

# Downtown LRT Concept Plan

## Southeast to West LRT Connection

### Recommendation:

That Transportation and Infrastructure Committee recommend to City Council:

That the Downtown LRT Concept Plan, as outlined in Attachments 7 and 8 of the November 15, 2011, Transportation Services report 2011TS5339rev, be approved.

### Report Summary

**This report details the recommended concept plan for the Downtown LRT Connector between the West and Southeast lines and provides information from the additional consultations as requested.**

### Previous Council/Committee Action

At the June 1, 2011, City Council meeting, the following motion was passed.

That the May 26, 2011, Transportation Department report 2011TD5339, be referred back to Administration:

1. To have Administration consult with Grant MacEwan University and NorQuest College during the preliminary engineering phase as a means to reconsider the diagonal station near 104 Avenue and 107 Street.
2. To consult with the Chinese Benevolent Society, Boyle Street and other affected stakeholders during the preliminary engineering phase:

- a. on 102 Avenue and 102A Avenue between 95 Street and 97 Street
- b. to develop designs to mitigate the impacts of the LRT portal including possible deletion of the 102 Avenue eastbound travel lane between 95 Street and 96 Street as a means to avoid property acquisition on the south side of 102 Avenue.

3. To provide a report to the September 20, 2011, Transportation Infrastructure Committee, outlining:
  - a. potential amendments to proposed alignments, or other solutions, as a result of these consultations, prior to the completion of the Southeast to West LRT preliminary engineering
  - b. potential impacts to the China Gate and the methods to protect the structure during construction

### Report

- In response to the motion passed at Council on June 1, 2011, Administration conducted additional Consultations. As a result Administration is recommending a revision to the original concept plan presented in May 2011. The results of the consultation and revisions to the plan are provided in Attachments 5 to 9 along with information related to the Chinatown Gate. Attachment 3 has been superseded and updated cost estimates are provided in Attachment 7.
- At the June 21, 2010, City Council meeting, Bylaw 15469, a Bylaw to amend Transportation System Bylaw

**Please retain this report for future meetings.**

15101 was approved. This Bylaw amendment defined the LRT route through the Downtown that connected the Southeast and West LRT lines.

- In June 2010, City Council approved the Downtown LRT Corridor which was the first of two steps in completing the concept plan. Since that time, Administration has been developing more details to refine the alignment of the LRT within the corridor.
- The development of the recommended concept plan has involved additional engineering and public involvement to evaluate various options of the alignment within the corridor. Details of the Downtown LRT Concept Plan are outlined in Attachments 1 and 2.
- Transportation Department provided a status update and draft concept plan to the Downtown LRT planning process at the December 8, 2010, Transportation and Public Works Committee meeting. Additional planning work was completed in early 2011 to update and refine the plan. Transportation Department is presenting the final recommended plan based on this additional work.
- The identification and evaluation of the Downtown LRT Corridor was undertaken in conjunction with the Quarters Development Team and the development of the Capital City Downtown Plan. The Downtown LRT Connector was identified in the Capital City Downtown Plan as one of the “Catalyst Projects” to support new development and improved public spaces, and a more vibrant and pedestrian oriented Downtown.
- The City intends to use the Downtown LRT as a ‘city shaper’

that will encourage new development of 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.

### Downtown LRT Concept Plan

- The Downtown LRT Connector concept planning commenced in July 2010, with the project team undertaking the development of a number of alignment and stop options to determine the optimal stop and street configuration to maximize the opportunities for transit, pedestrian, and bicycle improvements. The recommended alignment is for the LRT to continue from the West LRT down the centre of 104 Avenue, along the west side of 107 Street, and along the north side of 102 Avenue connecting to the Southeast LRT.
- The 102 Avenue right of way is narrow, making it difficult to provide the surface LRT, associated stops, and also provide continuous auto travel lanes. To accommodate all the desired modes in the corridor, a corridor hierarchy was developed. This hierarchy outlines the priority of the corridor to be transit, pedestrians, bicycles, and auto, in that order. As a result, the recommended plan includes a combination of one-way auto traffic (eastbound) and two-way bicycle traffic along 102 Avenue.
- The study team conducted consultations with both internal and external stakeholders in early 2011 to refine the plan where required. Changes to the Downtown LRT

Concept Plan from what was presented in December 2010 are:

- The previously named Campus Stop has been moved to 107 Street between 104 and 103 Avenue and is now referred to as 107 Street Stop.
- A single LRT vehicle staging track has been provided on the west side of 107 Street between 102 Avenue and Jasper Avenue.
- A dedicated two-way cycle lane has been provided on 102 Avenue between 107 Street and 99 Street.
- A continuous eastbound traffic lane has been provided on 102 Avenue between 107 Street and 95 Street.
- Additional turning movements provided where possible on 102 Avenue.
- On-street parking provided on 102 Avenue where possible.
- Parking/loading provided between 96 and 95 Street.
- Dedicated pedestrian crossing provided west of 95 Street across 102 Avenue.
- There are five stops identified in the Downtown section of the LRT. For each proposed stop, various options were developed that focused upon the arrangement at each stop. The options are outlined in Attachments 1 and 2. The following outlines the recommended stop locations and alignment configuration.

### Warehouse/Campus District

- The 107 Street stop is located on the west end of Downtown and is to serve the warehouse/campus district, including Grant MacEwan University and NorQuest College.

- The proposed stop is along the west side of 107 Street between 104 Avenue and 103 Avenue. This alignment results in property requirements on 107 Street and 104 Avenue, but provides convenient access for both Grant MacEwan University and NorQuest College. This configuration also provides opportunities for redevelopment on the site in the proximity of the station.
- The proposed staging track is planned on 107 Street, south of 102 Avenue. This track can be used to store additional trains to allow for operational flexibility and will ultimately become part of the future Downtown LRT circulator.
- The next stop is located on 102 Avenue, between 105 and 106 Streets. This provides a stop as far west as possible on 102 Avenue and provides walking links through to Jasper Avenue and Corona Station.
- The 105/106 Street stop is on the north side of 102 Avenue, occupying much of the block between 105 and 106 Street. For this block, auto capacity is reduced to one lane eastbound, enabling dedicated bicycle lanes to be provided adjacent to the LRT track. There are partial property impacts at the northeast corner of 107 Street and 102 Avenue.

### City Centre West

- This stop serves the commercial district including City Centre West/East, Don Wheaton YMCA, and Manulife Place. The stop is located on the north side of 102 Avenue with the platform located adjacent to 101 Street. This stop provides connectivity to the

commercial core, walking links to Jasper Avenue, interchange with bus service on 101 Street, and future connectivity to the potential Downtown arena/entertainment district.

- The recommended concept plan provides one eastbound vehicle lane from 103 to 101 Street. This maintains vehicle access and circulation near this stop.

### Churchill Square

- The purpose of this stop is to offer a direct interchange with the existing LRT line and provide access to the arts and civic district within the Downtown. The proposed stop will be located between 100 and 99 Streets. This configuration maintains eastbound auto access and provides dedicated two-way bicycle lanes.
- The stop also considers the closure of 99 Street between 102 Avenue and 102A Avenue. The closure would provide further opportunities to improve the public realm, creates a new direct connection to the Churchill LRT Station, and simplifies the intersection configurations on 102 Avenue. The bicycle route along 102 Avenue will be rerouted onto 99 Street and then along 102A Avenue into the Quarters District.

### The Quarters

- This stop is on the east end of Downtown serving the Quarters District area and the location was developed in conjunction with the Quarters Development Team. It is located on the north side of 102 Avenue, west of 96 Street, where it provides the greatest opportunity for the LRT to act as a

stimulus for redevelopment in the area.

- 102 Avenue would accommodate an eastbound lane between 97 Street and 96 Street. East of 96 Street two-way traffic is accommodated on 102 Avenue and connects to Jasper Avenue as a right-in/right-out. This will provide local access and maintains street parking for the businesses along the block.

### Property Acquisition

- Minimizing property acquisition has been a guiding principle for the design of the Urban LRT System. However, there are instances where additional property is required to accommodate the system.
- The approach used in assessing property needs involved first examining the potential for a partial taking. Where it was determined that the partial taking required was detrimental to the property or a building was impacted, the entire parcel was identified.
- The property requirements have been identified in Attachment 2. Typically, a two-year lead time for property negotiations is required in order to allow the owners sufficient time to negotiate an agreement.
- Property is required to accommodate the 107 Street stop, which impacts the property on the southwest corner of 107 Street and 104 Avenue. The 105/106 Street stop impacts a small portion of property along the south side of 102 Avenue. This is currently a surface parking lot. To accommodate two-way traffic on 102 Avenue east of 96 Street, property is required along the south side of 102 Avenue.

### Traffic/Access Modifications

- The road network within the Downtown consists of a typical grid network, providing traffic with multiple routes. The main arterial routes running north/south within the Downtown include 101, 105, and 109 Streets, the latter providing connectivity to the High Level Bridge over the North Saskatchewan River. In the east/west direction, 104 Avenue and Jasper Avenue are the main arterial routes into the Downtown.
- Traffic analysis was completed to determine overall adjustments and impacts to traffic movement in the Downtown, related to the introduction of the new LRT. The analysis was developed using model data, updated to reflect the inclusion of the proposed LRT (Downtown, West, and Southeast). The road network within the Downtown currently provides an adequate level of service. The inclusion of the future LRT will result in increases in delay and congestion, but within levels found within Downtown centres in other major cities.
- The development of the LRT routes and the use of existing road space within the identified corridors results in reduced traffic volumes within the LRT corridors, with some reassignment of traffic to other routes. The new LRT routes themselves will provide people with improved and new journey opportunities, reducing the reliance of the private car into the Downtown.
- The reduced capacity on 102 Avenue is manageable because of the proximity to corridors such as Jasper Avenue, 103 Avenue, and 104 Avenue. 102 Avenue will no longer function as a through arterial roadway and in combination with 103 Avenue, it will operate primarily as an internal circulation roadway west of 100 Street within the Downtown.
- The project team identified that all of 103 Avenue should be converted to two-way operation to provide a more complete parallel corridor to that of 102 Avenue.
- Accommodating existing access patterns to businesses are also impacted with the implementation of the street running LRT. For the approach to access management, the project utilized the assumption that all crossings of the LRT tracks occur at a controlled intersection and turning movements require a protected turning signal.
- Existing accesses that can be maintained, but are not signal controlled are converted to right in/right out movements.
- This philosophy requires a continued assessment of the larger transportation network and incorporating a series of “off route” intersection improvements to enhance capacity for routes paralleling the LRT corridor or provide better neighbourhood access/egress from/to the arterial road network.

### Noise and Vibration

- The areas adjacent to the corridor in the Downtown do not meet the Urban Traffic Noise Policy (C506) based on the types of land uses identified in the policy. Therefore, noise measurements and modelling were not completed and noise

attenuation measures are not required.

- Operation of LRT vehicles through sharp turns in the track can generate noise. This type of track arrangement is required on the route at 102 Avenue and 107 Street. To alleviate the potential impact, the LRT vehicle would operate at slow speeds and can, if required, be fitted with a wheel dampening system to reduce wheel noise. These measures, in conjunction with good design and maintenance of the alignment, should reduce the generation of noise and the associated impacts.
- The only identified location where additional measures will need to be considered is alongside the Winspear and Citadel Theatres. At this location, consideration should be given to the use of a form of track construction that reduces ground borne vibration.

### Pedestrian and Cycling

- Developing the Downtown LRT alignment has placed an emphasis on the LRT stops becoming focal points for pedestrian activity. Connectivity and improvement to existing walk links have been considered within the concept design. These include improved sidewalks to improve the walkability and space available to LRT passengers and the local community.
- The Capital City Downtown Plan identifies 102 Avenue as a central pedestrian spine and a provision of a cycle route along 102 Avenue. The proposal for the LRT along the corridor provides enhanced pedestrian facilities and a dedicated

cycling lane along 102 Avenue and 102A Avenue. The recommended plan proposes that the two-way cycle lane travels adjacent to the LRT tracks. The dedicated bicycle lanes will turn north onto 99 Street and continue east into the Quarters District on 102A Avenue.

### Cost Estimates

- The conceptual cost estimate for the extension is approximately \$155 million in 2011 dollars. The estimated cost including inflation is approximately \$180 million based on completing construction by 2016. This estimate includes property acquisition, engineering, and construction administration. A cost breakdown is presented in Attachment 3.

### Land Use Opportunities

- The Downtown LRT is a catalyst project within the Capital City Downtown Plan and as such, the corridor and the recommended LRT alignment has been developed to support the four following policies of the Capital City Downtown Plan:
  - Sustainable
  - Vibrant
  - Well-Designed
  - Accessibility
- The recommended LRT alignment will help support development along the corridor, such as at Grant MacEwan University and NorQuest College. The 107 and 106/105 Street stops are both centred on areas of the Downtown that are currently less well developed, which should increase the desirability of development around these two locations, helping

to generate development within the Warehouse/Campus District.

- The location of the 107 Street stop will offer the City with the opportunity to encourage Transit Oriented Development in combination with the LRT stop.

### Policy

LRT planning and construction is consistent with policies identified in the Transportation Master Plan.

### Corporate Outcomes

LRT planning and construction aligns with the City's ten-year strategic goals of shifting its transportation mode and transforming Edmonton's urban form.

### Public Consultation

- A public involvement process was completed in accordance with the Public Involvement Policy C513. Over 450 participants attended open houses, presentations, and small group meetings. A detailed outline of the public involvement activities and themes is outlined in Attachment 4.
- The process for the Downtown LRT Project included three major stages. In September 2010, a number of options were presented and discussed with a broad range of stakeholders at presentations and in small group meetings. This input was considered along with a technical study and the City's long term policy goals to develop a draft LRT Concept Plan that was presented for further feedback through a questionnaire at an open house held in November 2010. After the draft plan was presented at the Transportation and Public Works Committee meeting in December 2010, further stakeholder

consultation was completed with both internal and external stakeholders in early 2011. These consultations were in the form of in person meetings with key stakeholders. An information session was held on April 28, 2011, where additional public input was received.

- Almost half of the respondents (47%) who completed the open house survey (November 2010) indicated they were satisfied with the draft LRT Concept Plan, 27% indicated they were neutral, and 26% indicated they were dissatisfied.
- The results from the April 28, 2011, information session showed that 72% of those that submitted questionnaires strongly agreed or agreed the information presented was useful and informative, 68% felt the information was easy to understand, and 52% agreed or strongly agreed they were able to find satisfactory answers to their questions. Twenty Five percent of the respondents indicated they were very satisfied or satisfied with the recommended LRT Concept Plan, 33% indicated they were neutral, and 33% indicated they were dissatisfied.
- Participants who were satisfied with the recommended LRT Concept Plan most frequently stated it was a good plan that was well balanced to consider the needs of many stakeholders, that the plan needs to move forward, and that they see benefits from reducing road capacity and enhancing pedestrian focus. Those who indicated dissatisfaction were most likely to be concerned about the impact of reduced roadway capacity on car and traffic congestion, and they noted concerns regarding stop locations and bus

transit integration. As well, there were concerns about the chosen corridor of 102 Avenue.

- Issues raised through public involvement are similar to the previous LRT planning projects. These include concerns about noise, traffic, safety and community impacts. The information obtained through the consultation process helped refine the concept plan and develop appropriate mitigation measures.

### **Budget/Financial Implications**

The budget for the West to Southeast LRT Extension, including the Downtown section, has not been identified in the Capital Budget. Administration has presented options to fund the construction of the West to Southeast LRT line which City Council is currently considering. The April 12, 2011, Southeast and West LRT Line – Source of Funding and Phasing Schedule, Finance and Treasury Department report 2011FS3879 was referred to City Council from Transportation and Public Works Committee without a recommendation. This report recommends a funding strategy for preliminary engineering and some land requirements for the Southeast to West LRT line.

### **Justification of Recommendation**

The revisions to the recommended Downtown LRT Concept plan address stakeholder concerns identified for the section between 95 Street and 97 Street on 102 Avenue. The concept plan also accommodates a diagonal 107 Street station for consideration in the future if the appropriate commitments from Grant MacEwan University and NorQuest College are established at the time of implementing the LRT.

### **Attachments**

1. Downtown LRT Connector Concept Plan - May 2011
2. Edmonton LRT Expansion - Aerial Photos
3. Cost Estimate – Downtown LRT Quarters to Grant MacEwan
4. Downtown LRT Connector - Public Involvement Report 2011 (May 2011)
5. Additional Information
6. Grant MacEwan / Norquest Proposed LRT Station - Aerial Photos
7. Downtown LRT Connector Concept Plan - October 2011 (revised)
8. Revised Concept Plan
9. Downtown LRT: Public Involvement (Summer/Fall 2011) - November 2011

### **Background Information Available on Request from the Department**

1. Appendices for Attachment 2

### **Others Reviewing this Report**

- R. G. Klassen, General Manager, Sustainable Development