussed or presented as a viable program delivery option. The reasons this omission could be problematic are:
  - (a) the “operating” component of a DBO serves to induce the successful project proponent to design and build facilities that will endure during the operating term with less likely or foreseeable issues than facilities where the proponent is not responsible for design or construction after the warrantee period;
  - (b) in comparison with the DBFO alternative, the DBO approach would allow the CRD to proceed with a design build with financing from the Municipal Finance Authority of British Columbia instead of the DBFO private placement financing, which could result in financing savings of up to two to three points on the CRD portion of capitalization – this of course could be substantial (in the order of \$90 million over the amortization period and projected inflation) given the project capital cost and the CRD’s portion;
  - (c) the point spread discussed in paragraph (b) is amplified (doubled) if the Province requires the CRD to also borrow the provincial portion of capitalization such that the Province pays down its portion of the debt instead of granting its portion outright;
  - (d) it is arguable the CRD would be out of compliance with the Province’s Capital Asset Management Framework which obligates a public sector funding recipient to review the use of alternative procurement methods in its business case including public private partnership, which must include the DBO alternative;
  - (e) if the CRD proceeds with a DBFO, a limited number of teams will compete for the assignment. The industry has seen a distinct drop-off in interest if the financial component is included in such projects, as there are a limited number of credible teams with financing available on a scale of the CRD project (especially in the current economic climate);
  - (f) Ernst & Young stated in a memorandum dated January 11, 2010 that based on feedback received from the CRD Committee and the Province, the DBO option could be added

back to the plan. For this reason, Ernst & Young retained the DBO column in the risk registry but failed to include it in the delivery options paper.

2. We are concerned that the exclusion of a DBO and the mere inclusion of a DBFO as the PPP alternative may portray the PPP option as a “throw away” as opposed to a bona fide option. In the context of a project as large as the CRD project, a DBFO approach may not appear as attractive as a traditional or “hybrid” approach at the end of the comparison process. On the other hand, a DBO option may compare favourably with the traditional or “hybrid” approaches. This concern is underlined by note “a” on page 10 of the discussion paper where it is stated that all DBFO options are anticipated to generally use a maximum of up to one-third private sector financing for capital costs. Not only is the private sector financing more costly overall, but the Note fails to recognize that the Province may require the CRD to finance the provincial one-third portion of the financing under the grant scheme.
3. In the tables contained on pages 10 to 12 of the discussion paper, there is no summary of who would own the facilities in relation to each of the options. It is stated on page nine that the CRD would own all facilities regardless of the procurement method (under the heading “Option B: Hybrid Approach”). Despite this statement, the public private partnership option should include a discussion of whether the CRD should or should not own some or all of the facilities. If it is assumed that the consultant and the panel are considering the potential program delivery options, it is necessary and appropriate to explore the option of someone other than the CRD owning the facilities for a period of time (for example, doing the operating phase of a DBO) in the context of occupiers liability law, labour law, accountability for the project and other reasons.
4. It would be useful to define the difference between progressive and performance design build. If progressive design build is defined as involving more than a 30% design, the PRT has concerns about this approach. The paper seems to be slanted in favour of progressive design build, as noted in Ernst & Young’s January 11, 2010 memorandum. We suggest that the options be presented in a more objective manner.
5. The discussion paper identifies the three procurement options proposed to be compared by Ernst & Young but the paper does not contain an actual comparison of the potential program delivery options. The paper identifies the program components, the potential procurement methods (lacking a clear discussion of DBO), the assessment criteria applicable to the delivery options, and a number of background appendices. The discussion paper, however, fails to compare the delivery options. On page 15, it is stated that the final business case will analyze each procurement method and assess each component of the program against these criteria. Only after completion of the financial analysis, risk analysis and MCA analysis will a recommendation be feasible on procurement matters. At this stage we should be comparing the program delivery options based on information available to date, noting that the final comparison and recommendations will be provided after completion of the financial analysis, risk analysis and MCA analysis.

6. The Multiple Criteria approach is a good method of evaluating the options but we need to see how the criteria will be applied, valued and ranked. The current list of criteria is quite broad.
7. We would like to state again that any discussion of potential program delivery options is premature until the CRD ascertains whether or not it is in a position to control property that may be used for a central main wastewater treatment facility in lieu of McLoughlin Point.
8. Both Appendix B (entitled “Summary of the Market Sounding and Stakeholder Consultation Report, April 2008) and Appendix C (Description of Potential Delivery Options) are based not on Ernst & Young analysis, comparison and recommendations, but on Ernst & Young’s interpretation of the industry and stakeholder consultation on procurement as described in the report “Market Sounding and Stakeholder Consultation” dated April 2008. Accordingly, Appendices B and C do not contain an objective analysis of the advantages and disadvantages of the various procurement options, and merely constitute a subjective interpretation of the industry and stakeholder consultation. Any member of the CRD committee or senior staff would accordingly be misled to think that this discussion paper provides a logical objective analysis of the procurement options when, in fact, it is merely setting up the criteria and parameters for a future analysis and comparison. The market sounding is out of date in regard to the availability of financing.
9. One could review the relative strengths and weaknesses of the procurement options set out in the appendices, and comment on each one of them, but in the interests of practicality and staying on budget, we have assumed that the comparisons set out in the Schedules are merely background information and the PRT will have an opportunity to study and comment on the real comparisons and recommendations when Ernst & Young provides same.
10. Will risk-adjusted prices be developed for each delivery method?

## **Risk Registry Comments**

### General Questions/Comments:

1. It would be helpful to have a description of how these risks were evaluated and by whom, in terms of likelihood and impact.
2. It appears that the allocation of risks shown with yellow rankings is to be described later. When are we going to see the rankings and mitigation plans for those not yet filled in on the table?
3. Where are the risks related to technology i.e. the system as designed does not work, the environmental risks in dealing with sludge treatment and disposal, the risk of no market for bi-products of heat and land application of bio-solids, etc?
4. Where are the full descriptions of the risks and the associated assumptions in terms of who is going to be responsible for what? As pointed out below, different assumptions can be made which would then change the indicated expectation e.g. from transferred to shared risk.

5. What is the scale of the risk rankings? Numbers on chart range from 2 to 4. Is it a 1-4 scale? 1-5? 1-10?
6. On the design/construction risks, fairness would suggest that, with CMAR and maybe Progressive DB depending on its definition, “Retained Risks” be somehow footnoted to indicate that the owner does have an “errors and omissions” claim on many of these against the design engineer.

Precision of risk description - The register would be improved if many of the risks were broken down and separately stated based on what caused the risk to occur. The contracts typically provide that the owner bond retained risk not just on the occurrence of the risk, but most fundamentally on the cause of the risk. The following risk register items are examples of where the issue of causation is blurred, and would best be separated based on cause (or, alternatively, it made clear that the cause of the risk occurring is not an “uncontrollable circumstance” or “relief event”).

- PC1 (Delays during design)
- CR13 (Construction delays)
- CR8 (Facility not completed on time)
- OP1 (Maintenance costs higher than expected)
- OP5 (Operating costs higher than expected)
- OP14 (Failure to meet contract standards)

Risks that can be either retained or transferred - This part of the chart needs to have some method of dealing with risks that can be legitimately retained or transferred, based on owner preference, market acceptance and perceptions as to cost. The current format forces one choice or the other. In general, the choice to retain or transfer such risks is a choice that is independent of the delivery methods. For example, differing site conditions/geotechnical risk can be transferred or retained under any method. So can permitting terms and conditions risk (except using CMAR).

Risks Intrinsic to or Characteristic of a Delivery Method - One of the limitations of using a chart like this to try to encompass all of the considerations in determining the preferred delivery method is that, by encapsulating all risks under the rubric of “retain, share or transfer”, risks that are intrinsic in or characteristic of the delivery method itself are missed or underemphasized. These risks are better characterized as “higher or lower”, not “transferred or retained”. Here are some examples:

- The risks of disputes between designer, builder, operator, equipment supplier and financial firm. (Higher and not transferred in DBB, CMAR; Lower and transferred in DB, DBO, DBFO)
- Risk that best design concept will not be utilized. (Higher in DBB, CMAR, and lower in DB, DBO and DBFO, due to absence/presence of design competition and of participant collaboration)
- Risk of change orders (higher in DBB, CMAR, and lower in DB, DBO, DBFO)

- Risk of bid protests (higher in DBB, CMAR; lower in DB, DBO, DBFO)
- Risk of late stage price certainty (higher in DBB, CM; lower in DB, DBO, DBFO)

The analysis would benefit if these types of factors could somehow be explicitly considered.

Risks Omitted – We need to be sure risks worth noting haven't been omitted. We don't see clearly delineated the following:

- Change In Law (Noted in OP9 but applies in all phases; and its not just effluent standards)
- Force Majeure
- Condemnation/Eminent Domain
- Receipt of Influent Outside Assumed Influent Parameters
- Non-Compliance With Industrial Pre-Treatment Programs
- Insurance Unavailability
- Insurance Deductibles or Exceedences
- Obsolete Technology

Financing - The financing register could use further development. In particular:

- Risk of achieving financial close (provincial financing may be more certain than bank financing in this environment)
- Risks of refinancing (provincial debt solutions don't have this risk) (DBB, CMAR, DB, DBO, DBFO, private bank solutions do have this risk)

#### Site Acquisition Risks

SA4-Why is the Likelihood of alternative sites given only a 3 when alternative sites are being actively pursued?

#### Stakeholder and Process Approval Risks

SA7 - Should say under the heading "Description": "CRD is obligated to obtain the approval of the electors [not assent of electors] for contracts exceeding five years under which the CRD incurs a capital liability". It should not say "election" or "assent of the electors". Under the heading "Cause", the CRD board does not have the option of deciding whether to hold approval of the elector consultation. This is a statutory requirement as a precondition to the validity of the contract. The risk of the CRD seeking approval of the electors is shown as transferred for DB, DBO and DBFO. If the CRD seeks the approval of the electors, the risk would belong to the CRD. The legislation empowers the Province prior to procurement to grant the CRD an exemption from the obligation to obtain the approval of the electors.

SA15 – The risk of a change in the scope of plans by the CRD is shown as transferred for DB, DBO and DBFO. If the CRD changes the scope, the risk would belong to the CRD.



SA13 and SA16 appear to be duplicates. Also we wonder about the low rating of 2 on Likelihood given the past issues with the Western Communities wanting to go their own way.

### Planning and Design Risks

PC5 – The risk of inadequate planning phase work or project specification preparation is shown as shared or transferred for DB, DBO and DBFO. Project planning and the preparation of adequate specifications is the CRD's responsibility and the risk would belong to the CRD.

PC7 – The risk associated with obtaining permits in a timely way is shown as retained. It can be shared in DB, DBO and DBFO. This can be done by contractual requirements the contractor to submit all required permit information to the permitting agency by dates certain. The contractor bears the risk of submitting a complete and properly completed permit application including all required support information by the specified submittal date. Any delays from failure to do so are at the contractor's risk. The failure of a regulatory agency to respond in a timely way to a complete, on time and adequate permit application remains the owner's risk. The Federal Source of Funding Requires the CRD to comply with a complete Federal Environmental Assessment, which is a lengthy, expensive and risky process.

### Construction Risks

CR9, 10, 11 and 18 (There are two CR9 items listed, one for McLoughlin and one for Hartland) – Geotech risks are shown as shared for Performance DB, DBO and DBFO. Geotech risks can be completely transferred to a DB, DBO or DBFO contractor or completely retained by the owner. The downside of transferring all risk to the contractor is that the contractor may include contingency costs for adverse geotech conditions that are never encountered. To avoid this, another option is for the owner to retain the geotech risks. Partnerships BC has stated in all of its literature the geotechnical risk is to be transferred to the private partner.

CR3 – The risk of unexpected inflation causing construction cost increases beyond the fixed design-build cost is shown as transferred in DB, DBO and DBFO. Complete transfer of inflation risk to the contractor can result in the contractor including a contingency cost for inflation that never occurs. An alternative approach is to share the risk by tying the bid prices for certain commodity components of the bid (concrete, steel, copper for example) to cost indices for these components. The final prices paid for these components are based on the indices at a specified time after the bid, one year for example. If the index goes down, the price paid goes down. If the index goes up, the price paid goes up. It is possible that the contractor will pay more for the indexed components than the index-adjusted costs. In that event, the contractor bears the cost above the index adjusted cost. Often the components involved in the index adjustments comprise only about 25% of a wastewater treatment plant cost.

CR7 – The risk of strikes is shown as transferred in DB, DBO and DBFO. A commonly used approach is for the risk of local strikes to be borne by the contractor and the risk of national strikes to be borne by the owner.

CR8 – The failure to construct the plant within the contractual time frame is shown as retained for the DB options. This is typically a risk transferred to the DB contractor.

### Commissioning Risks

PC5 – The risk of undersized equipment because it is too small to handle the flows actually received at the plant is shown as transferred in DB, DBO and DBFO. The CRD will be responsible for defining the influent flows and loads that must be treated by the DB, DBO or DBFO contractor. It is the CRD's risk that the flows and loads may be greater than specified by the CRD resulting in undersized equipment.

### Operating Period Risks

OP7 - The risk that population growth occurs faster than expected is shown as a transferred risk for DBO and DBFO. The CRD will be responsible for defining the influent flows and loads that must be treated by the DBO or DBFO contractor. It is the CRD's risk that the unexpected population growth results in flows and loads greater than specified by the CRD.

OP3 – Problems integrating biosolids facility and WWTP is shown as transferred for DBO and DBFO. This would be true only if the same DBO or DBFO contractor is responsible for both the biosolids facility and the WWTP.

OP5 – The risk that the population growth occurs slower than expected resulting in an inefficient, oversized plant is shown as a transferred risk for DBO and DBFO. The CRD will be responsible for defining the influent flows and loads that must be treated by the DB, DBO or DBFO contractor. It is the CRD's risk that the flows and loads may be less than specified by the CRD resulting in an oversized, inefficient plant.

OP8 – The risk of higher O&M costs due to unexpectedly high inflation is shown as a transferred risk in DBO and DBFO. This is normally treated as a shared risk. The shared risk approach is to adjust the O&M cost annually based on an agreed upon cost index or indices. This avoids the contractor including contingency costs in its bid for inflation that may not occur. The contractor shares in the risk because actual costs, even after the inflation adjustment, may exceed the contractual O&M costs. In that case, the contractor bears the risk of O&M costs that exceed the inflation adjusted O&M amount.

OP9 – The cost to change the design to cope with higher effluent standards is shown as a transferred risk in DBO and DBFO. The CRD will be responsible for specifying the effluent quality that must be produced by the DB, DBO or DBFO contractor. It is the CRD's risk if future regulatory requirements are made more stringent after the contract is negotiated and signed.

OP11 – The risk associated with an inadequate biosolids system is shown as retained in Performance DBO. It is the contractor's responsibility to provide a biosolids system that meets the performance requirements specified by the CRD. This risk would be transferred to the contractor in Performance DBO.

OP18 – The CRD must obtain a discharge permit. The CRD would retain risk associated with contraventions of the permit. However, a private operator could be responsible for contractual service levels and be obligated to pay penalties to the CRD for any contraventions of the permit.

### Planning, Design and Pre-Construction Risks

CF1 – A change in interest rates before the contract is signed is shown as retained for DBFO. Would not this depend on how long the rates offered by the Proposer are open for and under what conditions?

CF2-What is meant by reasonable terms? Cannot this also be shared?

CF3-Is it not possible to transfer or share exchange rate risks at least within a particular range and for a defined period?

CF4 – The risk of major contractor or operator failure (bankruptcy) is shown as transferred in DBO and DBFO. To achieve this transfer, care must be taken first in establishing a financially capable project Guarantor for the DBO or DBFO contractor during the selection and negotiation process and having contractual provisions that protect the owner against adverse changes in the Guarantor's financial status during the life of the contract.

Force Majeure – We do not see this addressed. In any event, the risk would be retained by the CRD.

***APPENDIX D  
AGENDA AND NOTES FROM SECOND PEER  
REVIEW TEAM MEETING***

**BUSINESS CASE PEER REVIEW TEAM  
MEETING NOTES  
FEBRUARY 2-3, 2010**

**Attendees:** Peer Review Team – Gordon Culp, Eric Petersen, Don Lidstone, George Raftelis, Arn van Iersel; Ernst & Young – Gary Morrison; Stantec – Dave Walker; CRD – John Holt, Dwayne Kalynchuk, Tony Brcic.

**Meeting Agenda** – see attached

**Meeting Notes**

February 2

A site that is an alternative to the McLoughlin site is under consideration by the CRD but the required analysis is at least two months from completion. The site is bigger and has savings potential in terms of the facility but would require a longer outfall. The Province has been advised about the site and its potential to affect the business case. However, because the site availability is uncertain and the Province wants a business case as soon as possible, the business case is proceeding based on Option 1A that includes the McLoughlin site. Further evaluation of the alternative site may begin next week.

The current economic situation is causing the Province to examine project scopes very carefully. The push to include resource recovery is contrary to the need to minimize costs.

Landfill had been planned as the backup biosolids plan but it has been removed from the plan at the political level. There is no backup plan at the moment. The staff will be going back to the committee in the next 2 months.

Rezoning of the Saanich East site is currently under discussion.

The Federal government seems pleased with the Federal business case application sent in earlier. The CRD is looking at funding options – Build Canada, Green Fund, P3 Canada (West Shore plant may be right size for P3 Canada). Federal funds will be last in after the Province. Federal funds expire in 2014 but it is understood that draws could be made against the fund until March of 2016. Building Canada funds will require an environmental assessment that has been taken into consideration in the project schedule. It may be necessary to break the project into smaller projects because of funding considerations. There may also be the need to apply for Federal funds early so that they can be drawn down in time.

The CRD should seek an exemption from a referendum from the inspector's office.

The Province's one third of the funding is the only portion of the project that would potentially be privately funded. The nature of the Province's funding is yet to be resolved.

"Progressive" DB is considered the CRD consultants to involve 25-30% design. The typical use of this term involves 65-70% design. This needs to be clarified because the potential for innovation by project proposers is much less at 65-70% design.

The business case is going to rely on multiple criteria analysis without weighing or assigning points to criteria. May need to refine by elaborating on selection of criteria. Need to verify with Partnerships BC that this approach will be acceptable. Partnerships BC had asked for more information on how the MCA criteria were selected. Ernst & Young will check on what PBC expected for MCA criteria and weightings.

The PRT expressed concern about lack of explanation of how the delivery methods were selected for the components of the hybrid approach. An updated discussion paper will address the selection of delivery methods involved in the hybrid approach. This paper will be available this week. Also, the basis for the costs in the business case will be provided. The PRT was advised that there was not a full financial analysis with respect to the selection of the Hybrid components. Rather it as noted above was based on the MCA criteria.

The risk registry is being rebuilt to include some items that had been dropped. Risk profiles for the separate wastewater treatment plants, the wastewater treatment plants plus biosolids handling and energy recovery are being developed.

Any evaluation of the range of projected household costs of \$250-\$450 per household is not included in the PRT scope or in the business case. Cost allocation to municipalities will take wet weather flows into consideration as a factor in equitable allocation and to encourage I/I and CSO control. Source control bylaws are in place and are very good.

The Business Case P3 option is DBFO. It is likely to cost proposers on the order of \$8 million to prepare a proposal for the entire system as one package. May need to split the \$666 million project into smaller projects because a project that large may be beyond the limit of the market. A concern with splitting into different, separate projects is that it may get different operators involved in the system.

There will likely be more companies interested in DBO than DBFO because of financing difficulties. The wastewater industry will be stretched by a \$660 million DBFO project.

In the hybrid approach, the McLoughlin site is so limited that the CRD believes there is not much potential for innovative approaches with DBO or DBFO at that site so DB was selected. The Saanich East plant will be the first project and there is a lot of public interest. To accommodate public input to the design of that facility, CMAR was selected for Saanich East. MOE says the biosolids facility must be on-line for the Saanich East

plant to go on-line because of the need to process the solids from Saanich East. This makes it difficult to phase the core area.

DBFO procurement is complex and may require 9 months lead time. The PRT suggested there may be some merit in a dual procurement approach in that it may attract more companies. Dual procurement would give the bidders the option to propose with and without financing.

Another concern with DBFO is terminating the contract due to poor performance during the operating period. To terminate a DBFO contract, the CRD would have to write a check for hundreds of millions of dollars to repay the capital cost financed by the company. This is in contrast to a DBO contract where only a relatively small (\$1-\$2 million) convenience termination fee is required.

The Province will want to use a discount rate consistent with Partnerships BC methodology. The PRT suggested a sensitivity analysis for a range of discount rates. The Province now desires to fund one-third of all components. The PRT suggested that sensitivity analysis also be run on inflation rates. Ernst & Young indicated they may look to the CAPM discount rate methodology from Victoria, Australia.

GRD Metro Vancouver was planning a \$600 million DBFO water treatment plant but decided to use a conventional delivery method due to public outcry.

The CRD will need to educate the public and others about the financial, political and practical issues related to DBFO and the complexity of implementation. This large complex wastewater system is significantly different than road or hospital projects. Need to have discussions with policy makers. The permits will drive capital costs so need to do education on the effects of permits. Prolonged evaluation by the Province could jeopardize Federal funding because of the 2014 deadline for Building Canada funds.

Stantec is developing the percent savings from alternative delivery. The PRT expressed concern that the savings shown in the current draft of the business case were lower than experienced in other projects. Also the current Value for Money analysis showed the alternative delivery methods to have a higher net present cost than traditional. The PRT noted they had never seen this result before. The business case consultants advised the PRT that the Value for Money analysis was being revised and the PRT should ignore the version in the current draft. The PRT suggested that if this relative result persist that sensitivity analysis should be done to determine what percent savings would be required for the alternative delivery methods to equal the net present value of the traditional approach.

The PRT pointed out that although the CRD may be confident that it can hire the staff to operate the new treatment plants that other municipalities who were similarly optimistic were not successful in doing so. Examples cited were new water treatment facilities in Santa Fe and New York City. Seattle and Phoenix elected to use DBO because of concerns about recruiting and retaining a new work force for new treatment facilities.

In regard to governance, a separate municipally-owned agency set up to carry out the CRD program may not get MFA funding. The Federal government does not want to be part of governance. The CRD is leaning toward a steering committee.

A technical memo on the Clover wet weather facility is currently being drafted. The CRD is hoping for a deferral or elimination of this facility.

MBR facilities on part of the flow at the West Shore and McLoughlin have been included for resource recovery. However, there is little to no market for the reclaimed water. Could be an area for cost reduction.

The final business case is to be delivered on February 10. The PRT preliminary findings report is to be delivered by 1 PM on February 18. The PRT can refine their preliminary findings report for presentation on February 24 to the CALWMC. The entire PRT will be present at the February 24 CALWMC meeting. CALWMC will act on the business case on March 3 with Board action on March 10.

Affordability is not to be addressed in detail by the PRT. A separate consultant has been hired to determine how the cost of the project should be shared amongst the municipalities and the potential impact on the ratepayers. Ernst & Young is to ask PBC what they are looking for relative to affordability

### February 3

The PRT developed an outline and work plan for its report.



**CRD BUSINESS CASE  
PEER REVIEW TEAM  
AGENDA**

February 2-3, 2010  
CRD Building  
Victoria, British Columbia

**TUESDAY, FEBRUARY 2 (See attached expanded agenda for this portion of the meeting)**

8:30-9:00	Summary of current status of project, schedule, site selection, major issues, etc.	CRD
9:00-Noon	Presentation of draft business case	E&Y, Stantec
Noon-12:30	Lunch	
12:30 – 5:00	Finish presentation of draft business case, discussion of panel comments	CRD, E&Y, Stantec

**WEDNESDAY, FEBRUARY 3**

8:30-Noon	Panel report approach, outline, content	CRD, Panel
Noon-12:30	Lunch	
12:30-1:30	Finalize panel assignments, plan and schedule for completing panel report	CRD, Panel

**Capital Regional District**  
**Core Area Wastewater Management Program**  
**Agenda**  
**Tuesday, February 2, 2009 - 9:00am to 5:00pm**  
**CRD Building • 625 Fisgard St., Victoria - Room: TBD**

Purpose:	1. Review current draft of business case. 2. Discuss/clarify outstanding issues 3. Review schedule and deliverables to completion
Attendees:	CRD: Tony Brcic Stantec: Dave Walker EY: Gary Morrison PRT: Gordon Culp, Eric Peterson, Don Lidstone, George Raftelis, Arn van Iersel

TOPIC	WHO	DESCRIPTION
1. Confirm scope of review	Tony	Assume limited to provincial business case submission and supporting analysis.
2. Program Status Update	Tony / Dave	Alternative site update West Shore update Other matters Still using assumption of Option 1A for business case
3. Responses to prior issues/questions from the PRT	Gary	Gary to respond to questions from PRT on prior drafts of work to date  PRT to identify any specific issues that Gary should focus on during the rest of the day (special areas of concern or areas requiring further clarification)
4. Business case process	Gary	Workshops <ul style="list-style-type: none"> <li>- Risk</li> <li>- MCA</li> <li>- Updates to Committee</li> </ul> Discussion papers <ul style="list-style-type: none"> <li>- Procurement options</li> </ul> Open and transparent process Input of content
5. Review of expected funding commitments	Gary	CRD commitment – all MFA Provincial assumptions <ul style="list-style-type: none"> <li>- Grants during construction for traditional/DB</li> <li>- Guarantees for DBFO components</li> </ul> Federal grants <ul style="list-style-type: none"> <li>- BCF Major Infrastructure Fund</li> <li>- Infrastructure Canada Green Fund</li> <li>- P3 Canada for West Shore?</li> </ul>
6. Interactions with Province	Gary	Expected submission and review process Business case template understandings PBC best practices

TOPIC	WHO	DESCRIPTION
		Generally open channels (until recently)
7. Procurement options	Gary	Overview of options under consideration <ul style="list-style-type: none"> <li>- Traditional</li> <li>- Hybrid</li> <li>- P3</li> </ul> Overview of how options were defined
8. Risk status	Gary / Dave	Review rankings, level of quantification Next steps
9. MCA status	Gary / Dave	Review draft Next steps
10. Financial analysis	Gary	Status update <ul style="list-style-type: none"> <li>- Discount rates</li> <li>- Funding assumptions (interest rates, inflation, debt, equity)</li> </ul> Next steps <ul style="list-style-type: none"> <li>- update with risk &amp; efficiencies</li> <li>- update provincial assumptions on funding contributions</li> </ul>
11. Other issues	All	Governance Approval of electors Site issues Other?
12. Resource recovery	Gary / Tony / Dave	Brief review of approach with Province <ul style="list-style-type: none"> <li>- Joint ventures</li> <li>- Alternative bid process</li> </ul>
13. Schedule and Timing of PRT submission	All	Business case completion date Committee meetings Board meeting Report submissions for PRT Submission requirements of business case

\*This agenda will be informal – Q&A are anticipated throughout the day.