

Challenges for West and Southeast LRT Line

Recommendation:

That the November 15, 2011, Transportation Services report 2011TS0375 be received for information.

Report Summary

This report provides an overview of the signal and operational challenges experienced following the opening of the South LRT and if similar experiences could be expected for the West and Southeast LRT.

Previous Council/Committee Action

At the May 25, 2011, Transportation and Public Works Committee meeting, the following motion was passed:

That Administration provide a report to Transportation and Public Works Committee outlining:

1. What steps have been taken to alleviate the level crossing challenges on 51 Avenue and 111 Street and what challenges still exist?
2. Whether the steps that have been taken to alleviate the level crossing challenges on 51 Avenue and 111 Street can be applied to the current issues facing the West and Southeast LRT line.
3. What challenges and criteria existed that led to the decision to go underground at 114 Street and Belgravia and 111 Street and Argyll, and whether this analysis

can be compared to the situation on the West and Southeast LRT Lines.

4. What factors led to the decision to rule out underground LRT at University Avenue and 114 Street.

Report

Response to Question 1 and 2 51 Avenue and 111 Street Intersection and LRT Crossing

The first month of operation of the South LRT identified two key areas of traffic delay and disruption that were not anticipated during the planning and engineering phases. The variability in trains approaching and pre-empting the traffic signal at 51 Avenue were greater than anticipated and designed for. This was the first time that Edmonton experienced LRT operation through a major signalized intersection and a considerable amount of signal adjustments were required to reflect the operation in the field. The most significant adjustment included modifying the signal sequencing so that the traffic movements disrupted during the LRT pre-emption were provided with additional green time following the train crossing.

Longer delays for pre-empted traffic directions are the reality of operating an at-grade LRT that has full pre-emption over other traffic. Since this first month of operation, train variability has been reduced and the traffic signal timings at 51 Avenue have been reviewed and updated to ensure a balanced delay is achieved for the movements delayed by the trains.

All lessons learned from the existing LRT operational requirements and traffic signal operations are being reflected in future LRT designs. With the West and Southeast LRT designs, we are moving towards a more urban LRT design which creates a more integrated LRT/automobile signal system. The level of LRT priority will be able to be adjusted depending on the LRT's performance to the timetable, road conditions, and time of day. This will inherently provide for a more balanced approach to giving relative priority to the LRT while maintaining improved ability to also manage traffic delay through the traffic signals. It is also possible to model this type of operation with traffic simulation software.

Response to Question 3 Rational for LRT Underpasses at Belgravia Road – 114 Street and at 61 Avenue – 111 Street

The South LRT line is based on a design philosophy that features a considerable segregation between the LRT and vehicular traffic. As part of the concept planning work for the South LRT, traffic analysis was undertaken and showed that significant traffic congestion would occur at the Belgravia Road and 114 Street intersection with an at-grade LRT crossing. This, together with the limited number of alternative traffic routes from southwest Edmonton to the University, and the concerns expressed at the time with the closure of Keillor Road, the decision was made by City Council to construct an LRT underpass beneath Belgravia Road.

Similar traffic analysis was conducted for the intersection of 61 Avenue and

111 Street. While the results of this review suggested that traffic impacts would not be as severe as Belgravia Road, Administration recommended to construct an underpass, as it was possible to do this without the need to purchase properties and minimize risk of future congestion.

Response to Question 4 Decision Not to Construct an Underpass at University Avenue and 114 Street

The decision not to construct an underpass at University Avenue and 114 Street followed extensive discussion with the McKernan and Belgravia communities and subsequent debate by City Council in 1990. Some of the key considerations for the decision to maintain LRT above grade through this intersection included the additional cost and property impacts associated with an underpass, the desire by the adjacent communities to limit the vehicular capacity along 114 Street, and the fact that an underpass at the University Avenue intersection would likely have resulted in a completely underground LRT line between the Heath Sciences and Neil Crawford Stations.

The intersection at University Avenue and 114 Street is a single point of congestion in the area and certain movements (i.e. eastbound to southbound right turn in the PM period and northbound to westbound left turn in the AM period) are experiencing delays exceeding one signal cycle. The congestion issues being experienced are once again predominantly associated with the pre-empt priority that has been given to the LRT. The West and Southeast LRT lines will be

utilizing a train priority system that is fully integrated with the vehicle traffic signals and will be able to better balance LRT and vehicle delays. Furthermore, the West and Southeast LRT functional plans provide for more simplified traffic signal operation, smaller intersections, and have the LRT operating through intersections in such a way to minimize the impact of the LRT on traffic movements.

Corporate Outcomes

The transportation system is integrated, safe, and gives citizens a choice to their mode of movement.