

# Metro Line LRT (NAIT to Blatchford)

## Crossing Assessments and Concept Plan

---

### Recommendation

That the March 21, 2018, Integrated Infrastructure Services report CR\_5457, be received for information.

### Previous Council/Committee Action

At the January 23, 2018, City Council meeting, the following motion was passed:

That a non-statutory public hearing on the Valley Line West LRT and Metro Line LRT (NAIT to Blatchford) proposed Concept Plans be held at the March 21, 2018, Non-Regular City Council meeting at 9:30 a.m.

At the September 2, 2015, Transportation Committee meeting, the following motion was passed:

That Administration provide a report on the feasibility of grade separation at the Princess Elizabeth Avenue crossing as part of the next phase of the Northwest LRT extension through Blatchford and beyond.

### Executive Summary

Preliminary design work is currently funded through the Public Transit Infrastructure Fund for the Metro Line LRT (NAIT to Blatchford) extension. As a part of that work, a review of the previously approved Concept Plan has been conducted, which yielded no recommendations for significant deviations from the approved Concept Plan. This included an LRT crossing assessment, based on the Council approved Crossing Assessment Framework, for the Princess Elizabeth Avenue and 106 Street intersection. Comparative analysis was carried out for design options at this location and confirmed that the original design remains as the top performing option.

### Report

#### Project Overview

The Metro Line is a 19 kilometre high-floor LRT line that will operate between Health Sciences and Campbell Road in Northwest Edmonton, with a 2047 projected ridership of 110,000 boardings per day.

The corridor for the Metro Northwest LRT (NAIT to Campbell Road) was approved by Council and incorporated into the LRT Network Plan in 2009. A segment of the Metro Line, the 3.3 kilometre extension from Churchill Station to the temporary NAIT station, was constructed and went into operation in 2015. The Concept Plan for the remainder of the Metro Line (NAIT to Campbell Road) was approved by Council in 2014.

City Council designated the segment of Metro Line running from NAIT to Blatchford as one of two LRT construction priorities, along with the Valley Line West, for LRT delivery funding based on the information provided in the Integrated Infrastructure Services report CR\_3314 (*Long Term Funding Plan for the LRT - Strategic Options, Extension Planning and Proposed Stages of Construction*) on May 3, 2016.

In September 2016, the City of Edmonton received funding to complete preliminary design for the Metro Line segment running from NAIT to Blatchford Road through the Government of Canada's Public Transit Infrastructure Fund. This design work also included determining the most appropriate project delivery method, development of a business case for construction funding and ultimately ensuring this project is ready for construction procurement by Q1 2019.

### **Preliminary Design Update**

The Metro Line (NAIT to Blatchford) preliminary design involves a review of the 1.5 kilometre alignment to identify areas of change since the original Concept Plan from 2014, including an assessment of new information such as updated design requirements, land use plans, policies and reconnecting with stakeholders.

In June 2017, Council approved Integrated Infrastructure Services report CR\_4512 (*LRT Crossing Assessment Framework*), which established the weighted criteria and process that would guide decision making on LRT grade separations of current and future LRT projects. The Crossing Assessment Framework was applied to the existing LRT crossing at Princess Elizabeth Avenue and 106 Street, which was constructed as part of the first portion of the Metro Line (Churchill to NAIT) that went into operation in 2015.

### **Princess Elizabeth Avenue and 106 Street LRT Crossing Assessment**

[Attachment 1](#) provides a summary of the LRT Crossing Assessment Framework initial screening graph along with weighted criteria to support evaluation of crossing options. This process was applied to the Princess Elizabeth Avenue and 106 Street crossing of the Metro Line.

Based on the initial screening graph, this crossing has relatively low traffic volumes and was only marginally within the zone that warranted further assessment.

Four options were assessed for this crossing, including:

- Option A - retaining the existing horizontal and vertical alignment (status quo)
- Option B - elevated guideway along the existing horizontal alignment
- Option C - trenched LRT along the existing horizontal alignment
- Option D - at-grade crossing realigned horizontally across the north end of Kingsway Mall site, with an additional LRT station at Kingsway

Comparative analysis was carried out for these options. Option A (maintaining the at-grade crossing currently in service) was the highest performing option.

As presented in [Attachment 2](#), the main reasons for maintaining this crossing in its current configuration are:

- Traffic modelling demonstrates that negligible to marginal traffic improvements are expected to result from realignment or grade separation at this location;
- Realignment of the Metro Line in the Princess Elizabeth Avenue area would impact the NAIT station location, which impacts development planning underway for both Blatchford and NAIT, and as such was not supported by these stakeholders;
- Service on the portion of reconstructed line would be interrupted during construction of any grade separations or alternate alignments, resulting in a negative impact to current transit users; and
- The overall cost to benefit ratio does not support grade separation.

Traffic modelling results, as well as current traffic conditions, show that the largest traffic congestion challenges on the existing Metro Line are not at Princess Elizabeth Avenue and 106 Street, but at the LRT crossing of 111 Avenue and Kingsway (to the east of 106 Street). To date the LRT crossing assessment framework has not been applied to the existing 111 Avenue crossing as it does not fall within the scope of any current project, and is believed to be cost prohibitive.

### **Concept Plan Validation**

The approved Concept Plan includes a 1,500 metre extension from the temporary NAIT station into Blatchford and two new stations - the permanent NAIT station (replacing the temporary NAIT station) and a station in north Blatchford. The alignment and stations renderings are included in [Attachment 3](#).

Consistent with the urban-style LRT approach, LRT crossings in Blatchford will not include gates and warning bells, reducing noise impacts to the community. LRT vehicles will not exceed speed limits of roadways and would have partial priority through signalized intersections.

Based on the concept validation review, several items were assessed to evaluate the potential benefits of amending the Concept Plan. These reviews included; alignment, station locations, operational philosophy, alignment with new design standards, and grade separation benefits. These reviews did not result in a recommendation for any significant deviations from the approved Concept Plan.

Unless directed otherwise by City Council, Administration will proceed on the basis of the existing, Council-approved Concept Plan for the Metro Line Northwest LRT (NAIT to Blatchford) extension.

### **Budget/Financial**

As no significant amendments are proposed to the Metro Line (NAIT to Blatchford) design, there are no impacts to the overall project value. Current conceptual estimate to complete this project is \$351 million, which includes the 1,550 metre extension, two new five-car stations, six new high floor light rail vehicles, a 45-car LRV storage and cleaning facility located at the former Cromdale transit garage (located at 117 Avenue and 80 Street), and all design, procurement and management costs necessary to deliver the project. An updated project cost estimate will be available upon completion of the preliminary design and procurement package, which will be completed in First Quarter 2019.

### **Public Engagement**

Public engagement to advise the project team has been an essential part of the development of the Metro Line. Public engagement programs were undertaken for the Metro Northwest corridor selection (2009) and the Metro Northwest concept design (2013). Public engagement to inform the current preliminary design assignment began in 2017 and will continue through 2018.

In addition to public engagement sessions, the project team has actively engaged key stakeholders for their input on potential concept amendments and the Princess Elizabeth Avenue and 106 Street crossing. These key stakeholders included: NAIT administration and student's association, the Blatchford Redevelopment Team and Oxford Properties (Kingsway Mall).

Input on crossing assessments and grade separations in general was gathered as part of the first round of public engagement for the Metro Line preliminary design assignment in Summer 2017. Engagement on specific locations, including the Princess Elizabeth Avenue and 106 Street crossing, was completed in January 2018.

Some of the key themes heard from the public and major stakeholders were:

- Although residents expressed frustration with traffic congestion in the Princess Elizabeth area, it was noted that it has improved since the line initially went into operation;
- Acknowledgement that grade separation of Princess Elizabeth Avenue and 106 Street crossings would not resolve the more significant issues being experienced at the 111 Avenue crossing;
- Reducing long-term traffic impacts with grade separation are worth the initial investment in the most impacted areas; and
- The public and key stakeholders felt that an elevated LRT guideway would create an unsightly visual barrier and be imposing over adjacent single family residential areas immediately to the east.

The engagement results were key factors considered during the application of the LRT Crossing Assessment Framework for this crossing. Generally speaking, the majority of public opinion aligned with the technical recommendation for the Metro Line crossing at Princess Elizabeth Avenue.

As is typical with LRT expansion projects, a document summarizing all content received during the public engagement process is being developed and will be posted on the Metro Line Northwest project website once completed.

### Corporate Outcomes and Performance Management

<b>Corporate Outcome(s): Edmontonians use public transit and active modes of transportation</b>			
<b>Outcome(s)</b>	<b>Measure(s)</b>	<b>Result(s)</b>	<b>Target(s)</b>
Edmontonians use public transit and active modes of transportation	Transit ridership	96.9 rides/capita (2016)	105 rides/capita (2018)
	Journey to work mode	24.7% (2016)	25.9% (2018)

<b>Corporate Outcome(s): Edmonton is attractive and compact</b>			
<b>Outcome(s)</b>	<b>Measure(s)</b>	<b>Result(s)</b>	<b>Target(s)</b>
Edmonton is attractive and compact	Edmontonians' assessment: Well-designed, attractive city	53% (2016)	55% (2018) positive survey responses

<b>Corporate Outcome(s): The City of Edmonton has sustainable and accessible infrastructure</b>			
---	--	--	--

Outcome(s)	Measure(s)	Result(s)	Target(s)
The City of Edmonton has sustainable and accessible infrastructure	Edmontonians' assessment: Access to amenities and services that improve quality of life	67% (2016)	70% (2018) positive survey responses

**Risk Assessment**

Risk Element	Risk Description	Likelihood	Impact	Risk Score (with current mitigations)	Current Mitigations	Potential Future Mitigations
Public Perception	Recommended grade separations and design changes would result in an amendment. The Metro Line (NAIT to Campbell Rd) concept plan was approved in 2014. Subsequent decisions and actions, such as land acquisitions and stakeholder engagement, were made based on approved concept plan.	5 - Almost Certain	3 - Major	15 - High	Consider public engagement results as part of LRT crossing assessment evaluation process. Present recommendations to City Council and communicate recommendation to the public.	Communicate results of LRT crossing assessment to the public. Develop and execute engagement plan for newly impacted stakeholders.
Project Management	Recommended grade separation and design changes would result in LRT concept plan amendment. The Metro Line (NAIT to Campbell Rd) concept plan was approved in 2012. Subsequent project decisions and actions, such as preliminary design and cost estimates, were made based on approved concept plan. Concept plan amendment would result in higher project cost and schedule delay.	5 - Almost Certain	2 - Moderate	10 - Medium	Adopt risk-based approach in preliminary design efforts, focusing design effort in areas with less uncertainties first. Continuous monitoring of project scope, cost and schedule.	Assess impact of LRT crossing assessment results and quantify changes in project scope, cost and schedule. Communicate changes with impacted stakeholders and seek additional approvals where necessary.

Project Management	If LRT crossing assessment recommendations are not approved or decisions are delayed. This would have a direct impact on project schedule with cost and procurement implications.	2 - Unlikely	3 - Major	6 - Low	Carry out assessment following the LRT crossing assessment framework approved by City Council in June 2017.	Assess impact and quantify changes in project scope, cost and schedule. Communicate impacts with impacted stakeholders and seek additional approvals where necessary.
--------------------	---	--------------	-----------	---------	---	---

**Attachments**

1. LRT Crossing Assessment Framework
2. Princess Elizabeth Avenue and 106 Street - Crossing Assessment Summary
3. Metro Line LRT (NAIT to Blatchford) - Alignment and Station Renderings

**Others Reviewing this Report**

- C. Campbell, Deputy City Manager, Communications and Engagement
- D. Jones, Deputy City Manager, City Operations
- L. McCarthy, Deputy City Manager, Urban Form and Corporate Strategic Development
- T. Burge, Chief Financial Officer and Deputy City Manager, Financial and Corporate Services