

**Transportation Report to
SPC on Transportation and Transit
2018 December 06**

**ISC: UNRESTRICTED
TT2018-1335**

Green Line Q4 2018 Update

EXECUTIVE SUMMARY

This report constitutes the Green Line update for 2018 Q4, and provides the outline for future quarterly reports.

The primary activity for 2018 Q4 has been finalizing the constructability review, focused on delivering the Stage 1 project from 16 Avenue North to 126 Avenue Southeast. The goal of the constructability review has been to maintain the Council approved program objectives while balancing quality and cost, and planning for the safest work methods. The constructability review has focused on the major risks associated with tunneling and the construction of the underground stations.

Negotiations with Federal and Provincial funding partners continue regarding the Ultimate Recipient Agreement (URA), which contains the terms & conditions for the \$3.06 billion funding from the Federal and Provincial governments. The URA is expected to be in final form for execution by the end of Q4 2018. Following execution of the URA the project capital budget will be brought forward to Priorities and Finance Committee (PFC) in Q1 2019 for final approval.

An update on City Shaping will be provided at the 2018 December 5 Standing Policy Committee on Community and Protective Services (CPS2018-1355).

ADMINISTRATION RECOMMENDATIONS:

1. That the SPC on Transportation and Transit recommend that Council receive this report for information.

PREVIOUS COUNCIL DIRECTION / POLICY

At 2018 October 15 Regular Meeting of Council, Report TT2018-1089 (Green Line Update) was approved on Consent Agenda, as one of a series of quarterly updates that will be provided to the Transportation and Transit Committee to update Committee and Council as to the progress of the Green Line project.

At the 2018 May 28 Regular Meeting of Council, Green Line Director Introduction (Verbal), C2018-0649. A PowerPoint presentation entitled, "Green Line Introduction," dated 2018 May 28, with respect to Report C2018-0649, was distributed. Moved by Councillor Keating Seconded by Councillor Gondek that Council receive the Verbal Report for information. Green Line Committed to quarterly updates.

At the 2018 March 19 Combined Meeting of Council, Report PFC2018-0207 (Green Line Light Rail Transit Project Delivery Model Recommendation) was approved as follows:

1. Approve Design-Build-Finance ("DBF") as the delivery model for the Green Line LRT project from 16 Avenue North to 126 Avenue Southeast;
2. 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

**Transportation Report to
SPC on Transportation and Transit
2018 December 06**

**ISC: UNRESTRICTED
TT2018-1335**

Green Line Q4 2018 Update

- and the City Solicitor will also sign off on the funding agreements as to content and form, respectively;
3. Direct that Attachment 4 and the Closed Meeting discussions remain confidential pursuant to section 23, 24, 25 and 27 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; and
 4. 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.

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:

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
2. Adopt the recommended Green Line Urban Integration (GLUI) for the full Green Line LRT from 160 Avenue N to Seton as per Attachment 2;
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; and
4. Direct Administration to bring this report forward to the 2017 June 26 Regular Meeting of Council along with the associated reports from the SPC on Community and Protective Services (CPS2017-0469) and the SPC on Planning and Urban Development (PUD2017-0471).

Council provided the following direction to Administration at the 2017 May 15 Strategic Meeting of 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
SPC on Transportation and Transit
2018 December 06**

**ISC: UNRESTRICTED
TT2018-1335**

Green Line Q4 2018 Update

MOTION ARISING, at the 2017 May 15 Strategic Meeting of Council 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 N 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

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.

BACKGROUND

Following the approval of the Green Line long-term vision and Council direction to proceed with the Stage 1: 16 Avenue N to 126 Avenue SE (Stage 1) project at the 2017 June 26 Regular Meeting of Council, Administration has transitioned from the planning phase to the project execution phase. The initial step in the execution phase has been developing a constructability review of the entire alignment and a new detailed CAPEX cost estimation for the Council approved Stage 1.

INVESTIGATION: ALTERNATIVES AND ANALYSIS

Governance

Quarterly Report Format:

Throughout the planning phase of the Green Line project a regular cadence of reporting was established with Council. Following approval of the planning study in July of 2017, the project has had irregular reporting to Council, focused only on specific topics. This report is the second consecutive quarterly update and will establish a regular format and cadence of quarterly reporting to the Transportation and Transit (T&T) Committee. For 2019 quarterly project updates will be provided to T&T Committee on the following dates:

- Q1 – March 20, 2019
- Q2 – June 26, 2019
- Q3 – September 18, 2019
- Q4 – December 18, 2019

The quarterly reports will follow a consistent format addressing the following major project components:

- Governance – Including project oversight to committee and council, as well as any updates on administrative oversight and key performance indicators associated with governance
- Financial / Commercial – Including budget updates, expenditures to date, committed costs, estimate at completion, financing costs and procurement
- Schedule – Including short term and long term schedule as well as a summary of progress since the last quarterly reporting and upcoming actions for the next quarter

**Transportation Report to
SPC on Transportation and Transit
2018 December 06**

**ISC: UNRESTRICTED
TT2018-1335**

Green Line Q4 2018 Update

- Technical – Summary of key technical elements of relevance at the time. This will include updates on LRT and civil works contracts, and also City Shaping and Transit Oriented Development (TOD).
- Real Estate – A consolidated summary of the land acquisition to date and highlights of any critical land acquisition or real estate items
- Quality – Update on the status of the quality of the project
- Safety – Update on the safety performance of the project over the last quarter
- Stakeholder Engagement – Summary of engagement over the last quarter, and a forecast to what will be coming in the next quarter
- Environmental – Summary of key environmental initiatives over the last quarter
- Risk Assessment – Updated project risk registry

The quarterly reports will likely contain both public and confidential information. The quarterly reports and associated presentations will be structured accordingly.

Financial/Commercial

Current and Future Operating Budget:

Current operating expenditures for the Project are capitalized as incurred and are funded by a combination of the Enabling Works Budget of \$360.6 million, and previously approved Council funding of \$1.56 billion, depending on the nature of the expenditure (refer to Capital Budget section below for additional detail).

On 2017 May 15, and 2017 Nov 27, a preliminary estimate was provided to Council for the initial full year net operating costs of Green Line. This estimate is \$40 million/year, in 2016 dollars. This estimate will be updated once the major construction contract has been awarded and the construction schedule is set. Operating costs at revenue service are not currently funded.

In addition to operating costs post service commencement, the Project will incur debt servicing costs related to any portion of the funding that is received after Project completion. On 2017 Nov 27, an updated estimate of projected interest expense was presented to Council. Council approved the allocation of \$23.7 million/year until 2044 toward Green Line debt servicing. Actual debt servicing will be dependent on a combination of interest rates, timing of expenditures and any potential change in the funding schedule.

Current and Future Capital Budget:

In April 2018, the Government of Canada Treasury Board provided final approval for Green Line to be an eligible project under Canada's Investing in Canada Infrastructure Program (ICIP). The Federal government also signed an Integrated Bilateral Agreement (IBA) with Alberta. This IBA provides Alberta with the right to negotiate, on behalf of both Governments, an Ultimate Recipient Agreement (URA) with The City. This URA will cover terms & conditions for both the Federal \$1.53 billion as well as the Provincial \$1.53 billion of funding. Negotiations between the Province and the project team are on-going, and the URA is expected to be in final form for execution by the end of Q4 2018. Following execution of the URA the project capital budget will be brought forward to Priorities and Finance Committee (PFC) in Q1 2019 for final approval.

The Project had earlier received funding for its Enabling Works projects, which are related to preparing the right-of-way for the Project's major construction. The Enabling Works budget is \$360.6 million, and is provided by funding programs from the three orders of government that is separate from the main Project's funding (Federal Public Transit Infrastructure Fund (PTIF) 1 =

**Transportation Report to
SPC on Transportation and Transit
2018 December 06**

**ISC: UNRESTRICTED
TT2018-1335**

Green Line Q4 2018 Update

\$111 million, Provincial 50% PTIF match = \$55.5, Provincial Green Trip = \$92.4 million, City 50% match of PTIF 1 & Green Trip = \$101.7 million)

Expenditures to date:

To October 31, 2018 expenditures incurred total \$128 million.

Committed costs:

To October 31, 2018 expenditures and committed costs total \$211 million.

Procurement:

A continued risk highlighted from the constructability review is utility conflicts. Several Early Works and Enabling Works contracts are currently under construction or near completion that address major utility conflict areas along the Stage 1 corridor. There remains a significant number of utility conflicts that should be removed prior to the main contract award.

The project team is exploring the use of a Construction Management (CM) contract to facilitate the expedited relocation of utility conflicts along the corridor. A CM contract has the benefit of utilizing the expertise of a construction contractor familiar with the requirements of the various utility owners to coordinate the relocation of the remaining utility conflicts. A decision regarding the use of a CM will be made in Q1 2019.

The project team has been reviewing the main contracting strategy and will report back to PFC in Q1 2019 with an update on the recommended contracting strategy along with project capital budget after the URA is finalized with the Province.

Schedule

The project is currently behind the previously presented schedule, as the RFQ was originally anticipated to be released to the market in Q4 of 2018. The project team currently plans to start to release RFQ documents in Q1 2019, following finalization of the URA with the Province in Q4 2018.

Financial close and start of major construction is expected to be in 2020, with commencement of fee revenue service on target for 2026.

Attachment 1 contains an updated project timeline.

Technical

Constructability Review

Customer experience; mobility of Calgarians during and after construction; and an infrastructure network that maximizes opportunities for near and long-term development and customer connectivity, all remain focal to the constructability review.

Engineering and construction activities progressed throughout 2018 Q4. With the constructability review nearing completion, the design continues to be further optimized, with a focus on risk mitigation, quality and cost validation, and procurement readiness.

Key technical areas under review include tunnel constructability, station constructability and utility relocations.

Green Line Q4 2018 Update

Tunnel Constructability

The tunnelled section of the project remains one of the greatest risk elements in the 20 km of Stage 1 construction. The risk is magnified as the City has no experience building a large tunnel, coupled with a lack of large tunneling experience in Calgary. Throughout Q3 and Q4 of 2018 the project team continued to evaluate tunnelling options, including sequential excavation, cut and cover, and single and twin bored tunnels, in order to better assess risks, and cost and performance trade-offs.

Customer experience during and after construction remains a key driver in the consideration of tunnel options. Additionally, utility impacts, land impacts, surface disruption, and integration with adjacent development are being evaluated from an engineering and construction perspective. Tunnel options are also being evaluated from the perspective of procurement risk, as the chosen approach stands to impact the availability, quality and quantity of potential contractors.

Station Constructability

The design and construction of the underground stations is directly linked to the tunnel construction. Impact to customer experience during and after construction, and opportunities for development remain key drivers in station design. Other essential elements include fire, safety, security, operations and maintenance. Detailed station location and design will be further refined as a function of tunnel selection. Means and methods of construction for each station will be determined based on local conditions and will be better known once the tunnel approach is selected.

Utility Relocations

Utility conflicts represent a significant risk to the constructability of the centre city component of the project. Experience from other projects has shown that clearing the right-of-way of utilities significantly reduces the risk profile of the project, lowers the project cost, and accelerates the construction schedule. The primary objective of the Enabling Works projects is to clear the right-of-way and focus on the relocation of utilities. To date 85% of the shallow utilities between 4 Street SE to 126 Avenue SE have been designed with quotes received from the franchise utility owners with a scheduled completion of Q4 2019.

Approximately three hundred and fifty utility conflicts within the centre city have been identified. To date the project team has focused on physical relocations outside of the Centre City while the tunnel details are being finalized. In Q1 2019 the project team will focus on utility relocations in the centre city and on space proofing designs to accommodate the incorporation of significant utilities which will be cost and schedule prohibitive to relocate.

Enabling Works projects

Enabling Works projects are underway focused on improving project readiness. Enabling works include land acquisition, clearing the right-of-way including relocation of two existing land fills, demolition of buildings, and utility relocation. Attachment 2 outlines some of the inflight work completed to date and currently underway and Attachment 3 has a selection of site photographs from projects currently underway.

**Transportation Report to
SPC on Transportation and Transit
2018 December 06**

**ISC: UNRESTRICTED
TT2018-1335**

Green Line Q4 2018 Update

Real Estate

A major risk to delivering the Green Line on schedule and budget is the successful acquisitions of the required properties. An up-date on Stage 1 Green Line acquisitions is provided through the quarterly reporting to SPC on Utilities & Corporate Services. For Stage 1 of the project the following real estate statistics are current as of October 31, 2018:

- 152 property interests have been identified
- 48 have been acquired
- 39 are actively being acquired
- 65 are on hold pending constructability review

Taking into consideration the properties acquired to date and the previous City of Calgary owned right of way, the City currently owns approximately 15km of the 20 km within Stage 1. A dedicated acquisitions team is pursuing negotiated agreements with the 39 outstanding properties, with the goal of maximizing the number of properties acquired through negotiation rather than expropriation.

A Station Integration Framework is central to Green Line's Transit Oriented Development and City Shaping strategies. Administration is identifying best practices, guidelines and principles to inform the design and placement of station entrances, and allow for future development around these stations.

Quality

The Green Line Quality Management System (QMS) has been developed and is currently being implemented on Enabling works projects. The QMS defines Green Line's quality-related objectives while supporting consistency of delivery and ultimately consistency of end-product quality. The System is influenced by ISO 9001:2015, but is not intended to be fully compliant with the ISO standard. The QMS is complementary to the minimum standards for project delivery described within the Corporate Project Management Framework, and with use, will be continually improved.

Safety

The Green Line safety culture shows a steady improvement over 2018, including improved compliance with protective equipment use by on-site personnel, site task-specific safety awareness, safety discussion during work tasks, and cross business unit safety communication.

Safety management systems for all contractors were reviewed as part of the tendering and award process. Daily field level hazard assessments and identification of controls continue to be conducted at each of the Green Line Enabling work sites and are reviewed with the workers, supervisors, project managers and visitors upon each arrival to site. Site safety meetings and inspections are regularly conducted and reviewed with the contractor safety representatives, project managers and the Green Line Safety Manager.

Stakeholder Engagement and Communication

Over the last quarter engagement has been ongoing with businesses and residences impacted by current and anticipated Enabling works projects. Communication has comprised of electronic formats, mailed letters, face-to-face meetings, and facilitated meetings with owners and utility providers. This included communications to just over 500 businesses, the Ramsey Community

**Transportation Report to
SPC on Transportation and Transit
2018 December 06**

**ISC: UNRESTRICTED
TT2018-1335**

Green Line Q4 2018 Update

Association, and 193 citizens registered on the “Inglewood Ramsey Coordination Projects” mailing list.

Community relations support has been provided to seven businesses located directly adjacent to CN/Highfield, Ogden Landfill, and future 125 Avenue project areas. The objective is to support the businesses with alternate access during construction, connections to resolve other City-related issues, and to keep businesses informed of Enabling works activities. In addition, meetings related to construction coordination and opportunities for station integration, with five developers in the centre city, have taken place.

A presentation was delivered to Calgary Construction Association members, on October 18, 2018. Communications will continue with updates as relevant information becomes available.

Pre-consultation with 14 indigenous groups has been ongoing as part of the Project Description Review with the Canadian Environmental Assessment Agency (CEAA) to determine whether an environmental assessment will be required for the Maintenance Storage Facility. This pre-consultation is nearing completion and the project team has been ensuring alignment with the Indigenous Relations group within The City’s Calgary Neighbourhoods.

Strategic Alignment

Social, Environmental, Economic (External)

The project aligns with social, environmental and economic priorities of The City and the priorities of the provincial and federal governments. Green Line 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.

As part of its alignment with environmental priorities, the Environmental Management Program (EMP) focuses on realization of greenhouse gas (GhG) reduction benefits. The Green Line Project is tasked with satisfying City of Calgary, and federal and provincial funding partner requirements that include: climate resilience reporting; environmental assessments; First Nations consultation; application of the Envision management system; and the provision of technical environmental requirements and guidelines to satisfy the procurement process.

Financial Capacity

See the Financial/Commercial section above.

Risk Assessment

The Green Line Project risks are being tracked and actioned on a monthly basis. See Attachment 4 for the Q4 2018 Risk Registry.

REASON(S) FOR RECOMMENDATION(S):

This report is the second in a series of upcoming quarterly updates that will be provided to the Transportation and Transit Committee to update Committee and Council as to the progress of the Green Line project. This report establishes the format of the future reports and outlines the activities of the project for the last 3 months.

Transportation Report to
SPC on Transportation and Transit
2018 December 06

ISC: UNRESTRICTED
TT2018-1335

Green Line Q4 2018 Update

ATTACHMENT(S)

1. Attachment 1 – Project Time Line
2. Attachment 2 – Green Line LRT Stage 1 Inflight Work Summary
3. Attachment 3 – Photos of progress
4. Attachment 4 – Risk Registry Q4 2018