



## **Lions Gate to Highway 1 Connector Planning Study**

**March 2007**

The Ministry of Transportation recently completed a two-year study of the two primary routes connecting the Lions Gate Bridge to Highway 1 (the Trans Canada / Upper Levels Highway) in North and West Vancouver. Taylor Way through West Vancouver is a provincial route and Capilano Road through North Vancouver is a municipal route.

This study followed, and built upon, two other recent studies. The first study, completed in November 2003, reviewed the intersection of Taylor Way and Marine Drive, concluding with 21 options for improvements ranging from signal timing to significant infrastructure investments. These major infrastructure investments could not be made without further study. The second study was an internal review of a number of rehabilitation options for the westbound bridge carrying Marine Drive over Capilano River.

The purpose of the study was twofold. Firstly, to identify and evaluate long-term network improvement strategies that reduce anticipated network delays forecast for 2021. Secondly, the Ministry sought to prepare a possible staging strategy of improvements that could potentially be implemented before 2010, and are supported by business cases that demonstrate favourable project benefits, impacts, costs and risks.

The recently completed study undertook consultation with North Shore municipalities, TransLink, the Vancouver Port Authority and the Squamish First Nation. After a preliminary screening of all alternative strategies, this study provides a “business case” assessment of all reasonable improvement options that examines the overall benefits, impacts and costs from a technical perspective. The Ministry generally considers advancing transportation projects with business cases that clearly show a need to address a problem (safety and efficiency are key factors), a cost-effective improvement strategy, minimized impacts on external stakeholders and optimized project timing.

Areas of specific focus included:

- Marine Drive & the Lions Gate Bridge Approaches
- Taylor Way & Marine Drive intersection
- Capilano Road & Marine Drive intersection
- Capilano Interchange

Twenty candidate improvement strategies were developed and evaluated for feasibility to address the key issues at these areas of focus. To ensure effective evaluation, a multi-step screening process was followed to identify any ‘fatal flaws’ based upon preliminary level review of the transportation and community impacts. Fourteen improvement strategies were developed and evaluated in greater detail using the Multiple Account Evaluation framework to highlight relative benefits, impacts and costs of each concept. Of these fourteen concepts, four were identified as ‘Tier 1’ that are

required to support other options. For example, lengthening the westbound right-turn and left-turn lanes on Marine Drive at Taylor Way or widening the westbound Marine Drive Bridge over the Capilano River would support other improvements that enhance westbound travel on Marine Drive. Tier 2 concepts include all other roadway network improvement strategies that reduce the impacts of vehicle queues to the Lions Gate Bridge, provide enhanced access for southbound transit services and/or address known safety issues.

### Short- and Long-term Implications

As part of the study, the implications of the Vancouver 2010 Winter Olympic Games were considered in the short-term. Longer-term growth and development challenges were considered as factors for short-term and long-term infrastructure investments.

Generally, improvements to the Lions Gate Bridge or the North Shore area network are not legacy projects required to host the Olympics. Staff from the Vancouver Organizing Committee for the games (VANOC) provided very preliminary plans for moving people between the events in Vancouver and those venues north of the Burrard Inlet. In general, they broadly identified that the Iron Workers Memorial Bridge would accommodate most traffic to and through the North Shore area. However, VANOC will soon start development of a complete transportation plan to host all Olympic-related traffic between each sport venue.

Beyond 2021, the capacity of the transportation network outside the study area and crossing the Burrard Inlet will not likely be increased in the foreseeable future. The concepts evaluated in this study concentrated on reducing vehicle line-ups for traffic approaching the Lions Gate Bridge through the North Shore municipalities. If the Lions Gate Bridge is not widened, the additional storage provided by some of these concepts would be fully consumed sometime within the next 20 years or so. It is imperative, therefore, that person-carrying capacity be increased across the bridge - as there is no scope for increasing vehicle-carrying capacity.

### Conclusions and Recommendations

Some of the improvement strategies identified within this study can be implemented at relatively low cost and therefore make good investments. Given the single largest constraint – the Lions Gate Bridge lane capacity – the focus of most network improvements should be improving people moving capacity of the transportation system on the North Shore and across the Lions Gate Bridge. Transit supportive strategies such as modifying the transit priority facilities leading to the Lions Gate Bridge and other initiatives should be examined along with other improvements that address the impacts of vehicle queues on Marine Drive east of Capilano Road and west of Taylor Way. The study demonstrated that the queuing for the Lions Gate Bridge can be managed or relocated but there is no way to decrease the line-up. Some of the concepts identified within this study would support both of these goals.

Other considerations for the Ministry arising from this study will include the following:

- Minor capital improvements;
- Scope for safety improvements at Capilano interchange on Highway 1; and
- Rehabilitation or replacement of the westbound Marine Drive Bridge over Capilano River.