

## George Massey Tunnel Replacement Project Summary

### **BACKGROUND:**

- In 2013, the George Massey Tunnel Replacement Project team (GMTRP) undertook public engagement on five options:
  - retain existing tunnel;
  - replace existing tunnel with new bridge;
  - replace existing tunnel with new tunnel
  - maintain existing tunnel and build a new, adjacent crossing
  - maintain existing tunnel and build new crossing in new corridor
- The final option, a 10-lane bridge, received BCEAO and ALR approval in 2017.
- In 2017, the procurement was terminated, and the project paused to allow an independent technical review (ITR).
- The ITR was complete in the summer of 2018. Principal findings (detailed in Appendix A) include:
  - **Project Objectives and Functional Criteria:**
    - Capacity increase needed for travel reliability in non-peak direction during peak hours;
    - The absence of community alignment, community livability and cost from project goals (and solutions to address them) contributed to stakeholder concerns;
    - Original project goals and functional criteria resulted in the complex 10-lane bridge.
  - **Traffic:**
    - Highway improvements contributed almost half of the total Project user benefits.
    - Reducing the number of lanes from 10 to six or eight will accommodate the majority of the 2045 predicted traffic, with delays in 2045 similar to today.
  - **Highway and Bridge:**
    - Scale, complexity, and cost can be substantially reduced by changing criteria to allow an alternative alignment to the main highway and piers in the river.
  - **Transit:**
    - HOV/transit provisions do not provide value for money.
    - Eliminating the median transit provisions will significantly reduce the complexity of the Steveston Highway and Highway 17A interchanges.
  - **Business Case:**
    - Major scope components were not tested individually through trade-off studies and independent value for money analysis;
    - Estimated user benefits are reasonable, although inclusion of economic development benefits to further increase the B/C ratio is not consistent with MOTI practice.
  - **Existing and New Tunnel**
    - Retrofitting the Tunnel to modern seismic standards is technically feasible.
    - An immersed tube tunnel (ITT) for the new crossing either on its own or in conjunction with the retrofit of the existing Tunnel is feasible and likely cost competitive with a bridge.
- The ITR made recommendations in two primary areas (details in Appendix B):

- **Re-examine Project Goals and Functional Criteria**
  - Provide capacity to improve reliability and reduce congestion to levels consistent with other crossings in the Lower Mainland (vs. eliminate congestion at any time to 2045);
  - Provide transit infrastructure that is appropriate based on regional transportation planning (vs. median transit lanes and station to accommodate future LRT);
  - Respect environment by including necessary mitigation and compensation measures to allow for designs that may include a shorter bridge span, retrofit of the Tunnel or a new ITT (vs. requiring clear span and requiring construction in existing corridor); and
  - Maintain agricultural/park lands through mitigation and compensation to allow for lower risk interchange/crossing designs that reflect the surrounding lands and communities.
- **New Comprehensive Feasibility Study to confirm scope and cost (Re-scoping):**
  - Consider reuse of the existing tunnel;
  - Consider adding new capacity in the form of an ITT;
  - Maintain and improve the existing shoulder bus transit system;
  - Allow construction in the Fraser River and some encroachment on agricultural and park lands with suitable mitigation and compensation measures; and
  - Undertake formal trade-off studies and present value analysis on each of major project components.

**DISCUSSION:**

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## Appendix A: Independent Technical Review Findings

Project Needs, Objectives and Functional Criteria	<ul style="list-style-type: none"> <li>• Need to increase capacity to improve travel time reliability in non-peak direction during peak hours.</li> <li>• Absence of community alignment, community livability and cost from inclusion in Project Goals (and solutions to address them) contributed to stakeholder concerns</li> <li>• Goals of Mayors' Council on Transportation, TransLink, Metro Vancouver and local governments are closely aligned on need to improve the Crossing.</li> <li>• Functional criteria developed for <i>Goals 1, 4, 6</i> were principle factors in defining the Project scope.</li> </ul>
Traffic Modelling and Forecasting	<ul style="list-style-type: none"> <li>• Reference Concept highway improvements achieve 45% of total Project user benefits and are equally important to the Crossing solution</li> <li>• TransLink RTM3 model is reliable and suitable for future traffic forecasting on the Corridor.</li> <li>• Reducing the number of lanes from 10 to either six or eight will accommodate the majority of the 2045 predicted traffic but with delays in the peak direction in 2045 similar to today.</li> </ul>
Highway and Bridge	<ul style="list-style-type: none"> <li>• The scale, complexity, and cost of the Reference Concept can be substantially reduced by changing the functional criteria to allow an alternative alignment to the main highway and construction in the river.</li> <li>• The Review recommends that the Province change the specified functional criteria for the bridge to allow for an offset alignment and for construction to occur in, or adjacent to, the River.</li> </ul>
HOV and Transit	<ul style="list-style-type: none"> <li>• Eliminating the median transit provisions and corresponding lane reductions will significant reduce the complexity of the Steveston Highway and Highway 17A interchanges.</li> <li>• The Reference concept HOV/transit provisions do not provide value for money.</li> </ul>
Business Case.	<ul style="list-style-type: none"> <li>• The major components of the Project, which defined the scope, were not tested individually through trade-off studies and independent value for money analysis</li> <li>• Estimated user benefits are reasonable and review agree that for 10 lane reference concept has a benefit/cost ratio greater than 1.0</li> <li>• Inclusion of economic development benefits to further increase benefit/cost ratio in business case not consistent with MOTI practice for projects of this magnitude</li> </ul>
Existing and New Tunnel	<ul style="list-style-type: none"> <li>• Retrofitting the Tunnel to modern seismic standards is technically feasible.</li> <li>• Utilizing a new ITT (Immersed Tube Tunnel) for the new crossing either on its own or in conjunction with the retrofit of the existing Tunnel is feasible and likely cost competitive with a bridge.</li> </ul>

## Appendix B: Independent Technical Review Recommendations

Re-examine Project Needs and Functional Criteria	<ul style="list-style-type: none"> <li>• Provide capacity to improve current reliability and reduce future congestion to levels consistent with other crossings in the Lower Mainland (vs. eliminate congestion at any time to 2045);</li> <li>• Provide transit infrastructure that is appropriate based on regional transportation planning (vs. median transit lanes and station to accommodate future LRT);</li> <li>• Respect environment by including necessary mitigation and compensation measures to allow for alternative Crossing designs that may include a shorter bridge span, retrofit of the Tunnel or a new ITT (vs. requiring clear span and requiring construction in existing corridor); and</li> <li>• Respects need to maintain agricultural and park lands by including necessary mitigation and compensation measures to allow for lower risk, alternative interchange and Crossing designs that are less imposing and better reflect the surrounding lands and communities.</li> </ul>
New Comprehensive Feasibility Study to confirm scope and cost	<ul style="list-style-type: none"> <li>• Allow for congestion to be reduced, but not eliminated.</li> <li>• Formal trade-off studies and present value analysis on each of major project components.</li> <li>• Allow the new tunnel or bridge Crossing to be located off of the existing highway alignment.</li> <li>• A more detailed consideration of adding new capacity in the form of a tunnel engaging international experts in ITT design;</li> <li>• Consider reuse of the existing tunnel;</li> <li>• Maintain and improve the existing shoulder bus transit system (vs. median transit lanes and station to accommodate future LRT);</li> <li>• Allowing construction in the River with suitable mitigation and compensation measures; and</li> <li>• Allowing for some encroachment on agricultural and park lands with suitable mitigation and compensation measures.</li> </ul>

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