Calgary

Welcome

Green Line LRT

Beltline Alignment Options

Stay engaged!

Follow the Green Line story at **calgary.ca/greenline**

Green Line LRT Why are we here?

Our Challenge
Determine the best alignment in the Beltline.

Tonight:

- Find out more about the Green Line project
- Learn about the evaluation process and outcomes
- Give us your feedback

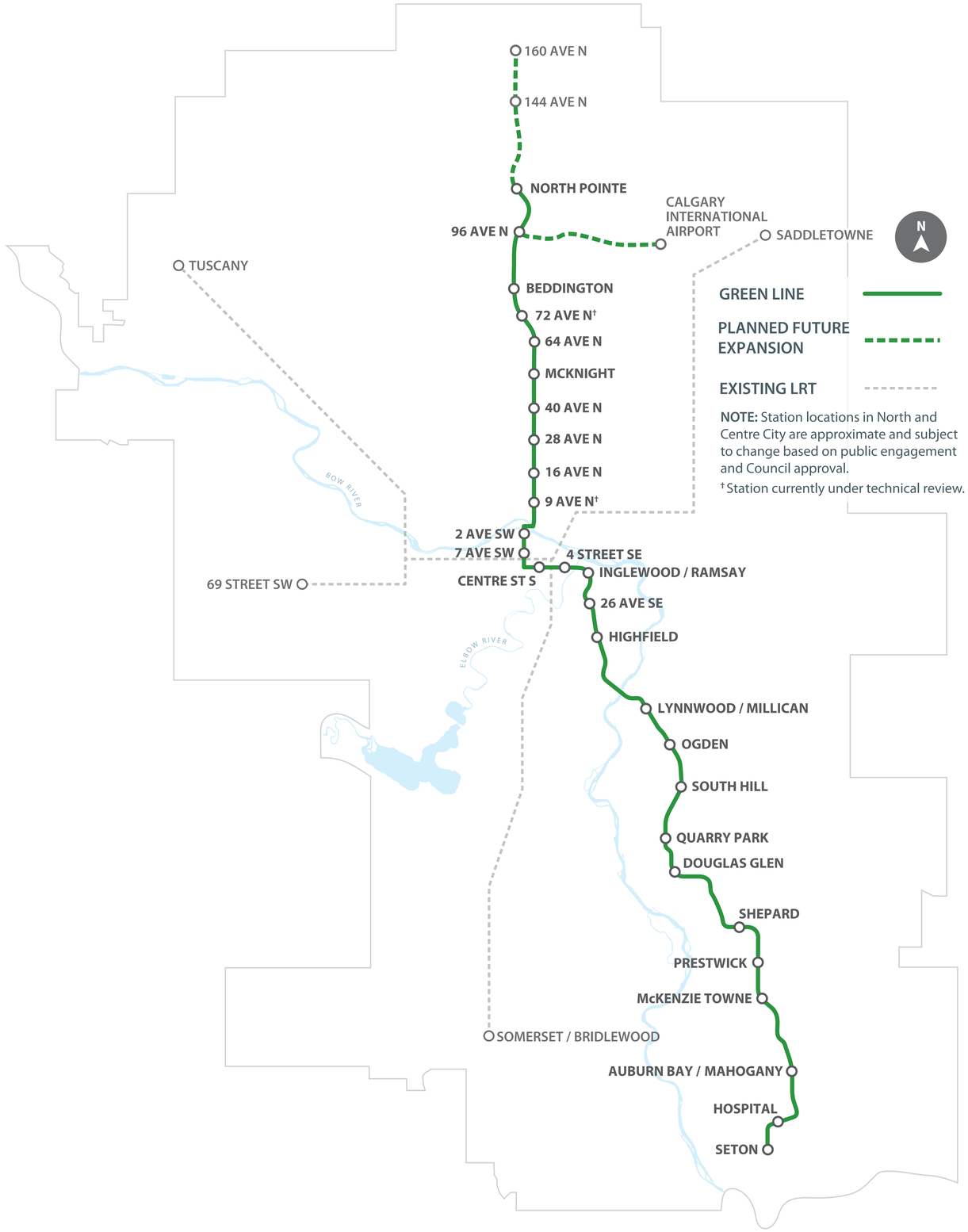
Green Line LRT

Project Background

Calgary

Green Line LRT

- Calgary's next light rail transit (LRT) line will be 46 kilometres long and will nearly double the size of our current LRT network.
- Estimated to provide 90,000 -140,000 daily weekday trips on opening day.
- A key mobility improvement in existing and new communities, connecting people and places, and enhancing the quality of life in the city.



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Green Line LRT Project timeline

2011
City applies for Provincial GreenTRIP grant for the Green Line preliminary design and transit oriented development (TOD) study.

2013
Council allocates $52 million/year from 2015-2024 for the Green Line.

2013 - 2014
Extensive public engagement & technical studies identify a route for the north leg of the Green Line. Centre Street alignment is approved by Council.

Jan to Sept 2015
Public engagement & design work confirms alignment, station locations and TOD plans for the southeast leg of the Green Line.

Jul 2015
The Government of Canada announces up to $1.53 billion to the Green Line LRT project.

Nov 2015
Council approves route alignment, station locations and TOD plans for the southeast leg of the Green Line.

Dec 2015
Green Line is brought under one program and is planned for an initial phase of LRT. Engagement on station locations, TOD, and alignment for Centre City and north leg of the line begins.

Jan 2016
The project team begins public engagement to develop land use plans in the southeast.

Apr to May 2016
Report-back on Downtown & Bow River Crossing options. Start public engagement for Beltline. TOD design charrettes begin.

May to Jun 2016
Report-back with an update on the Downtown & Bow River Crossing results. Introduce and gather feedback on preliminary Beltline alignment options.

Sept 2016
Present the Downtown & Bow River Crossing alignment recommendation to Council committee.

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Sept to Dec 2016
Evaluate and confirm the Beltline alignment options.
Continue public engagement and design work along the Green Line.

Dec 2016
Present outcomes of Beltline alignment evaluation to Council committee.

Jan to Mar 2017
Report back on the recommended alignment for the North, Centre City, and Beltline Green Line segments.

June 2017
Present final recommendations to Council for full alignment, station locations, cost estimates, contracting strategy, TOD plans, and city-shaping framework.

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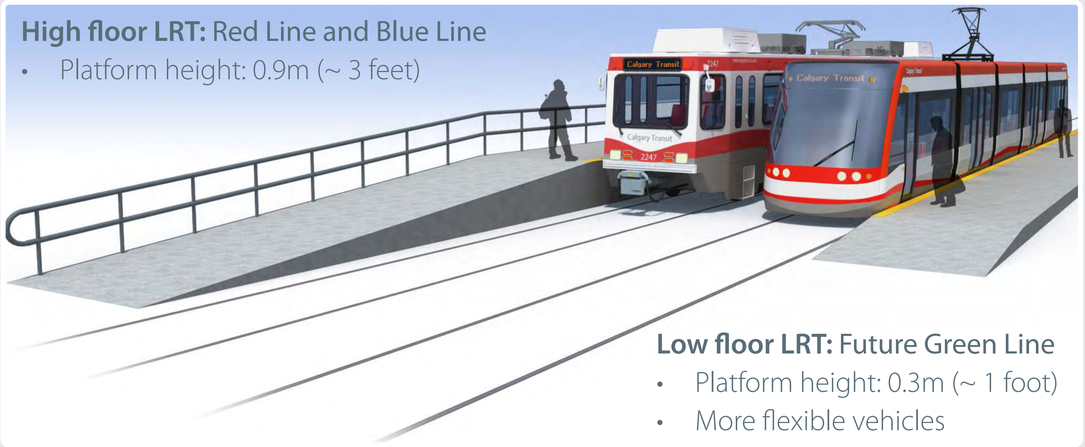
Green Line LRT Low floor LRT technology

Low floor LRT offers:

+ Better community integration
+ Curb-height platforms
+ Less infrastructure (compared to the existing Red and Blue Lines)
+ Better accessibility (such as shorter access ramps)

High floor: Red Line & Blue Line

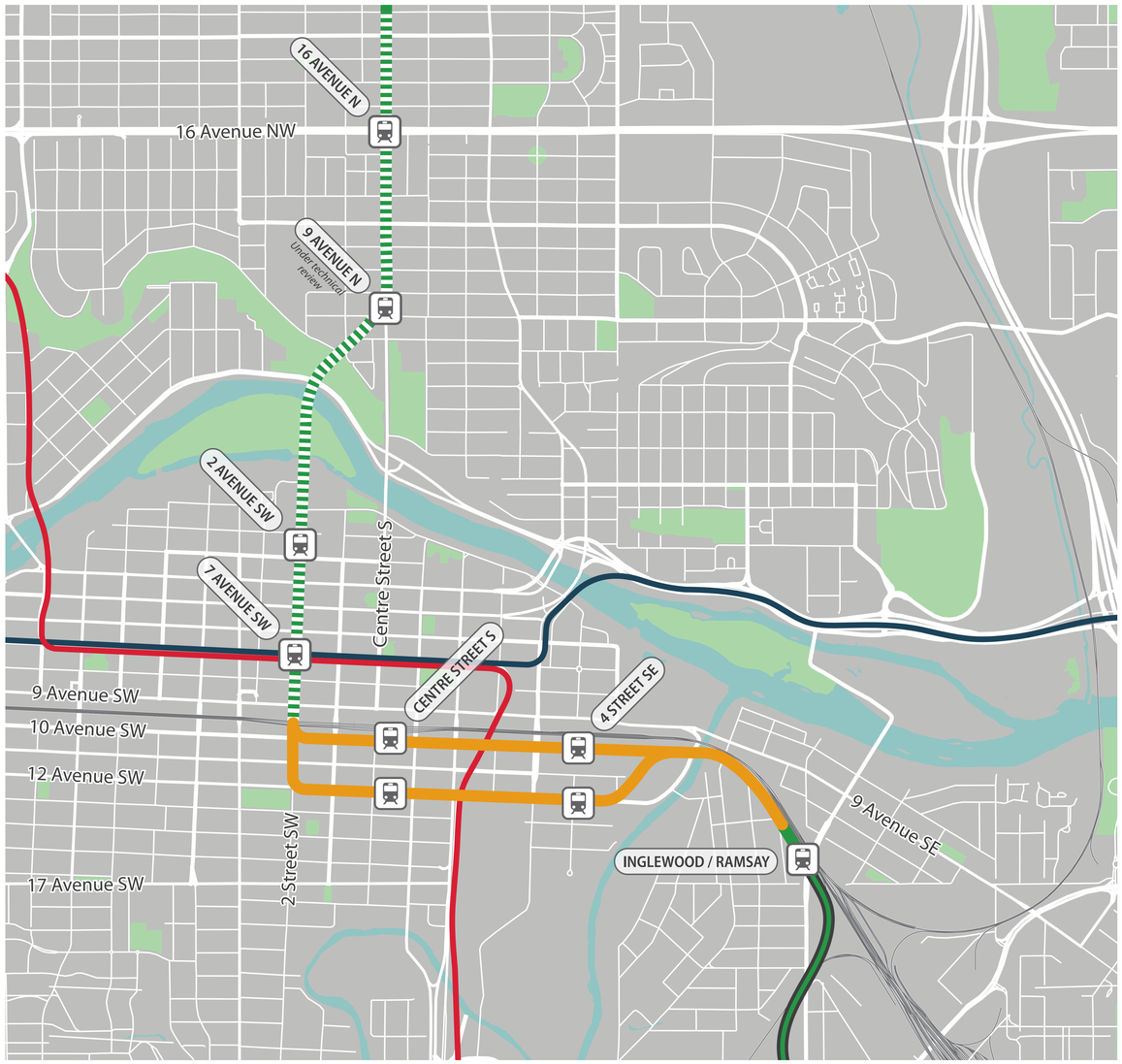
Low floor: future Green Line



Green Line LRT Downtown & Bow River Crossing

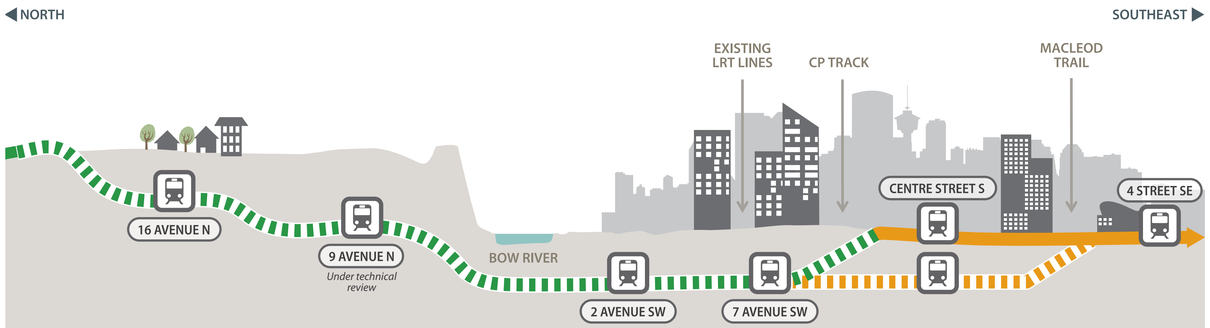
LEGEND

- GREEN LINE LRT SURFACE
- GREEN LINE LRT UNDERGROUND
- GREEN LINE LRT ELEVATED / BRIDGE
- BELTLINE / RAMSAY OPTION (TBD)
- EXISTING RED LINE LRT
- EXISTING BLUE LINE LRT
- GREEN LINE LRT PROPOSED STATION
- EXISTING RAILWAY



City Council has approved the fully tunneled LRT route in Calgary's Downtown Core, in principle.

The fully tunneled route would see the Green Line LRT run underground from the CP tracks in the Beltline, under 2 Street S.W., and under the Bow River. The line would resurface north of 16 Avenue N along Centre Street N.



NOTE: For discussion purposes only. Green Line alignment and station locations to be confirmed.

Beltline Alignment

Evaluating the Options

Beltline Alignment Shortlisted alignment options

Shortlisted alignment options

Preliminary evaluation identified the following options to advance to detailed evaluation:

+**10 Avenue S** Surface

+**10 Avenue S** Tunnel + Surface

+**12 Avenue S** Surface

+**12 Avenue S** Tunnel + Surface

LEGEND

- GREEN LINE LRT SURFACE
- GREEN LINE LRT UNDERGROUND
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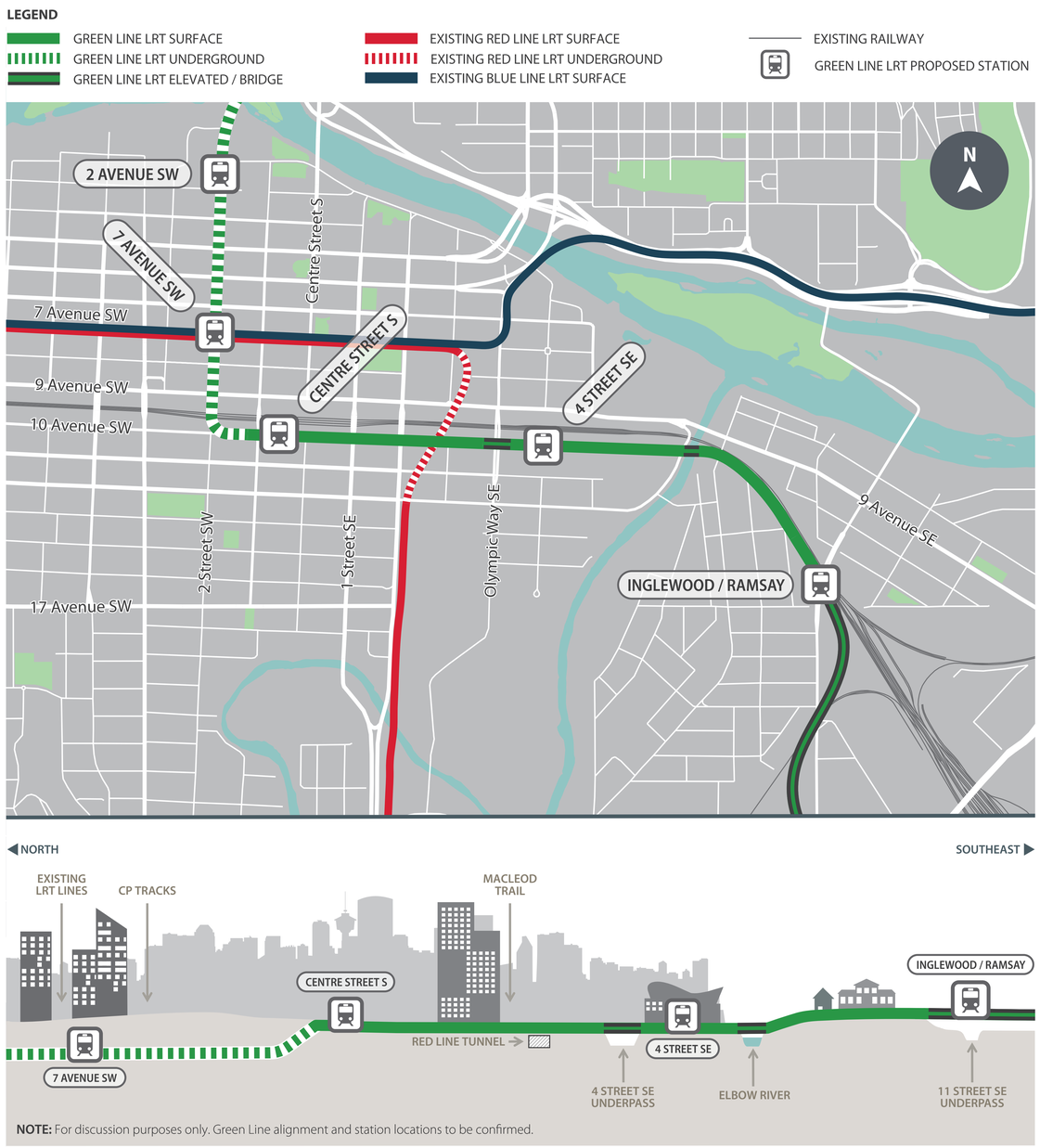
Beltline Alignment Shortlisted alignment options

10 Avenue S Surface



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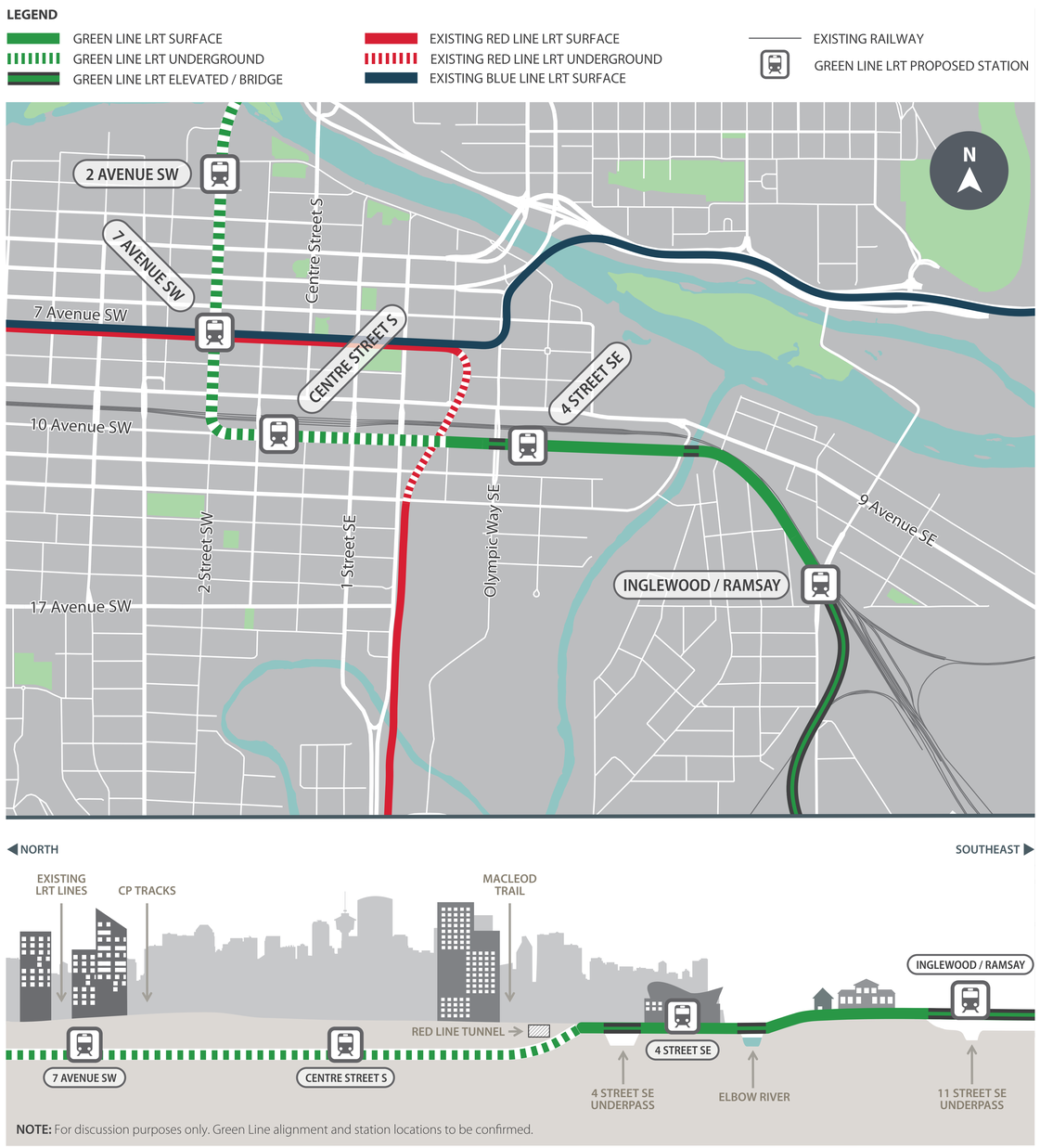
10 Avenue S Tunnel + Surface



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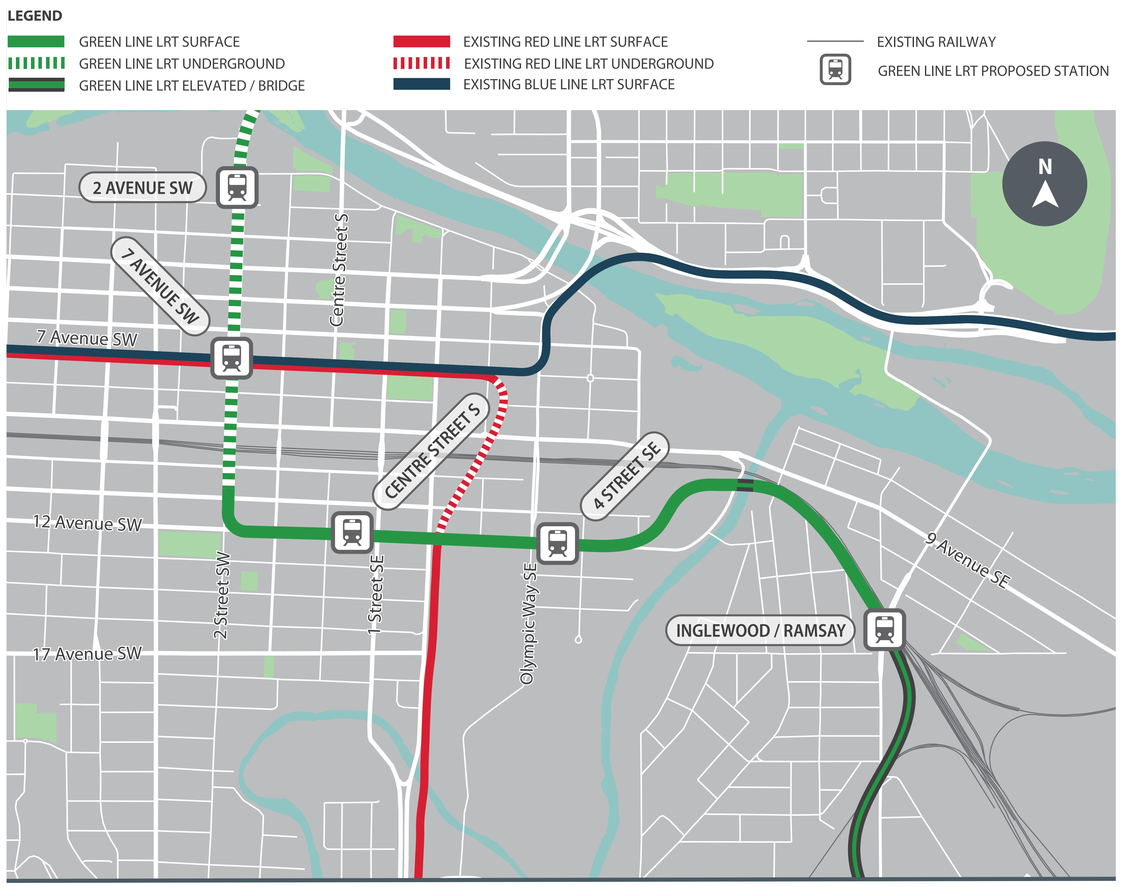
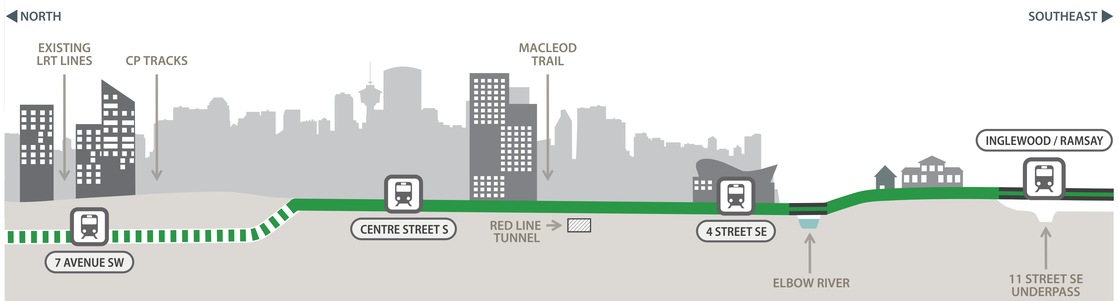
Beltline Alignment Shortlisted alignment options

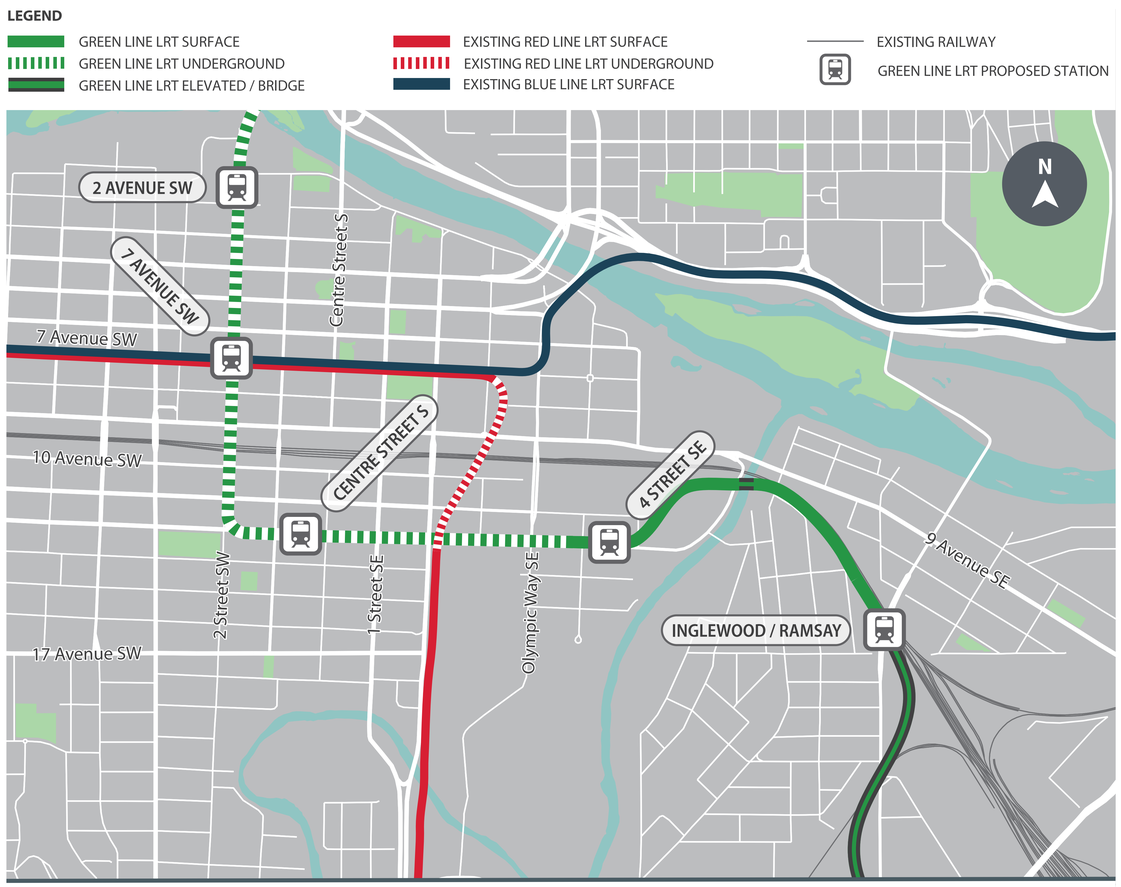
12 Avenue S Surface

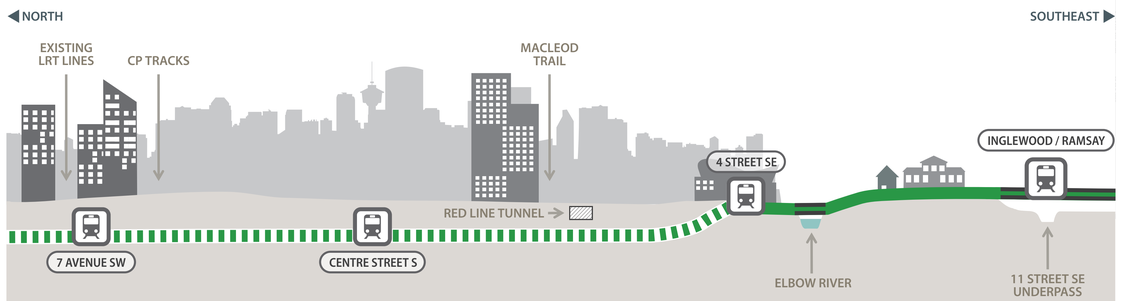




NOTE: For discussion purposes only. Green Line alignment and station locations to be confirmed.

12 Avenue S Tunnel + Surface





NOTE: For discussion purposes only. Green Line alignment and station locations to be confirmed.

Beltline Alignment Shortlisted alignment options

All shortlisted options underwent a detailed evaluation process.

This process considered technical, financial, economic and community-focused criteria.

This process also included gathering your feedback about the opportunities and challenges that each option presents.

Evaluation

Results & Key Outcomes

Evaluation Criteria

Detailed Evaluation Criteria

Community Well-being
A safe and socially inclusive service that improves access to key community destinations and provides transportation choices for Calgarians.

Transportation
A high priority transit service that attracts transit use, walking & cycling as preferred mobility choices for Calgarians. An integrated service that improves customer experience, meets future demand and strengthens the regional & local transit networks.

Sustainable Environment
A service that reduces greenhouse gases and minimizes impact to the existing natural environment.

Stakeholders
A service that reflects the values and priorities of communities.

Financial Capacity
An affordable and cost effective service. Costs are achievable, sustainable in the long term and provide good value for money.

Urban & Neighbourhood Development
A service that supports current and future land use, development along the corridor, and integrates with neighbouring communities.

Feasibility & Deliverability
A service that can be constructed and operated without significant technical issues or constraints.

Evaluation Community Well-being

Goal

A safe and socially inclusive service that improves access to key community destinations and provides transportation choices for Calgarians.

Evaluation Metrics

+ Community Cohesion

Consideration of opportunities for integrating stations with existing neighbourhoods while minimizing visual and physical barriers.

+ Impact to Recreational Uses

Consideration of potential construction impacts on community events, festivals and amenities.

+ Safety, Security & Emergency Access

Consideration of perceived safety and security of the LRT service, including how emergency services could access different parts of the system.

+ Accessibility

Consideration of service that would be accessible to all users.

Results

Key Outcomes

12 Avenue S Surface option scored the highest due to:

- Existing road network provides good station connections east of 4 Street S.E.
- Generally higher levels of street activity along 12 Avenue S improves perception of safety

10 Avenue S Surface + Tunnel option scored the lowest due to:

- Fewer station connections result in longer walking distance east of 4 Street S.E.
- Generally lower levels of street activity along 10 Avenue S decreases perception of safety

Evaluation Financial Capacity

Goal

An affordable and cost-effective service. Costs are achievable, sustainable in the long term and provide good value for money.

Evaluation Metrics

+ Capital Cost

Consideration of the anticipated costs to construct the LRT infrastructure.

+ Land Impact

The amount of land required to be purchased to accommodate the LRT infrastructure.

+ Operating & Maintenance Cost

High-level consideration of the overall costs to operate and maintain the infrastructure.

Results

Key Outcomes

12 Avenue S Surface option scored the highest due to:

- Lowest relative cost
- Anticipated lower future maintenance costs

10 Avenue S Surface + Tunnel option scored the lowest due to:

- Highest relative cost
- Anticipated highest future maintenance costs

Calgary

Evaluation Transportation

Goal

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 & local transit networks.

Evaluation Metrics

+ Ride Time for LRT

Evaluation of factors that could influence travel times for transit customers.

+ Transportation Network Reliability

Consideration of impacts to special events access and the overall transportation network.

+ Integration of Existing & Future Transit Service and Customers

Opportunities to strengthen regional and local transit networks by providing convenient connections to existing and planned routes.

+ LRT Service Reliability

Evaluation of factors that could influence the reliability of the LRT service, such as interaction with vehicle traffic, pedestrian crossings, or incidents that can disrupt transit service.

+ Catchment Area

Consideration of providing new transit service in the Beltline.

+ Complete Streets: Multi-modes, Connectivity & Accessibility

Opportunities to align with transportation policy documents by supporting active transportation such as cycling or pedestrian facilities along the route.

Results

Key Outcomes

10 Avenue S Tunnel and 12 Avenue S Tunnel ranked highly due to:

- Improved LRT reliability
- Fewer potential conflict points with vehicles, pedestrians and cyclists
- Lower impact on existing road network

10 Avenue S Surface and 12 Avenue S Surface options ranked lower due to:

- Slower LRT operations
- More potential for conflict points with vehicles, pedestrians and cyclists
- Disruption to existing traffic patterns
- Least amount of space available for public realm improvements

Evaluation Urban & Neighbourhood Development

Goal

A service that supports current and future land use, development along the corridor, and integrates with neighbouring communities.

Evaluation Metrics

+ Transit Oriented Development Potential

Consideration of how well station locations and the route alignment could integrate into existing land uses and provide opportunities for future development.

+ Streetscape & Public Realm

Evaluation of potential ways to improve the street environment and create high quality public spaces

+ Impact on Parking

Consideration of parking availability and access.

+ Urban Vision

Consideration of opportunities to provide for place making.

Results

Key Outcomes

The 12 Avenue S Tunnel + Surface option ranked highest due to:

- Greater near-term development potential
- Better integration of stations with urban realm
- Higher potential to preserve on-street parking and near-term place-making

The 10 Avenue S Surface option ranked lowest due to:

- Reduction in on-street parking
- Limited opportunity for near-term place-making and urban realm integration

Evaluation Sustainable Environment

Goal

A service that promotes sustainable development by reducing greenhouse gases and minimizes impact to the existing natural environment.

Evaluation Metrics

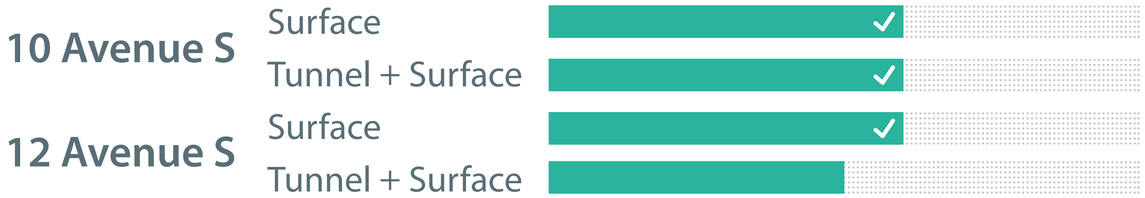
+ **Impact on Existing Natural Environment**
Consideration of the impact on biodiversity and natural environment, both during and after construction.

+ **Environmental Soil Conditions & Contamination**
Consideration of the number of contaminated sites that may be disturbed during construction.

+ **Adaptability to Extreme Climate Conditions**
Consideration of the ability of each option to adapt to extreme weather conditions and climate changes.

+ **Noise & Vibration Impacts**
Consideration of noise and vibration impacts on residents and businesses in the area during LRT operations.

Results



Key Outcomes

All options have the same Elbow River crossing, so all options ranked similarly.

12 Avenue S Tunnel + Surface scored somewhat lower due to:

- Tunnel portal proximity to Elbow River requiring additional mitigation

Evaluation Feasibility & Deliverability

Goal

A service that can be constructed and operated without significant technical issues or constraints..

Evaluation Metrics

+ Constructability

Consideration of technical constraints such as existing utilities, ground conditions, system wide challenges, and the schedule risk related to each.

+ Construction Impacts

Consideration of traffic impacts and disruption to the surrounding community during construction activities.

+ Impacts to Residences & Businesses

Consideration of impacts to neighbourhoods, business operations, and traffic flow during construction.

+ Archaeological & Heritage Impacts

Consideration of potential impacts on land or buildings with historical or architectural significance.

Results

Key Outcomes

The 10 Avenue S Tunnel + Surface option was highly ranked due to:

- Minimal impact to adjacent properties
- Minimal impact to heritage sites

The 10 Avenue S Surface option received a lower ranking due to:

- Greater disruption to heritage sites
- Lands along corridor present risk to project schedule

The 12 Avenue S Surface option also received a lower ranking due to greater disruption to adjacent properties.

Evaluation Stakeholders

Goal

A service that reflects the values and priorities of communities.

Evaluation Metrics

+ Public Acceptability

Consideration of public input gathered on the Beltline options between December 2015 and October 2016 about community and business priorities and values.

+ Alignment with City of Calgary Plans & Policies

Alignment with existing policy documents intended to shape the future of Calgary including the Municipal Development Plan (MDP), Calgary Transportation Plan (CTP), Complete Streets, and Build Calgary.

Results

Key Outcomes

Engagement done in 2016 indicated that the public and stakeholders prefer:

- The 12 Avenue S corridor over the 10 Avenue S corridor due to its greater potential for integration within the Beltline community
- The 12 Avenue S Tunnel + Surface option due to its lesser impact to area traffic

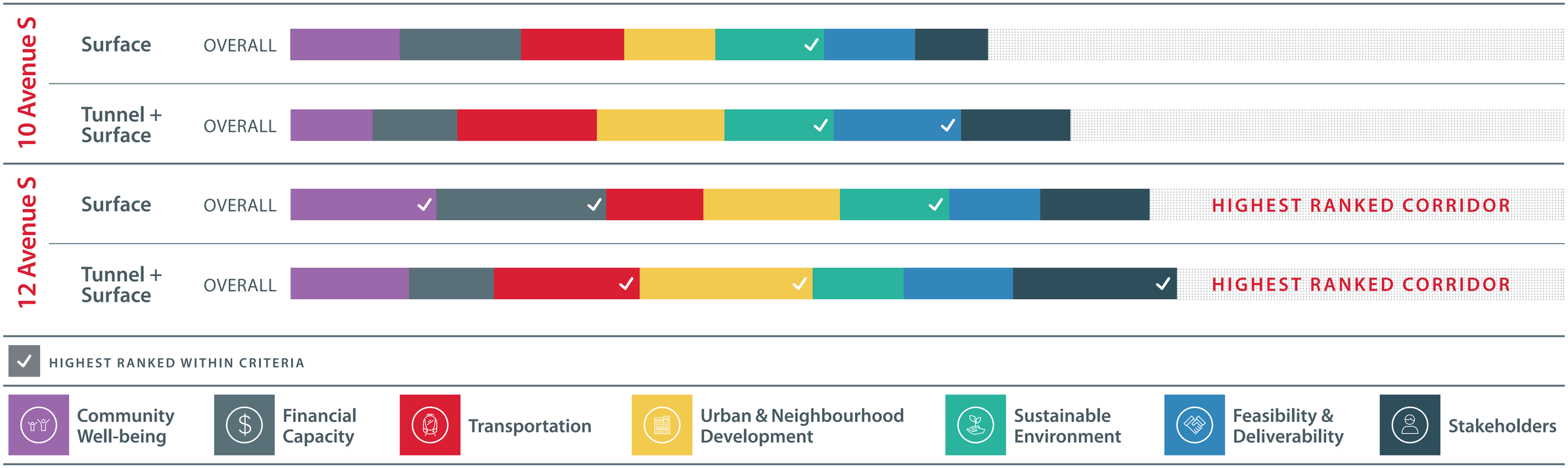
All options were designed to align with current City of Calgary plans and policies.

Evaluation Key outcomes

The **10 Avenue S Tunnel + Surface**, 12 **Avenue S Tunnel + Surface**, and **12 Avenue S Surface** options received similar overall rankings.

The results of the detailed evaluation process, including stakeholder and public input, indicate that 12 Avenue S is the preferred corridor.

Overall Rankings



The project team will carry both 12 Avenue S options forward for further evaluation.

Next Steps

Moving Toward a Council Decision

Next steps Making a recommendation

KEY DATES

Preliminary Alignment Options
June 2, 2016

Present and gather feedback on high level Beltline alignment options from the public and business/community stakeholders.

Shortlisted Alignment Options
September 14 & 15, 2016

Present and gather feedback on shortlisted Beltline alignment options from the public and business/community stakeholders.

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Detailed Evaluation Results
November 2, 2016

Present and gather feedback on outcomes of detailed evaluation process from the public and area stakeholders.

Council Committee
December 2016

Present outcomes of Beltline alignment evaluation and public engagement to the Standing Policy Committee on Transportation & Transit.

Recommended Alignment
Winter to Spring 2017

Present full Green Line recommended alignment to the public and business/community stakeholders.

Council Committee
Spring 2017

Present recommended Beltline alignment to the Standing Policy Committee on Transportation & Transit.

City Council
June 2017

Present full Green Line recommended alignment to Calgary City Council for decision.