

**Transportation Report to
Priorities and Finance Committee
2018 March 06**

**ISC: UNRESTRICTED
PFC2018-0207
Page 1 of 12**

Green Line Light Rail Transit Project Delivery Model Recommendation

EXECUTIVE SUMMARY

The focus of this report is the recommended delivery model for procurement of the Green Line Light Rail Transit (“LRT”) from 16 Avenue North to 126 Avenue Southeast (the “Project” or “Stage 1 Project” as referenced in prior reports). The recommended delivery model is the main component of a project’s overall contracting strategy, whereby Administration, with the support of independent technical, legal, and financial advisors, evaluate and determine the method by which the project should be procured from detailed design through to long-term operations and maintenance.

An extensive and thorough two-year evaluation process to determine the most appropriate delivery model for the Project is now complete. In accordance with The City’s Council Policy CFO011 – Public Private Partnerships (P3) Policy (Attachment 1) various delivery models were investigated, ranging from short-term and long-term public private partnerships (“P3’s”) to more traditional procurement methods. The process undertaken compared quantitative and qualitative metrics, including total risk adjusted project costs as part of the value-for-money (“VFM”) assessment, and advanced delivery models that offer the best lifecycle value while meeting the project’s objectives, characteristics, timelines, and long-term vision.

As per Council Policy CFO011 - Public-Private Partnerships (P3) Policy, Administration is responsible to seek the approval of Council if it is recommended that the Project be developed as a P3. Council’s approval of the delivery model allows Administration to continue development of the Project by advancing the procurement documents and technical performance requirements. To meet the target dates for Request for Qualifications (“RFQ”), Request for Proposal (“RFP”), contract award / construction start, and to ultimately achieve opening day of the Project in 2026, it is necessary to obtain approval of the delivery model now.

Design-Build-Finance (“DBF”) is recommended as the most appropriate delivery model for the Project given the VFM analysis suggests this model offers value for money to The City. The DBF model is a short-term P3 model that combines the design and construction under a single contract and includes short-term private sector financing for the construction period. The DBF model will provide The City with many benefits, including a high degree of cost and schedule certainty, efficiency through pairing the detailed design and construction, flexibility for operations and future expansions, and reduced credit risk.

The evaluation of delivery models, and the recommended delivery model presented herein supports the Green Line LRT long-term vision, including flexibility for future expansion. This report will be followed by a report to the SPC on Transportation and Transit (TT2018-0145) focused on staging future expansion to achieve the full Green Line LRT build out.

Green Line Light Rail Transit Project Delivery Model Recommendation

ADMINISTRATION RECOMMENDATION:

That Priorities and Finance Committee recommends that:

1. Council approve Design-Build-Finance (“DBF”) as the delivery model for the Green Line LRT project from 16 Avenue North to 126 Avenue Southeast;
2. Council authorize the General Manager, Transportation, to negotiate all funding agreements with the federal and provincial governments, and the General Manager, Transportation, and the City Clerk to execute the funding agreements and any other agreements necessary to advance the procurement process. The General Manager, Transportation, and the City Solicitor will also sign off on the funding agreements as to content and form, respectively;
3. Council direct that Attachment 4 remain confidential pursuant to section 23, 24 and 25 of the *Freedom of Information and Protection of Privacy (FOIP) Act (Alberta)* until the agreements for the Project considered in this report are awarded and financial close is achieved, with the exception, of information Administration needs to share with funding partners, which will be shared in confidence;
4. Direct that this Report be brought forward to the 2018 March 19 Combined Meeting of Council; and
5. Council direct Administration to report back no later than Q4 2018 to the Priorities and Finance Committee of Council with the recommended budgets for approval including financing and confirmation of funding from the other orders of government for the Project.

PREVIOUS COUNCIL DIRECTION / POLICY

At the 2017 May 15 Strategic Meeting of Council, Report C2017-0467 (Green Line LRT: Building the Core) was approved as follows:

“ADOPT, AS AMENDED, Moved by Councillor Keating, Seconded by Councillor Stevenson, that Recommendation 1 be adopted, as amended, as follows:

That Council:

1. Proceed with Stage 1 Project based on: 16 Avenue N (Crescent Heights) to 126 Avenue SE (Shepard) subject to Council’s final approval of the alignment, station locations, and transit oriented development concept plans based on the Class 3 capital estimate of \$4.65 Billion construction cost contingent on securing funding as per #2 and #3 below;
2. Prepare the required business case(s) for submission to the Government of Canada to support a request of \$1.53 Billion plus financing to support the Stage 1 Project;
3. Prepare the required business case(s) for submission to the Government of Alberta to support a request of \$1.56 Billion plus financing to support the Stage 1 Project;
4. Request the Mayor to work with administration in the beginning making the case for funding of the rest of the line, beginning as soon as possible;
5. Direct Administration to bring a revised financial strategy, pending confirmation of federal and provincial funding, and including capital, financing and operating cost models, to Council as part of the 2018 Business Plan and Budget deliberations; and
6. Direct that Attachment 2 and Distribution #3 remain confidential pursuant to Sections 24(1)(a), 24(1)(b) and 25(1)(b) of the Freedom of Information and Protection of Privacy Act, until the Green Line construction has been completed.

**Transportation Report to
Priorities and Finance Committee
2018 March 06**

**ISC: UNRESTRICTED
PFC2018-0207
Page 3 of 12**

Green Line Light Rail Transit Project Delivery Model Recommendation

MOTION ARISING, Moved by Councillor Chu, Seconded by Councillor Keating, that with respect to Report C2017-0467, Council direct Administration to:

1. Develop timeline scenarios for building the remainder of the Green Line showing the construction timelines assuming funding is secured for stations north of 16 Avenue North and south of 126 Ave SE;
2. Seek funding options so that the remainder of the line can be constructed without interruption once the opening day scenario is completed;
3. Continue land acquisition of Centre Street North properties on an opportunity basis and develop funding options, in advance of construction; and
4. Host open houses to provide residents and businesses who are not part of the opening day scenario with information regarding the completion of the green line including land acquisition.”

At the 2017 June 26 Regular Meeting of Council, Report TT2017-0534 (Green Line LRT Alignment and Stations: 160 Avenue N to Seton) was approved as follows:

REFER, Moved by Councillor Colley-Urquhart, Seconded by Councillor Chabot, that Councillor Keating’s Motion, NM2017-17, be referred to Administration for consideration during the development of a contracting strategy.

“ADOPT, Moved by Councillor Keating, Seconded by Councillor Carra, that the SPC on Transportation and Transit Recommendations 1 and 3 contained in Report TT2017-0534, be adopted, as follows:

That Council:

1. Adopt the recommended alignment and station locations for the Green Line Light Rail Transit (LRT) long-term vision from 160 Avenue N to Seton as per Attachment 1 and 3; and
3. Direct Administration to report back no later than Q1 2018 with a Stage 1: 16 Avenue N to 126 Avenue SE project update including a recommended contracting strategy and future staging approach.”

At the 2017 November 27 Regular Meeting of Council, Report C2017-1123 (Green Line LRT Council Presentation) was approved as follows:

REFER, Moved by Councillor Keating Seconded by Councillor Carra that with respect to Report C2017-1123 Recommendation 1, the following be adopted, after amendment:

“That Council:

1. Direct that the 2017 tax room (\$23.7 million) be retained in 2018 and future years and used to fund the financing costs for Green Line for 27 years until 2044.”

Green Line Light Rail Transit Project Delivery Model Recommendation

BACKGROUND

At the 2017 May 15 Strategic Meeting of Council, Administration presented the recommended first stage of Green Line LRT for construction. Council directed Administration to proceed with the Stage 1 Project from 16 Avenue N to 126 Avenue SE, to prepare the necessary business cases for funding, and to report back with a work plan for future stages of the Green Line.

On 2017 June 26, Council approved the visioning and planning phase for the Green Line from 160 Avenue North to Seton in the Southeast, whereby the alignment and stations were set, the necessary connections to stations were identified, the Transit Oriented Development concepts were completed, and the framework for City Shaping implementation was understood. At this time, Council directed Administration to report back with a contracting strategy and approach for future stages. Following the alignment and first stage for construction being approved by Council, Council approved on 2017 November 27 the allocation of tax room to fund the Project's financing costs.

The focus of this report is the recommended delivery model, which is the main component of a project's overall contracting strategy. The two-year evaluation process has been undertaken by an interdepartmental team comprised of Finance, Supply Management, Law, Calgary Transit, Transportation Infrastructure and supported by industry experts and advisors including KPMG as financial advisor, Blakes as external legal counsel, and Hatch as the Owner's Engineer. Together with independent technical, legal, and financial experts, Administration evaluated and determined the procurement method by which the project should be procured from detailed design through to long-term operations and maintenance.

To achieve opening day revenue service of the Project in 2026, construction must begin in the 2020 construction season. Working back from the Project's milestones, the schedule requires the main construction contract to be awarded in 2020 April, the RFP to be issued in 2019 February, and the RFQ to be issued by 2018 October. To achieve this, it is imperative that the delivery model be selected for the continued development of the technical performance requirements, the reference concept design, and the procurement documents, which include the project agreement (main contract). Attachment 2 is the Project timeline that illustrates key milestone dates, critical path, and dependencies to achieve the target revenue service date.

In addition to the primary focus of delivering the Project in 2026, the delivery model evaluation process has also considered future expansion and the options for flexibility that are required to further develop the Green Line in line with the long-term vision. As referenced in the 2017 June 26 Regular Meeting of Council and Councillor Keating's Notice of Motion (NM2017-17), Administration has considered future expansion and flexibility in the Green Line first project delivery model evaluation and potential implications on the contracting strategy for future stages of the Green Line LRT.

To date, funding for the Green Line LRT has been a three-party partnership between the Government of Canada, the Province of Alberta and The City of Calgary. Funding commitments have been made towards the first stage of the Green Line LRT by all orders of government, however terms and conditions are not yet known. Funding agreements between the Government of Canada and the Province of Alberta remain on track for late Q2 2018 in advance of Administration bringing forward the recommended project and financing budgets.

Green Line Light Rail Transit Project Delivery Model Recommendation

INVESTIGATION: ALTERNATIVES AND ANALYSIS

There are many ways in which a large and complex capital project like the Green Line LRT can be delivered. There are several potential delivery models that, if implemented could effectively and successfully deliver the Project. However, considering the Project's characteristics, (size, complexity, infrastructure components, current market conditions, etc.) selecting the most appropriate delivery model positions the Project for success in line with The City's objectives, budget, and timelines. A wide spectrum of delivery models has been considered and evaluated for the Project (i.e. ten in total) including traditional models, alternative models, and short-term and long-term P3 delivery models that are commonly used in mega capital projects.

Priority capital projects exceeding \$100 Million with the potential to be pursued as a P3 delivery model are to be evaluated under Council Policy CFO011, as outlined in Attachment 1. It requires three evaluation steps to be carried out consecutively to determine if a project is viable to be pursued as a P3. The phases of evaluation are an Initial Screen, Strategic Assessment, and VFM Assessment.

One of the first major steps in evaluating delivery models is to establish the Project's characteristics, scope, objectives, budget, and timelines. The 2017 May 15 Strategic Meeting of Council Report C2017-0467 (Green Line LRT: Building the Core) established the scope and key objectives of the Project allowing for the consideration of ten delivery models as part of the Strategic Assessment.

The Strategic Assessment phase of the delivery model evaluation narrowed the potential delivery model options from ten to four. Key qualitative criteria that are most important to The City were first identified and then were weighted based on their significance to the Project. The key criteria included total project cost certainty and efficiency, lifecycle approach, system-wide operational integration, user perspective, operational flexibility, system expansion, on-time delivery, design and construction risk allocation, design flexibility, capacity and oversight for administering the contract, and operational risk allocation. Based on the criteria, ten delivery models were ranked on a qualitative basis. The qualitative strategic assessment results determined four shortlisted delivery models that provided the highest potential out of the initial ten that were assessed. One short-term P3 delivery model, two long-term P3 delivery models, and the non-P3 (referred to as the Public-Sector Comparator ("PSC")) were selected for detailed and quantitative comparison in the VFM Assessment. The PSC selected for the Project was Design-Build ("DB") based on The City's most comparable and recent project, West LRT.

Following the Strategic Assessment, a VFM Assessment of the four potential delivery models was initiated and concluded in 2018 February. The following is a summary of the VFM process which led Administration towards the final delivery model recommendation and is further summarized in Attachment 3.

Value-for-Money (VFM) Assessment

Once the Strategic Assessment is concluded, the VFM process compares the total risk adjusted project costs (i.e. construction, maintenance, and operating, rehabilitation and financing) of the non-P3 delivery model (PSC) and the P3 delivery model (referred to as the "Shadow Bids").

Green Line Light Rail Transit Project Delivery Model Recommendation

To develop cost estimates, separate cost estimates were developed for the PSC (Design-Build) and the long-term delivery model (Design-Build-Finance-Vehicle-Operate-Maintain). It is noted that in the analysis, as the design-build package is assumed to be equivalent under the DB and DBF delivery models, the DBF delivery utilizes the same cost estimate as the DB delivery model.

Utilizing economic assumptions, costing analysis, probabilistic risk assessment, financial modelling, and sensitivity analysis the delivery models are quantitatively compared. Attachment 4, Executive Summary: Green Line LRT Value for Money Report summarizes this process and the results of the assessment.

When a P3 project delivery model demonstrates a positive risk adjusted cost differential relative to the PSC, the VFM analysis suggests the P3 project delivery model will offer positive value for money to The City. The goal of the VFM Assessment is to develop awareness of the potential VFM that may be generated by delivering the Project using a P3 delivery model.

Short-term and long-term P3 delivery model options were assessed against the PSC. The private sector's and The City's primary roles and responsibilities for each of the delivery models were determined prior to the VFM Assessment. Some of The City's primary roles and responsibilities remain common across each of the delivery models assessed such as The City will remain responsible for property acquisition, fare collection and revenue.

Value-for-Money Assessment Results

The results of the Project's VFM Assessment conclude that the short-term P3 delivery model, DBF, demonstrates value for money over the PSC (i.e. the Design-Build delivery model). Relative to the size of the project, the value for money that the DBF model may offer may not appear to be significant. However, the inclusion of private short-term financing and the involvement of lenders reduces The City's risk exposure, and enhances the PSC model. Although the DBF model has higher financing costs than the PSC because the DBF model includes short-term private sector construction financing, the financing costs are more than offset by the benefits of risk transfer/reduction that are offered by the DBF delivery model.

The long-term P3 delivery models assessed do not demonstrate value for money over the PSC. Relative to the size of the project, the negative value for money of the long-term P3 delivery models is significant.

After the results of the VFM Assessment were known, Administration finalized the delivery model recommendation by validating the results with other strategic factors that primarily focused on the availability for expansion and operational flexibility.

Recommended Delivery Model

The results of the Green Line LRT VFM Assessment support the recommended delivery model as DBF, and are documented in the final report issued by KPMG. The DBF model incorporates all the benefits of the design build delivery model of enhanced performance and economic efficiency and benefits from private sector financing during construction. Lender oversight during the construction period increases The City's leverage in achieving its objectives of budget, schedule, and performance.

Green Line Light Rail Transit Project Delivery Model Recommendation

Design-Build-Finance Benefits:

1. Better cost and schedule certainty
 - a. The City's design/construction partner (Project Co.) only receives partial payment for reaching pre-established construction milestones. The remainder of the payment is only given when construction is complete.
 - b. The risk for delays and cost overrun is lower when compared to other delivery models. The structure of the contract combined with the involvement of private financiers strongly motivate Project Co. to adhere to the schedule and ensures that the work meets technical requirements and standards.
2. Greater flexibility for operations and future expansions
 - a. Since operations and maintenance are not included as part of Project Co.'s contract in a DBF, Calgary Transit would continue to successfully operate and maintain the Green Line LRT leaving Project Co. purely responsible for the design and construction.
 - b. If changes are required to Calgary Transit's service plan in response to Council, customer needs and/or as a result of ridership fluctuations, these can be made without negotiating with a private operator. Therefore, the DBF model provides greater operational flexibility.
 - c. Long-term P3 models do not easily allow for expansions to the system. Any unplanned expansions, when using a long-term model could lead to additional costs in the long run. The DBF model allows flexibility to expand the line with future stages when funding and the timing is right for Calgary.
3. Additional oversight for the contractors anchors the design and construction risk transfer
 - a. With a DBF model, Project Co. takes on the construction risks for the Project. The finance component of the delivery model ties Project Co. to their obligations, and the lender provides additional oversight on Project Co.'s management of those risks. The City pays for a portion of the completed work during construction, but will withhold a large lump sum substantial completion payment until substantial completion of construction of the Project has been achieved. Project Co. will be responsible for penalties and interest costs associated with any delay that occurs in achieving substantial completion. Moreover, lender oversight imposes discipline in terms of subsequent changes to the contract during the construction process.
4. Less exposure to credit risk of contractors/subcontractors
 - a. Project Co.'s lenders would provide an additional layer of comprehensive credit checks, ensuring the contractors and subcontractors have the financial stability to be involved with construction of the Green Line.
5. Short-term financing is relatively inexpensive
 - a. When compared to long-term P3 delivery models where Operations and Maintenance are included, the short-term nature of DBF reduces the financial burden on The City associated with long-term financing.

Green Line Light Rail Transit Project Delivery Model Recommendation

Next Steps

Attachment 2 is the Project timeline that illustrates key milestone dates. The next critical milestones are the agreements with funding partners whereby the terms and conditions will be set, allowing Administration to refresh the Project capital and financing budgets.

Over the course of 2018 Administration will conclude the technical performance requirements and prepare the procurement documents for the DBF main contract as well as the procurement for light rail vehicles (LRV's).

Upon execution of the funding agreements, Administration will be able to seek approval for borrowing bylaws and other financing matters, approval for commencement for procurement of the Project, and authorization for execution of all agreements for the Project, with an anticipated start of construction in 2020, and an opening revenue service day in 2026.

The VFM Assessment will also be refreshed based on the successful proposal and the results of the final VFM report will be made available to the public shortly after contract award.

Stakeholder Engagement, Research and Communication

The recommended delivery model, DBF, supports the public engagement and commitments that Administration has made throughout the planning process to date. Although the scope of the main contract delivered with a DBF delivery model will be clearly defined in the project agreement, and scope will be carefully and responsibly managed, the DBF delivery model allows for other enabling, concurrent, or follow up work to be planned, designed, and constructed (under separate contracts) if additional funding or budgeting permits. This flexibility has already been utilized in the current enabling works being undertaken for preparing the corridor for the Project. The same enabling approach can be used to tie-in evolving plans of adjacent development, or to help enable unfunded components of layer 2, layer 3, and layer 4 plans and/or projects. The recommended delivery model will help facilitate the evolving unfunded components of the Green Line long-term vision, and is supportive of our public stakeholder's objectives, in a manner that is more flexible than the long-term P3 models that were assessed.

Industry engagement was also undertaken during the Strategic Assessment phase of the delivery model evaluation through a market sounding process that concluded in January 2017, and a market capacity assessment that was included in the Strategic Assessment Reporting. Another market sounding process is planned during Q3 2018 prior to issuance of the RFQ for the Project.

In addition to the market sounding and market capacity assessments, the Strategic Assessment Reporting included case study reviews of LRT projects with comparable and relevant attributes. Several case study projects were analysed during the Strategic Assessment and VFM Assessment phases. A couple of noteworthy and recent projects that have successfully used the DBF delivery model are:

- Evergreen Line, BC, an 11km long extension to the existing SkyTrain system in Metro Vancouver. A budget of \$1.43 Billion was approved in 2008. Service commenced in

Green Line Light Rail Transit Project Delivery Model Recommendation

December 2016. The project was delivered on time and approximately \$70 Million to \$85 Million under the budget set in 2008.

- Confederation Line East, Phase 2, ON, a 30km long extension to the newly constructed LRT system in Ottawa, note the first phase was built as a Design-Build-Finance-Operate-Maintain. The project is currently in RFP stage. Contract award is scheduled for Q2 2018 and construction commencement by Q2 2019. The project is expected to cost \$3.6 Billion.

Strategic Alignment

The delivery model evaluation process for the Project complies, and is fully aligned with the Council Policy CFO011 - Public-Private Partnerships (P3) Policy.

The recommended delivery model, DBF, is a short-term P3. This means that the project agreement for design and construction ends shortly after revenue service of the LRT commences. In contrast, the long-term P3 delivery models considered would require a project agreement spanning a much longer operations period, obligating The City to the terms of that project agreement for the duration. The longer-term models offer some advantages to The City, which are captured and documented in the Project's VFM report. However, the long-term P3 models do not offer the same flexibility, or adaptability to The City's evolving operational and strategic objectives that change over the longer term and do not recognize the evolution of transit that has occurred in The City of Calgary over the past 30 years.

Social, Environmental, Economic (External)

The Project aligns with social, environmental and economic priorities of The City and the priorities of the provincial and the federal governments. It is designed to improve quality of life by providing people with options on how to move, work, live, and play, and allows more affordable access to essential community services.

In addition to alignment to the social benefits documented in the Green Line long-term vision, the recommended delivery model, DBF, offers a social benefit to Calgary's transit customers as the responsibility, accountability, and level of service of LRT operations and maintenance remains with the current system wide operator, Calgary Transit. While this is quantified and documented in the Project's VFM report, there is social benefit that is recognized by maintaining system wide consistency in Calgary Transit's commitment and direct accountability to the customer.

Financial Capacity

Current and Future Operating Budget:

The Green Line LRT will require an investment in operating funding upon commencement of service. The Project will substantially expand The City's LRT network, and will require additional staff (e.g. LRT drivers, Peace Officers, station cleaners, service designers, track maintainers, etc.). Preliminary estimates for the Project have been calculated at an annual operating cost of \$40 million/year (2016 real dollars). The preliminary operating cost estimate for the Project is dependent on several factors, including, actual ridership and vehicle characteristics. The estimates are being further refined and will be included as part of Administration's Q4 2018 report to Council seeking formal approval for capital and financing budget.

Green Line Light Rail Transit Project Delivery Model Recommendation

Current and Future Capital Budget:

Funding commitments have been made by all orders of government, however, terms and conditions have not yet been determined. Negotiations regarding the details of funding including eligibility and timing are still ongoing with all orders of government and may result in adjustments to the estimated funding total. Details of the funding will be addressed in Q4 2018 report to Council.

The City has also dedicated \$23.7 Million in 2017 tax room to fund Green Line Stage 1 financing costs from 2018 to 2044 as part of its 2018 budget adjustments.

The DBF P3 model adds private short-term construction financing, in addition to any City financing required to fund payments to the private contractor, and The City will require borrowing bylaws for both financing components. Approval of this bylaw will be addressed in the Q4 2018 report to Council.

Risk Assessment

Risk Process

Estimating and quantifying project risks is a significant component of the work that has been undertaken. The process and results of the risk quantification are what drive the comparison of the total risk adjusted project costs (i.e. construction, maintenance, and operating, rehabilitation and financing) for the delivery models that were assessed. Administration participated in several comprehensive risk assessment workshops:

- **2017 October 14-16** – series of risk workshops (held over 4 days) developed risk quantification inputs to be used for the VFM Assessment:
 - pre-workshop, participants attended a small group pre-workshop education and alignment session during which the Financial Advisor (KPMG) provided an overview of the delivery models under consideration and outlined the goals of the workshops; and
 - participants included representatives from the Green Line Leadership Team, Green Line Project Delivery Team (including external advisors from the Owner's Engineer, KPMG, and the Owner's Legal Advisor), Green Line Technical Team, Calgary Transit, Legal, Finance, and Supply Management.
- **2017 November 1** – one day risk workshop, participants reconvened for a risk validation session to review, adjust and ultimately endorse the risk workshop outputs used for the VFM Assessment.

Based on the risk workshop outputs, the DBF model offers value for money to The City. The long-term P3 delivery models do not offer value for money, largely because of the limitations they impose for expansion and operational flexibility.

Supplemental analysis was undertaken to further compare the two long-term P3 delivery models; DBFVOM and DBVFM and relative to each other DBFVM is expected to have higher risk values and higher risk exposure. For these reasons both long-term P3 delivery models were eliminated.

Green Line Light Rail Transit Project Delivery Model Recommendation

Long-Term P3 Delivery Model (DBFVOM and DBVFM) Risks

Significant shortcomings and risk of The City utilizing a long-term P3 delivery model (DBFVOM or DBFVM) for the Project and quantified in the VFM Assessment are as follows:

- The private financing charges associated with a long-term (30 year) capital repayment outweigh the risk transfer/reduction that could be offered by the long-term P3 model assessed;
- Long-term P3 model contracts would limit The City's flexibility in implementing subsequent stages of the Green Line and could require significant premiums to be paid in an expansion or extension scenario occurring during construction, or during a long-term operating period of the Project;
- The assessment determined that the annual operating and maintenance (O&M) costs between the public sector (Calgary Transit in this case) and the private sector (long-term O&M services within a P3) to be similar. Any savings offered through long-term P3 delivery of O&M are small and are offset by the additional costs that would be expected to deal with interface, integration, and coordination. The similarities in O&M costs are aligned with Calgary Transit's long track record and documented performance operating one of North America's most successful LRT systems.
- Substantial opportunities to reduce the upfront capital costs in a long-term P3 model, to the PSC (DB) or the short-term P3 (DBF), were not identified through the assessment.

Short-Term P3 Delivery Model (DBF) Risks

One of the challenges expected in delivering the Green Line project with a DBF model (identified as a project management risk) is internal or external stakeholder expectations that could influence project scope (i.e. changing scope or adding scope). The DBF delivery model does not accommodate scope change in the same manner as traditional design-bid-build delivery, which is well understood and most commonly used by The City. Although this is not unique to DBF, there is a risk exposure to costly scope change that may arise if internal and external stakeholders influence on scope is not managed in a disciplined manner. These pressures are normal and are more easily managed by long-term P3 delivery model due to the cost premiums expected with any scope change and causing the Owner to likely reconsider any such change. This is quantified and documented in the results of the Green Line value for money report, however it remains a risk for the DBF delivery model that will require ongoing project management to mitigate this risk.

Another risk with the DBF delivery model, is that The City will retain the interface risk between the DBF main contract and the separate LRV procurement by The City. Advancing the LRV procurement immediately, ahead of the main contract RFP in Q1 2019, will help mitigate this interface risk by allowing for coordination between the LRV and DBF procurement processes, and by taking advantage of the additional time, prior to revenue service, that is gained by advancing the LRV procurement ahead of the DBF main contract award.

Transportation Report to
Priorities and Finance Committee
2018 March 06

ISC: UNRESTRICTED
PFC2018-0207
Page 12 of 12

Green Line Light Rail Transit Project Delivery Model Recommendation

REASON(S) FOR RECOMMENDATION(S):

Design-Build-Finance (DBF) as a short-term P3 model was evaluated relative to alternative delivery model options and is the recommended P3 option for the Green Line LRT project given it demonstrates value for money to The City of Calgary relative to procuring the project traditionally as a Design-Build (DB) model. The DBF delivery model will provide the Project with many benefits, including better cost and schedule certainty, flexibility for operations and future expansions, and reduced credit risk.

With the approval of the Project's Delivery Model Recommendation, the development of the technical project requirements, the reference concept design, the procurement documents, including the project agreement (main contract), may continue to progress in full alignment with the DBF delivery model as is required to meet the key project milestone dates.

ATTACHMENT(S)

1. Attachment 1 – Council Policy: Public-Private Partnership (P3) Policy (CFO011)
2. Attachment 2 – Green Line LRT Project Stage 1– Critical Path Schedule
3. Attachment 3 – Delivery Model Evaluation for Green Line
4. Attachment 4 – Executive Summary: Green Line LRT Value for Money Report (Confidential)