



Downtown LRT Connector:

Design Options

Downtown LRT



Downtown LRT Connector: Design Options

**Stakeholder Workbook
September 2010**

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City of Edmonton

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Highlights

- **A new LRT route** that would provide a surface LRT system downtown that also connects the West LRT line and the Southeast LRT line, with additional opportunities for transfers to the existing LRT system in the downtown core.

- **Length of line:** Approximately 2.1km

- **Number of stations:** 5

Low Floor LRT, Montpellier FRANCE



LRT supports new neighbourhoods, Montpellier FRANCE



Minneapolis USA



Low floor LRT creating places for people, Montpellier FRANCE



Introduction

The Downtown Connector

The City of Edmonton has adopted plans for a major expansion of its LRT network. This includes a 25km route from Lewis Estates in the West, through the Downtown and to Mill Woods in the Southeast of the City.

This document presents details of the core section, known as the Downtown Connector, that links the West and Southeast LRT corridors. While the main Downtown route has been approved by Council, there are a number of options for refining the alignment, particularly around stop locations.



Background

The Way Ahead

In line with the directions set out in the City of Edmonton's recently adopted Strategic Plan, *The Way Ahead*, and with the guidance of transportation and urban planning strategies, *The Way We Move* and *The Way We Grow*, the City has developed a holistic vision to promote growth in the downtown, encourage denser development around Light Rail Transit (LRT) stations and transit centres, and emphasize the role of urban design.

LRT Network Plan

In June 2009, City Council adopted a long-term LRT Network Plan that defines the future size, scale, and operation of the regional LRT system. Eventually, the LRT network will have six lines extending to the Northwest, Northeast, East, Southeast, South, and West.

The LRT Network Plan supports the overarching policy direction by making downtown Edmonton the focal point of the LRT system. In reviewing the overall system operation, it was determined that a street-level LRT line would be needed in the downtown core to serve future expansions separate from the existing LRT system in the downtown tunnel.

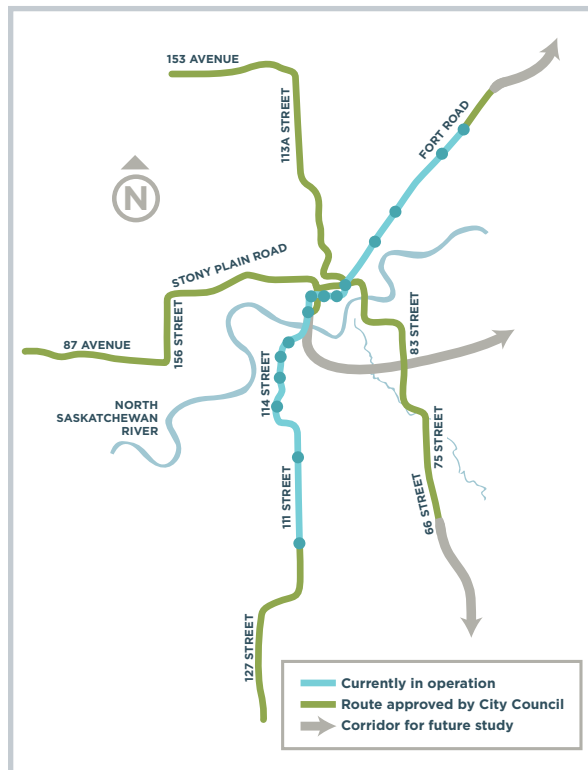
As part of the LRT Network Plan, a vehicle technology review was completed to help choose the style of LRT vehicles that was most appropriate to meet long-term transportation objectives. The review recommended:

- Maintaining the use of high-floor LRT vehicles on the existing line and its extensions; and
- Using new, low-floor LRT vehicles on new lines that do not connect to the existing line.

The Downtown Connector will be part of the new low-floor LRT network which will connect the other future low-floor LRT lines such as West and Southeast.

Capital City Downtown Plan

Integrating new and emerging policy directions, the City began a process to update the Downtown Plan in 2006. City Council recently approved the Capital City Downtown Plan which will guide the development of the downtown into a more vibrant, attractive, higher-density, mixed-use and walkable area. In particular, the Plan supports the integration of at-grade LRT as a catalyst to encourage mixed use downtown development and create enhanced pedestrian-oriented public spaces.



Urban LRT

Low Floor LRT Vehicles

Low-floor LRT vehicles were first introduced in the late 1980s and have since evolved to become the industry standard for new LRT systems in Europe and North America. Most of the mechanical equipment on a low floor LRT vehicle is located on the roof which means doors can be provided at street-level for step-free boarding onto the vehicle.

The biggest advantage to a low-floor LRT system is that the stations can be smaller and require less infrastructure - a station stop can be as simple as a raised curb and sidewalk. This makes it easier to integrate stations into their local surroundings with a more urban feel. Since ramps and steps are not needed, low floor LRT stops also provide better pedestrian connections and fewer barriers to people with mobility difficulties.



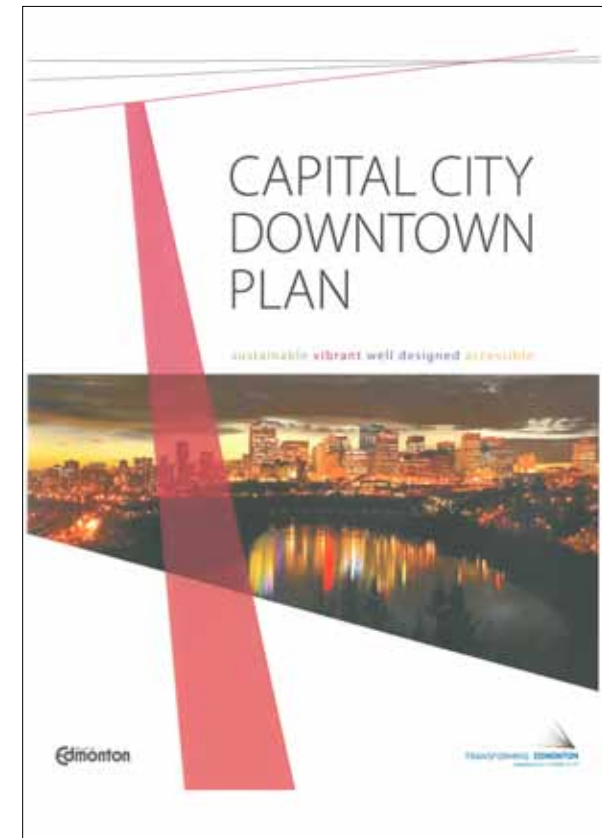
Implementing the Capital City Downtown Plan

The Downtown Connector low floor LRT is a key component of the Capital City Downtown Plan and will serve as a catalyst for new development, improved public spaces and a more vibrant and pedestrian-oriented city centre.

The Downtown Connector will support key goals of the Plan such as:

- Improving livability
- Transforming urban form
- Shifting transportation modes

The Downtown Connector is highlighted as a catalyst project for the Capital City Downtown Plan and is intended to not only provide an important transit function as part of a more sustainable transportation network in Edmonton, but also as a 'city shaper' which will encourage new development on underutilized 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 Connector

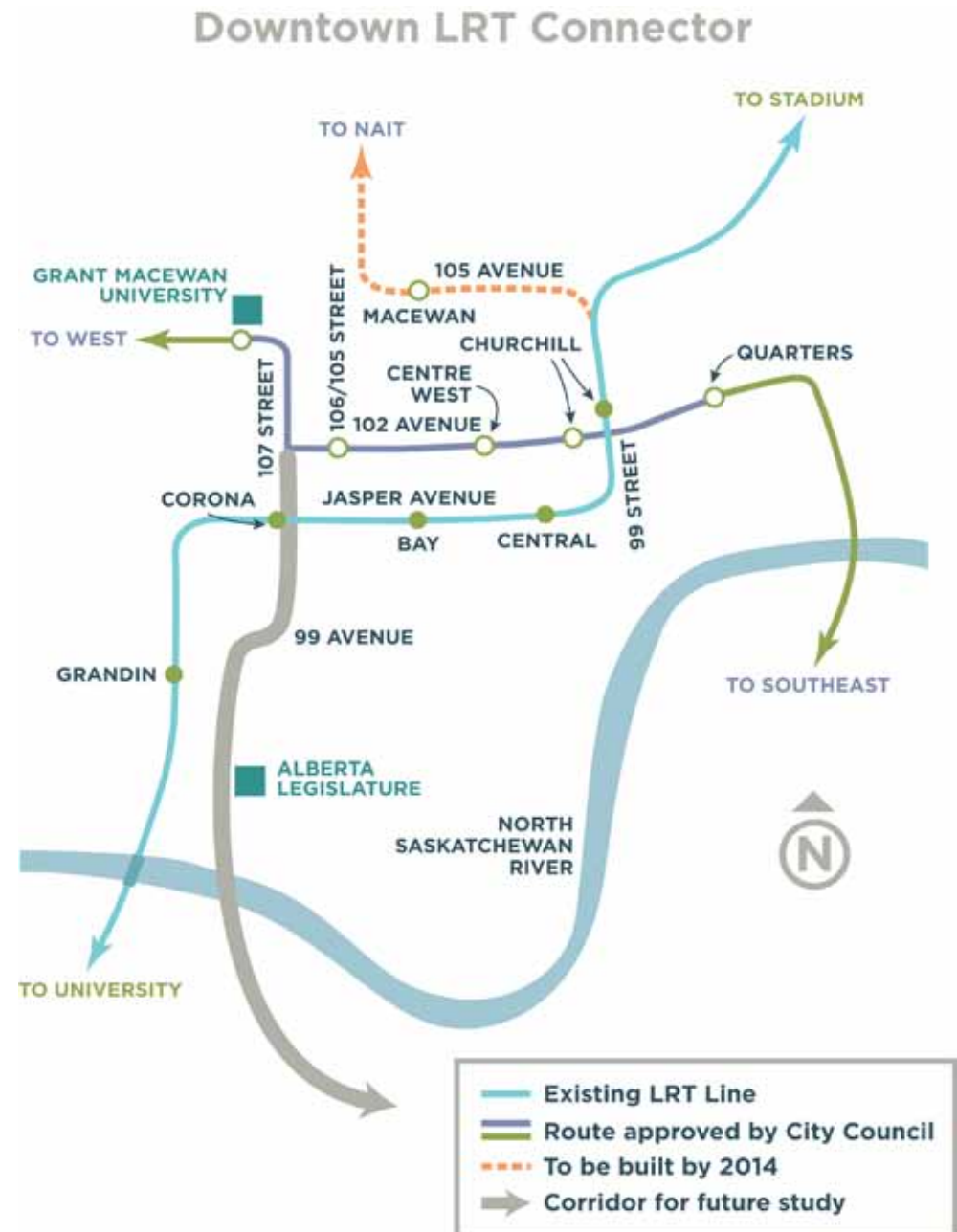
Project Progress

At a public hearing held on June 21, 2010, City Council approved the surface downtown section of LRT. The Downtown LRT Connector will use a combination of 107 Street and 102 Avenue. This route meets the objectives for future LRT expansion and best supports the Downtown Plan.

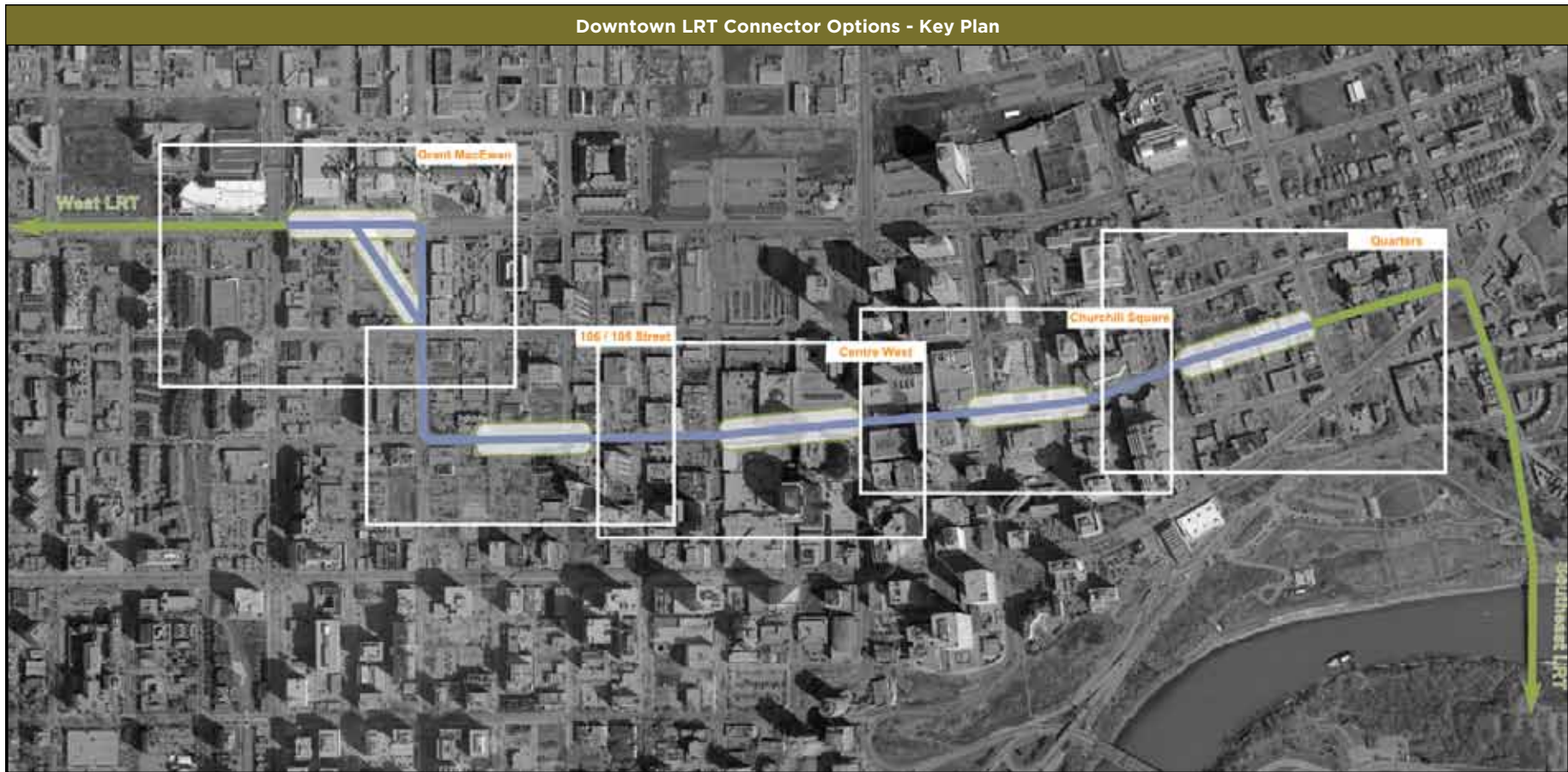
It also has important attributes for integrated LRT/land use planning:

- A stop more directly connected to Grant MacEwan University
- Shorter walking distance to existing developed areas of Downtown
- Proximity to the downtown core and high-use activity centres
- Potential to support the extension of higher density development north of Jasper Avenue through to 103 Avenue
- Integration with bus service on 101 Street
- A great potential for integrated urban realm improvements on more active streets

As part of the future development of the Downtown LRT Connector a number of options have been developed at stop location in order to maximise the opportunities for pedestrian, bike and transit improvements. A key plan of the options is shown on the following page.



Downtown LRT Connector Options - Key Plan



Grant MacEwan Stop (Option 1)

Description

This area is developing as a student-focused institutional/residential community with the significant presence of Grant MacEwan University and the nearby NorQuest College. With several underutilized land parcels adjacent to both education facilities, there are opportunities for this LRT stop to be a catalyst for future development which can contribute towards a vibrant, pedestrian-oriented college and residential neighbourhood.

Option 1 locates the Grant MacEwan stop on the north side of 104 Ave, directly adjacent to the University. 104 Ave, east of 109 St, would be narrowed from six to four lanes, and a section of the University's sidewalk and frontage land would be required to accommodate the low-

floor stop. This option minimizes the impact of the stop and leaves the south side of 104 Ave available for future redevelopment as part of a college neighbourhood community.

The track alignment will move from centre-running, west of 109 St, to off-street where the stop is located and then move to the west side of 107 St south of 104 Ave. The intersections at 104 Ave/109 St and 104 Ave/107 St will require signalling to enable the LRT to enter and exit the stop area.

Strengths

- Direct access to the University site
- Opportunity to create a pedestrian plaza around the stop
- Potential to serve as a focal point for the campus and encourage new development in the area
- Opportunity for 3 track stop layout to maximize operational flexibility

Weaknesses

- Requires land acquisition
- Potential impact on 109 St intersection by requiring separate LRT movement at traffic signal to cross to north side of 104 Ave
- Southbound LRT guideway on west side of 107 St removes parking and some property access





Concept only -
subject to change

EDMONTON LRT EXPANSION
DOWNTOWN LRT ALIGNMENT - Grant MacEwan Option 1

- Potential LRT at Grade
- Potential Stop Platform
- Potential Property Requirement
- Potential Roadworks

Scale Not to Scale
Drawing No
222005-03-201

Grant MacEwan Stop (Option 2)

Description

Option 2 locates the Grant MacEwan stop on the south side of 104 Ave between 108 Street and 107 Street. The location uses the existing surface car parking to provide an “off street” stop convenient for both Grant McEwan University and NorQuest College. Significant property purchase would be required including the ADAC building at 103 Ave at 107 St, although there is a major opportunity for most of the site to be redeveloped around the stop in a way that supports the University/College setting.

The track alignment would cross the 109 St intersection in the centre of the road, before turning south at the intersection with 108 St, with traffic signal control. The route then crosses through the surface parking between

108 St & 107 St and requires one existing building to be removed. The alignment finally joins 107 St to continue south, running on the west side of the street.

Strengths

- Adjacent to University sites
- Reduces impact on 109 St Intersection compared to Option 1 by allowing LRTs to move straight through the intersection with traffic
- Opportunities to create Campus plaza around stop
- Potential to revitalize currently underutilized site and encourage new development in the area

- Opportunity for 3 track stop operation to maximize downtown operational flexibility
- Can serve both Grant MacEwan and NorQuest campuses

Weaknesses

- Significant land acquisition



Potential



Concept only -
subject to change

EDMONTON LRT EXPANSION
DOWNTOWN LRT ALIGNMENT - Grant MacEwan Option 2

- Potential LRT at Grade
- Potential Stop Platform
- Potential Property Requirement
- Potential Roadworks

Scale Not to Scale
Drawing No
222005-03-202

105/106 Street Stop (Option 1)

Description

102 Ave in this area is envisioned as a mixed use commercial/residential “warehouse campus” neighbourhood in the Capital City Downtown Plan, and an LRT station is part of that vision. This type of street design is focused on mixed-use buildings, common setback lines, generous tree-lined sidewalks, and buildings with street-facing active frontages, that frame the street without overpowering the space or depriving it of natural light.

Option 1 locates the 105/106 St stop on the north side of 102 Ave with the low floor platform occupying much of the block between 105 St and 106 St. The stop would be largely located on the existing sidewalk and street right-of-way to avoid the need for property acquisition

while also leaving enough space for two lanes of traffic, which would include shared bicycle travel.

The track alignment would turn off of the west side of 107 St onto the north side of 102 Ave and potentially require a small amount of property acquisition from the surface parking lot on the northeast corner of 107 St & 102 Ave. Traffic signalling at this intersection would also be required. The alignment would continue from this stop along the north side of 102 Ave to the Centre West stop.

Strengths

- Provides traffic lanes in both directions
- Requires minimal land acquisition

- Bus operations on 102 Ave would not require rerouting

Weaknesses

- Two lane traffic operation requires minimal-width LRT platforms and minimizes pedestrian access and waiting areas.
- Property and lane access on the north side of 102 Ave would be removed
- Does not provide dedicated bicycle lanes



Potential



-  Potential LRT at Grade
-  Potential Stop Platform
-  Potential Property Requirement
-  Potential Roadworks

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105/106 Street Stop (Option 2)

Description

Option 2 locates the 105/106 St stop in the same place as Option 1, on the north side of 102 Ave, with the low level stop platform occupying much of the block between 105 St and 106 St. The key difference with this option is that the stop platform would be widened to provide more space for pedestrians and LRT passengers and bicycle lanes would be added to create a less automobile-oriented environment. As a result, only one lane of traffic would be provided and a portion of the parking lots on the north side of 102 St would likely need to be acquired to enable this option.

There is no change in the track alignment for this option, which would turn off of the west side of 107 St onto the north side of 102 Ave and

potentially require a small amount of property acquisition from the surface parking lot on the northeast corner of 107 St & 102 Ave. Traffic signalling at this intersection would also be required. The alignment would continue from this stop along the north side of 102 Ave to Centre West stop.

Strengths

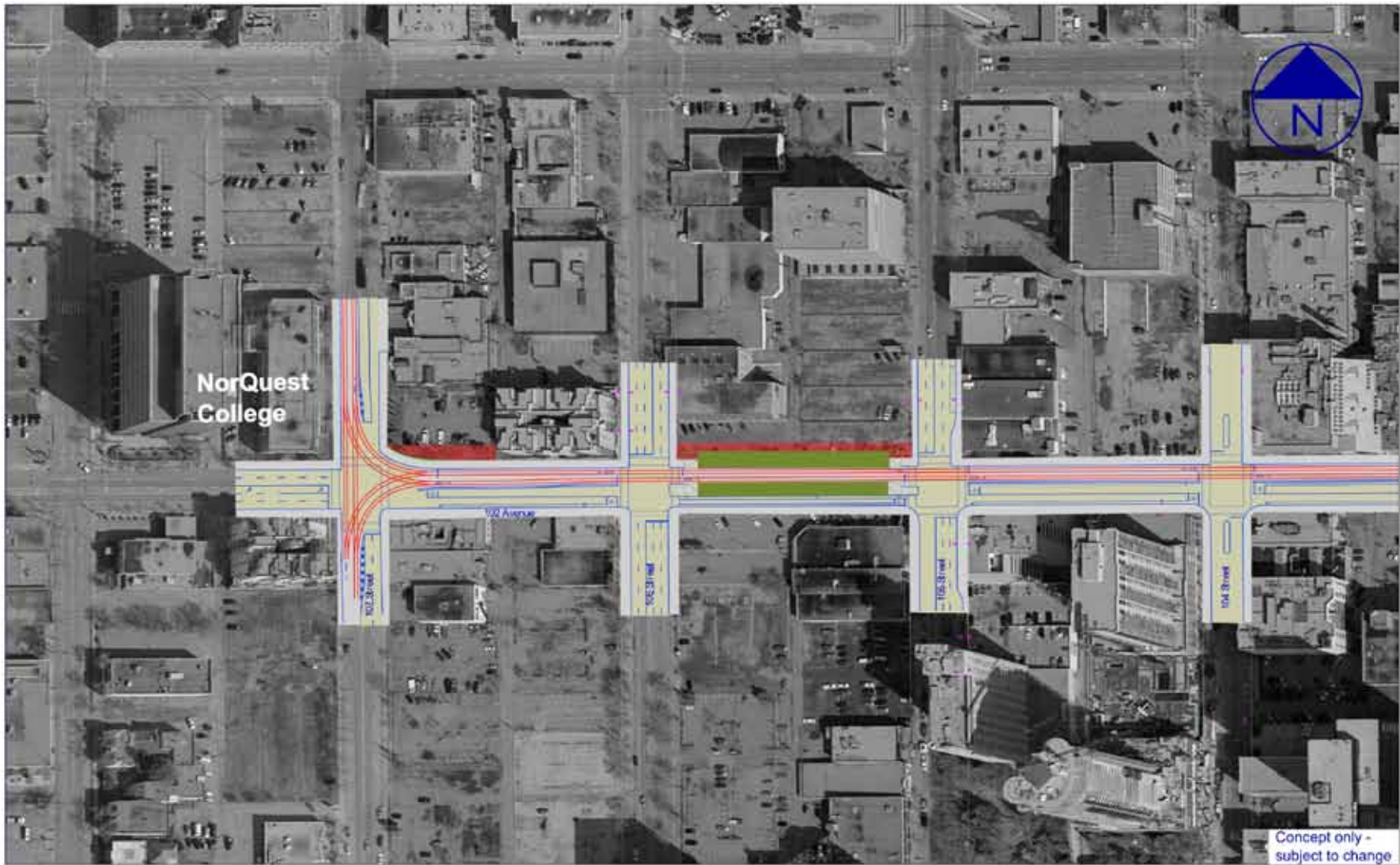
- Provides more room for stop platforms than Option 1, including additional LRT passenger waiting areas
- Provides dedicated bicycle lanes in both directions, providing safer travel for cyclists
- Provides wider sidewalks and an improved and safer pedestrian realm

Weaknesses

- Limits road capacity on 102 Ave to traffic in one direction
- Requires small amount of land acquisition on north side of 102 Ave
- Property and lane access on the north side of 102 Ave would be removed
- May require bus routes on 102 Ave to be rerouted



Potential



EDMONTON LRT EXPANSION
DOWNTOWN LRT ALIGNMENT - 106/105 Street Option 2

- Potential LRT at Grade
- Potential Stop Platform
- Potential Property Requirement
- Potential Roadworks

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222005-03-204

105/106 Street Stop (Option 3)

Description

Option 3 again locates the 105/106 St stop in the same place as Options 1 and 2, on the north side of 102 Ave, with the stop platform occupying much of the block between 105 St and 106 St. The key difference with this option is that 102 Ave from 105 St to 106 St would be closed to traffic, creating a more pedestrian-oriented environment with wider stop platforms and bicycle lanes in both directions and enhancing the overall urban realm.

As with Option 2, a portion of the parking lots on the north side of 102 St would likely need to be acquired to provide this option.

There is no change in the track alignment, which would turn off of the west side of 107 St onto the north side of 102 Ave and potentially require

a small amount of property acquisition from the surface parking lot on the northeast corner of 107 St & 102 Ave. New traffic signalling at this intersection would also be required. The alignment would continue from this stop along the north side of 102 Ave to Centre West stop.

Strengths

- Provides maximum space for low level LRT platforms and passenger waiting areas
- Provides dedicated bicycle lanes in both directions with no traffic interaction
- Creates more of a focal point around the stop to encourage and shape new development
- Provides non-automobile environment to enable improved and safer pedestrian realm

Weaknesses

- Limits road capacity on 102 Ave by removing traffic between 105 St and 106 St
- Requires small amount of land acquisition on north side of 102 Ave
- Property and lane access on the north side of 102 Ave would be removed
- Would require bus routes on 102 Ave to be rerouted





EDMONTON LRT EXPANSION
DOWNTOWN LRT ALIGNMENT - 106/105 Street Option 3

- Potential LRT at Grade
- Potential Stop Platform
- Potential Property Requirement
- Potential Roadworks

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Concept only -
subject to change

Centre West Stop (Option 1)

Description

The location of the Centre West stop is in the heart of the downtown commercial core. The area around this location is already fully developed but there is a good opportunity to reinvigorate the street with the introduction of LRT by improving pedestrian and cycling facilities and linkages to the Edmonton City Centre shopping mall and surrounding buildings.

Option 1 locates the stop on the north side of 102 Ave with the low level stop platform running the length of the block between 102 St and 101 St. A minimal-width passenger stop platform will be required in this option to minimize impact on the remainder of the street to enable two lanes of traffic with shared bicycle travel. This option would require no land acquisition by

locating stop infrastructure within the sidewalk and street right-of-way.

The track alignment would follow from the 105/106 stop along the north side of 102 Ave and continue towards the Churchill Square stop along the same alignment. limited traffic signal alterations would be required.

Strengths

- Provides traffic lanes in both directions
- Requires no land acquisition
- Located closer to Central Business District than Option 3 to serve existing employment

Weaknesses

- Provides minimal space for LRT stop platforms and pedestrian waiting areas
- Does not provide dedicated bicycle lanes
- Misses opportunity to improve the public realm through higher quality pedestrian and cycling facilities
- Likely to require rerouting of bus services



Potential



EDMONTON LRT EXPANSION
DOWNTOWN LRT ALIGNMENT - Centre West Option 1

- Potential LRT at Grade
- Potential Stop Platform
- Potential Property Requirement
- Potential Roadworks

Scale Not to Scale
Drawing No
222005-03-206

Centre West Stop (Option 2)

Description

Option 2 locates the stop in the same place as Option 1, on the north side of 102 Ave, with the stop platform taking up much of the block between 102 St and 101 St. The main difference with this option is the removal of traffic between 102 St and 101 St, which allows additional space for wider stop platforms and dedicated bicycle lanes in both directions. In addition, traffic between 103 St and 102 St would be limited to one lane with bicycle lanes in both directions.

The removal of traffic provides the opportunity to create a high quality public realm with improved pedestrian and cycling facilities integrated into the LRT stop. This option, as with Option 1, would require no land acquisition.

There is no change in the track alignment, which would follow from the 105/106 stop along the north side of 102 Ave and continue towards the Churchill Square stop along the same alignment. As such, limited traffic signal alterations would be required.

Strengths

- Provides maximum space for LRT stop platforms passenger waiting areas
- Requires no land acquisition
- Provides dedicated bicycle lanes in both directions with no traffic interaction
- Provides non-automobile environment to enable improved and safer pedestrian realm

- Located closer to Central Business District than Option 3 to serve existing employment

Weaknesses

- Limits road capacity on 102 Ave by removing traffic between 102 St and 101 St, and reduces traffic to one lane between 103 St and 102 St
- Likely to require rerouting of bus services



Potential



EDMONTON LRT EXPANSION
DOWNTOWN LRT ALIGNMENT - Centre West Option 2

- Potential LRT at Grade
- Potential Stop Platform
- Potential Property Requirement
- Potential Roadworks

Scale Not to Scale
Drawing No
222005-03-207

Centre West Stop (Option 3)

Description

Option 3 locates the stop on the north side of 102 Ave between 103 St and 102 St, which is one block west of the stop locations in Options 1 and 2, with the intent of providing access to the west end of the City Centre shopping mall and the potential to act as a catalyst for new development west of 103 St.

The street layout is similar to Option 2 in that traffic would be removed between 103 St and 102 St, with wide stop platforms and dedicated bicycle lanes in both directions. In addition, traffic between 102 St and 101 St would be limited to one lane, with bicycle lanes in both directions. As with Option 2, the removal of traffic provides the opportunity to create a high quality public realm with improved pedestrian

and cycling facilities integrated into the LRT stop. This option would also require no land acquisition.

There is no change in the track alignment, which would follow from the 105/106 stop along the north side of 102 Ave and continue towards the Churchill Square stop along the same alignment. As such, limited traffic signal alterations would be required.

Strengths

- Provides maximum space for LRT passenger waiting areas
- Requires no land acquisition
- Provides dedicated bicycle lanes in both directions with no traffic interaction

- Provides non-automobile environment to enable improved pedestrian realm
- Potential to encourage new development west of 103 Ave while still serving City Centre shopping mall

Weaknesses

- Limits road capacity on 102 Ave by removing traffic between 103 St and 102 St, and reduces traffic to one lane between 102 St and 101 St
- Likely to require rerouting of bus services





EDMONTON LRT EXPANSION
DOWNTOWN LRT ALIGNMENT - Centre West Option 3

- Potential LRT at Grade
- Potential Stop Platform
- Potential Property Requirement
- Potential Roadworks

Scale Not to Scale
Drawing No
222005-03-208

Churchill Square Stop (Option 1)

Description

The location of this stop is adjacent to the Churchill Square plaza and the Stanley Milner Library in the arts district. The area also includes the Winspear Theatre, the Art Gallery of Alberta, Edmonton City Hall and the federal government services at Canada Place. Integration of the LRT stop with Churchill Square will create a seamless pedestrian experience and provide further opportunities to improve the public realm at this important location.

Option 1 locates the stop on the north side of 102 Ave with the LRT stop platform stretching the full length of the block between 100 St and 99 St. A minimal-width stop platform would be provided, enabling two lanes of traffic with shared bicycle use. This option would require no

land acquisition by locating stop infrastructure within the sidewalk and street right-of-way. At the northwest corner of 102 Ave and 99 St, a structure would also be built to provide a connection to the underground LRT and Pedway.

The track alignment would follow from the Centre West stop along the north side of 102 Ave and continue towards the Quarters stop along the same alignment. As such, limited traffic signal alterations would be required. The alignment in this area would include special design provisions to minimize noise and vibration impacts on the Winspear Theatre.

Strengths

- Provides traffic lanes in both directions
- Requires no land acquisition
- Links directly to Churchill Square plaza
- Links directly to underground LRT at Churchill Square

Weaknesses

- Provides minimal space for LRT platform and pedestrian waiting areas
- Does not take full advantage of the opportunity to expand and improve the public realm around Churchill Square
- Does not provide dedicated bicycle lanes
- Likely to require rerouting of bus services



Potential



Concept only -
subject to change

EDMONTON LRT EXPANSION
DOWNTOWN LRT ALIGNMENT - Churchill Square Option 1

- Potential LRT at Grade
- Potential Stop Platform
- Potential Property Requirement
- Potential Roadworks

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Drawing No.
222005-03-209

Churchill Square Stop (Option 2)

Description

Option 2 locates the stop in the same place as Option 1, on the north side of 102 Ave between 100 St and 99 St. The main difference with this option is the provision for a wider LRT platform and the removal of one lane of traffic. A bicycle lane would be provided in the westbound direction with a traffic lane and shared bicycle travel in the eastbound direction. This option, as with Option 1, would require no land acquisition and would provide a connection to the underground LRT and Pedway.

The alignment would run from the Centre West stop along the north side of 102 Ave and continue towards the Quarters stop along the same alignment as Option 1 east of 99 St. As such, limited traffic signal alterations would be

required. As with Option 1, the alignment in this area would include special design provisions to minimize noise and vibration impacts on the Winspear Theatre.

Strengths

- Provides additional space for LRT platforms and passenger waiting areas
- Requires no land acquisition
- Links directly to Churchill Square plaza
- Links directly to underground LRT at Churchill Square
- Provides dedicated bicycle lane in one direction, improving safety and the overall public realm

Weaknesses

- Limits road capacity on 102 Ave by reducing traffic to one direction between 100 St and 99 St
- Likely to require rerouting of bus services





EDMONTON LRT EXPANSION
DOWNTOWN LRT ALIGNMENT - Churchill Square Option 2

- Potential LRT at Grade
- Potential Stop Platform
- Potential Property Requirement
- Potential Roadworks

Scale Not to Scale
Drawing No
222005-03-210

Churchill Square Stop (Option 3)

Description

Option 3 locates the stop in the same place as Options 1 and 2, on the north side of 102 Ave between 100 St and 99 St. The main difference with this option is the removal of traffic on 102 Ave between 100 St and 99 St and the reduction in road capacity between 99 St and 97 St to one traffic lane. This allows for wider stop platforms, an enhanced pedestrian environment, dedicated bicycles lanes in both directions, and increase the distance of the LRT tracks from the Winspear Theatre. This option, as with Options 1 and 2, would require no land acquisition and would provide a connection to the underground LRT and Pedway.

The track alignment would follow from the Centre West stop along the north side of 102

Ave and continue towards the Quarters stop along the same alignment as Option 1 and 2 east of 99 St. As such, limited traffic signal alterations would be required. As with Options 1 and 2, the alignment in this area would include special design provisions to minimize noise and vibration impacts on the Winspear Theatre.

Strengths

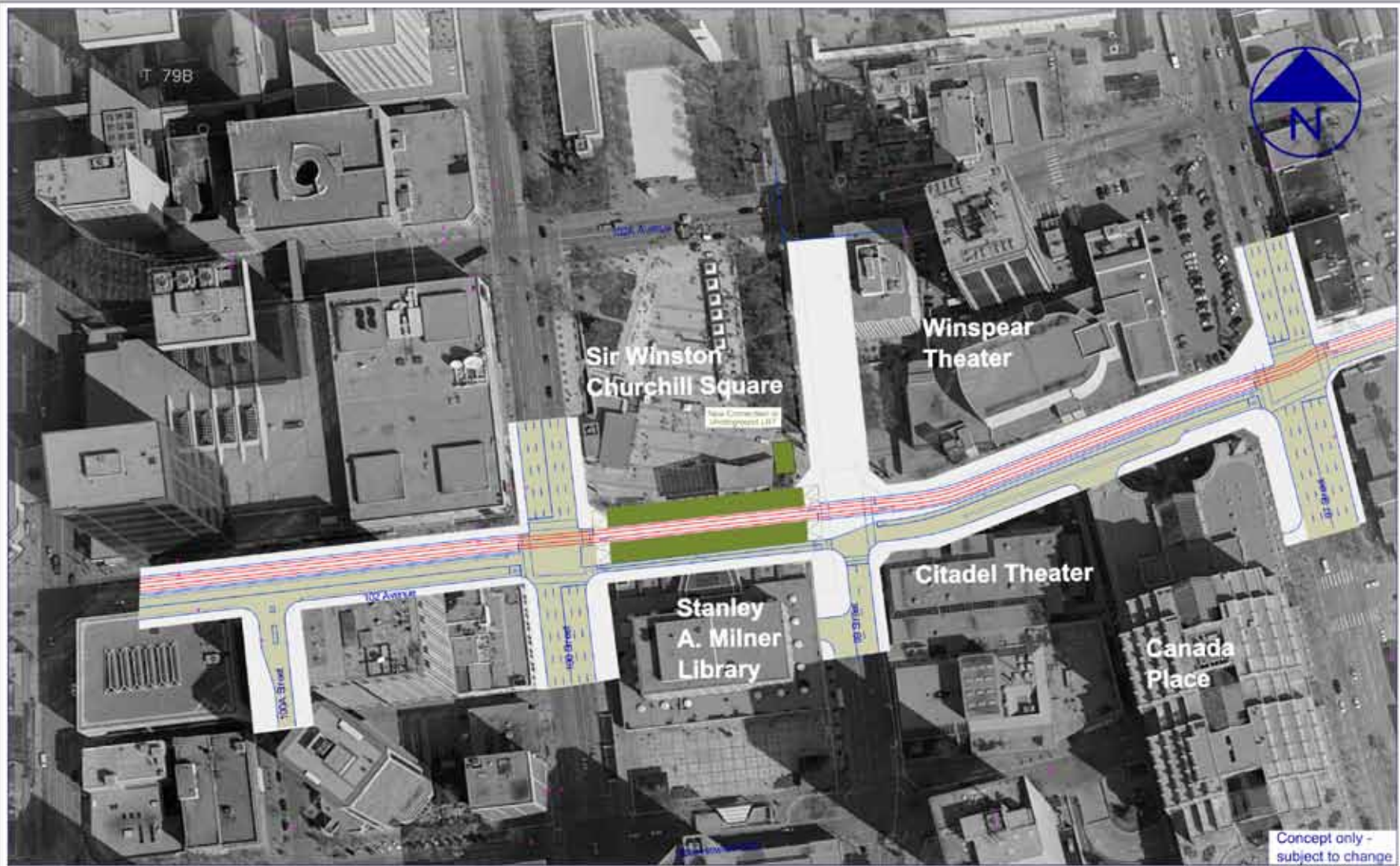
- Provides maximum space for LRT platforms and passenger waiting areas
- Requires no land acquisition
- Links directly to Churchill Square plaza
- Links directly to underground LRT at Churchill Square

- Provides dedicated bicycle lanes in both directions with no traffic interaction
- Provides expanded non-automobile environment to enable improved and safer pedestrian realm

Weaknesses

- Limits road capacity on 102 Ave by reducing traffic to one direction between 100 St and 97 St
- Likely to require rerouting of bus services





Concept only -
subject to change

EDMONTON LRT EXPANSION
DOWNTOWN LRT ALIGNMENT - Churchill Square Option 3

- Potential LRT at Grade
- Potential Stop Platform
- Potential Property Requirement
- Potential Roadworks

Scale Not to Scale
Drawing No
222005-03-211

Quarters Stop

Description

The location of this stop in the Quarters district provides the greatest opportunity for the LRT to act as a stimulus for future mixed use development to revitalize the area. Through previous consultation with the community, the stop location and street design has been largely agreed and as a result only a single option is provided.

This Option locates the stop on the north side of 102 Ave, just west of the intersection with 96 St. Minimal-width LRT platforms are provided, and 102 Ave is closed to through traffic at 96 St. A single eastbound traffic lane is provided from 97 St to the lane just west of 96 St to provide access and street parking to the businesses along the block, but bicycle lanes are

not provided on 102 Ave east of 97 St. No land acquisition is required to provide this option.

The track alignment would follow from the Churchill Square stop along the north side of 102 Ave and cross over to the south side of 102 Ave at 96 St and continue towards the Muttart stop on the Southeast LRT line.

Strengths

- Provides small pedestrian plaza adjacent to stop platforms
- Requires no land acquisition
- Provides expanded non-automobile environment to enable improved and safer pedestrian realm
- Retains automobile access and on-street parking for local businesses

Weaknesses

- Limits road capacity on 102 Ave by removing through traffic between 97 St and 96 St
- Would require rerouting of bus services





EDMONTON LRT EXPANSION
DOWNTOWN LRT ALIGNMENT - Quarters Option 1

- Potential LRT at Grade
- Potential Stop Platform
- Potential Property Requirement
- Potential Roadworks

Scale Not to Scale
Drawing No
222005-03-212



What Happens Next?

After initial review and comment from downtown stakeholders in September 2010, the project team will review this input and make recommendations on preferred alignments and stops. These recommendations will be taken to the public for review in November 2010.

After public consultation, the project team will refine the alignment and stop concepts to a more detailed level of design and make a final recommendation to the City Council in December 2010.

Find out more about the Downtown Connector

Visit www.edmonton.ca/LRTprojects

Call the LRT projects info line at 780-496-4874

E-mail LRTprojects@edmonton.ca

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