



Date: November 15, 2016

To: Michael Shepard, Project Assessment Manager, Environmental Assessment Office

From: Liz Staples, Project Coordinator, George Massey Tunnel Replacement Project

Re: Response to information requests regarding the Traffic Assessment for the George Massey Tunnel Replacement Project

This memo has been developed to address comments raised by Technical Working Group members at the October 19, 2016 meeting that focused on the traffic Intermediate Component (IC) and traffic information provided in the Application for an Environmental Assessment Certificate (Application). The memo focuses on key topics including:

- Project approach to traffic modelling;
- Consideration of additional modelling scenarios;
- Traffic considerations outside of the Local Assessment Area (LAA); and
- Operational phase monitoring.

In order to support a meaningful discussion on these topics, the memo also provides an overview of transportation planning in the Lower Mainland – i.e., how local, regional and provincial agencies work together to monitor, manage and invest in the local and regional transportation network to address the constantly changing needs of the region.

Transportation Planning in the Lower Mainland

Transportation infrastructure in the Lower Mainland is planned and operated by a range of local, regional and provincial government agencies that are responsible for different parts of the system including: local and arterial roads (municipalities and TransLink); provincial highways (Ministry of Transportation and Infrastructure); transit (TransLink); and cycling and pedestrian facilities (all).

Demands on transportation infrastructure in the region are constantly evolving in response to growth in population and changes in land use. In response, the range of agencies noted above work together through a variety of mechanisms to determine what parts of the system are working effectively and where new investments are needed. For example, the Ministry meets with TransLink on the Major Road Network yearly or more frequently as required, and with municipalities on a regular (monthly) basis

regarding operational issues in addition to additional meetings prior to the adoption of Official Community Plans (OCPs).

When developing new infrastructure, the lead/responsible agency engages with other partners in transportation planning to ensure that investments in one part of the system complement the operation of existing infrastructure. Due to the integrated nature of the system, all agencies have an interest in the overall performance of the regional transportation network. In this context, ongoing dialogue on the performance of the system, and the need for new investments or changes in operational practices, is part of the process of planning and operating the system and occurs on an ongoing basis.

Such is the case with the Project. Prior to entering the environmental assessment process, the Ministry has been monitoring, with local and regional governments, the performance of the Highway 99 corridor for decades. In response to information gathered, the Ministry has made improvements (e.g., counter-flow system) to ensure the best service possible for users of the corridor.

The rationale for the proposed Project is supported by ongoing monitoring of the performance of the corridor and is a response to critical congestion challenges, recognized by local, regional and national governments as well as other stakeholders. The planning of the Project has been undertaken with a comprehensive consideration of the transportation and land use plans of other organizations with interests and mandates in planning and operating the regional transportation network.

In this context, the physical elements of the Project design have been developed to address both the congestion challenges on Highway 99 as well as the transportation needs and objectives of national, regional and local government partners. As such, the Project includes elements such as:

- Dedicated transit lanes and median transit stop along Highway. 99;
- Investments in improved access to, and resulting conditions on, local road networks (e.g., Rice Mill Road connection);
- Improved cycling and pedestrian facilities; and
- Investments to facilitate more efficient goods movement.

Approach to Traffic Modelling

Traffic forecasts for the Project have used established industry practices in the Lower Mainland, such as using regional land use and transportation plans and TransLink's traffic demand models, to determine anticipated demand to 2045 for planned population and employment growth and transportation infrastructure from International, national, provincial and municipal agencies, as well as major industrial facilities.

This anticipated demand for passenger cars, goods movers and transit on the highway, as well as desired active transportation options, is then used to design infrastructure for AM and PM peak traffic hours to ensure that traffic flows in an appropriate manner to address the Projects goals - reduce congestion, improve safety, support trade and commerce, support increased transit on the Highway 99 corridor, support options for pedestrians and cyclists, and enhance the environment. Other key considerations in the design of the roadway infrastructure include vertical grades (particularly for goods movers) and traffic interactions at interchanges (e.g., transit stops, on ramps/ off ramps, and cyclist and pedestrian pathways).

Traffic modelling presented in the Application has been undertaken to support Project planning and ensure that the infrastructure can address anticipated traffic demand on opening day (2022) and in the short to medium term (2030). As an example, such traffic modelling was used to confirm a design concept that would meet future traffic demand including consideration of an eight-lane alternative (six general-purpose plus two transit/HOV lanes). Using such modelling, it was confirmed that with an eight-lane bridge, congestion would still remain on opening day (2022) and that the Project benefits associated with the Reference Concept (10-lane bridge) would not be realized.

In addition to forecasts out to 2030, Project planning was supported by longer term forecasts developed using TransLink's Regional Transportation Model (RTM) projections to 2045, as well as by the Regional Growth Strategy's 2041 population and employment forecasts. Such longer term forecasts provide for a high level consideration of anticipated traffic conditions in a timeline that is consistent with long term land use and transportation plans.

Using these longer term traffic forecasts, queue lengths in 2045 have been projected as illustrated in the Project Definition Report and show congestion delay times of between 45 and 65 minutes during the morning and afternoon peak periods, for both northbound and southbound traffic. Traffic demand forecasts for 2045 have also been compared to the operational capacity for the 10-lane bridge scenario which indicates minor queuing delays (five minutes or less) can be expected for merging traffic at the interchanges and traffic climbing the grade of the bridge during peak hours (northbound AM, southbound PM). During all other hours of the day, zero-delay conditions are expected.

Alternative Modelling Scenarios

As traffic modelling noted above is also used to support an effects assessment of the traffic IC, Working Group members have requested that other modelling scenarios, reflecting different potential transportation infrastructure futures, be considered.

The Ministry supports that, in the context of the way in which transportation infrastructure is planned and operated in the Lower Mainland, the Proponent appropriately selected scenarios that reflect the stated preferences of local and regional governments with respect to land use and growth management

and future investments in transportation infrastructure. This modelling scenario is reflective of the goals and objectives of transportation planning partners while at the same time supporting the Ministry’s mandate to facilitate people and goods movement in, through and beyond the region.

One of the key alternative modelling scenarios that have been proposed is one which assumes none of the infrastructure investments associated with the Mayors’ Vision are implemented. The TransLink Regional Transportation Model (RTM), currently in early stages of development, is being designed to facilitate the analysis of future scenarios where various proposed infrastructure investments are (or are not) implemented. However, modelling the “no-other-investment” scenario is not considered appropriate for this Project as it is contrary to the Ministry’s long-term commitment to acknowledging and supporting the mandates of other entities involved in land use and transportation planning. In addition, the Province has already committed financial resources to some of the projects identified within the Mayors’ Vision, and has indicated a commitment to future investments as the planning of specific projects is advanced.

Traffic Considerations Outside of the Local Assessment Area (LAA)

In addition to the request to consider alternative traffic modelling scenarios, some Working Group members have also identified concerns regarding effects that are considered to occur outside of the LAA and that such effects are substantial enough to outweigh the benefits that have been identified within the LAA/ Highway 99 corridor.

Information presented in the Application (See Table 1 below), based on TransLink’s RTM, forecasts only minor differences in traffic levels at the North Arm Fraser River crossings, with a slight reduction in traffic levels as a result of the Project.

Table1 Two-way Annual Average and Daily Traffic Volumes at the George Massey Tunnel Crossing and on Adjacent Fraser River Crossings, With and Without the Project

	2014-2015	2045	2045
Crossing	Measured	Without Project	With Project and Tolled
George Massey Tunnel	81,000	100,000	72,000
Alex Fraser Bridge	107,000	120,000	140,000
Knight Street Bridge	92,000	94,000	93,000
Arthur Laing Bridge	76,000	90,000	91,000
Oak Street Bridge	80,000	87,000	85,000
Knight + Laing + Oak	248,000	271,000	269,000

At the Alex Fraser Bridge (AFB), the RTM is forecasting that annual average daily traffic (AADT) will increase to 120,000 by 2045. In addition, the Proponent has performed a detailed analysis of origin-destination patterns for AFB/GMT traffic, as well as assessing the actual traffic response to tolling of the Port Mann Bridge starting in 2012. Based on these analyses, increases in traffic at AFB in the '*With Project Scenario*' represent traffic diverting from the newly tolled bridge, during evening and weekends, over and above the forecast increase in overall regional traffic levels. In addition, based on the Port Mann experience, diversion from the new bridge to AFB will be primarily during off-peak times, during times when there is available capacity on AFB.

As noted, the RTM forecasts for AFB are based on no regional tolling strategy being in place by 2045, and that AFB is not upgraded from its current configuration. In addition, the Ministry is currently considering potential ways to improve traffic flows and reduce congestion at AFB, including for example, possible counter-flow options.

Given all of these considerations, the assertion that the Project will result in negative effects on traffic and air quality outside of the LAA is not supported. AADT on the Fraser North Arm crossings are forecast to be slightly reduced by the Project, and the increases in traffic levels at AFB will consist of traffic diverted from the new bridge during off-peak periods, when AFB capacity is available.

Consideration of Existing Regional Congestion Challenges

Notwithstanding information presented in the Application that demonstrates the Project will not result in effects outside of the LAA, given its role in the operation of the regional transportation network, the Ministry has considered existing and ongoing congestion challenges at Fraser River crossings during Project planning.

For example, given the integrated approach to the operation of the transportation network in the Lower Mainland, the Ministry and the City of Vancouver have shared monitoring information regarding congestion at the Oak Street Bridge and are aware of the role of the Canada Line in decreasing traffic levels along the Oak Street corridor since its opening. This change reflects both the increasing congestion that accompanies regional growth and the increased transportation choices provided for by the Canada Line.

Notwithstanding this recent trend, congestion remains in this area and, in support of Project planning, the Ministry has engaged the City of Vancouver regarding potential changes to signal timing along Oak Street to reduce congestion. The City has noted that the current timing is considered optimum in the context of avoiding increases in delays for east-west traffic (crossing Oak Street) within the City. As such, congestion in this area is anticipated to remain and grow over time with growth in population and employment regardless of the Project.

As discussed in the Application, during off-peak hours, tolling of the new bridge will result in lower traffic volumes, tending to reduce traffic pressures and collision rates at the Oak Street Bridge. During peak hours, northbound morning and southbound afternoon traffic volumes at the new tolled bridge are forecast to be similar to current volumes at the untolled Tunnel. For northbound morning traffic, there may be some increase in traffic (and a few minutes extra delay) at Oak Street during the busiest part of the morning rush, as morning traffic at the new Massey crossing converges towards the middle part of the rush hour. However, any increase during the busiest hour will be offset by the lower traffic volumes coming from the new bridge at the beginning and end of the morning rush period. A short period of adjustment may be expected upon opening the new bridge, as traffic adjusts to its existence. However, the net impact of the new bridge on overall traffic volumes and congestion levels at the Oak Street Bridge is assessed as being neutral during rush hour periods, and as being positive during off-peak periods.

In this context, temporary changes to morning queues at locations such as the Oak Street Bridge, are considered part of the process of integrating new investments in transportation infrastructure that collectively address existing challenges rather than Project effects requiring mitigation. This approach is considered consistent with the manner that the Ministry works with regional and local partners in planning, constructing and operating the regional transportation network.

Operational Phase Monitoring

As noted above, the Ministry works with local, regional and national partners on an ongoing basis to monitor the performance of Ministry infrastructure in the context of the overall operation of the regional transportation network. As such, the Ministry is committed to working with local and regional partners to monitor the performance of Project infrastructure, and adjacent areas within the regional transportation network, during the operational phase.

The proposed framework for such monitoring would include reporting after the first year of full operation of the corridor on operational phase traffic conditions. The scope of reporting will include:

- AADT (Annual Average Daily Traffic);
- AAWT (Annual Average Weekday Traffic);
- Traffic profiles (truck, cars, busses, HOV);
- Transit ridership (work with TransLink on analyzing Compass data); and
- Cyclist and pedestrian traffic.

Reporting will consider changes in the metrics noted above by comparing actual data (rather than modelling) from the pre-construction and operational phase.