

GREEN LINE QUARTERLY UPDATE AND CENTRE CITY ALIGNMENT

EXECUTIVE SUMMARY

This report provides the second quarterly update for the Green Line program and includes the evaluation and risk analysis on five alternative alignments through Centre City excluding the Beltline. The Green Line program is comprised of three segments: Green Line Southeast, Green Line Centre City and Green Line North. The segments of the line are at different stages of planning, design and cost estimation. Individual alignment segments will continue to be brought forward and will include updates to the overall program risks and cost estimates. A full package of refined cost estimate, contracting strategy, and staging plan (if required), for the full functional alignment will be presented by 2017 June.

Since the first quarterly report, in 2016 March, the Province of Alberta announced a third call for GreenTRIP projects and explicitly identified Green Line LRT as eligible for funding. A report, TT2016-0237 was brought forward to the 2016 May 18 meeting of the SPC on Transportation and Transit recommending a submission to the Province of Alberta for funding through GreenTRIP and the Government of Canada's Public Transit Infrastructure Fund Phase 1. It is critical that The City of Calgary continue to anticipate the terms and timelines of Federal and Provincial funding agreements. Advancing all work streams such as design and land acquisition will enable The City to respond to future funding applications and access optimum available funds.

As technical design, land use, and the city-shaping strategy continue to advance, the goal of introducing service is always kept in mind. Planning and design efforts support the city-shaping objective, however, incremental refinements and decisions to establish the design and cost estimates are required. Critical milestones continue to guide the delivery of a comprehensive recommendation which aligns with Municipal, Provincial, and Federal objectives while adhering to anticipated funding timelines.

ADMINISTRATION RECOMMENDATIONS:

That the SPC on Transportation and Transit recommends that Council:

1. Receive this quarterly report for information;
2. Direct Administration to Report back to the SPC on Transportation and Transit no later than 2016 September with one recommended option for the Centre City alignment (excluding the Beltline) crossing the Bow River to be able to continue public engagement, refine design, risks, and cost estimating, and prepare for anticipated funding application submissions in early 2017;
3. Direct Administration to Implement the strategic approach described in LAS2015-53 (Proposed acquisition strategy for the Green Line Southeast, Attachment 4) and pursue land acquisition for the full Green Line alignment from North Pointe to Seton, based on the Green Line North route study and the Green Line Southeast preliminary design; and
4. Keep Attachment 4, and any *In Camera* discussion confidential pursuant to Sections 23(1)(b), 24(1)(a), 24(1)(g), 25(1)(b) and 25(1)(c) of the *Freedom of Information and Protection of Privacy Act* unless The City is required to disclose all or a portion of same pursuant to the *Expropriation Act* (Alberta).

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PREVIOUS COUNCIL DIRECTION/POLICY

At the 2015 December 14 Regular Meeting of Council, Report TT2015-0881 (Green Line Funding, Staging, and Delivery) was approved as follows:

REFER, Moved by Councillor Carra, Seconded by Councillor Pootmans, that Recommendation 11 contained in Report TT2015-0881, as follows, be referred to the 2016 January 18 Strategic Meeting of Council: "That Council direct Administration to:

11. Report back to Council through SPC on Transportation and Transit during 2016 on a quarterly basis beginning in March 2016."

ADOPT, AS AMENDED, Moved by Councillor Keating, Seconded by Councillor Woolley, that the SPC on Transportation and Transit Recommendations, except Recommendations 2 b) and 11, contained in Report TT2015-0811 be adopted, **as amended**, as follows:

That Council direct Administration to:

1. Proceed with the Green Line project based on an initial phase that will include LRT;
2. Based on the current anticipated funding of \$4.59 billion and a long term financing approach, plan on a phased approach which includes:
 - a) Downtown as an initial phase; and
 - b) Incorporation of a light rail vehicle storage and maintenance facility which is located in proximity to Shepard station.
3. Complete the north section functional planning study including the same elements as the Green Line Southeast alignment and stations report, November 2015.
4. Complete the central section (including the Downtown) functional planning study;
5. Prepare the required business case for submission to the Government of Canada Public Transit Fund for the Green Line LRT as per Attachment 1;
6. Prepare a business case for the Government of Alberta on a collaborative and flexible approach to matching funds;
7. Begin work with Calgary Economic Development on global promotion of economic diversification opportunities associated with the Green Line per the scope of work in Attachment 1;
8. Prepare a recommendation for a procurement model;
9. Amalgamate all Green Line project activity within a single team structured in anticipation of funding approval for construction;
10. Prepare a recommendation for a more streamlined reporting and decision making process for Council to hear all Green Line related reports and potentially other major projects to Council at their **2016 January 18 Strategic** Meeting; and
12. That Council reconsider Recommendation 2 contained in the Land and Asset Strategy Committee, Proposed Acquisition – (Auburn Bay) – Ward 12 (Cllr. Shane Keating) File No: 18150 56 St SE (JS), LAS2015-29 and further, that Recommendation 2, be amended, to

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report back no later than December 2016 as part of the Green Line Transit Oriented Development (TOD) policy report.

At the 2015 December 14 Regular Meeting of Council, Report TT2015-0905 (Green Line North Update) was approved as follows:

“ADOPT, Moved by Councillor Woolley, Seconded by Councillor Keating, that the SPC on Transportation and Transit Recommendations contained in Report TT2015-0905 be adopted, as follows:

That Council:

1. Adopts the evaluation framework in Attachment 1, to assist in the analysis of the recommended alignment for the Green Line through Calgary’s downtown, and adjacent communities;
2. Report back to the SPC on Transportation and Transit with the next update no later than 2016 July; and
3. Direct Administration to develop at grade vertical alignments through the Beltline communities, either into existing options presented or create new options, and report back no later than 2016 July.”

BACKGROUND

Although full funding commitments have not been made by the Province of Alberta and the Government of Canada, applications for short term funds through the Province of Alberta’s third call for GreenTRIP projects and the Government of Canada’s Public Transit Infrastructure Fund (PTIF) Phase 1 has been announced. Administration understands that the initial GreenTRIP and PTIF Phase 1 investments are for projects that can be completed by 2018. In order to access these funds, the project must align and prepare for the larger anticipated investments that advance the Province of Alberta’s and Government of Canada’s long-term goals. The long-term Ministerial priorities include leveraging transit for social equity initiatives, providing links for the region, and delivering safer and more efficient urban transportation systems for the purpose of enhancing Canada’s economic and environmental sustainability. Until the terms of the funding and the formal application process are released by the Province of Alberta and the Government of Canada, this interim funding will allow The City of Calgary to advance design, land acquisition, and early works contracts for Green Line if approved by funding partners.

Administration continues to advance all aspects of planning and design in order to demonstrate Green Line as a shovel ready and shovel worthy project for full funding. Functional design and a recommended contracting strategy for the full alignment had previously been targeted for end of 2016. A number of factors have changed which has resulted in adjustments to the schedule. The revised schedule reflects the time needed to meet the public engagement objectives, collaborate internally within The City, while considering anticipated funding timelines.

Council’s direction to deliver the Green Line LRT under one program has allowed Administration to holistically evaluate this investment and include city shaping metrics in the program deliverables. The full Green Line program includes three geographical segments: Green Line

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Southeast, Green Line Centre City, and Green Line North. Each segment varies greatly in urban context, community priorities, and opportunities and each are also at different stages of planning, design and cost estimation. As such, each of these segments require different levels of effort to bring them to the same state of design and cost certainty. By 2017 June, Administration will report on the full Green Line recommendations, transit oriented development (TOD) planning, city-shaping metrics, cost estimates, contracting strategy, and staging plan based on available funding.

INVESTIGATION: ALTERNATIVES AND ANALYSIS

Administration is currently focused on bringing each Green Line segment to the same level of planning, design and cost estimation. The evolution of each segment has progressed from concept, route study, functional design, and will continue to preliminary design and finally detailed design. The functional design is sufficient to inform alignment decisions, provide land impact certainty, identify risks, and determine cost estimate ranges, while the preliminary design phase provides additional certainty around land, risk and costs estimates.

Council directed Administration to evaluate five alignment options to connect the Green Line North, and Green Line Southeast in the Centre City. In order to identify constraints and opportunities, comprehensive functional level designs, cost estimates, and risk assessments were produced for each of the five options. Geotechnical, and hydrotechnical investigations were also undertaken for each of the options to inform the evaluation and associated risks. Environmental site assessments (ESA), biophysical impact assessments (BIA), and heritage resource impact assessments (HRIA) have been conducted for all five of the options. In addition to the technical analysis, input from the public, development industry and City policies informed the evaluation.

Green Line Centre City

Downtown is more than just the critical link for transportation connectivity, it is Calgary's economic engine. This is where the headquarters of global corporations locate, where business activity occurs throughout an ever-growing neighbourhood of skyscrapers and where over 120,000 Calgarians travel to work every day. Integration of the Green Line into this dense urban core must give particular consideration to the opportunities the downtown environment presents for all Calgarians and potential negative impacts. In order to continue to attract corporations and their employees in a competitive, global marketplace, Calgary's Downtown must continue to develop into a place of attractive business, recreation and residential destinations.

An underground alignment offers the most flexibility and long-term development potential for all aspects of Calgary's downtown. It maintains, and enhances access to grade-A office real estate locations, providing mobility for all Calgarians travelling in, out, and around the downtown.

Attachment 1 outlines the Council-approved evaluation methodology, and the results of the evaluation for Centre City. The following accounts were approved by Council for use in the evaluation:

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- **Financial Capacity:** an affordable and cost-effective service. Capital, operating and maintenance costs are achievable, sustainable in the long-term, and provide good value for money.
- **Community Well-being:** a safe and socially inclusive service that improves access to key community destinations, and provide transportation choices for Calgarians.
- **Transportation:** a high priority transit service that attracts transit use, walking and cycling as preferred mobility choices for Calgarians. An integrated service that improves customer experience, meets future demand, and strengthens the regional and local transit networks.
- **Urban and Neighbourhood Development:** a service that supports current and future land use, development along the corridor, and integrates with neighbouring communities.
- **Sustainable Development:** a service that reduces greenhouse gases and minimizes impact to the existing natural environment.
- **Feasibility and Deliverability:** a service that can be constructed and operated without significant technical issues or constraints.
- **Stakeholders:** a service that reflects the values and priorities of communities.

The evaluation shows that Option D, the underground option, is the best alignment to address the evaluation criterion. The underground option is the highest ranked in five of the seven accounts included in the evaluation. It also ranks highest when the numeric scoring for each of the accounts is summed. The seven evaluation accounts are weighted equally, and provide a comparison of the relative benefits, opportunities, challenges, and trade-offs of each of the options.

A decision on the Bow River crossing will be required from Council in fall 2016 to bring this segment of the Green Line to the same level of planning, design, and cost estimation. Deferring a decision beyond the fall will confuse stakeholders who actively engaged in the evaluation process, and will hinder the design team from moving forward with optimization of some design elements, engaging stakeholders in further discussions, and preparing for funding application submissions.

As the functional designs for the five Centre City options progressed, a number of limitations were identified in the Beltline for the previously-approved 10 Avenue S alignment. Due to these limitations, 11 Avenue S and 12 Avenue S were added to the evaluation of alignments. The full list of options being evaluated are:

- 10 Avenue S: elevated, surface, and underground
- 11 Avenue S: surface, and underground
- 12 Avenue S: surface, and underground
- 11 and 12 Avenues S: surface couplet (LRT operates one-way on 11 Avenue S, and in the opposite direction on 12 Avenue S)

Due to the late addition of the Beltline options, the evaluation and public engagement process has not been completed. Council approval of any of the five options for crossing the Bow River will not preclude any of the alignment options being considered for the Beltline. Administration

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is conducting public engagement in the Beltline to hear from people who live, work, and move in the Beltline. An update on the Beltline corridor (either 10 Avenue S, 11 Avenue S, 12 Avenue S, or the couplet) will be presented to SPC on Transportation and Transit no later than 2016 December. The decision on the alignment for the corridor will be presented to SPC on Transportation and Transit no later than 2017 March.

Transit Oriented Development and Land Use Policy

All Centre City stations will be discussed and studied with public stakeholders through individual station area workshops. It is not expected that any additional land use policies are required in the Centre City to address implementation of the Green Line.

Public Engagement

From 2015 November through 2016 February, the project team met with community and business leaders, property owners, developers and the public to identify opportunities, challenges and trade-offs that need to be considered in the evaluation. Participants had an opportunity to learn about each option and provide input on the evaluation criteria.

In April, the project team provided the public with results from the comparative evaluation of the Centre City options and obtained feedback on items requiring additional consideration or evaluation. Participants learned how options were evaluated and were presented with examples of the look and feel associated with each option and the specific benefits and challenges.

An interactive graphic presentation of the options and evaluation was installed at Olympic Plaza, along with pop-up displays with information about the options at nine locations in the Centre City. The Engage Portal was also promoted as a way to learn more about the options and to provide input.

Public response to the evaluation criteria has been positive with the majority of participants supporting the evaluation framework. Numerous comments have been received about the holistic and comprehensive approach to the evaluation suggesting that it has accurately captured the interests of the community and businesses.

Public response to the highest ranking option, Option D, has been favourable. Comments collected throughout all participation events noted that a tunnelled alignment was preferred because it was viewed to cause the least amount of disruption to communities, optimizes transit operations, and provides the infrastructure required in the long-term.

The public engagement program has had over 5,000 in-person contacts with Calgarians since 2015 November which include a number of pop-up events around the city and specific Green Line community sessions. In addition, there have been over 2,600 visits to the online engagement pages on the Centre City and Beltline options.

Land

Administration will continue its efforts to quantify the value of the private property impacts. In addition, meetings will continue with external stakeholders and land owners/building managers along the proposed alignment to seek out opportunities for collaboration and integration.

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Land impacts are being assessed based on the functional designs. Administration is reviewing each of the proposed design options in order to identify properties that will be required in all scenarios either for construction or strategic acquisition purposes. Based on those findings and in accordance with the Council approved route study, Administration is seeking direction to proceed with land acquisition in advance of the full alignment recommendation.

Cost

Program cost estimates provided for the five options are based on the functional designs. The estimates are informed by the latest data from the geotechnical, and hydrotechnical investigations, and include such items as critical risk, contingencies, project management, and administration costs. The cost estimates will be refined as design is progressed, staging is considered, and value engineering principles are applied. Cost estimates have been developed in accordance with The City's Corporate Project Management Framework *Estimation and Contingency Standard*, class four cost range. The design and costs will continue to be refined before sharing with the public in 2016 September.

Refinement of the cost estimates will include a more detailed review of risks to provide an 80% certainty cost estimate. This further cost validation and certainty will be determined with input from further design as well as statistical analyses to place a value to identified risks. Monte Carlo methods, an industry best practice for quantifying risk, will be used in a manner similar to that previously employed for the Green Line Southeast costs.

Risks

All Centre City options involve elements of tunnelling, including the elevated option which has a tunnel on the north side of the Bow River. The five functional designs for the Bow River crossing incorporate the latest data from the geotechnical and hydrotechnical investigation. The technical analysis, evaluation, and public input all support the highest ranked (underground) option. Additional information on the risks specific to the Centre City options are included in Attachment 2.

Applications for new developments (development permits) that are currently ongoing may pose a risk to the Green Line in terms of cost, design and operations. This is due to the fact that there is either insufficient detail known regarding the Green Line alignment, or the details of proposed developments are not known at this point in time to properly consider the mutual impacts and opportunities at these sites. Administration has no legal ability to place such applications on hold until further details are available. Administration is meeting with applicants to discuss these sites and provide as much information as possible to inform the development application process. Deferring the decision on the Centre City will increase anxiety among residents, building managers, and developers along the corridor. Certainty in the alignment options will allow all stakeholders to move forward together to optimize the design, discuss station access, and integrate with existing, and future developments.

Next Steps

All five options have implications on the previously indicated overall program budget. The program staging and delivery will be further examined, based on the approved Centre City

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alignment. To bring all the segments to the same level of design, and cost and risk certainty, Administration will require Council direction on the Centre City including the Bow River crossing no later than 2016 September.

Further engagement activities with Beltline stakeholders are being undertaken in 2016 June.

Green Line North

Design

Station locations and alignment, based on input from station area workshops and transit oriented development (TOD) charrettes, continue to progress. Technical and land constraints are also considered as station platform configurations, grade separation and connections between station locations, are established.

Cost Estimate

As the functional planning design progresses, updated cost estimates will be presented. Current cost estimates are within a class five cost range.

Transit Oriented Development and Land Use Policy

Similar to the Green Line Southeast process, TOD concept plans will be developed for four station areas along the north segment. These station areas are:

1. 9 Avenue N, 16 Avenue N, 28 Avenue N (as a single charrette)
2. 40 Avenue N
3. 64 Avenue N (completed)
4. 96 Avenue N

The TOD charrette outcomes are focused on identifying redevelopment opportunities created by Green Line and improved mobility options. These sites also facilitate the opportunity to explore the Green Line's potential influence towards city-shaping and economic diversification.

40 Avenue N was selected as it is in direct proximity to the Greenview industrial area to the east, and the opportunity presented by the proposed redevelopment of the former Highland Park Golf Course.

The 64 Avenue N charrette (multi-day design workshop with Administration, technical professionals, designers, and the public) explored city-shaping through an integrated planning approach to delivering municipal services. The charrette brought together key stakeholders from the Thornhill Aquatic and Recreation Centre, and Thornhill Public Library (both with separate business cases on Community Services' unfunded Infrastructure Investment Plan). The workshop aligned various stakeholders' plans into a concept for a new integrated facility that, together with the LRT station and bus terminal, will form a 'community hub' at full build out. A report back to the community on next steps is planned in 2016 June.

The opportunities presented by the 96 Avenue N station's proximity to Aurora Business Park lands, airport proximity, potential airport connection and LRT service will be explored and support economic diversification, and development.

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Public Engagement

Station area workshops (two-hour sessions focussing on how Calgarians move around their community today, and how they envision that changing with the Green Line) have been completed for all eight Green Line stations north of 16 Avenue N. These workshops were designed to generate discussion and gather feedback from community stakeholders around the integration of each station into its immediate surroundings. The focus of the workshops was around connectivity to the station through various modes of transportation, how the community would use and access the station, and where amenities could be provided. The information collected at these events will inform the design process and provide background information for the selected TOD concept plans.

The station area workshops have been well attended by residents, with attendance ranging from 70 to 120 participants at each workshop. Online opportunities were also provided for those unable to attend the sessions, and included videos of the presentations and a survey with questions around current and future community access to stations.

Land

Land impacts and costs are being assessed based on the developing functional design. Administration is reviewing each of the proposed design options in order to identify properties that will be required in all scenarios either for construction or strategic acquisition purposes. Based on those findings and in accordance with the Council approved route study, Administration is seeking direction to proceed with land acquisition, in advance of the full alignment recommendation.

Risks

As functional design progresses, land requirements are being identified. The number of parcels that are anticipated will require that The City of Calgary begin communication and negotiations with land owners as soon as possible to meet anticipated Green Line stage gates as per Attachment 3. Additionally, Administration is seeking authorization (Recommendation 3) to pursue land acquisition for the full Green Line alignment.

Next Steps

A report back on the outcome of the 64 Avenue N charrette is planned for 2016 June to share the concepts and solutions developed with members of the community who were unable to participate in the process. Feedback collected at this report back will inform the final TOD concept plans developed.

TOD charrettes for 9 Avenue N, 16 Avenue N, 28 Avenue N, 40 Avenue N, and 96 Avenue N will take place in fall 2016.

Green Line Southeast

Design

In preparation for development of the procurement documents (i.e. design and specifications), the preliminary design is being finalized, discussions with developers are advancing, and coordination with adjacent City capital projects are continuing.

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Transit Oriented Development and Land Use Policy

Land use policy planning in the three TOD areas of Inglewood and Ramsay, 26 Avenue SE, Lynnwood/Millican and Ogden, and South Hill are ongoing.

Initial public engagement events focused on informing stakeholders of the previous phase of planning undertaken in 2015 to establish the TOD vision for each area and to inform residents of the proposed work plan. Each event was well attended by the public. Questions currently being resolved are which policy measures to employ in each of the areas, e.g. amending or rescinding area redevelopment plans or creating new station area plans. Further engagements will occur to discuss proposed land uses, development rules and policy proposals. The policy plans will be presented for Council approval in 2016 December and will include land use concepts for the areas. Implementation of the concepts through City-initiated re-designation will occur in 2017.

Public Engagement

Public engagements for the local area policy plans are ongoing. The project teams have met with individual community associations and stakeholder groups and will continue to work through this process until station area plans are completed.

Administration has engaged with four of the Treaty Seven First Nations in compliance with Alberta Culture and Tourism requirements.

Land

Administration continues to actively engage in meaningful negotiations with property owners with the goal of reaching a higher percentage of negotiated agreements. To date, Administration has successfully negotiated a total of nine property acquisitions and is targeting a total of 14 closed transactions by year end. The remaining properties will be targeted for acquisition throughout 2017 and if required, expropriation proceedings are expected to commence in mid-2018 to ensure that The City has possession of all required properties by the targeted construction start date.

Private property requirements extending from Douglas Glen to Seton have now been identified and consist of approximately 20 private property acquisitions. Administration is seeking Council direction to proceed with land acquisition of these properties.

Construction

The Quick Wins project, which provides service improvements for the 302 bus route, was put on hold due to the funding announcement from the Federal government to expedite construction of the Green Line to LRT in 2015 August. Since funding is still to be confirmed, the Quick Wins project will proceed in phases. Phase 1 is targeted for a 2016 start and includes:

- reliability improvements to the intersection at Barlow Trail and 114 Avenue SE
- a temporary transit only connection from 40 Street SE to 126 Avenue SE through Shepard Development lands
- evaluation of other transit priority measure improvements on 130 Avenue SE and 52 Street SE

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Initially planned dedicated bus lanes on 130 Ave and 52 Street are not included in Phase 1 and may be constructed as a Phase 2 if required once the extents of the Green Line are known.

Cost

Cost estimates remain at a 70% certainty based on preliminary design, and are within a class three cost range.

Risks

Negotiations with Canadian National Railway and Canadian Pacific Railway for land required for the Green Line are on-going and have not yet been resolved. Infrastructure requirements imposed as a result of negotiations could impact program cost and schedule.

Next Steps

Early works, as identified in TT2016-0237, along with determination of the contracting strategy for the full Green Line remain the primary focus in order to produce the Green Line contract documents.

Further engagement events are planned for the three areas in 2016 June to present initial draft proposals for the policy plans and to collect feedback from the public. Presentation of the policy plans to Calgary Planning Commission and Council for approval is planned for Q4 2016.

Program Schedule

The Green Line stage gate plan has been revised as per Attachment 3. Through this rescheduling of milestones and activities, Administration has addressed the known information regarding funding timelines, new alignment considerations in the Beltline, expansion of the city-shaping and economic diversification aspects, and the objective of comprehensive and effective stakeholder engagement.

By 2017 June, Administration will report back with a comprehensive summary and recommendations for the full alignment including:

- refined cost estimates
- quantified risk assessments
- city-shaping framework- a strategy that identifies opportunities to leverage the Green Line LRT investment for related initiatives

Project Delivery

Administration is currently evaluating the options for contracting including delivery of detailed design and construction, and operations and maintenance. Administration has received confirmation that the Federal and Provincial governments will not mandate public-private partnership (P3) as a term of the funding agreements. This will allow Administration to evaluate all delivery models and recommend the one that best meets The City of Calgary's objectives.

City-shaping and City-wide Policies

Building on the city-shaping definition and three pillars outlined in the Green Line Q1 update report TT2016-0220 to SPC on Transportation and Transit, a city-shaping work plan has been developed. The work plan identifies major initiatives for the short-term to long-term under the full

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Green Line program. By 2017 June, Administration will deliver a framework on how the city-shaping vision will be implemented and realized.

Stakeholder Engagement, Research and Communication

Administration has been meeting with individual stakeholder groups, such as The Green Line North Communities Group, the new Beltline Community Group, Alberta Health Services, the Chinese community, and LRT on the Green. Additional meetings are being held with the applicants of development permits and land use amendments to provide information on the alignment in order to mitigate impacts and identify opportunities.

To generate awareness for Green Line, the city-wide scope and city-shaping potential, a number of events are planned with Council, city staff and the public.

Strategic Alignment

The Green Line 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. The identification of priorities in this report is consistent with the Growth Management Framework and the balance of growth between established communities and new green-field communities.

This strategic investment in infrastructure is well aligned with current policy initiatives as well as other orders of government priorities. The Green Line LRT can be leveraged to demonstrate benefits that are in alignment with Government priorities such as social equity, environmental sustainability, economic diversification, regional connections, and safer and more efficient urban transportation systems.

Social, Environmental, Economic (External)

Key to Green Line is the city-shaping opportunity and the social, environmental and economic benefits (e.g. tax dollars generated by spatially integrated mixed use, higher density development vs. single use, low density development, reduced annual healthcare cost correlated to emissions reduction and increase in active lifestyles). The integrated approach to service delivery, connections and links to major infrastructure projects, health and education centres, as well as the regional connection are some of the opportunities Green Line offers.

Social

Great communities are adaptable to the needs of current and future residents. Communities that provide a broad range of housing choices and commercial services, supported by high quality transit and transportation choices, allow people to meet day-to-day needs within their own neighbourhood.

As a city-shaping initiative, Green Line supports mixed-use and mixed income communities to reach their aspirations for vitality and sustainability. Mixed-use neighbourhoods are the places where people live, work, play, shop and learn. Mixed income communities are financially

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accessible to all Calgarians. Consideration for multi-generational communities and the places where residents can transition through all stages of life ensure a long term, sustainable plan.

Environmental

Improved, higher quality transit service and complete communities attract higher levels of ridership, decreasing the environmental impacts associated with urban travel. The Green Line will lead to a reduction in greenhouse gases. The City of Calgary uses a wind power contract for the LRT network, enabling zero-emissions door-to-door travel in Calgary for CTrain customers.

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. The City also has a community GHG reduction plan with a broader aim of enabling Calgary citizens and businesses to reduce emissions, primarily from choices they make in transportation and heating homes and buildings city-wide. The City's targets are for 20% reduction in GHG emissions from a 2005 baseline by 2020, and an 80% reduction by 2050.

Economic

Construction of the Green Line will create 23,000 direct jobs, based on current Government of Alberta Economic Multipliers. Further sustained employment is created through the on-going operation of public transit infrastructure.

The Green Line will further boost the accessibility of Calgary's downtown; currently over half of the weekday trips to the downtown are made on public transit. The Green Line will not only provide a primary transit connection between major employment activity centres along the route (Centre City, Quarry Park, Aurora Business Park, and Seton) but via transfers to the Red Line and Blue Line therefore connecting to other major activity centres (University of Calgary, SAIT, Alberta College of Art and Design, and the Stampede). Future connections are also under development to Calgary International Airport.

More population and economic activity generates sustained transit ridership and thereby creates a multiplier effect of the infrastructure investment.

A city-shaping investment of this order of magnitude provides the opportunity to attract global corporations in innovative industries to promote a diversified economy in Calgary.

Financial Capacity

Current and Future Operating Budget:

In order to demonstrate readiness to the potential funding partners, the Green Line planning phase must advance. These deliverables can only be met if an investment of operating funds/resources by several City business units is dedicated. The impact has been incorporated into the 2016 work plans of several business units, however resource efforts are a draw on the Green Line capital fund.

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Impact on the future operating budget is dependent on which option is ultimately constructed. Some options will require more funds to operate and maintain. Operating cost estimates will be refined in subsequent phases of this project and presented in 2017 June.

Current and Future Capital Budget:

A refined project cost estimate for Green Line is under development as part of this phase of functional planning work. Cost estimate refinements will be primarily related to the Green Line Center City and the Green Line North segments, as additional design information becomes available.

The impact of borrowing costs is expected to reduce the available budget for construction by approximately 1/3 of the cost of the project depending on the timeline of borrowing. Staging options that meet the available funding will be provided.

The current City of Calgary Green Line funds of \$520 million are being used to continue land acquisition and design to be ready for construction using any procurement option. Use of the Green Line funds ahead of a signed commitment of funding from the Federal and Provincial government erodes the matching contribution limit; however, this erosion of funds may be reduced with the recently announced interim funds being made available through GreenTRIP and PTIF Phase 1. Timing and commitments to these interim funds are unknown at this time.

Risk Assessment

The project has many risks that are being tracked and actioned, however the following risks are the focus of Administration's ongoing risk management:

- **Funding**
 - Funding is at risk if a shovel ready and shovel worthy project is not presented upon the funding applications being released. It is critical that The City of Calgary be first in line for funding applications as there will be competition from other municipalities for similar mass transit projects of national significance.
 - If the full alignment is not set by 2017 June, funding for this project may be delayed. In order to meet these timelines the design and alignment must progress.
- **Timeline**
 - If the key milestones are not reached as identified in Attachment 3 the opportunity to receive matching funds from the Federal and Provincial Government may be in jeopardy.
- **Land acquisition**
 - Land acquisition continues to present one of the highest risks to the project schedule and budget. Total land cost estimates continue to be reviewed and refined as negotiations proceed and the design advances. It's important to note that the land impacts for the Green Line continue to be refined as the project team works through the design process. Until detailed design is complete, the exact land impacts will not be known. The potential exists for additional property requirements to be identified as the design advances. Administration will make every effort to achieve negotiated

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agreements with impacted property owners; however expropriation may be required in order to ensure that the required land is available to meet the construction schedule.

REASON FOR RECOMMENDATION:

Provide Council and the public with an update on the status of Green Line activities, including the evaluation of the five options for crossing the Bow River.

ATTACHMENTS

1. Green Line LRT: Centre City Multiple Account Evaluation Summary Report
2. Relative Risks for the Green Line Centre City Options
3. Green Line LRT Program Stage Gates
4. LAS2015-53 Report (Confidential)