



BRIEFING DOCUMENT

To: GVRD Mayors and Councils

Re: Proposed twinning of the Port Mann Bridge and Highway 1 expansion

From: David Suzuki Foundation

Date: June 13, 2006

Recommendation

The Gateway collection of transportation infrastructure projects consists of a number of individual elements, of which the David Suzuki Foundation only takes issue with the following:

The Proposal

- **the twinning of the Port Mann Bridge and the widening of Highway 1 west of the Port Mann Bridge between Coquitlam and the McGill Interchange in Vancouver.**

Compared to the other Gateway initiatives for the region, the planning for this proposed project has been non-transparent and fundamentally flawed. **Local governments within the Greater Vancouver Regional District should reject the proposed Port Mann highway expansion project outlined above, based on the following grounds:**

- The proposal violates the goals of the Livable Region Strategic Plan (LRSP).
- The proposal cannot achieve its own objective of reducing congestion.
- The proposal is hugely expensive, and requires a long delay in implementation.
- The proposal fails to sufficiently consider alternative strategies.

The Problem

According to the B.C. Ministry of Transportation's *Program Definition Report*¹, the identified problem with the Port Mann Bridge is a current a.m. peak automobile queue of 1,000 vehicles (containing approximately 1,250 people). The *Program Definition Report* claims that this queue will grow over time, from 5 km today, to 12 km (approx. 2,400 vehicles, or 3,000 people) by 2011, and 17 km (approx. 3,400 vehicles or 4,200 people) by 2021. Although research on traffic congestion could call into question the estimated magnitude of this traffic growth, as traffic tends to reach a point of "self-limiting

¹ Government of British Columbia (January 31, 2006) *Gateway Program: Improving Roads and Bridges for people, goods and transit throughout Greater Vancouver*

equilibrium” where congestion “discourages further growth in peak-period travel”,² there is a significant congestion problem on the Port Mann highway corridor during peak travel periods, the worst section not being the Port Mann Bridge deck itself, but the westbound approach to the bridge between 176th Street and 152nd Street in Surrey³. To date, the only solution identified by the B.C. Ministry of Transportation is to widen the highway and double the number of traffic lanes over the Fraser River by twinning the Port Mann Bridge.

The Proposal violates regional goals

In contrast to the other Gateway projects we have evaluated, which assist cargo transport from Greater Vancouver’s ports, we conclude the primary outcome of this proposed Port Mann highway expansion project is an increase in peak-hour commuting using single-occupant automobiles.

This solution is incompatible with the GVRD’s *Transport 2021* plan, which shows further expansion of the Port Mann Bridge – or the Coquitlam-Vancouver portion of Highway 1 – is unnecessary.⁴

Moreover, the objectives of the proposed Port Mann highway expansion also fundamentally conflict with the region’s goals, set out in the GVRD Livable Region Strategic Plan⁵ (see Table 1). Instead of working to uphold the “livability” of the region, the proposal suggests we should abandon these goals by encouraging and facilitating low-density development and greater distance between work and home.

Table 1 – Conflicting objectives between the LRSP and the proposed Port Mann highway expansion

LRSP goals	Effects of freeway expansion
Increase transportation choice	Limits transportation choice / increases automobile dependence
Build complete communities	Enables / encourages long-distance separation of work, home, shopping, and recreation land uses
Achieve a compact metropolitan region	Discourages compact development / encourages sprawl
Protect the Green Zone	Increases pressure for Greenfield development (i.e., erosion of ALR)

² For further information see Victoria Transportation Policy Institute (2005) *Generated Traffic and Induced Travel Implications for Transport Planning* available at: www.vtpi.org/gentraf.pdf

³ TransLink (July 2, 2004) *Travel Characteristics of Traffic on the Highway 1 Corridor*

⁴ Between 1999 and 2001, two HOV lanes were added to Highway 1 west of the Port Mann Bridge, and the Port Mann Bridge was widened to accommodate a fifth lane. Expanding Highway 1 east of the Port Mann Bridge is compatible with *Transport 2021*.

⁵ These goals are also endorsed by the provincial government under the *BC Growth Management Act*.

The Proposal fails to achieve its own objective of reducing traffic congestion

“Adding capacity generates traffic, which leads to renewed congestion with higher traffic volumes, and more automobile oriented transport systems and land use patterns.”⁶

The critical weakness of the proposed Port Mann Bridge highway expansion is that it fails to even achieve its own objective of reducing congestion. Both research and real-world experiences have conclusively shown that unless road tolls high enough to dissuade some automobile trips from occurring are incorporated into the project, an increase in highway capacity for commuter traffic actually worsens traffic congestion rather than relieves it.⁷ This renewed congestion at higher traffic volumes is largely attributed to a phenomenon called “generated traffic” made up of “redirected traffic” (trips shifted in time, route and destination), and “induced vehicle travel” (new vehicle trips, shifts from other modes such as transit, and longer trips) as a result of new highway capacity⁸. One study that summarized a wide-ranging body of existing research on the portion of new road capacity that is absorbed or lost to “induced traffic” alone found that over a period of three years or more, the proportion of new road capacity absorbed by “induced traffic” (not including existing congestion) ranged from 50 to 100 per cent (see Table 2).⁹

Table 2 – Portion of new capacity absorbed by induced traffic

Author	Less than three years	Greater than three years
SACTRA		50 – 100%
Goodwin	28%	57%
Johnson and Ceerla		60 – 90%
Hansen and Huang		90%
Fulton, et al.	10 – 40%	50 – 80%
Marshall		76 – 85%
Noland	20 – 50%	70 – 100%

Source: Adapted from Victoria Transportation Policy Institute (2005) *Generated Traffic and Induced Travel Implications for Transport Planning*, p. 8

⁶ Victoria Transportation Policy Institute (2005) *Generated Traffic and Induced Travel Implications for Transport Planning*

⁷ Even the Gateway Program Definition Report acknowledges that “if the improved highway is not effectively managed through tolls and/or other congestion-management measures, analysis shows it [i.e. the expanded Port Mann Bridge with its increased capacity] would reach current levels of congestion 5 to 10 years after project completion.” p.37

See, for example, the traffic projections at different toll levels in: The Gateway Program: Traffic and Revenue Forecasts, Final Report September 2004. Steer Davies Gleave. http://www.th.gov.bc.ca/gateway/reports/GTWY_traffic-revenue-forecasts.pdf

⁸ Victoria Transportation Policy Institute (2005) *Generated Traffic and Induced Travel Implications for Transport Planning*

⁹ Ibid.

One of the main inefficiencies of adding highway capacity for commuter travel is that it encourages all motorists to make more trips than before. Adding highway capacity also stimulates new low-density suburban developments whose residents are compelled to use their cars since this urban design makes other forms of transportation ineffective or uneconomical.¹⁰ Within a short period of time (less than three years in some cases), economic losses from traffic congestion are greater than before, the ability to install alternatives has decreased, and the costs necessary to (temporarily) relieve the resurgent problem are compounded.

Even immediately after the proposed bridge would open, when there could be a temporary short-term relief from traffic congestion along the Port Mann Bridge corridor, much of the traffic would simply be displaced downstream, plugging up city secondary roads throughout the region (e.g., Surrey Guilford area, TriCities area, Burnaby and Vancouver).

The Proposal is hugely expensive, with a long delay in implementation

“Analysis of traffic conditions in 70 metropolitan areas finds that regions which invested heavily in road capacity expansion fared no better in reducing congestion than those that spent far less.”¹¹

The estimated cost for the new bridge and the highway expansion (both east and west of the bridge) is estimated at \$1.5 billion dollars.¹² Using this figure and the project’s own projections of vehicle queues, the proposed solution to remove the current vehicle queue will therefore cost about \$500,000 per assisted commuter in 2013, the completion date for the proposed Port Mann Bridge highway expansion. Further, given that the project proponents stress that there is already a queue of 1,000 vehicles, perhaps the most remarkable aspect of the proposal is that it will not provide any benefits to commuters until 2013.

Additional costs and externalities

Unfortunately, the real total cost of the project is likely to be significantly higher. Prices for steel, concrete and labour have risen considerably within the past few years, and this promises to significantly affect total capital costs for the project. Moreover, the \$1.5 billion estimate only includes the cost of improvements within the right-of-way of the trans-Canada highway. Local governments from Langley to Surrey to the North-East sector and Vancouver will be pressured to expand municipal roads and arterials to carry the increased amounts of traffic from the expanded highway.

¹⁰ Victoria Transport Policy Institute (December 14, 2005) *Automobile Dependency*. For more information see www.vtpi.org/tm100.htm

¹¹ Victoria Transportation Policy Institute (2005) *Generated Traffic and Induced Travel Implications for Transport Planning*.

¹² Real 2005 dollars.

There is also no accounting for imposed direct and indirect health and environmental costs from the increased vehicle traffic and vehicle distance traveled. This includes incurred costs from accidents, parking costs, air pollutants and greenhouse gas emissions.¹³ All of these costs will eventually be passed on to taxpayers and to drivers on the expanded Port Mann Bridge in particular.

Examples of indirect health costs:

1. **Obesity** - Low-density development facilitated by increased highway capacity “has been correlated with higher body weights, obesity and their associated diseases,” impacting public health and increasing overall health care costs.¹⁴
2. **Traffic accidents** – Traffic fatalities per capita tend to be higher in low-density development areas than in compact communities.¹⁵
3. **Air pollution** – Vehicle and truck traffic are a major source of air pollutants, including carcinogenic diesel particulate, for which there is no “safe” level of exposure.¹⁶

Insufficient examination of alternatives

Remarkably, the project planners have not satisfactorily answered (or even asked) whether there might be a less expensive option of diverting 3,600 vehicles or 4,200 commuters from their business-as-usual commute over the Port Mann Bridge in 2021. It is equally crucial to ask whether there might be a quicker option for diverting more than 1,250 commuters today, and more than 3,000 commuters from a business-as-usual commute over the Port Mann Bridge prior to 2013.

It should be noted that a shift of commuters in 20 per cent of the vehicles in the current a.m. peak hour bridge traffic and associated queue to other modes (transit, carpools, telecommuting, other) would completely eliminate the current a.m. westbound queue for the Port Mann Bridge. Moreover, a recent study for the Gateway Project by Halcrow¹⁷ finds that a 20 per cent mode shift to transit alone (i.e., not including other mode-shifting measures) is “not unrealistic and could be achieved for select origins and destinations if very high levels of transit service were provided.”¹⁸

Another Gateway report notes that regular bus systems can accommodate up to 5,000 people per hour. It also acknowledges the success of the large Scott Road Park and Ride facility in diverting cross-river automobile commuters to transit. The report further states that encouraging automobile commuters onto the Transit system “*may best be achieved*

¹³ Note some provincial officials have claimed the Port Mann Bridge highway expansion will reduce greenhouse gas emissions. This is a blatantly false statement that is neither supported by credible research or real-world experience.

¹⁴ Frank, L., Kavage, S. and Litman, T. (2006) *Promoting public health through Smart Growth*. Prepared for Smart Growth BC.

¹⁵ Ibid.

¹⁶ Levelton Engineering, Alchemy and D.V. Bates. (2000) *Diesel Particulate Matter and Associated Environmental Concerns, Health Risks and Tradeoffs*. Prepared for Onroad Diesel Emissions Evaluation Task Force (BC). For more information see www.gvrd.bc.ca/air/pdfs/DieselParticulateMatterStudy.pdf

¹⁷ Halcrow Consulting Inc (March 31, 2006) *Assessment of Transit-only Option for Port Mann Bridge* www.th.gov.bc.ca/gateway/reports/pdrsupp/HWY1_Corridor_Overview_Future_Transit_Needs.PDF

¹⁸ Ibid.

by constructing a transit exchange and a large park-and-ride facility close to Highway 1 with a fast and frequent transit link to [SkyTrain]. This would be particularly desirable to intercept some Highway 1 traffic coming from longer distances. However, very convenient access to and from Highway 1 would be a key to optimizing use of the transit exchange.”¹⁹

The proposed Port Mann highway expansion project actually calls for the construction of park and ride lots at key interchanges in Surrey and Langley, and TransLink’s 10-Year Outlook plan states that “bus rapid transit extensions south and east of the existing SkyTrain terminus at Surrey City Centre are proposed to be operational by 2013.” It is therefore remarkable that the project planners appear not to have investigated how effective such Park and Ride lots would be in the absence of the twinned Port Mann and expanded Coquitlam-Vancouver segment of Highway 1, particularly if these lots were linked to the SkyTrain system with a “B-Line” or rapid bus service.²⁰

Fast Track Alternatives for Port Mann Highway Corridor

The following provides a list of potential alternatives, the majority of which have been identified in GVRD’s existing transportation plans (*Transport 2021*, TransLink’s *10-year Outlook*, and others). These alternatives support the regional growth objectives of the LRSP. Many of the solutions could be put into operation within two to four years, much sooner than the proposed highway expansion and at significantly lower cost.²¹

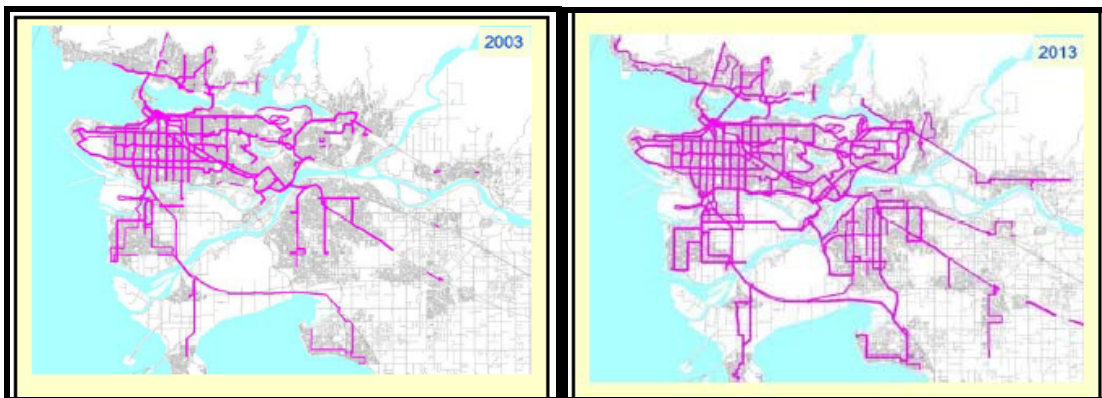


Figure 1 – Proposed expansion of transit routes with 10 minutes or better frequency

Source: Translink’s *Three-Year Plan and 10-year Outlook*, p. 31

¹⁹ NDLea Consultants Ltd. (December 2005) *Highway 1 Corridor Overview of Future Transit Needs* http://www.th.gov.bc.ca/gateway/reports/pdrsupp/HWY1_Corridor_Overview_Future_Transit_Needs.PDF

²⁰ The cost of two implementing two “rapid transit bus” systems in Surrey was estimated to be \$120 million, while the capital costs (excluding land purchase) for a 1,200-stall park and ride lot in Coquitlam was estimated to be \$15 million dollars in 2004. Together, these costs are less than 10% of the 2005 capital cost estimated for the proposed Port Mann Bridge highway expansion project. **Sources:** TransLink (February 2004) *2005 –2007 Three Year Plan and Ten-Year Outlook: Strategic Transportation Plan Amendment* and IBI Group et. al. (March 31, 2004) *North East Rapid Transit Alternatives Project - Phase 2*. www.translink.bc.ca/files/pdf/plan_proj/area_plans/northeast_sector/final_technical_report.pdf

²¹ A report by the Livable Region Coalition (2006), *Transportation for a Sustainable Region*, has estimated that the majority transit solutions within the above summary table (excluding Evergreen LRT and Park and Ride lots) would cost \$ 300 to \$500 million, less than one third the cost of the proposed Port Mann Bridge highway expansion.

Fast Track Solutions

1. An increase in TransLink's bus fleet, which is currently 50 per cent (600 buses) below target for 2006. This option should be accelerated and expanded to achieve increased frequent-service coverage, with priority to regions not adequately serviced. (See Figure 1).
2. New Park and Ride lots located at the 152nd and/or 160th Street interchanges, accessible directly from the highway, that allow people quick and easy access to express buses (solution #3) and rapid transit (solution #4 and #5).²²
3. A new rapid bus system servicing Surrey and Langley to Coquitlam with queue jumper lanes for the Port Mann Bridge corridor so users don't have to wait.
4. Additional SkyTrain cars to boost capacity and service, which is currently running at one-third capacity. (At full capacity this option has the people carrying capacity of an 18 to 20-lane freeway.)
5. Extend SkyTrain from Surrey City Centre to Guildford and Highway 1 and link with Park and Ride lot and rapid bus station.²³
6. Construction of Evergreen light rail line linking Millennium Line and Coquitlam City Centre.²⁴
7. Rescheduling to reduce peak transportation demand. This solution can be applied to manage container truck traffic from the Port of Vancouver.²⁵ It should be noted that in April 2005, the Port of Montreal extended its port hours from 4 PM to 11 PM to relieve truck container congestion on existing road infrastructure. After only seven months, this strategy had shifted 18 per cent of the gate transactions during the extended hours with expectations that a 25 per cent shift would be achieved in the near-term.²⁶

As is shown above, there are a number of alternatives identified that could solve the problem of traffic congestion in the Port Mann Highway corridor while not compromising the goals of the Livable Region Strategic Plan.

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²² Note this solution was not part of GVRD's Transport 2021 plan but was identified in GVTA's staff report (April 10, 2006) Regional Transportation Implications of the Provincial Gateway Program

²³ The *Transport 2021 Long-term Plan* calls for an intermediate-capacity transit link between Surrey City Centre and Guildford.

²⁴ See footnote 21.

²⁵ Giles, P. and Grant, E. *Alternatives to the Gateway Program: Moving Goods Through Vancouver Without Expanding Highway 1*, December 8, 2005) Study prepared for UBC's School of Community of Regional Planning

²⁶ Ibid. Referencing Federal-Provincial Task Force (2005)