

To: TransLink Board of Directors

From: Jane Bird, Project Director
Richmond/Airport to Vancouver Rapid Transit Project
Ken Dobell, CEO, TransLink

Date: April 3, 2001

Subject: **Final Report -- Richmond/Airport Rapid Transit Project**
Progress Report -- Macquarie North America PPP Review

STAFF RECOMMENDATIONS

- A. That the Board receive the information contained in the Multiple Account Evaluation for information, and reaffirm the development of the Richmond/Airport to Vancouver rapid transit link as a medium term policy objective.
 - B. That the contracts of Macquarie North America and the Project Director be extended to conduct additional analysis on a continued multi-agency basis; this analysis would include private-public partnership approaches and further investigation of commercial issues, including market and technical issues related to a possible Airport service, with funding of \$75,000 to be provided by each of TransLink and the Vancouver International Airport.
 - C. That based on the greater benefits associated with grade separation, Macquarie's comments on grade separated and at grade options from a private sector perspective, and community concerns, the CEO recommends that at grade rail transit options in Vancouver be excluded from any further analysis for this project; for clarification, in Vancouver, analysis would be restricted to underground options.
 - D. That Macquarie's conclusions on the potential for a public private partnership approach for the Richmond/Airport to Vancouver Rapid Transit link and a crossing of the Fraser River be reported back to the Board by July.
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SUMMARY

This report presents the final report of the Richmond/Airport Rapid Transit Project team for Phase 2 of this Project, and preliminary conclusions from the Macquarie North America review of PPP approaches to the construction of the connection.

In Phase 2 the Richmond/Airport to Vancouver Rapid Transit Project undertook a cost benefit analysis of the connection using a multiple account methodology. They used a series of possible transit line configurations, representing lower and higher capacity alternatives as illustrations for this purpose. Given long standing regional policy, and an extensive history of technical consulting reports, this analysis was directed to the question of timing: should the line be constructed earlier (consistent with regional policy) or later? The report concludes that the quantitative measures – costs and benefits – associated with construction of the line do not provide a clear answer within the limits of the analysis. However, when qualitative benefits – more appropriate urban development (smart growth) and the advantages for the environment, the economy, and liveability of the region – are considered, these lead to a conclusion to build rail transit from Richmond and the Airport sooner rather than later. Therefore, this reports recommends that existing regional policy be reaffirmed. (A summary of the project is attached as Appendix 1)

The Phase 2 exploration of the potential of this project as a public-private partnership was conducted by Macquarie North America for TransLink.

Macquarie North America conducted its work concurrently with the multiple account cost/benefit analysis. They provided comments throughout the study, which helped to clarify cost and revenue assumptions. They note that the assumptions of the multiple account analysis are very conservative, and suggest that appropriate participation by the private sector could provide a project for a lower cost, with significant financial participation by the private sector. However, the Macquarie preliminary conclusions would require that government adopt a different approach to project development, with a focus on commercial considerations. These include the development of a premium service to the Airport, possible revisions to fare structures, the incorporation of innovative revenue generating uses in stations, the application of transportation demand management measures, and the incorporation of existing elements of the transportation system into a private-public partnership, as well as developing an approval process to balance certainty for the private sector with participation by agencies and the community.

The Macquarie analysis noted significant concerns related to at grade construction in Vancouver. They noted the significantly greater benefits from a grade separated system, and significant community concerns related to an at grade system issue. The CEO recommends that further analysis of a rail transit connection through Vancouver be restricted to underground (tunnelled or cut and cover) options.

Given the potential for significant benefits from private sector, this report recommends that a three month extension of the PPP review be authorized, extending the analysis of

PPP opportunities in the context of this region, and addressing market and technical issues related to an Airport premium service. With this timing, the report back to the Board on PPP opportunities would take place in July, and would incorporate PPP opportunities for both rapid transit from Richmond and the Airport and the Fraser River crossing east of the Port Mann bridge.

PURPOSE

This report presents the results from the Richmond/Airport Rapid Transit Project, and preliminary conclusions from the related work of Macquarie Bank to assess the potential of a private-public partnership for this project.

BACKGROUND

Richmond/Airport to Vancouver Rapid Transit Project

A Richmond – Vancouver rapid transit link has been part of regional planning policy since 1980. It is an element of *Transport 2021*, the long range transportation plan for greater Vancouver, which in turn serves as the transportation component of the GVRD's District *Livable Region Strategic Plan (LRSP)*. *Transport 2021* anticipated completion of 3 intermediate capacity rapid transit lines by 2006 (medium range plan) and before 2021 (long range plan):

1. Coquitlam - New Westminister
2. Broadway – Lougheed; and
3. Richmond – Vancouver

In 1998 the Province announced a SkyTrain extension to cover *a portion* of the Coquitlam - New Westminister line and *a portion* of the Broadway-Lougheed line. That extension is now under construction. The Board of Directors has indicated that the completion of these two lines (together referred to as the 'T-Line') is a priority.

Since the adoption of the LRSP in 1994, planners have monitored growth in Vancouver, Richmond and at the Airport. The rate of growth is faster than initially anticipated, particularly at the Airport, where current employment levels have already surpassed 2021 predictions. In addition, in downtown Vancouver the rate of residential development is strong, and the rate of job and residential growth in Richmond City centre is exceeding expectations.

Planners discussed these growth trends during the consultation program for the TransLink *Strategic Transportation Plan*. Several regional agencies expressed renewed interest in a rapid transit link to connect Richmond and Vancouver, with a link to serve both the growing employment base at the Airport, and the terminal itself. TransLink advanced the Richmond/Vancouver corridor for study in 2000/2001, and, in light of the growth at the Airport, included an Airport connection.¹

¹ *TransLink Strategic Transportation Plan 2000 - 2005*, April 2000, p. 21

At its May 3, 2000 meeting, the Board of Directors approved the planning study. At its September 20, 2000 meeting, the Board of Directors approved a Management Plan for the study and TransLink's participation as lead agency.

The Management Plan provides:

- the study would be a joint planning process involving eight participants:
 - TransLink (as lead agency)
 - Transport Canada
 - Vancouver International Airport Authority ("YVR")
 - Province of BC
 - City of Richmond
 - City of Vancouver
 - GVRD
 - Vancouver Port Authority

(the "participating Agencies")

- the study has three independent Phases; at the conclusion of each Phase the agencies would agree, by executing a memorandum of understanding², to participate in the next phase;
- Phase 1 consists of the preparation of the Management Plan, and an agreement to participate in Phase 2
- Phase 2 takes place over 6 months, from October 2000 until March 2001;
- the budget estimate for Phase 2 is \$500,000, jointly funded by Transport Canada and YVR, with contributions in kind from other participating Agencies;
- a Project Team carries out the work plan for Phase 2, on behalf of all of the participating Agencies;
- a Steering Committee comprised of senior staff representatives from the participating Agencies and two independent advisors oversees the work;
- a Technical Committee, comprised of representatives from the participating agencies advises the Steering Committee and is available to the Project Team for advice, or on issues of particular significance to the agency or discipline they represent.

Phase 2 began October 1, 2000. It had 3 objectives:

1. An evaluation to compare the costs and benefits of building the line by 2010 versus a later date; communicating the conclusions of that analysis and consulting with decision makers, key stakeholders and the community;

² each participating Agency executed a memorandum of understanding, except the Province of BC; the Province agreed to participate in RAV, and nominated a senior staff member to the Steering Committee, but has not executed a memorandum of understanding.

2. Exploring the potential for public sector funding to develop the line, if approved, in particular from the Federal Government, but also from other agencies, as potential in principle funding partners; and
3. Exploring the potential for private sector involvement.

This report concludes Phase 2. The report presents the results of the cost/benefit analysis and public consultation, the status of public sector funding, and the status of the potential for private sector involvement.

Early in Phase 2, the Project Team and TransLink staff considered how to approach the third objective. At the same time, TransLink staff were evaluating the proposed Fraser River Crossing east of the Port Mann bridge, which they also thought might be suitable candidate for private sector involvement. They held a workshop involving senior staff from various agencies and the private sector to consider both projects. As a result of the workshop, staff and the Project Team concluded that both projects had potential, and that there may be some efficiency in retaining an advisor to consider both projects. As a result, as described below, TransLink retained a PPP advisor for both projects. While the results of the PPP work are part of the Phase 2 Richmond/Airport – Vancouver project, the work was done for TransLink, and is reported separately in this report.

Private-Public Partnership for Richmond/Airport to Vancouver Rapid Transit

On December 13th, the Board received a report on Private-Public Partnerships for Road and Transit Infrastructure. This report described world wide experience with private public partnerships for the construction of transportation infrastructure, and noted that two potential TransLink projects, the Richmond/Airport Rapid Transit line and the Fraser River Crossing east of the Port Mann bridge might be suitable candidates for this process.

The Board was advised that TransLink would seek proposals for a PPP advisor to review the two projects, and reserved funding for 2001 costs related to PPP advice and for TransLink's anticipated share of the next phase of the multi-agency Richmond/Airport Rapid Transit Project.

Macquarie North America was subsequently appointed as TransLink's PPP advisor. Macquarie North America is a subsidiary of Macquarie Bank, an Australian Bank specializing in advising and funding governments and the private sector to develop transportation infrastructure through private public partnerships. On January 19, Macquarie North America representatives presented the Board with a review of PPP transportation projects world wide, and discussed Macquarie's role in these projects, and their role as an advisor to TransLink on its projects.

TransLink and Macquarie representatives agreed on a project program and schedule that would provide separate reports on TransLink's two projects. The first report was scheduled to present preliminary conclusions on a timeline that would permit the Board

to evaluate them with the conclusions of the Richmond/Airport to Vancouver study. The second, to be presented slightly later, will deal with the Fraser River Crossing.

The parallel work of the two consulting teams has been very productive, testing the broad evaluation of the Richmond/Airport consulting team against the commercially focussed approach of the Macquarie team.

This Report

The remainder of this report will provide the Board with:

1. the results of the first 2 objectives of Phase 2 of the Richmond/Airport to Vancouver study:
 - A. an overview of the findings of the cost/benefit analysis and the public consultation;
 - B. the potential for public sector funding; and
2. an outline of the preliminary results from the Macquarie study.

DISCUSSION:

Richmond/Airport to Vancouver Rapid Transit Project

The Richmond/Vancouver Corridor

This corridor connects downtown Vancouver, Central Broadway, Richmond town centre and the Airport.

Downtown Vancouver and Central Broadway

- including the west end, the downtown part of the corridor is home to 77,000 residents and 130,000 jobs
- the downtown peninsula has experienced significant residential and employment growth in recent years; by 2021, jobs on the peninsula could reach as high as 180,000, 50,000 more than today
- the Central Broadway area (bounded by False Creek, 12th Avenue, Main Street and Burrard) is the second largest employment centre in the region, second only to downtown Vancouver
- by 2021, one third of peak period trips going downtown will terminate at Central Broadway

Richmond Town Centre

- the Town Centre has experienced rapid growth in the past decade

- the Town Centre has a residential population of 33,000 and an employment base of 38,000, and a proportionately large amount of commercial floor space (4.5 million square feet, the second highest among regional town centres)
- The City of Richmond is concentrating development in the Town Centre, which is expected to double in population by 2021

The Airport

- since 1992 when the Airport Authority assumed responsibility for the airport, passenger traffic has increased by 61% and air cargo has increased by 74%
- in 2000 YVR handled 16. million passengers and 252,000 metric tonnes of cargo
- YVR estimates that by 2021, passenger numbers will roughly double, to 30 million passengers per year; and it will handle 700,000 tonnes of air cargo annually
- as a result of this growth, employment growth on Sea Island is very strong, exceeding predictions: over the past 9 years, airport related employment has doubled – over 26,000 people currently work on Sea Island
- by 2021 YVR expects that number will have increased to 40,000 (in terms of jobs, a city the size of Prince George)
- 48% of employees live within the Vancouver/Richmond corridor

Downtown Vancouver and downtown Richmond represent approximately 5% of the region's population, and 15% of the region's jobs. Almost 1.1 million people travel in the corridor daily. Of those, approximately 65% drive, 25% take transit, and 10% walk/bike.

Of the 4 major regional corridors identified for improvement, this corridor has the greatest traffic density³.

The 98 B-line

TransLink is about to introduce the “98 B-Line” bus service to connect Richmond City Centre and downtown Vancouver. The 98 B-Line is intended to provide frequent, limited stop service using advanced bus technology and, along a 2km stretch in Richmond, a dedicated right-of-way.

A limited service has been in operation between the Airport Station and downtown Vancouver since 2000. Full 98 B-Line service will commence in the spring 2001 although full service levels may not be reached until 2002, depending on available funding.

The 98 B-line will provide:

³ As measured in passenger-kilometers per peak hour, per route kilometre and as compared to similar statistics for other corridors published in *Transport 2021, Medium Range Transportation Plan for Greater Vancouver*

- ◆ service every 4 to 5 minutes during the peak hours, every 7 to 8 minutes during the daytime and every 10 to 15 minutes in the evenings
- ◆ travel times from the Richmond City Centre terminal to Waterfront Station in downtown Vancouver of 35 to 40 minutes
- ◆ limited bus only lanes constructed in Richmond in the centre of No. 3 Road between Sea Island Way and Ackroyd (just north of Westminster Highway).
- ◆ Some signal priority at 66 traffic signals along the route
- ◆ Digital notification to riders of bus arrival

The #98 B-Line service will provide 1,500 passenger spaces per hour per direction during peak periods. Additional express buses will bring overall system capacity to approximately 2,400 passenger spaces per hour, although this will not be reached until 2002.

B-Line ridership is projected at 22,000 per day after one year of full service.

Policy Context

Analysis in Phase 2 was predicated on the policies of participating agencies. As described above, the primary policy governing this corridor is the GVRD LRSP, which calls for rapid transit in the Richmond/Vancouver corridor. Rapid transit in this corridor is also TransLink policy (the Strategic Plan, 2000), City of Vancouver policy (the City of Vancouver Transportation Plan, 1997) and Richmond policy (Richmond City Centre Transportation Plan, 1997, Richmond Official Community Plan 1995).

Following is a list of the studies and policy documents that have considered rapid transit in this corridor.

- 1970 Report on the Greater Vancouver Area Rapid Transit Study
- 1972 Kelly Report
- 1975 The Livable Region: 1976/1986
- 1979-80 GVRD's Light Rail Transit Studies
- 1980 GVRD's Official Regional Plan
- 1981 Hickling Report examines Cambie and Arbutus
- 1989 GVRD's Freedom to Move Study
- 1991 BC Transit's Vancouver-Richmond Rapid Transit Project: Vancouver International Airport Transit Connector Report
- 1992 BC Transit's Vancouver-Richmond Rapid Transit Project
- 1993 GVRD's Transport 2021: A Long Range Transportation Plan for Greater Vancouver
- 1993 GVRD's Transport 2021: A Medium Range Transportation Plan for Greater Vancouver
- 1993 Vancouver International Airport: Rapid Transit Concept Study
- 1994 BC Transit's Review of Intermediate Capacity Transit Systems: Richmond – Vancouver Corridor
- 1995 BC Transit's Summary of Intermediate Capacity Transit System Studies in Greater Vancouver
- 1995 BC Transit's Multiple Account Evaluation of Rapid Transit Options in Greater Vancouver
- 1996 GVRD's Livable Region Strategic Plan
- 1997 City of Vancouver Transportation Plan
- 1999 Vancouver International Airport's Rail Access to the Vancouver International Airport

Most of these policy documents refer to “intermediate capacity rapid transit” for this corridor. That term has been defined to mean higher capacity transit, with a capacity of 10,000 people per hour. The term can include busways (buses on dedicated rights of way) and rail. A number of earlier studies concluded that intermediate busways would not provide the required capacity to serve the corridor over the long term, and that busways developed to capacity would have potentially large community impacts.

As a result, the Project Team, in consultation with the Steering Committee, concluded that in light of the earlier work, dedicated busways would not be evaluated in as part of this project, and that an analysis of rapid transit would assume intermediate capacity rail.

Cost Benefit Analysis

Given the policy context, the Project Team, in consultation with the Steering Committee, concluded that the question was not *if* there should be rail transit in this corridor, but *when?*

Given the question was one of timing, the issue in terms of a cost/benefit analysis became: what are the costs and benefits of building rail transit to connect Richmond, the Airport and Vancouver by 2010 vs. 2021 or later?

The Project Team, with assistance from Marvin Shaffer, a consultant with expertise in cost/benefit analysis, developed the terms of reference for a multi-disciplinary team of consultants retained by the Project Team to perform the work. The terms of reference were based on a methodology originally developed by the Provincial Crown Corporations Secretariat for evaluating major capital projects. The methodology uses a “multiple account evaluation” approach. This approach was recently refined by TransLink for application to transportation projects.

In this approach the costs and benefits are not combined into one measure of net benefit. Rather, the costs and benefits are “bundled” into individual accounts, so that they can be analyzed separately.

The accounts used for this study were:

1. Financial
2. Transportation User
3. Economic
4. Urban Development
5. Social
6. Environment

The consultants were asked to develop:

- a “base case” scenario, with no rail transit, but high quality bus service (local, 98 B-Line [described above] and express services), improved over time as demand warrants; and
- alternative rail rapid transit scenarios, with in service dates of 2010 and 2021.

The costs and benefits of the rail development scenarios were compared to the base case, and analyzed using the above accounts.

For the purpose of calculating the costs and benefits, the consultants used a series of alignments and design alternatives to identify a “range” of illustrative concepts, from a lower cost, lower service concept, to a more expensive concept, providing a higher level of transit service. The alternatives included “at grade” or street level rail on Cambie and Arbutus Streets in Vancouver, to No. 3 Road and the Airport and “grade separated” rail, below/above street level on the same corridors. In the case of the below/above ground illustrations, *in Vancouver the illustrations presumed bermed or tunnel options*; in Richmond and Sea Island, where tunneling is difficult, the illustrations assumed above grade options. *This range was intended to “bound” the analysis, not to select a corridor or preferred technology.*

The analysis concludes that rail is a considerable investment, but offers significant benefits. Generally, the net benefits of rail are a function of increased capacity and higher ridership. Increased ridership is in turn due to reduced travel time, reliability and increased attractiveness of rail.

The following table notes the difference:

	98 B – line 2002	98 B – line 2010	Rail 2010	Rail 2021
Capacity (per peak hour)	2400	2800	15000+	15000+
Daily Ridership	22,000	32,500	107,500	137,000
Travel times	35-40 min.	42-50*	22**	22**

* given the congestion trends in the past decade, this is a conservative estimate

** exclusive right of way

These benefits in turn affect our ability to achieve transportation, land use, economic, and environmental policy objectives:

- ◆ Provide transportation choice;
- ◆ Provide capacity, particularly in the region’s primary corridors;
- ◆ Manage congestion;
- ◆ Concentrate population and employment growth in regional town centres and provide high quality transit between them;
- ◆ Foster a strong regional economy;
- ◆ Improve local air quality and control greenhouse gas emissions.

The results of the analysis are summarized in the Project Summary attached as Appendix 1. In short, the results are as follows:

1. the overall quantifiable benefits of a rapid transit line in this corridor (whether built sooner or later) do outweigh the overall quantifiable costs;
2. in spite of the fact that fare revenue is projected to exceed operating costs, and an operating surplus is generated each year, the line cannot recover all its capital costs from the fare box, irrespective of start up date;
3. an Airport branch of the line could be a justifiable addition to the main Richmond/Vancouver trunk, serving mainly Sea Island businesses and employees;

On the question of timing:

4. for the quantifiable benefits and costs, where the study put the most emphasis and rigour, the answer to the timing question is neutral within the accuracy of the analysis; the quantifiable measures alone give no reason to delay or proceed with rapid transit for 2010; this is because, the balance between the quantifiable benefits and costs (which favour benefits at both start dates) does not change appreciably over the 2010 to 2021 period;

In other words, based on the quantifiable measures, it is a good thing to have rapid transit in 2010, the cost is substantial, but there are substantial benefits received early. It is an equally good thing to have rapid transit start in 2021 – deferring the costs is valuable, and this compensates for the benefits missed between 2010 and 2021.

5. this statement does not recognize the non quantifiable considerations: overall, the study finds that the non quantifiable considerations favour early startup;
6. specifically, the social and community impacts appear to balance out; and are largely a question of design;
7. the environmental benefits of rapid transit are desirable to have earlier rather than later;
8. there are desirable land use, urban development and overall economic development benefits attributable to rapid transit; these too are better received sooner rather than later.

On balance, therefore, the advantages for the environment, the economy and liveability of the region outweigh the disadvantages; this points to a conclusion to build transit sooner rather than later.

The study contains one supplementary finding; by fine tuning the design of the system, it is possible to achieve greater performance (i.e. shorter travel time) and increased benefits,

with modest cost increases. Design of a system was not part of the mandate of this Phase.

Conclusion

The work confirms existing government policy and related studies: rapid transit in the Vancouver/Richmond corridor is an appropriate objective for the medium term and that an Airport branch of the line could be a justifiable addition to the main Richmond/Vancouver trunk, to serve mainly employees and businesses on Sea Island. A summary of the project report is presented in Appendix 1.

Public Consultation

There were 5 elements to the public consultation program.

1. Information Postcard: The Project Team developed a postcard that shows a map of the existing and proposed rapid transit routes in the Lower Mainland on one side and summarizes the purpose and stages of the current Study on the reverse side. The Project Team has distributed these postcards at various meetings with interest groups and stakeholders.
2. Web Site: The Project has a web site at www.yourcity2010.com. The web site has a number of pages that provide information on the Project, its status and the participants. The web site is accessible in both English and Chinese and includes links to the web sites of participating agencies. The web site included an on line survey, and the ability to comment by email. 225 people completed the on-line survey.
3. Quantitative/Qualitative Research: The Project Team retained a research firm to conduct a two stage research program. The first stage consisted of 7 focus group discussions with residents and businesses in the Lower Mainland. The second stage involved telephone interviews with 887 residents and 100 businesses in the Lower Mainland.
4. Public Open Houses: The Project held six open houses to present the top line results of the cost/benefit analysis and gather public feedback. The sixth open house was held at the specific request of Arbutus corridor residents, who indicated concern that corridor residents had not attended the earlier open houses. Project Team members and consultants were in attendance at all open houses. Over 800 people attended the open houses, and of those 375 completed feedback forms.
5. Advisory Groups/Stakeholders: The Project Team made presentations to a variety of stakeholders and interested parties including Chambers of Commerce, Vancouver Board of Trade Urban Transportation Task Force and Regional Transportation Task Force, Richmond Asia Pacific Business Association, "Better Environmentally Sound

Transportation” (“BEST”)/David Suzuki Foundation, and UBC and SFU transportation planning groups.

In addition, the Project Team met regularly with the Richmond Rapid Transit Public Advisory Committee, an advisory committee constituted by Richmond City Council. In Vancouver, the Project Team initiated meetings and met monthly with an informal group of concerned citizens from the Cambie Heritage Boulevard Society, the Arbutus Legacy Corridor Committee and the Granville rapid bus citizens group.

Public Consultation Results

Overall, there is significant public support for the Project, within Vancouver and Richmond and the region. The quantitative work indicates that more than 75% of all residents and businesses support the project, in concept. In Vancouver and Richmond 83% of residents surveyed see this project as a positive thing for their community; 62% of GVRD residents see this project as a positive thing for their community.

Questions were restricted to a rail project connecting the Airport, Richmond and Vancouver; they did not address technology or corridor preference.

These findings were consistent with the on line survey, and the feedback at most of the open houses. The one exception was the open house requested by Arbutus residents, where the feedback forms indicated a notable lack of support for the project. Residents also expressed grave concern with the ultimate alignment: particularly that it not be above grade⁴ or at grade. The citizens groups from Arbutus and Cambie that met with the Project Team do not support building a line sooner. Several question the regional policy that supports intermediate capacity rapid transit for this corridor. These views were inconsistent with the quantitative results of interviews with corridor residents. Of the 150 interviews within 3 blocks of the Arbutus and Cambie corridors, 83% of respondents see this as a positive thing for their community.

Generally, in terms of transportation priorities, residents place first priority on increasing bus service in the region, followed by a Richmond/Airport – Vancouver connection. Businesses placed equal importance on a number of road and transit projects.

Potential for Public Sector Funding

The Federal government has made commitments to urban transit infrastructure in the recent Throne Speech and has provided funding support for this project. The Throne Speech broadly reaffirmed the commitment in the Liberal election platform to dialogue with urban centres and improve public transit. Specifically, the speech included a pledge that the national government "will co-operate with provincial and municipal partners to help improve public transit infrastructure".

⁴ The City of Vancouver Arbutus Corridor Official Development Plan (July, 2000) precludes any grade separated rapid transit system elevated, in whole or in part, above the surface of the ground

In terms of other levels of government, though it referred to a rapid transit line in this corridor in the context of Olympic discussions, the Province appears to be concentrating its efforts on the Millennium Line construction and the Coquitlam/Port Moody and Vancouver West extensions. As regards TransLink, without significant additional funding (over and above that to allow it to fund the bus improvements and other initiatives contemplated in the Strategic Plan, and its commitments to the T-Line) a capital contribution seems unlikely. The Project Team recognized, and assumed in the context of its work, that these commitments are TransLink's first priority.

Generally, however, while the cost benefit analysis suggests that there may be economic and social justification for government capital contributions to this project, given the size of the project, the capital constraints facing governments, and the number and size of competing priorities, a direct contribution large enough to build the project seems unlikely. The objective of the PPP review was to explore the commercial opportunities of the project, and the potential to involve the private sector, and thereby reduce the level of government contribution that would be required. As described below, the initial findings of the PPP advisor suggest there is significant potential for a viable PPP project. The preliminary findings are under discussion with the participating agencies.

Macquarie Bank PPP Review of Richmond/Airport to Vancouver Rapid Transit

In contrast to the Richmond/Airport to Vancouver Rapid Transit work, which looks at overall costs and benefits, hard and soft, in structured way, the Macquarie Bank review focused on commercial considerations and opportunities associated with the transit system. Their perspective and experience has proven very valuable in reviewing the rapid transit evaluation, in particular the cost and revenue assessments.

In undertaking their analysis, Macquarie staff have consulted with all stakeholders and regional and provincial officials. They have provided commentaries on construction costs and timetables, operating costs, revenue estimates, and revenue sharing anomalies in the Richmond/Airport analysis, and identified commercial opportunities that require further exploration. They have conducted financial modelling under the Richmond/Airport to Vancouver Rapid Transit Project assumptions, and under more commercially appropriate assumptions, identified the potential for private sector involvement, and outlined a possible process to pursue a private-public partnership. A substantial draft report has been presented, which is now being reviewed by stakeholders.

Private-Public Partnerships in Transportation

Public-private partnerships in transportation are relatively recent. Traditionally, governments have invested directly in roads and transit systems, and operated them as part of government. More recently, as part of a general trend toward government specifying requirements and obtaining services from the private sector, many governments have adopted models where the private sector funds, designs, builds, and

operates roadways and transit systems. This practice is widespread in England, Australia, and New Zealand, and Asia, and is becoming more common in North America.

These models may take many forms. At one end, the private sector may provide all or most of the funding, and absorb major risks associated with the project – construction costs, delays, lower than projected revenue, higher than expected operating costs. At the other, the private sector's role may be limited to designing and building a facility within broadly specified parameters. In the middle, a private contractor may take the risks of design, construction, and schedule, but be guaranteed revenues sufficient to cover the bid cost of the project and subsequent operations.

All such projects have some common characteristics. To at least some degree, and frequently to a large degree, the government relinquishes its traditional practice of detailed specifications and project control, and allows the private sector greater flexibility in design and project management. Construction specifications are based on general requirements and performance standards – the private sector is left to determine the best way to meet these requirements. This may even extend to alternatives as diverse as a bridge or tunnel, or choice of rapid transit right of way. Operations too are based on performance specifications, usually governed by bonuses and penalties to ensure good performance.

The rationale for a public-private partnership may result from:

- a shortage of government funds
- a desire to obtain the benefits of private sector project management;
- the transfer of risks to private companies; and
- the greater flexibility in management and operations enjoyed by the private sector.

All of these objectives are relevant to TransLink.

PPP Review – Preliminary Conclusions

Macquarie's work suggests that the Richmond/Airport to Vancouver Project has many characteristics that may make it suitable for a private-public partnership approach. These include:

- The ability to meet operating costs from the farebox, and potential capital cost recovery through the farebox and associated commercial benefits arising from the project;
- The potential for a premium airport service, requiring additional capital costs but commanding a premium fare, to subsidize other elements of the project;
- Potential innovations in route selection, technology, and implementation, resulting in costs below the (appropriately) conservative estimates in the Richmond/Airport to Vancouver analysis;
- Local experiences of Design-Build contracting techniques;
- Potential for significant transfer of construction, maintenance, operating and financial risk to the private sector;

- A clear economic and social justification for government capital or operating contributions to the project, as demonstrated in the Richmond/Airport to Vancouver analysis; and
- Few pre-existing major government constraints on private sector involvement.

Macquarie's work notes that under the very conservative assumptions used in the Richmond/Airport to Vancouver Rapid Transit Project analysis, and given the scale of the project, there is limited possibility of significant private sector financing of project capital costs. However, their report suggests that the private sector could substantially improve the commercial viability of the project through range of innovations.

The Macquarie work presents directions that would require a significant shift in government thinking. These include the development of a premium service to the Airport, possible revisions to fare structures, the incorporation of innovative revenue generating uses in stations, the application of transportation demand management measures, and the incorporation of existing elements of the transportation system into a private-public partnership. Further, and perhaps most important, Macquarie notes that the current fragmented and open-ended approval processes in the region are insufficiently certain to attract early private investment. Development of such a process would be required. These issues require further consideration with participating agencies.

Macquarie reviewed the results of the MAE work and considered the relative benefits of at and below grade alternatives from a private sector perspective. They noted that below grade construction provided technical, commercial, and community benefits, albeit at higher cost, while at grade alternatives presented travel time and insurability issues, and raised community concerns. The Richmond/Airport to Vancouver Project was not intended to reach technical conclusions related to alignment or technology in this phase. However, the CEO, noting Macquarie's comments and the substantially greater benefits identified for high speed grade separated options, believes that for this project the Board should preclude at grade options in Vancouver in future work, to avoid both unnecessary analysis and continuing community issues related to surface options. This limitation on further analysis is contained in RECOMMENDATION C.

The innovations proposed by Macquarie require further development and discussion with project partners. In particular, the Airport has requested that TransLink join with the Airport in a further review of issues of interest to both agencies – further development of the PPP concepts, further market analysis to coincide with a planned update of the Airport's ground transportation plan (with data collection scheduled for June 2001), and technical considerations related to the Airport service. Modest funding from each agency would provide the necessary resources to complete the work by July. The final reports on the potential for public-private partnerships for both the Richmond/Airport to Vancouver link and the Fraser River crossing could then be presented concurrently.

Completion of this work would provide the Board with the necessary basis for an evaluation of the potential for use of a public-private partnership approach. With this further development, Macquarie suggests that the requirement for government funding

for major capital projects such as the Richmond/Airport line and the Fraser Crossing may be reduced significantly. Further, they believe that a properly structured competitive process, involving the private sector at an early stage, could utilize private sector expertise and risk dollars in more detailed planning.

Next Steps

Further investigation of PPP methodology, and issues related to market analysis and technical considerations related to the airport premium service would provide the Board with useful additional information. Following that work, should the Board conclude it wishes to proceed further, TransLink staff have been advised that Airport and Ministry of Transport staff would likely provide financial support for additional work

The mutual interest of the partners in exploring these directions results in a cost-effective government partnership that will serve all the agencies.

ALTERNATIVES

The recommendations of this report confirm previous policy work, and the conclusions of Transport 2021, which support construction of the Richmond link in the medium term.

Given long standing policy, and the results of the Richmond/Airport to Vancouver study, an alternative decision not to confirm present policy would represent a substantial change in direction, and require that the entire question be reviewed yet again.

Further, the report recommends that at grade alignments in Vancouver be excluded from further consideration.

This recommendation could be deferred or rejected. However, a decision to defer or reject this recommendation would maintain continuing uncertainty for the local communities, when both the overall analysis and the private sector perception of the alternatives suggests that given the requirements of this project, an at grade solution is unlikely to be viable.

An extension of Phase 2 is recommended to provide additional information on the application of PPP methodologies.

A decision that no further study should be undertaken at this time would limit the likelihood of obtaining matching financing from partner agencies to support the future study and development of this connection. It is noteworthy that both the federal Finance and Transport Ministries have expressed strong support for this approach.

CONCLUSION

The Richmond/Airport to Vancouver Rapid Transit study has demonstrated that even a conservative evaluation of a rapid transit system from Richmond and the Airport shows

significant positive benefits to the community, and that such a system should be constructed earlier rather than later. The Macquarie North America work suggests that significant benefits may be achievable through utilization of private sector expertise in the design, development, and approval of the project. An extension of Phase 2 to explore PPP techniques more fully, and examine market and technical issues related to the Airport service, is recommended.