

MEMORANDUM

To:	Richard Pucci Director of Operations	For info of:	City of Prince Rupert
From:	Stephen Lidington Vice President, Colliers Project Leaders	Doc Ref:	
Project:	Water Treatment Plant	Date:	Jan 11, 2023
Subject:	Potential Delivery Methods for the Water Treatment Plant		

Dear Richard,

This memorandum summarizes potential delivery methods for the proposed City of Prince Rupert (the City) Water Treatment Plant (WTP) (the Project). This document lists procurement methods considered, and the advantages and disadvantages of each method based on our understanding of the Project. It is our understanding that the City is considering establishing a Municipally Controlled Corporation (MCC) to govern the Project upon substantial completion of the facility. Considerations regarding this implementation approach have also been discussed where appropriate.

The key objective for the City is to provide reliable delivery of high-quality potable water. The current system requires upgrades to bring water quality to Provincial regulatory standards. Technically, this can be done through development of a new WTP. Operationally, this must be coupled by the provision of reliable operators with the qualifications to operate the more sophisticated facilities. The capacity of the City to operate the water system is limited and the City has faced continual challenges with retaining appropriately qualified operators to deliver existing services. This challenge would be amplified with the implementation of a treatment system that requires operators with higher levels of training and certification.

The discussion and consideration of project delivery methods within this memorandum contemplates the ability for the Project to address this key objective.

1.0 Project Delivery Methods

There are several project delivery methods that may be considered for the delivery of the Project. When evaluating models, the advantages and disadvantages of each option should be considered, and the decision should align with your needs and desired outcome for the Project. The following is a shortlist of project delivery methods discussed in this memorandum. Under all of the models listed below, the City retains full and complete ownership of the water treatment facility at all times and is responsible for defining the operating requirements of the WTP. Rate setting authority will remain with the public sector in all cases.

- Traditional & Hybrid Procurement Methods (Municipal Ownership and financing of construction)
 - Design-Build (DB)
 - Design-Bid-Build (DBB)

- Progressive Design-Build (PDB) - can be considered a hybrid model
- Integrated Project Delivery (IPD) - can be considered a hybrid model
- Alternative Delivery Models (Municipal Ownership and private financing of construction)
 - Design-Build-Finance (DBF)
 - Design-Build-Operate-Maintain (DBOM)
 - Design-Build-Finance-Operate-Maintain (DBFOM)
 - Progressive DBFOM

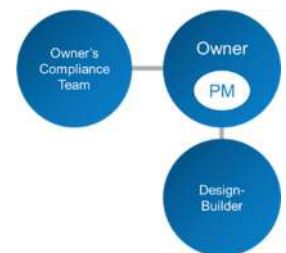
1.1 Traditional & Hybrid Procurement Methods

A review of infrastructure projects delivered using traditional procurement reveals inherent systemic challenges such as:

- The budget and schedule for projects are typically locked in very early in the process before the detailed design is completed. The public sector owner is exposed to budget increases that can cause delays for Council or treasury approvals.
- The detailed asset design may be focused on the asset itself rather than the services it will be called upon to provide. Thus, the designer generally has little incentive to integrate operating costs or service quality considerations into the asset design. To present a winning bid, the designer may trade off life-cycle efficiency to achieve lower construction costs.
- The City funds construction as it progresses with full capital payment due upon substantial completion of the owner administered contracts.
- This approach works well when the public sector has a higher certainty on price and scope, and capital is available upfront. If capital is not available in full, the City would need to secure financing to pay for the design and construction.

1.1.1 Design-Build (DB)

DB is a method of project delivery where the City contracts with a single entity to provide both the design and construction of a facility based on a building description and a performance specification. The Design-Builder is selected based on experience and qualifications, as well as on the fees for the preliminary design and a construction management fee. Contractually, DB offers the City a single point of responsibility and the project risks are passed to the Design-Builder who obligates themselves to provide a completed project to the City. DB provides a stipulated fixed price. The City would be responsible for operations and maintenance of the facility.



1.1.2 Design-Bid-Build (DBB)

DBB is the traditional method of project delivery in which the City has separate contracts with a Prime Consultant (PC) (architect or engineer) and with a General Contractor (GC). The City retains the PC to design the facility and produce drawings and specifications. A GC is then hired to construct the facility, for a fixed price, in accordance with the requirements of those drawings and specifications. Payments to the GC are advanced on a monthly basis as the construction progresses. The City would be responsible for operations and maintenance of the facility.



1.1.3 Progressive Design-Build (PDB)

PDB is a construction methodology that procures a single proponent for both Design and Construction. Before entering into a fixed price contract, the City and Design-BUILDER work together to define the project requirements, design, pricing, and risk. The Design-BUILDER and the owner develop a design and price that best suits their needs. Once the Design-BUILDER is engaged, the design progresses with approval to continue given by the City at different milestones in design. Once the design has progressed to late stages of design development or construction document stage, the design-builder enters a construction contract at a guaranteed maximum price. The City would be responsible for operations and maintenance of the facility.

1.1.4 Integrated Project Delivery

This model is a collaborative contracting option whereby all parties, including the City, Designer, Contractor and other advisors are bound by a single contract and share in the upside and downside of the project's results. The City would select a preferred proponent through a competitive procurement process to proceed to the validation phase in which most of the design is developed and finalized.

All parties, including the Owner, Contractor, Designer, as applicable, are collaboratively involved in developing the design and constructing the facility. All construction (and design) risks shared between all members, including the City, under the contract by way of the gainshare/painshare mechanisms tied to design and construction key performance indicators (KPIs). This incentivizes the team to collaborate and effectively manage the risks.

This model requires the City's team to play a hand-on role in executing and decision making alongside the designers and contractors. This requires a highly skilled and sufficient staff within the City's team and involves a greater level of effort than other alternative delivery models.

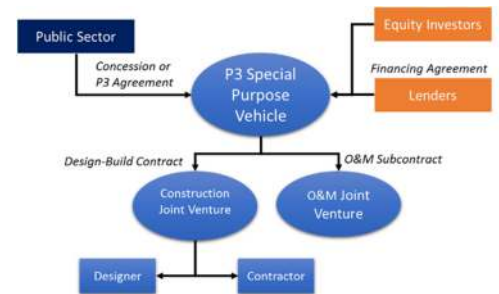
Project funding flows from the City to the other parties typically with the absence of project finance, which is difficult to secure under an IPD structure. Payments are made as the Project progresses. Each of the parties (designer, contractor, and others) are guaranteed reimbursement for 100% of their incurred direct costs, the amounts of which are confirmed through open-book Project accounting policies among all members. The City would be responsible for operations and maintenance of the facility.

1.2 Alternative Delivery Models

There are several alternative delivery models that apply a performance-based approach where the private sector assumes a major share of the responsibility in terms of risk and financing for the delivery

and the performance of the infrastructure, from design and construction to long-term maintenance. These models typically involve the integration of two or more phases of project delivery (i.e., Design Build, Operate, Maintain) as well as private financing. This financing can take the form of short-term financing during construction and may include long-term financing over the operating term.

A single contract is executed with the City and a Special Purpose Vehicle (SPV), which is a consortium of companies who come together to create a distinct business entity formed with the sole purpose of meeting project obligations. Project financing will be raised against the future cash flows owed to the SPV under the terms of the project agreement.



The SPV is selected through a competitive procurement process based on an indicative level of design. The Request for Proposals (RFP) includes design objectives with non-prescriptive criteria that guides the final product to meet the City's objectives. The City has limited input to design, but full discretion on performance criteria and output specifications.

One key advantage to alternative delivery models is that they bring in a broad range of private sector expertise and capacity to bear the risk yet have only a single point of accountability (the SPV). This approach allows for an agreement with some blend of payment at substantial completion of construction and of availability payments over time based on asset performance and quality.

The SPV is responsible for financing the construction of the facility and assumes responsibility for any cost overruns or delays that occur during construction. This agreement requires limited upfront capital from the City as the SPV will fund construction using private financing hedged against the future project revenues, in this case a substantial completion payment by the City and water usage billing over the operating term.

Alternative delivery models that include operations and maintenance (O&M) benefit from the involvement of the O&M provider in the design of the facility, enabling innovations in the initial design to achieve operational efficiencies over the long-term. This is a key advantage over models that do not incorporate operations and maintenance responsibilities; where contracts are often awarded on the basis of price and contractors may be incentivized to deliver a low-cost project that is ultimately very expensive or unwieldy to operate.

The accounting treatment for projects delivered under an alternative delivery model follows Public Sector Accounting Board Handbook Section 3150 Tangible Capital Assets. Alternative delivery models are a method of procuring tangible capital assets under a contractual arrangement in which a private contractor:

- provides some or all of the financing for a project;
- designs and builds the capital asset, and
- receives payments over an extended period of time.

Therefore, an alternative delivery model obligation is "on-book" and should be treated the same way as all other City tangible capital assets. That is, if the Project meets the requirements of the City's internal Tangible Capital Asset criteria, the City's balance sheet will record a liability for the amount owing for the private financing, and the City will record the WTP on its consolidated balance sheet as a capital asset.

The spectrum of alternative delivery models range from construction-only Design-Build-Finance (DBF) to longer-term agreements that include Operations (O) and Maintenance (M). A brief assessment of these

models follows. The project delivery mechanism for each model can also be considered. For example, if the project is executed as a typical DB project, a stipulated price is provided at the time of bid submissions, whereas if it is executed through a PDB, a guaranteed maximum price is reached part way through design.

1.2.1 DBF

- The SPV finances the construction of the facility through short-term construction financing. The City pays for the facility based on the achievement of specified construction milestones or in one lump sum payment on substantial completion. The construction financing provides an incentive for the SPV to complete the project on time to avoid carrying the cost of financing.
- The City benefits from cost-certainty through the transfer the construction cost risk to the SPV

1.2.2 DBOM

- This model is similar to the DBF but with the addition of operations and maintenance responsibilities.
- The City would enter into a single contract with an SPV to design-build-operate and maintain the facility.
- This model transfers lifecycle cost risk to the SPV, who must consider the operations and maintenance and rehabilitation costs as part of their proposal.
- The SPV would be responsible for securing a short-term loan to finance the construction of the facility. The full cost of the construction would be paid at substantial completion by the City.
- The City would make monthly availability payments to the SPV for operations and maintenance costs. Monthly payments would be subject to deductions for failure to meet performance requirements specified by the City.
- The key difference from the DBFOM is that there is no private capital at risk over the operating term. As a result, the City has less security regarding operating performance. The quality of the long-term risk transfer in a DBOM will rely on parent company guarantees or performance bonds.

1.2.3 DBFOM

- This model is similar to the DBOM but with the addition of financing over the operating term.
- The SPV is responsible for financing the construction of the facility through a mixture of short and long-term financing facilities. A portion of the capital cost (usually 50%) would be paid by the City on substantial completion, and the remainder would be financed over the long-term and paid for over the 20-30 year concession period.
- The City would make monthly payments to the SPV that would include operating costs and the remaining capital cost over the operating term. Monthly payments would be subject to deductions for failure to meet performance requirements specified by the City. This model puts private capital at risk over the full operating term of the agreement, which provides strong incentive for the SPV to perform and a high level of security for the City.
- Given the estimated capital cost of the Project, it is likely that the long-term financing would be provided by the parent company of the lead firm in the SPV, and not third-party lenders (which typically look for >\$50M investments). This provides less performance security for the City than a DBFOM with third party lenders, as the City does not benefit from the oversight provided by lenders; however, this does reduce the cost associated with long-term financing. In the

absence of third-party lenders, it will be important to ensure that the procurement results in only highly qualified companies with strong reputations to protect.

1.2.4 Progressive DBFOM

- This model includes the same scope of services as the DBFOM but adopts a collaborative approach to procurement.
- This model includes additional steps prior to awarding the contract that enable the City and SPV to collaborate and progressively develop a design solution before awarding the DBFOM contract
- A preferred proponent would be selected prior to initiating the design process. The City would sign a pre-construction contract with the preferred proponent and proceed to develop the design for the facility in collaboration with the partner. The pre-construction contract enables the proponent to commence early works where warranted, thereby reducing the delivery timeline. The preferred proponent is compensated for the work performed.
- As the design and site work progresses, development risks are understood and extinguished, avoiding risk premiums.
- Once the design and construction solution is complete, the preferred proponent presents their proposed costs in an 'open book' environment. The City can then either accept the proposed solution and award the DBFOM contract to the preferred proponent, or take the preferred design solution and continue the competitive procurement process by entering into similar open book negotiations with the next highest ranked proponent from the RFP process.

2.0 Implementation Approach

The City is proposing to lead the delivery of the project through procurement and construction, and is in the process of making a decision regarding whether to establish a Municipally Controlled Corporation (MCC) to assume responsibility for the Project upon substantial completion.

The City would establish a for-profit MCC through an order-in-council. The MCC would operate at arm's length from the City; however the City would retain a controlling interest in the MCC through the appointment of Board members. The dedicated skills-based Board of Governors would oversee the affairs of the Corporation, and represent the interests of the Corporation's primary shareholder, the City.

Given the proposed timeline for the project, it is possible that the process for establishing the MCC may not be completed prior to contract award. As a result, it may be necessary for the City to hold responsibility for the direct delivery of the project and then transfer ownership of the built asset to the MCC upon completion.

Under both traditional and alternative delivery models, the MCC would be responsible for rate setting (subject to regulations) and the collection of user fees. This revenue would be held by the MCC and used to fund operating costs, including availability payments to the SPV, in the case of alternative delivery models.

Under the traditional delivery models, the MCC could assume responsibility for operating and maintaining the facility upon its completion; this includes the responsibility for sourcing qualified

operators. The capital cost of the facility would be financed by the MCC and amortized over the long-term to be repaid along with operating and maintenance costs through user fees set by the MCC.

Under the alternative delivery models, the City could novate the project agreement (i.e. the contract with the SPV) to the MCC at the appropriate time. The MCC would become the counterparty to the agreement with the SPV and would be responsible for overseeing the performance of the SPV in accordance with the contract. Availability payments would be subject to deductions for performance failures.

Implementing the project through a MCC ensures that revenues generated by the asset are reinvested in the facility, rather than being subject to reallocation by Council.

3.0 Project Delivery Methods Advantages and Disadvantages

Advantages	Disadvantages
Traditional and Hybrid Procurement Models	
Design Build	
✓ Early cost certainty ✓ Opportunity for innovation ✓ Risk transfer to Design-Builder ✓ Accelerated schedule as construction begins before design is complete	✗ Complex early planning and commitment ✗ Performance vs. Prescription ✗ Design changes are costly ✗ Life-cycle concerns ✗ Prompt decision-making may reduce time for reviews and stakeholder input ✗ Does not provide reliable certified operators to deliver potable water services to the City
Design Bid Build	
✓ Familiar methodology ✓ Greater design control ✓ Fixed price, competitive bidding	✗ Owner at risk for design errors ✗ No input from GC during design ✗ Sequential process is time consuming ✗ Does not provide reliable certified operators to deliver potable water services to the City
Progressive Design Build	
✓ Minimizes pursuit costs ✓ Early price certainty ✓ Fosters early collaboration and teamwork ✓ Schedule typically shorter ✓ Enables fast-track delivery	✗ Requires significant involvement from Owner ✗ Risk of less innovation and creativity ✗ Post contract award changes may be costly due to Owner involvement ✗ Does not provide reliable certified operators to deliver potable water services to the City
Integrated Project Delivery	
✓ Flexibility ✓ Fosters early collaboration, teamwork and innovative risk management approaches ✓ Schedule typically shorter ✓ Gainshare ✓ Transparency in costing	✗ Requires significant involvement from Owner ✗ Pain share. Owner shares in the cost associated with design and construction risks ✗ Does not provide reliable certified operators to deliver potable water services to the City

Advantages	Disadvantages
Alternative Delivery Models	
✓ Single point of accountability ✓ Models that include OM benefit from whole-of-life outcomes and no deferred maintenance ✓ Transfers project delivery risks ✓ Schedule and cost certainty ✓ If operations transferred or shared with corporation, transfer the responsibility for sourcing reliable certified operators to the SPV	✗ Planning and procurement process is more complex ✗ Diminished direct control once the contract is entered into ✗ Post contract award changes can be more difficult to achieve/negotiate ✗ Private financing costs

4.0 Pre-Screen of Delivery Methods

The following constraints that may prohibit the City from pursuing certain delivery methods have been identified.

Project Constraints	Considerations
Operator Capacity	Operator capacity is less than adequate for the current system, with increasing challenges anticipated for a treatment system that requires higher levels of operator training and certification. Exploring long-term alternative delivery models will allow for reliable certified operators.
Budget	The federal and provincial governments are contributing \$22,106,281, and the City is contributing \$8,040,018; escalation of 2018 cost estimates are expected to exceed the agreement amount and the approved budget
Cost escalation Market volatility has increased - construction costs and escalation may continue to rise	Project delays will escalate construction costs Construction cost certainty to be developed as soon as possible Explore project delivery options to meet budget Confirm Affordability Threshold and the amount of capital that the City will have access to at substantial completion Identify priority of scope items and options to defer construction costs
Supply Chain Delays Delays can increase consulting and construction costs.	Long lead items to be identified in design and potential alternates selected. These can be mitigated through the adoption of certain alternative procurement models which allow the contractor to order materials ahead of time.
Borrowing capacity The City is nearing its borrowing capacity limit	Explore options for debt to be carried off of municipal balance sheet.
Third party contracts to be publicly tendered	Requirement of the funding agreement and applicable trade agreements
Substantial Completion Date March 31, 2024	Requirement of the funding agreement, with extension possibility; March 31, 2025 projected

4.1 Delivery Method Assessment

The table that follows provides an assessment of the delivery methods against the City's objectives and constraints.

Method	Suitable?	Explanation	Potential Implication of Delivery Model
Design-Bid-Build	No	- No potential for improved operator capacity - No private financing component involved - Owner at risk for design errors - No input from a general contractor at design - Potential schedule delays	- City is required to raise financing on its own and to fund construction costs as and when they occur - Lack of innovation or efficiency in the design and construction
Design-Build	No	- No potential for improved operator capacity - No private financing component involved - Owner at risk for design errors - Potential schedule delays	City is required to raise financing on its own and to fund construction cost as and when they occur
Progressive Design Build	No	- No potential for improved operator capacity - Cost certainty in earlier stages - Enables fast-tracking - Contractor input on designs - Less time spent on procurement	- City is required to raise financing on its own and to fund construction cost as and when they occur - Design changes can be costly - Less risk transfer
Integrated Project Delivery	No	- Provides flexibility in design and construction, but all costs shared by City - Does not provide cost certainty for the City - Requires active participation of the City in development of design and construction - City exposed to liability for project risks	- Risk is shared by the City - City is required to raise financing on its own and to fund construction cost as and when they occur
Design-Build-Finance (DBF)	No	- No potential for improved operator capacity - Private financing - Construction cost certainty - Schedule certainty - Publicly tendered - Affordability Threshold included	- City pays SPV at substantial completion based on inspection against output specifications - City retains its operations and maintenance services

Method	Suitable?	Explanation	Potential Implication of Delivery Model
Design-Build-Operate-Maintain (DBOM)	Yes	• Provision of reliable certified operators for improved operator capacity • Short-term construction financing only • Construction cost certainty • Schedule certainty • Publicly tendered • Affordability Threshold included	• Risk transferred to the party best suited to manage the risk • City will transfer operations to the SPV • Capital cost paid for entirely at substantial completion, reducing monthly availability payment amount over the operating term • Lower cost of private financing as compared to DBFOM, • Performance security achieved through parent company guarantees, letters of credit and/or performance bonds
Design-Build-Finance-Operate-Maintain (DBFOM)	Yes	• Provision of reliable certified operators for improved operator capacity • Private financing (short-term construction financing and long-term OM financing from the SPV) • Construction cost certainty • Schedule certainty • Publicly tendered • Less capital required up front as the capital cost is spread over the life of the asset	• Risk transferred to the party best suited to manage the risk • City will transfer operation and maintenance services to the private sector • City will make a substantial completion payment – amount To Be Determined • Size of financing likely would not attract third party financing and therefore project would not benefit from lender's oversight during operating period. • Additional financing costs of long term financing compared to DBOM.

Method	Suitable?	Explanation	Potential Implication of Delivery Model
Progressive DBFOM	Yes	• Provision of reliable certified operators for improved operator capacity • Private financing (short-term construction financing and long-term OM financing from Project Co) • Construction cost certainty • Schedule certainty • Publicly tendered • Spread the capital cost over the life of the asset • Expedited delivery timeline • May result in lower costs as compared to the DBFOM • Tends to be preferred by the market so may attract greater competition	• Risk transferred to the party best suited to manage the risk • Development risks shared, avoiding risk premiums included in standard DBFOM • City will transfer operation and maintenance services to the SPV • City will make a substantial completion payment – amount To Be Determined • Size of financing likely would not attract third party financing and therefore project would not benefit from lenders oversight during operating period. • Additional financing costs of long term financing compared to DBOM.

The DBOM, DBFOM, and progressive DBFOM all present viable delivery models for the Project based on the City's objectives and constraints. Given the estimated capital cost of approximately \$30M, it is unlikely that a SPV would require or attract long-term financing from a third-party lender. It is more likely that the SPV would elect to self-finance the capital cost on their balance sheet. As a result, the Project would not be subject to the due diligence and oversight from third party lenders, which is a critical aspect of the quality of the performance security afforded to the City by such models. As such, the performance security that the City would hold under the DBFOM or a progressive DBFOM would be similar to that of a DBOM and likely take the form of parent company guarantees, letters of credit and/or performance bonds over the concession period.

Provided that the City can fund the full capital cost of the project upon substantial completion, the DBOM may present the preferred model and may achieve the greatest value for money among the models considered by avoiding the cost associated with long-term private financing. Even if the City were to finance the substantial completion payment through the Municipal Financing Authority, municipal borrowing rates are more favourable to private financing rates.

It should be noted that while DBOM may be the preferred model, it is the opinion of this paper that the City remain open to other delivery models discussed. This is to increase the appeal of the project to the market and increasing the chances of a successful procurement. I.e. should the market not offer a DBOM model, then the City should be open to a DBFOM.

5.0 Community and Implementation Impact

The following is a summary of the impacts of implementation related to the use of an alternative delivery model for the project using a Municipally Controlled Corporation to execute the agreement with the SPV.

- The Crown (Province) retains ownership of the water.
- The municipality holds a water license to access that water, and the City will remain the holder of the water license.
- The City retains ownership of the water treatment and delivery system infrastructure that delivers potable water to residents.
- The governance and decision-making mechanisms within the MCC allow the City to retain control of rate setting and any revenues generated from operations of the facility.
- The MCC is wholly-owned by the City, and cannot be sold to a private company. It would act as the counterparty to the contract with the SPV to design, build, finance, operate, and maintain the facility.
- The facility will operate under the City's Collective Agreement / CUPE Union contract.
- The contract with the SPV could include a mechanism to terminate the operating contract for convenience. This provision would require the City to make the SPV whole if the model includes long-term financing, such that the SPV and their lenders are 'no better, no worse' to that point in the contract duration, including reasonable wrap-up / wind down expenses (but not for lost profits).

6.0 Next Steps

Consent from Council to investigate potential alternative operating models was received in June 2022, based on administration concerns regarding operator staffing as well as ability to fund cost over-runs. A Request for Expressions of Interest (RFEI) was advertised in October 2022. Below is a summary of next steps.

- The RFEI submissions will be evaluated to determine whether suitable partnerships could be formed with the respondents based on their proposed project delivery approaches.
- If so, a Request for Proposals will be issued, followed by review of submissions, negotiations, and award of the contract.