



## ADMINISTRATIVE REPORT

Report Date: July 16, 2013  
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Meeting Date: July 24, 2013

TO: Standing Committee on Planning, Transportation and Environment  
FROM: General Manager of Engineering Services  
SUBJECT: False Creek Bridges: Burrard Street Bridge South End Improvements

### *RECOMMENDATION \**

- A. THAT Council approve the recommended design for improved safety, pedestrian priority and cycling connections at the south end of the Burrard Bridge as described in this report.
- B. THAT Council approve a capital project budget of up to \$6.0 million for Burrard Street Bridge South End Improvements, to be funded from:
  - a. \$1.7 million from Transportation programs in the 2012-2014 Capital Plan as detailed in the Financial Implications section of this report; and
  - b. \$4.3 million from Emerging Priorities in the 2012-2014 Capital Plan (City-Wide DCL - Engineering Infrastructure) or through funding reallocation to be determined as part of the 2014 budget process.

With no net change to the 2013 Capital Expenditure Budget by reallocating \$1.0 million from the Burrard Bridge PCB/bearing replacement project expenditure budget which is projected to be underspent this fiscal year.

### *REPORT SUMMARY \**

Transportation 2040 identified the False Creek Bridges as an emerging area of focus to improve walking and cycling safety and connectivity. In addition, as presented to Council on April 24, 2013, as a follow up to Transportation 2040, there are infrastructure and safety upgrades necessary on all our False Creek Bridges over the next decade. The current configuration of the intersection at the south end of the Burrard Street Bridge is complex, it is circuitous for pedestrians, often requiring crossing up to five legs of the intersection, and the section of Cornwall Avenue between Burrard Street and Cypress Street is a collision hotspot for cyclists.

Staff have developed a recommended configuration for the Burrard and Cornwall intersection to address the issues identified above. Throughout the consultation process for the Point Grey-Cornwall Active Transportation Corridor project proposed changes to enhance

pedestrian, cycling and vehicle safety and reduce speeds on the intersection were strongly supported.

The recommended changes will:

- address a cycling collision hotspot by reducing speed and volumes between Burrard Street and Cypress Street on Cornwall Avenue;
- help transfer traffic volumes to nearby existing east-west arterial routes and reduce volumes along Cornwall Avenue and Point Grey Road where walking and cycling volumes are expected to increase;
- decrease the travel time for pedestrians and cyclists through the intersection by reducing the maximum number of crossings from five down to two; and
- reduce the footprint of the intersection and provide additional land that could be used for other city initiatives.

This work will be coordinated with other infrastructure work on the Burrard Bridge and the intersection at the north end as well as with public works on Burrard Street from 1<sup>st</sup> Ave to 16<sup>th</sup> Ave.

#### *COUNCIL AUTHORITY/PREVIOUS DECISIONS \**

Relevant Council Policies include:

- Transportation 2040 (2012)
- Greenest City 2020 Action Plan (2011)
- Downtown Transportation Plan (2002)
- False Creek Pedestrian and Cyclist Crossing Study (2001)
- Bicycle Plan (1999)
- Transportation Plan (1997)

#### *CITY MANAGER'S/GENERAL MANAGER'S COMMENTS \**

The General Manager supports the recommendations.

#### *REPORT*

##### *Background/Context \**

The City of Vancouver's Transportation 2040 Plan envisions an efficient transportation system to support a thriving economy, a healthy, safe, accessible and vibrant city, and an improved natural environment. Specific targets include having at least two thirds of all trips in Vancouver by walking, cycling or transit by 2040 and eliminating all traffic-related fatalities.

On April 24, 2013, staff presented Council with an overview of the current condition of the False Creek bridges. The False Creek bridges connect BC's two largest job centres and highest density residential areas (the downtown peninsula and Central Broadway), playing a key role in supporting our economy as well as reaching mode share targets for the city, region and the province. This report identified required maintenance/rehabilitation work and highlighted two high cycling collision areas including Cornwall Avenue from Burrard Street to Cypress Street, where 18 motor vehicle collisions involving cyclists were reported to ICBC between

2008-2012<sup>1</sup>. The presentation identified potential concepts to address safety, comfort and accessibility for the False Creek bridges. Staff are currently refining these concepts with stakeholders and developing a coordinated strategy to rehabilitate the bridge infrastructure as well as improve all three bridges for walking and cycling, including connections to walking and cycling corridors on each end of the bridges.

As outlined in the April 24<sup>th</sup> presentation, the bridges are structurally robust and reliable but are showing signs of aging. Burrard and Granville are the oldest bridges and have had over \$26M in rehabilitation and maintenance work over the past 20 years. These costs are typical for maintaining bridges of their age and further rehabilitation and maintenance will be required, including replacement of expansion joints, bearings, and decking on both bridges, as well as railing and lighting replacement on the Burrard Bridge. This work will allow the bridges to continue their transportation role and ensure the City meets regulatory compliance for PCB removal. While some of this work is already underway and will continue into 2014, the majority will likely occur in the next capital plan starting in 2015.

There is also water, sewer and street rehabilitation work planned for Burrard Street from 1<sup>st</sup> Avenue to 16<sup>th</sup> Avenue in 2015. This work will be coordinated with the Burrard Bridge rehabilitation work outlined above to take advantage of traffic reductions that are anticipated along Burrard Street due to lane reductions for the railing and lighting replacement on the Burrard Bridge. The traffic management plan for this work will largely focus on traffic diversion to other False Creek bridges.

Due to the magnitude and complexity of the work required on the False Creek bridges, and other infrastructure projects in the vicinity, the maintenance/rehabilitation work and the walking/cycling improvements will be completed in multiple phases. Table 1 provides a summary of the anticipated timeline.

**Table 1: Summary of False Creek Bridges Improvement timeline**

Description of Work item	Timing
PCB removal and bearing replacement for Burrard and Granville Bridges and expansion joint replacement on Granville Bridge.	Underway in 2013
Burrard/ Cornwall Intersection safety improvements and normalization.	2013/14 pending Council Approval
Burrard Bridge expansion joint replacement, deck assessment and rehabilitation of underside of the deck in critical areas.	2014 coordinated with Burrard /Cornwall Intersection
Finalised plan for permanent walking and cycling facilities on the Burrard Bridge coordinated with rehabilitation plans, walking and cycling improvements on Granville Bridge with potential trial timeline, and cycling capacity improvements on the Cambie Bridge.	2013/ early 2014
Burrard Bridge railing, lighting, complete rehabilitation of underside of deck, north intersection improvements and permanent walking/ cycling facilities installation.	2015-17
Burrard Street (1 <sup>st</sup> Avenue to 16 <sup>th</sup> Avenue) sewer, water and street rehabilitation	2015-17 coordinated with bridge rehabilitation

<sup>1</sup> These ICBC collision data include crashes in parking lots and crashes involving parked vehicles, such as "doorings." The data do not include incidents where the cyclist did not make a claim with ICBC, hit and run incidents, and those caused by a vehicle avoiding a cyclist (where there was no actual contact with the cyclist or bicycle).

### *Strategic Analysis* \*

The current configuration of the intersection of Burrard Street and Cornwall Avenue was last modified in the mid 1990's to add two northbound to westbound left turn lanes to Cornwall Avenue. It is a complex intersection that:

- creates long crossing times for pedestrians, requiring five separate crossings to walk from the east side of Burrard Street to the Burrard Bridge sidewalk over multiple traffic signal cycles;
- covers a large footprint with a highway style interchange configuration;
- promotes high vehicle speeds due to the slip lane from the Burrard Bridge to Cornwall Avenue; and
- is a cycling collision hotspot between Burrard Street and Cypress Street.

There is a key link between reconfiguring this intersection and the objectives of the Point Grey-Cornwall Active Transportation Corridor project. The idea of a reconfigured intersection concept was discussed in Phase 1 of the Point Grey-Cornwall Active Transportation Corridor public consultation and in Phase 2 a concept was included in the consultation materials. Some key aspects of the concept that was presented to the public for feedback include:

- reducing vehicle speeds by removing the slip lane from Burrard Bridge to Cornwall Avenue and normalizing the intersection such that Cornwall would "T" into Burrard;
- improving pedestrian safety and convenience by reducing the maximum number of crossings required for pedestrians from five down to two;
- closing Chestnut Street between Cornwall Avenue and Greer Street to vehicle traffic to address safety issues related to conflicts between vehicles, pedestrians and cyclists;
- improving the walking connection and adding a cycling facility through Seaforth Peace Park to connect Burrard Street to York Avenue;
- adding an east sidewalk to Chestnut Street between Cornwall Avenue and Greer Street;
- upgrading the on-street bicycle lanes along Cornwall Avenue (to Cypress Street) and Burrard Street (to 1<sup>st</sup> Avenue) to separated bicycle lanes; closing the driveway to the parking lot near Cypress Street onto Cornwall Avenue; and
- reconfiguring an eastbound bus stop on Cornwall Avenue at Cypress Street to accommodate a separated bike lane with a transit boarding platform.

### **Consultation**

The reconfiguration of the intersection was included in the scope of the extensive consultation undertaken over the last 6 months on the Point Grey-Cornwall Active Transportation Corridor. The idea of the realignment of the Burrard Street and Cornwall Avenue intersection received over 80% support in the questionnaire for the Phase 1 consultation. The concept presented in the Phase 2 consultation of the Point Grey-Cornwall Active Transportation Corridor also received consistent support, as the realignment greatly improved pedestrian and cyclist safety and addressed safety locations at Chestnut Street and Cornwall Avenue and the Cornwall Avenue driveway of Donegal Place plaza.

Some key points from the Phase 2 online questionnaire responses include:

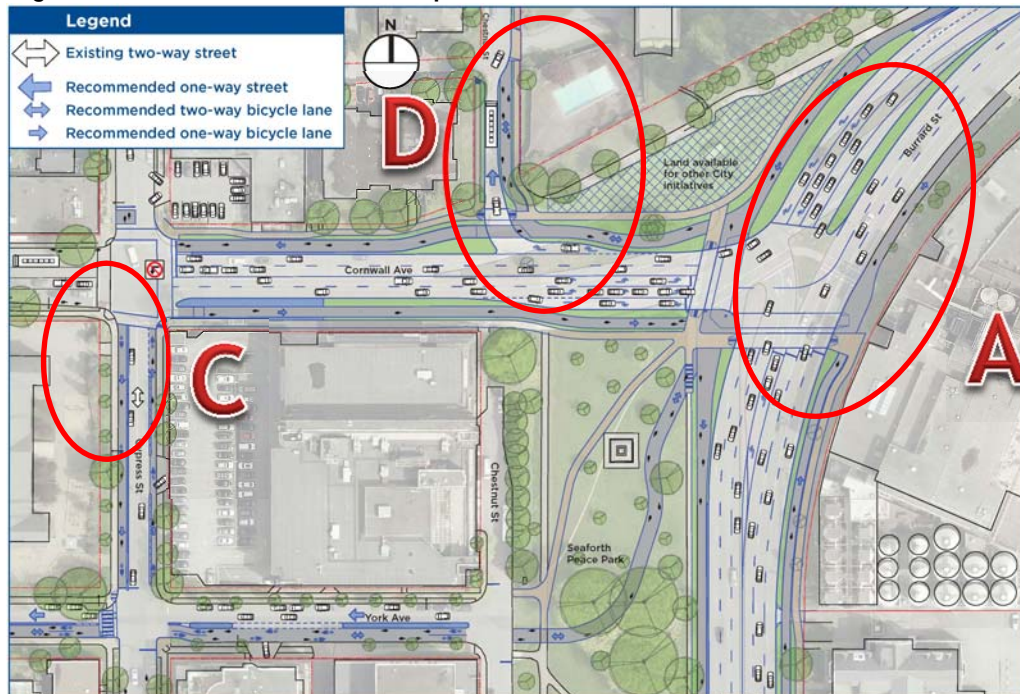
- 75% of respondents believe the proposed realignment at the south end of the bridge of the Burrard Street and Cornwall Avenue intersection would improve cyclist safety, comfort and convenience and 59% believed it would improve pedestrian safety, comfort and convenience. Approximately 40% thought that reducing vehicle speeds onto Cornwall Avenue would be a benefit.

- The largest concerns for respondents were the potential for motor vehicles rerouting onto nearby streets (71%) and reduced motor vehicle access onto Chestnut Street (47%). 23% of respondents expressed other concerns, specifically:
  - impacts to some of the existing landscaping (e.g. Seaforth Peace Park, the Welcome to Kitsilano log);
  - impacts to local businesses (e.g. reduced access, parking, construction during busy summer months);
  - specific concerns about Cypress Street and the Cypress Street/Cornwall Avenue intersection; and
  - access to Kits Point and the institutions in Vanier Park.

Based on the consultation feedback and further analysis, the design was refined with changes as outlined in Figure 1 and described below.

- Removal of one of the three southbound through lanes to simplify traffic operations from the bridge and further reduce the intersection footprint;
- Reduction of the speed limit on Burrard Bridge from 60km/h to 50km/h;
- Modifications at the corner of Cornwall Avenue and Cypress Street to improve visibility and safety for Henry Hudson school students; and
- Changes to the design of Chestnut Street in the half block north of Cornwall from a bike-only street to a one-way northbound street for vehicles, two-way for bicycles, to accommodate access to Kitsilano Point and Vanier Park and considering access to existing buildings and future development at the Senakw Squamish First Nation lands.

Figure 1: Recommended Concept



### Traffic Analysis

The major traffic related changes to the Burrard Street and Cornwall Avenue intersection are related to the southbound direction. The recommended configuration for the southbound direction through the intersection includes two right turn lanes and two through lanes. The double right turn lanes will operate through the signal and will only allow vehicles to turn

right when given a green light for that movement. This change will reduce the capacity for traffic travelling from Burrard Bridge to Cornwall by about 25-30% as the amount of green time for this movement is reduced. This will give more priority to vehicles travelling southbound on Burrard Street and encourage distribution to other east-west arterial streets. The diversion of traffic to multiple arterials, such as 4<sup>th</sup> Avenue, Broadway, 12<sup>th</sup> Avenue and 16<sup>th</sup> Avenue, will help to reduce the increase to any individual street.

The removal of the slip lane and reconfiguration of the intersection is anticipated to reduce the speed of vehicles travelling from Burrard Bridge to Cornwall Avenue and improve the safety of this intersection. The removal of this lane will also create a reduction in the intersection footprint and reduce the maximum number of crossings for pedestrians from five down to two.

A reduction of the speed limit on the Burrard Street Bridge from 60km/h to 50km/h is also recommended to make the speed limit consistent with other city streets and integrate better with the street activity in the adjacent local neighbourhoods. A change in speed would only add approximately 10 seconds to the overall travel time across the bridge. In conjunction with future safety improvements at the north end of the bridge the reduced speed limit will be a step towards changing driver behaviour across the bridge.

As background, the current Burrard Street and Cornwall Avenue intersection design encourages overuse of Cornwall Avenue as a connecting route to the Burrard Bridge. The Burrard Bridge carries approximately 54,000 vehicles per day. Based on 2013 traffic counts, during morning and afternoon peak hours, approximately 40-50% of the southbound vehicles on the Burrard Bridge are destined for Cornwall Avenue and approximately 55-60% of the northbound bridge traffic originates from Cornwall Avenue.

Cornwall Avenue carries approximately 27,000 vehicles per day near Cypress Street and is one of the highest traffic volume streets west of Burrard Street and outside of the downtown core. Comparatively, 4<sup>th</sup> Avenue and Broadway carry 21,000 and 22,000 vehicles per day respectively and 12<sup>th</sup> Avenue and 16<sup>th</sup> Avenue are estimated to carry approximately 18,000 vehicles per day.

One of the key goals of the intersection reconfiguration is to reduce the number of vehicles travelling onto Cornwall Avenue where we anticipate an increase in the number of people walking and cycling, and to minimise short cutting on local streets by encouraging connections to other nearby arterials. Through the public consultation process, there were two conflicting viewpoints regarding maintaining vehicle capacity to Cornwall. Some people expressed a desire to maintain vehicles on Cornwall Avenue in order to reduce diversion to other streets and minimize shortcutting through the neighbourhood. Other participants indicated a desire to reduce the vehicle volumes on Cornwall Avenue and ultimately reduce the number of vehicles travelling through to Macdonald Street.

Staff will monitor traffic volumes through the reconfigured intersection to determine what changes may be warranted to increase capacity on Burrard Street south of the intersection. This additional capacity could accommodate further diversion from Cornwall Avenue to Burrard Street. There will be major public works undertaken on Burrard Street between West 1<sup>st</sup> Ave and 16<sup>th</sup> Ave commencing in 2015 and these projects allow an opportunity to make adjustments in the streetscape to accommodate any necessary changes.

## Coordination with other projects

Pending approval by Council, this project would start in fall 2013 and would be coordinated with nearby water reconstruction work at 1<sup>st</sup> Avenue from Pine Street to Fir Street and the planned water main replacement through Seaforth Peace Park. In addition, bearing and joint replacement work and deck assessment work will be undertaken on the Burrard Bridge in Spring 2014. This work will require some lane closures on the bridge for extended periods of time and coordinating construction will help to minimise length and duration of disruption.

Future sewer, water and roadway reconstruction work scheduled for construction in 2015 on Burrard Street, between 1<sup>st</sup> Avenue and 16<sup>th</sup> Avenue, would provide an opportunity to make changes as identified through post construction traffic monitoring.

## *Implications/Related Issues/Risk (if applicable)*

### *Financial \**

The estimated cost to complete the Burrard & Cornwall intersection improvements is up to \$6.0 million. This estimate is based on preliminary designs only. As designs are finalized, a more detailed estimate will be available prior to the start of construction. It is expected that the required survey and design work and approvals will be completed by the end of September 2013, resulting in a more detailed cost estimate.

The proposed funding strategy is to allocate:

a) \$1.7 million from funding remaining in the 2012-2014 Capital Plan for the following Transportation programs to cover the cost of specific work components that are integral to this project, as follows:

- \$0.9 M from Replacement and/or Upgrading of Existing Traffic Signals
- \$0.5 M from Transit Improvements program
- \$0.25 M from Replacement and/or Upgrading of Existing Sidewalks
- \$0.05 M from New Curb Ramps program

b) \$4.3 million from Emerging Priorities in the 2012-2014 Capital Plan, to be funded from City-wide Development Cost Levies (CW-DCLs) for Engineering Infrastructure in place of Capital from Revenue identified for this category in the original Capital Plan approved in 2011, or through funding reallocation to be determined as part of the 2014 budget process.

Of this \$6.0 million capital project budget, \$1.0 million is anticipated to be spent in 2013. There will be no change to the 2013 Capital Expenditure Budget as \$1.0 million will be reallocated from Burrard Bridge PCB/bearing replacement project expenditure budget, as this complex project will not spend its entire 2013 allocation by year's end due to a lengthier than expected pre-construction process.

Staff does not anticipate additional funding will be required from the Operating Budget to maintain the improved intersection.

### *Environmental*

This project encourages more and safer walking and cycling, resulting in significant social, health, and environmental benefits. Addressing gaps or deficiencies in the existing walking and cycling networks would greatly increase safety, convenience, and use of existing infrastructure. This project would help the City reach its Greenest City and Transportation 2040 targets that at least half of all trips be made on foot, bike or transit by 2020, and at least two thirds by 2040.

In addition, reducing the intersection footprint unencumbers close to 2200m<sup>2</sup> of land. Although the access to this area is limited, it could be used to support other city initiatives.

*CONCLUSION \**

Transportation 2040 identified the False Creek Bridges as key infrastructure in our transportation system and as an emerging area of focus to improve walking and cycling safety and connectivity. In its current configuration, the Burrard and Cornwall intersection is a safety hotspot and is circuitous for pedestrians and cyclists as they have to cross up to five legs of the intersection. Improvements to the intersection received strong support through both phases of consultation as part of the Point Grey-Cornwall Active Transportation Corridor project. Planned improvements will increase safety and convenience for walking and cycling, and provide greater pedestrian priority across the intersection. The improvements are being coordinated with other bridge maintenance and public works in the area, allowing less disruption over time to the travelling public. An added benefit from the design of the reconfigured intersection is the large amount of land that is made available for other city initiatives.

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