

Valley Line West LRT Concept Plan Recommended Amendments

Lewis Farms LRT Terminus Site

Location	Concept Plan Amendment Recommendation	Approved 2011 Concept Plan
Lewis Farms LRT terminus site, 87 Avenue/West of Anthony Henday Drive	Adjust location of LRT Stop and LRV storage facility, increase size of Park and Ride facility to approximately 900 stalls	LRV storage facility located adjacent to LRT Stop, Park and Ride facility with approximately 275 stalls

Recommended Lewis Farms Terminus Site Layout



Site Description:

The Lewis Farms LRT terminus site is located adjacent to the existing Lewis Farms transit centre at 87 Avenue and west of Anthony Henday Drive. The site is constrained by the Transportation Utility Corridor to the east, the 87 Avenue arterial roadway to the north, a Natural Area to the west and a drainage pond to the south. The current site includes a transit centre and a 600 stalls park and ride facility.

- A - EXISTING LEWIS FARMS TRANSIT CENTRE
- B - LEWIS FARMS LRT STOP
- C - KISS & RIDE
- D - EXISTING PARK & RIDE
- E - EXISTING GRAVEL PARKING LOT
- F - NEW PARK & RIDE
- G - LRT STORAGE
- H - BIKE PARKING
- NATURAL AREA
- TRANSPORTATION UTILITY CORRIDOR
- STORM POND

General Considerations:

- Relocate Lewis Farms LRT Stop to improve passenger transfers to existing Lewis Farms transit centre and connection to adjacent park and ride facility
- Relocate Light Rail Vehicle storage facility to the southeast corner of site; adjacent to the TUC, existing storm pond and parking
- Increasing the size of park and ride to approximately 900 stalls to meet future demand, and relocate permanent infrastructure such as LRT platforms and paved parking stalls outside of the TUC.
- Opportunity to transition parking to Transit Oriented Development in the future
- Minimize impact to environment by not encroaching into adjacent Natural Area to the west
- With the confirmation of LRT terminus design at this site, the planning of the Potter Greens Special Study area and amendment of the Potter Greens Neighbourhood Structure Plan (NSP) can be completed
- Preliminary geotechnical testing indicates challenging soil conditions at Lewis Farms terminus site, requiring additional mitigations
- Overall, the project cost increase associated with this recommendation is approximately \$24 million (+/-30%).

87 Avenue/178 Street Grade Separation

Location	Concept Plan Amendment Recommendation	Approved 2011 Concept Plan
87 Avenue/178 Street	Grade separation, elevated LRT guideway over 178 Street along the south side of 87 Avenue	At-grade LRT crossing 178 Street along the south side of 87 Avenue

Recommended 178 Street Elevated Guideway



Site Description:

The intersection of 87 Avenue and 178 Street is located at the intersection of Belmead, Summerlea, Thorncliff and Aldergrove communities and is directly adjacent to the southwest corner of West Edmonton Mall. Land use in the northwest, southeast and southwest corners of the intersection are mostly single family residential homes. The area experiences high pedestrian traffic due to local activity nodes such as the West Edmonton Mall and the adjacent transit center.

General Considerations:

- Extension of LRT guideway across 178 Street eliminates conflict points between LRT and existing intersection
- No additional land is required
- Increases total project cost by approximately \$80 million (+/- 30%)
- Elevated guideway is 10 meter high and has an increased visual impact to adjacent properties

Operation Considerations:

- Improves vehicle traffic operations on 178 Street. Grade separation would enable traffic signal green times to be redistributed to potentially reduce the level of traffic congestion, compared to the at-grade arrangement. Turning movements that would cross the tracks will benefit the most.
- On average, the travel time savings for cross-traffic through the intersection would be approximately 14 seconds compared to the at-grade arrangement.
- LRT will have unimpeded crossing of 178 Street. The grade separation would provide an average LRT travel time savings of approximately 25 seconds per trip through the intersection.

Jasper Place Transit Centre Location

Location	Concept Plan Amendment Recommendation	Approved 2011 Concept Plan
Jasper Place Transit Centre	Maintain existing transit centre location west of 156 Street	Relocate Jasper Place Transit Centre to the southeast corner of Stony Plain Road/156 Street

Jasper Place Transit Centre



Site Description:

The Jasper Place transit centre is located in the northeast corner of the Glenwood community. The existing transit centre services the west and northwest regions of the City with 16 bus routes.

General Considerations:

- The existing Jasper Place Transit Centre terminal and busway renewal work is underway, scheduled to be completed in 2018.
- The space and access restrictions associated with the original transit centre location proposed at the southeast corner of Stony Plain Road and 156 Street is not desirable from bus operation perspective.
- It is estimated that 12 bus routes will be serviced from this transit centre with the completion of the Valley Line West LRT.
- Cost savings of \$20 million (+/-30%) with keeping transit centre at existing location

Stony Plain Road and 156 Street LRT Alignment Change and 156 Street LRT Stop Relocation

Location	Concept Plan Amendment Recommendation	Approved 2011 Concept Plan
Stony Plain Road, 155 Street to 156 Street; 156 Street, Stony Plain Road to 99 Avenue; and 156 LRT Stop	<p>At-grade track alignment with a 90 degree turn from the center of Stony Plain Road to the west side of 156 Street, transitioning back to the center of 156 Street at 99 Avenue.</p> <p>Relocate 156 Street LRT Stop to the west side of 156 Street, south of 100a Avenue</p>	<p>At-grade track alignment from the center of Stony Plain Road, diagonal connection between 155 Street and 100a Avenue, to center alignment on 156 Street.</p> <p>156 Street LRT Stop located in southeast corner of Stony Plain Road/156 Street, adjacent to relocated Jasper Place Transit Centre.</p>

Recommended Stony Plain Road and 156 Street LRT Alignment and LRT Stop Location



Site Description:

The intersection of Stony Plain Road and 156 Street is located between the Glenwood, Britannia Youngstown, Canora and the West Jasper Place communities. With the introduction of LRT on Stony Plain Road, the roadway configuration will be reduced to one lane in each direction along Stony Plain Road, east of 156 Street, and along 156 Street, south of Stony Plain Road. With the proposed concept plan amendment, the LRT alignment travels down the center of Stony Plain Road and turns 90 degrees through the Stony Plain Road and 156 Street intersection and continue down the west side of 156 Street before transitioning back to the center of 156 Street at 99 Avenue.

General Considerations:

- Greater integration between transit centre and LRT stop.
- Improved passenger experience. With the relocation of LRT Stop closer to the existing Jasper Place Transit Centre, the walking distance for bus-LRT transfers is approximately 75 metres and eliminates the need to cross 156 Street roadway.
- Fewer properties required in comparison to the approved concept. Reduction in property acquisition cost by approximately 20%. More land available in the immediate area suitable for Transit Oriented Development.
- Access modification required for properties adjacent to the recommended track alignment along the west side of 156 Street, between Stony Plain Road and 99 Avenue.
- Closure of 100a Avenue road access onto 156 Street.
- Recommended LRT alignment and stop location eliminates conflicts with the Orange Hub parkade structure and building access.
- An amendment to the existing Jasper Place Area Redevelopment Plan may be required.
- The cost of the proposed change is in the same order of magnitude as the approved concept design.

Operation Considerations:

- Due to geometric constraints the westbound left, northbound left, and southbound left turn movements will not be provided at the Stony Plain Road and 156 Street intersection.
- Southbound queue on 156 Street will likely reach 103 Avenue or beyond during afternoon peak period
- During the afternoon peak period in the 2027 year horizon, approximately 200-500 vehicles/hour in the southbound direction on 156 Street, between 107 Avenue and 95 Avenue, will likely divert to adjacent north-south corridors.
- During the afternoon peak period in the 2027 year horizon, approximately 100-250 vehicles/hour in the eastbound direction on Stony Plain Road, between 163 Street and 149 Street will likely divert to adjacent east-west corridors.
- The LRT trains will need to reduce speed to negotiate the bend through the intersection thus adding approximately one minute to the run time.
- The tighter curve radius may introduce wheel squeal and higher operation and maintenance costs.

Stony Plain Road/149 Street Grade Separation

Location	Concept Plan Amendment Recommendation	Approved 2011 Concept Plan
Stony Plain Road/149 Street	Grade separation of vehicle traffic, urban interchange separating center running at-grade LRT on Stony Plain Road with 149 Street north-south traffic	At-grade LRT crossing 149 Street along the center of Stony Plain Road

Recommended 149 Street Urban Interchange



Site Description:

The intersection of Stony Plain Road and 149 Street is located at the intersection of the Canora, Grovenor, Crestwood and West Jasper Place communities. This intersection is also located adjacent to the Mackinnon Ravine Park which consists of a trail network that connects to the North Saskatchewan River Valley. With the introduction of LRT on Stony Plain Road, the roadway configuration will be reduced to 1 lane in each direction. With the proposed amendment, the LRT alignment travels down the center of Stony Plain Road, crossing over the depressed 149 Street roadway via a bridge structure, with the nearest at-grade LRT Stop located between 150 and 151 Street.

General Considerations:

- To balance property impact and access management, a single-point diamond interchange with limited ramp access is recommended.
- To accommodate the grade separation, additional property will be required along the west side of 149 Street from north of 102 Avenue to south of 100 Avenue.
- A storm water storage tank will need to be constructed beneath the underpass to accommodate major storm events. The facility will connect to the existing storm tunnel in MacKinnon Ravine.
- An environmental impact assessment will be undertaken for MacKinnon Ravine.
- An amendment to the existing Jasper Place Area Redevelopment Plan may be required.
- Landscaping can be provided on the bridge structure to enhance the area for pedestrians on Stony Plain Road.
- LRT alignment and the 149 Street stop location are the same as approved in the Concept Plan
- Increases cost by approximately \$160 million (+/-30%), including construction and land acquisition cost.

Operation Considerations:

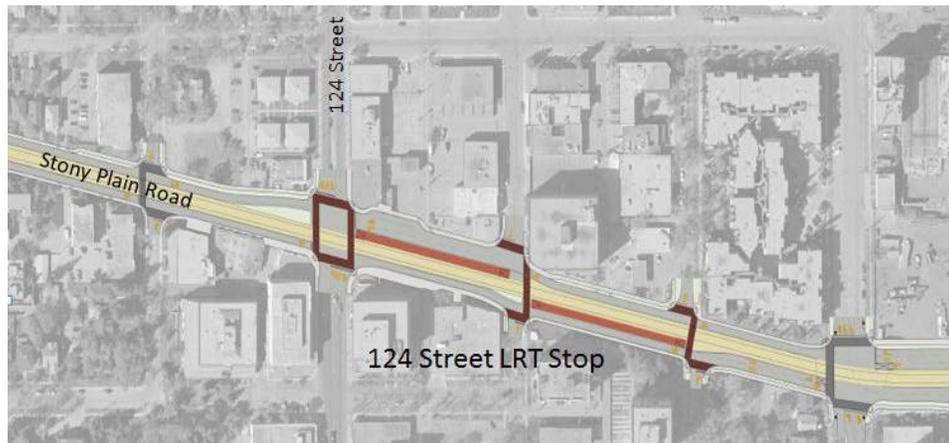
- The underpass will provide enhanced capacity for northbound and southbound traffic on 149 Street between 100 Avenue and 107 Avenue.
- With the north-south traffic of 149 Street grade separated from LRT, and limiting left turning movements to northbound to westbound and westbound to southbound, the traffic signal green times can be redistributed to benefit LRT and traffic along Stony Plain Road.
- The major turning movements, northbound from 149 Street to eastbound on Stony Plain Road and westbound on Stony Plain Road to southbound on 149 Street would be maintained. The westbound right turn, eastbound left turn, southbound left and right turns would not be provided at this location. The proposed interchange configuration will help to minimize the infrastructure footprint while accommodating major traffic patterns in the area.
- It is anticipated that additional traffic in the range of 1000 vehicles per hour for the peak direction will be attracted to 149 Street from adjacent roadways.
- In the 2027 year horizon afternoon peak scenario of no LRT, the majority of movements through the intersection of Stony Plain Road and 149 Street are anticipated to perform at a Level of Service D or better. The northbound left turn movement is anticipated to perform at a Level of Service E, with a traffic delay in the range of 1 minute.

- With the at-grade LRT on Stony Plain Road and a 149 Street underpass design in the 30 year horizon afternoon peak scenario, the eastbound and westbound through movements are anticipated to perform at a Level of Service B, with a traffic delay in the range of 0.5 minute. The westbound and northbound left turn movements are anticipated to perform at a Level of Service D and E respectively, with traffic delays in the range of 1 minute.

124 Street LRT Stop Relocation

Location	Concept Plan Amendment Recommendation	Approved 2011 Concept Plan
124 Street LRT Stop	Relocate 124 Street LRT Stop one block east, centered on 123 Street	124 Street LRT Stop on Stony Plain Road, centred on 124 Street

Recommended 124 Street LRT Stop Location



Site Description:

The 124 Street LRT stop consists of a staggered side loading platforms centered around 124 Street. It is located in the Westmount community surround by a mix of residential and commercial land use.

General Considerations:

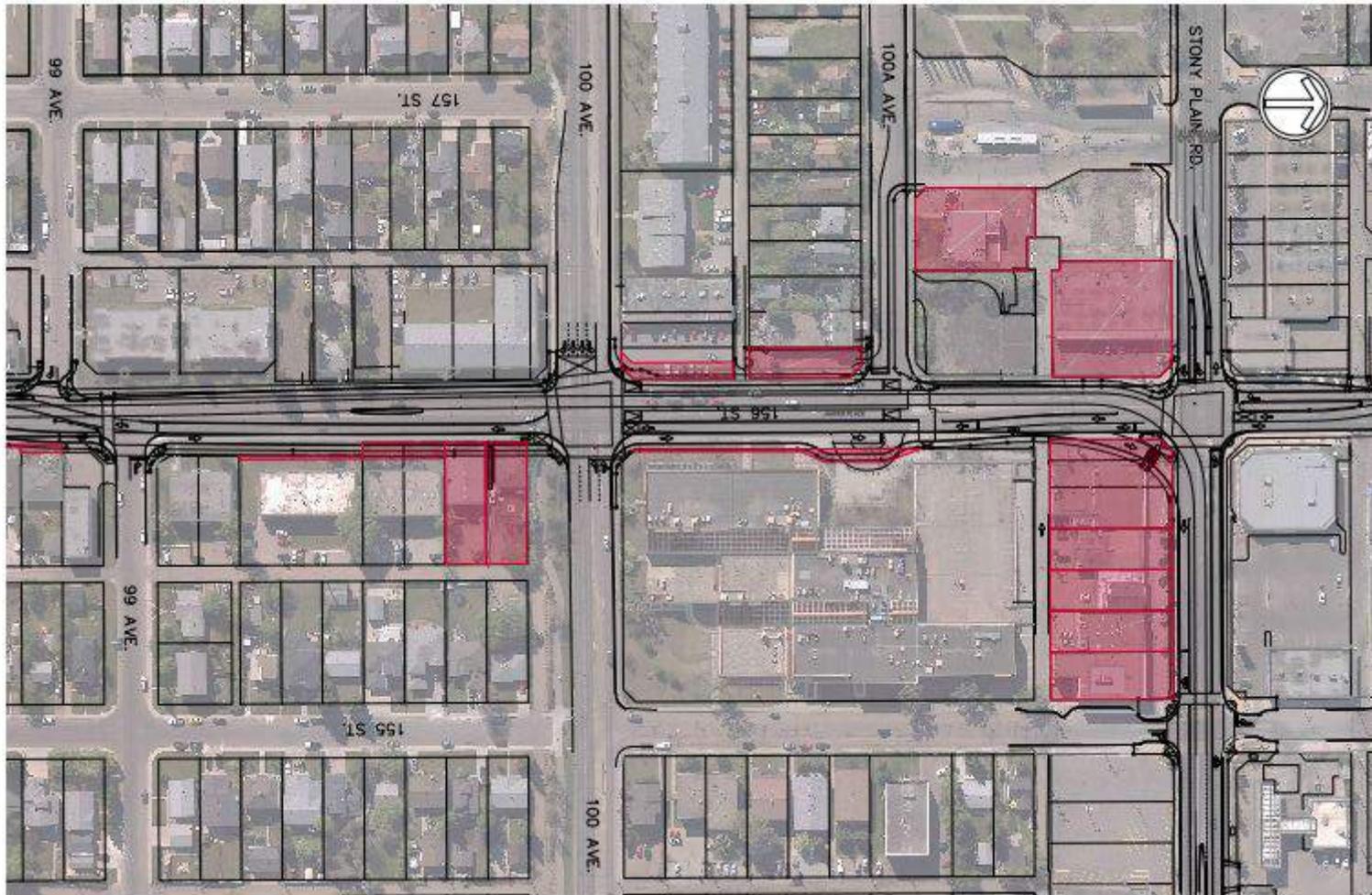
- The original LRT stop platform cannot be accommodated between 124 and 125 Street due to constraints associated with existing roadway grades and building elevations.
- Relocation of the LRT stop one block to the east will help achieve a level platform while providing opportunity to improve integration with adjacent roadway and properties.
- The LRT Stop will be one block further away from residences west of 124 Street and one block closer to the 120 Street stop.
- The 124 Street business area will continue to be well-served.
- No changes to the intersection configuration of Stony Plain Road at 124 Street.
- The cost of the proposed change is in the same order of magnitude as the approved concept design.

General Considerations:

- The recommended sidetrack is approximately 185 metre in length, located between 109 and 111 Street.
- The availability of a sidetrack improves LRT system operation.
- The sidetrack will allow for staging of LRT trains to add capacity for special events being held Downtown. The ability to stage trains close to the special events allows a quick response to increase LRT service.
- Disabled LRT vehicles could also be held temporarily on the sidetrack until the end of the day when they could be taken to the maintenance facility without impacting LRT service. A disabled vehicle on the main LRT track can have LRT system delays due to trains having to operate on a single track around the disabled vehicle.
- The sidetrack would utilize available median space and thus not require any shift in road alignment or additional property.
- The original plan for LRT staging track on 107 Street, south of 102 Avenue, would have been temporary until the LRT expands south on 107 Street as envisioned by the LRT Network Plan and Downtown LRT Concept Plan.

Preliminary Land Requirements for Concept Plan Recommended Amendments

PRELIMINARY LAND REQUIREMENT -
STONY PLAIN ROAD & 156 STREET AREA RECOMMENDATION



PRELIMINARY LAND REQUIREMENT -
STONY PLAIN ROAD & 149 STREET AREA, RECOMMENDED GRADE SEPARATION



PRELIMINARY LAND REQUIREMENT - STONY PLAIN ROAD & 124 STREET AREA, RECOMMENDED LRT STOP RELOCATION

