

and

ISL Engineering and Land Services
7909 51 Avenue
Edmonton, AB T6E 5L9

City of St. Albert

St. Albert LRT Planning Study

Phase 2 – Alignment Selection Report





ST. ALBERT

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ETS

Edmonton



City of St. Albert

St. Albert LRT Planning Study Phase 2 – Alignment Selection Report

Prepared by:
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Project Number:
60314966

Date:
October, 2015

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October 15, 2015

Bob McDonald
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Dear Mr. McDonald:

Project No: 60314966

Regarding: St. Albert LRT Planning Study: Phase 2 – Alignment Selection Report

Please find the enclosed final version of the St. Albert LRT Planning Study: Phase 2 – Alignment Selection Report.

If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,
AECOM Canada Ltd.

Mark Perry, P. Eng.
Roadways Manager
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Encl.



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Executive Summary

Long term strategic plans for the City of St. Albert and Capital Region Board have identified the need for a LRT line through St. Albert connecting to the City of Edmonton's LRT system. AECOM was retained by the City of St. Albert to define a recommended LRT corridor and alignment for an extension of the City of Edmonton's Metro LRT line through the City of St. Albert. The limits of the study were from the proposed Campbell Road Transit Centre and Park and Ride Facility to a terminus north of Villeneuve Road.

In December 2014, St. Albert City Council approved the LRT corridor following St. Albert Trail as the preferred option. This report summarizes the review of the LRT alignment within the preferred corridor.

The alignment and station locations within the St. Albert Trail corridor are shown on Figure ES-1. The LRT alignment starts at the Campbell Road Station within the City of Edmonton and then runs up the east side of St. Albert Trail with a bridge crossing of Anthony Henday Drive to a LRT station on the northeast corner of Hebert Road/Gervais Road and St. Albert Trail intersection. North of Hebert Road/Gervais Road the LRT will continue along the east side St. Albert Trail replacing two existing lanes on St. Albert Trail. The LRT will cross Sir Winston Churchill Avenue on a new bridge structure. A LRT station will be located near downtown on the bridge structure crossing the Sturgeon River. A new pedestrian overpass will be provided across St. Albert Trail to access the station. The existing St. Albert Exchange will be relocated to north of Sturgeon Road adjacent to the LRT station.

The LRT alignment continues on the east edge of St. Albert Trail to a LRT station at the Boudreau Road/Giroux Road and St. Albert Trail intersection. The LRT alignment will continue to north of Erin Ridge Road where it will cross St. Albert Trail to the west side where the North St. Albert Station will be located adjacent to a Transit Centre and a 500 parking stall Park and Ride facility.

The proposed LRT will be approximately 7 km in length and cost an estimated \$1.1 Billion.

The provision of LRT within St. Albert helps to support several goals of **St. Albert's Strategic Plan**, particularly:

- Creating an attractive environment to do business in St. Albert resulting in a diversified tax base.
- Encouraging a vibrant downtown core.
- Fostering business retention and expansion of local businesses by increasing opportunities to create local employment and improve the availability of local labour.
- Promoting current and future tourist attractions and events by enhancement of infrastructure in order to increase tourism visitations and expenditures.
- Promoting sustainable urban development through progressive urban and transportation planning initiatives.
- Maintaining a safe and efficient transportation network by:
 - Establishing sustainable priorities for the City's investment in transportation and infrastructure for the future and within the region; and
 - Promoting a transit network that enables the City of St. Albert to achieve its economic, social and environmental objectives by making transit a convenient and competitive mode of transportation.

In addition to its complete support of and alignment with the City's Strategic Plan, the LRT extension is fully compliant with and supportive of the City's Municipal Development Plan, Downtown Area Redevelopment Plan and Transportation Master Plan.

The introduction of LRT within St. Albert's central corridor is expected to contribute to revitalization of the current central corridor in terms of investment in the renewal of existing development and complete redevelopment to higher value development such as mixed use residential and commercial development.

The introduction of LRT to St. Albert is expected to return significant transportation benefits to the City including:

- LRT is viewed by the travelling public as a significantly superior and more attractive travel mode when compared to bus-based transit service.
- LRT can dramatically increase transit mode share and thereby eliminate the need for costly and land consumptive roadway and interchange projects.
- LRT will provide St. Albert residents with a highly reliable, high quality, congestion-free transit access to key employment, post-secondary education and cultural destinations in Edmonton
- Having St. Albert directly tied to the regional LRT network opens up the St. Albert job market to the better part of Edmonton's working population which can in turn provide an enticement to prospective employers to locate in St. Albert.

The introduction of the LRT represents an order of magnitude increase in the City of Sta. Albert's commitment to sustainability and to green practices and services through the realization of several benefits:

- Lower greenhouse gas emissions
- Improved local and regional air quality.
- Reduced consumption of fossil-fuels due to a reduction in the use of asphalt for road paving and re-paving
- Reduction in land consumption for roadway expansion purposes.

The introduction of LRT service to and within St. Albert will result in significant transit capital and operating cost savings. These savings will accrue as a result of a reduction in the bus fleet needed to provide service.



- Proposed LRT
- Proposed Station
- * Proposed Transit Centre

- Edmonton LRT
- Edmonton Station
- * Edmonton Transit Centre

CITY OF ST. ALBERT - LRT PLANNING STUDY **FIGURE ES-1**
 PROPOSED LRT ALIGNMENT & STATIONS



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1. Introduction

1.1 Project Purpose

Long term strategic plans for the City of St. Albert and Capital Region Board have identified the need for a LRT line through St. Albert connecting to the City of Edmonton's LRT system. AECOM has been retained by the City of St. Albert to define a recommended LRT corridor and alignment for an extension of the City of Edmonton's Metro LRT line through the City of St. Albert from the proposed Campbell Road Transit Centre and Park and Ride Facility to a terminus north of Villeneuve Road.

1.2 Scope and Objectives

The Project has two stages:

1. Identification, evaluation and recommendation of a preferred LRT corridor (completed in Dec 2014)
2. Development of concept plans and cost estimates for the recommended alignment within the corridor. The concept plans will identify station locations, the proposed northern terminus and the major infrastructure required to support a successful LRT operation.

Development of concept plans for LRT through St. Albert fulfills the following important civic and regional objectives:

- Supports long term visions identified in strategic documents
- Improved commuting choices and efficiency
- Increased transit usage to reduce greenhouse gases
- Provision of costs and benefits to facilitate informed decisions on future financing, project delivery strategies and implementation
- Advancement of concepts and plans to position the project for potential Provincial and Federal funding
- Identification of land requirements to potentially advance land purchases on an opportunity basis
- Defining locations of major transit nodes to provide the foundation for potential higher density, mixed use redevelopment

2. Background

2.1 Previous Initiatives

LRT has been planned for the Edmonton area in some form or another since the early 1960's. The seminal Metropolitan Edmonton Transportation Study (METS) of 1961 included an extensive region-wide freeway system that was supported by an extensive Rapid Transit network.

The METS subsequently led to a series of more detailed studies and plans that began to paint a picture of the types and extents of roadway facilities and their impacts on communities. These plans generated a high degree of public and political debate concerning the types of transportation facilities and indeed the types of communities that would result from its pursuit. In the ensuing decades there were multiple rapid transit and LRT studies completed that examined how growth in the Edmonton area could be served through the pursuit of less intrusive transit based solutions using LRT. Successive transportation masterplans in Edmonton reinforced and clarified the shift towards transit.

In 2008, the City of St. Albert completed its Transportation Master Plan which identified LRT within the St. Albert Trail corridor as part of its long range transportation network. St. Albert's commitment to LRT was further solidified through its acknowledgment in the City's Municipal Development Plan.

In 2009 the City of Edmonton adopted a long term LRT network plan that defines the future size, scale, and operation of the City's LRT system. This long term LRT network plan projected that the LRT network would eventually extend to the northeast, east, southeast, south, west and northwest to St. Albert.

In July 2010 Edmonton City Council approved a corridor that proceeded north from the Northern Alberta Institute of Technology (NAIT) through the Blatchford (former Municipal Airport) lands, across Yellowhead Trail, to a terminus west of Campbell Road and adjacent to St. Albert's proposed Campbell Road Transit Centre and Park and Ride facility.

In September 2011, the Capital Region Board approved the Integrated Regional Transportation Master Plan which identified LRT to St. Albert as part of the regional transportation network. Concept planning of Edmonton's northwest LRT, now named the Metro Line, was completed and approved in May 2013.

The first phase of the Northwest (Metro Line) LRT began operations to NAIT in September of 2015.

2.2 Corridor Selection

In fall of 2013 the City of St. Albert initiated its LRT Planning Study which was aimed at identifying a LRT corridor through St. Albert, as well as a specific alignment within the chosen corridor. In December 2014, St. Albert City Council approved the following motion:

That the LRT corridor following St. Albert Trail, identified as the preferred option in the "St. Albert LRT Planning Study Phase 1 - Corridor Selection Report" provided as Attachment 1 to the December 1, 2014 Agenda Report entitled "LRT Functional Study Update- Phase 1 - Corridor Selection Report", be approved.



2.3 Design Criteria

As the St. Albert LRT will be an extension of the City of Edmonton's Metro Line, the same design standards were applied to the design of the concept plan. The design standards used were the "LRT Design Guidelines for ETS Edmonton Transit System", 2011.

3. Alignment Review

The LRT through St. Albert will follow St. Albert Trail as the approved corridor. The alignment of the LRT along St. Albert Trail was reviewed based on the following criteria:

- Impacts to traffic
- Impacts to accesses
- Station locations
- Impacts on existing bridges
- Isolation of properties
- Major Utility Impacts
- Environmental Impacts

Alignments considered for the LRT within the corridor were:

- Along the east side of St. Albert Trail
- In the median of St. Albert Trail
- Along the west side of St. Albert Trail

The corridor was divided into segments for the review of the alignment. The segments were:

- Campbell Road Station (end of the Edmonton LRT section) to Hebert Road/Gervais Road
- Hebert Road/Gervais Road to Mission Avenue
- Mission Avenue to Boudreau Road/Giroux Road
- Boudreau Road/Giroux Road to North St. Albert

The summary tables of the segment reviews are included in Appendix A and described in the following sections.

3.1 Campbell Road Station to Hebert Road/Gervais Road

This segment of the LRT corridor starts at Campbell Road Station, whose location was fixed through the Edmonton Northwest LRT Concept Plan that was approved by Edmonton City Council in May 2013. Within this segment is a bridge crossing of Anthony Henday Drive and an anticipated station at Hebert Road/Gervais Road. The following is a summary of the major items related to the alignment through this segment.

3.1.1 East Running Track

The Campbell Road Station is located on the east side of St. Albert Trail which naturally flows into a LRT alignment along the east side of the road. The alignment would require a closure of the access to the Chamber of Commerce site and access to the existing Petro-Canada site north of Hebert Road. The access closure to the Petro-Canada Site would isolate the parcel. Although this would likely require purchase of the site, it does provide an opportunity for use by the Hebert Station and a traction power substation.

The ramp operations to Anthony Henday Drive would be impacted for the northbound movements from St. Albert Trail. The NBD to EBD ramp would need to be gated for the LRT operation. The NBD to WBD ramp would need to be revised so that the movement would go through the signalized intersection. This could be considered a minor impact since the traffic on St. Albert Trail goes through a number of intersections prior to reaching the Anthony Henday Drive Ramps.

The intent is to maintain all the current traffic lanes south of Hebert Road/Gervais Road and locate the LRT in boulevard on the east side of the road. This configuration will reduce road reconstruction requirements in this segment.

A new bridge would be constructed on the east side of St. Albert Trail to accommodate the LRT. The existing road bridge can be maintained.

Other considerations are the cleanup that would be needed at the Petro-Canada site. Overall the east LRT alignment would be considered to have the lowest cost.

3.1.2 Centreline Track

A LRT alignment between the northbound and southbound lanes of St. Albert Trail would require a crossing of the northbound lanes from the Campbell Road Station. This would have a significant impact on the operation of St. Albert Trail considering the traffic volumes at this location of the road.

Additional traffic impacts would be the LRT going through both signalized ramp intersections to Anthony Henday Drive. An east or west running track would only impact the operation of one of the intersections.

The existing road bridge was not designed to accommodate an LRT and would therefore require reconstruction. This essentially makes the centreline option unfeasible.

3.1.3 West Running Track

A LRT alignment on the west side of St. Albert Trail would require a crossing of the northbound and southbound lanes from the Campbell Road Station on the east side of St. Albert Trail. This would have a significant impact on the operation of St. Albert Trail considering the traffic volumes at this location of the road. A grade separation would resolve the traffic issues but would have high costs and would be difficult to fit in within the available space.

Once St. Albert Trail is crossed the west side option is similar to the east side alignment with the following differences:

- Similar Anthony Henday Drive ramp impacts except to the southbound St. Albert Trail movements instead of the northbound movements;
- No properties are isolated;
- No environmental cleanup of a gas station site;
- Property would still need to be acquired for the traction power substation; and
- The station at Hebert Road would also require property acquisition and grading.

The cost for the west side alignment would be expected to be higher than the east side alignment due to the additional cost for the St. Albert Trail crossing.

3.1.4 Recommended Segment Alignment

For the segment from the Campbell Road Station to Hebert Road/Gervais Road the east side alignment for the LRT would be recommended due to the lower costs and the starting location at the Campbell Road Station.

3.2 Hebert Road/Gervais Road to Mission Avenue

This segment of the LRT corridor starts at Hebert Road/Gervais Road and goes to a station near St. Albert's Downtown near Mission Avenue. Within this segment are two existing bridge structures: one bridge crossing Sir Winston Churchill Avenue and the other crossing the Sturgeon River. The following is a summary of the major items related to the alignment through this segment.

3.2.1 East Running Track

Along the east side of St. Albert Trail through this segment is predominately residential with an existing noise wall. By removing 2 of the existing lanes of St. Albert Trail the LRT can be accommodated between the remaining lanes and the noise wall. Depending on the wall's condition at the time of the LRT construction it can provide a barrier between the LRT and the residents.

For both bridges the east portion can be removed and a new structure built for the LRT. Additionally the Sturgeon River Bridge could accommodate the Downtown St. Albert Station. Although a station on the east side of St. Albert Trail would be separated from the Downtown this could be mitigated by the addition of a pedestrian overpass across the road. However if the existing transit centre is relocated to north of Sturgeon Road it would be adjacent to the Station location.

Utility impacts can be anticipated to be more than a median alignment, although not out of order for a project of this nature.

The cost of the east side option is anticipated to be the lowest of the three alignments.

3.2.2 Centreline Track

Similar to the impact on the bridge over Anthony Henday Drive the Sir Winston Churchill Bridges in this segment would require reconstruction and the Sturgeon River Bridge would require significant modification in order to fit the LRT. In addition St. Albert Trail would need to be widened to accommodate a station within the median. This would further add to the cost of the bridge modifications. A pedestrian overpass similar to the one for the east side option would likely also be wanted.

The bridge impacts and station impact make this option undesirable and the highest cost of the three alignments.

3.2.3 West Running Track

A LRT alignment on the west side of St. Albert Trail would impact 11 accesses and leave at least 5 parcels without an access. The isolated parcels would need to be purchased and increase this alignment costs significantly.

For both bridges in this segment the west portion can be removed and a new structure built for the LRT. Additionally the Sturgeon River Bridge could accommodate the Downtown St. Albert Station. The station would not require a pedestrian overpass for access to Downtown but would be separated from the relocated Transit Centre by St. Albert Trail.

The LRT alignment would take 2 lanes of St. Albert Trail similar to the east side alignment. Utility impacts can be anticipated to be more than a median alignment although not out of order for a project of this nature.

The cost for the west side alignment would be expected to be higher than the east side alignment due to the cost for purchasing the parcels isolated due to accesses closures.

3.2.4 Recommended Segment Alignment

For the segment from the Hebert Road/Gervais Road to Mission Avenue the east side alignment for the LRT would be recommended due to the lower cost and less impact on accesses and properties that would be caused by the west alignment.

3.3 Mission Avenue to Boudreau Road/Giroux Road

This segment of the LRT corridor starts at a station near St. Albert's Downtown near Mission Avenue and goes to a station at Boudreau Road/Giroux Road. This segment is relatively straight forward with no bridge structures other than a pedestrian overpass that crosses St. Albert Trail that will be removed to accommodate the LRT, independent of the alignment selected. The following is a summary of the major items related to the alignment through this segment.

3.3.1 East Running Track

Along the east side of St. Albert Trail through this segment is predominately commercial sites. There are a number of accesses impacted (10) but none would leave a property isolated.

As with the previous segment, two lanes of St. Albert Trail would be removed to accommodate the LRT. No additional property would be required other than at the station locations.

Traffic impacts are not significantly different for the three alignments although the side alignments do have fewer conflict points than the median alignment.

The Boudreau Station should be able to be accommodated in the existing road boulevard with minimal property requirements. With the station on the east side of St. Albert Trail it would provide easier access to the Sturgeon Community Hospital than the other 2 alignments.

Utility impacts can be anticipated to be lower than the west alignment.

The cost for the east alignment in this segment would not be expected to significantly differ from the other alignments.

3.3.2 Centreline Track

The significant considerations for the median alignment are that:

- There would be conflict points at each of the LRT crossings;
- Boudreau Station would require additional space in the median to accommodate the station platforms and therefore more road reconstruction;
- Has the no impact on the existing accesses; and
- Would have less utility impacts than the west alignment.

The cost for the median alignment in this segment would not be expected to be significantly different than the other alignments.

3.3.3 West Running Track

A LRT alignment on the west side of St. Albert Trail would impact 20 accesses, although none of the access closures would isolate a parcel.

As with the previous segment, two lanes of St. Albert Trail would be removed to accommodate the LRT. No additional property would be required other than at the station locations.

Utility impacts can be anticipated to be more than the other two alignments although not out of order for a project of this nature.

The Boudreau Station should be able to be accommodated in the existing road boulevard with minimal property requirements. With the station on the west side of St. Albert Trail access to the Sturgeon Community Hospital would be poorer than for the east alignment.

The cost for the west alignment in this segment would not be expected to be significantly different than the other alignments.

3.3.4 Recommended Segment Alignment

For this segment the differences between the alignments is not as significant as the previous two segments. For the segment from the Mission Avenue to Boudreau Road/Giroux Road the east side alignment for the LRT would be recommended due to less impact on property accesses that the west alignment has and fewer traffic conflicts that the median alignment has.

3.4 Boudreau Road/Giroux Road to North St. Albert Station

This segment of the LRT corridor starts at a station at Boudreau Road/Giroux Road and goes to the end of the alignment at the North St. Albert Station. This segment is relatively straight forward with no bridge structures other than a pedestrian overpass that crosses St. Albert Trail. The following is a summary of the major items related to the alignment through this segment.

3.4.1 Alignment Review

The differences between the three alignments is even less in this segment. All three alignments end at the North St. Albert Station west of St. Albert Trail. The alignments therefore have similar utility impacts and environmental concerns.

The major difference is that the east alignment will need to cross St. Albert Trail to reach the North St. Albert Station and the median alignment would need to cross the southbound lanes of St. Albert Trail. The traffic volumes on St. Albert Trail are lower than at the south end of St. Albert. With Ray Gibbon Drive and 127 Street being constructed in the future through traffic is anticipated to divert away from St. Albert Trail. This means that a crossing of St. Albert Trail at this location is not anticipated to have as large an impact as a crossing closer to Anthony Henday Drive.

The cost for the three alignments in this segment would not be expected to be significantly different.

3.4.2 Recommended Segment Alignment

Since the three alignments are quite similar for this segment there would not be a recommended alignment if this was a standalone segment. However, based on the review of the previous segments, consistency in the alignment should be considered and therefore the east alignment is recommended.

3.5 Bridge Review

In this section a detailed review of the bridge structures on St. Albert Trail for the following bridges is discussed and summarized.

1. Over Anthony Henday Drive Crossing
2. Over Sir Winston Churchill Avenue
3. Over Sturgeon River

It is considered that either a new bridge or rehabilitation of the existing bridge will be required to accommodate the LRT at each location. When developing the designs of the bridges to accommodate the LRT it is recommended that the existing bridge structures be reviewed to potentially rehabilitate the bridge at the time it is being modified to accommodate the LRT.

3.5.1 Anthony Henday Drive Bridge

Incorporating the LRT railway onto the existing road bridge is not possible. The existing road bridge has two 48m spans, with 2.2 m deep cast-in-place post-tensioned box girders. The bridge has a 40.97m clear roadway (UAD 4-11.1-70), that carries 4 lanes of traffic each way on St. Albert Trail, with a 2.5m wide sidewalk on the south side of the bridge. The bridge was designed for a CL800 vehicle loading and is not able to accommodate the City of Edmonton's LRV or work train loading requirements. Based on the type of bridge structure constructed, the existing bridges superstructure and substructure cannot be strengthened to accommodate the LRT loading. Constructing a bridge alongside the existing structure, however, is feasible.

Due to poor ground conditions in this area, the AHD roadway design required a special sub base and asphalt pavement structure which included frost protection and an underground drainage system under the eastbound and westbound lanes. The drainage system consists of transverse sheet drains under each road that tie into longitudinal sub drains. The longitudinal sub drains tie into transverse drains that in turn tie into catch basins on the northwest side of AHD. The transverse drains are located at every catch basin location and cross the median of AHD to collect water from the east bound lanes. Disrupting the network of drainage system is not an option. Bridge piers for the LRT Bridge can be installed in the median but must avoid the transverse drainage system that crosses the median. Care will be required during construction to not affect the roadway drainage system.

The catch basin system on the northwest side of AHD could have an impact on the construction of the abutment substructure element, but appears it can be avoided. AHD is currently being maintained and operated by the Northwest Connect Partnership as part of a P3 project for Alberta Transportation. Consultation with this group will be required. The length and span arrangement of the bridge and placement of substructure elements will be controlled by the following Alberta Transportation (AT) Design requirements:

- Railway over roadway – underside of superstructure to top of roadway 5.51m minimum (allowances to be made during design for all future pavement overlays proposed).
- Need to meet horizontal clearance requirements to structure elements, AHD is barrier free roadway.

A two span bridge with a bridge pier in the median of AHD is anticipated. Span lengths for the bridge constructed with MSE walls will be in the range 48 m each (total bridge length 96 m) to match the existing structure. The catch basin system will have to be avoided on the northwest side of the bridge. The depth of superstructure is anticipated

to be 2.2m, similar to the road bridge. The existing road bridge foundations are cast in place bored piles founded in a hard clay shall layer at elevation 670. (14m below AHD roadway) and a similar foundation requirements are anticipated for the LRT bridge.

Retrofitting the existing bridge to incorporate the LRT at St. Albert Trail and AHD is not feasible based on the type of structure. This bridge was designed for CL800 loading and cannot be retrofitted to carry LRT design loading. The Northwest Connect Group is currently maintaining and operating this bridge for Alberta Transportation until 2041. Even if the bridge could be retrofitted, the risks associated with a retrofit and the contractual requirements / responsibilities would be very complicated.

The final design of the LRT bridge and other aspects of the TUC crossing will need Provincial approval consistent with other AHD crossings.

3.5.1.1 Anthony Henday Drive LRT Crossing Tunneling Option

The option of constructing a tunnel under AHD was also reviewed. Tunneling does not appear to be viable for the following reasons:

- Restrictions by many buried utilities located on either side of AHD. Although some of the utilities can be relocated, many are unlikely to be able to be relocated. The depth of the tunnel will also depend on the elevation of the catch basins system along AHD westbound lanes.
- Soil conditions in this area are not ideal and may be problematic for tunneling.
- An open cut operation could be used to install a buried structure instead of using a tunneling machine. This would reduce the cost to install structure but traffic detours (cross overs) will be required. Cross over detours such as this will be very expensive especially because the detour design will have to consider the special road / drainage system design in this area. Additional risk will also be inherited with Northwest Connect Partnership who are operating this section of road for the next 25 years. Any road issues at this tunnel location and corresponding cost would likely be passed to the owner of the tunnel structure.
- The available area on either side of AHD is restricted. The steep grade line would be required to get the LRT below ground and the back up to the surface. A steeper grade line would be required to go under AHD with a tunnel verses going over with a bridge.
- Drainage in the tunnel will be an issue. A mechanical pump system and storage facility able to contain stormwater from a 1:100 year event would be required.
- The overall cost of designing and constructing a tunnel would be significantly more than building a bridge at the same location.

3.5.2 Bridge over Sir Winston Churchill Avenue

The existing bridge on St. Albert Trail crossing over Sir Winston Churchill Avenue carries three lanes of traffic in each the northbound and southbound direction. There are no sidewalks on this bridge. The bridge has three spans of 12.1m, 23.1m, and 13.5m. It was constructed in 1982 with RM pre-stressed concrete girders and has a roadway width of 32m. There are two utility lines; a municipal waterline and telephone under the median of the bridge nested between two girders. The bridge was designed for a MS230 loading.

The existing bridge is not able to accommodate the LRV or work train loading requirements. It is possible to locate a new LRT bridge on the east side of the existing road bridge. This will require acquiring additional right of way along St. Albert Trail which requires purchasing properties both on north and south of the bridge. It is possible to locate a new LRT bridge on the west side of the existing road bridge, however, the right of way is limited to the north of the bridge due to the condominium complex in the area and to the south by Green Grove Drive.

If the alignment of the LRT is required anywhere within the existing bridge, the existing bridge will need to be demolished and reconstructed to meet the LRT loading requirements. In this situation the existing utilities will need to be relocated and the grade line adjusted to meet the current vertical clearance standards.

A three span LRT Bridge similar to the existing road structure is anticipated to be installed at this location. The existing vertical clearance under the road bridge is posted at 4.9m which is 0.61m low based on current design standards. The structural depth for the LRT Bridge will also need to be deeper than the existing bridge to carry the LRV and Work train loading. Depending on the type of bridge superstructure, a traditional girder slab bridge will require an approximate 1.2 m raise in grade line above the current roadway to meet design and under bridge vertical clearance requirements. This could exasperate the grade concerns for the LRT between Sir Winston Churchill Ave and St. Anne St. Overall, it will need to be confirmed whether the new bridge clearance requirements must be met, or if a new LRT bridge can be built to the same clearance that exists currently at this location.

Three options for putting the LRT bridge within the existing Sir Winston Churchill overpass were reviewed. Option 1 and 3 looks to be feasible options, while Option 2 does not have enough space to place the 10 m LRT Bridge down the center of St. Albert Trail without a major rehabilitation to the existing bridge.

Option 1 – LRT Bridge on east side

- 10 m wide LRT bridge is located on the east side. The 10 m bridge section used for review was taken from the South LRT Extension Functional Planning study.
- New LRT structure would be independent from the road bridge.
- St. Albert Trail roadway cross section needs to be reduced to 4 – 3.5 m lanes with shoulders. The shoulder requirements are based on the Figure 2.2.10.3 in the TAC manual. Design speed of 90 km/hr is assumed.
- Some demolition of the existing substructures would need to be done to accommodate the new LRT bridge. Foundations for the LRT bridge likely can be supplement with additional piles.
- Existing bridge will need to be retrofitted.
- Two additional lines of girders are required where the water line is located.
- East girder, deck slab and barrier will have to be reconstructed.
- Piers may require a brace to support the cantilever pier cap.
- Waterline to be relocated.
- F-Shape barrier required down the centerline of bridge.
- Approximately 2.5 m of additional (R.O.W.) width would be required beyond the existing bridge foot print.
- Assumed 0.5 m separation between the existing bridge and the new LRT bridge.

Option 2 – LRT Bridge in Centre

- A 7 m wide bridge could be placed in the center of the existing road bridge based on minimizing the rehabilitation of the existing road structure, however 7 m is not wide enough to accommodate the LRT and therefore not a feasible option.
- Placing a 10 m wide LRT Bridge in the center of the road bridge maybe possible but would require adding additional girders to the east and west sides of the bridge in order to maintain an 11 m clear roadway cross section. Additional foundations and sub structure would have to be constructed. Option 1 and 3 would be least disruptive from a construction point of view and potential easier designs.
- Installation of a new foundation between the existing bridges is possible; however, it would be difficult due to space restrictions.

Option 3 LRT Bridge on West

(Similar to Option 1, except the LRT bridge is located on west side of St. Albert Trail)

- 10 m wide LRT bridge is located on the west side. The 10 m bridge section was taken from the South LRT Extension Functional Planning study.
- New LRT structure would be independent from the road bridge.
- St. Albert Trail roadway cross section needs to be reduced to 4 – 3.5 m lanes with shoulders. The shoulder requirements are based on the figure 2.2.10.3 in the TAC manual. Design speed of 90 km/hr. is assumed.
- Some demolition of the existing substructures would need to be done to accommodate the new LRT bridge. Foundations for the LRT bridge likely can be supplement with additional piles.
- Existing bridge will need to be retrofitted.
- Two additional lines of girders are required where the water line is located.
- East girder, deck slab and barrier will have to be reconstructed.
- Piers may require a brace to support the cantilever pier cap.
- Waterline to be relocated.
- F-Shape barrier required down the centerline of bridge.
- Approximately 2.5 m of additional (R.O.W.) width would be required beyond the existing bridge foot print.
- Assumed 0.5 m separation between the existing bridge and the new LRT bridge.

3.5.3 Bridge over Sturgeon River

The existing bridge on St. Albert Trail crossing over the Sturgeon River carries nine lanes of traffic, four in the northbound direction and five in the southbound direction. There are pedestrian sidewalks on each side of the bridge. The bridge has three span: 12.1m, 12.5m, and 12.8m It was constructed in 1982 with RM pre-stressed concrete girders and has a roadway width of 35 m. There are two utility lines; a municipal waterline (600 mm diameter) and telephone under the east sidewalk of the bridge. The bridge was designed for a MS230 loading.

The existing bridge is not able to accommodate the LRV or work train loading requirements. If the alignment of the LRT is required anywhere within the existing bridge, the existing bridge will need to be demolished and reconstructed to meet the LRT loading requirements. In this situation the existing utilities will need to be relocated and the grade line possibly increased to meet free board requirements under the bridge and additional structural depth to carry the LRT loading.

It is possible to locate a new LRT bridge on both the east or the west side of the existing road bridge, however, this will require acquiring additional right of way along St. Albert Trail which requires purchasing commercial properties both on north and south of the bridge. A three span LRT Bridge similar to the existing road structure is anticipated to be installed at this location. The freeboard requirement is not known at this time, but it is anticipated that structural depth for the LRT Bridge will need to be deeper than the existing bridge to carry the LRV and Work train loading. A single span LRT bridge may also be possible at this location. The benefits of having a single span bridge avoids construction in the river and is better from an environmental point of view. With this option the grade line for the LRT will need to be higher than the existing roadway to account for additional structural depth required to span the longer distance. The grade line increase will depend on the type of structure. Environmental permitting and approvals will be required for a structure over the river.

Locating the LRT bridge within the existing Sturgeon River Bridge was reviewed. Because of the vehicle movements and number of lanes on the bridge (nine) the reconfiguration of lanes can present a multiple of scenarios. General comments regarding the retrofitting an LRT structure within the existing bridge are:

- Placing an LRT bridge within the existing structure is feasible, but will require a major rehabilitation of the bridge.
- The existing foundations and substructure elements will not have the capacity to carry LRT loading. Additional piles will be required at each substructure element and complete reconstruction and widening of the piers/abutments will be required in the area of the LRT bridge.

- Work will be required in the river for the three span bridge. New superstructure (girders and deck) will be required for the LRT bridge with the depth of girder likely to be increased.
- Reuse of the existing RM precast girders (girders removed in the area of the LRT bridge) for any road widening at the bridge is possible.
- If the LRT is located at the centre of the bridge, working between the two bridges will be difficult, but not impossible.
- Waterline under the east side walk will likely have to be removed.
- A single span bridge is feasible and could eliminate work in the river as long as an increased grade line can be accommodated or lowering of the bridge as long as freeboard/pedestrian clearance under the bridge are maintained.

3.6 Stations Review

3.6.1 Hebert Road/Gervais Road

In considering the first station along the line within St. Albert, it was envisioned to provide access to the existing commercial and nearby residential areas but also the future redevelopment potential in the vicinity of St. Albert Trail and Hebert Road. Placement of a station north of Hebert Road is preferable over one south of Hebert Road for the following reasons:

- The Anthony Henday Drive corridor provides a significant barrier between the Campbell Road station and the one near Hebert Road, and locating the station nearer the freeway does not serve or benefit any additional potential passengers.
- Limited ease of passenger access, particularly because the capture area would be skewed and not maximized to the south.

Some benefits to placing a station north of Hebert Road include:

- A station north of Hebert Road would be a more central capture area for the surrounding development.
- Majority of the neighborhood is on the North of Hebert Road and perhaps is a better location compared to the location south of Hebert Road.
 - North of Hebert will serve both the neighbourhoods located on North and South of the Hebert/Gervais Road.
 - This location will be more convenient to the passengers both from commercial and residential area along the St. Albert Trail.
- Some students of Vital Grandin School may be able to utilize the LRT to travel to and from school.

Other points to note on this location:

- Two pedestrian accesses from residential neighbourhoods to the east between Hebert Road and Gate Avenue
- Medium density development west of St. Albert Trail surrounding existing Village Transit Station

3.6.2 Downtown St. Albert Station

An LRT Station for the City's Downtown is considered a required station location along the LRT Extension through the City. Along the St. Albert Trail corridor, there are 3 alternatives for this station location:

1. Station Located near Sterling St/Green Grove Dr., where vehicles and pedestrians currently access Downtown from the south – This location requires a 550m walk to Sir Winston Churchill Ave (the edge of Downtown), which is not considered close proximity to Downtown. This location would also be in very close proximity to the Hebert Station, and is therefore rejected.
2. Station Located near St. Albert Trail & Sir Winston Churchill Ave, possibly an overpass structure – Though this location is right at the corner of Downtown and close to the clock tower feature, the grade difference is a

large hurdle for practicality of locating a station here, as well as accessibility. Some points of concern are indicated below:

- A station should be located on a tangent section of track. Currently St. Albert Trail is only tangent over Sir Winston Churchill and to the north (station on west side would be alongside a condominium, or if on the east would impact residences more severely).
- The existing bridge is not constructed to handle the LRT load, therefore, a new LRT bridge need be constructed to the east or west of the existing. This bridge would need to be wider to also accommodate platform(s) or potentially a track that is widening to enter a station (higher cost and geometric concerns).
- A large grade difference would need to be overcome by people accessing Downtown, either by stairs, ramps and/or an elevator system (higher cost, larger footprint).
- Further geometric concerns that St. Albert Trail starts to descend north of Sir Winston Churchill, and therefore will be very difficult to have a station fit (as the maximum grade through a station is 1%).

Due to the above number of concerns and impacts, with minimal benefit in terms of the location, this option is rejected also.

3. Downtown Station located north of St. Anne St/Sturgeon Rd, near the Sturgeon River Valley – This location provides access to Downtown from its northeast corner and is the next location that has a more suitable grade that a station could be considered. The grades between Sir Winston Churchill and St. Anne St are far too steep to consider a station location in that area. Therefore, this is the preferred Downtown station location, which is discussed further below.

A station located north of St. Anne Street provides a number of other benefits:

- This location is convenient to both downtown and the area along St. Albert Trail that could be redeveloped in the future. In addition to serving the Downtown core, this location would also be able to capture the major commercial area along St. Albert Trail, north of the river, which has the potential to redevelop in the future into a more intensified land use. This would also benefit by a nearby LRT station.
- The station is in close proximity to the Sturgeon River Valley and Red Willow Trail system, which spans the length of the City. A station located here would also highlight both residents and visitors experience with the beautiful setting.
- In general, this area is less constrained, particularly along the east side of the road.
- This is a tangent section of St. Albert Trail.

Accessibility considerations:

- Very close connection with Red Willow Trail System
- Pedestrian access from residential area via sidewalks
- Access to downtown south of Sturgeon River via multiuse trail or pedestrian overpass

3.6.3 Boudreau Road/Giroux Road

Due to the large distance between the St. Albert Downtown Station and the lands that could be considered for the North St. Albert Station, another station is considered in between, near Boudreau Road and Giroux Road. Some discussion points surrounding the station location include the following:

- Sturgeon Community Hospital is located west of St. Albert Trail and north of the Boudreau Road, which was one of the two main locations the public commented that they would like the LRT to “touch” (in addition to the Downtown).
- There is wider boulevard and development setback along the Trail in this vicinity, which will reduce the number of constraints with a new station.
- North of Boudreau Road and Giroux Rd, the Right of Way begins its transition to widen even further.

Accessibility:

- North of Giroux Road – there is no pedestrian access from residential development west of St. Albert Trail directly to St. Albert Trail. Pedestrians only have access off of Giroux Road at Dunbar Road.
- Pedestrian access to Hospital and other medical employment facilities east of St. Albert Trail is along sidewalks on Boudreau.

The station should be located north of Giroux and Boudreau Roads to provide closer access to the hospital and the area is less constrained.

3.6.4 North St. Albert Station / Park and Ride

A future transit centre and park and ride is intended to be built alongside the north terminus LRT station (identified in St. Albert's previous Transportation Master Plan and the Capital Region Board's Integrated Regional Transportation Master Plan).

Originally, the City contemplated the park and ride to be located near Villeneuve Road, however, due to existing development in the area and approved Area Structure Plans for Jensen Lakes and Erin Ridge North, the location will need to be contemplated further to the north.

Adjacent developers have identified potential right-of-way for an LRT along the west side of St. Albert Trail, north of Jensen Lakes. If the City is in agreement with these future projections of the LRT, it is therefore, desirable to have the transit centre and park and ride along the same side as the tracks and station will be.

4. Recommended Concept Plan

4.1 Alignment Configuration

The LRT Track is proposed to run along the east side of St. Albert Trail from the Campbell Road Station to just north of Everitt Drive where it will cross St. Albert Trail to the North St. Albert Station on the west side of St. Albert Trail as shown in the Figures 4.1.1 through 4.1.12. This section describes the trackway.

Generally there are three types of trackway, as shown in Figure 4.1.13: ballasted track, direct fixation track, and embedded track. Ballasted Track would be considered typical railway track that includes rail being fastened to ties that sits on top of ballast. Embedded track has the rail "embedded" in concrete or some other material. Embedded track is what is typically used for streetcars. Direct Fixation track has the rail mounted directly onto a concrete structure such as a bridge deck. Each has advantages and disadvantages.

The track through St. Albert has been identified as embedded track to provide a more urban feel, reduce ongoing maintenance costs, require less right of way (than ballasted track), reduce the amount support infrastructure needed for the trackway (drainage in particular), and, because it tends to be the most capital intensive, to provide budget contingency no matter what track type is used.

The locations where ballasted track and direct fixation track should be considered are:

- On bridge decks direct fixation track should be considered too allow for easier track adjustments to compensate for bridge movements,
- At switch locations direct fixation track should be considered to allow easier access for maintenance of the moving parts,
- Through the Transportation Utility Corridor ballasted track should be considered since the segment does not have the same urban configuration and right of way width is available, and
- In locations, such as where the track is isolated between the road and the noise wall where pedestrian, cyclist, and other access is restricted and of significant length, direct fixation track should be considered to allow for easier access for rail maintenance.

The proposed trackway would have to follow the City of Edmonton LRT Design Guidelines for track spacing and other requirements. The grades along St. Albert Trail from Green Grove Drive/Sterling Street to St. Anne Street/Sturgeon Road were reviewed and determined that the LRT track profile could be set to meet the LRT design requirements.

Track switches should be located to allow for trains to switch tracks at the end of line and movement of trains around areas shut down for maintenance or disabled trains. Track switches need to be placed on sections of track that are relatively flat, on tangent, and not crossing through intersections or accesses.

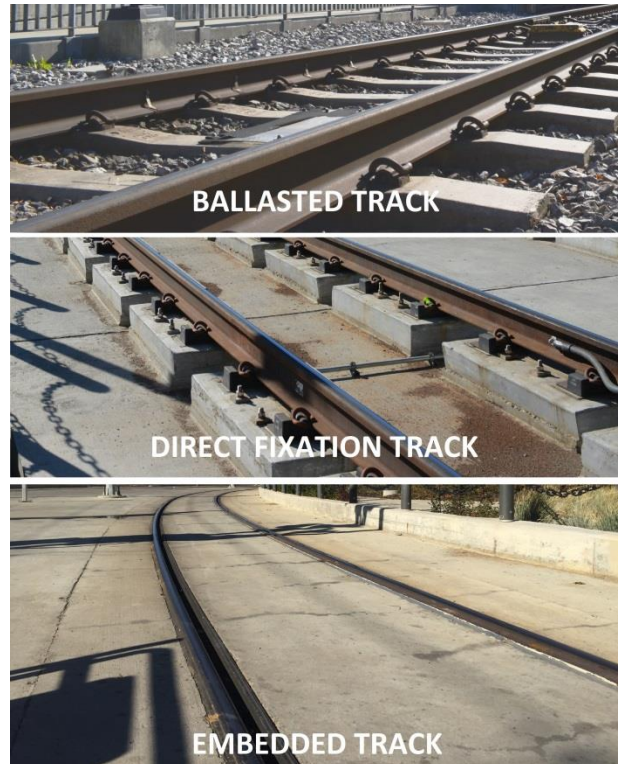
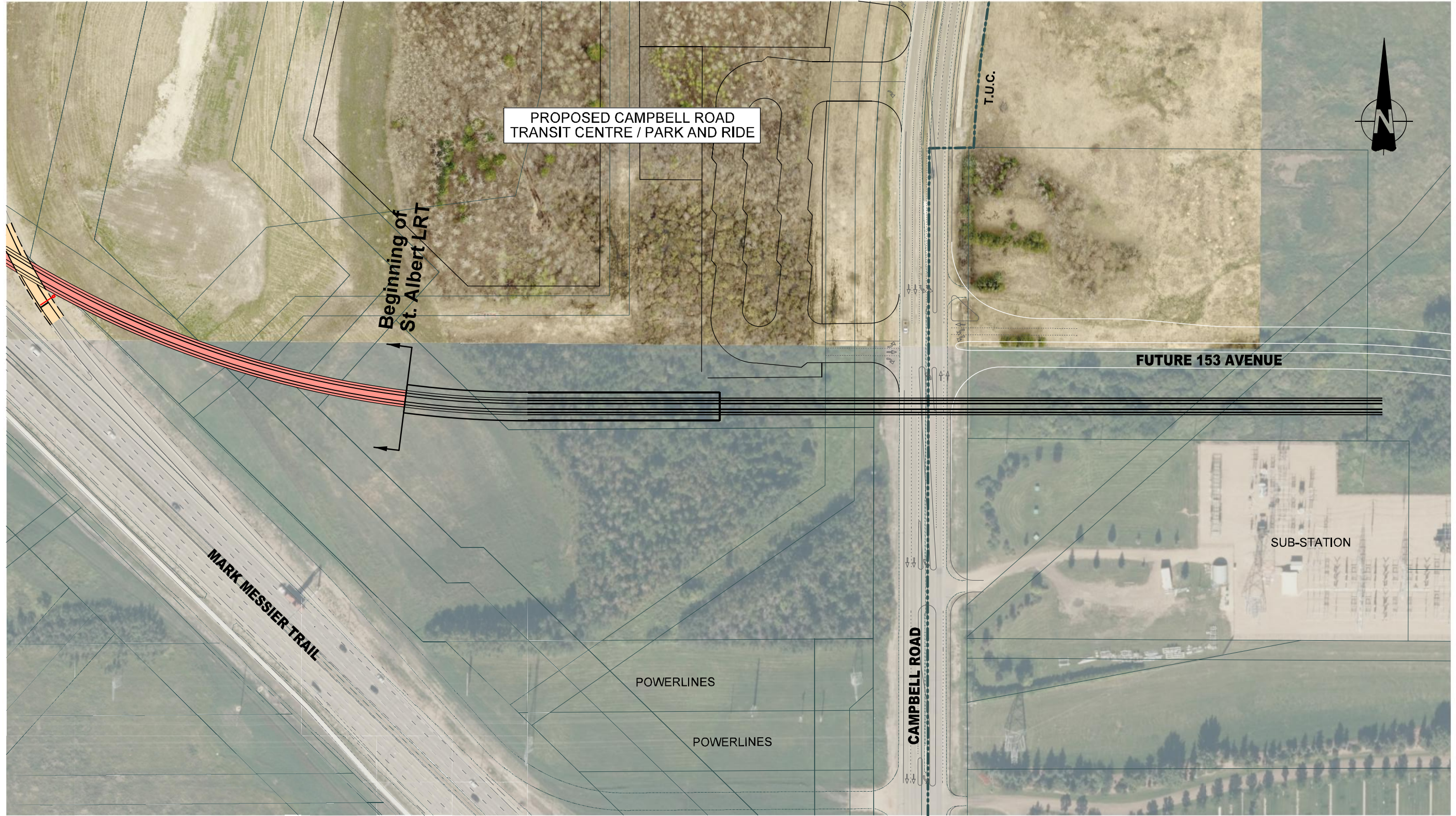


Figure 4.1.13 - Types of Track

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PROPOSED CAMPBELL ROAD
TRANSIT CENTRE / PARK AND RIDE

Beginning of
St. Albert LRT

FUTURE 153 AVENUE

MARK MESSIER TRAIL

CAMPBELL ROAD

SUB-STATION

POWERLINES

POWERLINES

T.U.C.

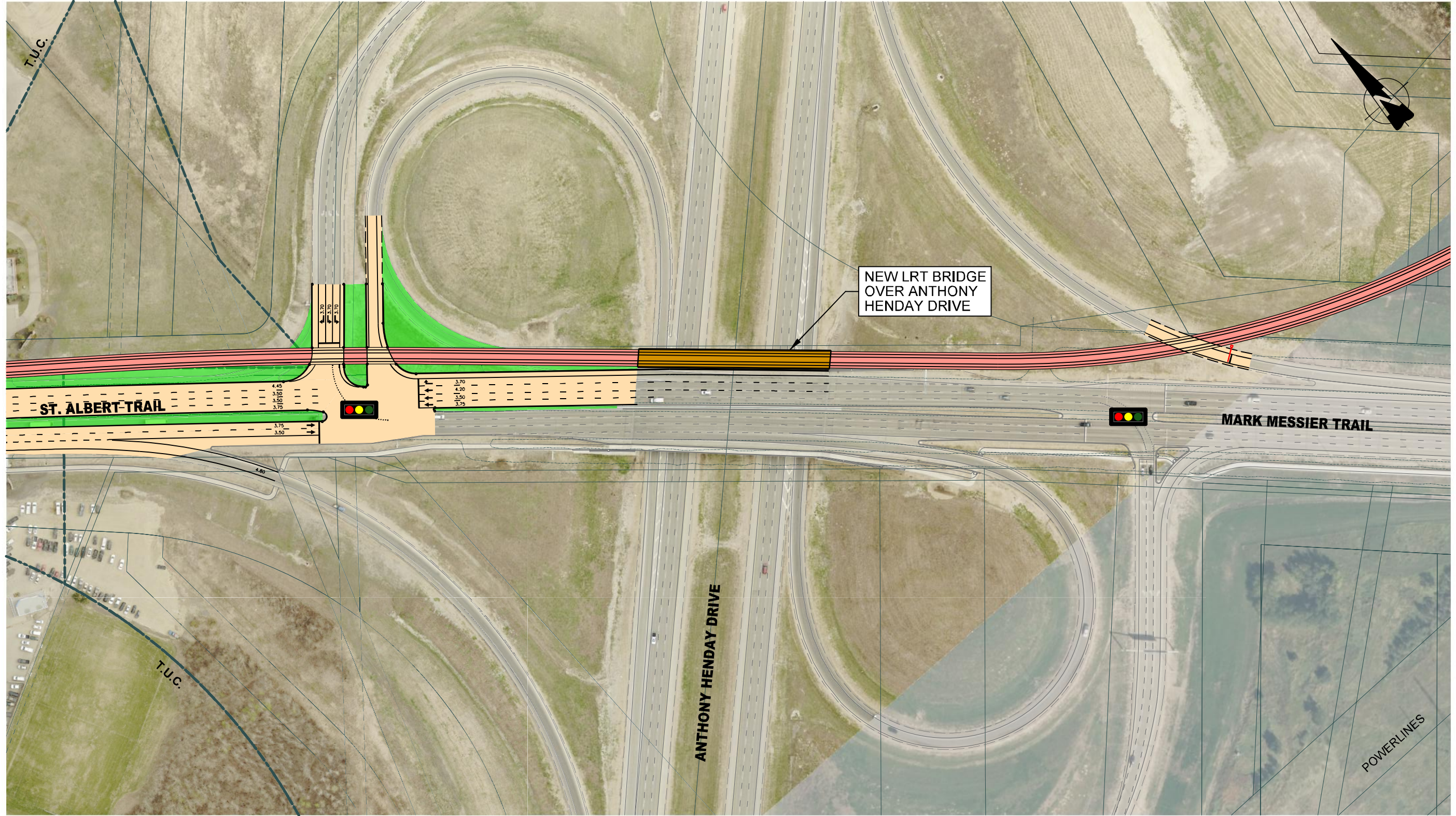
LEGEND

- LRT at Grade
- Elevated LRT/Bridge
- LRT Station
- Roadworks
- Sidewalk
- Landscaping
- Traction Power Substation
- Crossing Gate
- Signallized Intersection
- ↑ ↓ Direction Arrows
- Pavement Markings
- Fence
- * Bus Stops
















CITY OF ST. ALBERT
LRT PLANNING STUDY
RECOMMENDED CONCEPT PLAN
FIGURE 4.1.1

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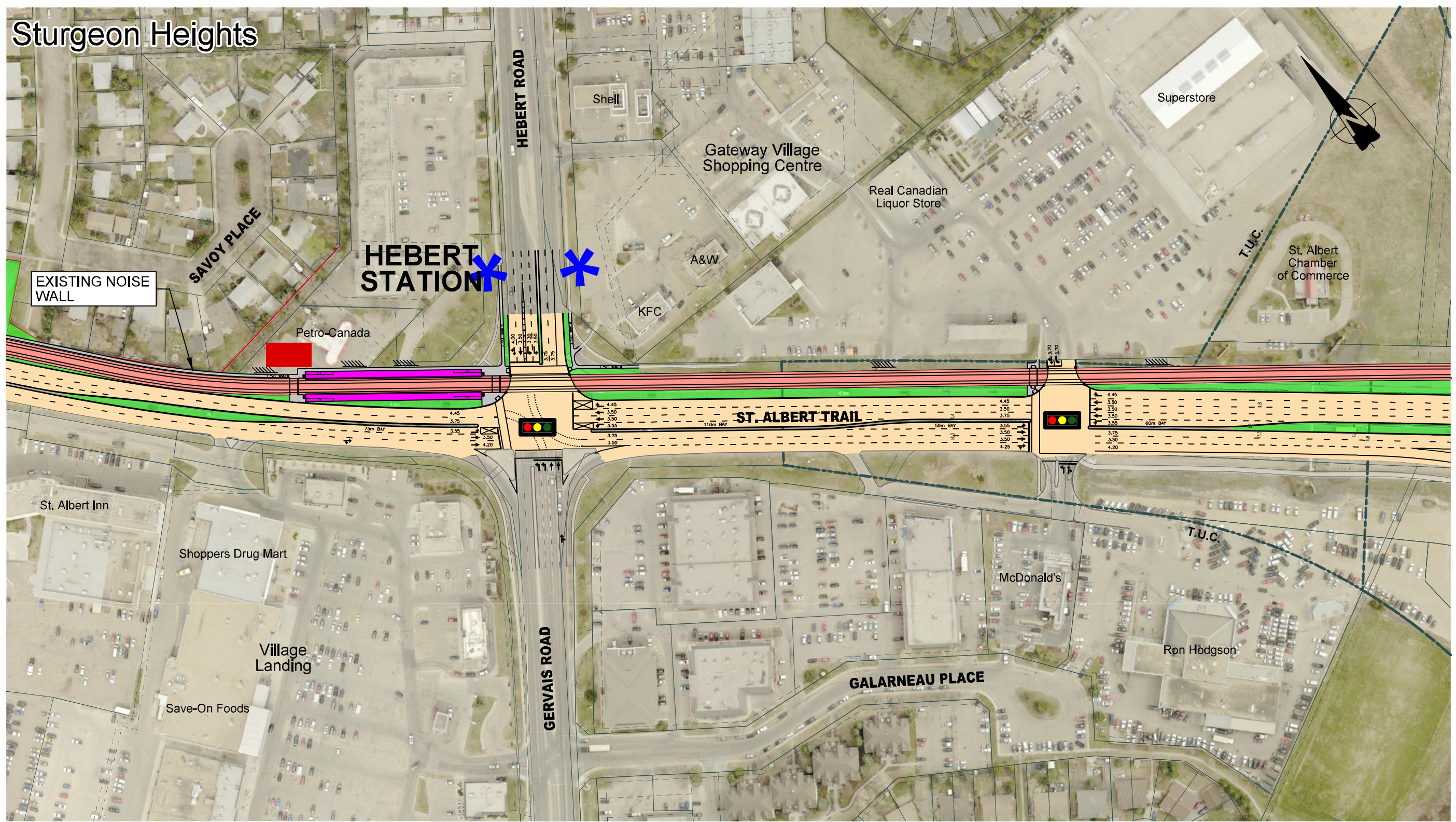
LEGEND

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|---|---------------------------|---|-------------------------|
|  | LRT at Grade |  | Crossing Gate |
|  | Elevated LRT/Bridge |  | Signalized Intersection |
|  | LRT Station |  | Direction Arrows |
|  | Roadworks |  | Pavement Markings |
|  | Sidewalk |  | Fence |
|  | Landscaping |  | Bus Stops |
|  | Traction Power Substation | | |
















**CITY OF ST. ALBERT
LRT PLANNING STUDY
RECOMMENDED CONCEPT PLAN
FIGURE 4.1.2**

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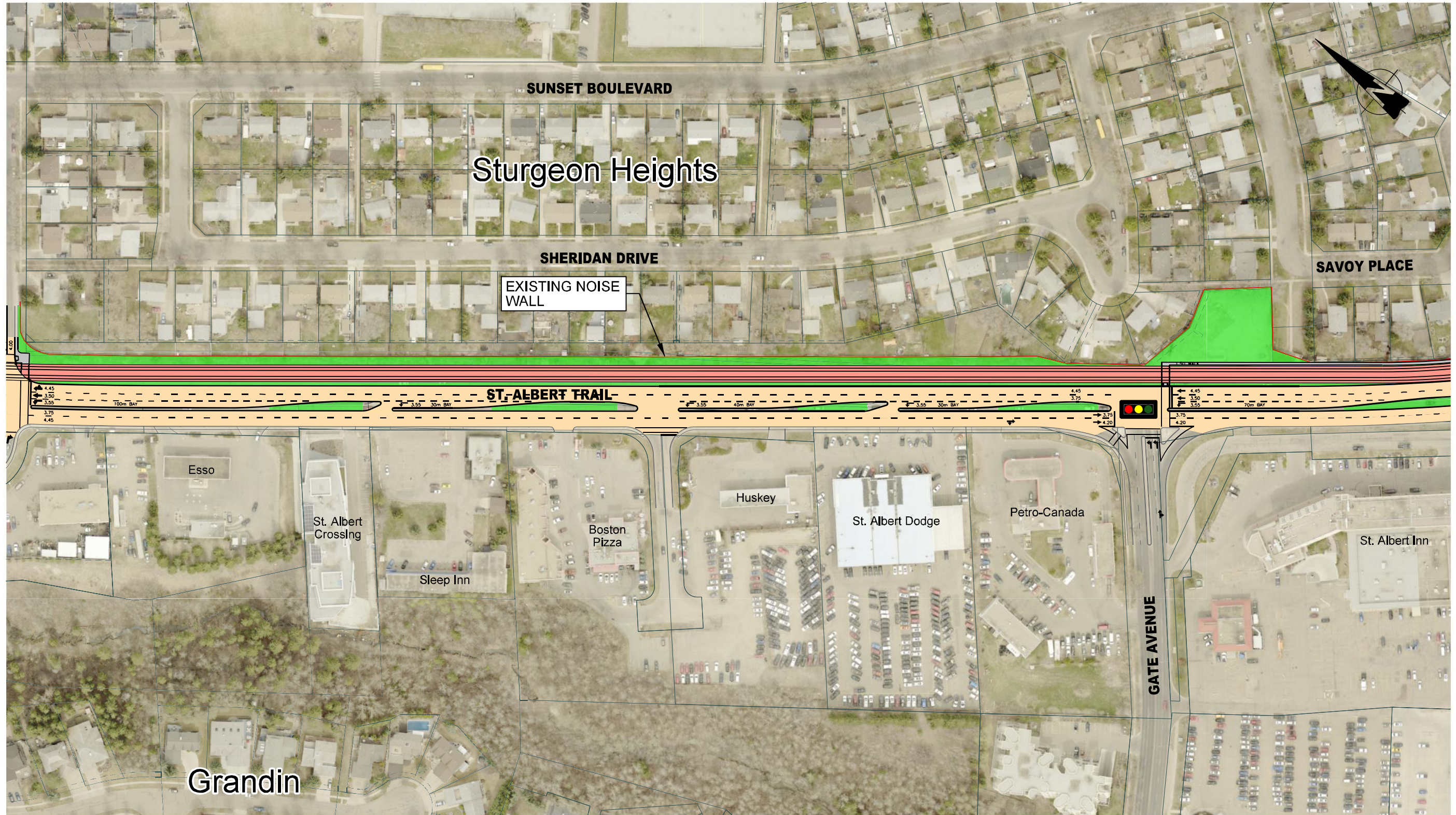


LEGEND

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|  | Elevated LRT/Bridge |  | Signalized Intersection |
|  | LRT Station |  | Direction Arrows |
|  | Roadworks |  | Pavement Markings |
|  | Sidewalk |  | Fence |
|  | Landscaping |  | Bus Stops |
|  | Traction Power Substation | | |



**CITY OF ST. ALBERT
LRT PLANNING STUDY
RECOMMENDED CONCEPT PLAN
FIGURE 4.1.3**

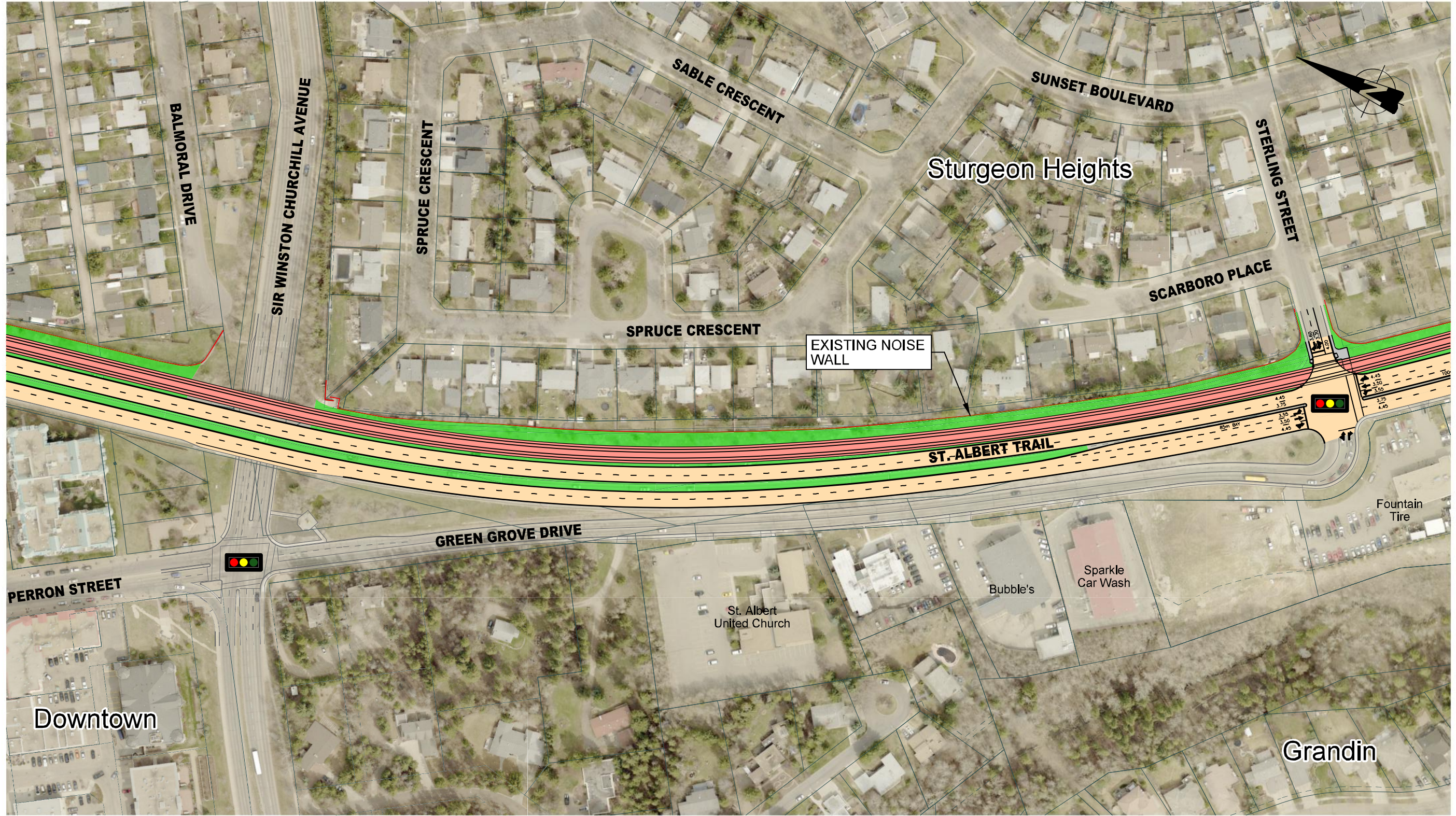


LEGEND

- LRT at Grade
- Elevated LRT/Bridge
- LRT Station
- Roadworks
- Sidewalk
- Landscaping
- Traction Power Substation
- Crossing Gate
- Signallized Intersection
- Direction Arrows
- Pavement Markings
- Fence
- Bus Stops



**CITY OF ST. ALBERT
 LRT PLANNING STUDY
 RECOMMENDED CONCEPT PLAN
 FIGURE 4.1.4**



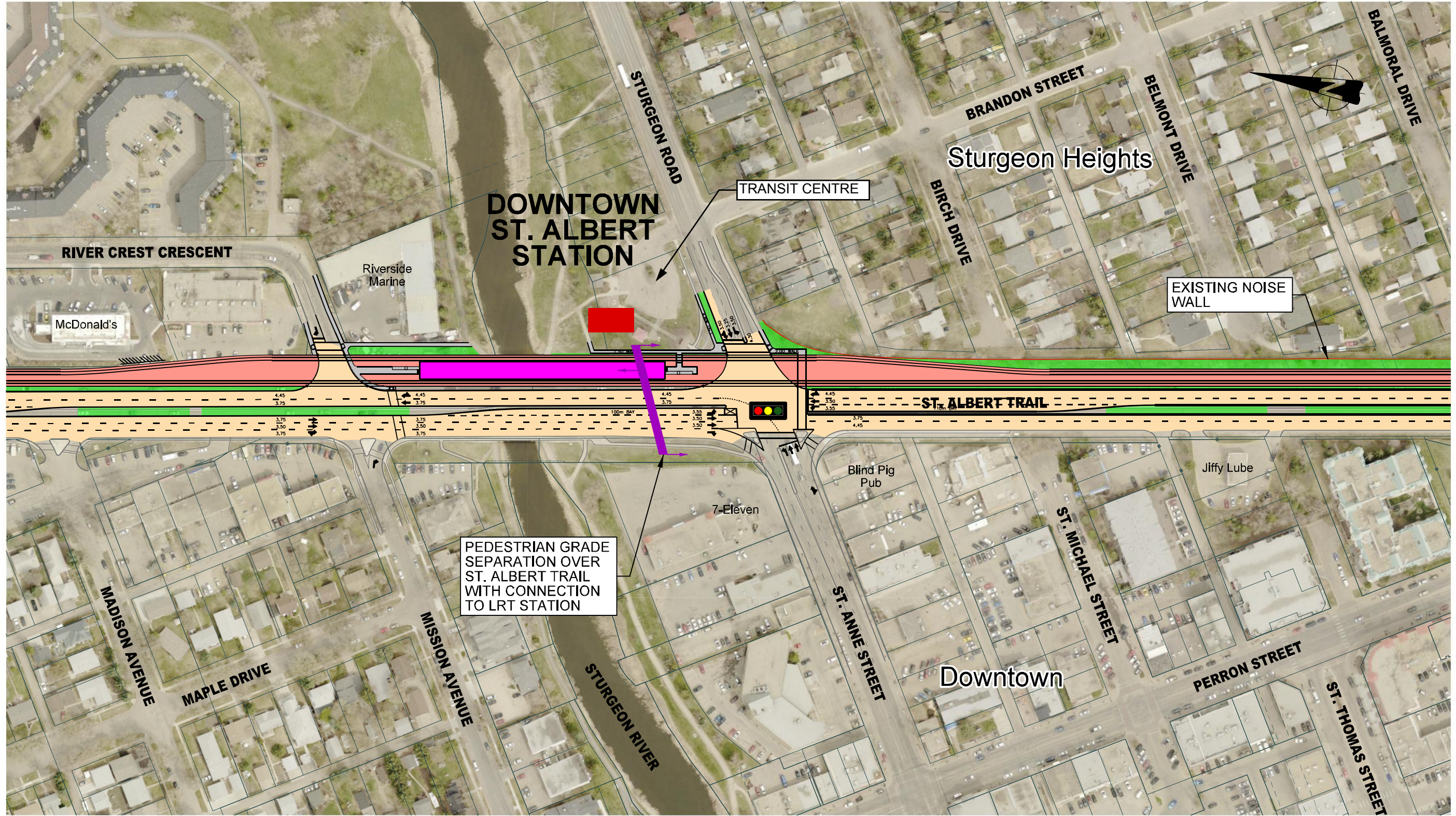
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- LRT at Grade
- Elevated LRT/Bridge
- LRT Station
- Roadworks
- Sidewalk
- Landscaping
- Traction Power Substation
- Crossing Gate
- Signallized Intersection
- Direction Arrows
- Pavement Markings
- Fence
- Bus Stops
















**CITY OF ST. ALBERT
 LRT PLANNING STUDY
 RECOMMENDED CONCEPT PLAN
 FIGURE 4.1.5**

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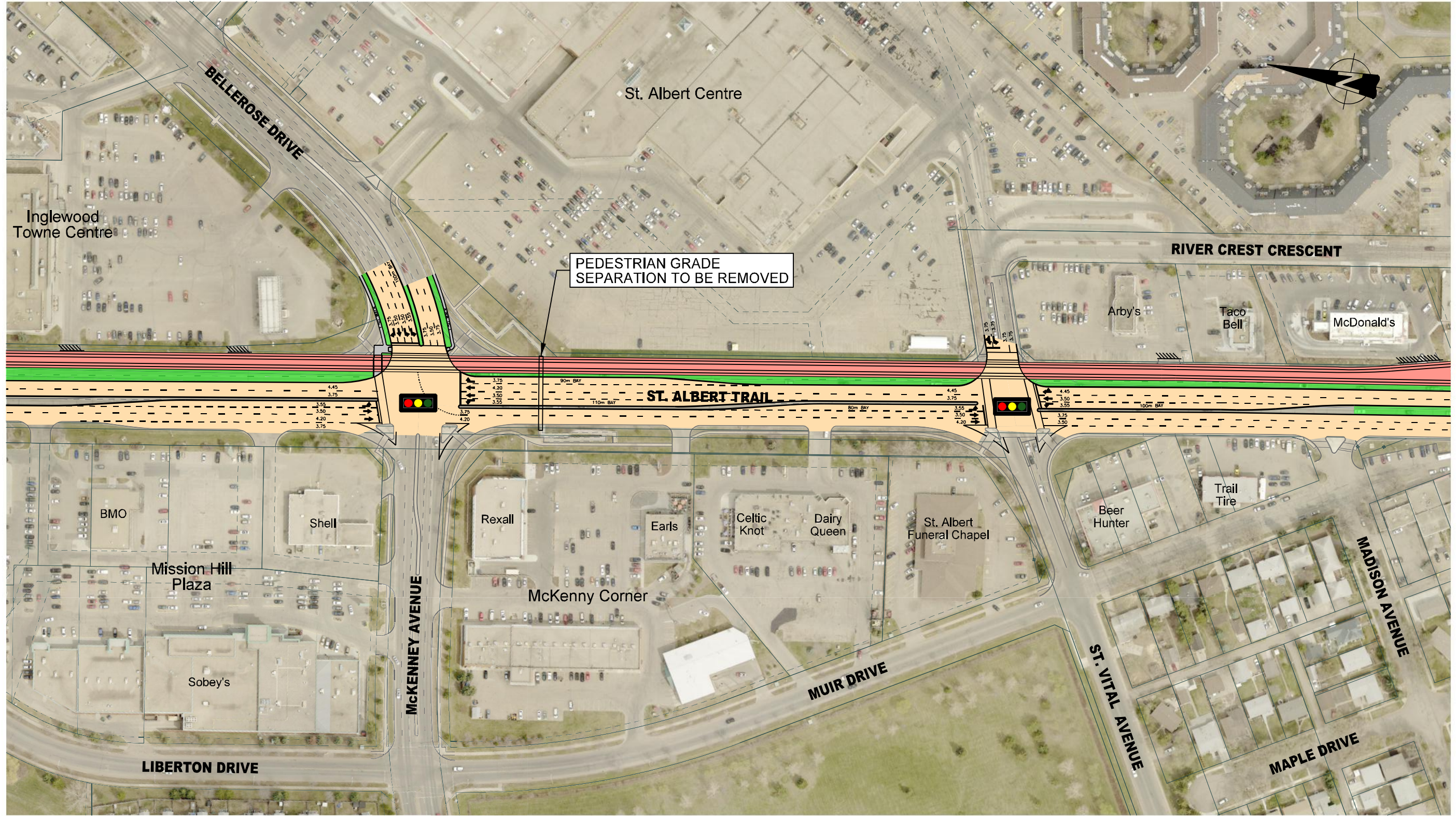
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|  | Elevated LRT/Bridge |  | Signalized Intersection |
|  | LRT Station |  | Direction Arrows |
|  | Roadworks |  | Pavement Markings |
|  | Sidewalk |  | Fence |
|  | Landscaping |  | Bus Stops |
|  | Traction Power Substation | | |



**CITY OF ST. ALBERT
LRT PLANNING STUDY
RECOMMENDED CONCEPT PLAN
FIGURE 4.1.6**

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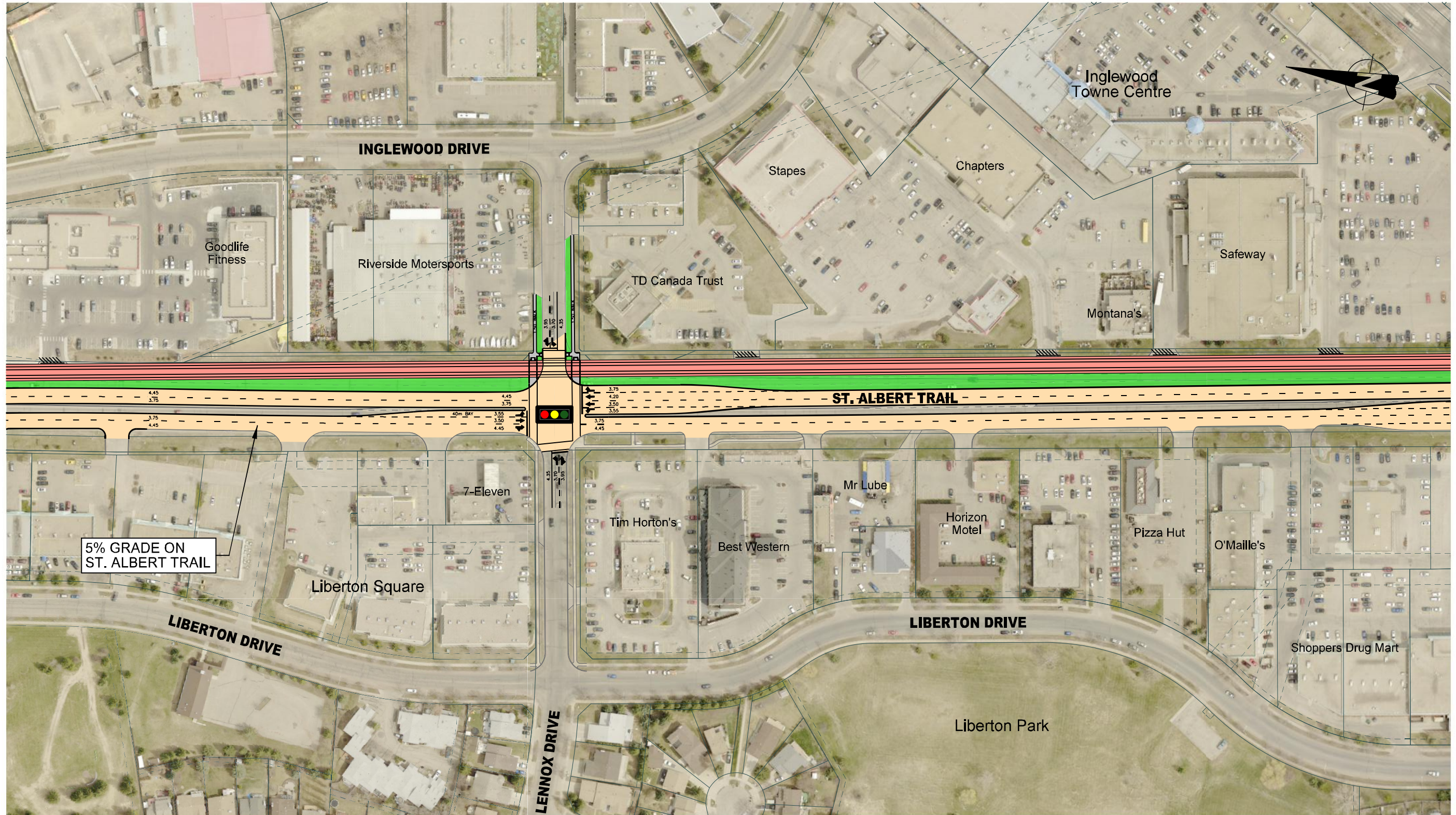
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- LRT at Grade
- Elevated LRT/Bridge
- LRT Station
- Roadworks
- Sidewalk
- Landscaping
- Traction Power Substation
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- Direction Arrows
- Pavement Markings
- Fence
- Bus Stops
















**CITY OF ST. ALBERT
LRT PLANNING STUDY
RECOMMENDED CONCEPT PLAN
FIGURE 4.1.7**

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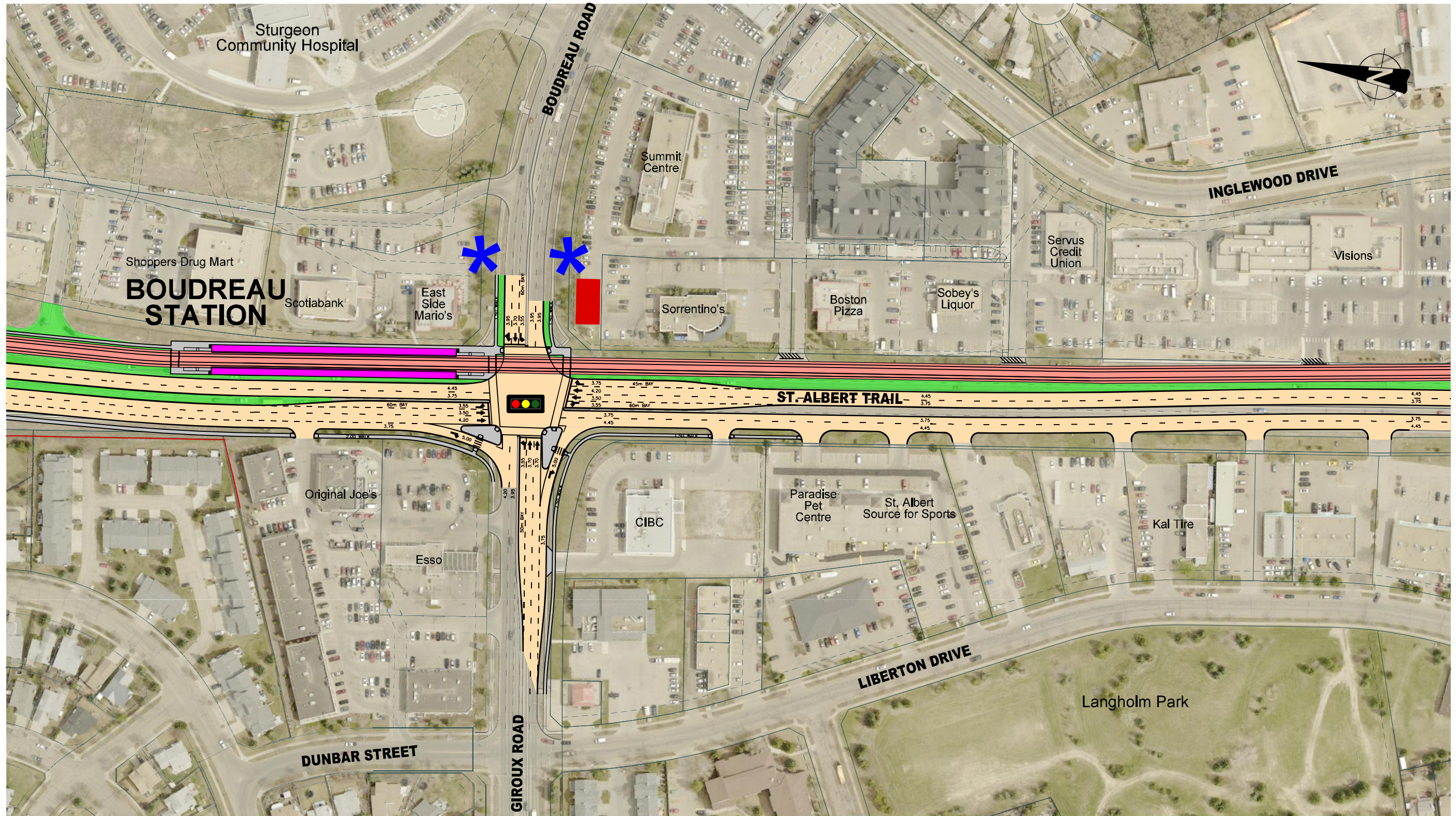
LEGEND

- | | | | |
|---|---------------------------|---|-------------------------|
|  | LRT at Grade |  | Crossing Gate |
|  | Elevated LRT/Bridge |  | Signalized Intersection |
|  | LRT Station |  | Direction Arrows |
|  | Roadworks |  | Pavement Markings |
|  | Sidewalk |  | Fence |
|  | Landscaping |  | Bus Stops |
|  | Traction Power Substation | | |



**CITY OF ST. ALBERT
LRT PLANNING STUDY
RECOMMENDED CONCEPT PLAN
FIGURE 4.1.8**

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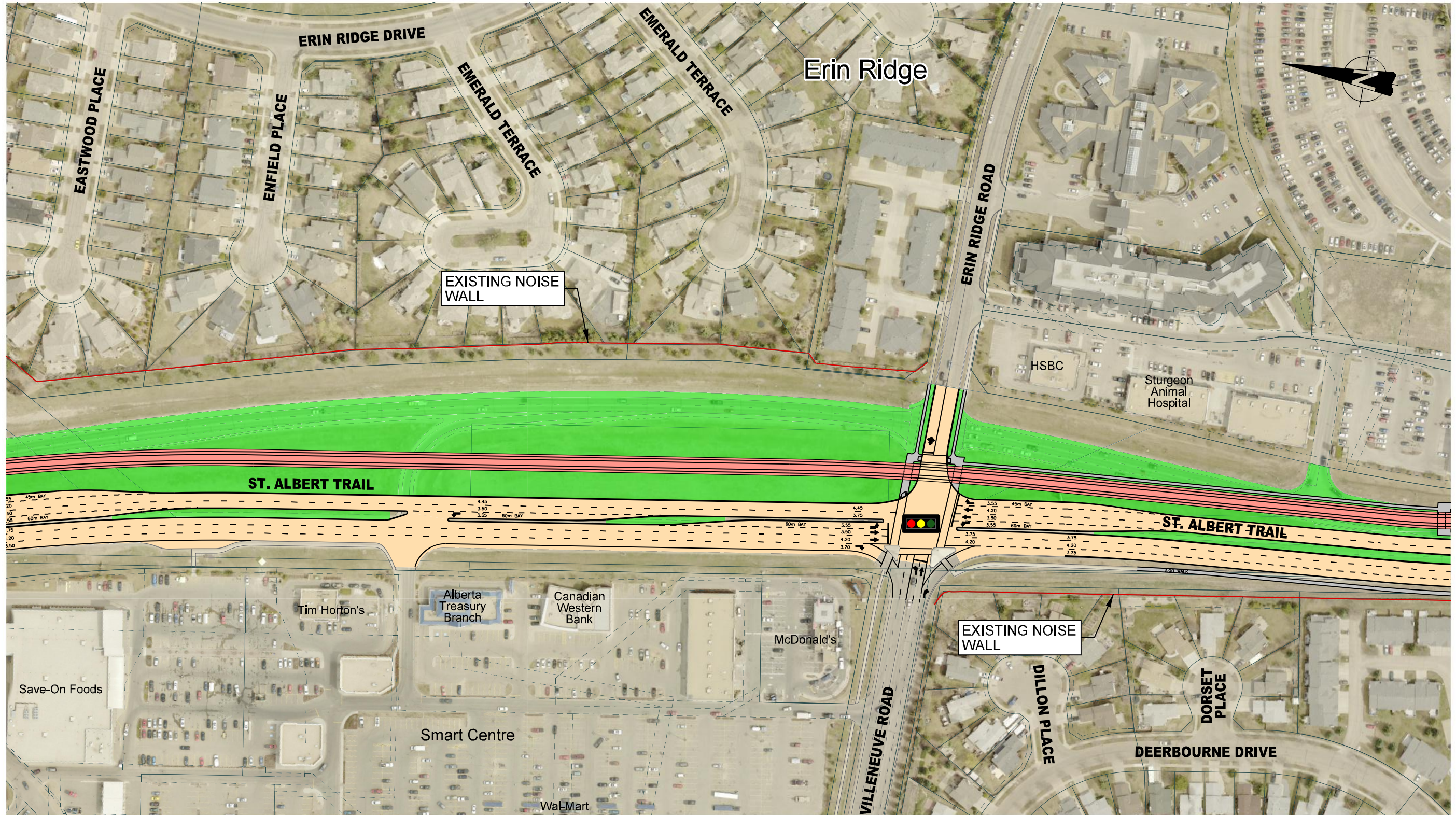
LEGEND

- | | | | |
|--|---------------------------|--|-------------------------|
| | LRT at Grade | | Crossing Gate |
| | Elevated LRT/Bridge | | Signalized Intersection |
| | LRT Station | | Direction Arrows |
| | Roadworks | | Pavement Markings |
| | Sidewalk | | Fence |
| | Landscaping | | Bus Stops |
| | Traction Power Substation | | |
















CITY OF ST. ALBERT
LRT PLANNING STUDY
RECOMMENDED CONCEPT PLAN
FIGURE 4.1.9

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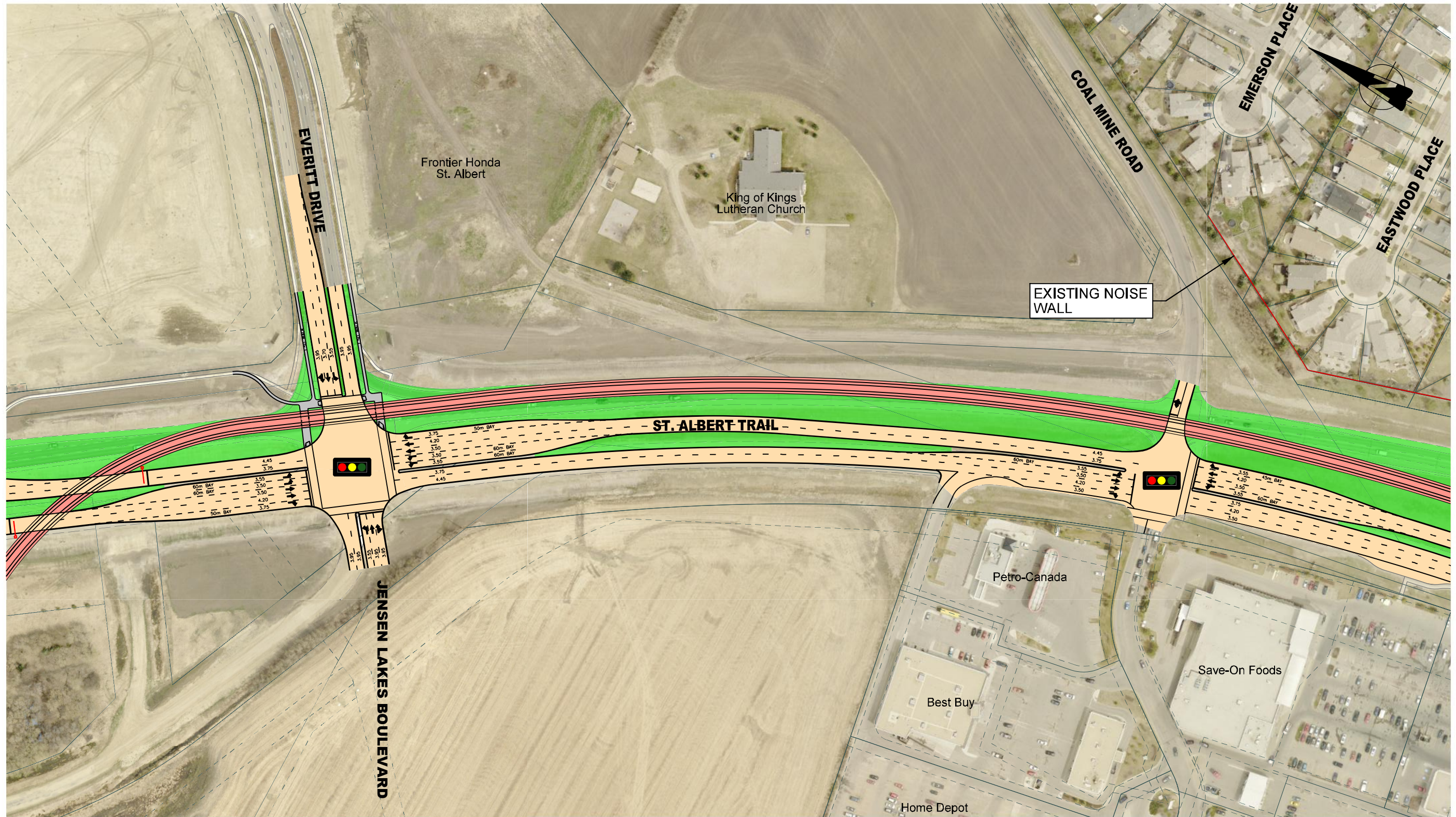
LEGEND

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|  | LRT at Grade |  | Crossing Gate |
|  | Elevated LRT/Bridge |  | Signalized Intersection |
|  | LRT Station |  | Direction Arrows |
|  | Roadworks |  | Pavement Markings |
|  | Sidewalk |  | Fence |
|  | Landscaping |  | Bus Stops |
|  | Traction Power Substation | | |














**CITY OF ST. ALBERT
LRT PLANNING STUDY
RECOMMENDED CONCEPT PLAN
FIGURE 4.1.10**



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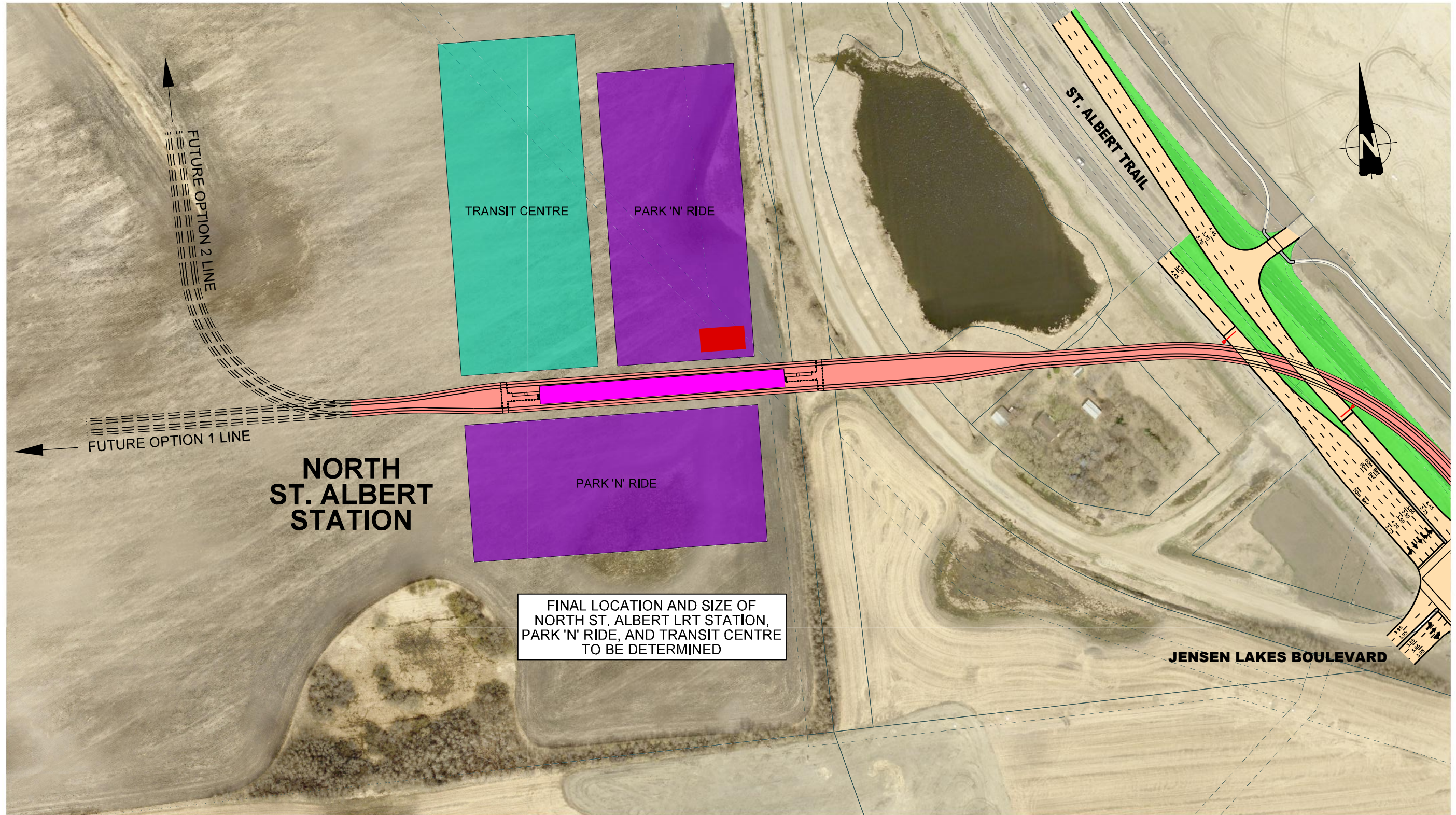
LEGEND

- | | | | |
|---|---------------------------|---|-------------------------|
|  | LRT at Grade |  | Crossing Gate |
|  | Elevated LRT/Bridge |  | Signalized Intersection |
|  | LRT Station |  | Direction Arrows |
|  | Roadworks |  | Pavement Markings |
|  | Sidewalk |  | Fence |
|  | Landscaping |  | Bus Stops |
|  | Traction Power Substation | | |

**CITY OF ST. ALBERT
LRT PLANNING STUDY
RECOMMENDED CONCEPT PLAN
FIGURE 4.1.11**



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LEGEND

- LRT at Grade
- Elevated LRT/Bridge
- LRT Station
- Roadworks
- Sidewalk
- Landscaping
- Traction Power Substation
- Crossing Gate
- Signalized Intersection
- Direction Arrows
- Pavement Markings
- Fence
- Bus Stops



CITY OF ST. ALBERT
LRT PLANNING STUDY
RECOMMENDED CONCEPT PLAN
FIGURE 4.1.12

Track switches are recommended at the following locations:

- North of Gate Avenue: Although it would be preferable to have a set of switches south of Hebert Station the combination of curved track alignment, number of grade crossings, and track slope approaching the bridge over Anthony Henday Drive prevent this. Similarly it would have preferable to have the switches closer to St. Albert Downtown Station but the approach grades and curved track alignment prevent this.
- South of Boudreau Road: This would be the preferred location. Through preliminary engineering the length of consistent track slope through this section will need to be confirmed to accommodate the track switches. If there is not enough space then a location near McKinney Avenue should be considered where the track flattens out again between St. Albert Downtown Station and Boudreau Station.
- South of North St. Albert Station: This is to accommodate trains switching tracks at the end of line in order to begin operating southbound.

4.2 Stations, Transit Centres, and Park and Rides

The station locations are discussed in Section 3.6. This section will describe the general configuration of each station.

4.2.1 General Station Configuration

Each of the stations will be equipped with heated shelters, ticket vending machines, closed-circuit television cameras, public address systems, and variable message signs. Reflecting the Edmonton LRT Design Guideline requirements, each of the stations will have platforms a minimum of 123 metres long and installed 980mm above the top of rail. The platform height will require ramping to provide pedestrian access.

4.2.2 Hebert Station

Hebert Station will have side loading platforms. A typical station with side loading platforms is shown in Figure 4.2.1. Although the configuration of embedded tracks, catenary poles, and platforms will be similar, the platform shown in Figure 4.2.1 is a low floor platform and therefore substantially lower than the high floor platforms required for the Metro Line.

Pedestrian access will be from connections to the existing sidewalks along Hebert Road and to the neighbourhood connection at Gate Avenue. The area is constrained in length along the tracks and therefore the ramps will likely need to be inset into the backs of the platforms. Stairs, which are significantly shorter in length than the ramps, will provide the primary access to the platforms.



Figure 4.2.1 - Station with Side Loading Platforms

Transfers from the bus network will be accommodated through bus stops on either side of Hebert Road east of St. Albert Trail.

4.2.3 St. Albert Downtown Station

St. Albert Downtown Station is located on the bridge structure over the Sturgeon River with a center loading platform. Although this will require the tracks to flare out to accommodate the platform the overall bridge width will be less than if the station had side loading platforms.



Pedestrian access will be provided primarily via ramps and steps off the ends of the platform with connections to Sturgeon Road, Rivercrest Crescent, and the Sturgeon River trails. Pedestrian access would also be provided via a new pedestrian overpass with connections west of St. Albert Trail, to the station platform, and to the transit centre on the east side of the tracks. Wheelchair access will need to be provided via elevators or ramps. Depending on the height of the pedestrian overpass, escalators may also be required.

Figure 4.2.2 - Station Platform Access

transit center east of the tracks and north of Sturgeon Road. The connection will be either at grade to the platform ramp/stairs or via the pedestrian overpass.

Transfers from the bus network will be through a new

4.2.4 Boudreau Station

Boudreau Station will have side loading platforms. Pedestrian access will be from connections to the existing sidewalks along Boudreau Avenue and to a new walkway to Erin Ridge Road. The area is constrained in length along the tracks and therefore the ramps will likely need to be inset into the backs of the platforms. Stairs, which are significantly shorter in length than the ramps, will provide the primary access to the platforms.

Transfers from the bus network will be accommodated through bus stops on either side of Boudreau Avenue east of St. Albert Trail.

4.2.5 North St. Albert Station

North St. Albert Station will have a center loading platform. Trains will be using both tracks to stop at the station and the use of side loading platforms will likely frustrate patrons if the train pulls into platform opposite from the one they are waiting at.

Pedestrian access will be provided via ramps and steps off the ends of the platform with connections to the surrounding area. The pedestrian connections will need to be determined as part of the area development plans.

A park and ride facility is anticipated to have been constructed adjacent to the LRT station prior to the LRT being extended. The park and ride will be sized to accommodate approximately 500 parking stalls. A well as the park and ride a transit centre is also anticipated to have been built and operating. This will be the transfer location from the bus network for the north portion of St. Albert.

4.3 Roads, Pedestrians, and Cyclists

From Campbell Road to Hebert Road the existing traffic through lanes are not anticipated to be impacted. The northbound to westbound ramp from St. Albert Trail to Anthony Henday Drive will need to be reconfigured in order to control the interaction between traffic and LRT better. The current acceleration taper will need to be revised to put the ramp traffic through the signalized intersection.

Between Hebert Road and Boudreau Road two lanes of traffic will be removed to accommodate the LRT trackway. The existing median will need to be adjusted to balance the lane impact for northbound and southbound traffic. That is the current 3 lanes northbound and 3 lanes southbound will be reduced to 2 lanes northbound and 2 lanes southbound. The expected timing of the LRT mean that Ray Gibbon Drive and 127 Street will be connected to act as outlets for diverted traffic from St. Albert Trail.

The east portions of the intersections that are impacted by the LRT will be “urbanized”. The right turn cut offs will be removed and the right turns will be forced to go through the intersections. This provides for more control of the interaction between traffic and the LRT. This also squares up the intersection corners and shortens the pedestrian crossings.

A number of accesses on the east side of St. Albert Trail will need to be closed to reduce the number of grade crossings and therefore conflict locations along the alignment.

North of Boudreau the current St. Albert Trail northbound lanes will be adjusted to run parallel with the southbound lanes similar to the configuration further south. This will reduce the overall transportation facility footprint here.

The current pedestrian facilities will generally be maintained. Where they are impacted they will be replaced with similar facilities. The pedestrian access around each station is noted in Section 4.2. Although not part of this project, there could be a multi-use trail along the west side of St. Albert Trail that would be part of the redevelopment along the corridor. This will provide better access to the LRT Stations for both cyclists and pedestrians in addition to improving the travel time and safety for cyclists going through St. Albert.

4.4 Noise and Vibration



Figure 4.4.1 - LRT through Belgravia in Edmonton

Studies in Edmonton have shown that Light Rail Vehicles are quieter and produce less vibration than buses. Generally the complaints regarding LRT noise relate to the bells at gated grade crossings not to the vehicles themselves. Another source of noise to be watchful of is the station announcements.

The locations where the LRT alignment is adjacent to residential areas there are currently noise walls for the traffic noise from St. Albert Trail. The existing noise walls are

similar but more substantial to the walls used adjacent to the LRT track in the Belgravia neighbourhood in Edmonton as shown in Figure 4.4.1. The noise studies done for the LRT through Belgravia indicated that the LRT would not exceed the City of Edmonton noise bylaw.

With no gated crossings with bells proposed a significant potential source of noise had been eliminated. The only location bells may be noticed will be at the crossing of St. Albert Trail. The residential areas along the east side of St. Albert Trail currently have noise protection in the form of a noise wall. As part of preliminary engineering a noise study should be undertaken to confirm that the appropriate level of noise protection will be provided.

4.5 LRT Systems

4.5.1 Signals

The extension of the Metro Line through St. Albert is anticipated to use the same LRT signaling system as the portion in Edmonton at the time of the extension. The control of interaction with traffic and pedestrians will primarily be through traffic signals. Although the LRT will have priority the grade crossings will not be gated though St. Albert. This is similar to a number of urban LRT systems in North America including the intended signal control of the Valley Line LRT in Edmonton.

Figure 4.5.1 shows a LRT crossing controlled by traffic signals. A similar traffic signal controlled intersection is shown in Figure 4.5.2.



Figure 4.5.1 – Traffic Signal Controlled LRT Crossing

The recommended locations for gated crossings are at the Anthony Henday Drive ramps where drivers may not be anticipating the LRT crossing. The gates reinforce the need for traffic to stop off the trackway. The other location will be the crossing of St. Albert Trail north of Everitt Drive. The crossing is away from an intersection and therefore not controlled by the traffic signal. Further analysis of this location should be done to confirm the operation of the crossing will not seriously impact the operation of St. Albert Trail.

4.5.2 Traction Power

For this study Traction Power Substations (TPSS) were anticipated to be located at or near each one of the 4 LRT stations. Although this is adequate for this level of study, a power study of the line will need to be undertaken considering the alignment and the proposed service to determine the best locations for the TPSSs. The TPSSs are based on the type of facility used along Edmonton's first stage of the Metro Line. These TPSSs house, in addition to the equipment to convert AC power to 60 volt DC power to operate the trains, signal and emergency power equipment. Depending on the

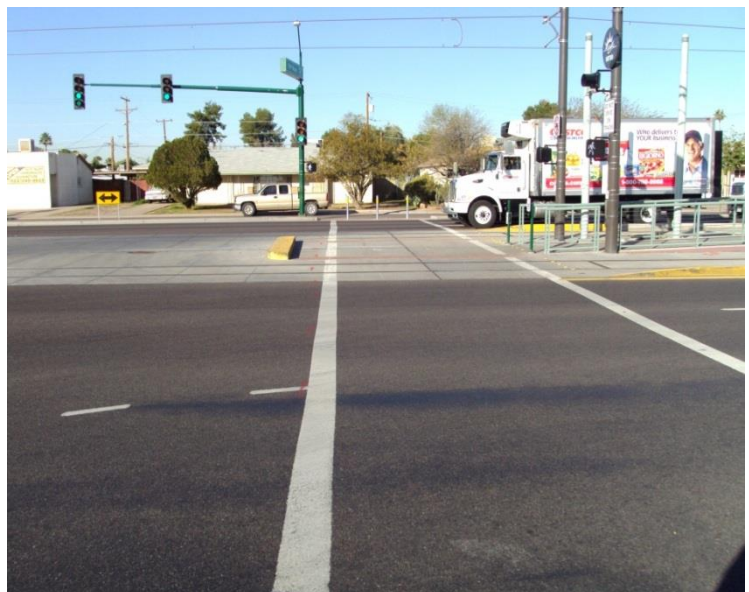


Figure 4.5.2 – Traffic Signal Controlled LRT Crossing

final configuration and the technology at the time of construction these facilities could be considerably different than the existing Metro Line TPSSs.

4.6 Environmental Considerations

Most of the proposed LRT alignment runs along previously developed land. Testing of the areas will need to be undertaken to determine if environmental remediation will be required. Considering there are gas station sites the LRT alignment will pass, clean up may be required.

Environmental reviews of the Sturgeon River for Ray Gibbon Drive crossing upstream and the 127 Street crossing downstream for the proposed LRT bridge and Downtown St. Albert Station have not indicated any unusual environmental concerns. An environmental review of the river crossing will need to be undertaken and measures put in place to maintain the condition of the Sturgeon River. Through design and construction the river will need to be considered and protected. An environmental impact assessment will be required to meet the City of St. Albert requirement of potential impacts to the inventoried natural area that the LRT would be crossing. In addition crossing of the Sturgeon River will be subject to approval of environmental agencies including Alberta Environment, Department of Fisheries (pursuant to the Fisheries Act) and Canadian Coast Guard (pursuant to the Navigable Waters Protection Act).

In addition to the Sturgeon River, another potentially environmentally sensitive area is the wetland areas near where the North St. Albert Station, Transit Centre and Park and Ride are planned for. When the transit centre and park and ride sites begin preliminary engineering an environmental study of the area will need to be undertaken.

4.7 Utility Considerations

A general review of potential utility conflicts was undertaken based on information provided by the City of St. Albert, available pipeline information, and experience on past projects including design and construction of Edmonton's LRT.

The proposed LRT alignment will be crossing three ATCO Pipelines with the Transportation Utility Corridor. There is also a deactivated petroleum Gibson pipeline the LRT will cross at the north end of the alignment. All of these crossings will require crossing permits and potentially some form of protection, both structurally and from stray current. Generally the stray current protection provided by the rail boot for embedded track will be adequate. The structural protection will vary depending on the depth of the pipelines but could be a simple thickening of the track slab to the extreme of lower the pipeline.

There are a combination of overhead and underground power facilities on and crossing the proposed LRT alignment including surface facilities that will need to be relocated. Conflicts with power lines running along proposed LRT alignment occur predominantly in the south and north of the alignment. These will take more time and coordination to relocate away from the LRT alignment.

Telecommunication facilities can take a significant amount of time to coordinate and relocate. There seems to be predominantly TELUS underground telecommunications facilities running along the LRT alignment as well as a number of crossings and surface facilities that will need to be relocated. Anticipate that SHAW conflicts will approximately mirror about a third of TELUS facilities.

It is anticipated that there will be gas conflicts at the majority of intersections that will require either relocation or lowering of the gas lines.

There are expected to be waterline crossing conflicts at the majority of intersections in addition to approximately 1.7km of conflicts with both transmission and distribution water mains along the LRT alignment. As well valves and

hydrants will require mitigation. In addition to the potential of lowering or relocating the waterlines to clear the LRT alignment, each water line crossing of the LRT alignment will require to be cased.

For Sanitary sewer lines, intersection crossing conflicts in addition to some longitudinal conflicts will require the relocation of approximately 0.4km of sanitary sewer main. Additionally a sanitary lift station is located at the Downtown transit centre north of Sturgeon Road. This lift station will need to be incorporated into the transit centre design or relocated. The current relocation estimate includes costs for mitigation of each of the sanitary line crossings. With further investigation and design it is anticipated that not all the crossings will need mitigation.

It is anticipated that conflicts at intersections in addition to some longitudinal conflicts will require the relocation of approximately 2.6km of storm sewer main line. As with the sanitary sewer estimate, further investigation and design may reduce the amount of storm sewer mitigation required.

4.8 Property Requirements

Property will be required to accommodate Hebert Station and TPSS, St. Albert Downtown Station, TPSS and Transit Centre, Boudreau Station TPSS, and North St. Albert Station, TPSS, Park and ride, and Transit Centre. The required property is identified in the drawings in Appendix B and summarized in Table 4.8.1. The majority of the trackway will be replacing 2 existing lanes of St. Albert Trail and therefore not require any additional right of way. The proposed pedestrian overpass at St Anne Street may require additional property depending on its final configuration.

These property requirements should be developed further prior to negotiations with land owners as they were developed based on conceptual designs and intended for order of magnitude areas only.

Table 4.8.1 Property Requirements

Location	Property	Requirement (ha)
Hebert Station	Petro-Canada	0.23
Hebert Station	Sturgeon Plaza	0.01
Downtown St. Albert Station and Transit Centre	Red Willow parking site	0.25
Downtown St. Albert Station	Riverside Marine	0.08
Downtown St. Albert Station	River Crest Plaza	0.07
Boudreau Station	Commercial Site for TPSS	0.08
Boudreau Station	Commercial Site	0.04
North St. Albert Station, Transit Centre, and Park and Ride	Station, Transit Centre, and Park and Ride, and Trackway	4.63
Total		5.39

4.9 Stakeholder Consultation

4.9.1 Public Engagement

Approximately 45 people attended the public meeting held on June 16, 2015 which was set up to provide information on three current City of St. Albert projects: Employment Lands, Transportation Master Plan Update, and St. Albert LRT Planning Study. The public could visit the displays of one, two or all of the projects. Attendees were counted at the door and were not asked which project they were seeking information on.

A variety of issues were raised in the comments with no issue being raised significantly more than another (looking at numbers of comments related to a specific issue). Some comments related to the corridor were received, which were outside of the scope of this meeting. General themes of comments were:

- safety of pedestrians trying to access the stations (sidewalks and crossings);
- parking implications for businesses;
- condition of St. Albert Trail and traffic impact from loss of lanes (capacity);
- alignment issues: crossing St. Albert Trail at the north end and placing the alignment in the middle of St. Albert Trail;
- timing and staging of construction;
- additional station required between Boudreau and Downtown stations.

A summary of the open house is included in Appendix C.

4.9.2 Chamber of Commerce

A presentation of the proposed LRT alignment through St. Albert was given to the St. Albert Chamber of Commerce on June 11, 2015. A large table top plan of the LRT alignment was shown and the LRT alignment and potential LRT station locations were described. As comments were made they were marked on the table top plans.

4.9.3 City of Edmonton

Meetings were held with the City of Edmonton Transportation Planning Department to review the proposed St. Albert LRT. The City of Edmonton indicated that the proposed LRT was compatible with their plans. The details of the operation of the line would be worked out as part of further design development. The location and alignment of the Campbell Road Station, as well as other LRT stations along the Metro Line, are considered fixed by the City of Edmonton since they have been approved by Edmonton City Council.

4.9.4 Alberta Transportation

A meeting was held with representatives of Alberta Transportation and the P3 contractor responsible for operations and maintenance of the portion of Anthony Henday Drive where the LRT is proposed to cross. The proposed alignment of the St. Albert LRT was reviewed including the fixed location of the Campbell Road Station in Edmonton, the grade separation crossing of Anthony Henday Drive, and the at grade crossings of two of the freeway on/off ramps. While Alberta Transportation may prefer the LRT be elevated over the Transportation Utility Corridor (TUC), they will be reviewing the proposal in comparison with the proposed LRT crossing of the TUC at 87 Avenue, which also has at-grade crossings of the freeway ramps, and other future LRT crossings of Anthony Henday Drive. The crossing of the TUC will also need the approval of Alberta Infrastructure, which manages the TUC.

4.10 Operations

4.10.1 Ridership

Estimate of LRT ridership were completed for this study based on analysis and a number assumptions which were provided by or agreed to by the City of St. Albert. Since this LRT Planning study is being completed in advance of the ongoing Transportation Master Plan (TMP), the estimates of LRT ridership have been made without the benefit of the travel forecasting model used in the TMP and as such are subject to revision, pending conclusion of the TMP. As previously discussed, the recommended LRT alignment includes four LRT stations within St. Albert: Hebert Station, Downtown Station, Boudreau Station and North St. Albert Station. In order to estimate total LRT ridership, three sources of information were used:

- City of Edmonton estimated LRT boardings at the Campbell Road LRT station

- Ridership estimates arrived at through this study, based on growth and development within 400m of the proposed LRT stations within St. Albert assuming a range of transit mode splits
- Ridership contributed through trips making use of a proposed 500 stall park and ride facility at the North St. Albert LRT station

The Table 4.10.1 provides the assumed development within 400 m of the LRT stations within St. Albert:

Table 4.10.1 Assumed Development within 400m of LRT Stations

Station	Population within 400m	Employment within 400m
Hebert Station	3175	1575
Downtown St. Albert Station	4300	2150
Boudreau Station	2775	1400
North St. Albert Station	3150	1575

Table 4.10.2 lists the LRT boarding and alighting estimates at each of the LRT stations under two transit mode share scenarios:

Table 4.10.2 LRT Boardings and Alightings by LRT Stations

Station	20% AM Peak Hour Transit Mode Share		30% AM Peak Hour Transit Mode Share	
	Passengers Boarding	Passengers Alighting	Passengers Boarding	Passengers Alighting
Campbell Road Station and Park and Ride	1825	150	1750	200
Hebert Station	225	125	325	175
Downtown St. Albert Station	300	175	425	250
Boudreau Station	175	100	275	150
North St. Albert Station	675	125	775	175
Total St. Albert	3200	675	3550	950

Reference to Tables 4.10.1 and Table 4.10.2 indicates that the two busiest stations in St. Albert will be the Downtown St. Albert Station and the North St. Albert Station. The Downtown St. Albert Station ridership is influenced by the DARP redevelopment potential, while the North St. Albert Station is governed by residential and employment potential, as well as ridership from the 500 park and ride lot which may include St. Albert residents and residents from outside the city.

At the Campbell Road Station, the high level of boardings are derived from the 1600 stall park and ride lot which will accommodate both St. Albert and City of Edmonton riders, as well as St. Albert and Edmonton residents who access the station by bus.

The above noted peak hour estimates have been converted to daily ridership by applying a peak hour to daily factor based on observed City of Edmonton counts. In Edmonton, the AM peak hour accounts for about 14% of daily boardings. Applying the same ratio, the St. Albert LRT line can be expected to generate some 22,800 to 25,400 daily boardings.

Figures 4.10.1 and 4.10.2 illustrate the above noted station boardings and alightings.

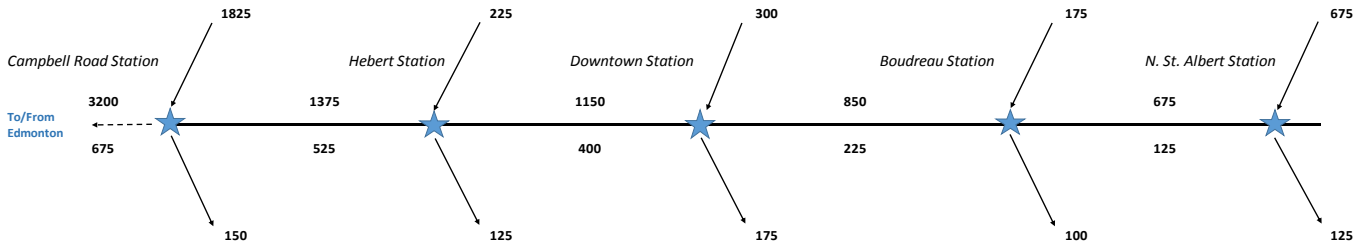


Figure 4.10.1- AM Peak Hour Ridership (20% Transit Mode Split)

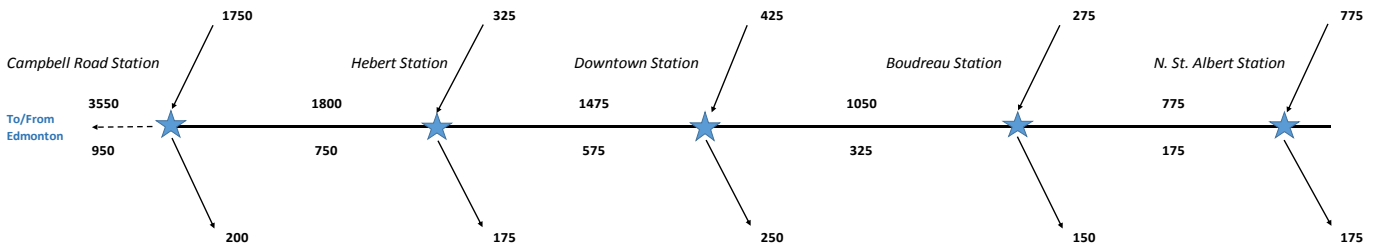


Figure 4.10.2 - AM Peak Hour Ridership (30% Transit Mode Split)

4.10.2 LRT Operations

Considering the St. Albert LRT will be an extension of the Edmonton Metro LRT line, the operations will match that proposed for the Metro Line. The *LRT Operations Plan – Health Sciences to Campbell Road*, prepared in 2013 for the Edmonton Transportation Planning Department, indicates that the planned LRT service periods for the Edmonton LRT lines, including the Metro Line, will be as shown in Table 4.10.3.

Table 4.10.3 Edmonton LRT Service Periods

	Service Period	Time Period	Service Level	Ultimate Headway (All Lines)
Weekday	Early Morning	5:00AM to 7:00AM	Early/Late	10 min
	Morning Peak	7:00AM to 9:00AM	Peak	5 min
	Mid Day	9:00AM to 3:30PM	Base	10 min
	Afternoon Peak	3:30PM to 6:00PM	Peak	5 min
	Evening	6:00PM to 9:00PM	Base	10 min
	Late Night	10:00PM to 1:00AM	Early/Late	15 min
Saturday	Early Morning	5:00AM to 8:00AM	Early/Late	10 min
	Daytime & Evening	8:00AM to 5:00PM	Base	10 min
	Late Night	5:00PM to 1:00AM	Early/Late	15 min
Sunday	All Day	5:00AM to 12:00PM	Base	15 min

The estimated running times for the LRT service through St. Albert are shown in Table 4.10.4. The runtime is based on the anticipated average travel speed between the stations within St. Albert. The dwell time, the time that LRT trains spend stopped at stations, has been set at 25 seconds per station. This is consistent with the dwell time used for Edmonton runtime calculations.

The terminal time, the time LRT trains spend waiting between runs at end of the line stations, is considered to be similar to the terminal time included in the run time for the Edmonton portion of the Metro Line for these calculations. Instead of the terminal time being spent at the Campbell Road Station it will be spent at the North St. Albert Station.

Table 4.10.4 LRT Northbound Runtime

Station	Distance from Previous Station (km)	Runtime (min)	Station Dwell Time (sec)	Time (min)
Campbell Road				
Hebert	1.4	2:04	25	2:29
Downtown	1.9	2:35	25	2:60
Boudreau	2.0	3:26	25	3:51
North St. Albert	1.8	3:03	25	3:28
Total	7.1	11:08	1:40	12:48

As noted in the *LRT Operations Plan – Health Sciences to Campbell Road* the planned service pattern, headways, and train consists for 2044 are shown in Table 4.10.5. The values for peak periods have been used to determine peak vehicle and fleet requirements.

Table 4.10.5 Service Pattern and Headways - 2044

Service Level	Headways (minutes)	Cars per Train
Early	10	5
Peak	5	5
Base	10	5
Late	15	5

The peak vehicle requirements are based on the difference between the travel time for a LRT to cycle between Health Sciences/Jubilee Station and Campbell Road Station and the travel time for a LRT to cycle between Health Sciences/Jubilee Station and North St. Albert Station, as shown in Table 4.10.6. For the 2044 service plan pattern using 5 minute headways has an estimated peak vehicle requirement for the St. Albert extension of the Metro Line of 33 vehicles including 12% allowance for maintenance spares.

Table 4.10.6 2044 Metro Line Peak Vehicle and Fleet Requirements

	Health Sciences/Jubilee to Campbell Road	Health Sciences/Jubilee to North St. Albert	Campbell Road to North St. Albert
Cycle Time (min)	80	105.6	25.6
Headway (min)	5	5	5
Peak Trains Required	16	22	6
Cars per Train at Peak	5	5	5
Peak Vehicle Requirement	80	110	30
Spares (12%)	10	13	3
Fleet Size	90	123	33

Note: Health Sciences/Jubilee to Campbell Road Information from Northwest LRT Concept Plan Report

4.11 Benefits

The extension of Light Rail Transit into St. Albert has the potential to bring many benefits to the community. These include:

- Strategic Alignment
- Revitalization, Redevelopment and Property Values
- Transportation Benefits and Mobility
- Environmental Benefits
- Transit Capital and Operational Costs Savings

4.11.1 Strategic Alignment

The provision of LRT within St. Albert helps to support several goals of **St. Albert's Strategic Plan**, particularly the bolded items:

- Create an attractive environment to do business in St. Albert that results in a diversified tax base. Strategies include:
 - Ensure a 20-year supply of serviced and unserviced non-residential land for commercial and targeted industrial/business expansion to maximize the city's strategic and/or economic advantage
 - Attract new business in targeted commercial sectors and support appropriate growth throughout the community and the Highway 2 corridor.
 - Promote business and industrial development that capitalizes on established and emerging industries within the Capital Region and the Alberta Industrial Heartland
 - Ensure the City of St. Albert supports expansion and attraction of desired business and industry through competitive policies, bylaws, taxes, infrastructure and services.
- Encourage a vibrant downtown core. Strategies include:
 - Encourage the growth of Downtown and ensure it remains the centre and heart of commercial, civic, human services, cultural, and residential activities of St. Albert through implementation of the Downtown Area Redevelopment Plan (DARP).
- Foster business retention and expansion of local businesses. Strategies include:
 - Retain and nurture expansion of existing local businesses and new local business startups.
 - Increase the number of residents working in St. Albert through identifying opportunities to create local employment opportunities and improve the availability of local labour.
- Promote current and future tourist attractions and events. Strategies include:
 - Cooperate in the promotion, development, and enhancement of tourist attractions and infrastructure in order to increase tourism visitations and expenditures.
- Promote sustainable urban development. Strategies include:
 - Promote sustainable neighbourhoods and transportation choices through progressive urban and transportation planning initiatives.
- Maintain a safe and efficient transportation network. Strategies include:
 - Provide for the safe and efficient movement of goods and people within the community to work, school and home.

- Establish sustainable priorities for the City's investment in transportation and infrastructure for the future and within the region.
- Promote a transit network that enables the City of St. Albert to achieve its economic, social and environmental objectives by making transit a convenient and competitive mode of transportation.

In addition to its complete support of and alignment with the City's Strategic Plan, the LRT extension is fully compliant with and supportive of the City's Municipal Development Plan, Downtown Area Redevelopment Plan and Transportation Master Plan.

4.11.2 Revitalization, Redevelopment and Property Values

The introduction of LRT within St. Albert's central corridor is expected to contribute to revitalization of the current central corridor in terms of investment in the renewal of existing development and complete redevelopment to higher value development such as mixed use residential and commercial development. This renewal tends to have other spin-off effects that support the above stated goals of the Strategic Plan.

Redevelopment, if planned properly, can significantly increase the amount, density and mix of residential, commercial and business uses around and along the St. Albert Trail corridor. The replacement of suburban style, car-oriented commercial development to a higher density mixed use area will support a more vibrant and more pedestrian friendly environment which is consistent with other City goals.

The transformation of the central part of St. Albert into a denser mixed use area will result in the increase and densification of employment levels and attract a wider and higher value range of jobs. The attraction of more and higher value jobs is further enhanced by the connectivity provided by the LRT connection. .

The combination of more employment, higher value employment and a highly improved public transportation connection will enhance labour mobility to the city by establishing St. Albert as a desirable and accessible work location.

Experience from other cities tends to indicate that the introduction of a high order transit facility such as LRT coupled with a complementary increase in land use diversity, tends to be accompanied by a rise in property valuations in the vicinity of the transit facility, particularly near stations.

4.11.3 Transportation and Mobility Benefits

The introduction of LRT to St. Albert is expected to return significant transportation benefits to the City.

Public perception and attraction to transit is affected by many factors. LRT is viewed by the travelling public as a significantly superior and more attractive travel mode when compared to bus-based transit service. Experience within the Edmonton region shows that LRT results in a material increase in transit ridership in sectors served by LRT.

LRT can dramatically increase transit mode share and thereby reduce the need for costly and land consumptive roadway and interchange projects. St. Albert's 2009 Transportation Master Plan indicated that LRT along St. Albert Trail would result in an increase in Transit mode share from the low single digits to the low double digits.

It should be noted that the City of Edmonton has for almost two decades embraced the philosophy of accommodating growth through investment in transit and LRT in particular. Given this shift towards transit in Edmonton, St. Albert can ill afford to pursue a different transportation course as it is so intrinsically tied to and integrated with this region's core city.

In addition to the above benefits, LRT will provide St. Albert residents with a highly reliable, high quality, congestion-free transit access to key employment, post-secondary education and cultural destinations in Edmonton including:

- North-central area employment (Kingsway, Glenrose, Royal Alexandra Hospitals)
- Downtown employment
- U of A area employment
- Entertainment, cultural and sports
- NAIT, Grant McEwan University, University of Alberta

In addition to the improvement in job accessibility for St. Albert residents, the LRT provides a material improvement in labour mobility for St. Albert area jobs. Having St. Albert directly tied to the regional LRT network opens up the St. Albert job market to the better part of Edmonton's working population. This in turn can provide an enticement to prospective employers to locate in St. Albert.

4.11.4 Environmental Benefits

The St. Albert Environmental Master Plan provides the City with the overall direction for its environmental performance and provides the framework for the setting of its environmental objectives and targets. Within the policy, the City's mission for the future is to protect the natural environment so that it remains an integral part of maintaining the long-term economic and social wealth of our community.

Development of LRT in St. Albert supports a number of the goals identified in the Environmental Master Plan, specifically the bolded items:

1. **Manage air quality:** LRT improves local and regional air quality through use of electricity to power the LRT system.
2. **Reduce energy consumption and greenhouse gas emissions:** By using electricity to power the LRT system and the mode shift from fossil fueled private vehicles to the LRT greenhouse gas emissions are reduced. There is also a reduced consumption of fossil-fuels due to a reduction in the use of asphalt for road paving and re-paving.
3. **Promote sustainable neighbourhoods and transportation choices:** LRT enhances the development of denser mixed use areas along the alignment, particularly at stations. The superior perception and attractiveness of LRT compared to other forms of public transit significantly increases the transit mode split.
4. **Preserve and manage trees, parks and natural areas:** In addition to the enhanced transit mode shift LRT also requires less property to transport more people than roadways and interchanges. This reduces the need for land that could be used for trees, parks, and natural areas to be developed into roadway projects.
5. Reduce solid waste generation
6. Protect and improve the Sturgeon River Watershed
7. Improve water quality of the Sturgeon River
8. Reduce water consumption
9. **Foster community environmental stewardship:** Developing the LRT as part of a regional transit network will enhance the environmental benefit beyond St. Albert. Use of the LRT for residents of communities north of St. Albert and for those commuting from outside to work within St. Albert reduces the energy consumption and helps improve the air quality within the Alberta Capital region.

4.11.5 Transit Capital and Operational Costs Savings

The introduction of LRT service to and within St. Albert will result in significant transit capital and operating cost savings. These savings will accrue as a result of a reduction in the bus fleet needed to provide service. Specific cost reductions are shown in Section 4.12.3.

4.12 Project Cost Estimate

4.12.1 Capital Costs

The anticipated capital costs, in 2015 dollars, for the extension of the Metro Line through St. Albert is shown in Table 4.12.1.

Table 4.12.1 St. Albert LRT Capital Costs

Description	Value (2015 \$)	Comments
General Requirements	32,780,000	Includes site trailers, traffic detours, and other general contract requirements
Roadwork	56,000,000	Includes roads, sidewalks, multi-use trails, and accesses.
Track	76,110,000	Includes rail, special trackwork, restraining rail, and other track items
Drainage	18,000,000	Includes new and relocated drainage infrastructure
Landscaping	20,500,000	Includes trees, plants, benches, planter features, and other landscape items
Utilities	35,000,000	Includes mitigations of existing utility facilities
Structures	45,860,000	The 3 LRT bridges and any retaining walls, support structures along the alignment
Stations	58,600,000	The structures and systems for the stations including the pedestrian overpass
Station Equipment	2,800,000	Includes ticket vending machines, emergency phones, and other station equipment
Transit Centre	10,000,000	Transit Centre at Sturgeon Road and St. Albert Trail
Sub-Station Buildings	8,000,000	Includes the buildings and building infrastructure for the TPSSs.
LRT Systems	140,200,000	Includes signal system, traction power system, emergency power, and other LRT systems
Vehicles	191,400,000	Cost for Light Rail Vehicles including spares.
Commissioning and Testing	3,575,000	Testing and commissioning for the systems and the trackway.
Management & Engineering	115,300,000	
Land	5,000,000	Based on estimated property requirements and current assessment values.
Public Art (1%)	1,200,000	Based on 1% of Structures, Stations, Transit Centre, and Su-Station Buildings.
TOTAL	815,325,000	
Contingencies	244,597,500	30%
Grand Total	1,059,922,500	

4.12.2 LRT Operation and Maintenance Costs

Annual operation and maintenance costs for the Edmonton LRT include the following items:

- Operational Staff including LRV drivers, supervisors, and management
- Maintenance Staff including station maintenance, traction power, signals, track, vehicles, and communications
- Security
- Vehicles parts and other consumables
- Infrastructure maintenance including substations, communications, track, signaling, and stops and structures
- System power
- Facilities utility costs (water, gas, etc)

Based on these itemized costs, the operation and maintenance costs for the Edmonton LRT work out to approximately \$401,300 annually per LRV. A ratio based on the number of LRVs can be used since the number of LRVs will increase based on the length of the system, the frequency of service provided. As well the St. Albert section of the Metro Line will operate under the same parameters as the Edmonton portion of the line.

The number of LRVs needed to operate the St. Albert portion of the line is 33, including spares. Therefore the annual operating and maintenance budget for the St. Albert extension of the LRT should be considered \$13,250,000 (in rounded 2015 dollars).

4.12.3 Bus Operation and Maintenance Costs

For the threshold planning year of 2044 and a full build out population of 112,000, passengers will access the regional LRT by:

- Walking;
- Cycling;
- Vehicle drop-off;
- Park and Ride; and
- Conventional bus network.

For the purposes of this study two supporting bus networks were developed and compared:

Network 1 – LRT terminating at the Campbell Road Transit Centre/ Park and Ride;

Network 2 – LRT through St. Albert terminating at North Transit Centre/ Park and Ride.

These networks were designed based on the following assumptions:

- Current transit service standards and 2014 cost/hour;
- Full build out of St. Albert within its current boundaries;
- Direct bus service to the LRT.

The comparison of the networks shows that the difference in cost between the two options is about 20% or \$5.8M annually. This difference can be attributed the extension of all routes to the Campbell Road Transit Centre in Network 1. This difference in supporting bus networks also represents a reduction of 17 peak buses at a capital cost of \$16.1 M (assuming an electric bus fleet).

4.12.4 Project Delivery and Funding

LRT has been procured using a number of delivery methods in Alberta. Initial projects were constructed using traditional Design Bid Build contracts. More recent LRT projects in Edmonton and Calgary have used Design Build, Construction Management, and Private Public Partnership methods. The best method to deliver the LRT extension through St. Albert will depend on the industry, the regional transit operating structure, development of the Metro Line LRT within Edmonton, project schedule, and a number of other factors that are currently unknown.

Typically due to the magnitude of LRT projects municipalities have not been able to fund them on their own. In Alberta LRT projects have used various Provincial and Federal programs for funding. Project delivery and funding can be determined once a number of the unknowns, particularly the operational structure for a regional LRT and the development of the Metro Line within Edmonton, have become more established.

5. Conclusions and Recommendations

This study has reviewed the potential alignment and station locations for a LRT through St. Albert. We recommend that the alignment as shown in the drawings of Appendix A along the east side of St. Albert Trail and the locations of the stations at Hebert Road/Gervais Road, at the Sturgeon River, at Boudreau Road/Giroux Road, and north of Jensen Lakes Boulevard and west of St. Albert Trail be approved so that future development plans take LRT into consideration.

Appendices

- Appendix A Alignment Review
- Appendix B Property Requirement Plans
- Appendix C Public Consultation Summary



Appendix A: Alignment Review

Segment: **Campbell Road Station to Hebert Station**

LRT Alignment Along St. Albert Trail	East Running Track	Centreline Track	West Running Track
Description	LRT travels alongside east side of St. Albert Trail	LRT is positioned in between the NB and SB lanes of St. Albert Trail	LRT travels alongside west side of St. Albert Trail
Access Impacts	Access to Chamber of Commerce, right out from commercial site, and Petro-Canada site.	None	Right in to commercial site
Parcel Isolation (i.e. is access to St. Albert Trail the parcels only access location?)	Access closure to Petro-Canada site on NE corner of Hebert Road/Gervais Road intersection would isolate the site	None	None
Number of Intersection Crossings Proposed	2 All-Directional: Gervais Road/Hebert Road, Commercial Access	2 All-Directional: Gervais Road/Hebert Road, Commercial Access	2 All-Directional: Gervais Road/Hebert Road, Commercial Access
Comparative LRT/Bus Operations	Similar operations for each option	Similar operations for each option	Similar operations for each option
Comparative Traffic Operations	Crossing of NBD St Albert Trail to Anthony Henday Drive ramps and WBD Anthony Henday Drive traffic accessing St Albert Trail	Right hand lane ramps from St Albert Trail to Anthony Henday Drive would not be affected during operation, EBD and WBD Anthony Henday Drive traffic accessing St Albert Trail would have crossings, and St Albert Trail NBD lanes.	Crossing of SBD St Albert Trail to Anthony Henday Drive ramps, EBD Anthony Henday Drive traffic accessing St Albert Trail, and St Albert Trail NBD and SBD lanes.
Anthony Henday Drive Bridge Crossing	New bridge on east side of existing road bridge	Need reconstruction of existing road bridge to accommodate LRT in median	New bridge on west side of existing road bridge
Comparative cost	Lowest Probable Cost	High Probable Cost, assuming partial reconstruction of road bridge over Anthony Henday Drive and reconstruction of St Albert Trail.	High Probable Cost due to crossing of St Albert Trail potentially requiring grade separation
Other Major Considerations	NBD to WBD ramp would need modification to become part of the signalized intersection. All existing lanes to be maintained south of Hebert Road/Gervais Road. Least impact to existing roads.	Both signalized ramp intersections to Anthony Henday Drive would be impacted. Either NBD or SBD lanes of St Albert Trail would need to be shifted in order to maintain current number of lanes. Crossing of NBD St Albert Trail lanes would have significant traffic impacts.	SBD to EBD ramp would need modification to become part of the signalized intersection. All existing lanes to be maintained south of Hebert Road/Gervais Road. Crossing of St Albert Trail would have significant traffic impact.
Major Utilities	3 Atco pipeline crossings in TUC.	3 Atco pipeline crossings in TUC. Most likely impact with reconstruction of St Albert Trail.	3 Atco pipeline crossings in TUC.
Campbell Road Station Location	Campbell Road Station location was set by City of Edmonton council and was considered a fixed starting point for the alignment	Campbell Road Station location was set by City of Edmonton council and was considered a fixed starting point for the alignment	Campbell Road Station location was set by City of Edmonton council and was considered a fixed starting point for the alignment

Segment: **Campbell Road Station to Hebert Station**

LRT Alignment Along St. Albert Trail	East Running Track	Centreline Track	West Running Track
Hebert Station Location	Station in the NE corner would be in isolated Petro-Canada site. Station on the SE corner could be accommodated in boulevard.	Station on south side of Hebert Road/Gervais Road intersection would be isolated by the traffic lanes. On the north side additional space for the station platforms would require additional lane separation.	Station on the SW corner could be likely be accommodated in boulevard with additional regrading and impacting highway sign. In the NW corner could be accommodated in boulevard but would likely require some additional regrading.
Environmental	Clean up of gas station site required. Crossing of pipelines in the TUC.	Crossing of pipelines in the TUC.	Crossing of pipelines in the TUC.
Preferred Alignment	Recommended	Not Recommended	

Segment: **Hebert Station to Downtown St Albert Station**

LRT Alignment Along St. Albert Trail	East Running Track	Centreline Track	West Running Track
Description	LRT travels alongside east side of St. Albert Trail	LRT is positioned in between the NB and SB lanes of St. Albert Trail	LRT travels alongside west side of St. Albert Trail
Access Impacts	Least impact to accesses - 4 total (2 RI/RO to Petro Canada, 1 right-in to Sturgeon Plaza and one access to vacant lot)	Moderate impact to accesses (2 median crossings will be impacted and require removal)	Most impact to commercial/retail accesses (11 commercial accesses will be impacted and require removal, along with Village Landing/service road access)
Parcel Isolation (i.e. is access to St. Albert Trail the parcels only access location?)	The vacant lot near Gate Ave would be isolated; removal of other accesses appear to have alternate access available.	None	Most parcel isolation - 5 parcels would have no alternate access based on current access configurations. Locations of buildings and ER/MR lands makes revised complex.
Number of Intersection Crossings Proposed	3 All-Directional: Gate Avenue, Green Grove Drive/Sterling Street, and St. Anne Street/Sturgeon Road	3 All-Directional: Gate Avenue, Green Grove Drive/Sterling Street, and St. Anne Street/Sturgeon Road	3 All-Directional: Gate Avenue, Green Grove Drive/Sterling Street, and St. Anne Street/Sturgeon Road
Comparative LRT/Bus Operations	Similar operations for each option	Similar operations for each option	Similar operations for each option
Comparative Traffic Operations	More crossing impacts for traffic O/D to east.	More conflict points. Crossing delays would generally be balanced between west and east sides.	More crossing impacts for traffic O/D to west.
Sir Winston Churchill Bridge Crossing	East portion of bridge could be removed and new LRT bridge would be constructed to the east.	Centreline spacing between existing piers will not allow for LRT bridge & required clearances. Total bridge reconstruction would be necessary.	West portion of bridge could be removed and new LRT bridge would be constructed to the west.
Sturgeon River Bridge Crossing	East portion of bridge could be removed and new LRT bridge would be constructed to the east of the St. Albert Trail bridge. Single span LRT bridge may be possible.	Centre portion of existing river bridge could be removed and repaced with LRT bridge, however, constructability will be very complex and more costly.	West portion of bridge could be removed and new LRT bridge would be constructed to the west of the St. Albert Trail bridge. Single span LRT bridge may be possible.
Comparative cost	Lowest Probable Cost	High Probable Cost, assuming construction of new bridges at Sir Winston Churchill Ave and complex constructability at Sturgeon River bridge	High Probable Cost due to potential parcel buy-outs/alternate access provision.
Other Major Considerations	Two lanes of St. Albert Trail to be removed. St. Albert Trail could be shifted to the west. The concrete noise wall along the residential area may need replacement. Major business impacts to Petro Canada with access removal.	Two lanes of St. Albert Trail to be removed. Widening will be necessary to one or both sides.	Two lanes of St. Albert Trail to be removed. St. Albert Trail could be shifted to the east. Proximity and height of LRT compared to condo complex south of sir Winston Churchill Avenue would be an impact to the owners.
Major Utilities	The east side has more conflicts with City STM/SAN/WTR. Waterline along Sir Winston Churchill bridge centreline would likely require relocation. Waterline under east sidewalk of river bridge requires relocation.	The centre has a lower amount of conflicts with City STM/SAN/WTR. Waterline along Sir Winston Churchill bridge centreline would require relocation.	The west side has more conflicts with City STM/SAN/WTR. Waterline along Sir Winston Churchill bridge centreline would likely require relocation.

Segment: **Hebert Station to Downtown St Albert Station**

LRT Alignment Along St. Albert Trail	East Running Track	Centreline Track	West Running Track
Hebert Station Location	Station on the SE corner could be accommodated in boulevard. In the NE corner would be in isolated Petro-Canada site.	Station on south side of Hebert Road/Gervais Road intersection would be isolated by the traffic lanes. On the north side additional space for the station platforms would require additional lane separation.	Station on the SW corner could be likely be accommodated in boulevard with additional regrading and impacting highway sign. In the NW corner could be accommodated in boulevard but would likely require some additional regrading.
Downtown St Albert Station Location	Station would be on new bridge crossing the Sturgeon River. Structure cost would be mitigated by combining the station and bridge. Separated from downtown by St Albert Trail. Overhead pedestrian crossing would help mitigate. Would be adjacent to relocated transit centre on NE corner of Sturgeon Road/St. Anne Street intersection.	Station could be on bridge crossing the Sturgeon River or north of the river. Both would require additional widening of St Albert Trail to accommodate the station platform. Would be separated from downtown and relocated transit centre by St Albert Trail. Overhead pedestrian crossing would help mitigate.	Station would be on new bridge crossing the Sturgeon River. Structure cost would be mitigated by combining the station and bridge. Station would be adjacent to downtown. Would likely be separated from relocated transit centre unless it was located on NW corner of Sturgeon Road/St. Anne Street intersection that would require additional property purchase.
Environmental	Clean up of gas station sites required. Sturgeon River Bridge would require environmental review and monitoring during construction.	Sturgeon River Bridge would require environmental review and monitoring during construction.	Sturgeon River Bridge would require environmental review and monitoring during construction.
Preferred Alignment	Recommended	Not Recommended	Not Recommended

Segment: **Downtown St Albert Station to Boudreau Station**

LRT Alignment Along St. Albert Trail	East Running Track	Centreline Track	West Running Track
Description	LRT travels alongside east side of St. Albert Trail	LRT is positioned in between the NB and SB lanes of St. Albert Trail	LRT travels alongside west side of St. Albert Trail
Access Impacts	Moderate impact to accesses (10 driveway accesses will be impacted and require removal)	Least impact to accesses (accesses could be preserved as they exist - right in/right out, or be eliminated as development shifts)	Most impact to commercial/retail accesses (20 accesses will be impacted and require removal)
Parcel Isolation (i.e. is access to St. Albert Trail the parcels only access location?)	None anticipated - all removal of accesses appear to have potential alternate access available	None	None anticipated - all removal of accesses appear to have potential alternate access available
Number of Intersection Crossings Proposed	4 All-Directional: Giroux/Boudreau Road, Lennox/Inglewood Drive, McKenney/Bellerose Drive, St. Vital/River Crest Crescent	4 All-Directional: Giroux/Boudreau Road, Lennox/Inglewood Drive, McKenney/Bellerose Drive, St. Vital/River Crest Crescent	4 All-Directional: Giroux/Boudreau Road, Lennox/Inglewood Drive, McKenney/Bellerose Drive, St. Vital/River Crest Crescent
Other Intersections	More complexity to maintain River Crest Cres (S) access open. The traffic control scheme may need to be reviewed	Most flexibility for maintaining St. Vital, River Crest (S), Muir Dr & Madison Drive in-place and operational. River Crest (S) RI/RO is subject to where transition to median would occur	More complexity to maintain St. Vital, Muir Dr & Madison Drive accesses open. The traffic control scheme may need to be reviewed
Comparative LRT/Bus Operations	Similar operations for each option	Similar operations for each option	Similar operations for each option
Comparative Traffic Operations	Less conflict points. More crossing impacts for traffic O/D to east	More conflict points. Crossing delays would generally be balanced between west and east sides.	Less conflict points. More crossing impacts for traffic O/D to west.
Comparative cost	Similar order of magnitude cost projected for each option	Similar order of magnitude cost projected for each option	Similar order of magnitude cost projected for each option
Other Major Considerations	Two lanes of St. Albert Trail to be removed. St. Albert Trail will be shifted to the west. Existing Pedestrian Overpass will be impacted	Two lanes of St. Albert Trail to be removed. Widening will be necessary to one or both sides. Existing Pedestrian Overpass will be impacted	Two lanes of St. Albert Trail to be removed. St. Albert Trail will be shifted to the east. Existing Pedestrian Overpass will be impacted
Major Utilities	Based on a review of information supplied by the City, the east side has a low amount of conflicts with City STM/SAN/WTR	Based on a review of information supplied by the City, the centre has a low amount of conflicts with City STM/SAN/WTR	Based on a review of information supplied by the City, the west side has more conflicts with City STM/SAN/WTR
Downtown St Albert Station Location	Station would be on new bridge crossing the Sturgeon River. Structure cost would be mitigated by combining the station and bridge. Separated from downtown by St Albert Trail. Overhead pedestrian crossing would help mitigate. Would be adjacent to relocated transit centre on NE corner of Sturgeon Road/St. Anne Street intersection.	Station could be on bridge crossing the Sturgeon River or north of the river. Both would require additional widening of St Albert Trail to accommodate the station platform. Would be separated from downtown and relocated transit centre by St Albert Trail. Overhead pedestrian crossing would help mitigate.	Station would be on new bridge crossing the Sturgeon River. Structure cost would be mitigated by combining the station and bridge. Station would be adjacent to downtown. Would likely be separated from relocated transit centre unless it was located on NW corner of Sturgeon Road/St. Anne Street intersection that would require additional property purchase.

Segment: **Downtown St Albert Station to Boudreau Station**

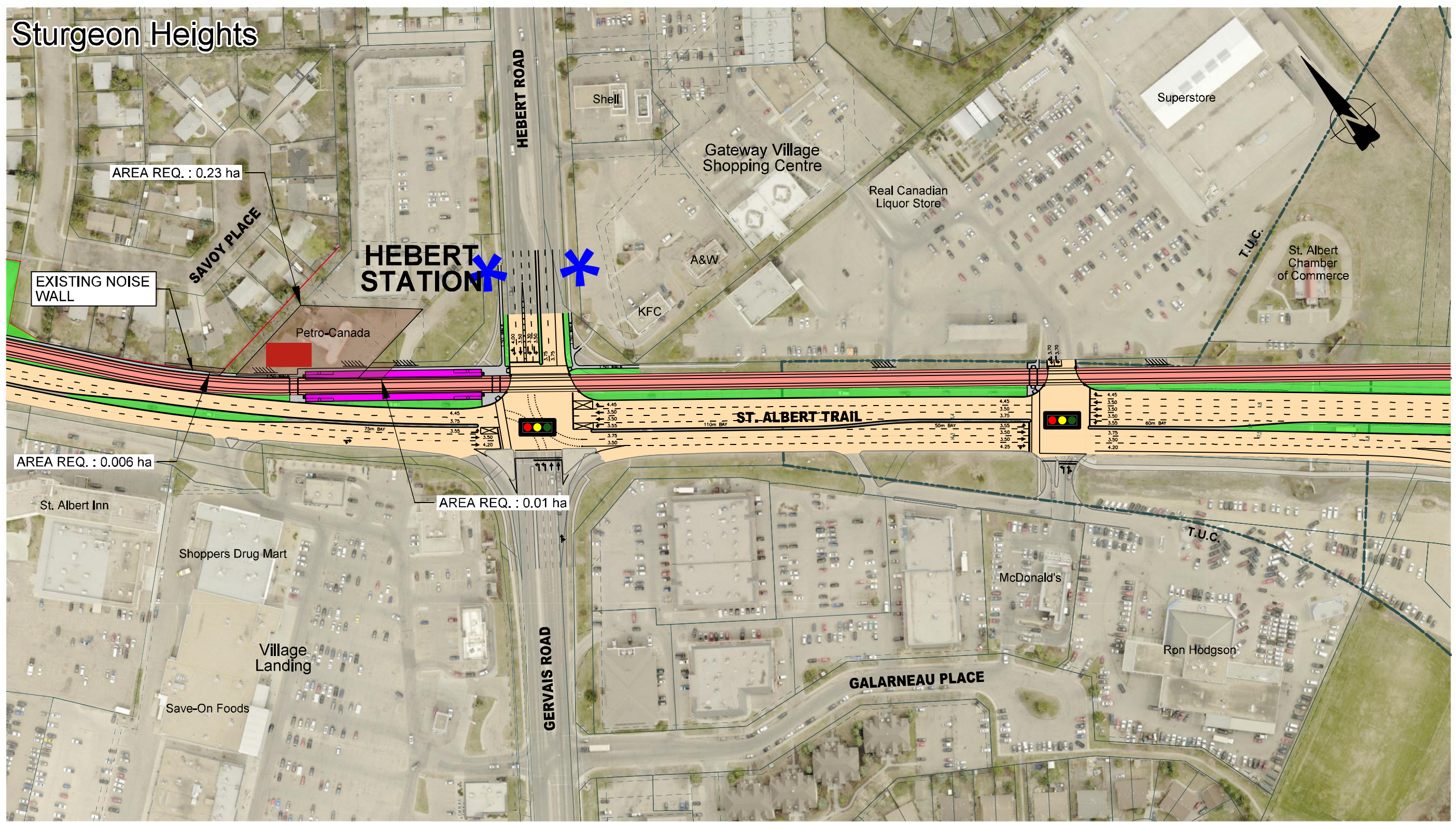
LRT Alignment Along St. Albert Trail	East Running Track	Centreline Track	West Running Track
Boudreau Station Location	In the NE corner could be accommodated in the boulevard and be closer access to the Sturgeon Community Hospital. On the SE corner NBD station platform could be accommodated in boulevard but SBD platform would be restricted by right turn bay. Could be a split platform.	Station on the south or south side of Boudreau Road/Giroux Road intersection would require additional space for the station platforms and therefore more road reconstruction.	Station on the SW corner could be likely be accommodated in boulevard. On the NW corner additional property would be required to accommodate the platform because of the SBD right turn lane. Both locations are separated from the hospital by St Albert Trail.
Environmental	Environmental review and mitigation is anticipated to be the same for all three options.	Environmental review and mitigation is anticipated to be the same for all three options.	Environmental review and mitigation is anticipated to be the same for all three options.
Preferred Alignment	Recommended	Not Recommended	Not Recommended

Segment: **Boudreau Station to North St Albert Station**

LRT Alignment Along St. Albert Trail	East Running Track	Centreline Track	West Running Track
Description	LRT travels alongside east side of St. Albert Trail	LRT is positioned in between the NB and SB lanes of St. Albert Trail	LRT travels alongside west side of St. Albert Trail
Access Impacts	3 Accesses Impacted	Potentially the NB left in to the big box site	3 Accesses Impacted
Parcel Isolation (i.e. is access to St. Albert Trail the parcels only access location?)	None	None	None
Number of Intersection Crossings Proposed	3 All-Directional: Erin Ridge Road/Villeneuve Road, Coal Mine Road, and Everitt Drive.	3 All-Directional: Erin Ridge Road/Villeneuve Road, Coal Mine Road, and Everitt Drive.	3 All-Directional: Erin Ridge Road/Villeneuve Road, Coal Mine Road, and Everitt Drive.
Comparative LRT/Bus Operations	Similar operations for each option	Similar operations for each option	Similar operations for each option
Comparative Traffic Operations	Less conflict points. More crossing impacts for traffic O/D to east	More conflict points. Crossing delays would generally be balanced between west and east sides.	Less conflict points. More crossing impacts for traffic O/D to west.
Comparative cost	Similar order of magnitude cost projected for each option	Similar order of magnitude cost projected for each option	Similar order of magnitude cost projected for each option
Other Major Considerations	Would require transition over both NB and SB lanes of St. Albert Trail	Would require transition over SB lanes of St. Albert Trail	No Transition over St Albert Trail would be required.
Major Utilities	Based on a review of information supplied by the City, there is relatively minor impacts to City STM/SAN/WTR	Based on a review of information supplied by the City, there is relatively minor impacts to City STM/SAN/WTR.	Based on a review of information supplied by the City, there is relatively minor impacts to City STM/SAN/WTR
Boudreau Station Location	In the NE corner could be accommodated in the boulevard and be closer access to the Sturgeon Community Hospital. On the SE corner NBD station platform could be accommodated in boulevard but SBD platform would be restricted by right turn bay. Could be a split platform.	Station on the south or south side of Boudreau Road/Giroux Road intersection would require additional space for the station platforms and therefore more road reconstruction.	Station on the SW corner could be likely be accommodated in boulevard. On the NW corner additional property would be required to accommodate the platform because of the SBD right turn lane. Both locations are separated from the hospital by St Albert Trail.
North St Albert Station	Station location would be the same for all 3 options including the Park 'n' Ride and Transit Centre	Station location would be the same for all 3 options including the Park 'n' Ride and Transit Centre	Station location would be the same for all 3 options including the Park 'n' Ride and Transit Centre
Environmental	Wet land areas near the transit centre and park 'n' ride location would need to be reviewed for impact and possible mitigations. This will be the same for the all 3 options.	Wet land areas near the transit centre and park 'n' ride location would need to be reviewed for impact and possible mitigations. This will be the same for the all 3 options.	Wet land areas near the transit centre and park 'n' ride location would need to be reviewed for impact and possible mitigations. This will be the same for the all 3 options.
Preferred Alignment	Recommended	Not Recommended	

Appendix B: Property Requirement Plans

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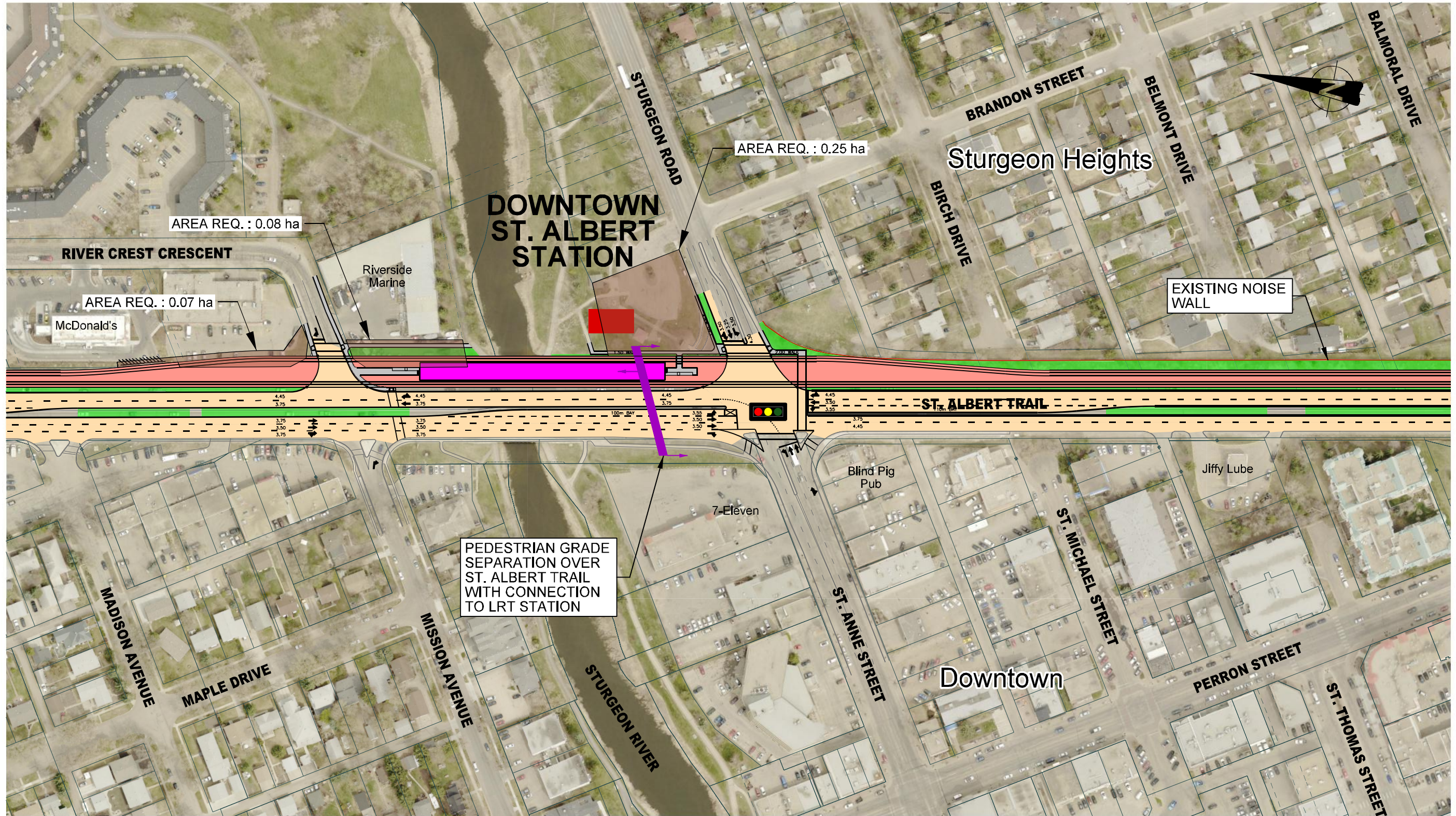


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





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|--|---------------------------|--|-------------------------|
| | LRT at Grade | | Crossing Gate |
| | Elevated LRT/Bridge | | Signalized Intersection |
| | LRT Station | | Direction Arrows |
| | Roadworks | | Pavement Markings |
| | Sidewalk | | Fence |
| | Landscaping | | Bus Stops |
| | Traction Power Substation | | |



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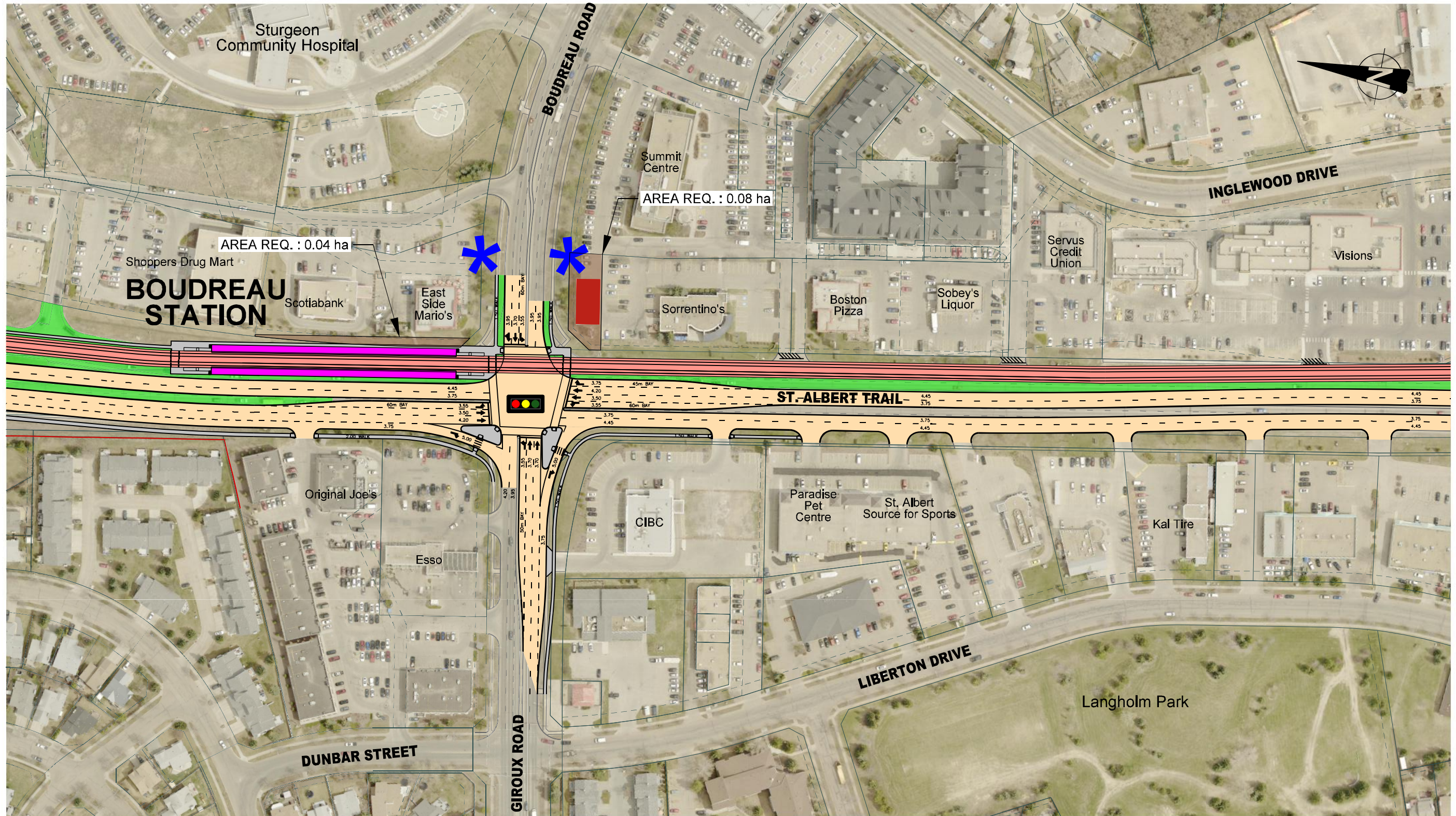


LEGEND

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|---|---------------------------|---|-------------------------|
|  | LRT at Grade |  | Crossing Gate |
|  | Elevated LRT/Bridge |  | Signalized Intersection |
|  | LRT Station |  | Direction Arrows |
|  | Roadworks |  | Pavement Markings |
|  | Sidewalk |  | Fence |
|  | Landscaping |  | Bus Stops |
|  | Traction Power Substation | | |



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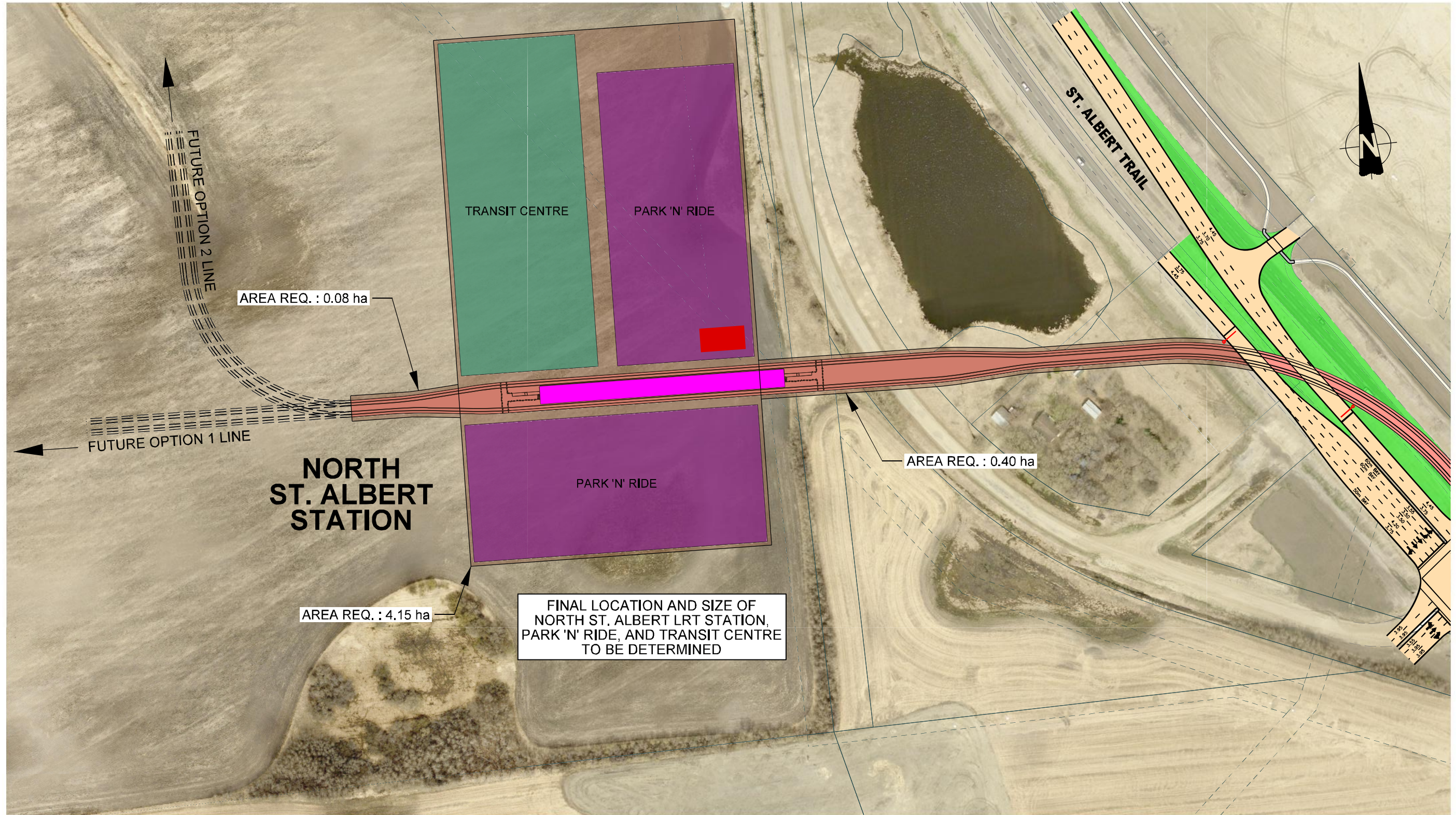


LEGEND

- | | | | |
|--|---------------------------|--|-------------------------|
| | LRT at Grade | | Crossing Gate |
| | Elevated LRT/Bridge | | Signalized Intersection |
| | LRT Station | | Direction Arrows |
| | Roadworks | | Pavement Markings |
| | Sidewalk | | Fence |
| | Landscaping | | Bus Stops |
| | Traction Power Substation | | |



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LEGEND

- LRT at Grade
- Elevated LRT/Bridge
- LRT Station
- Roadworks
- Sidewalk
- Landscaping
- Traction Power Substation
- Crossing Gate
- Signalized Intersection
- ↑ ↑ Direction Arrows
- Pavement Markings
- Fence
- * Bus Stops



CITY OF ST. ALBERT
LRT PLANNING STUDY
PROPERTY REQUIREMENTS
FIGURE B-4

Appendix C: Public Consultation Summary

St Albert LRT Planning Study

Stage 2 Meeting Summary

June 16, 2015

Held at: St Albert Legion, St. Albert

Staffed by:

- Mark Perry, AECOM
- Hassan Shaheen, ISL
- Bob McDonald, City of St Albert
- Will Steblik, City of St Albert
- Carol Craig, Kinnikinnick Studio

Invited: Chamber of Commerce had a specific stakeholder meeting with AECOM and City representatives. The general public was invited to a meeting held on June 16, 2015, for three City projects: Employment Lands, Transportation Master Plan and LRT Planning Study

Invitation: City Website, newspaper ad

Attendees: 45 in total

Format: Two roll plans showing the alignment were laid out on tables for the public to view. Detailed information on stations as well as some background information was provided on boards adjacent to the roll plans. A rolling PowerPoint presentation of background information was provided on a large screen monitor. Staff were available to discuss the project and a comment form was provided to fill in and return at the meeting or after the meeting via the LRT email or by fax. The comment form was also available with the presentation information on the City website.

Chamber Comments (on roll plan):

- Concern with (comment located adjacent to Village Station label):
 - Loss of lanes
 - Need to be able to extend
 - Reduce lane requirements
 - Concerns on loss
- Reduce walking distance Inglewood – closer (comment located at Gateway Village Shopping Centre label)
- Move middle (comment located at Gate Avenue label)
- Sidewalk impact (comment located south of Sterling Street on east side of alignment)
- Shift Downtown station and add centre station (located at south side of alignment at Sir Winston Churchill Avenue)
- First Staging to Downtown? Need transit connection (located at Downtown stations)
- Additional Station? (located between walking zones of Downtown and Boudreau stations)
- Future Expansion (located at North St Albert Station on west side)

Public Meeting Comments (on roll plans)

- Fix St Albert Trail - Jim (located south of Gateway Village Shopping Centre on east side of alignment)
- St Albert Trail capacity issues (located at Sterling Street label)
- Highest volume of car accidents here. Will huge increase in ped traffic worsen things? Will people run across 4 lanes of traffic to catch train? Pedestrian overpass? Pedestrian underpass? (located at Boudreau Station)
- Businesses will struggle with cars parking all day to ride LRT. Strong bylaw enforcement may be needed. (located at Boudreau Station)
- Very concerned about the tracks crossing the busy trail at ground level. Can it go further north? Under pass? (Located at North St Albert Station)
- Boudreau/Giroux traffic concern (located at Sturgeon County label, west of North Station)
- LRT, if in the St. Albert Trail corridor should be elevated so as not to affect vehicular traffic (*verbal comment*)
- Consider using land along the Ray Gibbon right-of-way for LRT (*a corridor comment received verbally*)
- City consider using the existing rail line through St. Albert for LRT (*a corridor comment received verbally*)

Comment Form Results:

Two (2) comment forms were received at the meeting – two returned via the LRT email after the meeting.

See attached summary of forms.

Overall Summary:

Approximately 45 people attended the public meeting which was set up to provide information on three current City of St. Albert projects: Employment Lands, Transportation Master Plan Update, and St. Albert LRT Planning Study. The public could visit the displays of one, two or all of the projects. Attendees were counted at the door and were not asked which project they were seeking information on.

A variety of issues were raised in the comments with no issue being raised significantly more than another (looking at numbers of comments related to a specific issue). Some comments related to the corridor were received, which were outside of the scope of this meeting.

General themes of comments were:

- safety of pedestrians trying to access the stations (sidewalks and crossings);
- parking implications for businesses;
- condition of St Albert Trail and traffic impact from loss of lanes (capacity);
- alignment issues: crossing St. Albert Trail at the north end and placing the alignment in the middle of St Albert Trail;
- timing and staging of construction;
- additional station required between Boudreau and Downtown stations.

Note: This summary will be revised if and when additional comments are received.

Revised upon receipt of comment form July 29, 2015.

Revised upon receipt of verbal comments July 30, 2015

COMMENT FORM

LRT Planning Study Alignment Selection

Four comment forms were received: 2 at the public meeting and 2 via fax/email

Some forms had more than one comment per question, and/or no comments for some questions.

1. Do you have any comments or concerns about the overall proposed LRT alignment?
 - Seems like a good plan
 - Concern – Grade on hill on trail – answered
 - Traffic flow across St. Albert Trail – congestion
 - Funding/costs to St Albert residents – tax increases
 - We should start with Park'n'Ride south of Anthony Henday and ALL THE REST OF THE LRT SHOULD BE ELEVATED ABOVE STREET LEVEL
 - No, the trail is the best choice – well I guess that is a comment
2. Are there any other criteria or parameters for alignment selection that should be considered?
 - Concerned about the final station location North West – not clear as to why the shift to the west
 - All parking should be underground
 - As I noted on the map with a sticky note, the EAST to WEST crossing of the highway concerns me greatly. Safety, Traffic Congestion. Underpass instead – go further north and stay on east side?
3. Do you have any comments specific to the Hebert Station, regarding location, connections for pedestrians and/or transit, etc.?
 - When will the transit station get build there? Your commuters are waiting
 - Hebert/St Albert Trail is a major intersection – Question – has the old gas station lot at/near gate/St Albert Trail been considered?
 - Lack of adequate parking
 - Concerned about pedestrians rushing across from west side against the traffic lights to catch train just arriving. Pedestrian over or underpass perhaps. Same for #5.

COMMENT FORM

4. Do you have any comments specific to the Downtown Station regarding location, connections, for pedestrians and/or transit, etc.?
 - Are there any water concerns re: flooding building the station on/over the river?
 - If DARP proceeds then this would be the most suitable location
 - Lack of adequate parking
 - Improve the pedestrian walkway under the bridge to reduce pedestrian traffic at intersection
5. Do you have any comments specific to the Boudreau Station regarding locations, connections, for pedestrians and/or transit, etc.?
 - No – glad it's close to the hospital
 - Lack of adequate parking
 - See #3. Also consider protected (from weather) pedway to hospital entrance
6. Do you have any comments specific to the North St. Albert Station regarding locations, connections, for pedestrians and/or transit, etc.?
 - See # 2. Concern is lack of access to North East St. Albert
 - Parking??
 - Make the LRT bridge over the Anthony Henday with a side for pedestrians-cyclists

Other Comments:

- Some displays are hard for “old” eyes to see. I must have missed timing and budget.

COMMENT FORM

Your responses to the following questions will assist us in planning future meetings.

Please indicate the extent to which you agree with each of the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
7. The LRT information presented at the event was clear and easy to understand.			1	1	1
8. The LRT information presented at the event was appropriate for my needs.			1	1	1
9. The session today increased my understanding of the Public Engagement Process and how my input will be used.			1	2	
10. There were good opportunities for discussion with others throughout the session.				1	2
11. The project team were approachable and open to discussion.				1	2
12. Participating in this session was a good use of my time.				2	1
13. The venue location was appropriate.				2	1

Please drop off your completed form at the welcome desk, or **fax to 780-488-2121**, or scan in and **email to LRTPlanningStudy@aecom.com**. You can also complete the survey online at www.stalbert.ca/LRTPlanningStudy .

Visit www.stalbert.ca/LRTPlanningStudy for project updates.



ST. ALBERT

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