



City of Port Moody

Report/Recommendation to Council

Date: May 28, 2024
Submitted by: Engineering and Operations Department – Infrastructure Engineering Services Division
Subject: Barnet Highway-loco Road-Dewdney Trunk Road Intersections Improvements

Purpose

To present recommendations from the Transportation Committee's March 20, 2024, meeting for consideration.

Recommended Resolution(s)

THAT staff be directed to implement Scenario 4 on Barnet Highway between loco Road and Dewdney Trunk Road to improve safety and operational efficiency of the roadway as recommended in the on-table presentation dated March 20, 2024, from the Engineering Technologist regarding Barnet Highway between Dewdney Trunk Road and loco Road;

AND THAT a cost of up to \$80,000 for a pilot implementation be funded from the Transportation Reserve.

Background

At the June 21, 2023, Transportation Committee meeting, motions were passed regarding the City's traffic signal system and potential for short-term improvements to the Barnet Highway/Dewdney Trunk Road and Barnet Highway/loco Road intersections:

TC23/009

THAT the Transportation Committee recommends the following:

THAT the City undertake traffic signal corridor coordination reviews and updates annually, including a review in 2023.

TC23/010

THAT the Transportation Committee endorses the following resolutions:

THAT staff be directed to undertake a traffic study of options on Barnet Highway between loco Road and Dewdney Trunk Road Traffic Study to review short-term improvements to improve safety and operational efficiency of the roadway;

AND THAT a project in the amount of \$35,000 be forwarded to the Finance Committee to determine a funding source.

The Committee's recommendations were presented to the Council on July 25, 2023, and were approved. The Council directed staff to complete the subject work.

On March 12, 2024, Council passed the following motion which directly supports this work:

RC24/061

THAT as part of the St. Johns Street Redesign Phase 2 Project, and the Barnet Highway, Dewdney, and loco Road intersection improvement project currently underway, staff identify potential opportunities to make localized traffic improvements and rebalance existing vehicle capacity to improve traffic flows in the afternoon without impacting sustainable mode shift initiatives.

Staff completed the traffic modelling study for the Barnet Highway between loco Road and Dewdney Trunk Road. The analysis, findings, and recommendations from the study were presented at the Transportation Committee meeting on March 20, 2024. During this meeting, the following motions were passed:

TC24/014

THAT the Transportation Committee recommends:

THAT staff be directed to implement Scenario 4 on Barnet Highway between loco Road and Dewdney Trunk Road to improve safety and operational efficiency of the roadway as recommended in the on-table presentation dated March 20, 2024, from the Engineering Technologist regarding Barnet Highway between Dewdney Trunk Road and loco Road;

AND THAT a project in the amount of \$80,000 be forwarded to the Finance Committee to determine a funding source.

This report presents the above recommendations for Council consideration including the analysis, findings, and recommendations from the traffic modelling analysis performed for the Barnet Highway between loco Road and Dewdney Trunk Road.

Discussion

Staff continue to receive complaints about northbound right turn traffic from Dewdney Trunk Road blocking traffic while attempting to merge into the eastbound left turn lane along Barnet Highway to access loco Road. In May 2023, the City's Traffic Review and Coordination Group (TRAC), consisting of Port Moody Police Department and engineering staff, reviewed the issue as it is causing ongoing operational and potential safety concerns. Follow up monitoring by staff confirmed the issue is frequent (On Tuesday, June 13, 2023, from 3pm-5pm, 75 vehicles from Dewdney Trunk Road, and 18 vehicles from other lanes on St. Johns Street were observed blocking Barnet Highway to merge into the subject left turn lane).

To address this issue, a traffic microsimulation model was developed to identify potential improvements. The study area considered in the analysis was expanded to capture the potential impact on traffic flow at adjacent intersections. The study area of the traffic microsimulation model is shown in Figure 1. The traffic model evaluates four scenarios:

- Scenario 1 – Baseline Scenario: Reflects the existing lane configurations and signal timing plans.
- Scenario 2: Replaces the channelized right-turn lane from Dewdney to Barnet with a right-turn movement at the Dewdney/Barnet Intersection. The approach from Dewdney includes one left-turn lane and one lane designated for both left and right turns.
- Scenario 3: Similar to Scenario 2, with the modification that the outside eastbound left-turn lane from Barnet to loco is designated as a bus-only lane.
- Scenario 4: Similar to Scenario 2, with the modification that the Dewdney approach consists of separate left and right-turn lanes.

The traffic model utilized multiple Measures of Effectiveness (MOEs) to identify the optimal solution. These MOEs include average and maximum queue lengths, intersection delay and Level of Service (LOS), along with corridor travel times. Corridor travel times were measured along key travel segments in this area.

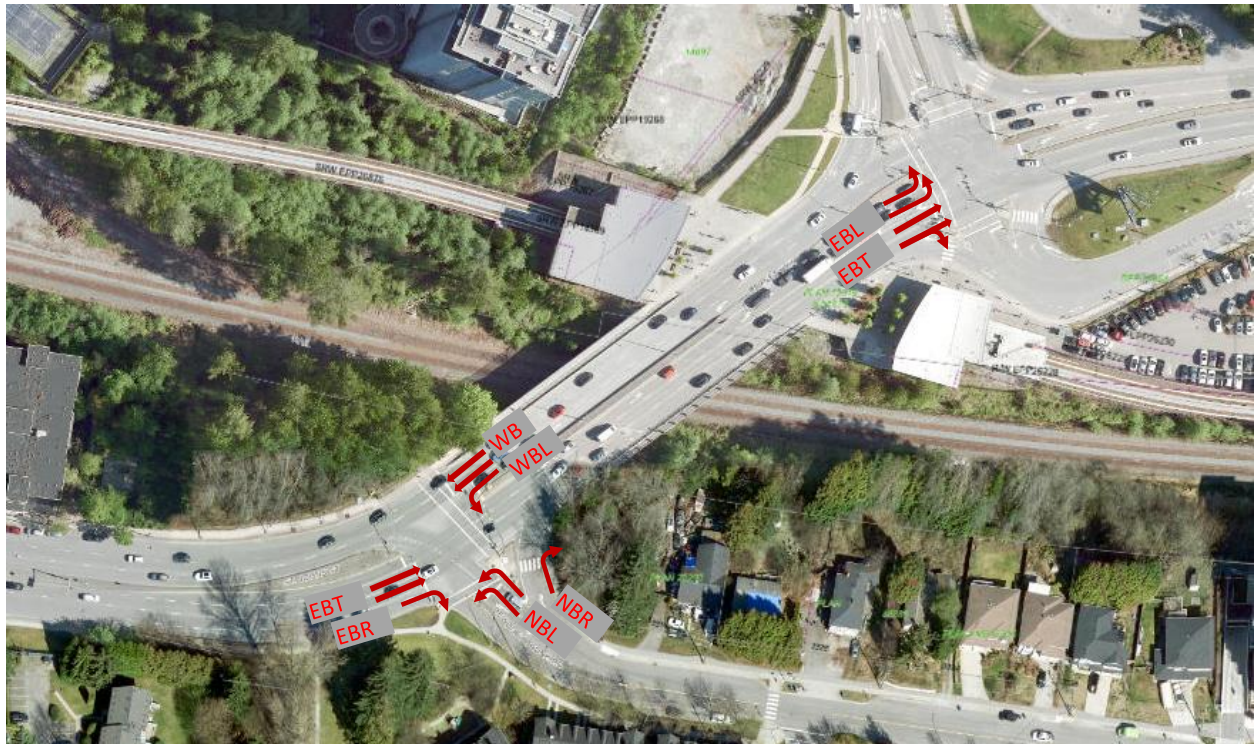


Figure 1: Study Area for Traffic Model (NBL = Northbound Left; NBR = Northbound Right; WB = Westbound; WBL = Westbound Left; EBL = Eastbound Left; EBT = Eastbound Through)

Model Findings

Scenario 1 – Baseline Scenario

To ensure the developed traffic microsimulation model accurately represents existing conditions, additional traffic data were collected to confirm its accuracy. The model was

validated to demonstrate no more than a 5% variation between modelled data and observed traffic data, which falls within the acceptable limit for operating such a model. This validated model was subsequently used to simulate various potential scenarios to analyze and compare traffic conditions.

Scenario 2: Modification of Right-Turn Movement at Dewdney/Barnet Intersection

The basic geometric improvements, specifically the removal of the channelized right-turn on Dewdney Trunk Road, resulted in significant improvements in eastbound traffic flow between Dewdney Trunk Road and Ioco Road.

Improvements were further supported by adjusted signal coordination and prioritizing the westbound left-turn movement from Barnet Highway onto Dewdney Trunk Road, which benefited the eastbound direction. Despite initial expectations of longer queues along Dewdney Trunk Road, traffic maintained smooth flow. Signal timing adjustments at Ioco enabled the early clearance of the eastbound left-turn queue, mitigating conflicts with northbound right-turn traffic from Dewdney onto the leftmost lane.

However, the eastbound segment between Moray and Dewdney occasionally experienced queuing, reflecting existing conditions. The model highlighted this area's tendency for congestion due to vehicles transitioning to the left-most lane, indicating that such friction can slow down traffic irrespective of signal improvements at Dewdney.

Scenario 3: Modified Scenario 2 with Bus-Only Lane from Barnet Highway to Ioco Road

Scenario 3 demonstrated significant congestion and queues extending into St. Johns Street and Moray Street. The removal of one of the two eastbound left-turn lanes on Barnet Highway at Ioco Road led to extensive queue spillbacks in the leftmost lane, causing additional congestion in the eastbound through lanes. However, the model did not explore other MOEs in the model analysis, such as person delay and the effectiveness of moving larger numbers of people more efficiently. Further study is needed to identify and implement measures that enhance the transit experience along this corridor.

Scenario 4: Building on Scenario 2 with Separate Left and Right-Turn Lanes at Dewdney Approach

Scenario 4 provides improvements similar to Scenario 2, with better network improvements through the separation of left and right-turn lanes from Dewdney Trunk Road to St. Johns Street/Barnet Highway. This adjustment enabled the operation of a northbound right overlap signal in conjunction with the westbound left movement, as shown in Figure 2. Although it might be presumed that reducing to one northbound left-turn lane at Dewdney during higher morning traffic volumes would adversely affect traffic flow, model observations have shown no significant issues or queuing.

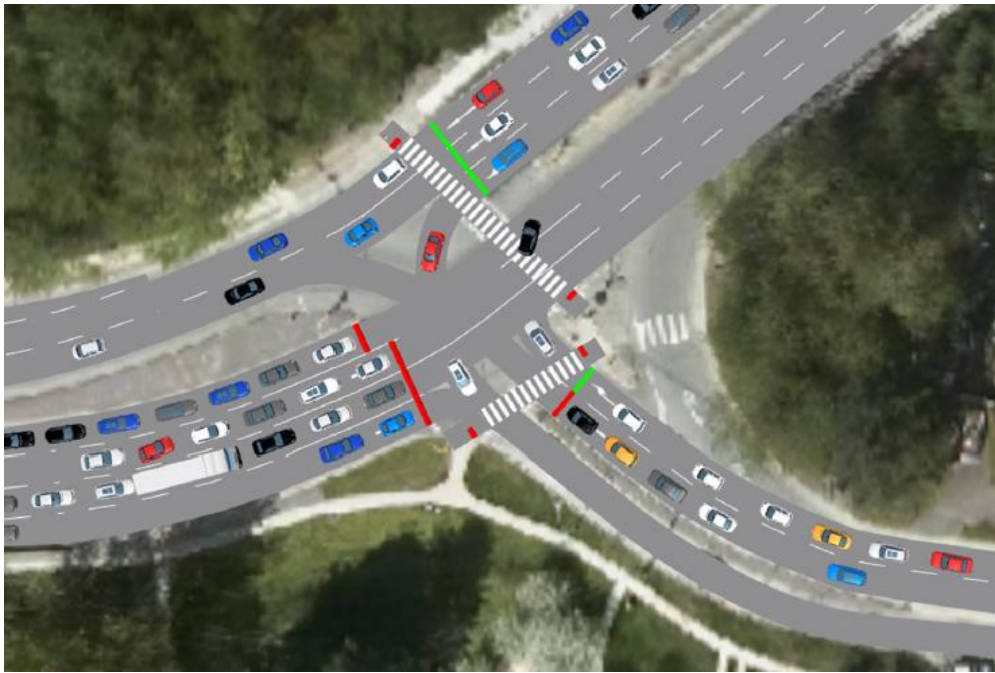


Figure 2: Scenario 4 with Dewdney Trunk Road Signal Overlap

The traffic microsimulation study suggests that Scenario 4, which involves replacing the channelized right-turn lane from Dewdney Trunk Road to Barnet Highway and separating left and right-turn lanes on Dewdney Trunk Road, is recommended for implementation in this segment. Before the permanent implementation of Scenario 4, staff recommend implementing short-term improvements to mimic Scenario 4 for testing. This will allow staff to review and make necessary adjustments before making permanent changes. As such, the following short-term components are recommended (included as **Attachment 1**):

- Install delineators along the Barnet Highway/loco Road eastbound left turn lane to prevent eastbound traffic from weaving onto the leftmost lane between Dewdney Trunk Road and Ioco Road.
- Remove the channelized right-turn lane from Dewdney Trunk Road to Barnet Highway, separating left and right-turn lanes on Dewdney Trunk Road and restricting right-turns-on-red from Dewdney Trunk Road.
- Modify the traffic signal plans for the Dewdney/Barnet and Ioco/Barnet intersections to allow for a leading westbound left phase at Dewdney and to provide adjusted signal coordination.
- Explore improvement options for transit along the St. Johns Street corridor.

Financial Implications

Implementation of interim improvements to the Dewdney Trunk Road, Barnet Highway, and Ioco Road intersections is estimated to require a budget of up to \$80,000 including construction and staff project management time. Staff recommend this cost be funded from the Transportation Reserve.

Communications and Public Engagement Initiatives

If the loco Road, Barnet Highway, and Dewdney Trunk Road Intersection initiative proceeds, communications to directly affected stakeholders and general road users will be planned as part of development of the implementation plan. There is no public engagement initiative associated with this implementation plan.

Council Strategic Plan Goals

The recommendations in this report align with the following Council Strategic Plan Goal(s):

- Strategic Goal 3.2 – Provide safe, efficient, and accessible transportation options.

Attachment(s)

1. Barnet Highway-loco Road-Dewdney Trunk Road Intersections Improvement Concept

Report Author

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Report Approval Details

Document Title:	Barnet Highway-loco Road-Dewdney Trunk Road Intersections Improvements.docx
Attachments:	- Attachment 1 - Barnet Highway-loco Road-Dewdney Trunk Road Intersections Improvement Concept.pdf
Final Approval Date:	May 22, 2024

This report and all of its attachments were approved and signed as outlined below:

Stephen Judd, Manager of Infrastructure Engineering - May 21, 2024

Jeff Moi, General Manager of Engineering and Operations - May 21, 2024

Stephanie Lam, City Clerk and Manager of Legislative Services - May 22, 2024

Lindsay Todd, Manager of Communications and Engagement - May 22, 2024

Paul Rockwood, General Manager of Finance and Technology - May 22, 2024

Paul Rockwood, General Manager of Finance and Technology, for Anna Mathewson, City Manager - May 22, 2024 - 4:27 PM