

# Northwest LRT (Metro Line) Concept Planning Study

NAIT to Campbell Road  
(Northwest City Limits)

## Recommendation:

That Transportation Committee recommend to City Council:

That the Northwest LRT Concept Plan as outlined in Attachment 1 of the May 1, 2013, Transportation Services report 2013TS6519, be approved.

## Report Summary

This report details the recommended concept plan for the Northwest LRT extending from NAIT to approximately Mark Messier Trail and Campbell Road.

## Report

### Background

On July 7, 2010, City Council approved the alignment of the Northwest LRT Corridor and The Transportation System Bylaw 15001 was amended accordingly.

On June 19, 2009, City Council approved the LRT Network Plan which included a future LRT line to serve Northwest Edmonton.

The Northwest LRT will provide LRT to the Northwest sector of the city, will encourage new development on under utilized and vacant land, promote pedestrian scale development with active street-facing frontages, and

provide the basis for more attractive, functional, and valued public spaces.

The Northwest LRT will also be an integral component of the overall public transit system in Northwest Edmonton and St. Albert. The City intends to use the Northwest LRT to extend the LRT to the Northwest sector of the city and regional destinations including the City of St. Albert. The Northwest LRT will be an extension of the NAIT line currently under construction and will use the existing LRT high-floor vehicle technology.

## Project Objectives

The purpose of the Concept Planning Study is to define the land requirements, LRT station, and alignment transit system integration locations, pedestrian and cyclist connections, land use benefits and impacts, and road and vehicle access changes. The concept plan is used to identify major structures and cost elements, and develop a reliable cost estimate for use in the City's capital budget process.

## Northwest LRT Concept Plan

The recommended concept plan is the culmination of technical studies, public involvement, and Council Policy. The concept plan is fully described in the attachments and summarized as follows.

## Alignment

The Northwest LRT Corridor Planning Study approved by City Council on July 7, 2010, defined the alignment for the Northwest LRT extension from NAIT

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to the terminus station at Campbell Road in the Transportation and Utility Corridor. From NAIT Station, the extension will proceed through the Blatchford/City Centre redevelopment lands, crossing the Yellowhead Trail/CN Walker Yard corridor between 107 Street and 113A Street. The alignment follows 113A Street to 153 Avenue and then follows 153 Avenue west to Campbell Road.

### **Stations**

The recommended concept plan includes nine stations. All of these stations are planned as centre loading platforms with a five LRT car length which is consistent with all of the existing stations located on the high-floor LRT system. The approach in deciding the station placement along the Northwest LRT Corridor was to optimize the catchment area to best serve the surrounding communities who are directly impacted. The proposed nine stations provide good coverage utilizing a 400 metre line catchment (or 5-minute walking distance). Other factors included in the selection of station location included proximity to activity centre destinations, transit integration, and opportunities for transit oriented development. The following provides a brief synopsis of the considerations for these station locations:

#### **NAIT Station**

This station will be the North LRT's final station and the point of extension for the Northwest LRT. When the Northwest LRT is constructed, the current NAIT Station may be shifted to the west to allow for five-car trains and to better

serve NAIT and its future expansion, the town centre planned for the Blatchford development, as well as the communities of Northwest Edmonton and Kingsway Mall.

#### **North (Blatchford) Station**

Through internal stakeholder discussions and discussions with the Blatchford Consulting Team, the alignment within the Blatchford lands is proposed to be centre running. The second station within these lands is proposed to be located between 121 and 122 Avenues. At this location, it will serve development towards the north end of the site and the existing community of Westwood to the east. This station will be focused around higher density development and facilities in the community. The Blatchford Station will integrate with a Transit Oriented Design concept to create a dense, pedestrian friendly community providing significant ridership.

#### **132 Avenue Station**

Continuing north from the Blatchford Lands, the LRT will touch down in the Calder community after crossing the Yellowhead and CN Tracks. The LRT descends from the bridge on the east side of 113A Street along the edge of Grand Trunk Park. The LRT north of the bridge will be on the east side of 113A Street. The station will be between 130 Avenue and 132 Avenues and provides connectivity to the surrounding communities, retail and facilities including places of worship (Al-Rashid Mosque, New Life Church) and schools (Rosslyn School). The properties on the

east side of 113A Street between 129 Avenue and 130 Avenue will need to be acquired to allow for the LRT. Removing these properties allows traffic to continue between 129 and 134 Avenues and retains frontage parking for homes along 113A Street. As well, 130 Avenue will be cul-de-sac'ed and closed to through traffic. A shared use pathway is proposed for both pedestrians and cyclists on the east side of 113A Street from 127 Avenue to 153 Avenue.

#### 137 Avenue Station

The LRT continues across 137 Avenue along the east side of Castle Downs Road. North of 137 Avenue, two lanes of traffic in each direction is maintained. A station is proposed to be located on the north side of 137 Avenue, adjacent to a new transit centre to provide bus connections. Further study may be required around the station to better integrate the transit use with the intended land use.

#### 145 Avenue Station

Heading north along Castle Downs, the LRT alignment shifts from the east side to centre running around 139 Avenue. A station is proposed north of 145 Avenue intersection to serve the existing community on the west (Carlisle, Caernarvon) and the growing Griesbach development to the east.

#### Castle Downs Station

The LRT continues north along Castle Downs Road and turns west onto 153 Avenue at the intersection of Castle Downs Road. A station is proposed to

integrate with a new bus bay transit centre adjacent to the YMCA facility. This transit centre will replace the transit centre currently located on the east side of Castle Downs Road just north of 153 Avenue. The parking lot at the YMCA will be maintained and will be for the use of the patrons of the YMCA, arena, sports fields, a future high school, and is not intended to be a Park and Ride location.

#### 127 Street Station

The LRT continues west on 153 Avenue to a centre station just east of 127 Street intersection. A station at 127 Street provides connectivity to the surrounding communities and local amenities including Sobeys and the Oxford Plaza Shopping Centre. There is a shared-use pathway proposed for the southside and a sidewalk on the northside.

#### 137 Street Station

The LRT route continues along 153 Avenue, crosses 134 Street and transitions from the centre to the south side of 153 Avenue. The LRT continues west to a proposed station between 137 and 139 Streets, providing strong connectivity with the surrounding communities of Cumberland, Carlton, and Oxford.

#### Campbell Road

Continuing West, the route passes through the Rampart Industrial area. The proposed Operations and Maintenance facility is proposed to be located here. The Campbell Road Park and Ride, transit centre, and the final Northwest LRT station are located on

the west side of Campbell Road. This stop is the terminus of the Northwest LRT and provides service and connection to St. Albert where Edmonton and St. Albert bus services will integrate.

### **Railway Crossings**

Two heavy rail crossings, operated by CN Rail are located on the light rail transit corridor. The project team worked with representatives from CN Rail to reach technical resolutions with respect to the crossing of the CN Walker Yard.

The City recommends an overhead bridge structure to cross Walker Yard, a solution which CN has agreed to in principle. The proposed bridge structure will provide for LRT as well as pedestrian and cyclist connections from the Blatchford development to communities across the track (e.g. Calder, Lauderdale).

The LRT crossing near 142 Street will also be grade separated with the LRT tracks running underneath the CN tracks.

### **Staging**

A number of different staging options were contemplated as part of the development of the concept plan. The limiting constraint with respect to extending the current LRT high-floor system beyond NAIT is the current operations and maintenance facility (D.L. Macdonald) which will be at capacity with the commissioning of the NAIT line. Therefore, any extensions of the high-floor system will require

expansion or construction of a new operations and maintenance facility. This could be accomplished by a number of different strategies including but not limited to an extension of the South LRT to a new facility in Heritage Valley, or on a short-term basis temporary upgrading of the Cromdale facility. The best approach to extending the current high-floor system would be to complete a network priority study. This study is part of the implementation plan for Transportation Services. As part of the Northwest LRT Concept Plan, an Operations and Maintenance Facility is planned within the Rampart Industrial area. The intended land use is consistent with the approved Rampart Area Structure Plan.

### **Bus Integration**

The concept planning study included a review of how the bus services would be adapted to service the LRT facility. Working within both ETS and St. Albert Transit operating systems, provision for three transit centres are included in the design: Campbell, Castle Downs, and Griesbach.

The Campbell Transit Centre is identified as a regional Transit Centre by the Capital Region Board (ref: Integrated Regional Transportation Master Plan 2011). The transit centre is planned to accommodate both the St. Albert Transit and ETS buses. The facility is expected to be constructed and in service by St. Albert Transit by 2014.

The Castle Downs Transit Centre is a relocation and expansion of the existing ten-bay station located east of Castle

Downs Road north of 153 Avenue within a new bay transit centre located immediately adjacent to the Castle Downs LRT Station. This transit centre will facilitate passenger interchange between local feeder bus routes serving neighbourhoods north of 153 Avenue and Northwest LRT, provide transit access to the adjacent recreation facilities, and facilitate bus to bus transfers for passengers living in and travelling to destinations in Northwest Edmonton.

The Griesbach Transit Centre is a proposed new facility located in the northeast corner of Castle Downs Road and 137 Avenue. This transit centre will facilitate passenger interchange from feeder bus routes serving Northwest Edmonton neighbourhoods south of 153 Avenue travelling to and from destinations served by Northwest LRT and bus routes serving key destinations along 137 Avenue (e.g. Northwest industrial area).

Park and Ride facilities were not contemplated as part of this concept planning study as per City Policy C554 beyond the regional facility located at the Campbell Road Station currently under development by the City of St. Albert.

### **Transit Oriented Development**

In planning the LRT it is immediately clear there are competing interests for land in and around the nine LRT stations. Where possible the station locations were selected where it was thought to provide the best opportunities for development or redevelopment which in turn will return that investment

back in the form of increased new local ridership, economic development, and property values if sensitively designed.

Integration of transit oriented design principles into the land use surrounding all the stations is critical to provide the greatest opportunity for increased ridership, private sector development participation, and quality of life in these station areas. To ensure transit oriented development is addressed effectively, additional land use planning and design resources should be considered before advancing further engineering.

### **Vehicle Traffic**

A traffic simulation was completed for the 113A Street / Castle Downs corridor to focus on the two most constrained intersections; 137 Avenue and 153 Avenue. The assessment looked at the long-term impacts of the recommended plan in addition to the projected traffic growth. The analysis reviewed this corridor utilizing a multi-modal approach (e.g. auto, transit, and other users). It is expected that the recommended concept plan will result in increased levels of congestion for vehicles during peak hours (with or without LRT based on growth projections); however, at this stage of review it is thought to provide an acceptable level of service when factoring the modified and increased travel choices that the LRT will provide. Further investigation and more detailed analysis will need to be considered at future stages of design.

The recommended concept plan provides an equivalent number of lanes of traffic along the entire corridor with

one exception of 113A Street between 132 Avenue and 137 Avenue where the number of lanes is being reduced from four to two. The intent is for 113A Street south of 137 Avenue to be used for local traffic and the through traffic would diverge at 137 Avenue to utilize parallel routes of 97 Street and 127 Street.

### **Pedestrian / Cycling**

Where possible walk links were modified or added to the concept plan to improve access to the local neighbourhood LRT stations.

A bike facility consistent with the Bike Master Plan is included along the east side of 113A Street and Castle Downs Road.

A shared use path is also planned along the length of the 153 Avenue corridor utilizing the existing Alta Link right of way.

### **LRT Operations**

City Council adopted an urban style operation for all new or planned extensions of the existing LRT system. The urban style LRT is a comprehensive systems approach that provides better integration into the community in order to allow for more walk-on ridership and potential redevelopment.

The technology for this line will be an extension of the existing high-floor LRT system and the operation of this line is expected to interface directly with the existing North and South LRT lines. The running limits of this line will extend

through Downtown south to Health Sciences Station.

With the Urban LRT System the trains will be more integrated into the surrounding neighbourhoods. The Northwest LRT will utilize a dedicated Right of Way and not mix with traffic. The operation will also move towards a system with limited use of crossing gates and bells at intersections (except where needed to address specific safety concerns).

The recommended plan includes three different zones of operation. The operation within Blatchford and Calder/Griesbach is planned as Urban Style (maximum speed 40 km/hr and 50 km/hr respectively). The operation of 153 Avenue has been designed with operational flexibility to run both an Urban or Suburban Style operation (maximum speed 70 km/hr).

The expected runtime between Campbell Station and NAIT is 30 minutes. Ridership on this line is projected to be near capacity (five-minute frequency) by 2044. Daily boardings/alighting are anticipated to reach 46,000 passengers/per day.

### **Property Impacts**

Property impacts along the Northwest LRT corridor were minimized as much as possible. However, there are a few locations where properties are required in order to accommodate the proposed design. The properties impacted include:

- 16 residential properties located on the east side of 113A Street between 129 Avenue and 130 Avenue.
- Partial property required from Grand Trunk Park along 113A Street to accommodate the Yellowhead and CNR bridge landing.
- Partial property required at the northwest corner of 113A Street and 130 Avenue and northwest corner of 113A Street and 132 Avenue.
- Partial property required in the Griesbach area for the proposed Transit Centre.
- Partial property required on east side of Castle Downs Road at 145 Avenue.
- Partial property required from the Castle Down's YMCA and Castle Downs Park to provide for the proposed Castle Downs Transit Centre.
- Property is required in the Rampart Industrial area for the proposed Operations and Maintenance facility and the alignment.

The estimated cost of land for this project is \$28 million in 2013 dollars.

### **Noise and Vibration**

Noise measurements and modeling have been conducted for the Northwest LRT Concept Plan. Noise attenuation is required where calculated noise levels exceed the 65 dBA Leq24 thresholds stipulated in the Urban Traffic Noise Policy (C506). Noise attenuation requirements are based on 20-year model projection of noise levels in comparison to the allowable threshold.

The following locations should be considered for noise attenuation with this project:

- south west corner of 139 Avenue and Castle Downs Road
- south east corner of 131 Street and 153 Avenue
- north side of 153 Avenue between 127 Street and 131 Street
- northwest corner of 137 Street
- north side of 153 Avenue – 138A Street (east side corner of street)
- north side of 153 Avenue – 138B Street (west corner of street)

With all locations the dominant noise source is the road traffic and all locations can be effectively mitigated with a fence.

### **Cost Estimates**

The conceptual cost estimate for the Northwest LRT Concept Plan as a complete project is approximately \$1.5 billion in 2013 dollars. This estimate includes property acquisition, engineering, construction, vehicle procurement, etc. A cost breakdown is presented in Attachment 4.

### **Policy**

LRT planning and construction is consistent with policies identified in the Transportation Master Plan "*The Way We Move.*"

### **Corporate Outcomes**

- Attractive and compact physical design with diverse neighbourhoods, amenities, and public open spaces.

- Citizens use public transit and active modes of transportation.
- The transportation system is integrated, safe, and gives citizen choice to their mode of movement.

### **Public Consultation**

A public involvement process was completed in accordance with the Public Involvement Policy C513.

Approximately 1,000 participants combined attended open houses, presentations, and small group meetings. A detailed outline of the public involvement activities and themes are outlined in Attachment 3.

The process of Public Involvement for the Northwest LRT Concept Planning Study included five public meeting sessions throughout the study period. These sessions were held at specific periods during the study development to share with the public general information about the Northwest LRT, present options for alignment and station location, and to obtain public feedback and information.

Some of the key themes that were stated by the public include concerns about traffic congestion (particularly along 113A Street and at Castle Downs Road/153 Avenue intersection), perceived loss of property value, noise impacts, impacts to general aesthetics along the route, general safety and crime and pedestrian safety.

A high level of satisfaction was also expressed for the track alignment, shared-use paths, inclusion of a pedestrian and bicycle path on the bridge across CN's Walker Yard and Yellowhead Trail, and the fencing along

the LRT tracks within the Grand Trunk dog park.

Feedback from the public sessions was taken to improve and refine the plan where possible and include a fence along Grand Trunk Park, access to the waterpark and others outlined in Attachment 3.

### **Budget/Financial Implications**

Currently there is no budget to continue the Northwest LRT Project to the next stages of preliminary engineering, design, and construction.

### **Justification of Recommendation**

The recommendation of this report is consistent with City policies and will help plan for future LRT expansion and allow for the next step in design or land acquisition should City Council wish to proceed with future budget approvals.

### **Attachments**

1. Northwest Light Rail Transit Concept Planning Report
2. Northwest LRT Concept Plans
3. Public Involvement Report
4. Cost Estimate

### **Others Reviewing this Report**

- R.G. Klassen, General Manager, Sustainable Development
- L. Rosen, Chief Financial Officer and Treasurer