

North LRT Extension: Downtown to NAIT - Concept Plan

Recommendation:

That the North LRT Extension: Downtown to NAIT Concept Plan, as outlined in Attachment 1, and amended in Attachment 2 of the September 17, 2008, Transportation Department report 2008TD5736-2, be approved.

Report Summary

This report amends the North LRT Extension: Downtown to NAIT - Concept Plan by placing the LRT in the median of 105 Street from 105 Avenue to 108 Avenue.

Previous Council/Committee Action

At the July 8, 2008, City Council meeting, the following motions were passed:

1. That the North LRT Extension: Downtown to NAIT - Concept Plan be referred back to Administration to amend the Downtown to NAIT Concept Plan by planning the LRT alignment on 105 Street from 105 Avenue to 108 Avenue.
2. That a Special City Council meeting be scheduled for September 25, 2008, at 1:30 p.m., to deal with this matter and any other related matters.

Report

Background

- The North High Speed Transit (Downtown to NAIT) Concept Planning Study was approved by City Council on January 20, 2005. The study identified a recommended

North LRT route from Churchill Station to NAIT. From Churchill Station, the North LRT alignment follows an underground easement to surface on 105 Avenue west of 101 Street. From 105 Avenue, the recommended route curves to the north, following 105 and 104 Streets to Kingsway Avenue, then along Kingsway Avenue to 106 Street, and then north to Princess Elizabeth Avenue.

- In June 2007, the Transportation Department engaged UMA Engineering Ltd., in partnership with Stantec and ISL Engineering and Land Services, to prepare a concept plan and preliminary design for a North LRT line from downtown to NAIT.
- UMA's original Concept Planning Report Executive Summary is presented in Attachment 1. UMA has prepared an addendum to the Concept Planning Report, presented in Attachment 2, to address City Council's July 8, 2008 motions. The Addendum Report is intended to be in addition to the Concept Planning Report dated June 2008, and where there is a conflict between the two reports, this Addendum Report prevails.
- Over the past year, the concept plan has been developed with the input of multiple stakeholders. The recommended plan is included as Figure 10 in Attachment 2 and is generally consistent with the recommended route in the North High Speed Transit (Downtown to NAIT) Study.

Station Locations

- There are three proposed stations which will serve the major destinations in the area:
 - MacEwan Station – located near 105 Avenue and 105 Street to serve Grant MacEwan College and redevelopment land within the Downtown North Edge. This station is consistent with previous planning including the High Speed Transit (Downtown to NAIT) Study, North Edge Development Study as included in the Central McDougall/Queen Mary Area Redevelopment Plan, and the 105 Avenue Corridor Study (2006).
 - Kingsway Station - located on Kingsway between 104 Street and 106 Street to serve the Royal Alexandra Hospital, Glenrose Hospital, Victoria Composite School, and Kingsway Garden Mall. The existing Kingsway transit centre will be relocated to be adjacent to this LRT station to integrate bus service along 111 Avenue with the LRT.
 - NAIT Station - A temporary station is proposed on 106 Street south of Princess Elizabeth Avenue. NAIT has requested that the LRT be constructed underground from Princess Elizabeth Avenue to 118 Avenue, with a station integrated into their proposed Centre for Applied Technologies building. As NAIT is early in the planning process for the new building, details on station configuration and cost sharing cannot be finalized. Transportation Department will continue discussions with NAIT during the engineering stage.

Property Acquisition

- The downtown to NAIT corridor is an established area with limited available right-of-way. It will be necessary to acquire a number of residential, commercial, and institutional properties. A property requirement plan is presented as Figure 12 in Attachment 2. This plan will continue to be modified through the preliminary design phase.
- Participants in the December 2007 Public Consultation phase indicated significant support (approximately 85%) for property acquisition to accommodate LRT expansion.
- A two-year lead time for property negotiations is required in order to allow the owners' sufficient time to negotiate an agreement and to possibly re-establish their business and ownership in a new location. Given that it may be necessary to construct a new structure for certain situations, which is possible under expropriation, this process can easily take two years or longer to complete at a minimum business loss cost to the owner and to the City.

Qualico/EPCOR Tower

- Construction of the LRT tunnel below the Qualico/EPCOR tower on the Station Lands site north of the CN Tower is scheduled to be completed in 2009.

105 Street Alignment

- Following the July 8, 2008, City Council meeting, further planning was completed to evaluate potential alignments for the LRT within the 105 Street road right-of-way, from 105 Avenue to 108 Avenue.
- Five options were evaluated, including LRT alignments on the

east, west or median of 105 Street with a single traffic lane in each direction; an option to place the LRT on 105 Street with two northbound lanes on 105 Street and two southbound lanes on 106 Street (one-way couplet); and an option to place the LRT on 105 Street with a three lane cross section, with the centre lane operating as a reversible lane.

- The median option, presented as Figure 7 in Attachment 2, is recommended for the following reasons:
 - Optimizes traffic flow by minimizing the number of turning movements which conflict with train crossings.
 - Balances the impact of LRT construction and operation on adjacent properties, and maximizes separation from adjacent commercial and residential buildings.
 - Provides a reasonable LRT curve radius of 90 meters from 105 Avenue to 105 Street.
 - Maintains all existing commercial accesses to 105 Street. One existing all-directional access will be restricted to right-in, right-out.
- The LRT alignment along 105 Avenue has been designed to accommodate the curve onto 105 Street without impacting the city-owned 105 Street Emergency Services building. The location of the proposed MacEwan Station has shifted approximately 50 metres southeast of the location shown in Figure E-1 of Attachment 1. The portal location is not affected.

- Access to the Square 104 Apartment building at the northeast corner of 104 Avenue and 105 Street will be relocated from 105 Avenue to a new signalized all-directional intersection at 104 Avenue and 104 Street. The property owner has been informed of this proposal. An access closure bylaw will be required.
- To avoid conflicts with ambulances being dispatched from the 105 Street building (EMS Station #42), a new ambulance station west of the LRT alignment will be required. A contingency for this has been included in the cost estimate. The remaining operating functions in the 105 Street building will not be impacted by LRT operations.
- 105 Street will be closed to traffic from 107 Avenue to 108 Avenue to accommodate the LRT alignment and pedestrians only. This is necessary for traffic operation at the intersection of 107 Avenue and 105 Street.

Traffic Modelling/Road Modifications

- Detailed traffic analysis for 105 Street from 105 Avenue to 108 Avenue has not been carried out. However, it is expected that 105 Street will accommodate approximately 10,000 vehicles per day as a two lane arterial (one lane in each direction). With a current volume of approximately 16,000 vehicles per day, the remaining 6,000 vehicles per day will need to be accommodated through shifts in travel routes, travel mode, and/or the time at which the trip takes place.
- Traffic modelling has been completed for the remainder of the North LRT alignment using projected traffic volumes for the year 2041. No

grade separations are required. All road crossings can function as surface crossings, with roadway modifications to accommodate traffic.

- Traffic analysis will continue during the engineering stage to finalize roadway modifications, access/egress to adjacent businesses, institutions and communities, and parking.

Noise and Vibration

- Noise modelling has been conducted for the North LRT alignment. Noise attenuation is not required under the *Urban Traffic Noise Policy* (C506) which specifies an allowable threshold of 65 dBA Leq₂₄.
- Vibration modelling is underway. Impacts to existing structures adjacent to the alignment will be assessed.

Pedestrian Circulation and Multi-use Trail

- The North LRT project will incorporate a multi-use trail (MUT) from NAIT to MacEwan Station. The MUT will generally parallel the LRT alignment. A portion of the MUT will run along 104 Street from 105 Avenue to 108 Avenue.
- The MUT will tie into 105 Avenue between 101 Street and 105 Street. This section forms part of the 105 Avenue Corridor Study, approved by City Council in November 2006. To eliminate future re-work and duplication of costs, the North LRT project will include streetscaping and landscaping along 105 Avenue from 101 Street to 105 Street consistent with the 105 Avenue Corridor Study. The streetscaping and landscaping will

be funded by the development levy approved in the 105 Avenue Corridor Study.

- Surface pedestrian crossings are planned at all road crossings, both ends of each station, and mid-block at approximately 108 Avenue/104 Street and 113 Avenue/106 Street. Pedestrian access from the stations to all major activity centres will be preserved.
- Industry standards will be applied to ensure the appropriate safety warning devices and physical barriers are in place at all pedestrian crossings. An independent safety audit of all pedestrian crossings will take place during the detailed engineering phase.

Cost Estimate and Implementation

- The conceptual cost estimate is \$660 million in 2008 dollars, including the previously approved tunnel below the EPCOR Tower. The estimate including inflation is \$825 million. This estimate includes property acquisition and purchase of 10 Light Rail Vehicles. A cost breakdown is presented as Figure 13 in Attachment 2.
- These estimates are based on budget approval in 2008, as part of the 2009-2011 Capital Budget process. Detailed design will commence in 2009, with construction starting in 2010 and finishing in 2013. The extension would be open for service in 2014.

Public Consultation

- Public involvement for this project has included discussions with a stakeholder advisory group, stakeholder and community

meetings, open houses, and print/online questionnaires.

- Many of the issues raised through public involvement are similar to previous LRT planning projects, including concerns about noise, traffic, safety, and community impacts. Overall, there is a divergence of opinion between the views of directly impacted stakeholders and potential LRT users, with potential users expressing significant support for the concept plan and interest in seeing it built, compared to a segment of the directly impacted stakeholders that have expressed concerns about community impacts and property acquisition, and suggested a desire for an underground alignment.
- Following the July 8, 2008, City Council meeting, a questionnaire was sent to adjacent property owners, residents, and business operators along 105 Street from 105 Avenue to 108 Avenue. This information was used to help distinguish if there were specific issues on 105 Street that should be considered when determining an ultimate recommended alignment on 105 Street.
- In the commercial/mixed use area (105 Avenue to 107 Avenue), respondents indicated priority should be given to providing traffic capacity and vehicle access. In the residential area (107 Avenue to 108 Avenue), respondents indicated priority should be given to vehicle access and traffic capacity.
- This information was incorporated into the evaluation, along with considerations for technical issues, constructability, and findings from the December 2007 consultation.

While no option provided a solution that would meet every desire, the evaluation process provided a means to balance these considerations and develop a recommended alignment.

Land Use Impacts

- The recommended alignment is consistent with the high speed transit corridor envisioned in the Downtown North Edge Development Concept within the Central McDougall/Queen Mary Park Area Redevelopment Plan, approved by City Council in 2005.

Budget/Financial Implications

- The budget for the North LRT extension will be brought forward to Council for approval through the 2009-2011 Capital Budget setting process. The total project budget of \$825 million includes the \$45 million previously approved for the tunnel below the EPCOR Tower. Therefore, \$780 million of new funding is required.

Justification of Recommendation

The recommended plan is generally consistent with the Transportation Master Plan, the North High Speed Transit (Downtown to NAIT) Concept Planning Study, and the Downtown North Edge Development Concept. The recommended plan meets the objective of connecting several major activity centres to the LRT system and supports intensified development in the Downtown North Edge. Also, the recommendation responds to Council's direction at the July 8, 2008, City Council meeting. Approval of the concept plan allows administration to proceed with preliminary engineering and property acquisition, and initiate utility relocations.

Attachments

1. [North LRT Extension: Downtown to NAIT Concept Planning Report – Executive Summary](#)
2. [North LRT Extension: Downtown to NAIT Concept Planning Report Summary - Addendum](#)

Others Approving this Report

- L. Cochrane, General Manager, Community Services Department
- R. G. Klassen, General Manager, Planning and Development Department
- L. Rosen, General Manager, Asset Management and Public Works Department
- C. Warnock, Chief Financial Officer