

Transportation Report to  
SPC on Transportation and Transit  
2018 March 08

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TT2018-0145  
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## Green Line Program Update – Future Stages Planning and Design

### EXECUTIVE SUMMARY

The focus of this report is to provide an update on the planning and design of the future stages of the long-term Green Line LRT vision outside of the Stage 1 project which extends from 16 Avenue N to 126 Avenue SE. Administration is advancing the preliminary design of the future stages to define the land requirements, to increase cost certainty, and to prepare the project should future funding become available.

This report was preceded by a report to the Priorities and Finance Committee (PFC2018-0207), Green Line LRT Stage 1 Delivery Model Recommendation, presented on 2018 March 06, which focused on the procurement model recommendation for the Stage 1 project.

#### ADMINISTRATION RECOMMENDATION:

That the SPC on Transportation and Transit recommend that Council:

1. Direct Administration to report in Q4 2018 with a staging recommendation and update on layers 1 (LRT infrastructure design), 2 (station connections), 3 (planning and development), and 4 (City Shaping) for the long-term Green Line vision; and
2. Continue land acquisition outside of the Stage 1 project guided by a risk-based process until land requirements are updated with completion of the preliminary design for the North leg.

#### RECOMMENDATION OF THE SPC ON TRANSPORTATION AND TRANSIT, DATED 2018 MARCH 08:

That Council:

1. Direct Administration to report to **Council through the SPC on Transportation and Transit** in Q4 2018 with a staging recommendation and update on layers 1 (LRT infrastructure design), 2 (station connections), 3 (planning and development), and 4 (City Shaping) for the long-term Green Line vision;
2. Continue land acquisition outside of the Stage 1 project guided by a risk-based process until land requirements are updated with completion of the preliminary design for the North leg; **and**
3. **Direct Administration to explore the ways and means that the existing right of ways (ROWs), north of 16<sup>th</sup> Avenue N and south of 126 Avenue S, can be activated for community purposes that may include, but are not limited to BRT, pedestrian and bicycle infrastructure, that can then convert to LRT infrastructure. Report back to Council through the SPC on T&T by Q4 2018.**

### PREVIOUS COUNCIL DIRECTION/POLICY

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;

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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.

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 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
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 21 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).

### **BACKGROUND**

After approval of the Green Line long-term vision on 2017 June 26 Administration initiated work on the preliminary design of the future stages outside of the Stage 1 project scope. This work is being completed in coordination with the development of the Stage 1 project. The Stage 1 delivery model recommendation supports the development of the future stages as the

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recommended Design-Build-Finance model allows easy future expansion as there are no long-term maintenance or operation contracts which could complicate integration of future stages.

Administration has been tasked to deliver the Green Line long-term vision elements including:

- The full 46 kilometres of LRT and associated stations (layer 1)
- Station connections (layer 2)
- Transit oriented development planning (layer 3)
- City Shaping (layer 4).
- The long-term funding strategy to support layers 1 through 4 for the entire vision
- Land acquisition

### **INVESTIGATION: ALTERNATIVES AND ANALYSIS**

#### **Planning and Design (Layers 1 and 2)**

To advance the planning and design for future stages a team has been formed to build on the functional design approved by Council in 2017 June. As reported to Council in 2017, the Southeast leg (south of 126 Avenue SE) is currently at a preliminary design level of detail (Attachment 1). Due to the advanced level of design and the limited number of land parcels required the Southeast leg is at a more advanced state of readiness when compared to the North leg (north of 16 Avenue N). The North leg is a relatively new alignment approved in 2015, in a complex urban corridor with many small land parcels fronting on to Centre Street North.

Administration is focussing on advancing the state of readiness of the North leg. The complexity of the design and operations on Centre Street N, combined with ongoing development applications, will allow the team to provide more certainty to stakeholders as the design progresses. Traffic and LRT operations will be modelled to further understand the interaction of traffic and the LRT in a broader geographic area than previously investigated. This work is critical as the Centre Street North segment of the Green Line is Calgary's first integrated LRT corridor where public traffic will travel in close proximity to the LRT with limited barriers separating them. This modelling work will provide a better understanding for Administration, communities, and Council of how this corridor will function for all modes. The modelling and design work will also inform the land requirements, specifically for the numerous properties with access onto Centre Street N.

Recommendations on the next stages of construction will be brought forward to the SPC on Transportation & Transit in Q4 2018. The analysis framework will be based on work previously undertaken by Administration to investigate potential Stage 1 options, with additional staging scenarios included in the analysis.

The timeline to complete the preliminary design of the North Leg and to conduct public and stakeholder engagement is approximately 12 months. Administration will report back to the SPC on Transportation and Transit in Q2 2019 with the findings of the preliminary design.

#### **Transit Oriented Development (TOD) and Planning (Layer 3)**

TOD planning and policy work continues after Council approval of the TOD Framework in 2017 June. The focus to date has been aligning with corporate planning and development initiatives, and supporting development that achieves the Green Line long-term vision. The outcome will be to support the implementation of development at select Green Line station areas that provides a

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place for people of all income levels to have access to housing, transit, jobs, and community amenities.

A dedicated Corporate Planning Applications Group (CPAG) team has been formed to review and process development applications to support reaching The City's goals of additional residents in Green Line station areas. The following targets were shared with our Provincial and Federal funding partners:

- 5,000 additional people living within 400 metres of Green Line Stage 1 by opening day
- 13,000 additional people living within 1000 metres of Green Line Stage 1 by opening day

Administration is developing key performance indicators to benchmark and monitor TOD progress. Additionally, key City-owned sites are being identified for development to act as catalyst sites to promote private investments.

As part of the deliverables for immediate implementation as outlined in the TOD Framework, Transit Oriented Development Policy Guidelines have been drafted, with the intent of replacing the previous guidelines, approved by Council in 2005. The document will focus on all LRT station areas city-wide that currently do not have station specific policies in place that support development. It will be aligned with the Developed Areas Guidebook, updates to the Municipal Development Plan (MDP) and Calgary Transportation Plan (CTP). The guidelines will provide direction for development in existing and future LRT station areas.

Administration is working with Real Estate & Development Services, Urban Strategy, Planning & Development, Green Line, and external partners such as Calgary Economic Development, to align TOD ongoing work. Research to date indicates the creation of a city-wide TOD Implementation Strategy is the most appropriate way to support existing and future TOD investments and to focus resources on stations with the highest potential for success. Due to the need to expand the TOD scope to a city-wide perspective and the need to collaborate with additional stakeholders, Administration will be providing an update to the TOD Implementation Strategy to the Standing Policy Committee on Planning and Urban Development in 2018 June and requesting a deferral until 2019 in order to prepare a comprehensive Implementation Strategy.

### **City Shaping (Layer 4)**

In June 2017, City Council approved the City Shaping Framework directing the City Shaping team to "report back no later than 2018 Q2 with a City Shaping Strategic Implementation Plan that delivers City Shaping priorities and resource needs for Action Plan 2019-2022 budget cycle". Administration is focused on implementing Council approved strategies and actions from the City Shaping Framework into business and budget planning for future strategic investments (programs, services, and infrastructure) along the Green Line corridor. Initiatives are being coordinated across the organization in coordination with Infrastructure Calgary, Integrated Civic Facilities Planning program, the Community Services department, Livable Streets, Urban Strategy, and others.

Public engagement events held in Q1 2018 provided valuable feedback on the City Shaping initiatives Calgarians want to experience at Green Line stations. This input will help to determine potential City Shaping projects focused on leveraging and optimizing physical spaces, such as

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transit plazas, along the Green Line. Experiments focussed on the activation of transit spaces are currently being coordinated with business units across the organization and will be undertaken in 2018.

Administration is coordinating with Calgary Housing to deliver the equitable and inclusive strategies within the City Shaping Framework. Calgary Housing's 10-year Affordable Housing Capital Development Plan, being brought forward in Q2 2018, identifies three priority station areas along the Green Line: 16 and 28 Avenue N, Inglewood/Ramsay, and Ogden. Calgary Housing aims to support the creation of 252 homes by opening day in 2026, by identifying funding for the 2019-2022 business plan and budget.

City Shaping is progressing and a report will be provided to the SPC on Community and Protective Services in 2018 June. In addition, Administration is focused on continued coordination with the Green Line technical teams to ensure City Shaping priorities are being reviewed and included as part of the Stage 1 project.

### Land Acquisition

Administration has Council approval to purchase land for the full Green Line alignment. Currently, there is no funding to purchase land beyond the Stage 1 project limits and Administration has not entered into negotiations with any landowners beyond the Stage 1 project. Funding for land purchases must be identified before entering into negotiations with landowners. Administration continues to explore options for funding land purchases on an opportunity basis. With the timeline of future extensions unknown, any land purchases will have to be prioritized using a risk-based approach grounded on the likelihood of the land being required within the next extensions. Administration is advancing the North leg from functional to preliminary design in part to inform the land acquisition strategy. The North leg requires the purchase of 350 parcels between 16 Avenue N and Keystone. The Southeast leg is currently at a preliminary design, and requires 12 properties between Shepard and Seton.

The following chart shows a comparison of land requirements:

	Land parcels required*	Relative estimated cost of land parcels	Comparative estimated cost of leg
<b>North leg</b> (16 Avenue N to Keystone)	350	\$\$\$\$\$	\$\$\$
<b>Southeast leg</b> (126 Avenue SE to Seton)	12	\$	\$

\* 'Land parcels required' includes full and partial properties required for the Green Line LRT infrastructure.

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Administration continues to pursue funding for land purchase and future stage construction. Options for staging construction are being analyzed to further examine the opportunities and challenges associated with land acquisition, construction and operations.

To align with broader corporate projects, Administration, through One Calgary and Infrastructure Calgary, will undergo a prioritization process for capital projects in 2018. The process joins other departmental infrastructure processes under one umbrella that will provide governance and oversight of The City's investment strategy. The list will align funding allocations to projects that are identified as priorities in the 10-year timeframe.

### **Stakeholder Engagement, Research and Communication**

Future stages of the Green Line are reliant on a number of external factors including funding from different levels of government. At this point public engagement on Green Line design may set false expectations of construction timelines. Administration is focussing engagement efforts on the Stage 1 project, as well as City Shaping, community experience, and place-making within the Stage 1 project extents. Upcoming engagement opportunities for Green Line communities include (Attachment 2):

- Green Line urban integration and community experience open houses in Q1 2018;
- Local area planning exercise in the Southeast completing in 2018, led by Community Planning and supported by Green Line;
- Local area planning exercises in the North beginning in 2018/2019, led by Community Planning and supported by Green Line; and
- Green Line North preliminary design public engagement in Q1 2019.

In 2018, Administration will provide updates to communities north of 16 Avenue N and south of 126 Avenue SE on the current state of the long-term vision, timeline for design, and the process to analyze and recommend future extensions. This information will be shared through various communication channels to ensure communities remain aware of timelines and ongoing planning and design initiatives.

Administration provided updates to community leaders in 2017 May regarding the analysis and recommendation for Green Line Stage 1. These face-to-face meetings were well received and provided a forum for in-depth discussion into the details of how the analysis was performed and how the recommendation was produced.

Open houses held in 2018 January and February included technical experts from Green Line to share information and receive public input. A total of six open houses were held with approximately 300 attendees providing input. Open houses were held in Crescent Heights, Beltline, Inglewood, East Village, Millican and Ogden. The emphasis of the engagement activities was Green Line urban integration in preparation for the Stage 1 project, but with application throughout the Green Line long-term vision to define the look and feel of the LRT and public infrastructure. City Shaping initiatives and safety/security were also items for engagement from the public. Administration explored how Calgarians would use public spaces, such as transit plazas, to help inform City Shaping initiatives. The public also provided input on perceptions of safety and security in public places to help inform design. Staff at pop-up events (smaller-scale sessions in parks, businesses, and public places) connected with approximately 500 Calgarians. Online engagement ran from January 16 to February 13, with approximately 3,300 views, and 535 comments contributed. Administration is currently compiling 'what we

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heard documentation' before integrating the input into design and decision-making, then reporting back to communities.

### **Strategic Alignment**

#### **Social, Environmental, Economic (External)**

The Green Line LRT is aligned with the future vision of our city as articulated in imagineCALGARY and is identified as part of the City's RouteAhead 30-year Strategic Plan for Transit in Calgary. The RouteAhead plan is aligned with the policy direction and strategic goals of the Municipal Development Plan (MDP) and Calgary Transportation Plan (CTP), the 2020 Sustainability Direction and Council's Action Plan priorities. RouteAhead was developed in coordination with Investing in Mobility to ensure strategic alignment within the Transportation Department capital plans.

Due to the scope of Green Line crossing geographic boundaries (from the south to north of Calgary) and encompassing all departments at The City, Administration is coordinating with a wide variety of projects and corporate initiatives, including working with:

- Community Services to identify and advance City Shaping projects;
- Urban Strategy, Real Estate & Development Services, Planning & Development, and Calgary Economic Development to align with ongoing planning and development initiatives;
- Main Streets on an urban design concept for Centre Street N, between 7 Avenue N and 16 Avenue N;
- Calgary Housing to deliver equitable and inclusive strategies identified in the City Shaping Framework, aligned with Calgary Housing's 10-year Affordable Housing Capital Development Plan;
- Calgary Municipal Lands Corporation (CMLC) on the Rivers District Master Plan;
- Planning & Development on the Beltline Area Redevelopment Plan (ARP), Green Line station area policy plans, Investing in Local Area Plans (rationalization of policy planning projects);
- The Integrated Civic Facilities Program team to support the Green Line long-term vision of redevelopment and City investment in community amenities at key station areas; and
- Calgary Transit to align future staging recommendations with the RouteAhead Strategic Plan, and Calgary Transit's operating plans.

The Green Line LRT program will result in outcomes which include social, environmental, and economic benefits for generations to come.

#### Social

The Green Line LRT supports mixed-use and mixed income communities to reach community aspirations for vitality, sustainability and affordability. Mixed-use neighbourhoods are the places where people live, work, play, shop and learn. Mixed income communities are financially accessible to all Calgarians. A major benefit of increasing access to rapid transit is the overall lowering of transportation costs, and the fundamental link between cost and affordability of housing, especially lower income households. Consideration for multi-generational communities

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and the places where residents can transition through all stages of life ensure a long-term, sustainable and resilient plan.

### **Environmental**

Investment in transit provides environmental benefits that extend beyond the reduction of greenhouse gases. Improved, higher quality transit service and complete communities attract higher levels of transit ridership, decreasing the environmental impacts associated with urban travel but also support compact growth which in turn provides health benefits. The Canadian Urban Transit Association (CUTA) has outlined the public health benefits of public transit to include improved urban air quality and increased physical activity, which can lower the risk for many diseases. Reduction in greenhouse gases and social health benefits are therefore realized by maximizing transit investment. The City of Calgary has committed to reducing greenhouse gases (GHG) from its corporate operations, through energy efficiency and conservation programs and a shift to using lower carbon and renewable energy sources.

### **Economic**

Leveraging transit investment maximizes the economic return through land use with development opportunities along the corridor. This has the potential to reduce the fiscal impact of growth, and promotes integrated and sustainable development. The investment in transit provides the opportunity to attract global corporations in innovative industries to promote a diversified economy in Calgary. As a result, more population and activity generates sustained ridership and economic growth thereby creating a multiplier effect of the infrastructure investment.

Investing in Calgary's future also results in economic resiliency through job creation, gross domestic product (GDP) growth, with direct benefits resulting from construction, operations and maintenance, increased property values, savings for households, and productivity gains.

### **Financial Capacity**

#### ***Current and Future Operating Budget:***

The Green Line LRT will require an investment in operating funding upon commencement of service. The long-term vision will substantially expand The City's LRT network, and will require additional staff (LRT drivers, Peace Officers, station cleaners, service designers, track maintainers, etc.), and maintenance and storage facilities. The Stage 1 project operating budget is estimated at \$40 million per year, however future stages of the Green Line LRT are not yet known as there are a number of factors to be considered such as the level of service provided, actual ridership and vehicle characteristics. Operation and maintenance cost estimates will be determined as details of future staging options are developed.

#### ***Current and Future Capital Budget:***

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. In order to proceed to construction of Stage 1, The City of Calgary must finalize funding agreements with The Government of Canada through the Investing in Canada Infrastructure Program (ICIP), along with matching funds from the Province of Alberta through the Climate Leadership Plan. The immediate focus has been securing funding agreements for the Stage 1 project.



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Once the funding agreements are finalized, Administration will develop the long-term funding strategy to support the full vision, including layers 1, 2, 3, and 4. Administration is also working with other departments to align our infrastructure investment plans (IIPs) through a coordinated capital plan to focus investment in layers 2, 3, and 4.

As of the beginning of March, there is a dedicated finance lead for the Green Line Program. The mandate for the finance lead is to develop the funding strategy and work with funding partners.

### **Risk Assessment**

#### **Funding**

- Layers 1, 2, 3, and 4 are advancing to meet Council direction to deliver the long-term vision of the full alignment, integrated with station connections, planning and development, and City Shaping. Administration continues to explore sources for funding implementation of transit oriented development, City Shaping, land acquisition outside Stage 1, and planning and design of the North and Southeast extensions. See mitigating measures above, including a dedicated finance lead tasked with developing a funding strategy for the long-term vision.

#### **Land**

- Land acquisition represents one of the highest risks to the project schedule, budget, and readiness. The full Green Line LRT from 160 Avenue N to Seton SE impacts an estimated 440 privately owned properties, approximately 350 of which are located north of 16 Avenue N. Mitigating the land acquisition risks for the full construction of the Green Line LRT will require a focused land acquisition strategy and dedicated funding.
- Land impacts for the Green Line LRT continue to be refined as Administration works through the design process. Only after preliminary design is complete and negotiations with property owners are complete will the exact impacts and costs be known. The potential exists for additional property requirements to be identified as the design advances.

#### **Escalation Costs**

- The start date of construction of future stages will impact cost estimates. Escalation costs cannot be accurately determined for future staging options as the timing of construction is not yet known.

#### **Community Support and Public Engagement**

- A program of this scale and timeline has not been undertaken before in Calgary. It is critical to maintain community support, particularly during construction, and for the duration of multiple LRT extensions. Administration is developing a strategy, including lessons learned from previous projects and other jurisdictions, to respond to community and business impacts during construction.

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### **REASONS FOR RECOMMENDATIONS:**

Completing preliminary design in the north leg will bring the full alignment to the same state of readiness and will inform land requirements. Coordinating planning, development and City Shaping initiatives will support the Green Line long-term vision approved by Council.

### **ATTACHMENTS**

1. Attachment 1 - Green Line LRT Long-term Vision
2. Attachment 2 - Green Line LRT Program Milestones