
TO: CITY MANAGER **DATE:** 2008 March 12

FROM: DIRECTOR PLANNING & BUILDING **FILE:** PL 90300 – 20
Ref: ALRT - Evergreen Line

SUBJECT: EVERGREEN LINE RAPID TRANSIT PROJECT BUSINESS CASE

PURPOSE: To advise Council on the “Evergreen Line Rapid Transit Project Business Case” recently announced by the Province and TransLink.

RECOMMENDATIONS:

1. **THAT** Council request the Province and TransLink to undertake an evaluation of the Business Case for LRT technology for the Northwest Corridor, taking into account the concerns and questions raised in this report with regard to Business Case 2008 ALRT assumptions on service speed, ridership, operating and capital costs, inter-operability and community service, while retaining proposed funding commitments for the Northeast Sector rapid transit service.
2. **THAT** Council affirm its support for the Northwest Corridor as the preferred route for the Evergreen Rapid Transit Line, and request a Provincial and TransLink commitment to adhere to the conditions for Lougheed Town Centre as outlined in Section 4.0 of this report.
3. **THAT** Council request the Province and TransLink to re-consider the advisability of the anticipated P3 funding approach given issues raised with regard to public accountability and transparency, transfer of revenue shortfalls to the public, and certainty of system integration with local communities.
4. **THAT** the Province and TransLink be requested to undertake further consultations with affected municipalities once the revised Business Plan has been prepared.
5. **THAT** a copy of this report be forwarded to Hon. K. Falcon, Minister of Transportation, Province of BC; L. Blain, Chief Executive Officer, Partnerships BC.; D. Parker, Chair, Board of Directors, TransLink, F. Cummings, Vice-President, Construction, TransLink and to Burnaby MP’s and MLA’s.
6. **THAT** a copy of this report be forwarded to the Mayors of the Northeast Sector Municipalities and to the Transportation Committee of Council.

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REPORT

1.0 SUMMARY

On 2008 February 1, the Province and TransLink released the “*Evergreen Line Rapid Transit Project – Business Case*” (Business Case 2008). This document reflects discussions between TransLink and the Province over the past few months on the previous business case submitted by TransLink in 2007 October to the Province and the Federal government. Entitled “*The Case for the Evergreen Line*”, this business case (Business Case 2007) was based on the preliminary design for LRT using the Northwest corridor which was developed in consultation with the affected municipalities of Burnaby, Port Moody, Coquitlam and Port Coquitlam.

The 2008 February 01 Provincial announcement is not a commitment to begin design or construction, for the Evergreen Line, but rather is an announcement that this Business Case has been completed. The document sets out the rationale for the choice of rapid transit technology and corridor options. The Province also announced that it will increase its financial commitment from \$170M to \$400M, and will use this business case to seek matching funding from the Federal government. The announcement also set a 45 day consultation period prior to a final decision on the routing of the Evergreen Line.

Business Case 2008 represents a significant departure from Business Case 2007 in adopting ALRT (Advanced Light Rapid Transit) as the preferred rapid transit technology - SkyTrain or a comparable technology. However, as the announcement states that the Province’s decision has been made on ALRT for the Evergreen Line, the consultation period is intended by TransLink and the Ministry of Transportation to be used to make a final decision on routing only. Release of Business Case 2008 initiates a consultation period of 45 days (by 2008 March 17) for area mayors to provide feedback. On 2008 March 10, the Councils of the City of Coquitlam and the City of Port Coquitlam considered staff reports/presentations on Business Case 2008 and have supported the Northwest Corridor as the preferred corridor for the Evergreen Line.

Recognizing that the conclusions in Business Case 2008 regarding rapid transit technology and the route for the Evergreen Line are significantly different from those of the Business Case 2007 (approved by the former TransLink Board) and the previous technical studies of rapid transit to the NE Sector, Council, on 2008 February 04, requested staff to prepare a report on the new Business Case for the Evergreen Line as compared to proposals that had previously been put forward for the Evergreen Line.

This report provides a comparison of this business case (Business Case 2008) and the previous business case produced by TransLink (Business Case 2007) with respect to technology, corridor, funding and procurement. The report also presents the results of a staff review of the assumptions and resulting ridership figures presented in Business Case 2008 used to support the selection of ALRT technology, provides an assessment of the preferred route for rapid transit service to the Northeast sector and provides staff views on the assumptions and validity of the basic conclusions of Business Case 2008.

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Key findings in this staff report include:

- Business Case 2008 concludes that ALRT is the preferred technology primarily due to its higher ridership, better service to transit riders and the capability for system integration with the Millennium Line. However ridership estimates appear to exaggerate the case for ALRT by overestimating ALRT ridership and underestimating LRT ridership and also assume that a fully integrated system - interoperable with ALRT (and not LRT) - will increase ridership by eliminating the inconvenience and delay for riders transferring from one line to another. While interoperability is possible, the ridership estimates for ALRT assume increased ridership from system integration for ALRT alone (not for LRT) and don't adequately account for the potential difficulties associated with integrating the Evergreen and Millennium Lines.
- For Burnaby, the choice of ALRT as the preferred technology would also mean the loss of the Cameron Station and the noise and visual intrusion associated with an elevated guideway in the median of North Road. LRT with the inclusion of a Cameron Station would provide better service to the community in the Lougheed Town Centre area.
- The evaluation of the two corridors in the Business Case notes the Northwest Corridor as superior to the Southeast Corridor on almost every account including ridership, cost/benefit, development potential and ease of implementation. Although the Northwest Corridor is clearly the superior route for rapid transit the Business Case reports that the Northwest Corridor as having "slight technical advantages" over the Southwest Corridor.
- Burnaby Council has consistently supported the Northwest alignment for rapid transit to the Northeast Sector. However, recognizing the potential impacts of a rapid transit alignment along North Road, the City has set a number of conditions which continue to be appropriate requirements to guide the planning and construction of rapid transit through Lougheed Town Centre.
- The capital cost for LRT in the Northwest Corridor has increased from \$970M in the business case for LRT to \$1.25B in Business Case 2008 in the short period since the publication of Business Case 2007. This LRT cost estimate is important as it is used to make the case for LRT being almost as expensive as ALRT at \$1.4B. As Business Case 2008 does not provide an explanation for this increase it is difficult to support the contention that ALRT is superior from a benefit cost perspective.
- Based on current funding commitments of \$400M from TransLink and \$400M from the Province, the current funding shortfall for the Evergreen Line using ALRT has increased to \$533M which is greater today than the \$400M it was 16 months ago for LRT. Business Case 2008 suggests that the \$533M funding shortfall will be addressed through a \$343M contribution from the federal government. Making up the difference will also require a further commitment of \$180M from TransLink and \$10M from the Province. Business

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Case 2008 suggests that this increase could come from the additional fare revenue that would be generated by an ALRT Line.

- By suggesting fare revenue as a source of TransLink funding, Business Case 2008 implies that this funding could come to TransLink through a Public Private Partnership Concessionaire arrangement similar to that of the Canada Line. The other factors leading towards a P3 approach to procurement of the Evergreen Line are the involvement of Partnerships BC in developing Business Case 2008 and the likelihood of the federal contribution being largely derived from federal partnerships funding.
- The experience with the Canada Line has shown that this type of procurement raises a number of issues for municipalities and the public including transparency, the absence of municipal involvement in the procurement process and the lack of municipal and general public input into the final product.
- Should the proposed funding commitments of \$410M from the Province, \$410M from the Federal Government, and \$400M from TransLink be obtained, it would be sufficient to fund the Evergreen LRT line, without the additional funding or debt from TransLink.

In response to these concerns, issues, questions and observations, this report recommends that:

- the Province and TransLink undertake to re-evaluate the choice of technology and prepare a business case of LRT technology for the Evergreen Line based on the concerns and questions raised in this report with regard to service speed, ridership estimates, operating and capital costs, inter-operability, community service and other factors while retaining the proposed funding commitments for the northeast sector rapid transit service;
- Council support rapid transit in the Northwest Corridor, and request Provincial/TransLink commitment to adhere to these conditions, as outlined in this report;
- the Province to re-consider the advisability of the anticipated P3 funding approach given issues raised with regard to public accountability and transparency, transfer revenue shortfalls to the public, and certainty of system integration with local communities; and
- that the Province and TransLink be requested to undertake further consultations with affected municipalities once the revised business plan has been prepared.

2.0 RAPID TRANSIT TECHNOLOGY CHOICE

2.1 Business Case 2008 Conclusions on Technology

Business Case 2008 concludes that Advanced Light Rapid Transit (ALRT or SkyTrain-type technology) is the “clearly preferred technology”. The change in rapid transit technology from LRT (Light Rail Transit) to ALRT (Advanced Light Rail Transit) is the most striking conclusion of Business Case 2008.

ALRT in this case refers to a particular class of rail transit which is automated (driverless) and therefore must be fully separated from traffic generally either on an elevated or underground

guideway. As three vehicle manufacturers are currently able to supply “SkyTrain-like” vehicles, Business Case 2008 uses the term ALRT to refer to a generic class of vehicles of which SkyTrain is only one type. The term SkyTrain refers to vehicles currently manufactured by Bombardier.

In accordance with the materials presented in the Business Case 2008, ALRT is viewed as the preferred technology from the perspective of assumptions and estimates reported in terms of operating characteristics (particularly the faster travel time), ridership and system integration.

2.2 Staff Review and Assessment

The following provides a staff assessment of the information and resulting conclusions presented in Business Case 2008 in terms of the assumptions and base information presented in the Business Case 2008 in the areas of operating characteristics, ridership and system integration (interoperability).

2.2.1 Operating Characteristics

The following *Table 1* compares the assumptions for ALRT and LRT operating characteristics in Business Case 2008 with those for LRT in Business Case 2007 in relation to service frequency, operating speed, capacity, line distance, stations and total travel time.

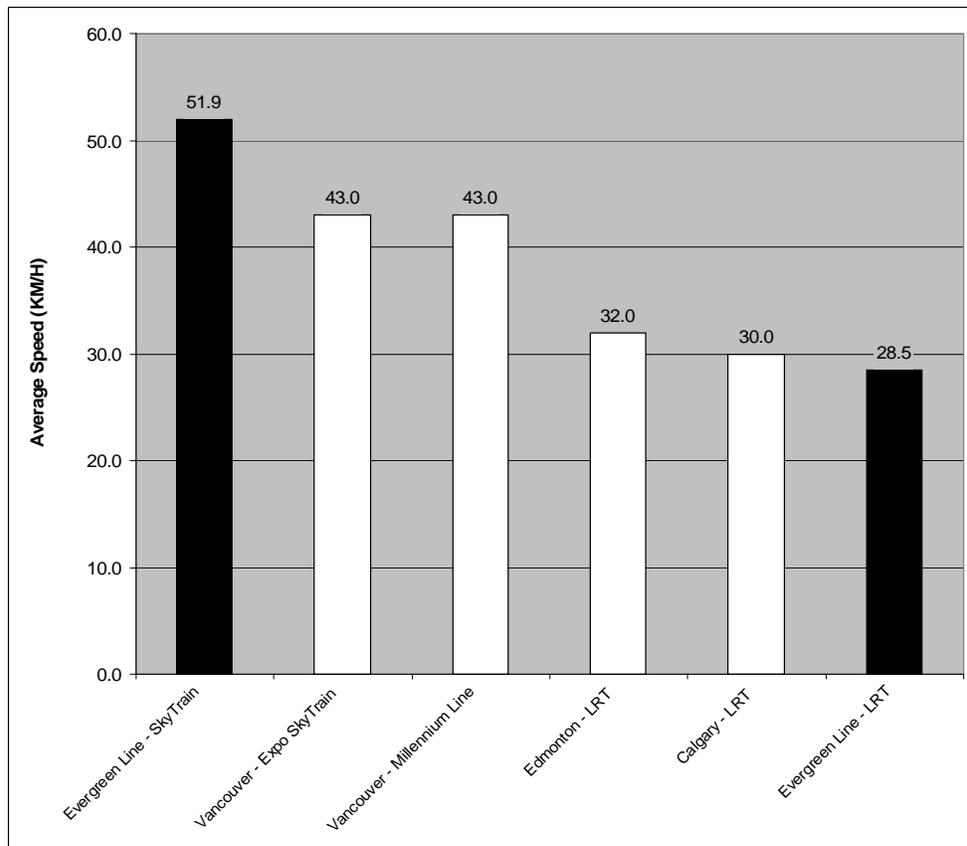
Table 1 Comparison of ALRT/LRT Operating Characteristics Business Cases 2007 and 2008

Operating Characteristic	Business Case 2007	Business Case 2008	
	LRT	ALRT	LRT
Peak Period service frequency (minutes)	6	3	5
Maximum Speed (km/hr)	80	80	60
Peak Hour Capacity	4,800	10,400	4,080
Total Distance (km)	11.2	10.9	11.2
Stations	12	8	12
Total Travel Time (min)	24	12.6	23.6

While many of the assumptions are the same in both business cases, Business Case 2008 assumes a lower maximum speed for LRT of 60 kph than Business Case 2007 (80 kph). The total travel time from Coquitlam Town Centre to Lougheed Town Centre for LRT is 23.6 minutes which is almost the same as the travel time of 24 minutes in Business case 2007. However, the estimate put forward for travel time for ALRT in Business Case 2008 at 12.6 minutes is almost half that of LRT. The faster travel time is the major factor in generating predictions of higher ridership for ALRT.

As speed is a major factor in developing the forecasted ridership for the two technologies, the Evergreen Line average speeds forecast in Business Case 2008 were compared by staff to average speeds on existing Canadian rapid transit systems as shown in **Figure 1**.

Figure 1 Comparison of Forecast Evergreen Line Average Speeds (NW Corridor) Versus Existing Rapid Transit System Average Speeds



Source of existing rapid transit system ridership: Halcrow Group, "RAVP Richmond/Airport/Vancouver Rapid Transit Project Definition Phase Final Report on Ridership and Revenue", January 2003, Tables 2.2 and 2.4

The results of this comparison show that the forecast average speed for the ALRT Evergreen Line option is over 20% higher than that of the existing Expo and Millennium SkyTrain Lines while the forecast average speed for the LRT Evergreen Line option is lower than the two existing LRT systems (over 10% lower than Edmonton and about 5% lower than Calgary). This raises a concern about the accuracy of the differential between the two Evergreen Line average speed estimates (SkyTrain versus LRT) contained within Business Case 2008, as it likely skews the ridership results.

2.2.2 Ridership

The ridership estimates in Business Case 2008 are important because they are used to make the case that ALRT is a superior technology to LRT. Business Case 2008 attributes the higher ridership of ALRT to two factors: the operating characteristics of ALRT (primarily faster service), which makes it more attractive to new transit riders who previously drove their car or rode the West Coast Express, and to the interoperability of ALRT which would purport to allow trains on the Evergreen Line to be through routed along the Millennium Line

Business Case 2008 states that ALRT will produce two and a half times the ridership of Light Rail Transit (LRT) and that ridership of an ALRT line is more consistent with the ridership goals in the Provincial Transit Plan announced in 2008 January. **Table 2** compares the ridership estimates in Business Case 2007 for LRT and Business Case 2008 for ALRT and LRT in the Northwest Corridor.

Table 2 Comparison of Evergreen Line ALRT/LRT Ridership in 2021/2031 Business Cases 2007 and 2008

Ridership	Business Case 2007	Business Case 2008	
	LRT	ALRT	LRT
AM Peak Hour Boardings (2021)*		6,850	2,700
AM Peak Hour Boardings (2031)*		9,530	3,720
Annual Boardings 2021(000's)*	10,700	22,900	9,000
Annual Boardings 2031 (000's)*		31,800	12,400
Maximum Load in the Peak Direction (2021 AM)	4,800	n/a	n/a

* Boardings refers to the number of times a transit rider boards the Evergreen Line

In staff's review of the ridership estimates, it is noted that the 2021 LRT ridership of 9M boardings in Business Case 2008 is lower than the 10.7M annual boardings estimated in Business Case 2007. The ridership estimates in Business Case 2007 were developed through a forecasting process undertaken by an independent consultant and were based on established Metro Vancouver regional population and employment estimates. In response to questions on this issue, Partnership BC offers no explanation for this apparent underestimation of LRT ridership.

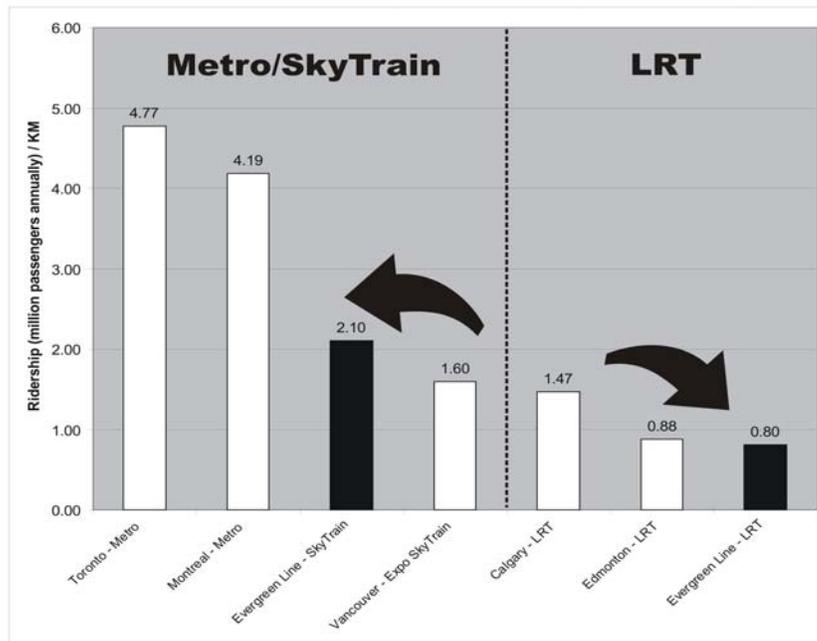
It is important to note, that while the Business Case 2008 estimates of LRT ridership in 2021 seem to be markedly lower than expected, the ridership estimates for ALRT in 2021 appear to be higher than would be expected in reference to established SkyTrain ridership

benchmarks. Business Case 2008 projects that the annual ridership of the Evergreen Line for ALRT in 2021 will be 22.9M boardings and in 2031 will be 31.8M boardings.

As a point of comparison, the total annual number of boardings on the entire SkyTrain System in 2006 was 35.3M boardings. This means that the Business Case 2008 has assumed that in 23 years the number of riders on the 11 km. Evergreen Line with 8 stations serving the Northeast Sector cities of Coquitlam Port Moody Port Coquitlam and part of Burnaby will be almost as high as the current ridership on the entire 50km SkyTrain Line with 33 stations and directly serving Vancouver, Burnaby, New Westminster and Surrey. This clearly raises questions as to whether the Business Case 2008 estimates are realistic or achievable.

As shown in **Figure 2**, the Evergreen Line ridership forecasts contained in the Business Case 2008 were compared to ridership on existing Canadian rapid transit systems. To allow for this comparison between the different systems, the total annual ridership (in millions per annum) was divided by the total length of the rapid transit system to provide a ratio of annual ridership per kilometre. This same calculation was also performed for the forecast ridership for the Evergreen Line SkyTrain option and the Evergreen Line LRT option.

Figure 2 Comparison of Forecast Evergreen Line 2021 Ridership (NW Corridor) Versus Actual Rapid Transit System Ridership



Source of existing rapid transit system ridership: Halcrow Group, "RAVP Richmond/Airport/Vancouver Rapid Transit Project Definition Phase Final Report on Ridership and Revenue", January 2003, Table 2.3

The results of this analysis show that the forecast annual ridership per kilometer for the SkyTrain Evergreen Line option is over 30% higher than that of the existing Expo SkyTrain Line while the forecast annual ridership per kilometer for the LRT Evergreen

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Line option is lower than the two existing LRT systems (over 40% lower than Calgary and about 9% lower than Edmonton). This raises a concern about the accuracy of the differential between the two Evergreen Line ridership estimates (ALRT versus LRT) contained within Business Case 2008.

If the ridership estimates for ALRT reflected actual ridership on comparable systems like the Expo Line, the 2021 annual ridership for ALRT would be 17.5M boardings instead of the 22.9M boardings forecasted using the transportation model. Similarly, the 2021 LRT annual ridership if based on actual ridership from the Calgary system would be 13.2M instead of the 9M estimated in Business Case 2008. Based on ridership of existing rapid transit systems, the ridership of LRT would be more comparable to that of ALRT than is presented in Business Case 2008.

The higher than expected ridership for ALRT may be partly due to the overestimation of auto users and West Coast Express riders attracted to the Evergreen Line. As shown in **Table 3**, the Business Case 2008 purports that significantly more new riders are attracted to ALRT from the auto modes than are attracted to LRT.

Table 3 Auto and West Coast Express (WCE) Trips Attracted to Evergreen Line in 2021

Impact	LRT 2021	ALRT
	Northwest Corridor	Northwest Corridor
Change in Auto Trips (000's)	(2,838)	(4,511)
Change in WCE Boardings (000's)	(416)	(2,327)

The ridership model concludes that ALRT in the Northwest Corridor attracts 2,327,000 boardings from the West Coast Express while LRT attracts only 416,000 boardings. However, in determining the impact upon WCE ridership, the ridership model only takes into account travel time, and not the transfer time from one system to the other. It assumes that WCE riders from the Fraser Valley to Downtown Vancouver will transfer to the Evergreen and Millennium Lines and those WCE riders from the NE Sector will switch. Transit user surveys suggest, however, that most WCE users have a stated preference for the service and would continue to use WCE even if it was slower than the Evergreen Line. If a large number of the 2,327,000 WCE riders which are assumed to switch to ALRT due to its faster travel time stay on the West Coast Express, then ALRT ridership would be substantially lower than the stated 22.9M boardings in 2021.

The above considerations raise questions about the ALRT ridership estimates in Business Case 2008 which are based solely on the faster service offered by SkyTrain. Clearly, the WCE example proves there are other factors which determine an individual's choice of

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travel mode. In Business Case 2007, LRT was offered as a more user friendly service with superior customer features including the following:

- More stations within closer walking distance to where people live
- Safer and secure stations with low platforms and visible by neighbours and passing vehicles,
- Stations with easy access from well signed and lit pedestrian routes and with traffic signals to permit safe crossing of roads
- Stations integrated into their communities including public improvements including improved sidewalks, landscaping

All of these features are important service quality considerations favouring LRT that determine the attractiveness of a rapid transit service to the customer, but which are not fully considered in the Business Case 2008 where ridership estimates were based on travel time alone.

2.2.3 Interoperability

The other ridership factor which Business Case 2008 cites as favouring ALRT over LRT is that an ALRT Evergreen Line will be fully integrated or interoperable with the Millennium and Expo Lines. Thus, it was concluded that with similar technologies, Evergreen Line ALRT trains could be routed through to the Millennium Line without the necessity for a transfer. According to the Business Case, this through service could only be provided by an ALRT technology very similar to SkyTrain.

It is assumed that interoperability will be possible with ALRT, however, while through-routing of trains from one line to another is theoretically possible, Business Case 2008 is not explicit as to how full system integration would be accomplished. Staff would note that it would be difficult to construct the guideway and track work to permit interoperability while the Millennium Line is in operation. In addition, the SkyTrain guideway at Lougheed Station was designed and constructed with a separate platform as a transfer station and not with a through-routing configuration.

The ALRT ridership estimates in Business Case 2008 assume that a fully integrated system with ALRT will increase ridership by eliminating the inconvenience and delay for riders transferring from one line to another. While interoperability is possible, staff have concerns that the Business Case 2008 has not determined the feasibility of accommodating the through-routing of trains through the Lougheed Station, and as a result, the cost of this modification may not be accounted for, while the option is clearly used to support higher ridership estimates for ALRT over LRT.

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2.3 Summary of Staff Assessment

In summary, while staff have not been provided with the technical work supporting the conclusions of Business Case 2008, the document makes an argument for the selection of ALRT as the preferred technology for the Evergreen Line based primarily on generated higher ridership for ALRT and the potential for integrating service on the Evergreen Line and the Millennium Line. In accepting the Business Case 2008 argument for ALRT, the Province has made senior government funding (both Provincial and Federal) for the Evergreen Line conditional on ALRT.

To support the case for ALRT over LRT, Business Case 2008, using a forecasting process that relies on travel time as the primary determinant, appears to substantially overestimate ALRT ridership and underestimate LRT ridership. The analysis of existing systems in this report has shown that Evergreen Line ALRT ridership estimates in Business Case 2008 are substantially higher than actual ridership on existing ALRT systems like the Expo SkyTrain Line while the ridership estimates on an Evergreen LRT Line are substantially lower than actual ridership on existing Canadian LRT systems. Staff also have concerns that Business Case 2008 has not adequately assessed the technical and operating issues of interoperating trains between the Evergreen and Millennium Lines at Lougheed Station while the option is clearly used to support higher ridership estimates for ALRT over LRT.

In addition, the City of Burnaby and the Northeast Sector cities have supported LRT in the past. The TransLink Board, on 2004 October 15, in a document entitled *The Essential Elements for the Northeast Sector Rapid Transit Line* endorsed LRT (in the Northwest Corridor) as the preferred technology. Business Case 2007, *The Case for the Evergreen Line*, found LRT was not only more affordable but also fit better within the communities it served and possessed superior customer features.

The announcement by the Province that their financial support for the Evergreen Line is conditional on ALRT is based on possible questionable ridership estimates in Business Case 2008. It substitutes ALRT, with its higher capital costs and more negative impacts on the community, for LRT which was demonstrated as a workable, user friendly transit technology for NE Sector communities.

In response to this assessment, it is recommended that Council request the Province and TransLink to undertake an evaluation of the Business Case for LRT technology for the Northwest Corridor, taking into account the concerns and questions raised in this report with regard to Business Case 2008 ALRT assumptions on service speed, ridership, inter-operability operating and capital costs and community service.

3.0 CORRIDOR CHOICE

3.1 Business Case 2008 Route Options

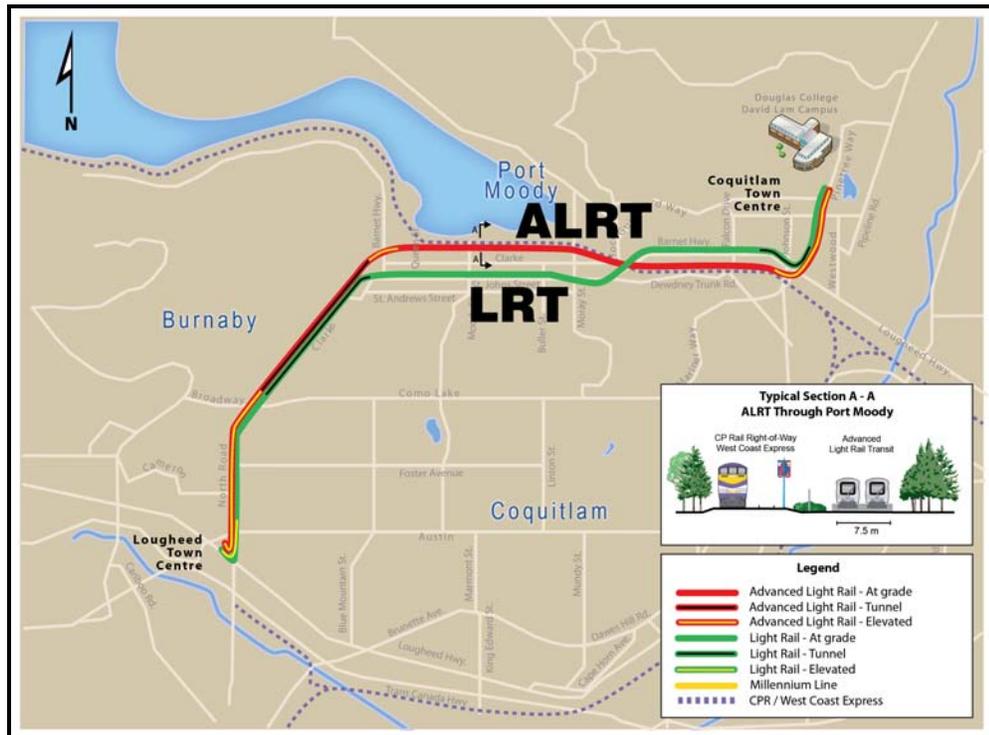
Business Case 2008 reassesses the route options originally identified in the 2004 Northeast Sector Rapid Transit Alternatives Project (NESRTAP) – the Northwest Corridor and the

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Southeast Corridor. As shown in **Figure 1**, the Northwest Corridor alignment for LRT is the same one as identified in the *90% Preliminary Design for the Evergreen LRT Line* completed by TransLink and adopted by the former TransLink Board in Business Case 2007 as the recommended route.

With the change to ALRT technology, there is also a new alignment in the Northwest Corridor. As shown in **Figure 1**, the SkyTrain Line continues to be elevated from Lougheed Station up North Road and Clark Road to the tunnel starting north of Como Lake Road down the Clarke Road Hill to St. Johns Street in Port Moody. At this point however, rather than using St. Johns Street and the Barnet Highway as previously envisioned in 2002, the ALRT line in Business Case 2008 runs at-grade on the south side of the CPR tracks (**Figure 3 inset Section A-A**). This alignment is reported as being more acceptable to the City of Port Moody.

Figure 3 Northwest Corridor Alignments

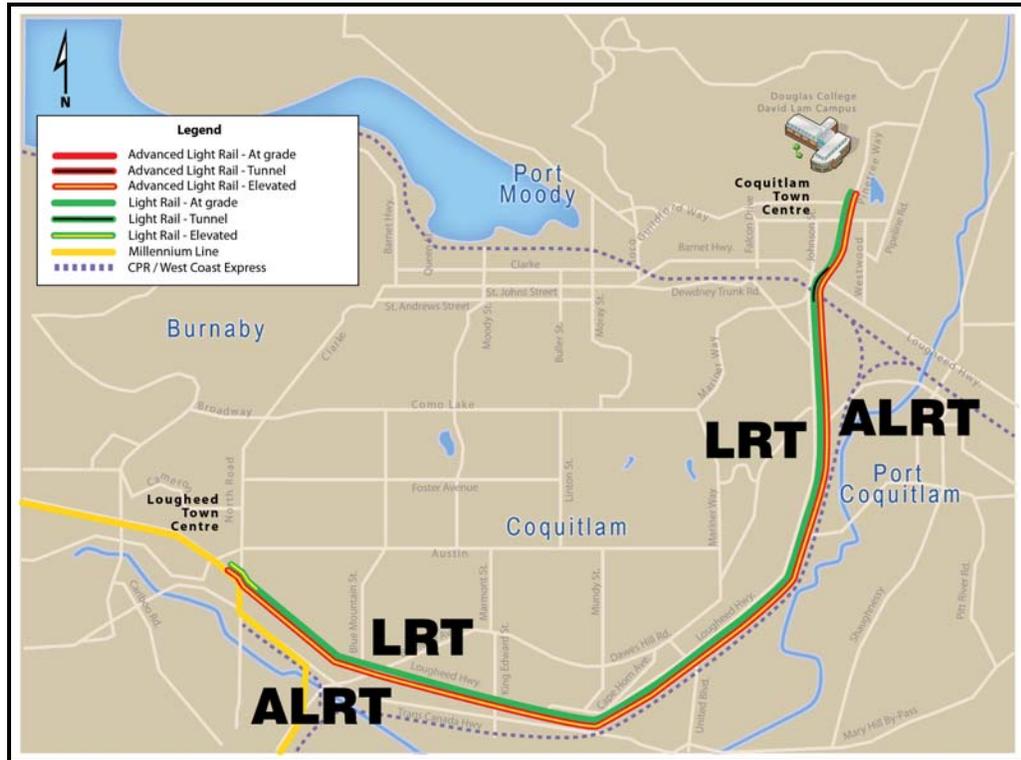


As shown in **Figure 4**, The Southeast Corridor for ALRT (or LRT) follows the Lougheed Highway to Pinetree Way in the Coquitlam Town Centre. However, LRT is at-grade in the median of the highway and ALRT is elevated along the south and west sides of the highway. From Lougheed Town Centre to Brunette the ALRT alignment runs parallel to the Millennium Line essentially duplicating this segment.

On the Southeast Corridor, stations were assumed to be at Lougheed Town Centre, Brunette, King Edward, United Boulevard, Pitt River Road, Coquitlam/West Coast Express, Lincoln, and

Coquitlam City Hall / Douglas College. The station at Pitt River Road would be the closest to serve any potential development on the Riverview site.

Figure 4 Southeast Corridor Alignments



3.2 Staff Review of Route Options

Business Case 2008 evaluates both ALRT and LRT in each of the two corridors according to a number of criteria including ridership, development potential, system integration, environment and stakeholder consultation. The following provides a staff assessment and discussion of the route options and a general conclusion to support the Northwest Corridor for rapid transit service.

3.2.1 Corridor Comparison

As ALRT is the only technology option being considered in the Business Case 2008 report, **Table 4** compares the two corridors with ALRT only, however, it is noted that the issues and considerations discussed are generally equally applicable to either ALRT or LRT technology.

Table 4 Business Case 2008 Corridor Comparison

Criteria	Northwest ALRT	Southeast ALRT
Ridership	Highest	Second Highest
Benefit/Cost	Highest	Second Highest
Development Potential	More development has already taken place; more residential development potential	Current land use industrial; Suited to lower density residential.
System Integration	High	High
Environment	High reduction in car Trips; Environmental Assessment completed for LRT	High reduction in car trips; Environmental Assessment not done
Stakeholders	Issues better understood; Consultation required on ALRT technology	No public consultation undertaken
Schedule	Shorter schedule due to work already done on corridor	Longer schedule due to EA Process and Public consultation

The evaluation in Business Case 2008 shows the Northwest Corridor to have a higher benefit/cost as it attracts higher ridership for the same capital cost as the Southeast Corridor. Business Case 2008 also recognizes that the Northwest Corridor also has superior high-density residential and mixed use development potential because development in the corridor is supported by Northeast Sector OCP's incorporating planned densification. The Southeast Corridor has been developed for industrial, large format retail ("big box") and lower-density residential uses. As this development pattern has not considered rapid transit, ALRT ridership for the foreseeable future would be more driven by employment growth than by population growth. Nevertheless, the report concludes that both routes offer significant development potential with the Northwest as redevelopment and the Southeast as new development.

In the case of the Southeast Corridor, Business Case 2008 assumes that new development of up to 20,000 people, not currently contemplated in the OCPs of the NE Sector municipalities, would occur at Riverview and elsewhere on the alignment including the Fraser Mills area of Coquitlam, south of Maillardville. However, Business Case 2008 does not acknowledge the existing and future high density town centre development in Port Moody which would be bypassed by ALRT in the Southeast Corridor.

The Business Case 2008 comparison of corridors shown in **Table 4** also assesses the two corridors on the basis of environment, stakeholder consultation and schedule. It notes that the Northwest Corridor is further ahead in these areas as both an Environmental Assessment (EA) and stakeholder consultation have already been done for LRT in the Northwest Corridor while neither has been done for ALRT in the Southeast Corridor. The necessity to undertake an EA process and public consultation is expected to extend the Southeast Corridor schedule by twelve months.

3.2.2 Ridership by Corridor

Table 5 shows the difference in ALRT ridership for the Northwest and Southeast Corridor. The estimates show that the 2021 and 2031 ridership of the Northwest Corridor is higher (22.9M and 31.8M riders) than the Southeast Corridor (21.1M and 29.5M riders). As previously mentioned, staff have reservations with regard to these projections.

Table 5 ALRT Corridor Riders (Millions)

Corridor Ridership	NW Corridor ALRT	SE Corridor ALRT
2021 Annual Riders	22.9	21.1
2031 Annual Riders	31.8	29.5

3.2.3 Corridor Distance and Travel Time Comparison

As shown in **Table 6**, the higher ridership on the Northwest Corridor is largely due to the shorter distance and travel time. The Northwest Corridor is 1.7 km shorter and the ALRT travel time is 2.2 minutes faster than ALRT in the Southeast Corridor. The Southeast Corridor is markedly less attractive as an ALRT corridor in that it is longer, slower and attracts fewer riders.

Table 6 ALRT Corridor Distance and Travel Time

Criteria	Northwest Corridor	Southeast Corridor
Total Distance (km)	10.9	12.6
ALRT Travel time (min)	12.6	14.8

3.3 Summary of Staff Corridor Assessment

In summary, based on the Business Case 2008 Corridor Evaluation, the Northwest Corridor is superior to the Southeast Corridor in almost every respect including ridership, cost/ benefit and development potential and would be much easier and faster to implement as the EA and stakeholder consultation has already been done. It is therefore difficult to understand the following conclusions of Business Case 2008 that the:

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“Northwest corridor may benefit slightly from technical considerations such as a shorter anticipated construction schedule and shorter travelling distance and travel time and from being consistent with community development plans”

“the evaluation shows that there is a strong business case for ALRT along both corridors.”

Business Case 2008 does not provide a strong argument for retaining the Southeast Corridor as a route option for ALRT. From a transportation service perspective it is longer, provides slower service, attracts fewer riders and is inconsistent with both the regional and municipal plans that have shaped development since the LRSP. Metro Vancouver is currently considering whether the selection of the Southeast alignment would require an amendment to the LRSP and, if it does, an amendment to the LRSP would require the unanimous approval of all Metro Vancouver municipalities.

ALRT in a Southeast Corridor would also have more significant environmental impacts on watercourses primarily in the Pitt River watershed and the Metro Vancouver Green Zone (including Riverview). The only advantage of the Southeast corridor cited by Business Case 2008 that it would have fewer noise and visual intrusion impacts on existing developed areas. It is acknowledged that ALRT in the Southeast Corridor will be less disruptive to existing developments but it will not be as good at directly serving those developments. As it skirts developed areas rather than being routed through the middle, its stations (except in the Coquitlam Town Centre) would be less accessible to the existing population of these areas.

From 2002 to 2004, the Northeast Sector Rapid Transit Alternatives Project undertook a comprehensive review of alternative corridors and technologies for rapid transit to Coquitlam Town Centre. Following a period of public consultation in the spring and summer of 2004, the TransLink Board, on 2004, October 15 adopted the draft “Essential Elements” for a Northeast Sector Rapid Transit Line. Within Burnaby, the Essential Elements alignment was elevated from Lougheed Town Centre Station descending to an at-grade alignment north of Austin in the centre median of North Road to an at-grade station at Cameron Street and continuing at-grade in the middle of North Road. In response to the Essential Elements report, Council, on 2004 October 25, considered a report from staff and approved a recommendation reaffirming “that the Northwest Corridor is the preferred corridor for the NE Sector Line.”

The City has consistently taken the position that, since the LRSP was adopted in 1995, municipal and regional development plans and the development that has followed these plans has been predicated on rapid transit in the Northwest Corridor. Not to provide rapid transit to serve the high-density development that has grown up in this corridor (especially in Port Moody) would be making a choice in favour of serving existing low-density commercial and residential development in the Southeast Corridor, and speculating on future retail and high density development that may not materialize for decades. Switching to the Southeast Corridor would bypass existing high density town centre development in Port Moody Town Centre, which has grown strongly since Metro Vancouver and TransLink’s endorsement of the Northwest Corridor.

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Both Coquitlam and Port Coquitlam Council's endorsed the Northwest Corridor at their meetings of 2008 March 10.

As such, based on these considerations, it is recommended that Council affirm its support for the Northwest Corridor as the preferred route for the Evergreen Rapid Transit Line.

4.0 LOUGHEED TOWN CENTRE CONSIDERATIONS

The Province's choice of ALRT technology in the Northwest Corridor has significant implications for Burnaby. In particular, it would likely result in the absence of a Cameron Station that has been previously planned and accounted for by the City in recent development approvals at North Road and Cameron, and which was included by TransLink (as an LRT station) in Business Case 2007. Business Case 2008 is silent on the presence or absence of a Cameron Station but further information on station locations provided by Partnerships BC indicates that a Cameron Station is not included as one of the eight ALRT stations on the Northwest Corridor.

The likely loss of this station would not only limit the development stimulus of rapid transit in the north part of the Lougheed Town Centre but also mean inferior service for transit riders in the north part of the Lougheed Town Centre and in the Sullivan Heights area of Burnaby. The nearest station to serve this area would be at Burquitlam or Lougheed necessitating much longer walking distances.

Although the Province has announced its direction for the change from LRT to ALRT technology, the Burnaby "Essential Elements" position that Council approved on 2004 October 25 continues to be appropriate to guide the planning and construction of rapid transit in the Northwest Corridor. Council support for the Northwest Corridor for rapid transit should be based on a recommended request for a commitment from the Province to the following conditions:

- **Access Agreement:** that the agencies (public or private) responsible for implementing the Evergreen Line enter into an agreement with the City of Burnaby to provide a clear definition of the responsibilities of the parties to the agreement, the agreed preliminary design of the project and the regulatory process and cost sharing of the various aspects of the project.
- **Alignment:** a centre median alignment on North Road to mitigate noise and visual impacts.
- **Land Use System Integration:** that the project will be constructed to enhance the communities it serves and that the alignments and stations fit with community scale and planning objectives.
- **Protection for Future Redevelopment Proposals:** The design of the elevated guideway approaching Lougheed Town Centre station must leave buildable development parcels within this portion of the Lougheed Town Centre.

- **Grade Separation of the Intersection of North Road/Austin Road:** An elevated crossing of the intersection is required to maintain traffic capacity at this major intersection.
- **North Road Capacity** - North Road has a capacity for six travel lanes from Lougheed Highway to Clarke Road. This capacity must be maintained to accommodate traffic demands in the growing Lougheed Town Centre.
- **Replacement of Infrastructure and Utilities** – the principle of like for like replacement of infrastructure and utilities will apply to the construction of the Evergreen Line. This will ensure that the agencies implementing the project replace what was there prior to construction with an equivalent item if relocation or replacement was required.
- **Guideway Columns on North Road:** design of the guideway columns must allow for the future upgrading of North Road travel lanes to minimum TransLink Major Road Network (MRN) standards.
- **Lougheed Mall Access** - the existing northbound left turn lane from North Road into Lougheed Mall must be maintained.
- **Include a Cameron Station** – A Cameron Street Station would access the northern half of the Lougheed Town Centre area. The north part of the town centre has considerable development potential, much of which will not be within walking distance of the Lougheed Town Centre Station. A Cameron Station would be similar to the Gilmore Station on the Millennium Line which provides access to the western part of the Brentwood Town Centre and has attracted considerable development.

As a comparatively high-level document, the *Business Case 2008* does not provide sufficient detail for staff to assess whether the above design parameters for ALRT in the Northwest corridor are recognized. If the Northwest Corridor is approved after the 45 day consultation period, then a Preliminary Design process would follow which would establish the alignment and stations. However, as Business Case 2008 favours some form of Public Private Partnership approach, it will be of greater urgency to ensure that these requirements are reflected in any future agreement with a private contractor.

5.0 COSTS AND FUNDING

5.1 Capital and Operating Costs

The capital cost estimate for LRT in the Northwest Corridor provided in Business Case 2008, as shown in **Table 8**, has increased from \$970M (Business Case 2007) to \$1.25B - a 44% increase in the 16 months since the publication of Business Case 2007. Both estimates are based on the *90% Preliminary Design for LRT* done by TransLink which envisioned a line 11.2 kilometres long, with 12 stations.

**Table 8 ALRT and LRT Cost Comparison
 Evergreen Line**

Costs	Business Case 2007*	Business Case 2008	
	LRT	ALRT	LRT
Costs			
Capital cost (\$M)	970	1,400	1,250
Annual Operating and Maintenance Cost (\$M)		10.2	15.3
Operating cost per passenger (2021)		0.45	1.7

* Business Case 2007 costs in 2007 dollars

As the capital cost of ALRT is \$1.4B (\$150M more than LRT), this LRT cost estimate is important as it is used to make the case for LRT being almost as expensive as ALRT. Business Case 2008 offers no explanation for the increase in the LRT estimate, but response to staff inquiries has indicated that these capital costs estimates may reflect the cost escalation over the later construction start for the line of 2011 with completion in 2014 (in 2008 dollars). The LRT costs in Business Case 2007 were based on a 2008 start of construction.

The annual Operating and Maintenance cost of LRT is reported to be \$15.3M. This is over 50% higher than ALRT estimate of \$10.2M and even higher on a per passenger basis as LRT supposedly attracts fewer riders. An adequate explanation or accounting of this significant difference is not provided in the Business Case 2008.

5.2 Funding

As shown in *Table 9* the capital cost of the Evergreen Line is reported as having risen from \$970M using LRT technology to \$1.4B with ALRT. To address the cost difference, the Province has increased its financial commitment by \$230M (from the previous \$170M) to the new \$400 M while TransLink maintains its previous commitment of \$400M to the Evergreen Line.

Based on current funding commitments of \$400M from TransLink and \$400M from the Province (as noted in the announcement), the current funding shortfall for the Evergreen Line has increased to \$533M. (with the recent Federal Budget announcement of \$67M) but the funding short-fall is greater today for ALRT than the \$400M shortfall for LRT noted in Business Case 2007. As such, this increased Provincial funding commitment does not cover the reported increase in the LRT cost to \$1.25B nor the higher cost of ALRT at \$1.4B in the Northwest Corridor.

Business Case 2008 suggests that the \$533M funding shortfall will be addressed through a contribution from the Federal Government and an increased commitment from TransLink as follows:

- **Federal Government** – a commitment of \$410M to match the Province’s new commitment of \$410M. The Province would have to commit an additional \$10M to bring its commitment to \$410M.

As previously noted, the 2008 Federal Budget committed \$67M to the Evergreen Line from the \$500M allocated to support capital investments in public transit. However the government has not indicated any future commitment of funding. It has been speculated that the remaining \$343M could be derived from a federal partnerships fund which supports P3 projects.

- **TransLink** – As shown in **Table 9**, to make up the difference between the ALRT cost and senior government contributions, TransLink would have to increase its funding commitment from the current \$400M approved by the TransLink Board in 2004 to \$580M. Business Case 2008 suggests that this additional \$180M could come from the additional fare revenue that would be generated from the higher ridership of an ALRT Line. However, it should be noted that the continuing funding commitments of \$410M from the Province, \$410M from the Federal Government, and \$400 M from TransLink would be sufficient to fund the Evergreen LRT line, without the additional funding or debt from TransLink. Viewed from this perspective, TransLink, and not the Province, is being made responsible for the increased costs of a selection of ALRT technology.

Table 9 Funding Commitments Evergreen Line

Costs	Business Case 2007 LRT	Current Committed Funding ALRT	Business Case 2008 Proposed Funding ALRT	ALRT Funding Shortfall
TransLink Funding (\$M)	400	400	580	180
Provincial Funding (\$M)	170	400	410	10
Federal Funding (\$M)	0	67	410	343
Capital Cost (\$M)	970	1,400	1,400	1,400
Total Funding Shortfall (\$M)	400	523	0	533

By suggesting fare revenue as a source of TransLink funding, Business Case 2008 seems to suggest that this funding will come to TransLink through a Public Private Partnership Concessionaire arrangement similar to that of the Canada Line. Under the funding agreement for the Canada Line, the funding partners including the Federal government, the Province, GVTA, the Vancouver Airport Authority and the City of Vancouver contributed \$1.25B of the approximately \$1.9B total cost of the Line. Under a 35 year contract, InTransit, the concessionaire, is responsible to design, build, operate and maintain the system and made up the cost difference of \$657M. In return, the Concessionaire receives all revenues from the operation of the Line with GVTA guaranteeing any shortfall in ridership revenues below 100,000 riders per day. The

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concern with this arrangement is that the inflated ridership estimates in Business Case 2008 could be used to establish the base fare revenue requirement in a potential Concessionaire agreement, with a provision that the public, through TransLink or the Province, pick-up the shortfall should ridership targets not be met.

6.0 PROCURMENT

As the Business Case 2008 was developed with the involvement of Partnerships BC, it includes statements regarding the procurement of the Evergreen Line. It is concluded in the report that “following the application of screening criteria, the Project demonstrates a range of characteristics that suggest there would be value for taxpayer dollars in procuring the Evergreen Line using a public private partnership approach.” This approach reflects provincial policy that public private partnerships are the preferred procurement method for major capital projects with a capital cost exceeding \$20M, unless there is a compelling reason to do otherwise.

Procurement via a Public Private Partnership is favoured in the report, with the specific model yet to be determined. Presumably this determination would happen after the decision on the routing of the Evergreen Line following the 45 day consultation period. As previously noted, the assumed model for a public-private partnership for “SkyTrain-like” technology in the Lower Mainland is the Canada Line. It is not known whether the Province and TransLink will follow a similar procurement approach for the Evergreen Line, however, the experience with the Canada Line has shown that this type of procurement raises a number of issues for municipalities and the public.

The contract for the project may be between the Province (through Partnerships BC) or TransLink and a private contractor. As local government and the public are not direct parties to the agreement, they would have little or no control over the negotiations that lead to the contract. Moreover, the Province is not bound by municipal policies, bylaws and regulations and a contractor to the Province is even less likely to be responsible to the municipalities through which the Line runs. It is therefore important that municipalities have input early in the procurement process (preferably prior to the Request for Proposals stage) to ensure that their requirements are reflected in this document. With the selection of a contractor and commencement of contract negotiations, the process becomes less transparent, and there is a risk that changes can be made to project design and construction provisions without the knowledge and concurrence of third parties.

As such, it is recommended that Council request the Province and TransLink to re-consider the advisability of the anticipated P3 funding approach given issues raised with regard to public accountability and transparency, transfer revenue shortfalls to the public, and certainty of system integration with local communities. As well, as indicated in Recommendation #1, the Province and TransLink are requested to undertake a re-evaluation of operating and capital costs estimates for LRT.

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7.0 CONCLUSION

The announcement of the *Evergreen Line Rapid Transit Project – Business Case* by the Province sets the conditions for the senior government funding for the Evergreen Line to proceed to implementation. Business Case 2008 concludes that ALRT is the preferred technology primarily due to its higher ridership, better service to transit riders and the capability for system integration with the Millennium Line. However, ridership estimates appear to exaggerate the case for ALRT by overestimating ALRT ridership and underestimating LRT ridership. Comparing the model forecasted ridership against actual ridership of existing ALRT and LRT systems in Canada shows that ALRT to have only slightly higher ridership than LRT.

For Burnaby, the choice of ALRT would result in the likely loss of a station at Cameron. This would mean longer walking distances and reduced service for residents of the Lougheed town Centre and Sullivan Heights.

As the evaluation of the two corridors in the business case notes the Northwest Corridor as superior to the Southeast Corridor on almost every account except for its potential community impacts. As such, it is difficult to understand the conclusion in Business Case 2008 that the Northwest Corridor is considered to be only slightly better than the Southwest Corridor. Burnaby Council has consistently supported the Northwest alignment for rapid transit to the Northeast Sector. However, recognizing the potential impacts of rapid transit along North Road, the City has set a number of conditions (“Essential Elements”) which are appropriate requirements to guide the planning and construction of rapid transit through Lougheed Town Centre.

The Business Case announcement referred to current funding commitments of \$400M from TransLink and \$410M from the Province, however, the current funding shortfall for the Evergreen Line has increased to \$533M, taking into account the recent Federal announcement of \$67M contribution. This shortfall has been partially offset by the recent Budget 2008 announcement of \$67M for the Evergreen Line but the funding short-fall is greater today for ALRT than the \$400 M shortfall for LRT noted in Business Case 2007. As such, this increased Provincial funding commitment does not cover the reported increase in the LRT cost to \$1.25B nor the higher cost of ALRT at \$1.4B in the Northwest Corridor. In addition, as noted, continuing funding commitments from the Province, the Federal Government, and TransLink would be sufficient to fund the Evergreen LRT line, without the additional funding or debt from TransLink that arises from a selection of ALRT technology.

This report also raised concerns with the anticipated P3 approach for the project, as local government and the public are not direct parties to the agreement, they would have little or no control over the negotiations that lead to the contract. It is therefore important that municipalities have input early in the procurement process (preferably prior to the Request for Proposals stage) to ensure that their requirements are reflected in this document. As noted earlier, maintaining proposed funding commitments with lower cost LRT would also result in a reduced debt load for the project.

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In response to this primary issues and concerns, it is recommended that:

- **THAT** Council request the Province and TransLink to undertake an evaluation of the business case for LRT technology for the Northwest Corridor, taking into account the concerns and questions raised in this report with regard to Business Case 2008 ALRT assumptions on service speed, ridership, operating and capital costs, inter-operability and community service, while retaining proposed funding commitments for the Northeast Sector rapid transit service.
- **THAT** Council affirm its support for the Northwest Corridor as the preferred route for the Evergreen Rapid Transit Line, and request a Provincial and TransLink commitment to adhere to the conditions for Lougheed Town Centre as outlined in Section 4.0 of this report.
- **THAT** Council request the Province and TransLink to re-consider the advisability of the anticipated P3 funding approach given issues raised with regard to public accountability and transparency, transfer of revenue shortfalls to the public, and certainty of system integration with local communities.
- **THAT** the Province and TransLink be requested to undertake further consultations with affected municipalities once the revised business plan has been prepared.
- **THAT** a copy of this report be forwarded to Hon. K. Falcon, Minister of Transportation, Province of BC; L. Blain, Chief Executive Officer, Partnerships BC.; D. Parker, Chair, Board of Directors, TransLink, F. Cummings, Vice-President, Construction, TransLink and Burnaby MP's and MLA's.
- **THAT** a copy of this report be forwarded to the Mayors of the Northeast Sector Municipalities and to the Transportation Committee of Council.

B. Luksun, Director
PLANNING & BUILDING

RG/DC:sa:jc:tn

cc: Deputy City Manager
Director Engineering
Director Finance
City Solicitor
Director Parks Recreation and Cultural Services
Fire Chief
O.I.C. RCMP