

Note to the Reader

This report was finalized before the Pattullo Bridge Replacement Project was transferred from TransLink (South Coast British Columbia Transportation Authority) to the BC Ministry of Transportation and Infrastructure (MoTI).

References to TransLink should be read as MoTI unless referring specifically to TransLink policies or other TransLink-related aspects.



PATTULLO BRIDGE REPLACEMENT PROJECT

ENVIRONMENTAL ASSESSMENT TRAFFIC ANALYSIS REPORT

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January 2018

Project No. 602525

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Appendix: Traffic Modelling Report

1.0 Introduction

The existing Pattullo Bridge, which spans the Fraser River between the City of Surrey and the City of New Westminster, was built in 1937 and is near the end of its useful life. It is vulnerable to seismic events and high winds, marine collisions and river scour. The bridge does not meet current roadway design guidelines, including lane widths and road curvatures. The Pattullo Bridge Replacement Project's (the Project) includes a new, four-lane bridge that meets current seismic and road design standards, and provides a safe and reliable crossing for vehicles, pedestrians and cyclists, network connections in Surrey and New Westminster and the removal of the existing bridge.

1.1 Purpose and Report Structure

The purpose of this document is to describe the traffic demand analysis that was conducted for the new Pattullo Bridge. The document presents historical traffic data and existing conditions, describes the methodology for the future traffic analysis, and analyzes forecast traffic metrics applied to the proposed bridge replacement. The detailed traffic modelling methodology, assumptions, as well as the detailed data output can be found in the *Appendix*.

1.2 Assessment Context

The Pattullo Bridge Replacement Project involves changes to the Pattullo Bridge corridor and related road, cycling, and pedestrian networks that influence the movement of people and goods, as represented by changes in future traffic volumes, traffic flows, origins and destinations, and travel mode choice. The anticipated changes between the 'No-Build' scenario, a base case condition consisting of a three lane rehabilitated existing bridge and the 'Build' scenario, a new four lane Pattullo Bridge with improved community connections, in terms of traffic demand and operations, have the potential to affect air quality, noise, and existing land uses at the regional as well as local levels. As such, specialized analysis was conducted to assess traffic demand at both the regional level and within smaller study areas in the immediate vicinity of the project.

1.3 Assessment Scenarios

For the purposes of assessing the traffic changes for the new Pattullo Bridge, two scenarios were investigated, the No Build Scenario and the Build Scenario. A description of each scenario is provided below and a set of detailed connection assumptions are listed in *Table 1.1*.

1.3.1 No Build Scenario

The No Build Scenario involves rehabilitating the existing Pattullo Bridge. In order to achieve modern width traffic lanes to improve user safety, the rehabilitated bridge is assumed to operate as a three lane crossing. The three lane configuration would be operated with a reversible center lane, which would provide an additional lane in the peak direction of travel during the peak periods. The existing sub-standard on-ramp from Columbia Street to the bridge would be permanently closed. No further changes to the road connections in Surrey or New Westminster are included.

1.3.2 Build Scenario

The Build Scenario involves a new four lane bridge. Expected to open in 2023, the new bridge would provide a safer crossing with standard lane widths and a center median, improved pedestrian and cyclist paths, and improved community connections.

Table 1.1: Scenario Assumptions

Connections	No Build Scenario	Build Scenario
McBride Blvd	<ul style="list-style-type: none"> 1 lane southbound (AM) 2 lanes northbound (AM) 2 lanes southbound (PM) 1 lane northbound (PM) 	<ul style="list-style-type: none"> 1 lane southbound 2 lanes northbound
Royal Ave	<ul style="list-style-type: none"> 1 lane merge southbound 2 lanes diverge northbound 	<ul style="list-style-type: none"> 1 lane merge southbound 2 lanes diverge northbound
Columbia St	<ul style="list-style-type: none"> closed 	<ul style="list-style-type: none"> 1 lane southbound 1 lane diverge northbound
Pattullo Bridge	<ul style="list-style-type: none"> Existing Bridge Counter Flow: 1 lane southbound (AM) 2 lanes northbound (AM) 2 lanes southbound (PM) 1 lane northbound (PM) 	<ul style="list-style-type: none"> New Bridge Replacement: 2 lanes southbound 2 lanes northbound
King George Blvd	<ul style="list-style-type: none"> 1 lane southbound (AM) 1 lane northbound (AM) 2 lanes southbound (PM) 1 lane northbound (PM) 	<ul style="list-style-type: none"> 2 lanes southbound 1 lane northbound
Scott Rd	<ul style="list-style-type: none"> 1 lane diverge southbound (AM) 1 lane northbound (AM) 1 lane diverge southbound (PM) 1 lane merge northbound (PM) 	<ul style="list-style-type: none"> New interchange: 1 lane diverge southbound 1 lane northbound
Highway 17 (east of Pattullo)	<ul style="list-style-type: none"> none 	<ul style="list-style-type: none"> Access via 124 St (interchange): <ul style="list-style-type: none"> from westbound Highway 17 to Pattullo from Pattullo to eastbound Highway 17
Highway 17 (west of Pattullo)	<ul style="list-style-type: none"> none 	<ul style="list-style-type: none"> Access via 124 St (interchange): <ul style="list-style-type: none"> from eastbound Highway 17 to Pattullo Access via SB off-ramp to Highway 17: <ul style="list-style-type: none"> from Pattullo to westbound Highway 17

2.0 Existing Conditions

Traffic demands and patterns in the area surrounding the Pattullo Bridge have changed substantially since its opening in 1937, particularly within the relevant period between 2008 and 2017. Several events occurred during this period, which have had a significant impact on regional traffic demands and patterns. These events include the following:

- Significant population growth on both sides of the Fraser River;
- Construction along the Highway 1 corridor;
- Construction and provision of a new parallel river crossing (10 lane Port Mann Bridge) to replace the older five lane bridge;
- Introduction of tolled crossings within the regional network (Port Mann and Golden Ears Bridge);
- Construction and provision of a new highway corridor (Highway 17);
- Rehabilitation of the Pattullo Bridge;
- Expansion of the transit system; and
- Removal of tolls from the river crossings.

Due to the impact of these events, it is difficult to establish a true “baseline” of traffic demands and patterns on the Pattullo Bridge. This section therefore aims to provide an overview of recent traffic conditions on the bridge in terms of traffic volumes, patterns, and mode share. A preliminary analysis of the impacts related to the removal of tolls is also provided.

2.1 Historical and Existing Traffic Information

A profile of current users of the Pattullo Bridge, including trucks, transit, and cyclists is summarized in this section. In particular, this section describes the trends in Annual Average Daily Traffic (AADT), Monthly Average Daily Traffic (MADT), peak hour traffic volumes and daily traffic profiles, truck volumes, mode share, and key traffic patterns.

2.1.1 Annual Average Daily Traffic

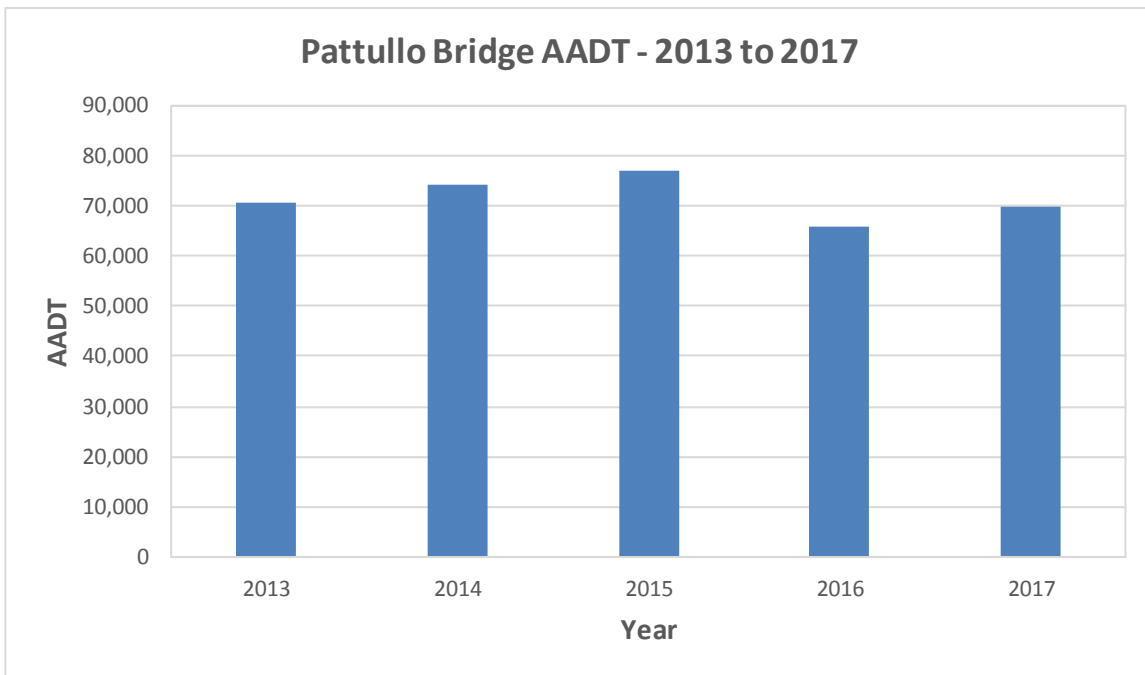
Annual Average Daily Traffic (AADT) is a measurement of two-way traffic on a road segment of interest. AADT is used to help understand the historical context of the facility and to gain a better overall understanding of traffic patterns over the entire year. AADT is defined as the summation of the total two-way traffic on a road segment for an entire year, divided by the number of days in the year. Ideally, AADT would be calculated with 365 or 366 days of data, though some data may be lost due to data collection equipment failures and other issues. The AADT can be calculated by omitting the missing

data, however this could lead to unintended discrepancies when comparing AADTs between different years. These discrepancies are particularly an issue if the missing data is concentrated within a single season. No significant issues were noted in the dataset used to estimate the AADT of the Pattullo Bridge.

It should be noted that AADT is a coarse measurement of traffic conditions. An AADT is used to quantify usage and general trends at a facility. However, an AADT does not provide sufficient detail to explain why the patterns are occurring. Also, an AADT does not provide finer details such as the traffic operations of a facility as that is better measured on weekdays at frequent intervals (typically by hour).

The AADT for the Pattullo Bridge for the past five years are shown in **Figure 2.1**. An increase in AADT is observed between 2013 and 2015. In 2016, a significant decrease is observed, likely due to the rehabilitation of the Pattullo Bridge during the summer months. In 2017, AADT appears to return to 2013 levels. However, it should be noted that the 2017 AADT was calculated with nine months of data when the Port Mann Bridge was tolled, and three months of data after the tolls were removed.

Figure 2.1: Pattullo Bridge AADT



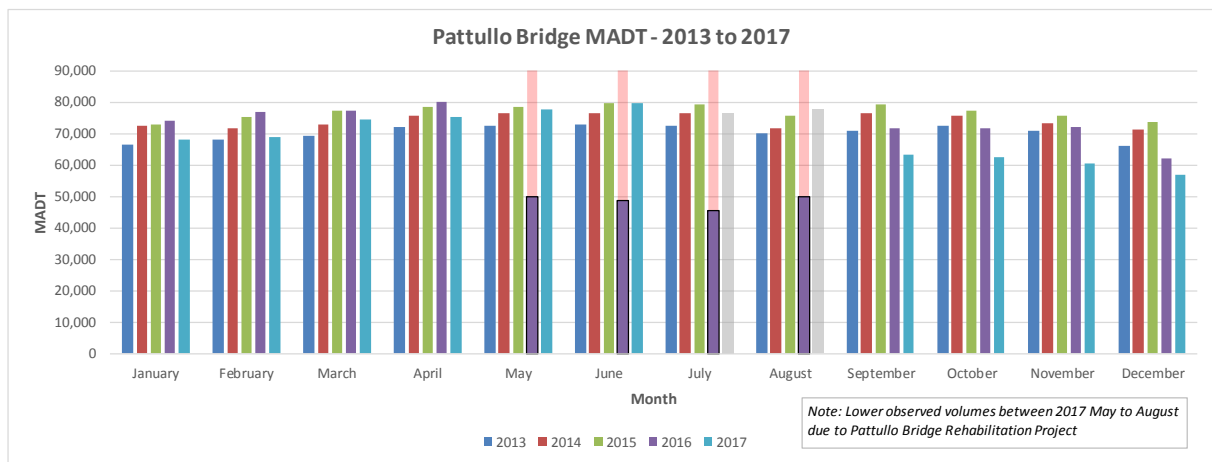
2.1.2 Monthly Average Daily Traffic (MADT)

Monthly Average Daily Traffic (MADT) is a measurement of the daily two-way traffic on a road segment of interest for a specific month. This parameter is defined as the summation of the total two-way traffic

on a road segment for an entire month, divided by the number of days in the month in order to obtain an average. It is a useful measure of traffic trends, particularly when short duration events cause temporary impacts on traffic patterns. Ideally, MADT would be calculated with 28 to 31 days of data, though some data may be lost due to data collection equipment failures and other issues. An audit of the available data should always be conducted prior to calculating an MADT to determine if sufficient data is available. Care must be taken to ensure a weekday is not under-represented or over-represented in the MADT calculation.

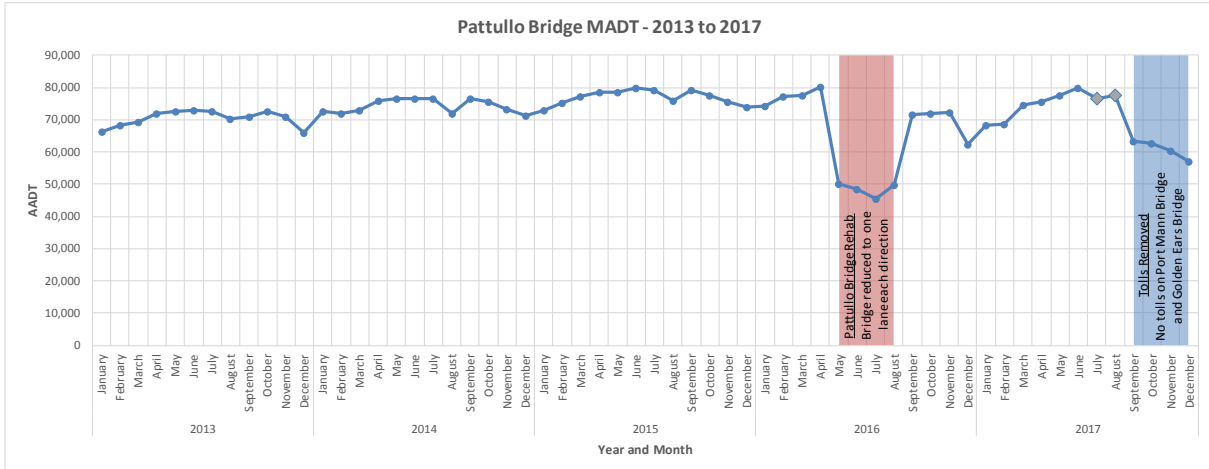
MADTs of the Pattullo Bridge for the past five years are shown in **Figure 2.2A** and **Figure 2.2B**. In **Figure 2.2A**, the annual variations in MADT are shown. The highest MADTs of each month appeared to have occurred in 2015, with the exception of the first four months of 2016. Significant reductions in MADT are observed between May 2016 and August 2016, which corresponds with the rehabilitation work on the Pattullo Bridge. A decrease in MADT is also observed on September 2017, corresponding with the removal of tolls on the Port Mann Bridge. The data collection equipment appeared to be experiencing some technical difficulties from July 2017 to August 2017. As such, these estimated MADTs should be treated with caution and are greyed-out in the figure below.

Figure 2.2A: Pattullo Bridge MADT – Variations by Year



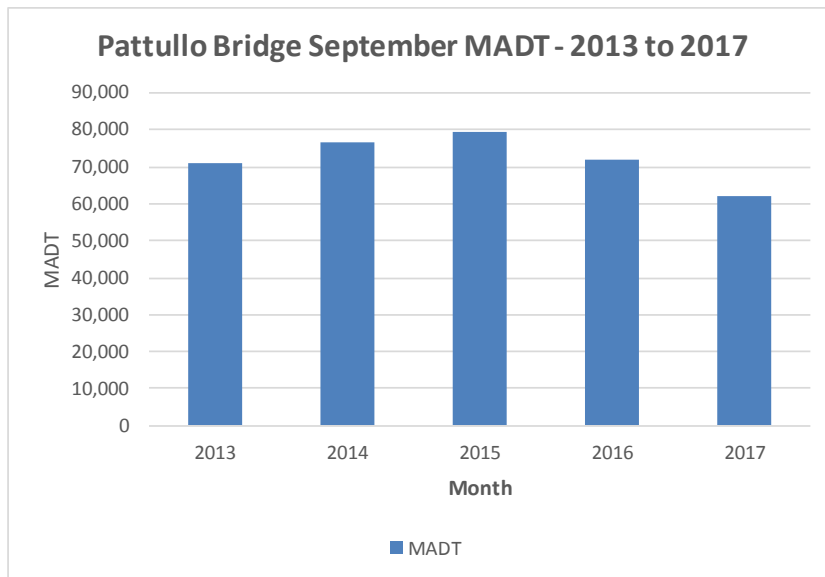
In **Figure 2.2B**, the overall trend in Pattullo Bridge MADT is shown. The MADT appears to show a gradual increase between 2013 and the first few months of 2016. A significant decrease is observed between May 2016 and August 2016, corresponding with the rehabilitation work at the Pattullo Bridge. However, a steady increase in MADT is observed between December 2016 and June 2017. A significant decrease in MADT is observed in September 2017 after the removal of tolls on the Port Mann Bridge.

Figure 2.2B: Pattullo Bridge MADT – Trend



Typically, fall season traffic is assumed to represent “baseline” traffic patterns. However, it is difficult to determine what the “baseline” of traffic patterns should be at the Pattullo Bridge due to significant changes in the regional transportation system as illustrated in **Figure 2.3**. At the time of writing this report, it is believed that traffic patterns are still normalizing from the removal of tolls in September 2017. The month of September has been selected for comparison purposes because it represents one of the months with the highest daily traffic as depicted in **Figure 2.2**.

Figure 2.3: Pattullo Bridge MADT (September)



The daily traffic volumes shown in the **Figure 2.3** reflect the impact of various events on traffic patterns at the Pattullo Bridge. The following observations can be made:

- Increase in daily traffic volumes between 2013 and 2014
 - Due to tolls on the neighbouring Port Mann Bridge since the end of 2012
- Reduction in daily traffic volumes between 2015 and 2016
 - Bridge rehabilitation occurred in the summer of 2016
 - Traffic levels were not stabilized after the rehabilitation project
- Reduction in daily traffic volumes between 2016 and 2017, and a reduction of approximately 30% in MADT between the peak of observed traffic in 2015 and 2017
 - Likely due to the removal of tolls on the neighbouring Port Mann Bridge and Golden Ears Bridge on September 1, 2017

2.1.3 Peak Hour Volumes and Traffic Profiles

Peak hour traffic volumes and traffic profiles are shown in **Figure 2.4A** and **Figure 2.4B**.

Figure 2.4A: 2017 Fall Weekday Pattullo Bridge Traffic Volume Profile - Northbound

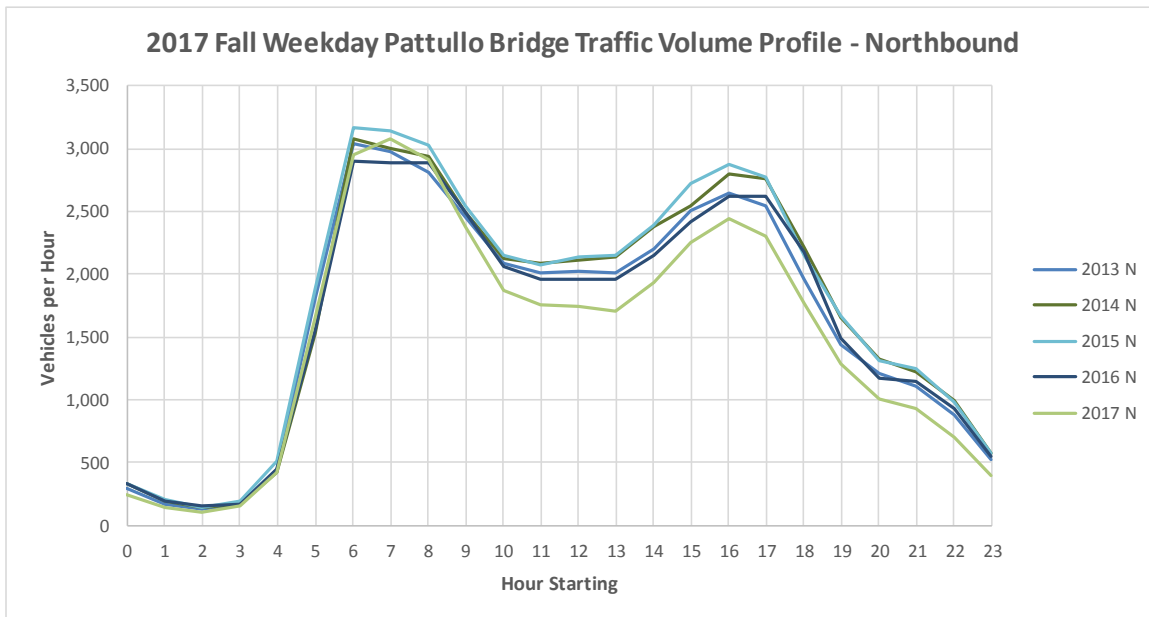
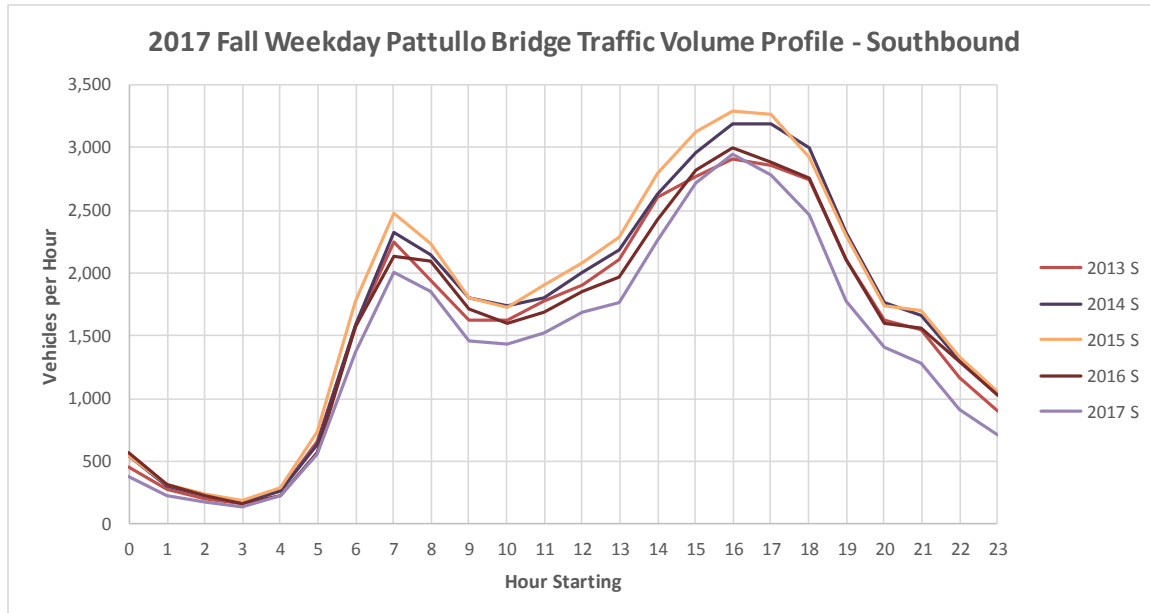


Figure 2.4B: 2017 Fall Weekday Pattullo Bridge Traffic Volume Profile - Southbound



Both **Figure 2.4A** and **Figure 2.4B** suggest hourly traffic volumes are lower in 2017 compared to previous years. In the northbound direction, peak hour traffic volume is approximately 3,000 vph in all recent years. In the southbound direction, peak hour traffic volume was approximately 3,200 vph during the highest years. Because demand exceeds capacity in the peak hours as evidenced by queue build up in the peak direction of travel, the capacity of the existing bridge is approximated at 3,000 vph in the northbound direction and 3,200 vph in the southbound direction. The southbound direction likely has less capacity than comparable four-lane bridges due to its sub-standard lane widths, mainline horizontal geometry, and ramp merge geometry.

2.1.4 Trucks

The Pattullo Bridge is a key component of the regional truck transportation network that supports local, provincial, and international trade. The truck traffic trends described in this section originate from two sources:

- A report produced by Acure Consulting, *2014 Metro Vancouver Truck Classification and Dangerous Goods Survey*; and
- 2013 – 2017 Traffic Data from the Pattullo Bridge Permanent Count Station.

It should be noted that these two sources use different vehicle classification schemes. The data used in *2014 Metro Truck Classification and Dangerous Good Survey* was based on manual surveys. As such, the classification scheme is very detailed. In contrast, the permanent count station is only capable of classifying vehicles by length into five categories:

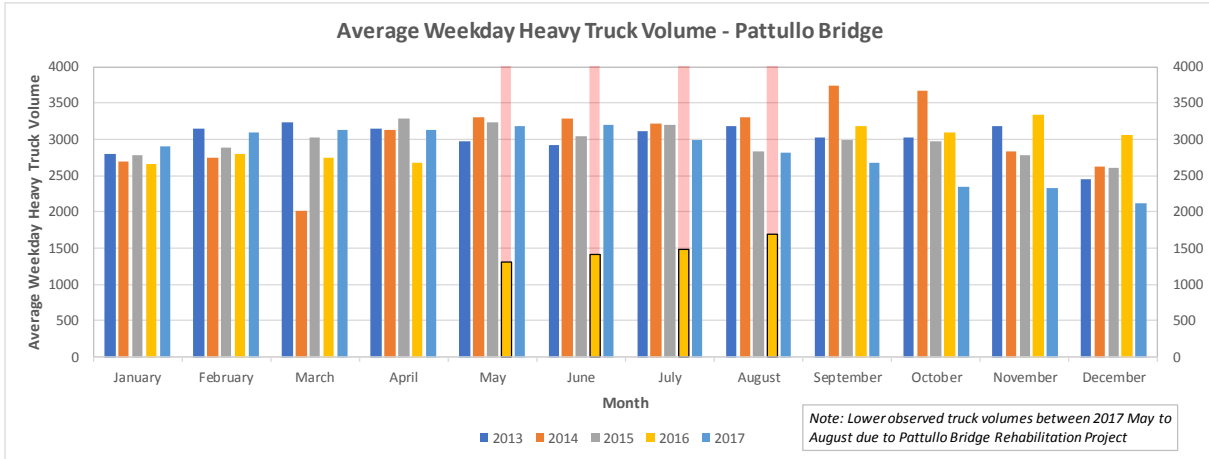
- Bin 1: 0.0 – 6.0 m;
- Bin 2: 6.0 – 12.5 m;
- Bin 3: 12.5 – 22.5 m;
- Bin 4: 22.5 m – 35.0 m; and
- Bin 5: > 35.0 m.

It was observed that the datasets were consistent when comparing the volumes of heavy trucks as defined in the Acuere report, with volumes in Bin 3, 4, and 5. However, significant discrepancies were observed when comparing the volumes of light trucks as defined in the Acuere report, and volumes in Bin 1 or Bin 2. It appears that not every vehicle in Bin 2 would be classified as a light truck.

According to *2014 Metro Vancouver Truck Classification and Dangerous Goods Survey*, more than 4,000 light trucks and heavy trucks used the bridge on the weekdays in 2014. Truck traffic grew by over 9% at all major river crossings in the Lower Mainland from 2008 to 2014. For the same period, the number of trucks using the Pattullo Bridge increased by 15% (CTS 2008, Acuere 2014). However, the increase during this period was likely due to the presence of tolls on the neighbouring Port Mann Bridge between 2013 and 2017 and the diversion of trucks to avoid tolls. The removal of tolls since September 2017 is expected to reverse the 15% increase and cause truck traffic volumes to return to pre-2008 levels.

In **Figure 2.5**, the average weekday heavy truck volume on the Pattullo Bridge is shown for each month. Approximately 3,000 heavy trucks use the Pattullo Bridge on an average weekday, although some exceptions are observed. Variations in heavy truck volumes are expected as many heavy truck trips are dependent on international trade. For example, container truck movements are dependent on activities at the marine container terminals such as the local Fraser Surrey Docks. A noticeable reduction in heavy truck volumes was observed in 2017 after the removal of the tolls on the Port Mann Bridge.

Figure 2.5: Average Weekday Heavy Truck Volume on Pattullo Bridge



2.1.5 Mode Share

No buses currently operate on the Pattullo Bridge during peak periods. SkyTrain Expo Line trains carry passengers across the adjacent SkyTrain bridge – the Skybridge. **Table 2.1** summarizes the mode share between motorists driving across the Pattullo Bridge and SkyTrain passengers across the Skybridge.

Table 2.1: Peak Hour Mode Share

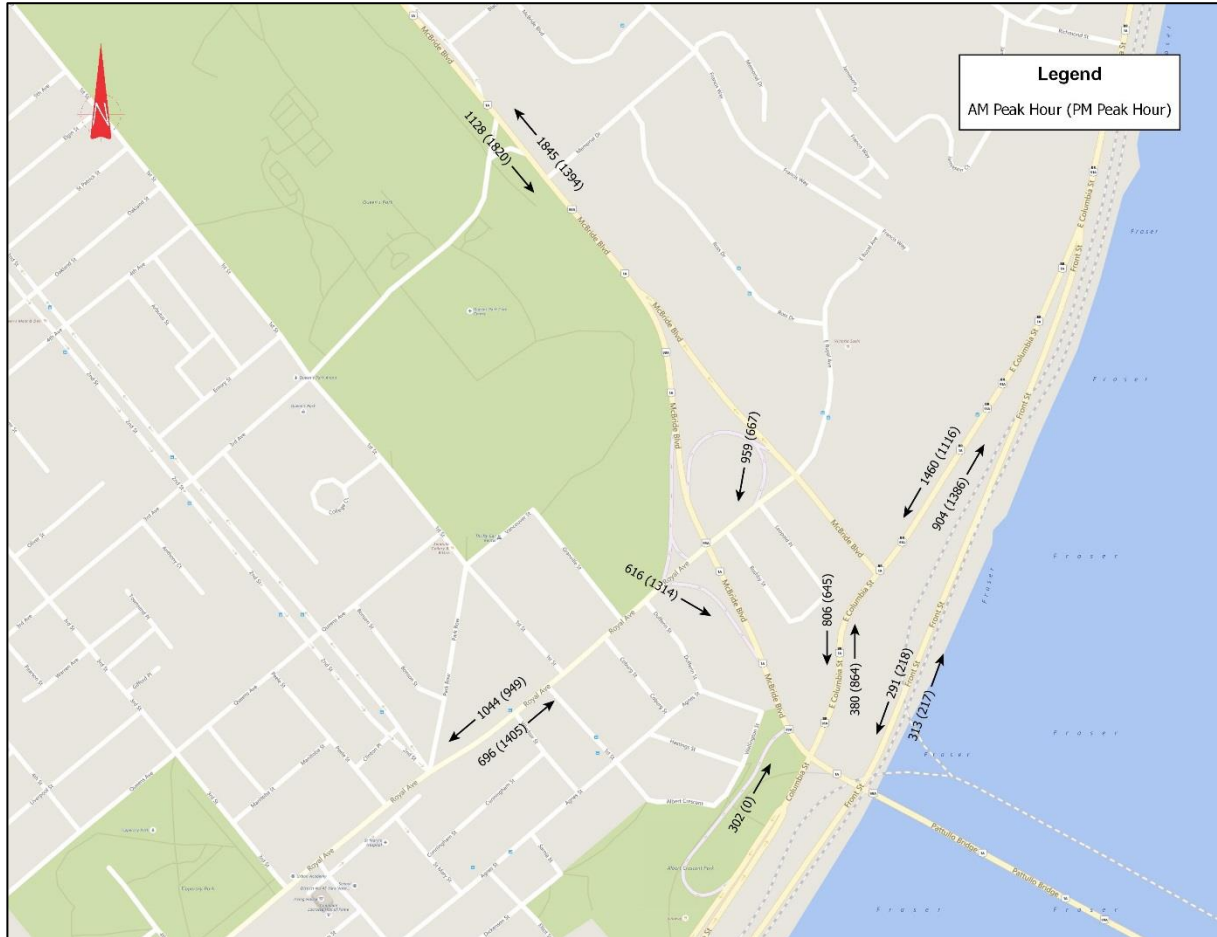
Mode	AM	MD	PM
Auto (Pattullo)	45%	60%	55%
Walking and Cycling (Pattullo)	0%	0%	0%
Transit (SkyTrain)	55%	40%	45%

These mode shares are calculated based on the 2011 Metro Vancouver Regional Screenline Survey (TransLink). With no substantial capacity changes along the corridor since 2011 and with no tolls on the neighbouring Port Mann Bridge, existing peak hour mode share should be quite comparable.

2.1.6 Peak Hour Volumes of Surrounding Areas

A traffic data collection program was conducted between late November and early December 2017. As part of this program, tube counts were conducted in the City of New Westminster to obtain hourly traffic data on several key road segments. These surveys are summarized in **Figure 2.6**, which shows AM and PM peak hour traffic volumes.

Figure 2.6: Peak Hour Traffic Volumes in New Westminster



2.1.7 Key Traffic Patterns

An origin-destination survey was conducted as part of the Pattullo Bridge Replacement Project data collection program. Findings from the initial analyses are provided in this section with respect to traffic patterns using the Pattullo Bridge.

AM northbound traffic patterns crossing the Pattullo Bridge are shown in **Figure 2.7**. The northbound traffic on the Pattullo Bridge appears to originate primarily from King George Boulevard, Scott Road and Bridgeview Drive. The majority of the traffic from Bridgeview Drive likely originates from Highway 17, east of the Pattullo Bridge. When combined with the demand from Highway 17 west of Pattullo Bridge, up to 30% of the northbound traffic appears to originate from Highway 17. Approximately 50% of the

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northbound trips on the Pattullo Bridge are destined to McBride Boulevard, while the remaining 50% are split between Royal Avenue and Columbia Street.

Figure 2.7: AM Northbound Traffic Patterns



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AM southbound traffic patterns crossing the Pattullo Bridge are shown in **Figure 2.8**. Approximately 50% of the southbound trips using the Pattullo Bridge originate from McBride Boulevard, while the remaining 50% are split between Royal Avenue and Columbia Street. Most of the southbound trips on the Pattullo Bridge are destined to King George Boulevard and Scott Road.

Figure 2.8: AM Southbound Traffic Patterns



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PM northbound traffic patterns crossing the Pattullo Bridge are shown in **Figure 2.9**. The northbound traffic using the Pattullo Bridge appears to originate primarily from King George Boulevard and Scott Road. Approximately 50% of the northbound trips are destined to McBride Boulevard, while the remaining 50% are split between Royal Avenue and Columbia Street.

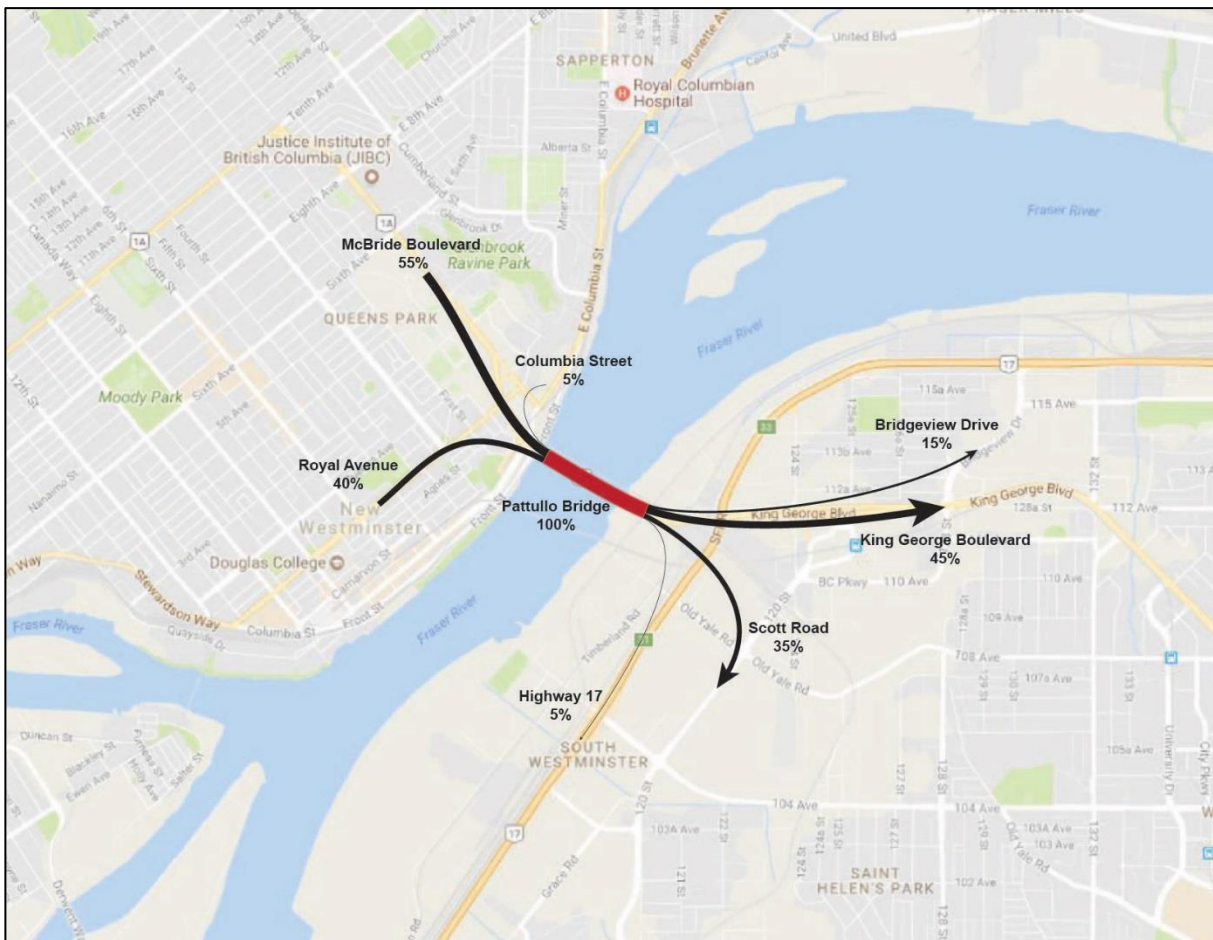
Figure 2.9: PM Northbound Traffic Patterns



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PM southbound traffic patterns crossing the Pattullo Bridge are shown in **Figure 2.10**. Slightly more than 50% of the southbound trips on the Pattullo Bridge originate from McBride Boulevard, while the remaining 50% are split between Royal Avenue and Columbia Street. The low percentage of vehicle trips originating from Columbia Street is due to the closure of the Columbia Street loop ramp during PM peak hours. The small percentage (5%) of vehicles that are still originating from Columbia Street are likely “short cutting” through the adjacent road network to access the Pattullo Bridge. Most of the southbound trips are destined to King George Boulevard and Scott Road.

Figure 2.10: PM Southbound Traffic Patterns



2.2 Impact of Toll Removal

Point-tolls were eliminated from the Port Mann Bridge and the Golden Ears Bridge beginning September 1, 2017. The removal of tolls on these two adjacent bridges have had a noticeable impact on the Pattullo Bridge, especially during off peak periods.

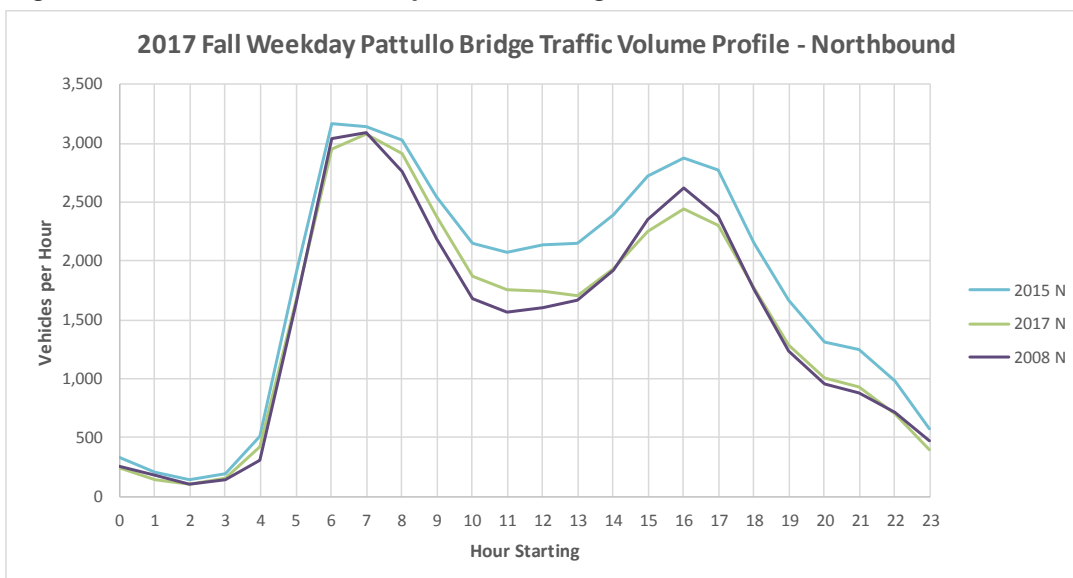
2.2.1 Pattullo Bridge Traffic Volumes

Figure 2.11A and **Figure 2.11B** show the traffic volume profile at the existing Pattullo Bridge in 2008, 2015, and 2017 in the northbound and southbound directions, respectively. The three years represent three key periods in regional network:

- 2008: prior to completion of the new tolled Port Mann Bridge;
- 2015: after the completion of the new tolled Port Mann Bridge;
- 2017: after the removal of tolls on the new Port Mann Bridge.

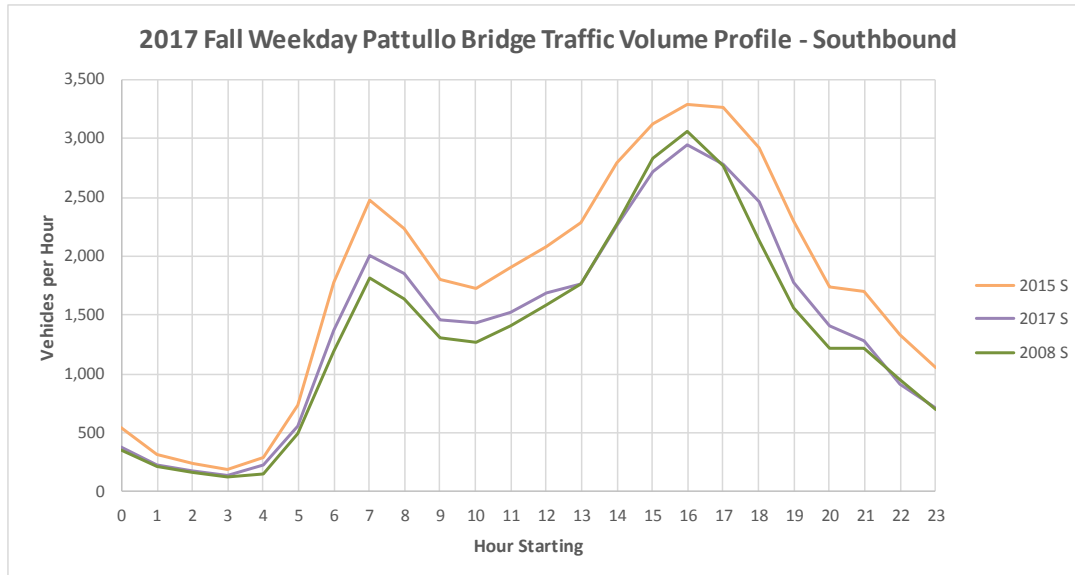
As shown in **Figure 2.11A**, the AM peak hour traffic volumes in the northbound direction are similar in all three years. However, in 2017 after the removal of the tolls, traffic volumes through the rest of the day appear to be lower than the 2015 volumes, but similar to the 2008 volumes.

Figure 2.11A: 2017 Fall Weekday Pattullo Bridge Traffic Volume Profile - Northbound



As shown in **Figure 2.11B**, in 2017 after the removal of the tolls, southbound traffic volumes throughout the day appear to be lower than the 2015 volumes, but similar to the 2008 volumes.

Figure 2.11B: 2017 Fall Weekday Pattullo Bridge Traffic Volume Profile - Southbound



2.2.2 Travel Times

Sample travel times between King George Boulevard at 108 Avenue in Surrey and McBride Boulevard at 6 Avenue in New Westminster were collected using Google Maps during the peak periods. The following observations were made before the removal of tolls:

- In the AM peak hour, travel times are approximately 14 minutes in the northbound direction and approximately 8 minutes in the southbound direction.
- In the PM peak hour, travel times are approximately 11 minutes in the northbound direction and approximately 11 minutes in the southbound direction.

The following observations were made after the removal of tolls:

- In the AM peak hour, travel times are approximately 13 minutes in the northbound direction and approximately 7 minutes in the southbound direction.
- In the PM peak hour, travel times are approximately 9 minutes in the northbound direction and approximately 10 minutes in the southbound direction.

These travel time changes are consistent with the changes in peak hour traffic volumes previously described. After the removal of tolls, peak travel times in the peak direction are similar to travel times associated with the pre-removal of tolls. Peak hour travel times in the non-peak direction seem to have similar or lower travel times as compared to travel times associated with the pre-removal of tolls.

3.0 Methodology

Based on the regional based travel demand forecasting model (RTM), a sub area model was developed to generate the traffic data to be used as part of the traffic analysis. The Pattullo Bridge sub area model includes auto, transit, and truck models which have been calibrated for the Pattullo Bridge study area for the AM, Middy, and PM peak hours.

The starting point of the sub area model was the then-existing TransLink Regional Transportation Model (RTM), Phase 2 Official Release 2015. Using EMME software, the travel demand forecasting model was calibrated using a combination of existing survey data and data collected specifically for this project (e.g. traffic counts, vehicle classification data, and travel time surveys).

More detailed descriptions of the following model components are referenced in Section 1.2 of the appended document *Pattullo Bridge Replacement Project – Environmental Assessment Input Traffic Modelling Report (Parsons 2017)*:

- Regional model version
- Model zone system and land use data
- Model road and transit network
- Four-stage transportation modeling procedure
- Model assumptions
- Model validation
- Traffic volume expansion
- Spatial Boundaries

Model traffic forecasts of the future 2023 and 2030 planning horizons were used as part of the traffic analysis. The 2023 planning horizon represents the “opening day” scenario for the new four lane Pattullo Bridge whereas the 2030 planning horizon represents a near ten year analysis period. The 2030 planning horizon was chosen as this time frame forms an important interim horizon for the Metro Vancouver Regional Growth Strategy, and therefore, official model inputs in terms of land use characteristics (population and employment demographics) and road and transit network assumptions have already been derived.

4.0 Future Conditions – 2023

This section includes an assessment of the No Build Scenario and the Build Scenario for 2023. The following traffic metrics are presented:

- Vehicle-kilometres Travelled (VKT) and Vehicle-hours Travelled (VHT)
- Traffic Demand¹ and Capacity
- Sample Origin-destination (OD) Travel Times

Four analysis hours are modelled and presented:

- AM1: 6:30 – 7:30 AM (project peak hour)
- AM2: 7:30 – 8:30 AM (regional peak hour)
- MD: 12:00 – 1:00 PM
- PM: 4:30 – 5:30 PM (project and regional peak hour)

The traffic metrics are first presented as absolute values of the scenario, before they are compared.

4.1 No Build Scenario

As described in Section 1, the No Build Scenario entails replacing much of the entire existing bridge deck and reconfigures the new deck with three standard lanes because the width of the bridge between the arches does not permit reinstatement of four standard lanes.

VKT and VHT are two basic metrics from the sub area model. The spatial scope is the entire model extents stretching from Lions Bay in the west to Hope in the east, and hence the absolute values are not very insightful other than providing an appreciation of the order of magnitude of the differences. VKT measures vehicle trip distances and is a determinant of fuel consumption, vehicle emissions, and road maintenance. VHT measures vehicle trip durations and is a determinant of travel time and speed, congestion and delays. Model forecasts of 2023 regional VKT and VHT are shown in **Table 4.1**.

¹ Traffic demand refers to the number of trips that desire to use a particular link to travel between an origin – destination pair. If the traffic demand is less than the capacity of the link, the traffic volume on that link would be equal to the traffic demand. If the traffic demand is equal to or exceeds the capacity, the traffic volume on that link would be approximately equal to the capacity of the link. The demand in excess of the capacity would be unserved, and may manifest as queues on the network.

Table 4.1: 2023 Forecast Regional Hourly VKT and VHT (No Build Scenario)

Horizon Year	2023			
Time Period	AM1	AM2	MD	PM
VKT	3,180,000	4,450,000	3,010,000	4,780,000
VHT	67,100	108,900	59,600	117,800

The rest of the metrics pertain to the immediate Pattullo Bridge study area, and hence the absolute values are more meaningful. Model forecasts of 2023 hourly traffic demand presented at the bridge and the approaches are shown in **Table 4.2**.

Table 4.2: 2023 Forecast Hourly Traffic Demand (No Build Scenario)

Horizon Year	2023							
Time Period	AM1		AM2		MD		PM	
Location	SB	NB	SB	NB	SB	NB	SB	NB
McBride Blvd	1,090	1,665	1,420	1,635	1,255	760	2,705	1,090
Royal Ave	740	1,520	1,000	1,590	880	685	1,620	1,040
Columbia St	780	885	870	1,095	505	890	1,160	1,205
Pattullo Bridge	1,650	3,705	2,155	3,680	1,775	1,600	3,880	1,955
King George Blvd	1,070	2,235	1,340	2,230	1,130	990	2,625	990
Scott Rd	630	1,555	935	1,610	865	845	1,465	1,175
Highway 17 (east of Pattullo)	305	705	490	825	405	375	1,115	375
Highway 17 (west of Pattullo)	705	305	825	490	375	405	375	1,115

* numbers in red indicate that traffic demand exceeds capacity of approximately 3,500 vph²

* numbers in blue indicate that traffic demand exceeds capacity of single lane of approximately 1,600 vph

Table 4.2 shows that peak direction traffic demand across the Pattullo Bridge in 2023 is in the range of 3,700-3,900 vehicles per hour (vph) in two lanes. Traffic demand in the non-peak direction is in the range of 1,900-2,200 vph in one lane. Traffic demand exceeds capacity in both directions during the AM and PM peak hours.

Sample travel times are shown in **Table 4.3** for seven representative origin-destination pairs that use the bridge.

² Based on complementary traffic operational analysis using a customized and calibrated micro-simulation model.

Table 4.3: 2023 Modelled Travel Times in Minutes (No Build Scenario)

				Horizon Year		2023					
				Time Period		AM1		AM2		MD	
Origin		Destination		SB	NB	SB	NB	SB	NB	SB	NB
Surrey	Bridgeview	New West	Royal City Centre	8	12	11	13	7	10	16	17
Surrey	108 Avenue at 128 Street	Burnaby	Metrotown	20	26	24	27	20	21	31	29
Surrey	Central City	New West	Royal City Centre	13	17	16	17	12	14	21	21
Surrey	Newton	New West	Royal City Centre	20	25	24	26	20	22	31	29
Surrey	96 Avenue at Scott Road	Burnaby	N Fraser Way Industrials	21	28	22	28	20	21	28	26
Delta	Tilbury Industrials	New West	Royal City Centre	20	24	22	25	19	20	25	26
Surrey	Newton	Coquitlam	SilverCity Coquitlam	20	23	22	24	20	19	26	22

Table 4.3 shows that travel times in the peak direction are 3 to 11 minutes longer than those in the midday when traffic is less congested and close to free flow operations. Travel times in the non-peak direction come close to those in the peak direction due to the single lane operation in the non-peak direction.

The estimated AADT values are shown in **Table 4.4**.

Table 4.4: 2023 Estimated AADT (No Build Scenario)

Horizon Year	2023		
	AADT		
Location	SB	NB	Total
McBride Blvd	24,750	16,200	40,950
Royal Ave	16,500	15,150	31,650
Columbia St	11,250	15,750	27,000
Pattullo Bridge	35,850	33,900	69,750
King George Blvd	23,150	20,150	43,300
Scott Rd	15,750	17,150	32,900
Highway 17 (east of Pattullo)	8,850	7,550	16,400
Highway 17 (west of Pattullo)	7,550	8,850	16,400

Table 4.4 shows that the estimated AADT on the Pattullo Bridge in 2023 is approximately 70,000, compared to existing MADT of 63,000 (after toll removal).

4.2 Build Scenario

As described in Section 1, the Build Scenario is a new four-lane bridge that replaces the existing bridge.

Model forecasts of 2023 regional VKT and VHT are shown in **Table 4.5**.

Table 4.5: 2023 Forecast Regional Hourly VKT and VHT (Build Scenario)

Horizon Year	2023			
Time Period	AM1	AM2	MD	PM
VKT	3,190,000	4,450,000	3,010,000	4,780,000
VHT	67,200	109,200	59,600	117,900

Model forecasts of 2023 hourly traffic demand are shown in **Table 4.6** for the key routes providing access to and from the bridge.

Table 4.6: 2023 Forecast Hourly Traffic Demand (Build Scenario)

Horizon Year	2023							
Time Period	AM1		AM2		MD		PM	
Location	SB	NB	SB	NB	SB	NB	SB	NB
McBride Blvd	970	1,600	1,320	1,410	875	655	1,490	1,455
Royal Ave	780	1,410	1,070	1,275	900	795	1,335	1,220
Columbia St	1,310	1,255	1,720	1,285	1,105	1,235	2,225	1,535
Pattullo Bridge	2,315	4,130	3,155	3,435	2,130	2,095	4,175	3,345
King George Blvd	1,290	2,110	1,790	1,735	1,280	955	2,445	1,460
Scott Rd	500	1,290	965	1,130	665	750	1,395	1,275
Highway 17 (east of Pattullo)	265	1,090	585	1,085	350	610	1,015	720
Highway 17 (west of Pattullo)	1,090	560	1,015	815	615	615	720	1,345

* numbers in red indicate that traffic demand exceeds capacity of approximately 3,500 vph

Table 4.6 shows that the peak direction traffic demand across the Pattullo Bridge in 2023 is in the range of 4,100-4,200 vph. Traffic demand in the non-peak direction is in the range of 3,100-3,400 vph. Traffic demand exceeds capacity in the peak direction, while it is slightly under capacity in the non-peak direction.

Sample travel times are shown in **Table 4.7** for seven representative origin-destination pairs that use the bridge.

Table 4.7: 2023 Modelled Travel Times in Minutes (Build Scenario)

				Horizon Year		2023					
				Time Period		AM1		AM2		MD	
Origin		Destination		SB	NB	SB	NB	SB	NB	SB	NB
Surrey	Bridgeview	New West	Royal City Centre	8	12	10	16	8	8	20	9
Surrey	108 Avenue at 128 Street	Burnaby	Metrotown	20	27	22	30	20	20	31	23
Surrey	Central City	New West	Royal City Centre	12	17	15	20	12	12	26	14
Surrey	Newton	New West	Royal City Centre	20	25	23	29	20	20	34	23
Surrey	96 Avenue at Scott Road	Burnaby	N Fraser Way Industrials	21	27	22	31	21	21	28	23
Delta	Tilbury Industrials	New West	Royal City Centre	17	22	18	26	16	19	25	20
Surrey	Newton	Coquitlam	SilverCity Coquitlam	20	23	21	24	20	19	26	21

Table 4.7 shows that travel times in the peak direction are 8 to 14 minutes longer than those in the midday when traffic is less congested and close to free flow operations. Travel times in the non-peak direction are similar to the midday, suggesting that there is minimal congestion in the non-peak direction.

The estimated AADT values are shown in **Table 4.8**. As can be seen in the table, the estimated AADT on the Pattullo Bridge in 2023 is approximately 85,000, compared to existing MADT of 63,000 (after toll removal).

Table 4.8: 2023 Estimated AADT (Build Scenario)

Horizon Year		2023		
Time Period		AADT		
Location		SB	NB	Total
McBride Blvd		17,250	15,500	32,750
Royal Ave		16,100	15,500	31,600
Columbia St		23,050	20,550	43,600
Pattullo Bridge		43,600	41,750	85,350
King George Blvd		25,600	19,450	45,050
Scott Rd		13,850	14,800	28,650
Highway 17 (east of Pattullo)		8,450	11,650	20,100
Highway 17 (west of Pattullo)		11,500	12,650	24,150

4.3 Comparison: No Build vs Build Scenarios

To improve the understanding of the potential differences between the two scenarios, all traffic metrics presented previously for the 2023 planning horizon have been compared, including VKT and VHT, traffic demand, travel times, and AADT.

VKT and VHT

As discussed, the spatial scope of the VKT and VHT is the entire model extents, and hence the absolute values are not very insightful other than providing an appreciation of the order of magnitude of the differences. The differences in VKT and VHT give better insights as to the overall changes in trip distances and durations due to the project. Changes in regional VKT and VHT are shown in **Table 4.9**.

Table 4.9: 2023 Forecast Regional VKT and VHT (Build over No Build)

Horizon Year	2023				
	Time Period	AM1	AM2	MD	PM
VKT	10,000	0	0	0	0
VHT	100	300	0	100	

These changes in regional VKT and VHT, as shown in Table 4.9, could be caused by:

- Changes in trip distances and durations of bridge traffic in the No Build Scenario (usually a reduction).
- Trip distances and durations of new traffic crossing the bridge in the Build Scenario (must be an increase).

Increases in VKT and VHT are anticipated to primarily occur in the AM peak period. The complex interactions of trip making only imply that some of the increases are greater than the reductions overall, but they cannot be isolated to determine the benefit of the new bridge to an individual trip. Hence, the other metrics provide better insights such as the changes in hourly traffic demand, travel time, and AADT.

Travel Demand

The difference in travel demand between the two scenarios is shown in **Table 4.10** for the key routes providing access to and from the bridge (new or rehabilitated).

Table 4.10: 2023 Forecast Hourly Traffic Demand (Build over No Build)

Horizon Year	2023									
	Time Period		AM1		AM2		MD		PM	
	Direction		SB	NB	SB	NB	SB	NB	SB	NB
McBride Blvd	-120	-65	-100	-225	-380	-105	-1,215	365		
Royal Ave	40	-110	70	-315	20	110	-285	180		
Columbia St	530	370	850	190	600	345	1,065	330		
Pattullo Bridge	665	425	1,000	-245	355	495	295	1,390		
King George Blvd	220	-125	450	-495	150	-35	-180	470		
Scott Rd	-130	-265	30	-480	-200	-95	-70	100		
Highway 17 (east of Pattullo)	-40	385	95	260	-55	235	-100	345		
Highway 17 (west of Pattullo)	385	255	190	325	240	210	345	230		

At the Pattullo Bridge, the highest traffic demand increases were observed in the non-peak direction as more capacity is provided with the single lane operation in the No Build Scenario becoming two standard lanes in the Build Scenario. On the bridge approaches, traffic demand increases on Columbia Street and Highway 17 were observed due to the improved direct accesses to the bridge. This results in traffic demand reductions on McBride Boulevard and Scott Road, especially in the peak direction of travel.

Travel Time

Changes in sample travel times are shown in **Table 4.11** for seven representative origin-destination pairs that use the bridge (new or rehabilitated).

Table 4.11: 2023 Modelled Travel Times in Minutes (Build over No Build)

Horizon Year				2023											
				Time Period				AM1		AM2		MD		PM	
				Origin		Destination		SB	NB	SB	NB	SB	NB	SB	NB
Surrey	Bridgeview	New West	Royal City Centre	0	0	-1	3	0	-2	4	-7				
Surrey	108 Avenue at 128 Street	Burnaby	Metrotown	0	1	-2	3	0	-1	0	-6				
Surrey	Central City	New West	Royal City Centre	0	0	-1	3	0	-2	5	-7				
Surrey	Newton	New West	Royal City Centre	0	0	-1	3	0	-2	3	-7				
Surrey	96 Avenue at Scott Road	Burnaby	N Fraser Way Industrials	0	0	0	3	1	0	1	-3				
Delta	Tilbury Industrials	New West	Royal City Centre	-3	-2	-4	2	-3	-2	1	-6				
Surrey	Newton	Coquitlam	SilverCity Coquitlam	0	0	-1	0	0	0	0	-1				

Travel time reductions throughout the day are observed on the OD pair between Delta Tilbury and New Westminster Royal City Center due to the proposed direct accesses for Highway 17 via the Scott Road Extension. Otherwise, for the rest of the OD pairs, travel times generally increase in the peak direction and decrease in the non-peak direction. Reductions in travel time in the non-peak direction are due to additional capacity as the single lane operation in the No Build Scenario becomes two standard lanes in the Build Scenario. Increases in travel time in the northbound direction during the AM peak period for those routes accessing the bridge via King George Boulevard are likely associated with the proposed laning configuration where traffic merges down to a single lane independently of Scott Road. Increases in travel time in the southbound direction during the PM peak period for those routes accessing the bridge via McBride Boulevard or Royal Avenue are likely associated with the proposed laning configuration where traffic also merges down to a single lane prior to accessing the bridge.

In summary, estimated travel times for the Build Scenario were generally less than the No Build Scenario for all time periods, with the exception for the AM northbound and PM southbound peak periods.

AADT

Changes in estimated AADT values for the 2023 planning horizon are shown in **Table 4.12**.

Table 4.12: 2023 Estimated AADT (Build over No Build)

Horizon Year	2023	
Time Period	AADT	
Direction	SB	NB
McBride Blvd	-7,500	-700
Royal Ave	-400	350
Columbia St	11,800	4,800
Pattullo Bridge	7,750	7,850
King George Blvd	2,450	-700
Scott Rd	-1,900	-2,350
Highway 17 (east of Pattullo)	-400	4,100
Highway 17 (west of Pattullo)	3,950	3,800

Across the Pattullo Bridge, the increase in AADT is approximately 16,000 between the Build and No Build Scenarios. On the bridge approaches, traffic increases on Columbia Street and Highway 17 are also anticipated due to the improved direct accesses to the bridge. Conversely, these direct ramps to the bridge are anticipated to result in traffic reductions on McBride Boulevard and Scott Road.

5.0 Future Conditions – 2030

This section includes an assessment of the No Build Scenario and the Build Scenario for the 2030 planning horizon. The same traffic metrics as introduced previously are presented as follows:

- Vehicle-kilometres Travelled (VKT) and Vehicle-hours Travelled (VHT).
- Traffic Demand and Capacity.
- Sample Origin-destination (OD) Travel Times.

The section is organized in a similar manner as the previous section, in that traffic metrics are first presented as absolute values of the scenario, before they are compared.

5.1 No Build Scenario

As described in Section 1, the No Build Scenario entails replacing much of the entire existing bridge deck and reconfigures the new deck with three standard lanes because the width of the bridge between the arches does not permit reinstatement of four standard lanes.

Model forecasts of 2030 regional VKT and VHT are shown in **Table 5.1**.

Table 5.1: 2030 Forecast Regional VKT and VHT (No Build Scenario)

Horizon Year	2030			
Time Period	AM1	AM2	MD	PM
VKT	3,370,000	4,740,000	3,160,000	5,090,000
VHT	72,700	122,600	63,200	133,000

Model forecasts of 2030 hourly traffic demand are shown in **Table 5.2**.

Table 5.2: 2030 Forecast Hourly Traffic Demand (No Build Scenario)

Horizon Year	2030								
	Time Period		AM1		AM2		MD		PM
Location	SB	NB	SB	NB	SB	NB	SB	NB	
McBride Blvd	1,100	1,705	1,465	1,650	1,315	765	2,840	1,105	
Royal Ave	760	1,620	1,060	1,595	930	715	1,735	1,100	
Columbia St	800	930	925	1,135	525	935	1,220	1,250	
Pattullo Bridge	1,695	3,900	2,240	3,690	1,860	1,630	4,075	1,975	
King George Blvd	1,115	2,320	1,385	2,240	1,195	1,015	2,765	975	
Scott Rd	630	1,655	980	1,635	905	875	1,490	1,185	
Highway 17 (east of Pattullo)	335	790	570	935	425	385	1,185	435	
Highway 17 (west of Pattullo)	790	335	935	570	385	425	435	1,185	

* numbers in red indicate that traffic demand exceeds capacity of around 3,500 vph

* numbers in blue indicate that traffic demand exceeds capacity of a single lane of approximately 1,600 vph

Table 5.2 shows that peak direction traffic demand across the Pattullo Bridge in 2030 is in the range of 3,900-4,100 vph in two lanes. Traffic demand in the non-peak direction is in the range of 1,900-2,300 vph in one lane. Traffic demand exceeds capacity in both directions during the AM and PM peak hours.

Sample travel times are shown in **Table 5.3** for seven representative origin-destination pairs that use the bridge.

Table 5.3: 2030 Modelled Travel Times in Minutes (No Build Scenario)

Horizon Year				2030							
				Time Period		AM1		AM2		MD	
Origin		Destination		SB	NB	SB	NB	SB	NB	SB	NB
Surrey	Bridgeview	New West	Royal City Centre	8	14	12	17	7	10	18	18
Surrey	108 Avenue at 128 Street	Burnaby	Metrotown	20	27	25	31	20	22	33	30
Surrey	Central City	New West	Royal City Centre	13	18	17	21	12	14	24	22
Surrey	Newton	New West	Royal City Centre	21	27	25	31	20	22	34	30
Surrey	96 Avenue at Scott Road	Burnaby	N Fraser Way Industrials	21	29	23	33	20	21	30	26
Delta	Tilbury Industrials	New West	Royal City Centre	20	25	23	29	19	20	27	27
Surrey	Newton	Coquitlam	SilverCity Coquitlam	20	24	23	25	20	20	27	22

Table 5.3 shows that travel times in the peak direction are 7 to 14 minutes longer than those in the midday when traffic is less congested and close to free flow operations. Travel times in the non-peak direction are close to those in the peak direction due to the single lane operation in the non-peak direction.

The estimated AADT values are shown in **Table 5.4**.

Table 5.4: 2030 Estimated AADT (No Build Scenario)

Horizon Year	2030		
Time Period	AADT		
Location	SB	NB	Total
McBride Blvd	25,900	16,350	42,250
Royal Ave	17,550	15,600	33,150
Columbia St	11,850	16,400	28,250
Pattullo Bridge	37,550	34,250	71,800
King George Blvd	24,400	20,300	44,700
Scott Rd	16,350	17,500	33,850
Highway 17 (east of Pattullo)	9,550	8,200	17,750
Highway 17 (west of Pattullo)	8,200	9,550	17,750

Table 5.4 shows that the estimated AADT on the Pattullo Bridge in 2030 is approximately 72,000, compared to existing MADT of 63,000 (after toll removal).

5.2 Build Scenario

As described in Section 1, the Build Scenario is a new four-lane bridge that replaces the existing bridge.

Model forecasts of 2030 regional VKT and VHT are shown in **Table 5.5**.

Table 5.5: 2030 Forecast Regional VKT and VHT (Build Scenario)

Horizon Year	2030			
Time Period	AM1	AM2	MD	PM
VKT	3,370,000	4,750,000	3,160,000	5,100,000
VHT	72,900	123,000	63,100	133,400

Model forecasts of 2030 hourly traffic demand are shown in **Table 5.6**.

Table 5.6: 2030 Forecast Hourly Traffic Demand (Build Scenario)

Horizon Year	2030							
	AM1		AM2		MD		PM	
Location	SB	NB	SB	NB	SB	NB	SB	NB
McBride Blvd	1,000	1,655	1,375	1,440	920	670	1,525	1,495
Royal Ave	820	1,480	1,120	1,300	950	815	1,390	1,275
Columbia St	1,340	1,300	1,835	1,315	1,145	1,260	2,185	1,590
Pattullo Bridge	2,410	4,360	3,335	3,495	2,240	2,150	4,160	3,470
King George Blvd	1,345	2,250	1,875	1,780	1,370	995	2,510	1,515
Scott Rd	535	1,380	1,055	1,190	695	775	1,375	1,315
Highway 17 (east of Pattullo)	310	1,170	700	1,175	370	620	1,095	800
Highway 17 (west of Pattullo)	1,135	580	1,080	885	625	630	715	1,445

* numbers in red indicate that traffic demand exceeds capacity of approximately 3,500 vph

Table 5.6 shows that the peak direction traffic demand across the Pattullo Bridge in 2030 is in the range of 4,100-4,400 vph. Traffic demand in the non-peak direction is in the range of 3,300-3,500 vph. Traffic demand exceeds capacity in the peak direction, while it is slightly under capacity in the non-peak direction.

Sample travel times are shown in **Table 5.7** for seven representative origin-destination pairs that use the bridge.

Table 5.7: 2030 Modelled Travel Times in Minutes (Build Scenario)

				Horizon Year		2030					
				Time Period		AM1		AM2		MD	
Origin		Destination		SB	NB	SB	NB	SB	NB	SB	NB
Surrey	Bridgeview	New West	Royal City Centre	8	13	10	21	8	8	24	10
Surrey	108 Avenue at 128 Street	Burnaby	Metrotown	20	28	23	32	20	20	33	23
Surrey	Central City	New West	Royal City Centre	13	18	15	25	13	12	30	15
Surrey	Newton	New West	Royal City Centre	20	27	24	35	20	21	37	23
Surrey	96 Avenue at Scott Road	Burnaby	N Fraser Way Industrials	21	29	22	36	21	21	32	23
Delta	Tilbury Industrials	New West	Royal City Centre	17	23	19	31	16	19	28	20
Surrey	Newton	Coquitlam	SilverCity Coquitlam	20	24	22	26	20	20	27	22

Table 5.7 shows that travel times in the peak direction are 11 to 17 minutes longer than those in the midday when traffic is less congested and close to free flow operations. Travel times in the non-peak direction are similar to the midday with little congestion.

The estimated AADT values are shown in **Table 5.8**.

Table 5.8: 2030 Estimated AADT (Build Scenario)

Horizon Year	2030		
Time Period	AADT		
Location	SB	NB	Total
McBride Blvd	17,950	15,900	33,850
Royal Ave	16,900	15,950	32,850
Columbia St	23,750	21,050	44,800
Pattullo Bridge	45,200	42,850	88,050
King George Blvd	26,950	20,100	47,050
Scott Rd	14,350	15,400	29,750
Highway 17 (east of Pattullo)	9,250	12,350	21,600
Highway 17 (west of Pattullo)	11,750	13,350	25,100

Table 5.8 shows the estimated AADT on the Pattullo Bridge in 2030 is approximately 88,000, compared to existing MADT of 63,000 (after toll removal).

5.3 Comparison: No Build vs Build Scenarios

To improve the understanding of the potential differences between the two scenarios, all traffic metrics presented previously for the 2030 planning horizon have been compared, including VKT and VHT, traffic demand, travel times, and AADT.

VKT and VHT

As discussed, the spatial scope of the VKT and VHT is the entire model extents, and hence the absolute values are not very insightful other than providing an appreciation of the order of magnitude of the differences. The differences in VKT and VHT give better insights as to the overall changes in trip distances and durations due to the project. Changes in regional VKT and VHT are shown in **Table 5.9**.

Table 5.9: 2030 Forecast Regional VKT and VHT (Build over No Build)

Horizon Year	2030			
Time Period	AM1	AM2	MD	PM
VKT	0	10,000	0	10,000
VHT	200	400	-100	400

These changes in VKT and VHT, as shown in Table 5.9, could be caused by:

- Changes in trip distances and durations of bridge traffic in the No Build Scenario (usually a reduction).
- Trip distances and durations of new traffic crossing the bridge in the Build Scenario (must be an increase).

Increases in VKT and VHT are anticipated in the peak hours, however, not during the midday. The complex interactions of trip making only imply that some of the increases are greater than the reduction overall, but they cannot be isolated to determine the benefit of the new bridge to an individual trip. Hence, the rest of the metrics would provide better insights.

Travel Demand

Changes in hourly traffic demand are shown in **Table 5.10** for the key routes providing access to and from the bridge (new or rehabilitated).

Table 5.10: 2030 Forecast Hourly Traffic Demand (Build over No Build)

Horizon Year	2030							
Time Period	AM1		AM2		MD		PM	
Direction	SB	NB	SB	NB	SB	NB	SB	NB
McBride Blvd	-100	-50	-90	-210	-395	-95	-1,315	390
Royal Ave	60	-140	60	-295	20	100	-345	175
Columbia St	540	370	910	180	620	325	965	340
Pattullo Bridge	715	460	1,095	-195	380	520	85	1,495
King George Blvd	230	-70	490	-460	175	-20	-255	540
Scott Rd	-95	-275	75	-445	-210	-100	-115	130
Highway 17 (east of Pattullo)	-25	380	130	240	-55	235	-90	365
Highway 17 (west of Pattullo)	345	245	145	315	240	205	280	260

At the Pattullo Bridge, the highest traffic demand increases were observed in the non-peak direction as more capacity is provided with the single lane operation in the No Build Scenario becoming two standard lanes in the Build Scenario. On the bridge approaches, traffic demand increases on Columbia Street and Highway 17 were observed due to the improved direct accesses to the bridge. This results in traffic demand reductions on McBride Boulevard and Scott Road, especially in the peak direction of travel.

Travel Times

Changes in sample travel times are shown in **Table 5.11** for seven representative origin-destination pairs that use the bridge (new or rehabilitated).

Table 5.11: 2030 Modelled Travel Times in Minutes (Build over No Build)

Horizon Year				2030							
				Time Period		AM1		AM2		MD	
Origin		Destination		SB	NB	SB	NB	SB	NB	SB	NB
Surrey	Bridgeview	New West	Royal City Centre	0	0	-2	4	0	-2	6	-8
Surrey	108 Avenue at 128 Street	Burnaby	Metrotown	0	1	-2	1	1	-1	0	-7
Surrey	Central City	New West	Royal City Centre	0	0	-2	4	0	-2	6	-8
Surrey	Newton	New West	Royal City Centre	0	0	-2	4	0	-2	2	-7
Surrey	96 Avenue at Scott Road	Burnaby	N Fraser Way Industrials	0	0	-1	3	1	0	1	-3
Delta	Tilbury Industrials	New West	Royal City Centre	-3	-2	-4	2	-2	-2	2	-7
Surrey	Newton	Coquitlam	SilverCity Coquitlam	0	0	-1	0	0	0	0	-1

Travel time reductions throughout the day are observed on the OD pair between Delta Tilbury and New Westminster Royal City Center due to the proposed direct accesses for Highway 17 via the Scott Road Extension. Otherwise, for the rest of the OD pairs, travel times generally increase in the peak direction and decrease in the non-peak direction. Reductions in travel time the non-peak direction are due to additional capacity as the single lane operation in the No Build Scenario which becomes two standard lanes in the Build Scenario. Increases in travel time in the northbound direction during the AM peak period for those routes accessing the bridge via King George Boulevard are likely associated with the proposed laning configuration where traffic merges down to a single lane independently of Scott Road. Increases in travel time in the southbound direction during the PM peak period for those routes accessing the bridge via McBride Boulevard or Royal Avenue are likely associated with the proposed laning configuration where traffic also merges down to a single lane prior to accessing the bridge.

In summary, estimated travel times for the Build Scenario were generally less than the No Build Scenario for all time periods, with the exception for the AM northbound and PM southbound peak periods.

AADT

Changes in estimated AADT values for the 2030 planning horizon are shown in **Table 5.12**.

Table 5.12: 2030 Estimated AADT (Build over No Build)

Horizon Year	2030	
Time Period	AADT	
Direction	SB	NB
McBride Blvd	-7,950	-450
Royal Ave	-650	350
Columbia St	11,900	4,650
Pattullo Bridge	7,650	8,600
King George Blvd	2,550	-200
Scott Rd	-2,000	-2,100
Highway 17 (east of Pattullo)	-300	4,150
Highway 17 (west of Pattullo)	3,550	3,800

Across the Pattullo Bridge, the increase in AADT is approximately 16,000 between the Build and No Build Scenarios. On the bridge approaches, traffic increases on Columbia Street and Highway 17 are also anticipated due to the improved direct accesses to the bridge. Conversely, these direct ramps to the bridge are anticipated to result in traffic reductions on McBride Boulevard and Scott Road.

6.0 Sensitivity Analysis

To complete the traffic analysis, a sensitivity analysis was undertaken on potential George Massey Tunnel Replacement capacity changes.

As the traffic analysis described in this document is being undertaken, the future scope of the George Massey Tunnel Replacement (GMTR) project remains uncertain. Since the GMTR crosses the Fraser River along with the Pattullo Bridge, and with potential to increase in traffic capacity, traffic demand across the Pattullo Bridge could be impacted. Although the traffic analysis previously described in this document was undertaken assuming a six-lane GMTR, the first sensitivity analysis explores traffic demand for all crossings of the Fraser River Middle and South Arm including the Pattullo Bridge with different capacity assumptions at the GMTR. The sensitivity analysis has a wider spatial scope and a longer-term horizon than undertaken for the analysis in the previous sections.

A high-level assessment was conducted, for the 2023 and 2045 planning horizons using TransLink's Regional Transportation Model (RTM), to determine the magnitude of the change in traffic demand at the Pattullo Bridge if different laning configurations were considered at the Highway 99 crossing of the Fraser River.

6.1 Network Assumptions

The sensitivity analysis assumes different capacities at the Highway 99 crossing and the removal of tolls from all bridges. For both horizon years, the assumed Pattullo Bridge Replacement is based on current the Stage 2 Reference Concept Full Connection Scope, while the Alex Fraser Bridge is reconfigured with seven (7) lanes including a reversible centre lane / counter-flow operation.

The three sensitivity scenarios also included the following primary assumptions:

- Six-lane crossing along Highway 99 with all lanes designated as general purpose lanes. Existing HOV lanes were retained and extended north and south of the river crossing, with terminations near the new six lane river crossing.
- Eight-lane crossing along Highway 99 with six lanes designated as general purpose lanes and two lanes (one in each direction) designated as HOV lanes. The continuous HOV lanes were extended south of the river to approximately Highway 91 and north of the river to approximately Westminster Highway.
- 10-lane crossing along Highway 99 with eight general purpose lanes and two HOV lanes (one in each direction). The continuous HOV lanes were extended south of the river to King George Boulevard and north of the river to Bridgeport Road.

6.2 Sensitivity Analysis Findings

Findings, in terms of AM and PM peak hour demands at all of the major river crossings, have been illustrated below for both the 2023 planning horizon and the 2045 planning horizon.

2023 Traffic Demand Comparison

Figures 6.1 and **6.2** illustrate a comparison of forecast traffic demand during the peak hours for the 2023 planning horizon between the three sensitivity scenarios, for each crossing that is part of the Fraser River Middle and South Arm screenline.

Figure 6.1: Screenline 2023 Weekday AM Traffic Demand Comparison

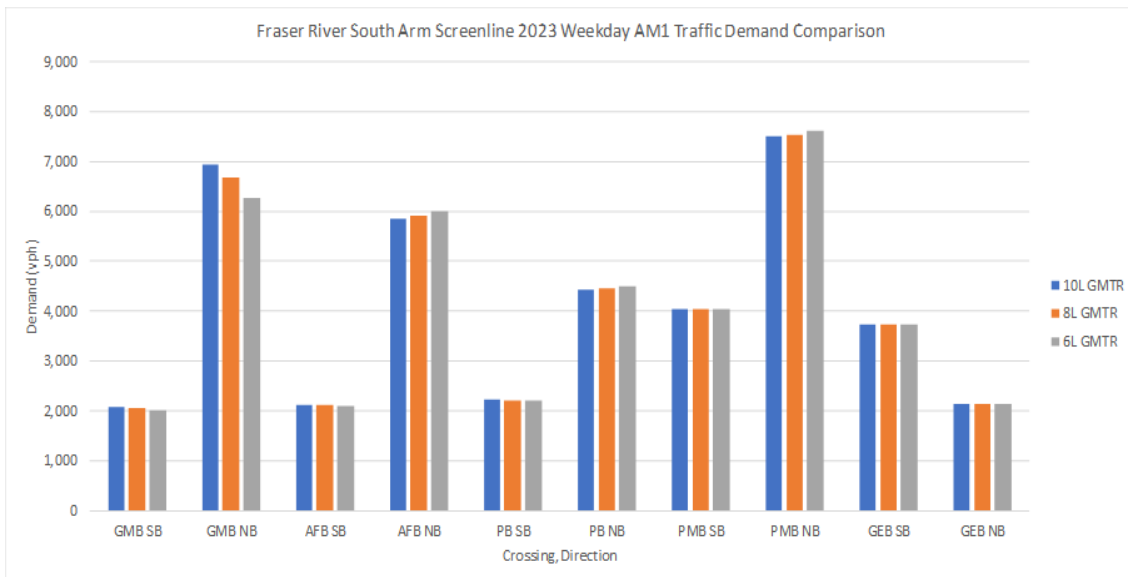
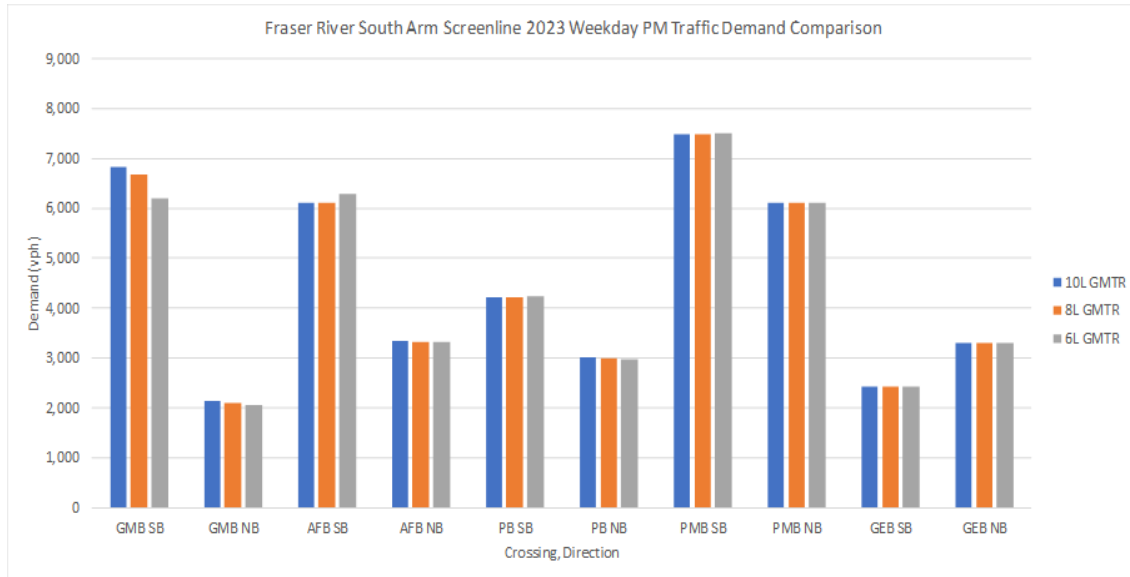


Figure 6.2: Screenline 2023 Weekday PM Traffic Demand Comparison



The results of the sensitivity analysis indicate that there would be negligible effects on the traffic demand at the new Pattullo Bridge between the three sensitivity scenarios. With peak period travel demand forecast to be approximately 4,500 vph in the northbound direction and 4,200 vph in the southbound direction, a difference of less than 100 vph was noted between all three scenarios for the AM peak period northbound movement across the Pattullo Bridge and a similar difference was noted in the PM peak period for the southbound movement.

At the Highway 99 corridor, the forecast peak hour traffic demand at the bridge crossing represents approximately 1400 vphpl, 1900 vphpl, and 2100 vphpl on the general-purpose lanes for the 10-lane, eight lane, and six lane crossing scenarios respectively. The charts show that the increase in peak hour traffic at the already congested Alex Fraser Bridge and Highway 91 corridor is also not significant. This small change at the Alex Fraser Bridge and new Pattullo Bridge suggests that some of the river crossing traffic is internalized when the capacity at the Highway 99 Fraser River crossing is reduced.

2045 Traffic Demand Comparison

Figures 6.3 and **6.4** illustrate a comparison of forecast traffic demand at the various crossings along the Fraser River North and South Arm screenline during the AM and PM peak hours for the 2045 planning horizon.

Figure 6.3: Screenline 2045 Weekday AM Traffic Demand Comparison

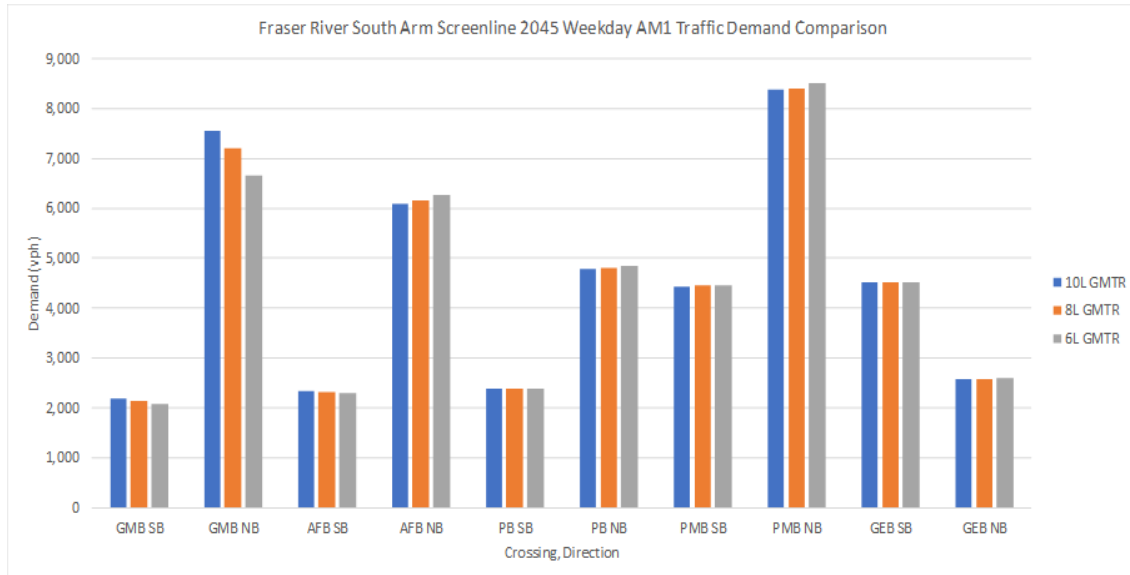
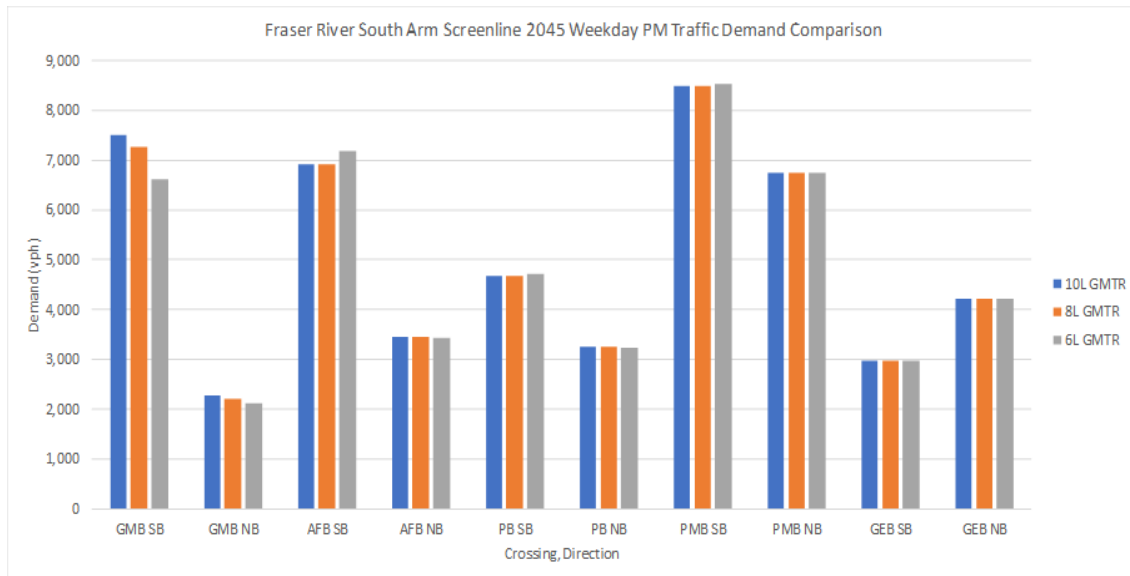


Figure 6.4: Screenline 2045 Weekday PM Traffic Demand Comparison



Again, the results of the sensitivity analysis indicate that there would be negligible effects on the traffic demand at the new Pattullo Bridge between the three sensitivity scenarios. With peak period travel demand forecast to be approximately 4,800 vph in the northbound direction and 4,700 vph in the southbound direction, a difference of less than 100 vph was noted between all three scenarios for the AM peak period northbound movement across the Pattullo Bridge and a similar difference was noted in the PM peak period for the southbound movement.

At the Highway 99 corridor, the forecast peak hour traffic demand at the river crossing represents approximately 1500 vphpl, 2000 vphpl, and 2200 vphpl on the general-purpose lanes for the 10-lane, eight lane, and six lane crossing scenarios. The charts show that the increase in peak hour traffic at the already congested Alex Fraser Bridge and Highway 91 corridor is also not significant. This small change at the Alex Fraser Bridge and new Pattullo Bridge suggests that some of the river crossing traffic is internalized when the capacity at the Highway 99 Fraser River crossing is reduced.

7.0 Summary

The purpose of this document was to describe the traffic demand analysis that was conducted for the new Pattullo Bridge. The document presents and analyzes forecast traffic metrics that have been applied to the proposed bridge replacement. For the purposes of assessing the traffic changes for the new Pattullo Bridge, two scenarios were considered, the No Build Scenario and the Build Scenario. While the Build Scenario represents a new four-lane bridge replacing the existing bridge, the No Build Scenario represents a three lane operation with a reversible center lane, which would provide an additional lane in the peak direction of travel during the peak periods.

Comparing traffic demand at the bridge in 2023 and 2030, the highest traffic increases can be expected from the non-peak direction during the peak hours as the single lane operation in the No Build Scenario becomes two standard lanes in the Build Scenario. On the bridge approaches, traffic volumes increase on Columbia Street and Highway 17 due to the proposed bridge direct accesses. This direct bridge access results in traffic reductions on McBride Boulevard and Scott Road, especially in the peak direction.

The sample travel times convey a common theme. Routes that could use the proposed direct accesses have the most travel time reductions, and the benefits stay true throughout the day. The remaining routes also benefit throughout the day except for the peak direction of travel during the peak hours. Peak direction traffic during the peak hours amounts to less than 20% of daily traffic. Although some routes gain and others lose, the result is an overall travel time reduction to the average trip.

The results of the sensitivity analysis between different capacity assumptions for the GMTR indicate that there would be negligible effects on the traffic demand at the new Pattullo Bridge.

APPENDIX

Traffic Modelling Report



PATTULLO BRIDGE REPLACEMENT PROJECT

ENVIRONMENTAL ASSESSMENT INPUT TRAFFIC MODELLING REPORT

(Appendix to Traffic Analysis Report)

Submitted By:

PARSONS

January 2018

Project No. 602525

1.0 Introduction

The purpose of this document is to describe the traffic demand analysis that was conducted for the environmental assessment for the new Pattullo Bridge and more specifically, as input to the Air Quality, Noise Impact, and Socio Community Impact component studies. The document describes the methodology including tools, the spatial and temporal boundaries, and the typical traffic data output for each environmental assessment component study.

1.1 Assessment Context

The Pattullo Bridge Replacement Project involves changes to the Pattullo Bridge corridor and related road, cycling, and pedestrian networks that influence the movement of people and goods, as represented by changes in future traffic volumes, traffic flows, origins and destinations, and travel mode choice. The anticipated changes between the 'No-Build' scenario, a base case condition consisting of a three lane rehabilitated existing bridge and the 'Build' scenario, a new four lane Pattullo Bridge with improved community connections, in terms of traffic demand and operations, have the potential to affect air quality, noise, and existing land uses at the regional as well as local levels. As such, specialized analysis was conducted to assess traffic demand at both the regional level and within smaller study areas in the immediate vicinity of the project.

The two scenarios being investigated for the environmental assessment component studies are introduced below in terms of how they were derived along with the general scope of the proposed works. Both scenarios have assumed no tolls on any of the Fraser River crossings.

No Build Scenario – Rehabilitated Three Lane Pattullo Bridge

The No Build Scenario involves rehabilitating the existing Pattullo Bridge. In order to achieve modern width traffic lanes to improve user safety, the rehabilitated bridge is assumed to operate as a three lane crossing. The three lane configuration would be operated with a reversible center lane, which would provide an additional lane in the peak direction of travel during the peak periods. The existing sub-standard on-ramp from Columbia Street to the bridge would be permanently closed. No further changes to the road connections in Surrey or New Westminster are included.

Build Scenario – New Four Lane Pattullo Bridge

The Build scenario includes a new, four-lane bridge that meets current seismic and road design standards, and provides a safe and reliable crossing for vehicles, pedestrians and cyclists, network connections in Surrey and New Westminster and the removal of the existing bridge.

The Build scenario includes the following connections on each side of the river:

- In New Westminster, a new off-ramp to eastbound East Columbia Street will be provided along with other geometric and roadway realignments to connect to the new bridge. The existing westbound East Columbia Street loop on-ramp will also be replaced for improved geometry. In addition to the road connection changes, there will be improved pedestrian and cycling facilities along the project corridors.
- In Surrey, the new bridge will connect to King George Boulevard with a new interchange constructed to provide free flow traffic movements between the new Pattullo Bridge, Scott Road, King George Boulevard, and Highway 17 via the new Scott Road Extension. The Scott Road Extension provides a direct connection between Scott Road and Highway 17 for the traffic movements to / from Highway 17 east and for Highway 17 eastbound to Scott Road / Pattullo Bridge. A direct southbound ramp from the bridge will be provided to connect to westbound Highway 17. The existing at-grade signalized intersection at Highway 17 / Old Yale Road will be replaced with a grade separated crossing. Cycling and pedestrian improvements are included beyond those on the new bridge.

1.2 Methodology

The traffic analysis methodology is described in terms of the traffic demand forecasting process followed by the various post modelling data processing activities to generate the required input to each of the environmental assessment component studies.

1.2.1 Traffic Demand Forecasting

A regional based travel demand forecasting model was applied to generate the traffic data to be used in several component studies as part of the Environmental Assessment of the Pattullo Bridge Replacement Project. For this project, a sub area model was developed to generate the traffic demand for the areas of specific interest for each environmental assessment component study. The Pattullo Bridge sub area model includes auto, transit, and truck models which have been calibrated for the Pattullo Bridge study area for the AM, Midday, and PM peak hours.

The travel demand forecasting models, using EMME software, were calibrated using a combination of existing survey data and data collected specifically for this project (e.g. traffic counts, vehicle classification data, and travel time surveys). The starting point of the sub area model was the then-existing TransLink Regional Transportation Model (RTM), Phase 2 Official Release 2015, which is briefly described below:

The RTM is comprised of three main components:

- A traffic zone system and associated land use data (in the form of population and employment demographic data);
- A base road and transit network (auto, truck and transit);
- A four-stage transportation modelling procedure.

The RTM divides the Lower Mainland area into a system of traffic zones. The traffic zone sizes vary according to population and employment densities and for the most part, adhere to the federal government census tracts and to municipal boundaries. Metro Vancouver developed detailed demographic information for each traffic zone for the current year and future years in accordance with the Regional Growth Strategy. Included in the zone system are 11 external zones located at entry points to the region (e.g. Hope via Highway 1 or Highway 7, Squamish, U.S. Border crossings, airport and ferries) to account for traffic entering, leaving, or passing through the region. For the sub area model, the RTM traffic zones were further disaggregated into finer zones within the Pattullo Bridge study area to provide additional accuracy with respect to traffic volume forecasts on lower class roadways. This additional accuracy within the sub area model, which is not provided with the parent RTM, provides a finer level of detail within the Pattullo Bridge study area road network with respect to traffic volume changes (between the base case and replacement option) that need to be considered through the various environmental assessment component studies.

The second component is a base road network (auto, truck and transit) that extends from Lions Bay to Hope. The road network is comprised of freeway, arterial, and collector facilities. Minimal representation is given to residential / local roads. Each road link contains information pertaining to the number of lanes, posted speed limit, capacity and turning restrictions at intersections. The transit network, which utilizes the road network (except for SkyTrain, Commuter Rail, and SeaBus), contains detailed information on every transit route in the region.

The third component of the RTM is the four-stage transportation modelling procedure that predicts the number of auto, truck, transit, walk and bike trips during the peak hours. The modelling stages include:

- **Trip Generation** – estimates the number of trips that are produced and attracted to each traffic zone. Trips are generated by nine trip purposes (e.g. Home Based Work, Home Based University, Home Based School, etc.). The number of trips produced is a function of household socioeconomic characteristics such as size, number of workers, income, and auto ownership. The number of trips attracted is a function of land use characteristics, and school enrolment.
- **Trip Distribution** – distributes the produced and attracted trips between the traffic zones. The distribution is conducted as a function of impedance or generalized cost between a

given origin and destination. The impedance is usually a combination of auto and transit impedances, which ensures that the new transit or road infrastructure investments are reflected in future trip distributions. The products of the trip distribution stage are person trip matrices (for all modes) for each trip purpose.

- **Mode Choice** – divides the trip purpose matrices by mode. This division is conducted using a series of logit models, which estimate the probability of using a mode between a given origin and destination based on modal accessibilities and impedances. The products of this stage include person trip matrices by mode and purpose. These trip purpose matrices are combined by mode for the assignment stage.
- **Assignment** – selection of routes between origins and destinations within the respective networks. The vehicle (auto and truck) and transit passenger assignments are based on an iterative path finding process that cycles until network travel times are in equilibrium. The resulting outputs include vehicle and transit network volumes (by link), travel times, travel costs, etc.

Model assumptions applicable to the Pattullo Bridge sub area model are presented in **Table 1.1**.

Table 1.1: Transportation Model Assumptions

Component	Assumptions
1. Regional model and version	TransLink's Regional Transportation Model (RTM), official phase 2
2. Land use, population, employment	Metro Vancouver Regional Growth Strategy land use / population / employment (2011, 2030, and 2045), 641 zones further disaggregated within the study area
3. Road networks	2011 network, 2014 network (2011 plus Gateway Program), 2023 network, 2030 network, and 2045 network, further refined within the study area Infrastructures assumed by 2023 include: 7-lane Alex Fraser Bridge, Brunette Interchange Improvements, 6-lane Massey Tunnel Replacement (Untolled) Pattullo Bridge Replacement based on Stage 2 Reference Concept four lane bridge Full Connection Scope with no tolls.
4. Transit network	2011 network, 2030 Mayors' Vision, and 2045 Mayors' Vision
5. Origin-destination patterns	Four-stage model that is the regression of regional travel patterns based on TransLink's 2011 Trip Diary Survey
6. Time slices	AM1 peak hour (6:30-7:30 AM), AM2 peak hour (7:30-8:30 AM), midday hour (12:00-1:00 PM), PM peak hour (4:30-5:30 PM)
7. Base traffic volumes	TransLink 2011 Screenline Survey, 2011 Pattullo Bridge study area traffic counts
8. Value of time per hour	In 2011 dollars – \$5, \$10 and \$20 (autos); \$30 (Light Truck); \$42 (Heavy Truck)
9. Special generators	2014 Metro Vancouver Truck Model Update, Four freight market sectors
10. Validation	Observed volumes – 2011 regional screenline, recent study area counts Travel times - validation with Google Maps using 13 OD pairs

As required for the various traffic related environmental assessment component studies, model traffic forecasts of the 2023 and 2030 planning horizons were used as input to the environmental assessment studies. The 2023 planning horizon represents the “opening day” scenario for the new four lane Pattullo Bridge whereas the 2030 planning horizon represents a near ten year analysis period. The 2030 planning horizon was chosen as this time frame forms an important interim horizon for the Metro Vancouver Regional Growth Strategy, and therefore, official model inputs in terms of land use characteristics (population and employment demographics) and road and transit network assumptions have already been derived.

Initial data provided from the models were hourly traffic demand by vehicle class and link travel speeds. Additional supplementary data was provided to generate traffic forecasts that would be pertinent to the environmental assessment component studies. This process involved the expansion of model hourly traffic demands by vehicle class to annual average daily traffic (AADT), as well as specific day time and night time hours. Detailed assumptions, methodology, inputs and outputs of this process are documented in the following section.

1.2.2 Traffic Volume Expansion

As noted above, traffic demands were initially derived for the specific peak hours as typical model output. However, additional supplementary data was required for each environmental assessment component study including daily traffic volumes. An overview of the data provided, and the methodology used to generate the daily volume figures is described in the following sub sections.

It should be noted that this expansion process tries to relate traffic volumes over the course of the typical weekday on regional screen lines, and then applies them to every roadway within the study area. The spatial differences between the two scopes may result in slight discrepancies. As such, forecasts at the daily level may not be as accurate as those at the hourly level.

Data Requirements

The following data was required for the various environmental assessment components studies (air quality, noise, and socio-community):

- Total light vehicles during the day;
- Total light vehicles during the night;
- Total heavy vehicles during the day;
- Total heavy vehicles during the night.

A 'heavy vehicle' is defined as a vehicle with three or more axles. A 'light vehicle' is defined as all non-heavy vehicles. For the purposes of deriving the traffic data, 'day' is defined as the period between 07:00 to 22:00. Consequently, 'night' is defined as the period between 22:00 to 07:00.

It should be noted that the various environmental assessment component study teams were interested in very specific areas only (see Section 2.2). Given the significant amount of model data to be assessed, the analysis and post data processing was automated, thus allowing consistent daily traffic volume data to be estimated for all links in the study area for each environmental assessment component study.

Model Outputs

Traffic demands were generated using the Pattullo Bridge sub area model and data was extracted from the following scenarios:

- Base
- 2023 3 Lane Bridge
- 2023 4 Lane Bridge
- 2030 3 Lane Bridge
- 2030 4 Lane Bridge

For each scenario, data was extracted for four analysis hours representing the following peak hours:

- AM1: 6:30 – 7:30 AM (project peak hour)
- AM2: 7:30 – 8:30 AM (regional peak hour)
- MD: 12:00 – 1:00 PM
- PM: 4:30 – 5:30 PM

Link volumes for each vehicle mode were extracted from the model outputs.

Supplementary Data

In addition to the initial model data outputs, the following supplementary data was also extracted from available sources:

- Existing traffic profile at the Pattullo Bridge;
- Existing and historic AADT for the Pattullo Bridge; and
- Existing truck percentages on select links.

Expansion Factors

As part of a previous report prepared for TransLink (*Regional VKT Expansion Factors, 2014, Delcan*), factors to expand hourly model outputs to daily figures (e.g. kilometres travelled) were developed. These factors were developed by examining the relationship between peak hour volumes and daily volumes at screenline locations throughout the Lower Mainland.

Several different sets of expansion factors were developed. For example, a factor was developed to estimate the daily volume using the AM peak hour volume only, while another factor was developed to estimate the daily volume using the AM, MD and PM peak hour volumes.

Furthermore, the daily volumes could be estimated for each vehicle class or on a total vehicle volume level. It should be noted that generating daily volume estimates for each vehicle class requires significantly more effort, and should only be considered if there is sufficient data to validate the results (see **Notes** sub section below).

Hourly to Daily Expansion Process – Average Annual Daily Traffic

Average annual daily traffic (AADT) was calculated for each link of the study area. The process was conducted twice to calculate total traffic and heavy vehicle traffic. Light vehicle traffic demand was calculated as the difference between the total traffic and heavy vehicle traffic demands.

Total Traffic

The hourly traffic demands on each link were expanded to daily traffic demands using the expansion factors shown in the table below. The resultant figure is an estimate of the average weekday traffic.

Peak Hour	Expansion Factor (non-class specific)
AM2	3.68
MD	9.20
PM	3.11

To establish the traffic on an average day, the figure must first be multiplied by a weekday-to-annual factor and then divided by 365. The resultant figure is the estimated AADT.

Weekday to Annual (non-class specific)	Annual to Average Day
335	1/365

A comparison of the estimated AADT from the base scenario and measured AADT of the existing Pattullo Bridge showed that the estimate was approximately 7.5% lower than the measured AADT. As such, a correction factor of 1.075 was applied.

Correction Factor (non-class specific)
1.075

Heavy Vehicle Traffic

It was assumed that Heavy Vehicles are represented by heavy trucks in the RTM. The hourly truck demands on each link were expanded to daily demands using the following expansion factors. The resultant figure is an estimate of the average weekday truck traffic.

Peak Hour	Expansion Factor (Heavy Vehicles)
AM2	4.88
MD	5.43
PM	6.36

To establish the truck traffic on an average day, the figure must first be multiplied by a weekday-to-annual factor and then divided by 365. The resultant figure is the estimated truck AADT.

Weekday to Annual (Heavy Vehicles)	Annual to Average Day
276	1/365

A comparison of the estimated truck AADT from the base scenario and measured truck AADT of the existing Pattullo Bridge showed that the estimate was approximately 47% higher than the measured truck AADT. As such, a correction factor of 0.68 was applied.

Correction Factor (Heavy Vehicles)
0.68

Light Vehicle Traffic

The light vehicle traffic demand was calculated by the difference between total traffic and heavy vehicle traffic.

Hourly to Daily Expansion Process – Day / Night Split

Traffic profiles of the existing Pattullo Bridge were examined to determine the distribution of traffic during the ‘day’ and ‘night’ time intervals as defined by the environmental assessment component study teams. Based on this data, the following distribution patterns were determined.

Period	Heavy Vehicles	Light Vehicles
Day	87%	83%
Night	13%	17%

The estimated heavy vehicle AADT was multiplied by the corresponding distribution percentages to determine the number of heavy vehicles on each link during the day and night.

The estimated light vehicle AADT was multiplied by the corresponding distribution percentages to determine the number of light vehicles on each link during the day and night.

Notes

Additional notes and caveats are provided as follows:

Traffic Demand Expansion

As noted in the *Expansion Factors* section above, it is possible to estimate the daily volumes for each vehicle class and sum them to estimate the total daily traffic volumes. This approach was not used as there was insufficient data to verify the accuracy of the expansion factors. For example, although expansion factors for HOVs are available, existing counts of HOV vehicles in the study area were not available.

Accuracy of Expansion Factors

In the *Hourly to Daily Expansion* sections above, simple validation procedures identified the need for correction factors. It should be noted that the expansion factors were developed using screenline surveys conducted over a short time period, throughout the Lower Mainland. As such, the accuracy of the process to generate daily traffic volumes in the study area is somewhat limited noting that the expansion factors have been generated for the region as a whole. It should also be noted that the RTM provides hourly outputs that represent a typical fall weekday, while the AADT is an aggregate measure of traffic patterns throughout an entire year.

Engineering judgment must be exercised so as not to overstate the level of accuracy that can be provided.

The estimate of heavy vehicle daily traffic appears to be significantly higher than existing counts. It is worth noting that the hourly truck traffic demands appear to be reasonable. As such, the discrepancy in the daily volume is likely due to the expansion methodology. Again, the accuracy or limitations of the methodology must be recognized. The daily number of trucks measured on any given link is likely measured in the thousands. Daily fluctuations alone could cause variations in the order of +/- 500.

1.3 Spatial Boundaries

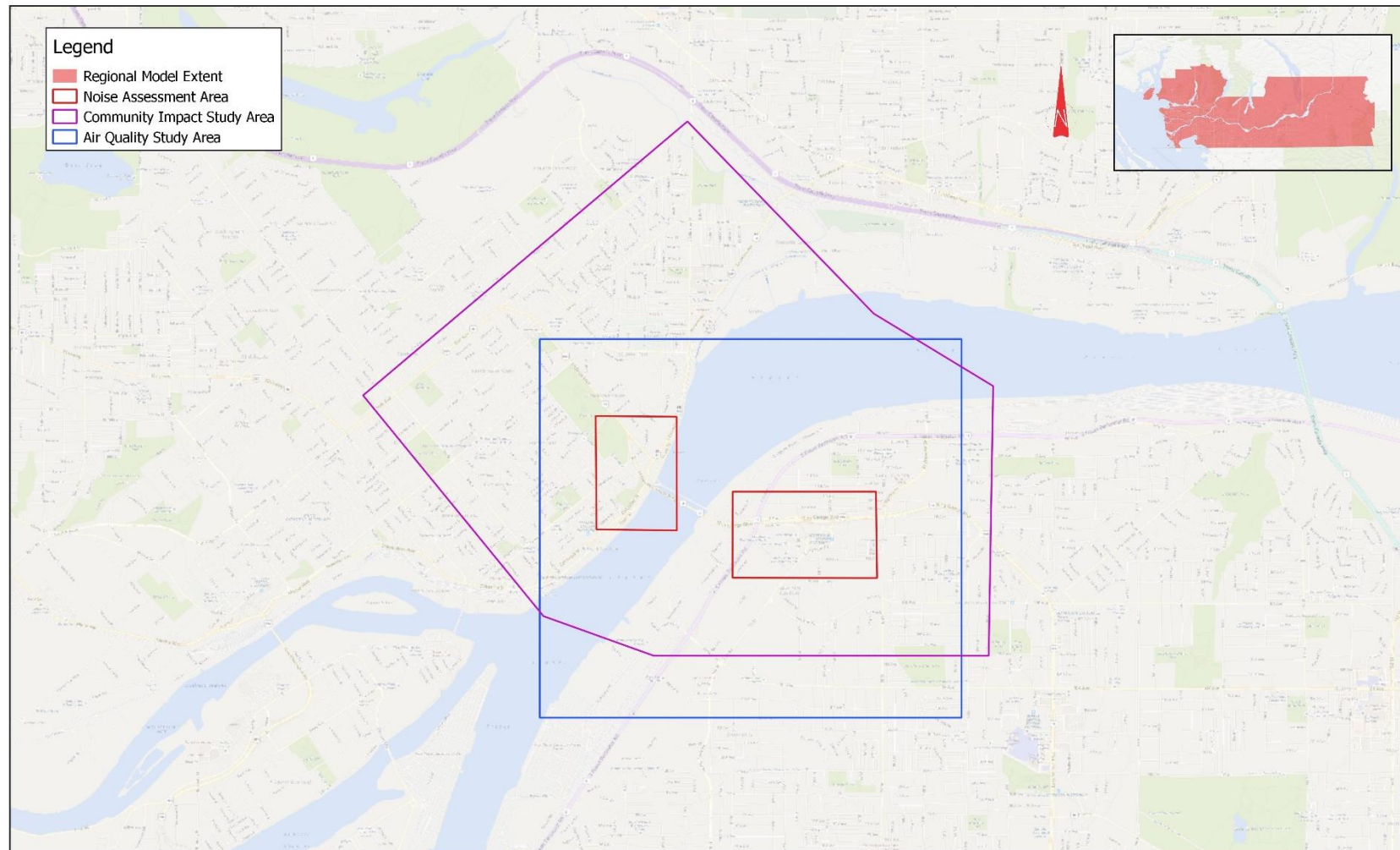
The project extends from King George Boulevard at 128 Street in Surrey to McBride Boulevard at Memorial Drive in New Westminster. The spatial scope of the traffic assessment is divided into several environmental assessment component study areas and a regional study area as shown in **Figure 1.1** and summarized on **Table 1.2**. Although, the study area boundaries are slightly different for each of the environmental assessment component studies, their purpose and objectives are similar and therefore, they are described together in this document. The size of each environmental assessment component study area is not limited to the physical scope of the project itself, but is meant to be large enough to capture changes in the amount of traffic directly affected by the project as provided by the subject matter experts for each environmental assessment component study. In turn, these anticipated changes in the amount of traffic using the road network within the various component study areas would likely have an effect on the environment and the adjacent land use.

The regional study area is defined as the RTM extent which comprise of the entire Metro Vancouver and Fraser Valley Regional District.

Table 1.2: Spatial Boundaries for Traffic Assessment

Spatial Boundary	Description of Assessment Area
Environmental Assessment Component Study Areas	The size of the study areas is meant to be large enough to capture changes in the amount of traffic directly affected by the project with respect to each component study
Regional Study Area	The RTM extent which comprise of the entire Metro Vancouver and Fraser Valley Regional District.

Figure 1.1: Study Areas



The study areas for each environmental assessment component study and the regional study area incorporate Metro Vancouver's future land use plans, population and employment growth forecasts, goods movement forecasts, changes that may be made to the regional transportation infrastructure (roads and transit), and decisions that individuals and goods movers are likely to make regarding regional transportation travel and mode choices.

1.4 Scenarios

For the purposes of assessing the traffic changes for the new Pattullo Bridge, two scenarios were developed, a Build Scenario and a No Build or Base Case Scenario. These two scenarios were introduced in Section 1.1, but are described again along with a set of detailed connection assumptions which are listed in *Table 1.3*.

1.4.1 No Build Scenario

The No Build or Base Case Scenario involves rehabilitating the existing Pattullo Bridge. Due to technical and safety considerations associated with the existing Pattullo Bridge, it would be costly and technically challenging to rehabilitate the existing bridge to accommodate four modern-width traffic lanes. The No Build scenario therefore involves the structural seismic retrofit and rehabilitation of the existing bridge while reducing the existing four lane configuration to three lanes with modern lane widths. The three lane configuration would be operated with a reversible center lane, which would provide an additional lane in the peak direction of travel during the peak periods. The existing sub-standard on-ramp from Columbia St to the bridge would be permanently closed as well.

1.4.2 Build Scenario

The Build Scenario involves a new four lane bridge. Expected to open in 2023, the new bridge would provide a safer crossing with standard lane widths and a center median, improved pedestrian and cyclist paths, and improved community connections.

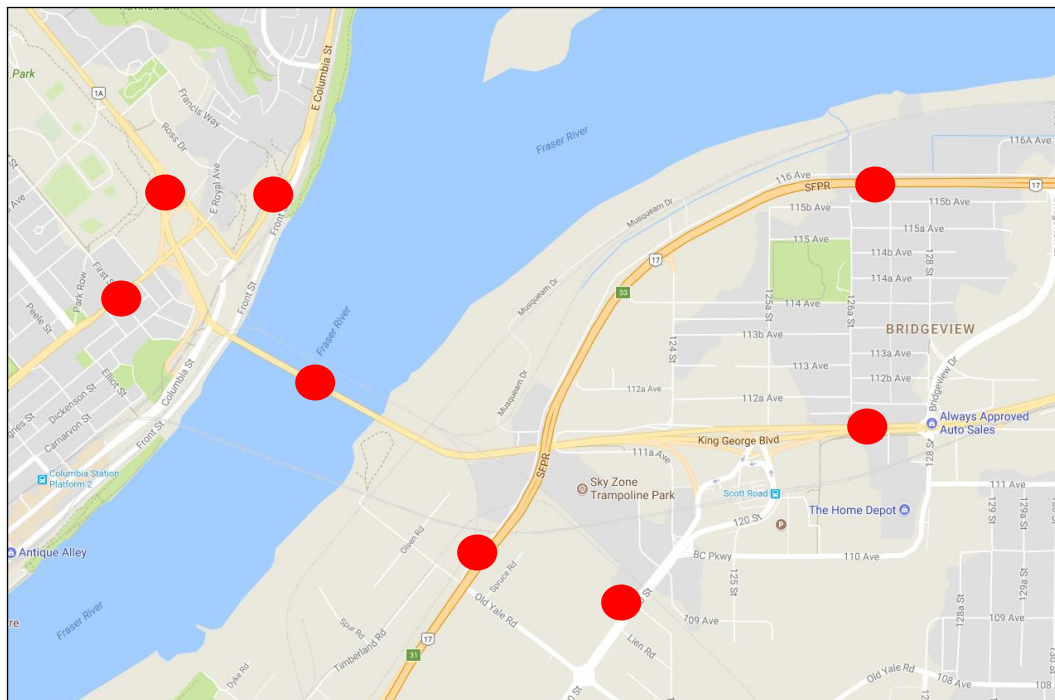
Table 1.3: Scenario Assumptions

Connections	No Build Scenario	Build Scenario
McBride Blvd	<ul style="list-style-type: none"> 1 lane southbound (AM) 2 lanes northbound (AM) 2 lanes southbound (PM) 1 lane northbound (PM) 	<ul style="list-style-type: none"> 1 lane southbound 2 lanes northbound
Royal Ave	<ul style="list-style-type: none"> 1 lane merge southbound 2 lanes diverge northbound 	<ul style="list-style-type: none"> 1 lane merge southbound 2 lanes diverge northbound
Columbia St	<ul style="list-style-type: none"> closed 	<ul style="list-style-type: none"> 1 lane southbound 1 lane diverge northbound
Pattullo Bridge	<ul style="list-style-type: none"> Existing Bridge Counter Flow: 1 lane southbound (AM) 2 lanes northbound (AM) 2 lanes southbound (PM) 1 lane northbound (PM) 	<ul style="list-style-type: none"> New Bridge Replacement: 2 lanes southbound 2 lanes northbound
King George Blvd	<ul style="list-style-type: none"> 1 lane southbound (AM) 1 lane northbound (AM) 2 lanes southbound (PM) 1 lane northbound (PM) 	<ul style="list-style-type: none"> 2 lanes southbound 1 lane northbound
Scott Rd	<ul style="list-style-type: none"> 1 lane diverge southbound (AM) 1 lane northbound (AM) 1 lane diverge southbound (PM) 1 lane merge northbound (PM) 	<ul style="list-style-type: none"> New interchange: 1 lane diverge southbound 1 lane northbound
Highway 17 (east of Pattullo)	<ul style="list-style-type: none"> none 	<ul style="list-style-type: none"> Access via 124 St (interchange): <ul style="list-style-type: none"> from westbound Highway 17 to Pattullo from Pattullo to eastbound Highway 17
Highway 17 (west of Pattullo)	<ul style="list-style-type: none"> none 	<ul style="list-style-type: none"> Access via 124 St (interchange): <ul style="list-style-type: none"> from eastbound Highway 17 to Pattullo Access via SB off-ramp to Highway 17: <ul style="list-style-type: none"> from Pattullo to westbound Highway 17

2.0 No Build Scenario Conditions

The traffic data provided to the environmental assessment component studies included all links within the applicable environmental assessment component study areas. However, to highlight traffic volumes on the Pattullo Bridge and the approaches, **Figure 2.1** shows a set of selected reference locations that are presented in a series of tables to follow.

Figure 2.1: Reference Locations



Model forecasts of 2023 and 2030 hourly traffic demand are shown in **Table 2.1** and **Table 2.2** respectively. Four analysis hours are modelled and presented:

- AM1: 6:30 – 7:30 AM (project peak hour)
- AM2: 7:30 – 8:30 AM (regional peak hour)
- MD: 12:00 – 1:00 PM
- PM: 4:30 – 5:30 PM (project and regional peak hour)

Table 2.1: 2023 Forecast Hourly Traffic Demand (No Build Scenario)

Horizon Year	2023							
Time Period	AM1		AM2		MD		PM	
Direction	SB	NB	SB	NB	SB	NB	SB	NB
McBride Blvd	1,090	1,665	1,420	1,635	1,255	760	2,705	1,090
Royal Ave	740	1,520	1,000	1,590	880	685	1,620	1,040
Columbia St	780	885	870	1,095	505	890	1,160	1,205
Pattullo Bridge	1,650	3,705	2,155	3,680	1,775	1,600	3,880	1,955
King George Blvd	1,070	2,235	1,340	2,230	1,130	990	2,625	990
Scott Rd	630	1,555	935	1,610	865	845	1,465	1,175
Highway 17 (east of Pattullo)	305	705	490	825	405	375	1,115	375
Highway 17 (west of Pattullo)	705	305	825	490	375	405	375	1,115

* Shaded rows have no direct connection to the Pattullo Bridge under the No Build scenario.

Table 2.2: 2030 Forecast Hourly Traffic Demand (No Build Scenario)

Horizon Year	2030							
Time Period	AM1		AM2		MD		PM	
Direction	SB	NB	SB	NB	SB	NB	SB	NB
McBride Blvd	1,100	1,705	1,465	1,650	1,315	765	2,840	1,105
Royal Ave	760	1,620	1,060	1,595	930	715	1,735	1,100
Columbia St	800	930	925	1,135	525	935	1,220	1,250
Pattullo Bridge	1,695	3,900	2,240	3,690	1,860	1,630	4,075	1,975
King George Blvd	1,115	2,320	1,385	2,240	1,195	1,015	2,765	975
Scott Rd	630	1,655	980	1,635	905	875	1,490	1,185
Highway 17 (east of Pattullo)	335	790	570	935	425	385	1,185	435
Highway 17 (west of Pattullo)	790	335	935	570	385	425	435	1,185

* Shaded rows have no direct connection to the Pattullo Bridge under the No Build scenario.

Table 2.1 and **Table 2.2** show that peak direction traffic demand across the Pattullo Bridge in 2023 is in the range of 3,700-3,900 vehicles per hour (vph). Traffic demand in the non-peak direction is in the range of 1,900-2,200 vph. Traffic demand exceeds capacity (approximately 3500 vehicles per hour per direction) in both peak directions during the AM and PM peak hours.

The estimated AADT values, after post-processing (expanding) the hourly results as described earlier, are shown in **Table 2.3**.

Table 2.3: 2023 and 2030 Estimated AADT (No Build Scenario)

Horizon Year	2023		2030	
Time Period	AADT		AADT	
Direction	SB	NB	SB	NB
McBride Blvd	24,750	16,200	25,900	16,350
Royal Ave	16,500	15,150	17,550	15,600
Columbia St	11,250	15,750	11,850	16,400
Pattullo Bridge	35,850	33,900	37,550	34,250
King George Blvd	23,150	20,150	24,400	20,300
Scott Rd	15,750	17,150	16,350	17,500
Highway 17 (east of Pattullo)	8,850	7,550	9,550	8,200
Highway 17 (west of Pattullo)	7,550	8,850	8,200	9,550

**Shaded rows have no direct connection to the Pattullo Bridge under the No Build scenario*

Table 2.3 shows that the estimated AADT on the Pattullo Bridge in 2023 is approximately 70,000, which is similar to existing AADT (pre toll removal at the Port Mann and Golden Ears Bridges).

The traffic data provided for the Air Quality component study, being presented in terms of hourly traffic demand and travel speeds as extracted from the model, are attached in **Appendix A**.

The traffic data provided for the Noise Assessment component study, being presented in terms of AADT, day and night time truck traffic as extracted from the model and after post-processing, are attached in **Appendix B**.

The traffic data provided for the Socio Community Impact component study, being presented in terms of AADT as extracted from the model and after post-processing, are attached in **Appendix C**.

3.0 Build Scenario Conditions

Model forecasts of 2023 and 2030 hourly traffic demand are shown in **Table 3.1** and **Table 3.2** respectively.

Table 3.1: 2023 Forecast Hourly Traffic Demand (Build Scenario)

Horizon Year	2023							
Time Period	AM1		AM2		MD		PM	
Direction	SB	NB	SB	NB	SB	NB	SB	NB
McBride Blvd	970	1,600	1,320	1,410	875	655	1,490	1,455
Royal Ave	780	1,410	1,070	1,275	900	795	1,335	1,220
Columbia St	1,310	1,255	1,720	1,285	1,105	1,235	2,225	1,535
Pattullo Bridge	2,315	4,130	3,155	3,435	2,130	2,095	4,175	3,345
King George Blvd	1,290	2,110	1,790	1,735	1,280	955	2,445	1,460
Scott Rd	500	1,290	965	1,130	665	750	1,395	1,275
Highway 17 (east of Pattullo)	265	1,090	585	1,085	350	610	1,015	720
Highway 17 (west of Pattullo)	1,090	560	1,015	815	615	615	720	1,345

Table 3.2: 2030 Forecast Hourly Traffic Demand (Build Scenario)

Horizon Year	2030							
Time Period	AM1		AM2		MD		PM	
Direction	SB	NB	SB	NB	SB	NB	SB	NB
McBride Blvd	1,000	1,655	1,375	1,440	920	670	1,525	1,495
Royal Ave	820	1,480	1,120	1,300	950	815	1,390	1,275
Columbia St	1,340	1,300	1,835	1,315	1,145	1,260	2,185	1,590
Pattullo Bridge	2,410	4,360	3,335	3,495	2,240	2,150	4,160	3,470
King George Blvd	1,345	2,250	1,875	1,780	1,370	995	2,510	1,515
Scott Rd	535	1,380	1,055	1,190	695	775	1,375	1,315
Highway 17 (east of Pattullo)	310	1,170	700	1,175	370	620	1,095	800
Highway 17 (west of Pattullo)	1,135	580	1,080	885	625	630	715	1,445

Table 3.1 and **Table 3.2** show that the peak direction traffic demand across the Pattullo Bridge in 2023 is in the range of 4,100-4,200 vph. Traffic demand in the non-peak direction is in the range of 3,100-3,400 vph. Traffic demand exceeds capacity in the peak direction, while it is slightly under capacity in the non-peak directions. The estimated AADT values, after post-processing the hourly results, are shown in **Table 3.3**.

Table 3.3: 2023 and 2030 Estimated AADT (Build Scenario)

Horizon Year	2023		2030	
Time Period	AADT		AADT	
Direction	SB	NB	SB	NB
McBride Blvd	17,250	15,500	17,950	15,900
Royal Ave	16,100	15,500	16,900	15,950
Columbia St	23,050	20,550	23,750	21,050
Pattullo Bridge	43,600	41,750	45,200	42,850
King George Blvd	25,600	19,450	26,950	20,100
Scott Rd	13,850	14,800	14,350	15,400
Highway 17 (east of Pattullo)	8,450	11,650	9,250	12,350
Highway 17 (west of Pattullo)	11,500	12,650	11,750	13,350

Table 3.3 shows the estimated AADT on the Pattullo Bridge in 2023 is approximately 85,000. This new AADT is approximately 25% higher than existing AADT (pre toll removal from the Port Mann and Golden Ears Bridges).

The traffic data provided for the Air Quality component study, being presented in terms of hourly traffic demand as extracted from the model, are attached in **Attachment 1**.

The traffic data provided for the Noise Assessment component study, being presented in terms of AADT, day and night time truck traffic as extracted from the model and after post-processing, are attached in **Attachment 2**.

The traffic data provided for the Socio Community Impact component study, being presented in terms of AADT as extracted from the model and after post-processing, are attached in **Attachment 3**.

ATTACHMENT 1

Traffic Data for Air Quality

Queens Avenue_Sixth Street_Fourth Street	EB	47601-47616	120	215	25	145	195	25	90	175	25	185	290	25	115	170	25	150	160	25	100	185	25	200	295	25
	WB	47616-47601	95	215	19	50	195	19	85	175	19	105	290	19	55	170	19	10	160	19	85	185	19	95	295	19
Queens Avenue_Third Street_Second Street	EB	292505-292014	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	18	0	0	18	0	0	0	0	0
	WB	292014-292505	0	0	25	0	0	25	0	0	25	0	0	25	0	0	25	0	0	25	0	0	25	0	0	25
Richmond Street_Alberta Street_Cumberland Street	NB	48205-48371	245	265	42	275	360	42	200	245	42	215	365	42	250	270	42	300	395	42	215	260	42	220	430	42
	SB	48371-48205	20	265	30	85	360	30	45	245	30	150	365	30	20	270	30	95	395	30	45	260	30	210	430	28
Richmond Street_Cumberland Street_Minor Street	EB	48205-48211	35	150	42	80	230	42	120	235	42	230	365	42	40	160	42	85	250	42	130	250	42	285	430	42
	WB	48211-48205	115	150	21	150	230	20	115	235	21	135	365	21	120	160	21	165	250	20	120	250	21	145	430	20
Richmond Street_Minor Street_Columbia Street East	NB	48212-48211	60	125	31	70	190	31	30	135	31	160	275	31	65	130	31	75	205	31	35	145	31	170	330	31
	SB	48211-48212	65	125	30	120	190	28	105	135	29	115	275	30	65	130	29	130	205	27	110	145	29	160	330	30
Royal Avenue Pattullo Off Ramp_McBride SB	NB	47908-47902	605	605	10	615	615	9	335	335	10	190	190	11	655	655	9	620	620	9	340	340	10	170	170	11
Royal Avenue Pattullo Off Ramp_Royal Avenue WB	NB	47908-47907	1435	1435	39	1425	1425	39	505	505	50	670	670	50	1540	1540	35	1420	1420	39	520	520	50	700	700	50
Royal Avenue Pattullo Off Ramp_Pattullo Bridge_Royal Avenue	NB	47909-47908	2040	2040	48	2040	2040	48	840	840	50	860	860	50	2195	2195	47	2040	2040	48	860	860	50	870	870	50
	WB	48270-47909	2040	2040	48	2040	2040	48	840	840	50	860	860	50	2195	2195	47	2040	2040	48	860	860	50	870	870	50
Royal Avenue Pattullo On Ramp_Columbia Street On Ramp_Pattullo Bridge	SB	48076-48007	630	630	13	850	850	4	655	655	11	1240	1240	1	660	660	11	890	890	3	685	685	9	1290	1290	0
Royal Avenue Pattullo On Ramp_Royal Avenue_Columbia Street On Ramp	EB	48070-48076	630	630	50	850	850	49	655	655	50	1240	1240	44	660	660	50	890	890	49	685	685	50	1290	1290	43
Royal Avenue_Dufferin Street_McBride Off Ramp	EB	48070-48072	105	1580	50	150	1665	50	225	830	50	375	1365	50	105	1680	50	165	1680	50	245	870	50	445	1490	50
	WB	48072-48070	1475	1580	50	1515	1665	49	605	830	50	990	1365	50	1575	1680	49	1515	1680	49	625	870	50	1045	1490	50
Royal Avenue_Eighth Street_Sixth Street	EB	47501-47704	250	1195	25	350	1275	25	430	760	25	1025	1265	23	265	1230	25	365	1260	25	455	790	25	1075	1320	22
	WB	47704-47501	945	1195	23	925	1275	23	330	760	25	240	1265	25	965	1230	23	895	1260	23	335	790	25	245	1320	25
Royal Avenue_First Street_Dufferin Street	EB	47913-48070	740	2260	50	1000	2590	50	880	1565	50	1620	2660	49	760	2380	50	1060	2655	50	930	1645	50	1735	2835	49
	WB	48070-47913	1520	2260	7	1590	2590	6	685	1565	14	1040	2660	12	1620	2380	6	1595	2655	6	715	1645	14	1100	2835	11
Royal Avenue_Fourth Street_Third Street	EB	48005-292608	370	1375	50	465	1465	50	500	845	50	1045	1495	50	380	1435	50	490	1475	50	515	865	50	1100	1590	50
	WB	292608-48002	1005	1375	13	1000	1465	13	345	845	15	450	1495	15	1055	1435	12	985	1475	13	350	865	15	490	1590	15
Royal Avenue_Leopold Place_McBride Boulevard	EB	47907-47902	135	175	12	185	270	12	270	365	12	390	710	9	125	160	12	205	300	12	295	400	12	450	795	6
	WB	47902-47907	40	175	50	85	270	50	95	365	50	320	710	50	95	160	50	95	300	50	105	400	50	345	795	50
Royal Avenue_McBride Off Ramp_Leopold Place	EB	48072-47907	135	1610	50	185	1700	50	270	875	50	390	1380	50	125	1700	50	205	1720	50	295	920	50	450	1495	50
	WB	47907-48072	1475	1610	50	1515	1700	49	605	875	50	990	1380	50	1575	1700	49	1515	1720	49	625	920	50	1045	1495	50
Royal Avenue_Second Street_First Street	EB	48005-47913	535	1920	18	700	2115	18	630	1145	18	1245	2020	13	535	2000	18	740	2145	18	655	1180	18	1310	2115	12
	WB	47913-48005	1385	1920	50	1415	2115	50	515	1145	50	775	2020	50	1465	2000	50	1405	2145	50	520	1180	50	805	2115	50
Royal Avenue_Sixth Street_Fourth Street	EB	47704-48002	355	1345	21	445	1420	21	485	815	21	930	1275	20	365	1400	21	455	1415	21	500	835	21	995	1360	19
	WB	48002-47704	990	1345	19	975	1420	19	330	815	21	345	1275	21	1035	1400	19	960	1415	20	335	835	21	365	1360	21
Royal Avenue_Third Street_Second Street	EB	292608-48005	535	1845	50	655	1950	50	630	1145	50	1250	1935	50	540	1905	50	690	1980	50	655	1180	50	1315	2025	50
	WB	48005-292608	1310	1845	50	1295	1950	50	515	1145	50	685	1935	50	1365	1905	50	1290	1980	50	525	1180	50	710	2025	50
Second Street_Fourth Avenue_Third Avenue	NB	47916-47915	5	20	25	10	95	25	5	20	25	5	80	25	5	20	25	10	105	25	5	20	25	5	95	25
	SB	47915-47916	15	20	42	85	95	42	15	20	42	75	80	42	15	20	42	95	105	42	15	20	42	90	95	42
Second Street_Queens Avenue_Royal Avenue	NB	48005-292014	80	85	21	130	185	21	5	10	21	105	115	21	105	110	21	130	195	21	5	10	21	110	120	21
	SB	292014-48005	5	85	25	55	185	25	5	10	25	10	115	25	5	110	25	65	195	25	5	10	25	10	120	25
Second Street_Third Avenue_Fourth Avenue	NB	47915-47903	30	35	31	55	60	31	35	40	31	15	25	31	35	40	31	60	65	31	40	45	31	20	35	31
	SB	47903-47915	5	35	31	5	60	31	5	40	31	10	25	31	5	40	31	5	65	31	5	45	31	15	35	31
Second Street_Third Avenue_Queens Avenue	NB	292014-47916	80	85	31	130	185	31	5	10	31	105	115	31	105	110	31	130	195	31	5	10	31	110	120	31
	SB	47916-292014	5	85	26	55	185	26	5	10	26	10	115	26	5	110	26	65	195	26	5	10	26	10	120	26
Sixth Avenue East_Cumberland Street_Alberta Street	EB	48207-48141	40	175	20	190	585	19	165	280	20	245	495	18	50	200	20	200	465	19	165	285	20	260	530	18
	WB	48141-48207	135	175	20	260	450	18	115	280	20	250	495	18	150	200	20	265	465	18	120	285	20	270	530	18
Sixth Avenue East_Ginger Drive_Glenbrook Drive	EB	291201-48229	390	965	42	540	1240	42	290	695	42	455	1080	42	405	1005	42	565	1290	42	255	715	42	470	1120	42
	WB	48229-291201	575	965	42	700	1240	41	445	695	42	625	1080	41	600	1005	42	725	1290	41	460	715	42	650	1120	41
Sixth Avenue East_Glenbrook Drive_Cumberland Street	EB	48229-48207	285	690	13	320	810	10	230	610	17	270	690	14	295	715	12	330	825	10	230	620	16	275	705	14
	WB	48207-48229	405	690	42	490	810	42	380	610	42	420	690	42	420	715	42	495	825	42	390	620	42	430	705	42
Sixth Avenue East_McBride Boulevard_Ginger Drive	EB	48101-291201	485	985	42	705	1300	41	285	725	42	330	1170	42	510	1030	42	740	1355	41	290	745	42	335	1205	42
	WB	291201-48101	500	985	15	595	1300	9	440	725	42	840	1170	3	520	1030	14	615	1355	8	455	745	11	870	1205	3
Sixth Avenue_First Street_McBride Boulevard	EB	47914-48101	195	565	29	370	785	29	360	570	28	860	1330	10	210	995	29	395	820	28	365	580	28	895	1400	9
	WB	48101-47914	370	565	42	415	785	42	210	570	42	470	1330	42	385	995	42	425	820	42	215	580	42	505	1400	42
Sixth Avenue_Second Street_First Street	EB	47903-47914	185	530	25	350	710	25	340	530	25	850	1175	25	200	555	25	370	735	25	345	535	25	885	1210	24
	WB	47914-47903	345	530	11	360	710	10	190	530	17	325	1175	12	355	555	10	365	735	9	190	535	17	325	1210	12
Sixth Street_Agnes Street_Carnarvon Street	NB	293202-47703	80	90	31	100	120	31	90	115	31	150	175	31	60	70	31	70	90	31	100	125	31	155	185	31
	SB	47703-293202	10	90	19	20	120	19	25	115	19	25	175	19	10	70	19	20	90	19	25	125	19	30	185	19

Project Scenario

(Road)_ Segment Between (Cross Street 1)_(Cross Street 2)	Direction	ID	2023												2030												
			AM1			AM2			MD			PM			AM1			AM2			MD			PM			
			Volume	2 Way Vol	Travel Speed	Volume	2 Way Vol	Travel Speed	Volume	2 Way Vol	Travel Speed	Volume	2 Way Vol	Travel Speed	Volume	2 Way Vol	Travel Speed	Volume	2 Way Vol	Travel Speed	Volume	2 Way Vol	Travel Speed	Volume	2 Way Vol	Travel Speed	
103A Avenue_120 Street_121 Street	EB	71006-614205	110	140	33	190	250	33	85	150	33	45	325	33	110	145	33	215	280	33	90	160	33	45	370	33	
103A Avenue_121 Street_122 Street	WB	614205-71006	30	140	22	60	220	33	25	150	22	280	225	33	25	145	22	65	280	22	70	160	22	325	270	22	
103A Avenue_Grace Road_120 Street	EB	71018-71006	205	355	22	260	500	22	175	285	24	400	710	22	225	400	21	290	560	21	185	305	23	460	805	22	
103A Avenue_Highway 17 Off Ramp_Grace Road	WB	71017-71018	150	355	24	240	500	24	110	285	24	310	710	24	175	400	24	270	560	24	120	305	24	345	805	11	
104 Avenue_120 Street_122 Street	NB	71018-71017	15	65	42	15	100	42	15	90	42	175	200	42	20	75	42	25	115	42	15	95	42	25	230	42	
104 Avenue_122 Street_125A Street	WB	71017-71018	50	65	31	85	100	31	75	90	31	275	200	31	55	75	31	90	115	31	80	95	31	205	230	30	
104 Avenue_125A Street_127 Street	EB	71102-71101	165	525	50	320	645	50	210	325	50	605	890	50	185	590	50	350	740	50	230	355	50	710	1015	50	
104 Avenue_127 Street_128 Street	WB	71101-71102	360	525	36	325	645	36	115	325	36	285	890	36	405	590	36	390	740	36	125	355	36	305	1015	36	
104 Avenue_128 Street_128A Street	EB	71101-71007	200	600	36	390	795	36	250	410	36	685	1075	36	220	690	36	420	905	36	270	440	36	800	1225	35	
104 Avenue_128A Street_127 Street	WB	71007-71008	400	600	50	405	795	50	160	410	50	390	1075	50	470	690	50	485	905	50	175	440	50	425	1225	50	
104 Avenue_127 Street_128 Street	EB	71008-71007	200	745	50	375	920	50	115	520	50	795	1145	50	215	830	50	400	1025	50	35	560	50	850	1225	49	
104 Avenue_128 Street_Old Yale Road	WB	71008-71007	545	745	50	545	920	50	205	520	50	350	1145	50	615	840	50	625	1025	50	225	560	50	375	1225	50	
104 Avenue_Old Yale Road_132 Street	EB	71008-71904	290	755	30	545	1035	25	430	695	28	730	1265	15	310	840	30	580	1145	23	450	735	28	790	1365	12	
106 Avenue_128 Street_Old Yale Road	WB	71904-71008	465	755	50	490	1035	50	265	695	50	535	1265	50	530	840	50	565	1145	50	285	735	50	575	1365	50	
108 Avenue_128 Street_130A Street	EB	71904-71501	320	805	50	600	1100	50	470	750	50	905	1460	48	340	860	50	640	1195	50	500	805	50	990	1570	48	
110 Avenue_120 Street_126A Street	WB	71501-71904	485	805	30	500	1100	30	280	750	32	555	1460	29	520	860	30	555	1195	29	305	805	32	580	1570	28	
111 Avenue_128 Street_128A Street	EB	71501-71502	160	345	25	300	500	25	195	305	25	290	630	25	175	385	25	325	560	25	210	335	25	335	710	25	
111 Avenue_128 Street_128A Street	WB	71502-71501	185	345	30	200	500	30	110	305	30	340	630	30	210	385	30	235	560	30	125	335	30	375	710	30	
111 Avenue_128 Street_128A Street	EB	71402-71504	5	5	17	0	15	17	0	15	17	0	55	17	0	20	17	0	15	17	0	20	17	0	50	80	17
111 Avenue_128 Street_128A Street	WB	71504-71402	5	5	17	15	15	17	15	15	17	15	55	17	15	15	17	15	15	17	15	15	17	15	80	17	
111 Avenue_128A Street_132 Street	EB	71403-71516	100	340	36	260	665	36	175	365	36	455	825	36	110	395	36	305	760	36	200	410	36	520	935	36	
111 Avenue_128A Street_132 Street	WB	71516-71516	240	340	50	405	665	50	190	365	50	370	825	50	285	395	50	455	760	50	210	410	50	415	935	50	
111 Avenue_130A Street_132 Street	EB	71516-71403	240	340	34	405	665	33	190	365	34	370	825	32	285	395	34	455	760	32	210	410	34	415	935	30	
111 Avenue_130A Street_132 Street	WB	71515-71804	130	335	33	320	730	32	215	440	33	455	915	30	140	395	33	360	820	32	245	495	33	530	1030	27	
111 Avenue_128A Street_132 Street	EB	71804-71515	205	335	50	410	730	50	225	440	50	460	915	50	255	395	50	460	820	50	250	495	50	500	1030	50	
111 Avenue_128A Street_132 Street	WB	71110-71111	125	240	50	190	350	50	60	170	50	115	285	50	130	270	50	200	385	50	65	180	50	140	315	50	
111 Avenue_128A Street_132 Street	EB	71111-71121	90	175	50	155	285	50	45	135	50	85	220	50	95	205	50	170	325	50	45	145	50	110	250	50	
111 Avenue_128A Street_132 Street	WB	71111-71110	115	240	27	160	350	25	110	170	26	170	285	22	140	270	27	185	385	26	115	180	26	175	315	21	
111 Avenue_128A Street_132 Street	EB	71121-71111	85	175	50	130	285	50	90	135	50	135	220	50	110	205	50	155	325	50	100	145	50	140	250	50	
111 Avenue_128A Street_132 Street	WB	71115-611005	10	100	42	25	200	42	30	80	42	235	265	42	10	145	42	25	260	42	30	80	42	270	300	42	
111 Avenue_128A Street_132 Street	EB	611005-71115	90	100	13	175	200	13	50	80	13	30	265	13	135	145	13	235	260	13	50	80	13	30	300	13	
111 Avenue_128A Street_132 Street	WB	71115-611007	10	100	42	25	200	42	30	80	42	235	265	42	10	145	42	25	260	42	30	80	42	270	300	42	
111 Avenue_128A Street_132 Street	EB	611007-71115	10	100	25	175	200	25	50	80	25	30	265	25	135	145	25	235	260	25	50	80	25	30	300	25	
111 Avenue_128A Street_132 Street	WB	71115-611005	90	100	42	175	200	42	50	80	42	235	265	42	135	145	42	235	260	42	50	80	42	30	300	42	
111 Avenue_128A Street_132 Street	EB	611007-71511	90	100	25	175	200	25	50	80	25	30	265	25	135	145	25	235	260	25	50	80	25	30	300	25	
111 Avenue_128A Street_132 Street	WB	611004-611012	0	0	25	0	0	25	0	0	25	15	15	25	0	0	25	0	0	25	0	0	25	0	20	20	25
111 Avenue_128A Street_132 Street	EB	611012-611004	0	0	25	0	0	25	0	0	25	15	15	25	0	0	25	0	0	25	0	0	25	0	20	20	25
111 Avenue_128A Street_132 Street	WB	611011-611004	0	0	25	0	0	25	0	0	25	15	15	25	0	0	25	0	0	25	0	0	25	0	20	20	25
111 Avenue_128A Street_132 Street	EB	611011-611004	0	0	25	0	0	25	0	0	25	15	15	25	0	0	25	0	0	25	0	0	25	0	20	20	25
111 Avenue_128A Street_132 Street	WB	611004-611011	0	0	25	0	0	25	0	0	25	15	15	25	0	0	25	0	0	25	0	0	25	0	20	20	25
111 Avenue_128A Street_132 Street	EB	71241-71210	90	230	42	205	400	42	90	170	42	285	525	42	110	275	42	260	500	42	100	190	42	335	650	42	
111 Avenue_128A Street_132 Street	WB	71210-71241	140	230	32	195	400	31	80	170	32	240	525	29	165	275	31	240	500	29	90	190	32	315	650	24	
111 Avenue_128A Street_132 Street	EB	71213-71248	10	50	42	15	55	42	25	50	42	85	95	42	10	60	42	15	60	42	25	50	42	110	120	42	
111 Avenue_128A Street_132 Street	WB	71248-71213	10	50	42	15	55	42	25	50	42	85	95	42	10	60	42	15	60	42	25	50	42	110	120	42	
111 Avenue_128A Street_132 Street	EB	71213-71248	40	50	42	40	55	42	25	50	42	10	95	42	50	60	42	45	60	42	25	50	42	10	120	42	
111 Avenue_128A Street_132 Street	WB	71248-71213	40	50	42	40	55	42	25	50	42	10	95	42	50	60	42	45	60	42	25	50	42	10	120	42	
111 Avenue_128A Street_132 Street	EB	71249-71248	40	50	42	40	55	42	25	50	42	10	95	42	50	60	42	45	60	42	25	50	42	10	120	42	
111 Avenue_128A Street_132 Street	WB	71248-71249	40	50	42	40	55	42	25	50	42	10	95	42	50	60	42	45	60	42	25	50	42	10	120	42	
111 Avenue_128A Street_132 Street	EB	71201-71229	10	50	42	15	55	42	25	50	42	85	95	42	10	60	42	15	60	42	25	50	42	110	120	42	
111 Avenue_128A Street_132 Street	WB	71229-71201	10	50	42	15	55	42	25	50	42	85	95	42	10	60	42	15	60	42	25	50	42	110	120	42	
111 Avenue_128A Street_132 Street	EB	71212-71224	10	50	42	15	55	42	25	50	42	85	95	42	10	60	42	15	60	42	25	50	42	110	120	42	
111 Avenue_128A Street_132 Street	WB	71224-71212	10	50	42	15	55	42	25	50	42	85	95	42	10	60	42	15	60	42	25	50	42	110	120	42	
111 Avenue_128A Street_132 Street	EB	71229-71208	40	50	42	40	55	42	25	50	42	10	95	42	50	60	42	45	60	42	25	50	42	10	120	42	
111 Avenue_128A Street_132 Street	WB	71208-71229	40	50	42	40	55	42	25	50	42	10	95	42	50	60	42	45									

Fourth Street_Carnarvon Street_Columbia Street	SB	47705-48001	65	120	42	110	185	42	125	185	42	95	230	42	65	150	42	110	215	42	120	185	42	105	260	42	
	NB	47705-48001	65	425	31	310	380	31	180	260	31	350	470	31	405	455	31	330	400	31	200	275	31	380	520	31	31
	SB	48001-47702	65	425	20	70	380	19	80	260	18	120	470	14	50	455	20	70	400	19	75	275	19	140	520	13	13
Fourth Street_Fourth Avenue_Third Avenue	NB	47615-47614	0	25	26	0	45	26	0	40	26	0	70	26	0	25	26	0	40	26	0	45	26	0	70	26	0
	SB	47614-47615	25	25	42	45	45	42	40	40	42	70	70	42	25	25	42	40	40	42	45	45	42	70	70	42	0
Fourth Street_Royal Avenue_Agnes Street	NB	47705-48002	15	30	16	30	50	16	20	35	16	35	70	16	15	30	16	70	90	16	20	40	16	30	70	16	16
	SB	48002-47705	15	30	19	20	50	19	15	35	19	35	70	19	15	30	19	20	90	19	20	40	19	40	70	19	19
Fourth Street_Third Avenue_Queens Avenue	NB	47615-47616	180	180	42	190	190	42	80	80	42	205	205	42	205	205	42	210	210	42	85	85	42	220	220	42	0
	SB	47615-47616	0	180	26	0	190	26	0	80	26	0	205	26	0	205	26	0	210	26	0	85	26	0	220	26	0
Front Street_Begbie Street_Sixth Street	EB	293109-47707	100	475	16	165	575	16	150	285	16	445	610	15	105	500	16	165	590	16	150	285	16	470	700	15	15
	WB	47707-293109	375	475	30	410	575	30	135	285	30	165	610	30	395	500	30	425	590	30	155	285	30	230	700	30	30
Front Street_Columbia Street_Eighth Street	EB	47403-47706	105	475	15	170	575	15	155	290	15	445	615	14	105	495	15	170	590	15	155	290	15	465	700	13	13
	WB	47706-47403	370	475	22	405	575	21	135	290	23	170	615	23	390	495	22	420	590	21	135	290	23	235	700	23	23
Front Street_Eighth Street_Begbie Street	EB	47706-293109	105	475	30	170	575	30	155	290	30	445	610	30	395	500	30	425	590	30	155	290	30	235	700	30	30
	WB	293109-47706	370	475	10	405	575	10	135	290	10	175	620	10	390	495	10	420	595	10	135	290	10	245	710	10	10
Front Street_Sixth Street_Columbia Street East	EB	47707-48009	260	635	22	335	745	22	270	405	22	590	755	20	295	685	22	365	785	22	310	445	22	610	840	19	19
	WB	48009-47707	260	635	37	335	745	36	270	405	37	590	755	19	295	685	37	365	785	35	310	445	36	610	840	18	18
	SB	48009-48008	260	635	50	335	745	50	270	405	50	590	755	50	295	685	50	365	785	50	310	445	50	610	840	50	50
	WB	48008-48009	375	635	30	410	745	29	135	405	30	165	755	30	390	685	30	420	785	29	135	445	30	230	840	30	30
	SB	48009-47707	375	635	22	410	745	22	135	405	22	165	755	22	390	685	22	420	785	21	135	445	22	230	840	22	22
	WB	48203-48008	375	635	50	410	745	50	135	405	50	165	755	50	390	685	50	420	785	50	135	445	50	230	840	50	50
Glenbrook Drive_Sixth Avenue East_Cumberland Street	EB	48225-48226	65	185	42	160	290	42	50	50	42	220	255	42	100	230	42	170	305	42	60	60	42	240	275	42	42
	WB	48226-48227	65	185	42	160	290	42	50	50	42	220	255	42	100	230	42	170	305	42	60	60	42	240	275	42	42
	SB	48227-48228	65	185	18	160	290	17	50	50	18	220	255	16	100	230	18	170	305	17	60	60	18	240	275	15	15
	WB	48228-48225	65	185	42	160	290	42	50	50	42	220	255	42	100	230	42	170	305	42	60	60	42	240	275	42	42
	SB	48225-48229	120	185	18	130	290	18	0	50	18	35	255	18	130	230	18	135	305	18	0	60	18	35	275	18	18
	WB	48226-48225	120	185	42	130	290	42	0	50	42	35	255	42	130	230	42	135	305	42	0	60	42	35	275	42	42
	SB	48227-48226	120	185	42	130	290	42	0	50	42	35	255	42	130	230	42	135	305	42	0	60	42	35	275	42	42
	WB	48228-48227	120	185	42	130	290	42	0	50	42	35	255	42	130	230	42	135	305	42	0	60	42	35	275	42	42
Grace Road_River Road_103A Avenue	NB	71057-71057	160	190	28	185	250	28	60	110	28	55	350	28	185	215	28	225	290	28	65	115	28	55	385	28	28
	SB	71079-71057	160	190	33	185	250	33	60	110	33	55	350	33	185	215	33	225	290	33	65	115	33	55	385	33	33
	WB	71018-71057	30	190	28	65	250	28	50	110	28	295	350	27	30	215	28	65	290	28	50	115	28	330	385	27	27
	SB	71057-71079	30	190	42	65	250	42	50	110	42	295	350	38	30	215	42	65	290	42	50	115	42	330	385	36	36
Highway 17_124 Street_Bridgeview Drive	EB	71214-71238	265	1355	48	585	1670	48	350	960	48	1015	1735	46	310	1480	48	700	1875	48	370	990	48	1095	1895	44	44
	WB	71139-71214	265	1355	88	585	1670	88	350	960	88	1015	1735	88	310	1480	88	700	1875	88	370	990	88	1095	1895	88	88
	SB	71280-71139	265	1355	88	585	1670	88	350	960	88	1015	1735	88	310	1480	88	700	1875	88	370	990	88	1095	1895	88	88
	WB	71238-71214	1090	1355	88	1085	1670	88	610	960	88	1720	1735	88	1170	1480	88	1175	1875	88	620	990	88	1800	1895	88	88
	SB	71214-71139	1090	1355	88	1085	1670	88	610	960	88	1720	1735	88	1170	1480	88	1175	1875	88	620	990	88	1800	1895	88	88
	WB	71139-71214	1090	1355	88	1085	1670	88	610	960	88	1720	1735	88	1170	1480	88	1175	1875	88	620	990	88	1800	1895	88	88
Highway 17_Highway 91 Connector_Tannery Hwy 17 EB Off Ramp	EB	71051-71050	855	2380	88	1340	2735	88	965	1785	88	1960	3240	87	900	2500	88	1440	2945	88	1000	1835	88	2115	3435	86	86
	WB	71050-71051	1525	2380	88	1395	2735	88	820	1785	88	1280	3240	88	1600	2500	88	1505	2945	88	835	1835	88	1320	3435	88	88
Highway 17_Tannery Hwy 17 EB Off Ramp_Tannery Hwy 17 WB On Ramp	EB	71050-71150	510	2035	88	740	2135	88	550	1370	88	1130	2410	88	525	2125	88	795	2300	88	565	1400	88	1185	2505	88	88
	WB	71150-71050	510	2035	88	740	2135	88	550	1370	88	1130	2410	88	525	2125	88	795	2300	88	565	1400	88	1185	2505	88	88
	SB	71150-71050	510	2035	88	740	2135	88	550	1370	88	1130	2410	88	525	2125	88	795	2300	88	565	1400	88	1185	2505	88	88
	WB	71150-71050	510	2035	88	740	2135	88	550	1370	88	1130	2410	88	525	2125	88	795	2300	88	565	1400	88	1185	2505	88	88
Highway 17_Tannery Hwy 17 WB On Ramp_Tannery Hwy 17 EB On Ramp	EB	71155-71155	510	1600	80	740	1755	80	550	1165	80	1130	1850	76	525	1660	80	795	1875	79	565	1190	80	1185	1900	76	76
	WB	71155-71155	1090	1600	77	1015	1755	77	615	1165	80	1220	1850	80	525	1660	80	795	1875	77	565	1190	80	1185	1900	76	76
	SB	71155-71155	1090	1600	77	1015	1755	77	615	1165	80	1220	1850	80	525	1660	80	795	1875	77	565	1190	80	1185	1900	76	76
	WB	71155-71155	1090	1600	77	1015	1755</																				

Third Avenue_Second Street_First Street	EB	47916-47918	5	10	24	5	20	24	15	35	24	50	55	24	5	10	24	10	30	24	15	35	24	60	65	24
	WB	47918-47916	5	10	24	5	20	24	15	35	24	50	55	24	5	10	24	10	30	24	15	35	24	60	65	24
Third Avenue_Third Street_Second Street	EB	292501-47916	5	10	24	5	20	24	15	35	24	50	55	24	5	10	24	10	30	24	15	35	24	60	65	24
	WB	47916-292501	85	90	42	75	80	42	25	40	42	185	230	42	110	115	42	105	110	42	40	55	42	200	250	42
Third Street_Fourth Avenue_Third Avenue	NB	292501-291907	90	110	42	80	90	42	75	95	42	125	135	42	110	130	42	100	105	42	80	105	42	130	145	42
	SB	291907-292501	20	110	26	10	90	26	20	95	26	10	135	26	20	130	26	5	105	26	5	105	26	15	145	26
Third Street_Queens Avenue_Royal Avenue	NB	292608-292505	305	480	17	260	460	20	220	370	23	270	470	20	315	495	16	270	480	20	220	380	23	270	490	20
	SB	292505-292608	175	480	24	200	460	23	150	370	24	200	470	23	180	495	24	210	480	23	160	380	24	220	490	23
Third Street_Third Avenue_Queens Avenue	NB	292505-292501	5	60	26	10	75	26	45	105	26	15	55	26	5	65	26	20	90	26	35	100	26	15	60	26
	SB	292501-292505	55	60	26	65	75	26	60	105	26	40	55	26	60	65	26	70	90	26	65	100	26	45	60	26
Timberland Road_Dock Road_Pine Road	NB	71055-71156	45	245	35	55	360	35	95	200	35	305	360	34	45	285	35	55	410	35	95	210	35	355	410	34
	SB	71156-71055	200	245	42	305	360	42	105	200	42	55	360	42	240	285	42	355	410	42	115	210	42	55	410	42
Timberland Road_Pine Road_Tannery Road	NB	71156-71104	55	265	42	70	385	42	110	230	42	340	405	42	55	305	42	70	440	42	115	240	42	400	465	42
	SB	71104-71156	210	265	24	315	385	24	120	230	24	65	405	24	250	305	24	370	440	24	125	240	24	65	465	24
Timberland Road_Robson Road_Dock Road	NB	71014-71055	45	245	42	55	360	42	95	200	42	305	360	42	45	285	42	55	410	42	95	210	42	355	410	42
	SB	71055-71014	200	245	42	305	360	42	105	200	42	55	360	42	240	285	42	355	410	42	115	210	42	55	410	42
Timberland Road_Tannery Road_Old Yale Road	NB	71104-71109	10	20	42	20	35	42	15	35	42	15	60	42	10	20	42	20	35	42	15	35	42	15	65	42
	SB	71109-71104	10	20	42	15	35	42	20	35	42	45	60	42	10	20	42	15	35	42	20	35	42	50	65	42
128 Street_114 Avenue_Bridgeview Drive	NB	71230-71209	35	235	42	70	440	42	120	280	42	440	550	42	40	255	42	80	470	42	130	300	42	465	585	42
	WB	71243-71230	35	235	42	70	440	42	120	280	42	440	550	42	40	255	42	80	470	42	130	300	42	465	585	42
	SB	71209-71230	200	235	42	370	440	42	160	280	42	110	550	42	215	255	42	390	470	42	170	300	42	120	585	42
	WB	71230-71243	200	235	16	370	440	6	160	280	17	110	550	18	215	255	16	390	470	5	170	300	17	120	585	18
Highway 17_Bridgeview Drive_To East	EB	71238-71215	675	1935	88	970	2130	88	565	1205	88	1185	2000	88	735	2100	88	1085	2355	88	605	1265	88	1335	2245	88
	WB	71215-71238	1260	1935	46	1160	2130	47	640	1205	49	815	2000	48	1365	2100	44	1270	2355	46	660	1265	49	910	2245	48
	SB	71215-71209	5	10	27	5	10	27	0	0	27	5	10	27	5	10	27	5	10	27	0	0	27	5	10	27
	WB	71223-71228	5	10	42	5	10	42	0	0	42	5	10	42	5	10	42	5	10	42	0	0	42	5	10	42
	WB	71228-71219	5	10	27	5	10	27	0	0	27	5	10	27	5	10	27	5	10	27	0	0	27	5	10	27
	WB	71209-71219	5	10	27	5	10	27	0	0	27	5	10	27	5	10	27	5	10	27	0	0	27	5	10	27
	WB	71219-71228	5	10	42	5	10	42	0	0	42	5	10	42	5	10	42	5	10	42	0	0	42	5	10	42
	WB	71228-71223	5	10	29	5	10	29	0	0	29	5	10	29	5	10	29	5	10	29	0	0	29	5	10	29
124 Street Frontage Road_114 Avenue_112A Avenue	NB	71235-71223	5	10	42	5	10	42	0	0	42	5	10	42	5	10	42	5	10	42	0	0	42	5	10	42
	SB	71223-71235	5	10	42	5	10	42	0	0	42	5	10	42	5	10	42	5	10	42	0	0	42	5	10	42
Highway 17_124 Street Hwy 17 EB On Ramp_124 Street Hwy 17 WB Off Ramp	EB	71225-71200	265	820	88	585	945	88	350	620	88	1015	1395	88	310	885	88	700	1050	88	370	650	88	1095	1505	88
	WB	71200-71225	555	820	5	360	945	14	270	620	17	380	1395	13	575	885	5	350	1050	14	280	650	16	410	1505	12
124 Street_124 Street EB On Ramp_124 Street Hwy 17 EB Off Ramp	NB	71162-71225	15	570	50	135	495	50	15	285	50	100	480	50	35	610	50	175	525	50	20	300	50	90	500	50
	SB	71225-71162	555	570	35	360	495	48	270	285	49	380	480	47	575	610	34	350	525	48	280	300	49	410	500	45
Highway 17_Tannery Hwy 17 WB Off Ramp_124 Street	EB	71117-71135	560	1095	88	815	1535	88	615	950	88	1345	1690	88	580	1175	88	885	1705	88	630	975	88	1445	1835	88
	WB	71135-71227	560	1095	88	815	1535	88	615	950	88	1345	1690	88	580	1175	88	885	1705	88	630	975	88	1445	1835	88
	WB	71227-71226	560	1095	88	815	1535	88	615	950	88	1345	1690	88	580	1175	88	885	1705	88	630	975	88	1445	1835	88
	WB	71226-71137	560	1095	88	815	1535	88	615	950	88	1345	1690	88	580	1175	88	885	1705	88	630	975	88	1445	1835	88
	WB	71135-71117	535	1095	88	720	1535	88	335	950	88	345	1690	88	595	1175	88	820	1705	88	345	975	88	390	1835	88
	WB	71226-71227	535	1095	88	720	1535	88	335	950	88	345	1690	88	595	1175	88	820	1705	88	345	975	88	390	1835	88
	WB	71227-71135	535	1095	88	720	1535	88	335	950	88	345	1690	88	595	1175	88	820	1705	88	345	975	88	390	1835	88
	WB	71137-71226	535	1095	88	720	1535	88	335	950	88	345	1690	88	595	1175	88	820	1705	88	345	975	88	390	1835	88
112 Avenue_111A Avenue Underpass_124 Street Frontage Road	EB	71204-71235	5	10	42	5	10	42	0	0	42	5	10	42	5	10	42	5	10	42	0	0	42	5	10	42
	WB	71235-71204	5	10	28	5	10	28	0	0	28	5	10	28	5	10	28	5	10	28	0	0	28	5	10	28
Royal Avenue_McBride Off Ramp_McBride Boulevard	EB	47907-47902	125	1485	12	205	1350	12	235	935	12	245	1340	11	135	1560	12	220	1380	12	250	960	11	280	1420	11
	WB	48070-48072	125	1485	50	205	1350	50	235	935	50	245	1340	50	135	1560	50	220	1380	50	250	960	50	280	1420	50
	WB	48072-47907	125	1485	50	205	1350	50	235	935	50	245	1340	50	135	1560	50	220	1380	50	250	960	50	280	1420	50
	WB	47902-47907	1360	1485	50	1145	1350	50	700	935	50	1095	1340	50	1425	1560	50	1160	1380	50	710	960	50	1140	1420	50
	WB	47907-48072	1360	1485	50	1145	1350	50	700	935	50	1095	1340	50	1425	1560	50	1160	1380	50	710	96				

ATTACHMENT 2

Traffic Data for Noise



AADT - Base 2014



AADT - 3L-U 2023



AADT - 3L-U 2030



AADT - 4L-U 2023



AADT - 4L-U 2030



Day - Base 2014



Day - 3L-U 2023



Day - 3L-U 2030



Day - 4L-U 2023



Day - 4L-U 2030



Night - Base 2014



Night - 3L-U 2030



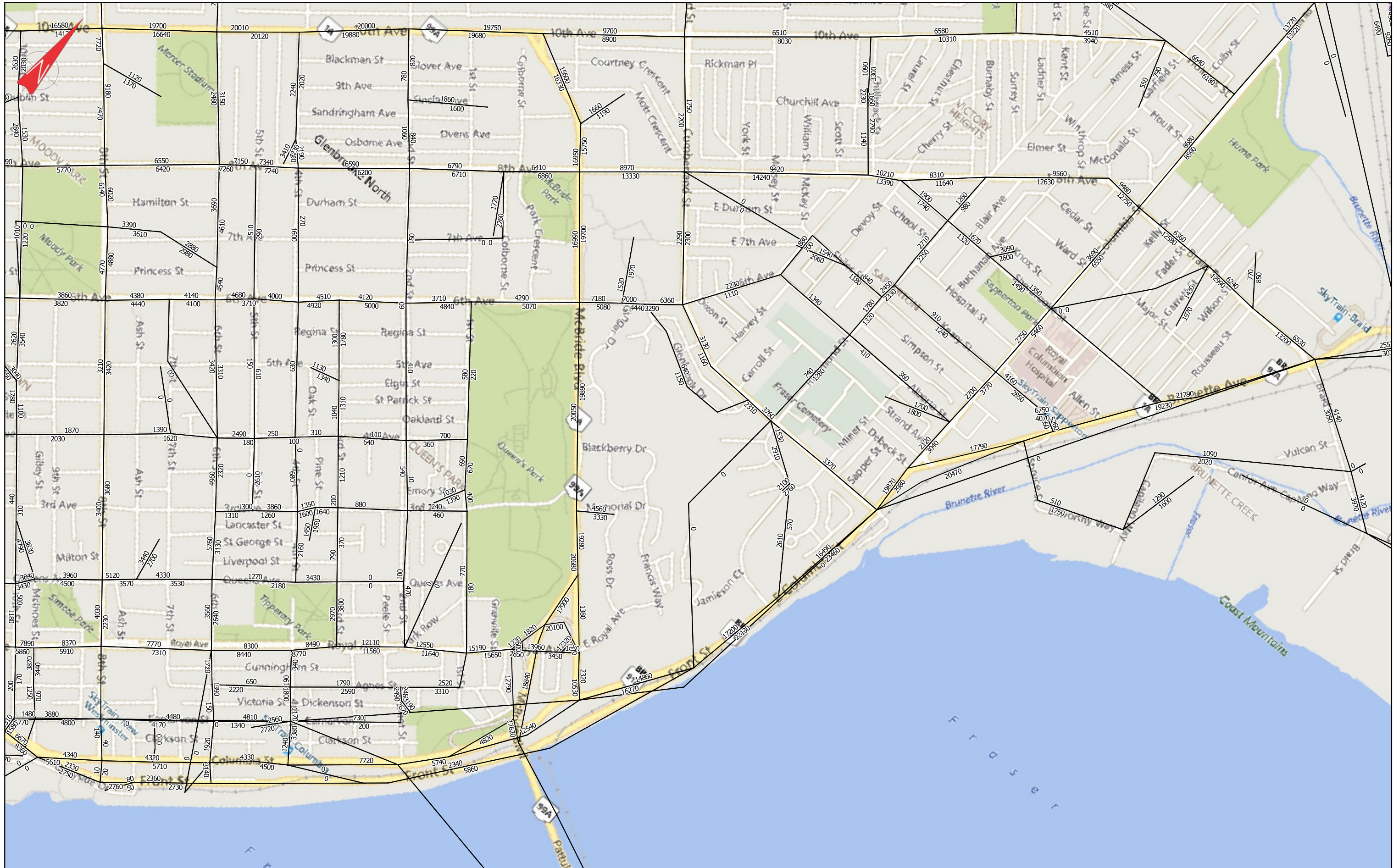
Night - 4L-U 2023



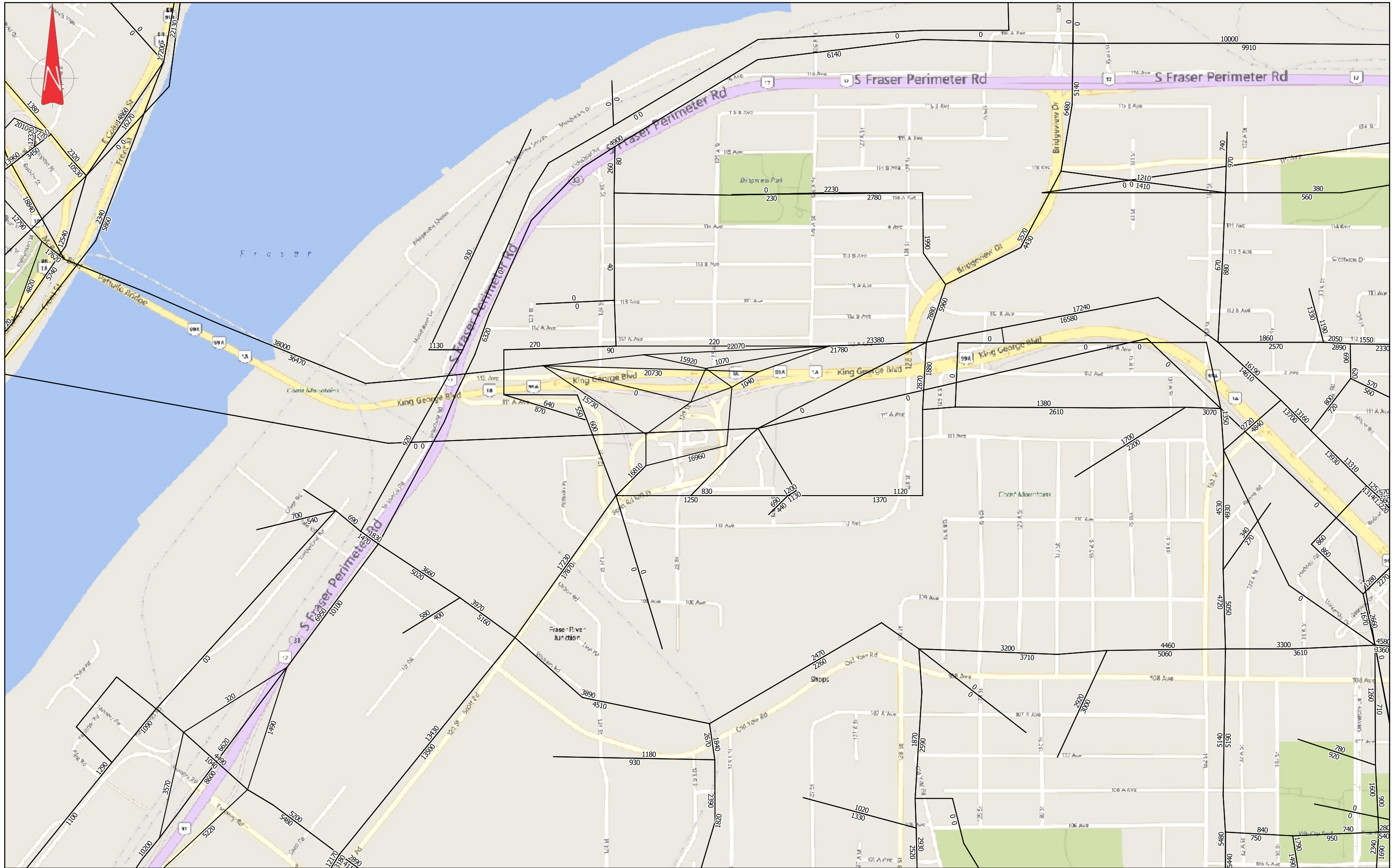
Night - 4L-U 2030

ATTACHMENT 3

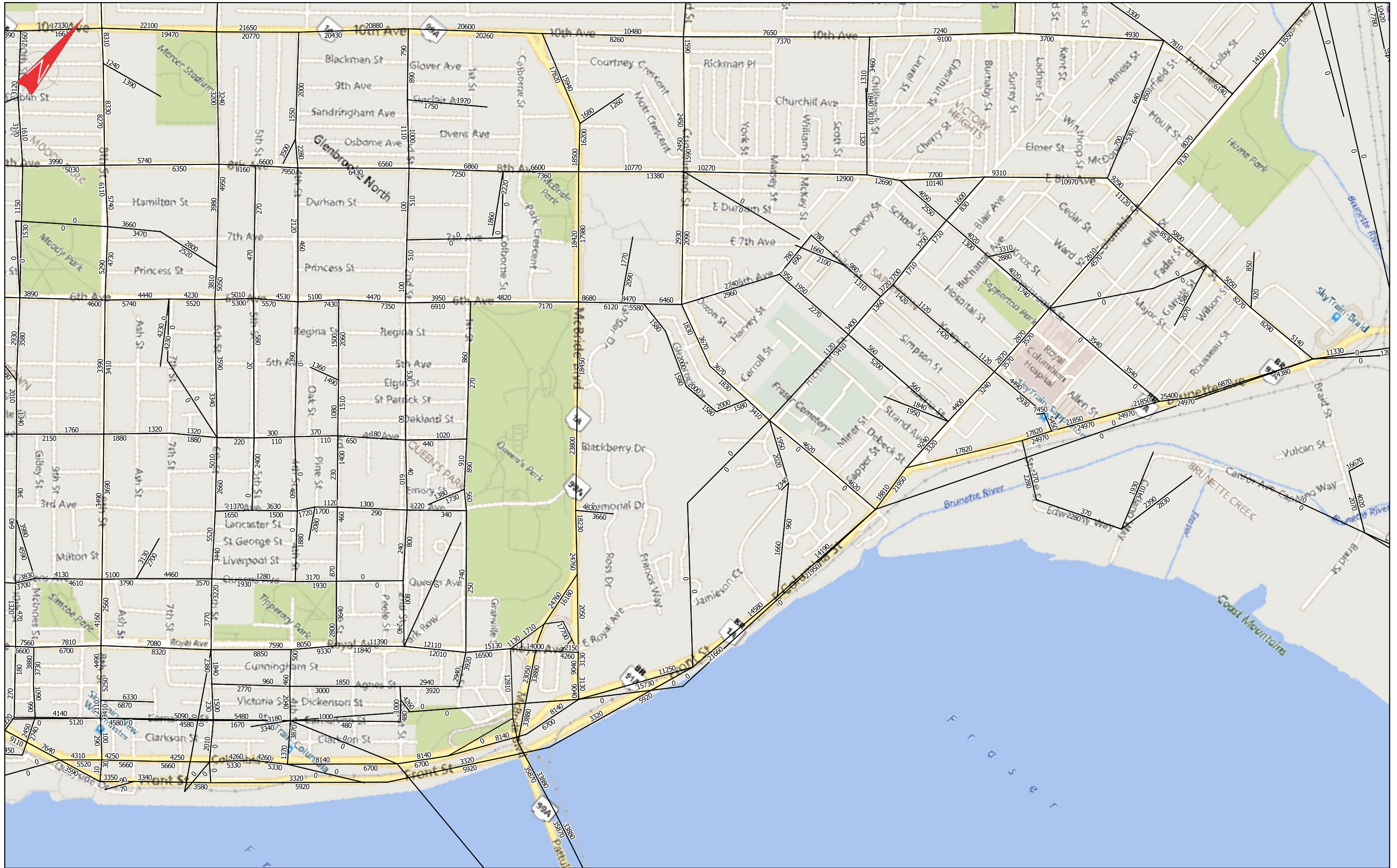
Traffic Data for Community Impact



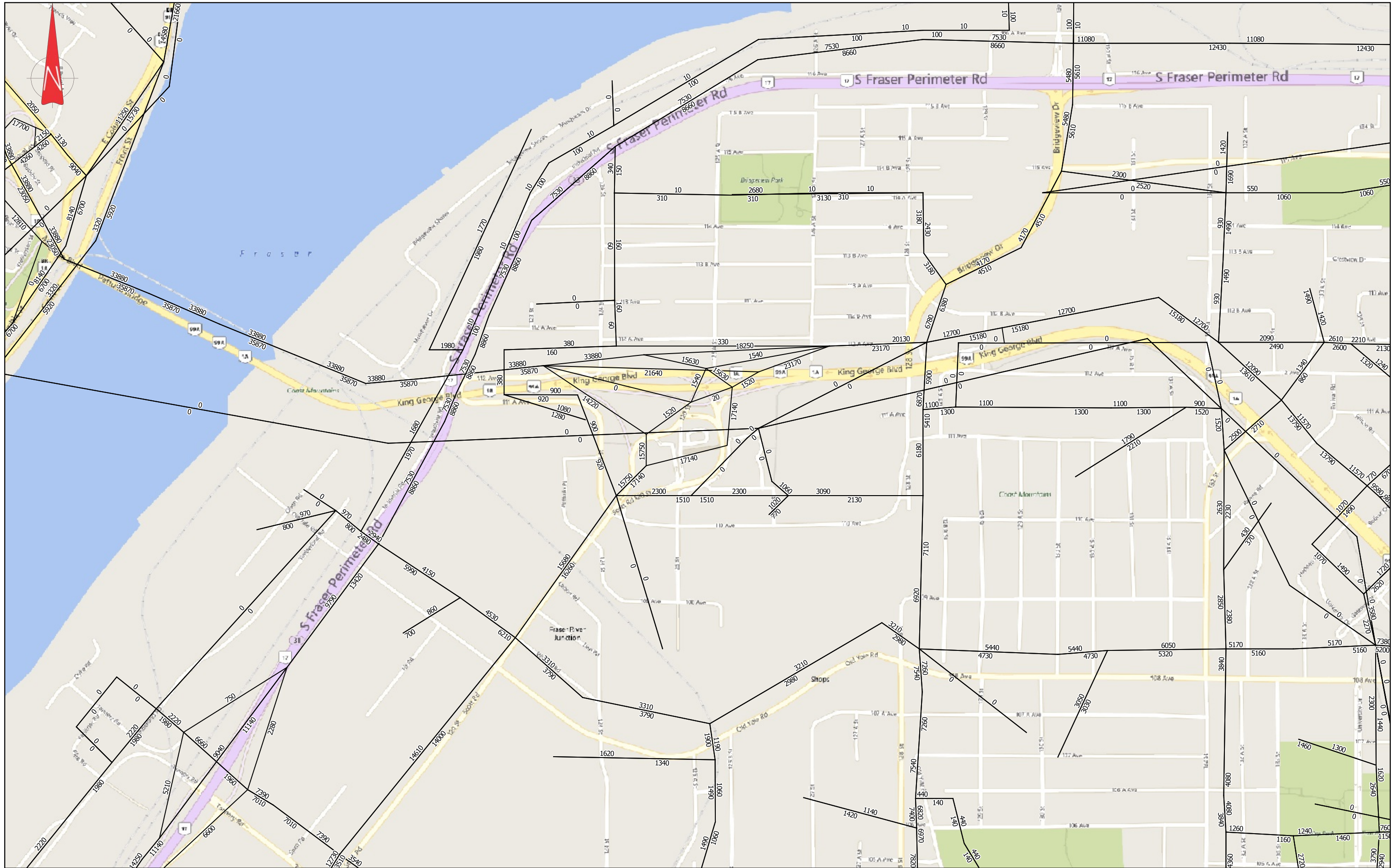
**AADT - Base 2014
New Westminster**



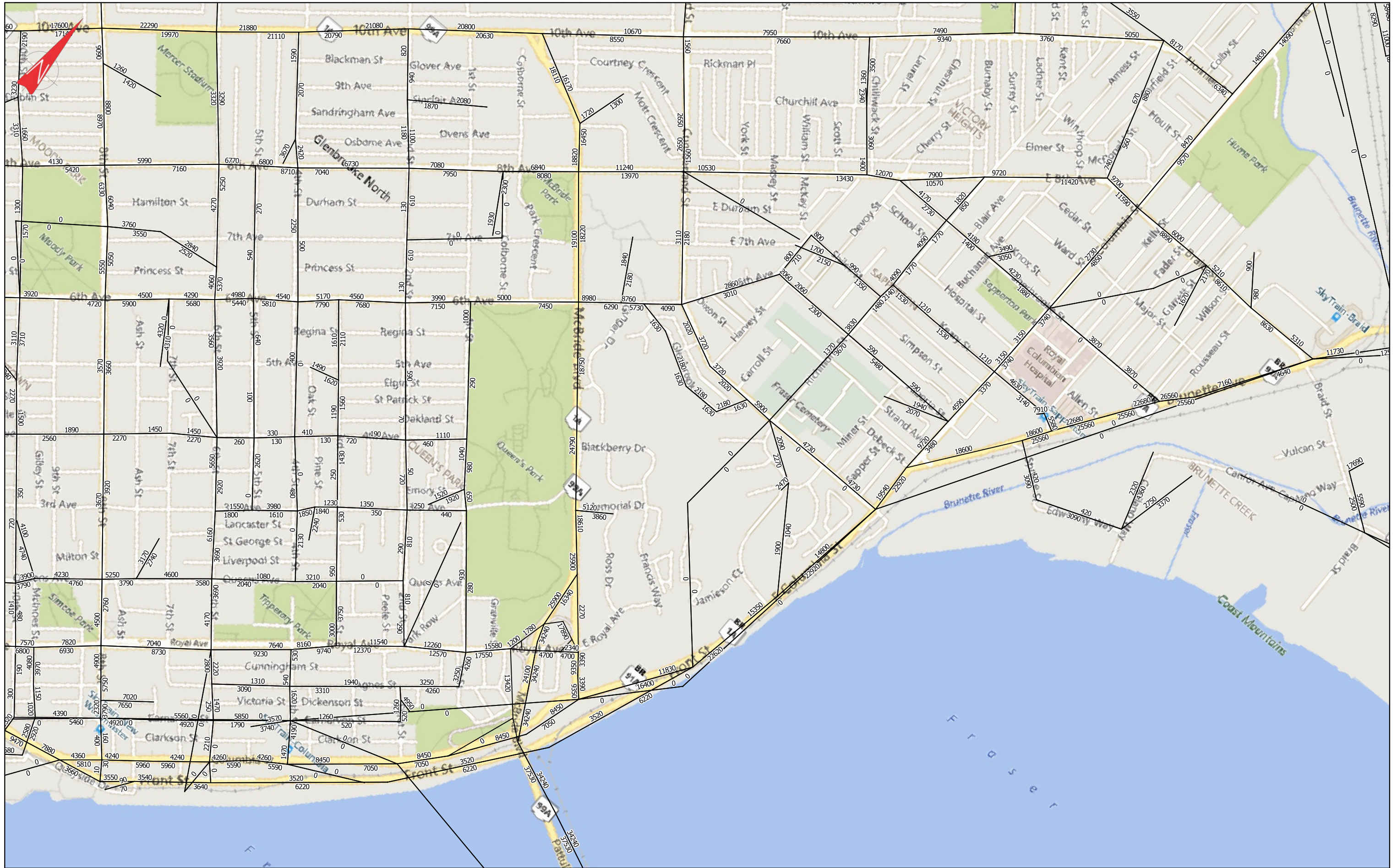
**AADT - Base 2014
Surrey**



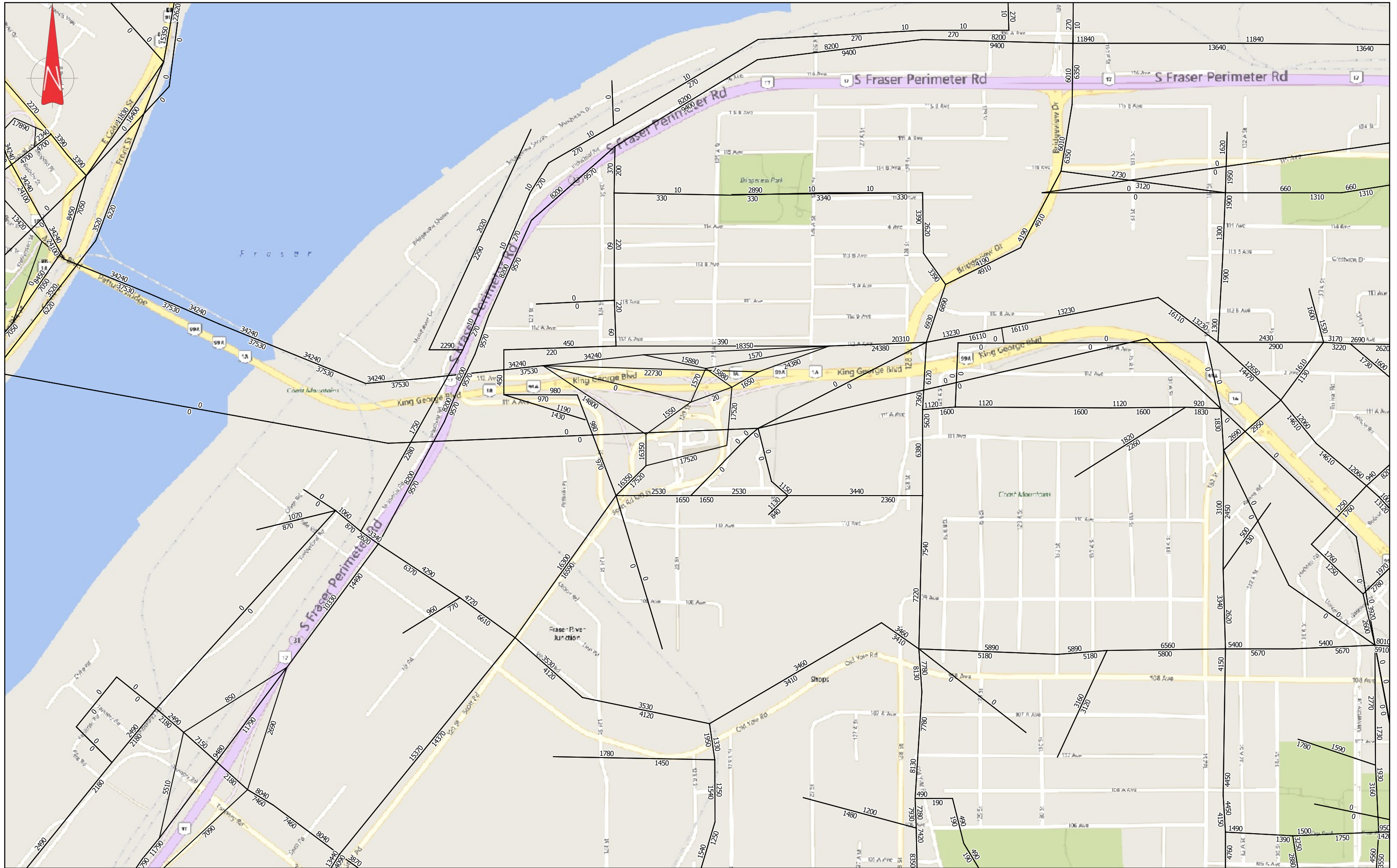
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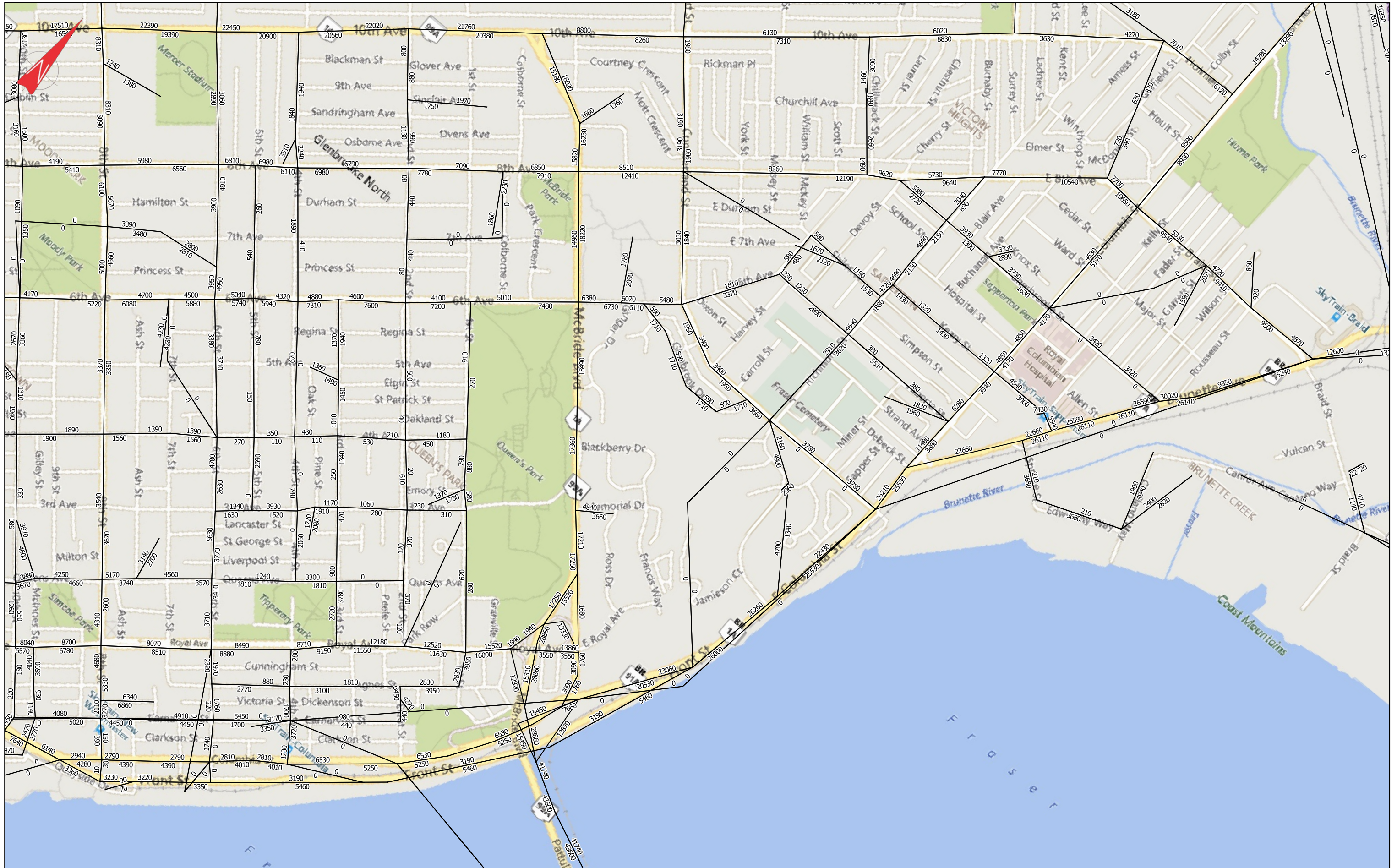
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Surrey



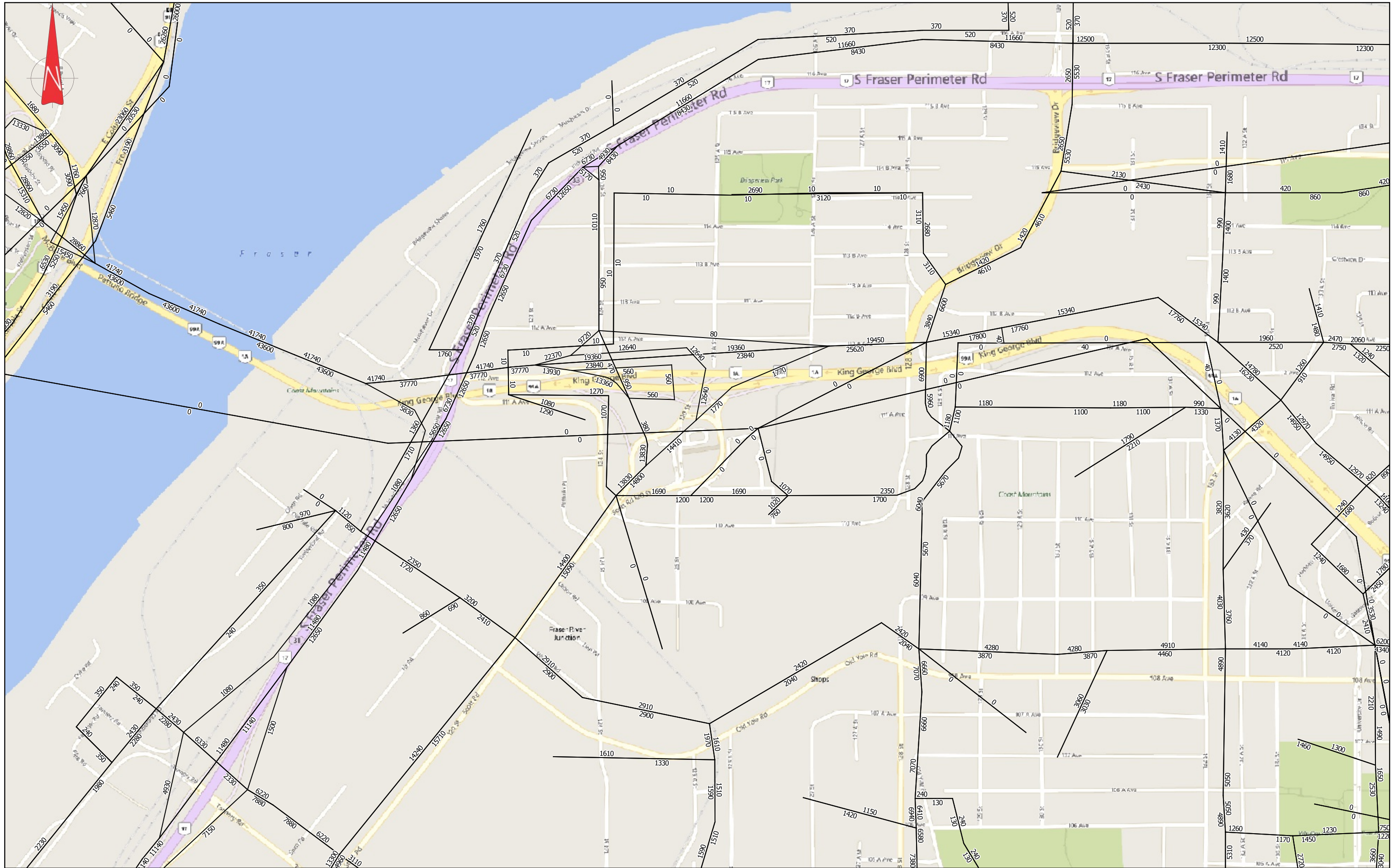
AADT - 3L-U 2030
New Westminster



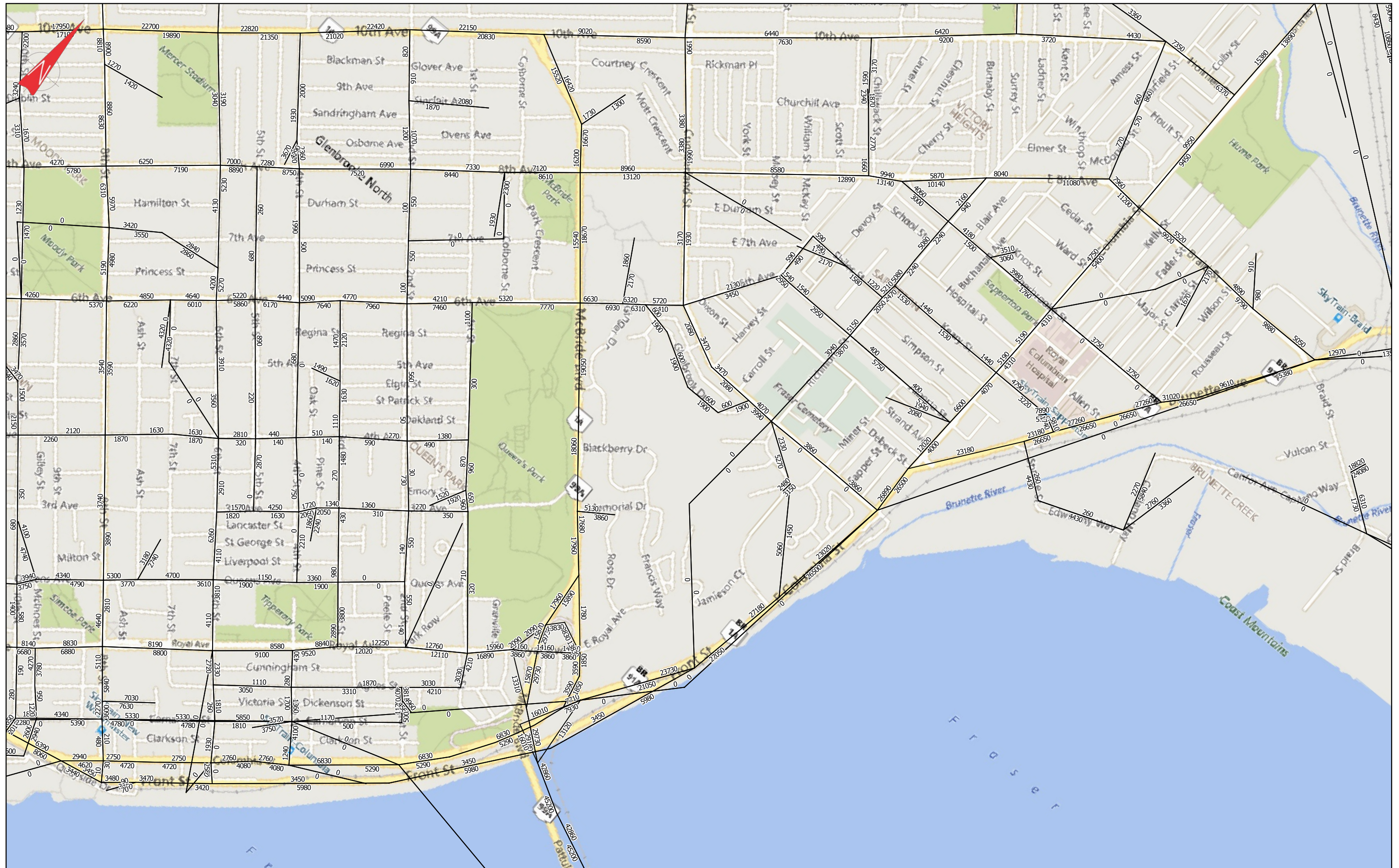
AADT - 3L-U 2030
Surrey



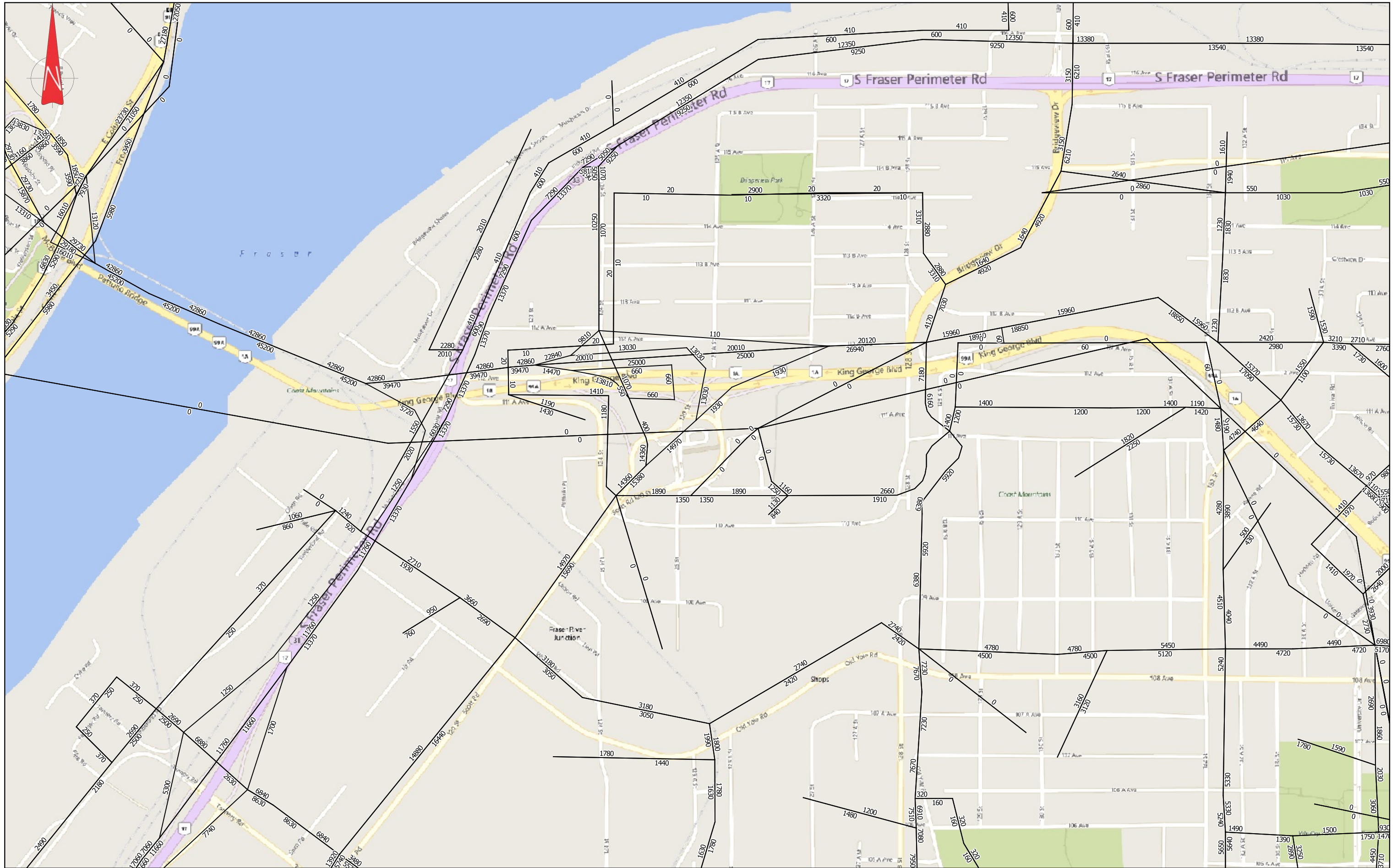
AADT - 4L-U 2023
New Westminster



AADT - 4L-U 2023
Surrey



**AADT - 4L-U 2030
New Westminster**



AADT - 4L-U 2030
Surrey