TRANSPORTATION PLANNERS AND ENGINEERS

bunt & associates

2025 St. Johns Street

Transportation Impact Assessment

FINAL

Prepared for

Marcon Developments Ltd.

Date

August 06, 2021

Project No.

04-18-0480

August 06, 2021
04-18-0480

Timothy Schmitt
Development Manager
Marcon Developments Ltd.
5645 – 199th Street
Langley, BC
V3A 1H9

Dear Tim:

Re: 2025 St. Johns Street, Port Moody
Transportation Impact Assessment

We have completed a Transportation Impact Assessment study for the proposed mixed-use development located at the southwest corner of St. Johns Street and Barnet Highway/Albert Street in Port Moody to support your development application. The development plan consists of approximately 550 SQM (7,000 sq. ft.) of commercial use and 242 residential units.

The following report provides an overview of the existing transportation conditions in the study area, forecast of the future transportation conditions with the proposed development and recommended mitigations to the road network, and an overview of the proposed site plan. This report has been updated in response to the City's comments on December 9, 2019.

We trust that this information will assist you in moving forward with your development. Please contact us should you have questions.

Yours truly,
Bunt & Associates

Yulia Liem, P.Eng., PTOE
Associate, Senior Transportation Engineer

CORPORATE AUTHORIZATION

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Approved By:	Yulia Liem, P.Eng. PTOE Associate	Status:	FINAL

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EXECUTIVE SUMMARY

Marcon Developments Ltd. (Marcon) is proposing to develop the vacant site at 2025 St Johns Street located on the southwest corner of St Johns Street and Barnet Highway/Albert Street in the City of Port Moody. The development will be comprised of approximately 550 SQM (7,000 sq. ft.) of commercial use and 242 residential units. Parkade access will be provided on Albert Street between St Johns Street and St George Street. At present, the nature of commercial uses is not fixed, although both retail (excluding restaurants, food services or grocery uses) and office are being considered by the developer.

As part of the rezoning application, the City requires a Transportation Impact Assessment (TIA) study to be completed to understand the impact of the proposed development traffic on the traffic operations for two horizon years: Opening Day (expected to be in 2022) and Opening Day + 5 years (2027). The TIA study also provides a review of site requirements for parking and loading, as well as layouts.

The existing conditions traffic analysis showed the study area is currently nearing the accepted performance threshold for traffic operations at the St Johns Street and Barnet Highway intersection. Long queues were predicted by the traffic operations model at this intersection during the weekday AM peak for northbound traffic, likely associated with the drop-off activity generated by the nearby Port Moody Secondary School, located on Albert Street. During the weekday PM peak period, long westbound queues were reported for Clarke Road at St Johns Street, which corresponds to Bunt's field observations during the weekday peak period.

Assuming a worst case site development scenario for traffic generation hour (100% office use) in the AM peak hour, the development could generate in the order of 102 two-way vehicles per hour. With the worst case scenario for traffic generation in the PM peak hour (a mix of retail and office use) there could be up to 128 two-way vehicle movements. This level of traffic generation is equivalent to approximately 2 vehicles entering and exiting the site, every minute during the peak hour periods. The site traffic impact onto the road network is expected to be low, as it is expected to contribute just 4% or less of future total traffic at study area intersections.

A compounded background traffic growth rate of 0.5% was approved by the City for future horizon year traffic forecasting in addition to the school projected traffic increase due to the planned 12 classroom expansion that will bring the student enrollment from 1,200 to 1,500 in the long term (2027) horizon year. Comparisons between total traffic conditions and background traffic conditions showed no significant impacts to traffic operations in the short term horizon due to the proposed development.

An increase in traffic signal cycle length and optimization of split times is recommended for Barnet Highway & St. Johns Street intersection to be considered by the City to accommodate background growth by the horizon year of 2022, even if the site does not redevelop. However, this recommendation should be addressed within the context of the overall signal optimization strategy for the St Johns Street corridor.

With the background signal timing improvements in place, the adjacent transportation network will be adequate to support the proposed form of development under the two land use scenarios tested for the AM and PM Peak hours, with no further mitigation measures necessary. Alternatively, if the cycle length is not supported, laning modification to the north leg of Barnet Highway without the need to widen the road can be considered.

In the long term horizon year, if the school expansion is taken place, further improvement is recommended on Albert Street at St. Johns Street to maintain the intersection operation below the performance thresholds.

The proposed parking plan meets the City's bylaw requirement for number of vehicle and bicycle parking spaces. However, it has a shortfall of loading space inside the property which is significantly constrained by environmental setbacks. In lieu of an on-site truck loading position, two passenger vehicle-sized loading spaces are provided on the P1 level. Based on previous surveys conducted by Bunt on similar land-use sites, the majority of loading demand for the site can be satisfied by the two passenger vehicle sized stalls inside the parkade. Infrequent loading demand by single-unit trucks could be accommodated via an on-street commercial loading space, within the lay-by space fronting the building on the west side of Albert Street, north of the entrance/exit ramp. It is recommended that appropriate signage for this loading space be provided.

The multi-use paths planned on Albert Street and St. Johns Street fronting the development site will meet TAC minimum sight distance requirements for pedestrians and cyclists approaching the intersection from south and west.

1. INTRODUCTION

1.1 Study Purpose & Objectives

Marcon Developments Ltd. (Marcon) is proposing to develop the vacant site at the southwest corner of St Johns Street and Barnet Highway/Albert Street in the City of Port Moody. The site location is shown in **Exhibit 1.1**. The development will be comprised of approximately 550 SQM (7,000 sq. ft.) of commercial use and 242 residential units. Parkade access will be provided off Albert Street between St Johns Street and St George Street.

As part of the rezoning application, the City required a Transportation Impact Assessment (TIA) study to be completed to understand the impact of the proposed development traffic to the surrounding road conditions and identify any mitigations required. Bunt & Associates Engineering Ltd. (Bunt) was retained by Marcon to complete the study.

The purpose of the TIA is:

- to understand the existing operational challenges/opportunities in the study area concerning walking, cycling, transit and vehicle use;
- to estimate the number of new trips generated by the development and the operational impact on the study network;
- to assess how the anticipated 'net new' vehicle movements generated from the development can be accommodated on the study network for future horizon years;
- to review on-site design access, loading, garbage and accessibility of vehicles; and,
- to review the City's Bylaw requirements for vehicle and bicycle parking and compare to that proposed by the developer.

1.2 Study Scope & Area

The City of Port Moody has approved the Terms of Reference prepared by Bunt for the study as included in **Appendix A**.

The study area includes the following intersections as illustrated in **Exhibit 1.2**.

1. St Johns Street & Barnet Highway;
2. Clarke Road & St Johns Street;
3. St George Street & Albert Street; and,
4. Site Access at Albert Street.

Exhibit 1.1

Site Location

2025 St Johns St TIA

04-18-0480 August 2019

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Exhibit 1.2
Study Area

2025 St Johns St TIA
June 2019

04-18-0480

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As agreed with the City, this TIA examines the impacts of the proposed development on the surrounding road network on Opening Day (2022) and Opening Day + 5 Years (2027) during the weekday AM and PM peak hours.

1.3 Organization of Report

The report is organized into the following sections:

- **Section 1** – Introduction;
- **Section 2** – Existing conditions within the study area, including existing traffic volumes, transit, cycling and walking networks, and operations analysis of existing conditions at all study intersections;
- **Section 3** – Future traffic conditions within the study area, including net trip generation and assignment generated by the proposed development, and any mitigations required to accommodate the increase of traffic in the study area;
- **Section 4** – Site design review of the proposed site plan, including internal circulation, parking, bicycle and loading requirements, and waste collection operation; and,
- **Section 5** – Sightline analysis for pedestrians and cyclists on the new multi-use paths fronting the development site.
- **Section 6** – Conclusion and recommendations.

2. EXISTING CONDITIONS

2.1 Land Use

The proposed development site on 2025 St Johns Street is located in the Moody Centre Neighbourhood of Port Moody. According to the City of Port Moody's Official Community Plan (OCP), the Moody Centre is the City's most diverse neighbourhood from a land use perspective, with a waterfront industrial area, a heritage conservation area as well as a mix of commercial and residential spaces all located within the neighbourhood. The primary residential area in Moody Centre is to the south of St Johns Street. The north side of the property fronts St Johns Street, a major arterial road in Port Moody. The east side of the property fronts Albert Street and is adjacent to Port Moody Secondary School to the south.

The existing Official Community Plan (OCP) land use designations are shown in **Exhibit 2.1**.

2.2 Existing Transportation Network

2.2.1 Road Network

Table 2.1 lists the individual road characteristics of the existing transportation network and **Exhibit 2.2** shows the existing traffic control and laning configuration of the network.

Table 2.1: Existing Street Characteristics

STREET	CLASSIFICATION	NUMBER OF TRAVEL LANES	POSTED SPEED (km/h)	PARKING FACILITIES
Barnet Highway	Highway (MRN)	5	50	None
St Johns St	Arterial (MRN)	4	50	None
Clarke Rd	Arterial (MRN)	3	50	None
Albert St	Local	2	30	West side
St George St	Local	2	30	Both sides
Charles St	Local	2	50	Both sides

Barnet Highway

Barnet Highway is a major arterial roadway, is a part of TransLink's Major Road Network (MRN) and is classified as a truck route. The road connects with Hastings Street in Vancouver to the west of Port Moody and connects with St Johns Street to the east.

St. Johns Street

St Johns Street is also a part of the MRN and is the main east-west arterial thoroughfare in the City of Port Moody. The road connects the Burquitlam and Lougheed Town Centre areas to the west and Coquitlam Centre and Port Coquitlam to the east.

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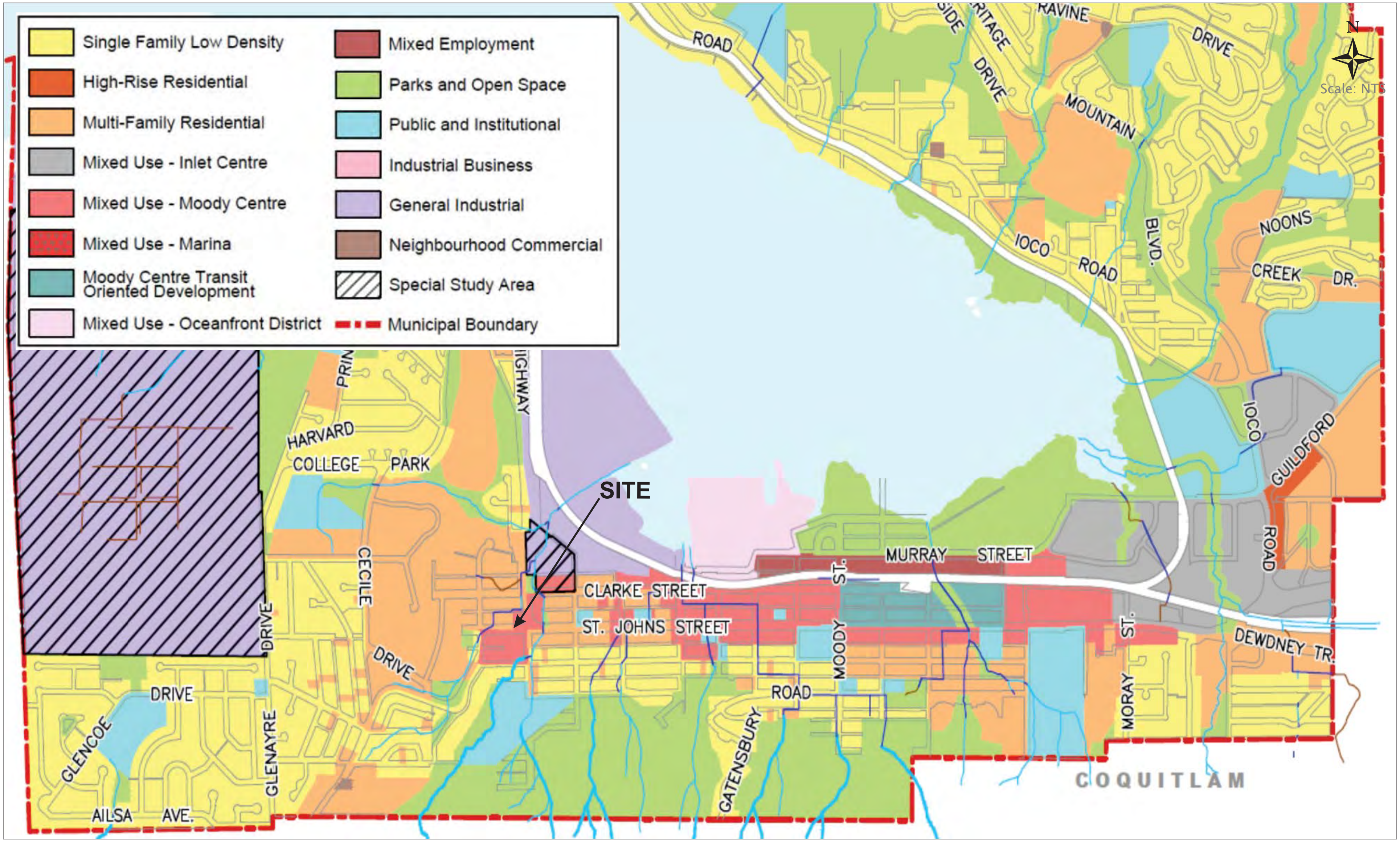

Exhibit 2.1

Existing OCP Land Use Designations

04-18-0480

2025 St Johns St TIA
June 2019

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Exhibit 2.2

Existing Laning & Traffic Control

2025 St Johns St TIA

04-18-0480

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Clarke Road

Clarke Road is also a part of the MRN, that connects with St Johns Street to the east and extends south west towards Burquitlam. This 3 lane road widens to a 4 lane road south west past the study area.

Albert Street

Albert Street is a local north-south road that provides access for the residential community to the major intersection of St Johns Street and Barnet Highway. Port Moody Secondary School is also located at the southern end of this street. On-street parking is available on both sides of the street.

St George Street

St George Street is a local east- west road that connects with Albert Street to the west and Douglas Street to the east. This is a narrow street with an overall width of around 8.3m that has on-street parking on both sides of the street.

Charles Street

Charles Street is local north-south road in the study area that connects with Clarke Road to the south and Spring Street to the north, another local east-west road. This is also a narrow street with an overall width of around 8.6m providing parking on both sides of the street.

2.2.2 Transit Network

Table 2.2 lists all transit routes within 800m of the proposed site. The proposed development is located on the Frequent Transit Network (FTN), meaning that buses serve the site with headways of 15 minutes or better for 15 hours a day, 7 days a week. These buses also connect with the Moody Centre station, providing access to the Sky Train Millennium Line and the West Coast Express commuter rail service, with an approximate 6 minute transit trip. The surrounding transit network can be seen along with pedestrian and cyclist facilities in **Exhibit 2.3**.

Table 2.2: Existing Transit Service Frequency

ROUTE		STOP	WEEKDAY SERVICE SPAN		HEADWAY (MIN.)				
#	DIRECTION		START	END	AM	MID-DAY	PM	EVENING	WEEKEND
160	Port Coquitlam Stn	53144	06:01	02:02*	15	15	15	15	15
160	Kootenay Loop	53186	05:02	01:38*	15	15	15	15	15
180	Lougheed Stn	53187	04:42	00:02*	15	15	15	20	20
180	Moody Centre Station	58227	05:27	00:59*	15	15	15	20	20
848	Lougheed Town Centre (school season)	53187	15:18	15:35	-	-	-	-	-
N9	Coquitlam Central Stn	58227	02:12	05:23	-	-	-	30 (late night)	-
N9	Downtown NightBus	53187	01:01	03:13	-	-	-	30 (late night)	-

(*) Time next day

2.2.3 Cycling & Pedestrian Networks

According to Translink's Metro Vancouver Cycling Map, the study area is well connected for people to cycle in all directions to and from the proposed development site. As seen on **Exhibit 2.3**, Barnet Highway consists of a major street bicycle lane beginning from the View Street and Barnet Highway intersection, around 350m north of the proposed site. This lane is connected to a shared cycling/walking pavement that runs north south on the west side of Barnet Highway from the Barnet Highway and St Johns Street intersection as well as an off-street, unpaved bicycle route that runs north south along the east side of Barnet Highway beginning from Short Street.

Albert Street and St George Street included in the study area are both classified as informal bicycle routes which are recommended for cycling although no special treatments are provided for cyclists due to low traffic volumes. The east and west sides of the proposed site currently have neighbourhood street bikeways along Spring Street and Clarke Street respectively.

The road network surrounding the proposed site has sidewalks on the adjacent Albert Street as well as on St Johns Street, Clarke Road, Barnet Highway and St George Street.

Marked crosswalks and pedestrian walk "countdown" times are provided at a number of the signalized intersections within the study area

Marked crosswalks are provided at the Barnet Highway and St Johns Street signalized intersection on all four legs. However, there is currently an absence of crossing opportunies from Charles Street to the sidewalk on the south side of St Johns Street due to free flowing movement of vehicles travelling northbound on Clarke Road turning east on St Johns Street and vehicles travelling westbound turning south on Clarke Road.

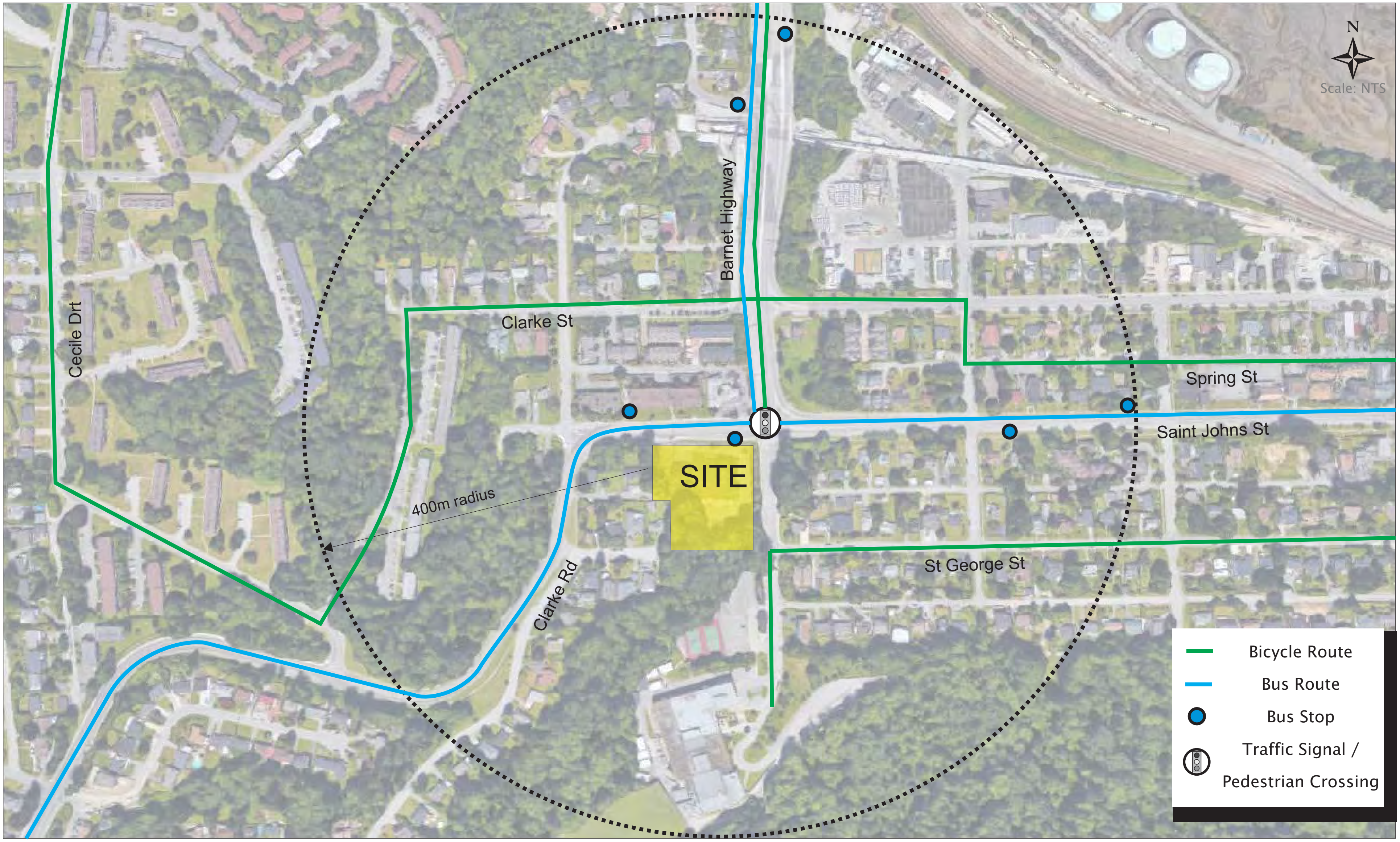

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Exhibit 2.3

Existing Pedestrian, Cycling and Transit Infrastructure

2025 St Johns St TIA

04-18-0480 September 2020

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2.3 Data Collection

2.3.1 Traffic Data Collection Program

Intersection counts were conducted by Bunt, for the weekday AM and PM traffic movement counts (TMCs) at the study area intersections on Tuesday, April 30, 2019. Bunt had previously conducted a TMC at the St Johns Street and Barnet Highway intersection on June 17, 2018. Since recent data was available for this intersection, an updated TMC was not required as confirmed with the City of Port Moody. Minor adjustments were made to the raw data in order to balance existing volumes between all intersections in the study area.

Table 2.3 summarizes the available traffic data and peak hours of traffic demand at each intersection. Complete TMC reports are provided in **Appendix B**.

Table 2.3: Summary of Available and Counted Traffic Data

INTERSECTION	SOURCE	DATE OF COUNT	PEAK HOURS	
			AM	PM
St Johns St / Clarke Rd	Bunt	April 30, 2019	8:00-9:00	4:45-5:45
St Johns St / Barnet Highway	Bunt	June 17, 2018	7:45-8:45	4:45-5:45
Albert St / St George St	Bunt	April 30, 2019	8:00-9:00	2:45-3:45
		OVERALL STUDY AREA PEAK HOUR	7:45-8:45	4:45-5:45

Based on the traffic volumes collected, the overall weekday AM and PM peak hours for the study area were determined to be from 7:45am to 8:45am and 4:45pm to 5:45pm respectively. The morning peak hour overlaps with Port Moody Secondary School peak drop off activity while the afternoon peak hour does not. That is, the afternoon peak pick-up period for the school occurs earlier at 2:45pm-3:45pm compared to the commuter peak hour.

Exhibit 2.4 shows the peak hour traffic volumes.

Table 2.4 presents a summary of the two-way peak hour vehicle movements for the streets included in the study area.

Table 2.4: Existing Peak Hour Roadway Link Volumes at Study Area Gateways

ROAD LINK	PEAK LINK VOLUMES (VEH/HR)	
	AM	PM
St Johns St (East)	2870	2930
Clarke Rd (South)	2030	1980
Barnet Highway (North)	1185	1665
Albert St (South)	725	80
St George St (East)	95	295
Charles St (North)	30	50
St Johns St (West)	20	0

During the scheduled count program, long queues were observed in the AM and PM hours for northbound traffic on Albert Street. These queues were evident during peak morning drop off and afternoon pick up at Port Moody Secondary School beginning from the St Johns Street and Barnet Highway intersection and extending south past the St George Street and Albert Street intersection.

Long queues were also observed in the commuter PM hours for northbound traffic on Clarke Road, turning east at the Clarke Road and St Johns Street intersection. These queues were evident at various times of the count program with the longest queues observed during 3:30pm and 3:50pm, 4:40pm and 5:00pm and 5:30pm and 5:50pm. The queues began from the St Johns Street and Clarke Road intersection and extended south past the St George Street and Clarke Road intersection. Signal timing at Clarke Road & St Johns Street favours the very high southbound to eastbound left turn movement in the afternoon (over 1,000 vph) and not the eastbound through movement from Clarke Road.

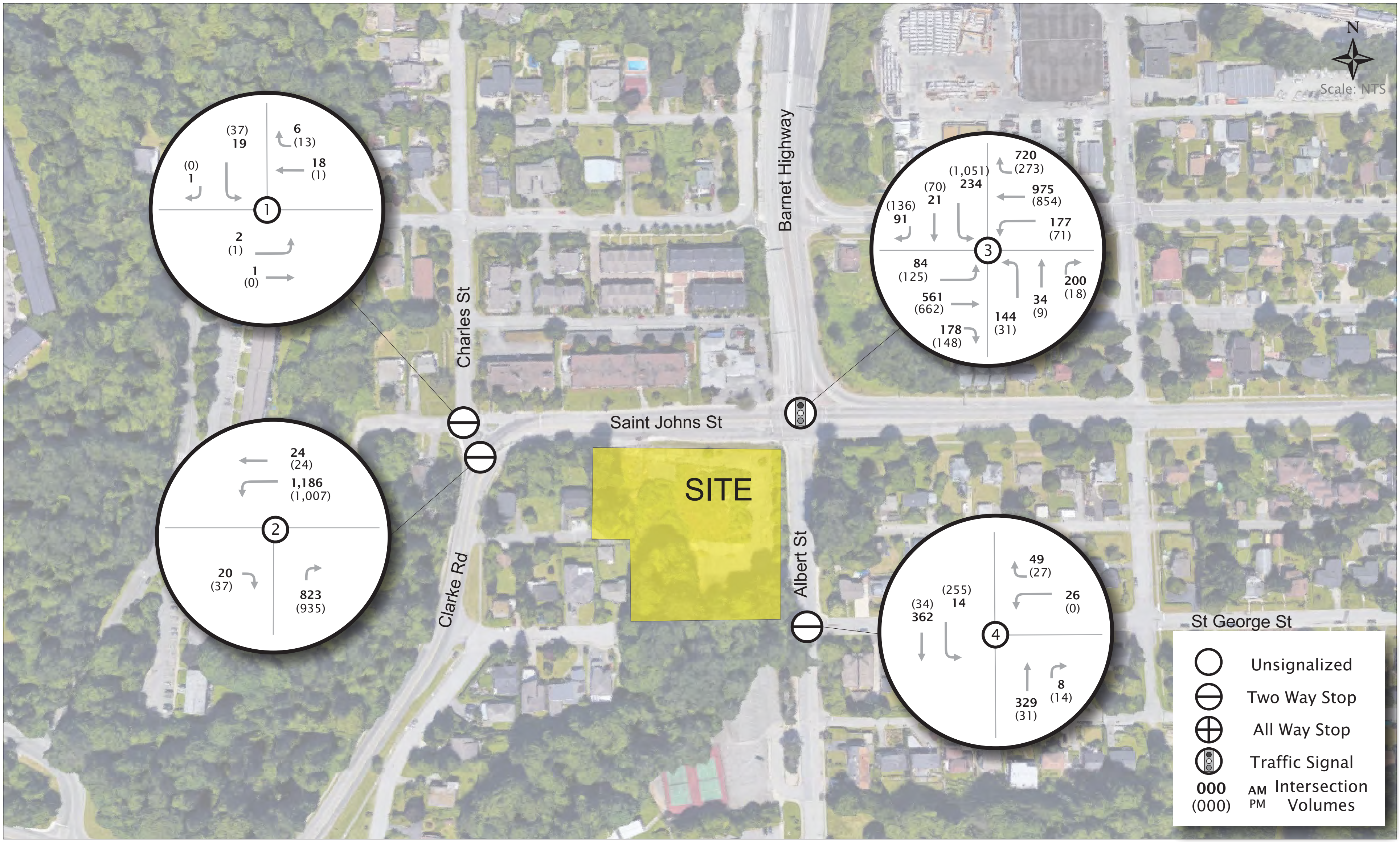

Exhibit 2.4
Existing Peak Hour Traffic Volumes

2025 St Johns St TIA
September 2020

04-18-0480

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2.4 Existing Operations

2.4.1 Performance Thresholds

The existing operations of study area intersections and access points were assessed using the methods outlined in the 2000 Highway Capacity Manual (HCM 2000), using the Synchro 10 analysis software (Build 10.2.0.45). For intersections where Synchro 10 could not apply the HCM 2000 methodology, HCM 2010 methodology was applied instead, The traffic operations were assessed using the performance measures of Level of Service (LOS) and volume-to-capacity (V/C) ratio. The study area intersections and access points were also assessed using the methods outlined in HCM 6th Edition.

The LOS rating is based on average vehicle delay and ranges from "A" to "F" based on the quality of operation at the intersection. LOS "A" represents optimal, minimal delay conditions while a LOS "F" represents an over-capacity condition with considerable congestion and/or delay. Delay is calculated in seconds and is based on the average intersection delay per vehicle.

Table 2.5 below summarizes the LOS thresholds for the six Levels of Service, for both signalized and unsignalized intersections.

Table 2.5: Intersection Level of Service Thresholds

LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	
	SIGNALIZED	UNSIGNALIZED
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Source: Highway Capacity Manual

The volume to capacity (V/C) ratio of an intersection represents ratio between the demand volume and the available capacity. A V/C ratio less than 0.85 indicates that there is sufficient capacity to accommodate demands and generally represents reasonable traffic conditions in suburban settings. A V/C value between 0.85 and 0.95 indicates an intersection is approaching practical capacity; a V/C ratio over 0.95 indicates that traffic demands are close to exceeding the available capacity, resulting in saturated conditions. A V/C ratio over 1.0 indicates a very congested intersection where drivers may have to wait through several signal cycles. In downtown and Town Centre contexts, during peak demand periods, V/C ratios over 0.90 and even 1.0 are common.

As directed by the City of Port Moody, the performance thresholds that were used to trigger consideration of roadway or traffic control improvements in this study are listed below:

Signalized Intersections:

- Overall intersection Level of Service = LOS D or better;
- Individual movement Level of Service = LOS E or better; and,
- Individual movement V/C ratio = 0.90 or less.

Unsignalized Intersections and Roundabouts:

- Individual movement Level of Service = LOS E or better, unless the volume is very low in which case LOS F is acceptable.

In interpreting of the analysis results, note that the HCM methodology reports performance differently for various types of intersection traffic control. In this report, the performance reporting convention is as follows:

- For signalized intersections: HCM 2010 Edition or HCM 2000 output for overall LOS and V/C (only in HCM 2000) as well as individual movement LOS and V/C is reported. 95th Percentile Queues are reported as estimated by SimTraffic, the micro-simulation module of the Synchro software; and,

- For unsignalized two-way stop controlled intersections: HCM 2010 or HCM 2000 output for LOS and V/C output is reported just for individual lanes as the HCM methodology does not report overall performance. SimTraffic estimated queues and delays have also been reported, as the HCM methodologies do not directly take into account the gaps afforded by adjacent signalized intersections.

The performance reporting conventions noted above have been consistently applied throughout this document and the detailed outputs are provided in **Appendix C**.

2.4.2 Existing Conditions Analysis Assumptions

Signal Timing:
The existing signal timing plan for the intersection of St Johns Street and Barnet Highway was obtained from the City of Port Moody Engineering Department. The signal operates as actuated and coordinated with nearby traffic signals in the St Johns Street corridor. The current coordination green time strategy favours the heavy traffic flows between the Barnet Highway and St Johns Street east leg; however, is it unknown if this intersection has the master controller in the coordination plan.

Synchro Parameters:
In general, Synchro default parameters were used for the analysis. However, existing peak hour factors, heavy vehicle percentages, and bicycle and pedestrian volumes were collected as part of the intersection traffic counts and thus, were used to better represent existing conditions. It was important to reflect the effect of the short term drop off/pick up activity during the AM and PM Peak Hour, in particular, associated with Port Moody Secondary School.

Blockages due to bus stops were also included in the analysis using Translink's database of bus stop locations and service frequency. Adjacent parking lanes were also accounted for on road segments with on-street parking permitted. These parameters were carried through in the analysis of future conditions.

2.4.3 Existing Operational Analysis Results

Table 2.6 summarizes 2019 existing traffic operations for the weekday AM and weekday PM peak hours. In addition to showing the traffic operations, the table also shows in bold the movements not meeting the general acceptable traffic operations performance criteria. 95th percentile queues that exceeded the available lane's storage length by 5 m or more are also bolded, as they are expected to cause congestion on adjacent traffic lanes and/or in nearby intersections.

Table 2.6: Existing Traffic Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Barnet Hwy & St Johns St / Signalized	*OVERALL*	*C*	*0.83*	-	*D*	*0.82*	-
	EBL	C	0.51	25	D	0.65	855
	EBTR	D	0.73	110	D	0.83	190
	WBL	C	0.73	**80**	C	0.47	**75**
	WBT	D	0.89	115	E	**0.96**	160
	WBR	A	0.54	-	A	0.18	45
	NBTL	D	0.70	**65**	D	0.30	20
	NBR	D	0.49	**45**	D	0.01	10
	SBL	D	0.46	55	D	0.85	**130**
	SBTL	D	0.46	45	D	0.85	**115**
	SBR	D	0.09	20	C	0.11	45
St Johns St & Charles St / TWSC	*OVERALL*	*A*			*A*		
	EB	A	0.00	-	A	0.00	-
	WB	A	0.03	10	A	0.01	10
	SB	A	0.01	0	A	0.02	-
St Johns St & Clarke Rd / TWSC	*OVERALL*						
	EB	A	0.02	10	A	0.04	15
	WB	C	0.84	30	B	0.65	10
	NB	A	0.00	20	A	0.00	85
Albert St & St George St / TWSC	*OVERALL*						
	WB	C	0.34	15	A	0.04	10
	SB	A	0.02	10	A	0.22	10
	NB	A	0.31	-	A	0.03	-

AM Peak Hour

In the AM peak hour, the signalized intersection at St Johns Street and Barnet Highway operates within capacity with an overall LOS of C. The highest V/C ratio was observed for westbound through movement on St Johns Street at 0.89.

All queue lengths for each of the available lanes are lower than the available storage length except for the westbound left turn movement on St Johns Street with a queue length of 73m and northbound through & left and northbound right turn movements on Albert Street with queue lengths of 133m and 22m, respectively. These queue lengths were confirmed in the field during the data collection program and occurred due to the drop off at Port Moody Secondary School on Albert Street located south of the Albert Street and Hope Street intersection. However, this activity is not currently affecting the operations of westbound and southbound turning movements at the Albert Street and St George Street intersection with a LOS of C and A, respectively and V/C ratios of 0.34 and 0.02, respectively.

The long northbound queue length was further observed at the Albert Street and St George Street intersection with a queue length of 86m. This confirmed the vehicle delay taking place on this lane during the peak AM drop off activity going on at the school.

The northbound traffic queues turning east at the St Johns Street and Clarke Road intersection also exceeded the storage length with 61m long queues. This length extended south past the Clarke Road and St Andrews Street intersection.

All movements at unsignalized intersections in the study area were found to operate within the performance thresholds during the AM peak.

PM Peak Hour

In the PM peak hour, the signalized intersection at St Johns Street and Barnet Highway operates within capacity with an overall LOS of D. The highest V/C ratio was observed for westbound through movement on St Johns Street with a value of 0.96. This value exceeds the defined performance threshold for an individual movement at a signalized intersection. Queue lengths exceeded the available storage lengths at the westbound left, southbound left and southbound right turn movements of this intersection.

Northbound traffic queues turning east at the St Johns Street and Clarke Road intersection also exceeded with 136m queue length. This was longer than the AM peak hour queue length of 61m, and confirmed during field observations. The queue extended south past St George Street intersection.

3. FUTURE TRAFFIC CONDITIONS

3.1 Traffic Forecasts

3.1.1 Background Traffic Forecasts

Based on the information provided by Marcon Developments Ltd., Bunt assumed the development's opening day for 2022. The City of Port Moody required Opening Day and Opening Day + 5 years future scenarios to be assessed. Therefore, Bunt's analysis focused on the 2022 "Opening Day" and 2027 "Opening Day + 5 years" horizon years.

Background traffic is traffic that would be present in the study area road network if the site did not redevelop. Based on past studies conducted in the area by Bunt, a 0.5% annual growth rate (compounded) was applied to the existing traffic volumes to forecast background traffic.

3.1.2 School Traffic Forecast

In addition to the growth rate, Bunt calculated the traffic that would be added to the network due to the growth projected at Port Moody Secondary School if the planned additional 12 classrooms are approved by the Ministry and constructed. The addition, according to the Principal of Coquitlam School District, would increase the nominal capacity of the school from 1,200 to 1,500 students to meet the planned densification in the area. This expansion was part of the district's 5-year annual capital plan with the Ministry of Education, subject to funding and approval. Therefore, additional trips generated by the school expansion were added to the background traffic in the long term horizon year (2027).

Using trip generation rates collected by Bunt at other secondary schools in Surrey School District, which are comparable to ITE Trip Generation rates, vehicle trips generated by the school were estimated for the current 1,150 student enrollment and future 1,500 capacity. **Table 3.1** summarizes the estimated existing and future school trips.

Table 3.1: Estimated School Vehicle Trips during Adjacent Street Peak Hour

CONDITION	# STUDENTS	AM PEAK HOUR			PM PEAK HOUR		
		IN	OUT	TOT	IN	OUT	TOT
Trip rate/student		0.36	0.23	0.59	0.04	0.06	0.10
Existing	1,150	414	265	679	46	69	115
Future	1,500	540	345	885	60	90	150
INCREASE	+350	+126	+80	+206	+14	+21	+35

Exhibits 3.1 and **3.2** show the peak hour background traffic volumes for 2022 and 2027 horizon years, respectively.

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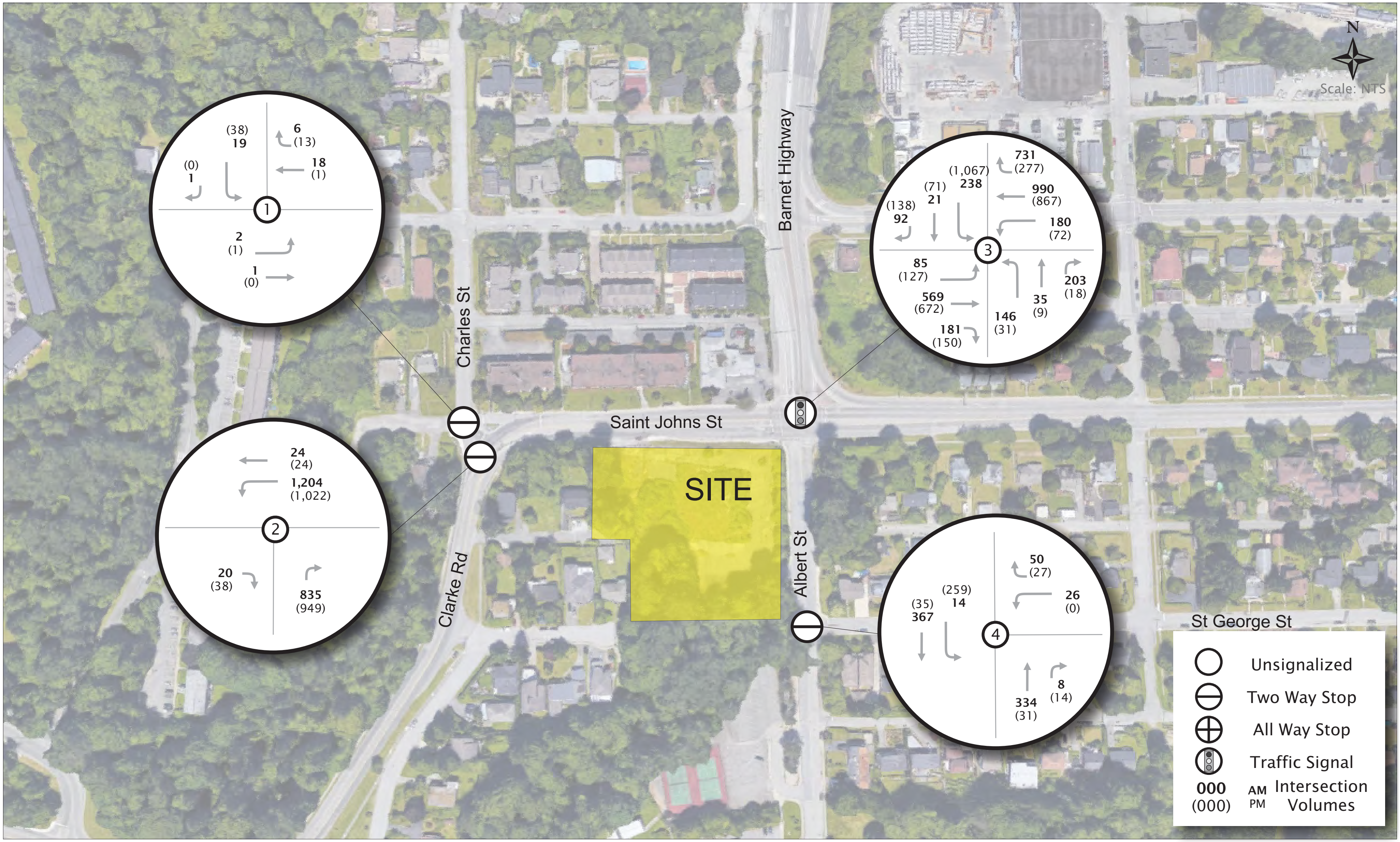

Exhibit 3.1

Opening Day (2022) Background Traffic Forecasts

2025 St Johns St TIA

04-18-0480 September 2020

bunt & associates

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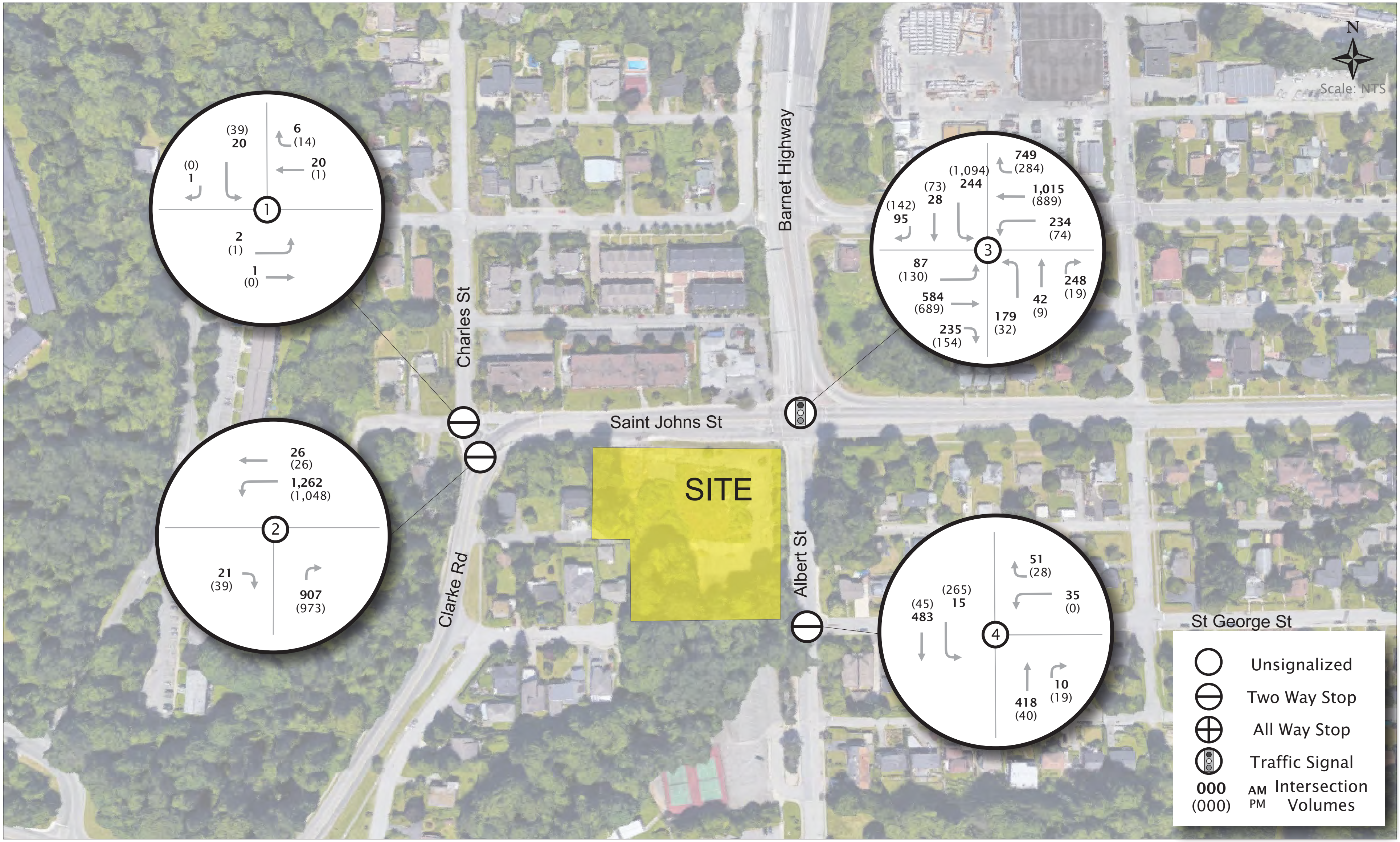

Exhibit 3.2

Opening Day + 5 (2027) Background Traffic Forecasts

04-18-0480

2025 St Johns St TIA
September 2020

bunt & associates

3.1.3 Site Traffic

Trip Generation

With reference to the latest site statistics confirmed with Marcon Developments Ltd., the proposed development plans for 242 residential units and approximately 550 SQM (7,000 sq. ft.) of commercial use comprised of a mix of land uses related to general office, medical/dental space and retail.

The precise nature and mix of the commercial space is not yet known. Therefore, solely for the purposes of this TIA, Bunt considered “worst case” scenarios of land use mix contemplated by the site developer for the two commuter peak hours in relation to traffic generation as follows:

- AM Peak Hour: 100% office use with 4,100 sq.ft GFA Medical/Dental Office and 2,900 sq.ft. General Office space
- PM Peak Hour: 30% office use with 2,000 sq.ft GFA and 70% retail use with 5,000 sq.ft GFA.

Vehicle trip rates to estimate the future AM and PM peak-hour periods generation were obtained from the Institute of *Transportation Engineers (ITE) Trip Generation Manual, 10th Edition*. ITE Land Use Codes number 221 (Mid-Rise Residential), 720 (Medical/Dental), 710 (General Office Building) and Shopping Center (ITE 820) were used as part of the analysis. **Table 3.2 and 3.3** summarize the base vehicle trip rates:

Table 3.2: Peak Hour Vehicle Trip Rates (AM with 100% Office)

LAND USE	QUANTITY	UNITS	AM PEAK HOUR		
			IN	OUT	TOT
Mid-Rise Residential	242	Dwelling units	0.09	0.27	0.36
Medical/Dental	4.1	1,000 sf GFA	2.17	0.61	2.78
General Office Building	2.9	1,000 sf GFA	1.00	0.16	1.16

Table 3.3: Peak Hour Vehicle Trip Rates (PM with 30% Office and 70% Retail)

LAND USE	QUANTITY	UNITS	PM PEAK HOUR		
			IN	OUT	TOT
Mid-Rise Residential	242	Dwelling units	0.27	0.17	0.44
Shopping Center	5.0	1,000 sf GFA	1.83	1.98	3.81
General Office Building	2.0	1,000 sf GFA	0.18	0.97	1.15

Table 3.4 summarizes the anticipated future site generated vehicle trips for the two land uses scenarios based on the above rates.

Table 3.4: Estimated Peak Hour Site Vehicle Trips

LAND USE	AM PEAK HOUR (100% OFFICE)			PM PEAK HOUR (30% OFFICE, 70% RETAIL)		
	IN	OUT	TOT	IN	OUT	TOT
Mid-Rise Residential	22	65	87	65	42	107
Medical/Dental	9	3	12	-	-	-
General Office Building	3	0	3	0	2	2
Shopping Center	-	-	-	9	10	19
	34	68	102	74	53	128

Trip Distribution & Assignment

The site's new vehicle trips were distributed, assigned and superimposed on the road network based on existing turning movements and travel patterns observed within the study area. The assumed new trip distribution is shown in **Table 3.5**.

Table 3.5: Estimated Trip Distribution

ORGIN/DESTINATION	AM PEAK HOUR		PM PEAK HOUR	
	IN (%)	OUT (%)	IN (%)	OUT (%)
St Johns St – East	55	30	30	55
Barnet Highway – North	10	25	40	15
Clark Rd – South	25	35	25	25
St George St - East	10	10	5	5
TOTAL	100%	100%	100%	100%

The resulting site traffic forecast is shown in **Exhibit 3.3** and the net changes in intersection traffic volumes are presented in **Table 3.6**.

Table 3.6: Net Change in Future Intersection Vehicle Volumes with New Site Trips

INTERSECTION	AM PEAK HOUR (100% OFFICE)			PM PEAK HOUR (30% OFFICE, 70% RETAIL)		
	2022 BACK-GROUND	SITE	% CHANGE	2022 BACK-GROUND	SITE	% CHANGE
Barnet Hwy & St Johns St	3470	95	3	3500	130	4
St Johns St & Clarke Rd	2085	35	2	2025	35	2
Albert St & St George St	800	10	1	365	5	1
St Johns St & Charles St	45	0	0	55	0	0

The table shows that the development is estimated to contribute to a maximum increase of 3-4% during both peak-hour periods which would occur at the Barnet Hwy & St. Johns St intersection. The net increase on other intersections are expected to be less than 3%.

3.1.4 Total Traffic

Total traffic was estimated by summing the background and site traffic forecasts. The resulting total traffic forecasts in 2022 and 2027 are shown in **Exhibits 3.4** and **3.5**, respectively.

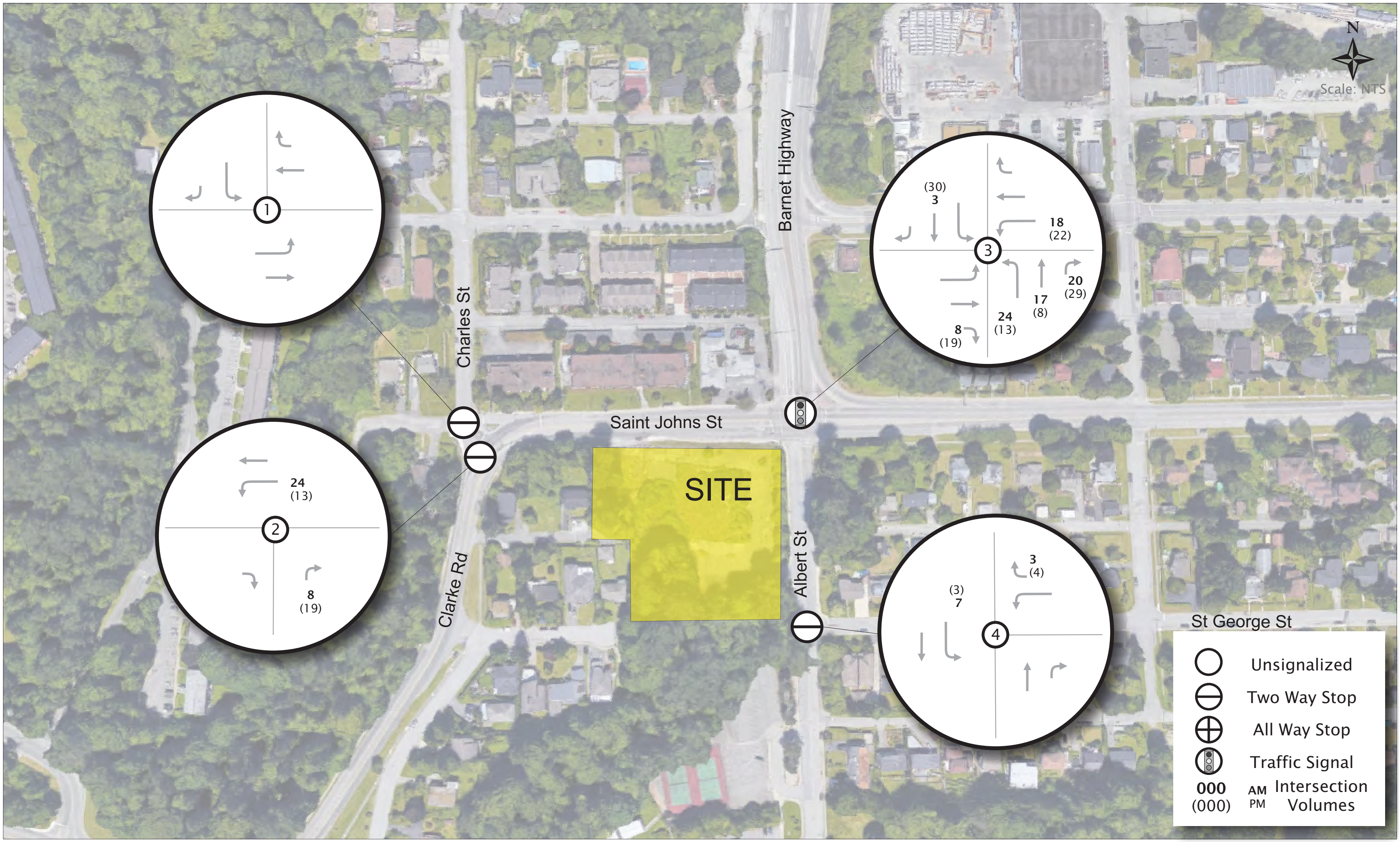

Exhibit 3.3

Site Traffic Forecasts

2025 St Johns St TIA

04-18-0480

September 2020

bunt & associates

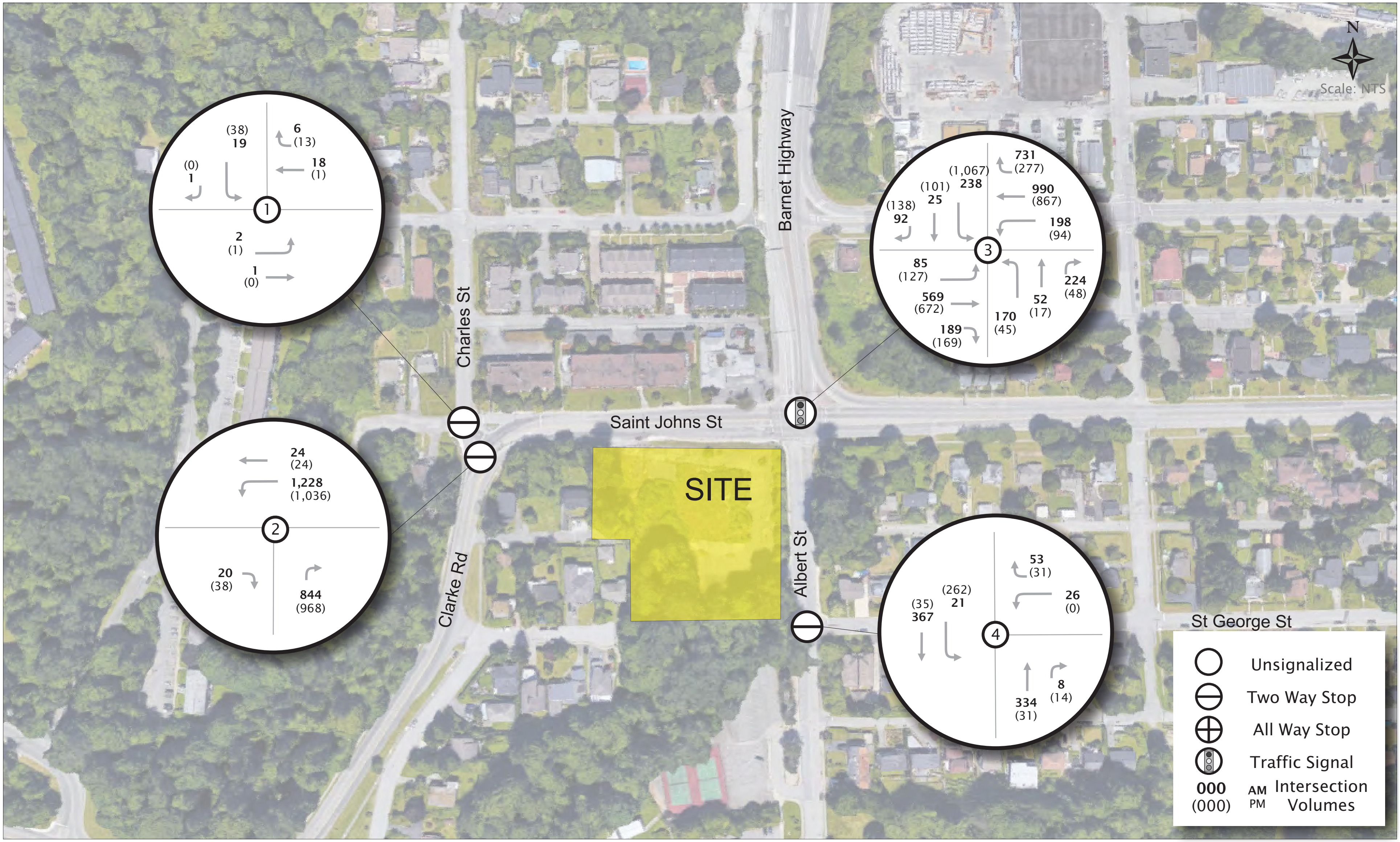

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Exhibit 3.4

Opening Day (2022) Total Traffic Forecasts

2025 St Johns St TIA
04-18-0480 September 2020

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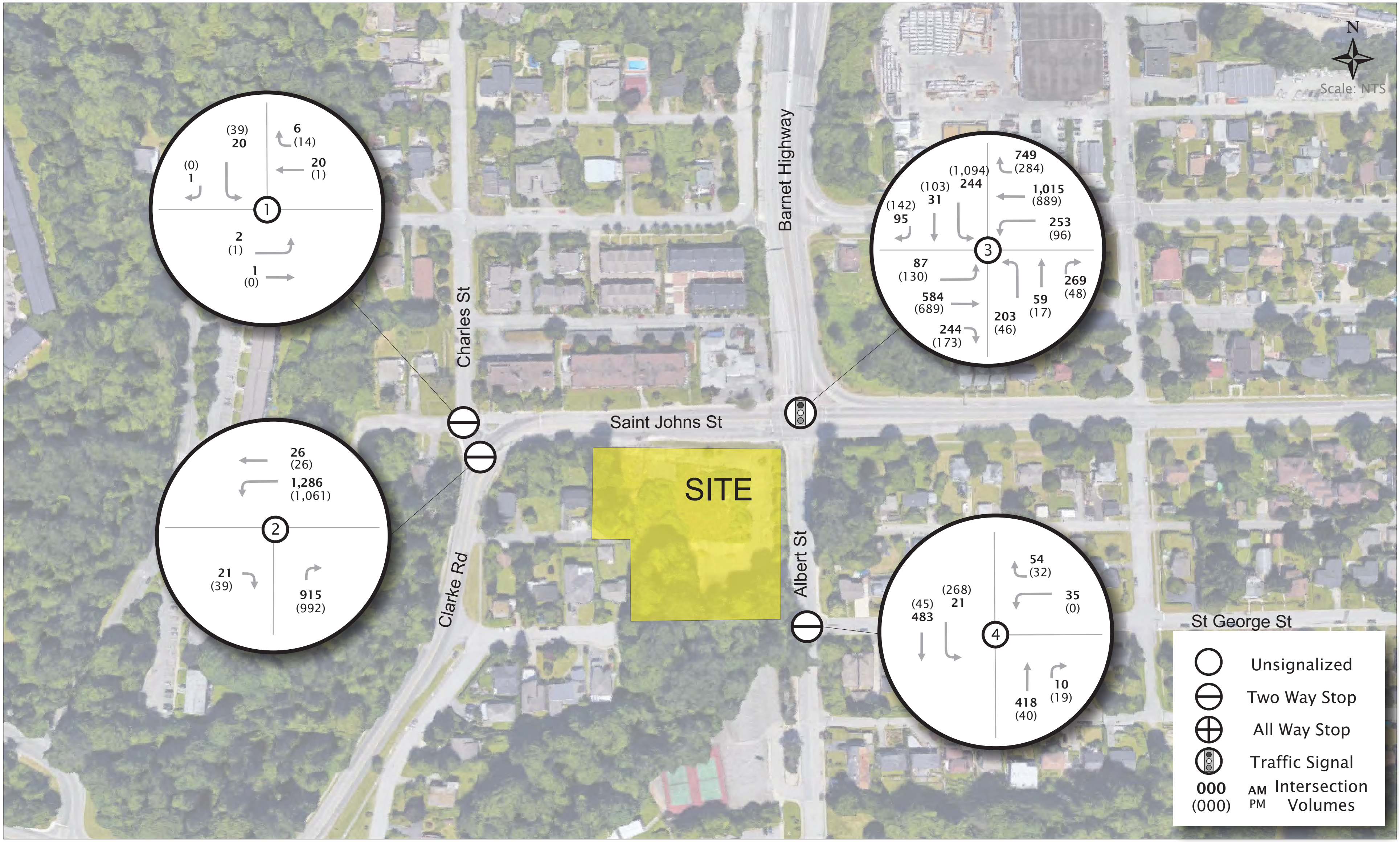

Exhibit 3.5

Opening Day + 5 (2027) Total Traffic Forecasts

2025 St Johns St TIA
04-18-0480 September 2020

bunt & associates

3.2 Future Traffic Operations

The Synchro parameters used in the analysis of existing traffic conditions previously reported were applied to the future traffic operations analysis.

3.2.1 Future Background Traffic Operations

Table 3.7 summarizes the Opening Day (2022) operation conditions while **Table 3.8** summarizes the Opening Day + 5 Years (2027) conditions without any mitigations applied.

Table 3.7: Opening Day (2022) Background Vehicle Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Barnet Hwy & St Johns St / Signalized	*OVERALL*	C	0.85		D	0.83	
	EBL	C	0.52	25	D	0.66	60
	EBTR	D	0.75	110	D	0.85	170
	WBL	C	0.74	**75**	C	0.49	**70**
	WBT	D	**0.91**	**130**	E	**0.99**	**180**
	WBR	A	0.55	-	A	0.19	85
	NBTL	D	0.72	**65**	D	0.30	20
	NBR	D	0.50	50	D	0.01	10
	SBL	D	0.47	60	D	0.85	125
	SBTL	D	0.46	40	D	0.85	115
	SBR	D	0.09	20	C	0.11	70
St Johns St & Charles St / TWSC	*OVERALL*						
	EB	A	0.00	5	A	0.00	5
	WB	A	0.03	5	A	0.01	10
	SB	A	0.01	40	A	0.02	-
St Johns St & Clarke Rd / TWSC	*OVERALL*						
	EB	A	0.02	16	A	0.04	15
	WB	C	0.85	20	B	0.66	10
	NB	A	0.00	43	A	0.00	80
Albert St & St George St / TWSC	*OVERALL*						
	WB	C	0.36	15	A	0.04	10
	SB	A	0.02	10	A	0.22	15
	NB	A	0.31	-	A	0.03	0

Table 3.8: Opening Day + 5 (2027) Background Vehicle Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Barnet Hwy & St Johns St / Signalized	*OVERALL*	D	**1.00**		D	0.85	
	EBL	C	0.53	20	D	0.70	85
	EBTR	D	0.82	**140**	E	**0.91**	**175**
	WBL	**F**	**1.15**	**80**	D	0.50	65
	WBT	D	**0.96**	**135**	**F**	**1.05**	**200**
	WBR	A	0.56	-	A	0.19	145
	NBTL	E	0.81	**80**	D	0.31	20
	NBR	D	0.67	**55**	D	0.01	10
	SBL	D	0.49	60	D	0.85	130
	SBTL	D	0.48	50	D	0.85	120
	SBR	D	0.09	20	C	0.12	**75**
St Johns St & Charles St / TWSC	*OVERALL*						
	EB	A	0.00	5	A	0.00	5
	WB	A	0.03	10	A	0.02	10
	SB	A	0.01	-	A	0.03	-
St Johns St & Clarke Rd / TWSC	*OVERALL*						
	EB	A	0.02	15	A	0.04	15
	WB	C	0.89	20	B	0.68	10
	NB	A	0.00	100	A	0.00	80
Albert St & St George St / TWSC	*OVERALL*						
	WB	E	0.54	15	A	0.04	10
	SB	A	0.02	15	A	0.23	10
	NB	A	0.37	10	A	0.05	-

St. Johns Street / Clarke Road Intersection

Longer queues were also reported on the northbound movements on Clarke Road turning east with a reported 95th percentile queue length of 100m during the AM peak hour. However, it is understood the City of Port Moody intends to widen the northbound Clarke Road to accommodate additional lane. If this widening occurs, it will improve the intersection operation.

Albert Street / St. George Street Intersection

Vehicles making westbound turning movement would experience long delays with additional traffic generated by the school expansion.

Bunt conducted TAC Pedestrian Crossing Warrant analysis for this intersection. Based on the AADT of Albert Street at approximately 9,000 vehicles and a two-lane road, a zebra crosswalk with side-mounted sign is recommended. Curb bulges on all corners are also recommended to narrow down the crossing distance and slow down traffic travelling north-south.

Barnet Highway / St. Johns Street Intersection

Under 2022 background growth conditions, Barnet Highway & St. Johns Street intersection is expected to operate within the overall intersection thresholds. However, the westbound through movement will exceed the defined performance threshold for individual movements with a V/C of 0.91 in the morning peak hour and 0.99 in the afternoon peak hour. All other movements are expected to operate within capacity.

The projected queues of the northbound movements are quite long with 80m or approximately 10 – 12 vehicles long in the morning peak hour. The westbound left movements' queues are also projected to extend beyond the storage length.

Under 2027 background conditions, this intersection is expected to reach its capacity in the morning peak hour due to the background traffic growth and additional 200 trips generated by the school expansion. During the PM peak hour, the overall intersection operation will still be within the performance thresholds, but the westbound through movement will operate above capacity.

The reported capacity and 95th percentile queues in Tables 3.7 and 3.8 are a result of future background growth conditions and school expansion, that would be present regardless of whether the site redevelops or not. It should be noted that the intersection peak hour factor was quite low in the morning peak hour, at 0.86. The volume within the hour was considerably higher during 15-minute period before the school starts. We were assuming that this condition persists in the future when the school expands.

Bunt recommends the following improvements to resolve the capacity issues for the future 2022 background scenario at this intersection regardless of the development:

Option 1:

- For the AM peak period: optimize the signal phasing split between westbound left turn and eastbound through movements, while keeping the cycle length at 108 seconds. This will improve the overall intersection V/C ratio and westbound left turn movement operations while maintaining V/C ratios of other movements below 1.
- For the PM peak period: increase signal cycle length from 118 seconds to 125 and optimize phasing split. This will bring the westbound through movement V/C ratio to 0.90 with an LOS E in horizon year 2022.

Option 2:

- convert the southbound left/through lane into a 2nd exclusive left turn lane, and the exclusive right turn lane into a shared through/right turn lane. This will form dual southbound left turn lanes and a shared southbound through/right turn lane. This configuration is expected to lower the westbound through movement's V/C ratio from 0.99 to 0.94, and the overall intersection V/C from 0.83 to 0.80.

It is understood that the traffic signal at Barnet Highway and St Johns Street is coordinated with other traffic signals on the St Johns Street corridor and possibly also on the Barnet Highway corridor. The coordination objectives for the corridor as a whole may not support the potential mitigation measure of increasing the cycle length, therefore, the second option is presented herein.

Tables 3.9 shows the resulting improvements to the Barnet Highway and St Johns Street intersection with the above listed two mitigation options for the future 2027 horizon year.

Table 3.9: 2027 Background Operations at Barnet Hwy & St. Johns St with Mitigations

MITIGATION	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
AM: Optimized Split **PM:** Increased Cycle Length to 125 Seconds	*OVERALL*	*D*	*0.92*		*D*	*0.84*	
	EBL	C	0.53	25	*E*	*0.84*	*40*
	EBTR	D	0.89	150	*D*	*0.86*	*170*
	WBL	E	**0.97**	**80**	*D*	*0.58*	*70*
	WBT	D	**0.96**	130	*E*	*0.96*	*145*
	WBR	A	0.56	120	*A*	*0.19*	*45*
	NBTL	E	0.81	**90**	*E*	*0.32*	*30*
	NBR	D	0.45	**55**	*D*	*0.01*	*10*
	SBL	D	0.49	55	*D*	*0.83*	*130*
	SBTL	D	0.48	45	*D*	*0.84*	*125*
	SBR	D	0.09	20	*C*	*0.12*	*80*
Dual SBL and a shared SBTR	*OVERALL*	*D*	*0.89*		*D*	*0.82*	
	EBL	C	0.57	25	D	0.66	60
	EBTR	D	**0.91**	160	D	0.84	**190**
	WBL	E	**0.90**	**80**	C	0.49	**75**
	WBT	D	**0.93**	125	E	**0.97**	175
	WBR	A	0.56	-	A	0.19	110
	NBTL	E	0.81	**90**	D	0.31	20
	NBR	D	0.49	**55**	D	0.01	**15**
	SBL	D	0.44	45	D	0.83	**125**
	SBTR	D	0.20	30	C	0.25	60

It is noted that the projected queues of the northbound movements on Albert Street would almost reach St. George Street. Bunt recommends widening this south leg of the intersection to formally accommodate an exclusive northbound left turn lane, one through lane, and an exclusive right turn lane. This will not require right-of-way from Marcon site, but may require some land acquisition from the property to the east of Albert Street due to the lane alignment to the north leg. This laning configurations will improve the overall intersection operations and critical movements' operations.

3.2.2 Future Total Traffic Operations

Table 3.10 summarizes the total operation traffic conditions of all intersections within the study area for horizon year 2022. As part of the site development, the shared eastbound through/right turn lane will be extended as far as the west property line. This extension was included in the Total conditions analysis. Other parameters were kept as per Background condition without any mitigations. .

Table 3.10: Opening Day (2022) Total Vehicle Operations with Signal Change

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Barnet Hwy & St Johns St / Signalized	*OVERALL*	*D*	*0.88*		*D*	*0.86*	
	EBL	C	0.52	30	D	0.72	45
	EBTR	D	0.76	95	E	**0.97**	160
	WBL	D	0.90	**85**	D	0.58	**85**
	WBT	D	**0.94**	**110**	**F**	**1.04**	195
	WBR	A	0.55	-	A	0.19	140
	NBTL	E	0.82	**80**	D	0.43	30
	NBR	D	0.57	55	D	0.03	20
	SBL	D	0.47	55	D	0.85	125
	SBTL	D	0.47	40	D	0.83	115
	SBR	D	0.09	20	C	0.11	**85**
St Johns St & Charles St / TWSC	*OVERALL*						
	EB	A	0.00	5	A	0.00	5
	WB	A	0.03	10	A	0.01	10
	SB	A	0.01	0	A	0.02	0
St Johns St & Clarke Rd / TWSC	*OVERALL*						
	EB	A	0.02	10	A	0.04	15
	WB	C	0.87	25	B	0.67	10
	NB	A	0.00	40	A	0.00	60
Albert St & St George St / TWSC	*OVERALL*						
	WB	C	0.33	15	A	0.04	15
	SB	A	0.03	15	A	0.22	10
	NB	A	0.30	-	A	0.03	0

The development traffic is expected to reduce the overall intersection performance of Barnet Highway & St. Johns Street by V/C ratio of 0.03 The westbound through movement on St. Johns Street at Barnet Highway will operate above capacity, and the eastbound through/right movements will reach its capacity with V/C ratio of 0.97. All other movements are expected to operate within capacity, while queuing issues remained the same as under background conditions.

All other intersections will remain operating within the performance thresholds in the Opening Day of the site.

The 2027 AM analysis was conducted with the signal phasing split optimized for the intersection of Barnet Highway & St. Johns Street, but no changes were implemented for the PM analysis. The analysis results for horizon year 2027 are summarized in **Table 3.11**.

Table 3.11: Opening Day + 5 (2027) Total Vehicle Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Barnet Hwy & St Johns St / Signalized	*OVERALL*	*D*	*0.92*		*D*	*0.86*	
	EBL	C	0.59	25	D	0.72	40
	EBTR	E	**0.98**	100	E	**0.97**	**170**
	WBL	E	**0.94**	**80**	D	0.58	85
	WBT	D	**0.95**	140	**F**	**1.04**	**200**
	WBR	A	0.56	-	A	0.19	165
	NBTL	E	**0.91**	**100**	D	0.43	30
	NBR	D	0.52	**55**	D	0.03	20
	SBL	D	0.50	55	D	0.85	**130**
	SBTL	D	0.50	50	D	0.83	**120**
	SBR	D	0.09	25	C	0.11	**80**
St Johns St & Charles St / TWSC	*OVERALL*						
	EB	A	0.00	5	A	0.00	5
	WB	A	0.03	15	A	0.02	10
	SB	A	0.01	0	A	0.03	-
St Johns St & Clarke Rd / TWSC	*OVERALL*						
	EB	A	0.02	10	A	0.04	15
	WB	C	0.89	25	B	0.67	10
	NB	A	0.00	40	A	0.00	**100**
Albert St & St George St / TWSC	*OVERALL*						
	WB	E	0.55	20	A	0.04	15
	SB	A	0.02	10	A	0.22	10
	NB	A	0.37	20	A	0.03	-

Table 3.12 summarizes the operation performance of Barnet Hwy & St. Johns St intersection with the aforementioned improvement options for 2022.

Table 3.12: 2022 Total Operations at Barnet Hwy & St. Johns St with Mitigations

MITIGATION	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
AM: Optimized Split **PM:** Increased Cycle Length to 125 Seconds	*OVERALL*	*D*	*0.89*		*D*	*0.84*	
	EBL	C	0.52	30	E	0.83	40
	EBTR	D	0.78	85	E	0.90	130
	WBL	D	0.86	80	D	0.65	75
	WBT	D	**0.94**	120	E	**0.95**	155
	WBR	A	0.55	-	A	0.19	45
	NBTL	E	0.82	**80**	E	0.45	25
	NBR	D	0.35	**50**	D	0.03	15
	SBL	D	0.47	55	D	0.85	130
	SBTL	D	0.47	45	D	0.83	125
	SBR	D	0.09	25	C	0.12	80
Dual SBL and a shared SBTR	*OVERALL*	*C*	*0.84*		*C*	*0.81*	
	EBL	C	0.54	25	D	0.64	60
	EBTR	D	0.72	85	D	0.89	**155**
	WBL	C	0.78	**80**	C	0.53	**80**
	WBT	D	0.86	130	E	**0.96**	165
	WBR	A	0.53	-	A	0.19	65
	NBTL	E	0.79	85	D	0.43	30
	NBR	D	0.31	**55**	D	0.03	**20**
	SBL	D	0.41	**50**	D	0.83	120
	SBTR	D	0.18	30	C	0.32	80

Table 3.13 summarizes the 2027 analysis results with the additional northbound left turn lane. It should be noted that this widening is recommended for background conditions, regardless of the proposed development.

Table 3.13: 2027 Total Operations at Barnet Hwy & St. Johns St with Mitigations

MITIGATION	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
AM: Optimized Split **PM:** Increased Cycle Length to 125 Seconds New Exclusive NBL	*OVERALL*	*D*	*0.88*		*D*	*0.83*	
	EBL	C	0.57	25	E	0.82	40
	EBTR	E	**0.95**	90	E	0.91	115
	WBL	E	**0.91**	**80**	D	0.65	85
	WBT	D	**0.92**	145	E	**0.95**	140
	WBR	A	0.56	-	A	0.19	-
	NBL	D	0.77	50	E	0.35	25
	NBT	D	0.21	70	D	0.13	15
	NBR	D	0.49	55	D	0.03	20
	SBL	D	0.50	60	D	0.84	130
	SBTL	D	0.50	50	D	0.82	130
	SBR	D	0.09	20	C	0.12	80
Dual SBL + a Shared SBTR New Exclusive NBL	*OVERALL*	*D*	*0.88*		*D*	*0.80*	
	EBL	C	0.57	35	C	0.61	60
	EBTR	E	**0.95**	105	D	0.88	**140**
	WBL	E	**0.91**	**80**	C	0.51	**75**
	WBT	D	**0.92**	130	E	**0.95**	170
	WBR	A	0.56	-	A	0.19	65
	NBL	D	0.77	50	D	0.34	25
	NBT	D	0.21	75	D	0.12	15
	NBR	D	0.49	50	D	0.03	15
	SBL	D	0.44	45	D	0.83	125
	SBTR	D	0.21	30	C	0.32	110

Albert Street/Barnet Highway & St. Johns Street Intersection

Comparison between Opening Day + 5 Total and Opening Day + 5 Background traffic conditions showed the expected development traffic will not have a significant impact on traffic operations.

The capacity concerns identified in the background traffic conditions can also be mitigated for improved total condition operations and reduce the V/C ratio to below 1.

Queuing issues under background conditions would remain the same under future total conditions.

3.2.3 Site Access Traffic Operations

Site access traffic analysis was conducted at the proposed vehicle access on Albert Street between St Johns Street and St George Street. This access was modeled to function as a full-movement, three-leg, two-way stop-controlled intersection, with the site access functioning as a stop-controlled movement.

Table 3.14 summarizes Opening Day and Opening Day + 5 Total Traffic operations for the weekday AM and weekday PM peak hours at the site access.

Table 3.14: Site Access Traffic Operations

SCENARIO	INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
			LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Opening Day	Site Access & Albert St (TWSC)	EBLR	C	0.29	21	B	0.10	17
		NBLT	A	0.00	84	A	0.00	3
		SBTR	A	0.33	38	A	0.23	3
Opening Day + 5	Site Access & Albert St (TWSC)	EBLR	C	0.23	20	B	0.11	15
		NBLT	A	0.00	80	A	0.00	5
		SBTR	A	0.27	15	A	0.24	-

Traffic operations at the site access were within the recommended performance thresholds. An on-site magazine storage of 22 m (nearly a 3-vehicle queue) is recommended as per the results of this analysis. The current parkade ramp is approximately 35m long, and thus will be able to accommodate the projected queues of vehicles exiting the parkade.

3.2.4 Summary of Recommended Mitigations

Albert Street/Barnet Highway & St. Johns Street

1. Background 2022:
    - o AM peak period: optimize westbound left turn and eastbound through movements signal phasing while keeping the cycle length at 108 seconds;
    - o PM peak period: increase cycle length to 125 seconds or modify the north leg to include dual southbound left turn lanes and a shared through/right turn lane.
2. Background 2027:
    - o Provide an exclusive northbound left turn lane, through lane, and a right turn lane which may require right-of-way from the property east of Albert Street.

No further improvements are required to accommodate the proposed development site traffic.

Albert Street/St. George Street

i. Curb bulges and zebra crossing are recommended at this intersection to provide safe crossing during school period.

4. SITE PLAN DESIGN REVIEW

4.1 Site Access Design

The site's parkade will be accessed via a proposed driveway off of Albert Street, south of the St Johns Street and Barnet Highway intersection. Vehicular access to the underground parkade consists of a two-lane ramp: one inbound (westbound) and one outbound (eastbound). The proposed site plan is shown in **Exhibit 4.1**.

4.2 Vehicle Parking Supply

Table 4.1 summarizes the required number of parking spaces according to the City of Port Moody Zoning Bylaw based on the worst case parking supply scenario with 30% Office and 70% Retail uses.

Table 4.1: Vehicle Parking Supply Requirement & Provision

LAND USE	TYPE	QUANTITY	BYLAW RATE	# OF STALLS REQ.	TOTAL STALLS REQ.	TOTAL PROVIDED
Residential	Ownership	147 units	1 / studio or 1 bedroom unit	147	316	316
		71 units	1.5 / 2+ bedrooms unit	107		
	Visitor		0.2 / unit for 100 units 0.1 / unit for each additional unit	32		
	Market Rental	20 units	1.1 / unit	22		
	Visitor		0.2 / unit for 100 units 0.1 / unit for each additional unit	4		
	Below Market Rental	4 units	0.9 / unit	4		
	Visitor		0.1 / unit	0		
Commercial	Retail	465 sq m	1 space/40sqm floor area	12	16	17
	Office	186 sq m	1 space/50sqm floor area	4		
			TOTAL		332	333

The table shows that the proposed development with this land use mix would require a total of 332 parking spaces according to the Bylaw with the unit mix as shown. If all commercial spaces are occupied by retail, the minimum requirement will be 333 parking spaces. The current parking plan dated September 2020 shows a total of 333 parking spaces which satisfies the minimum parking requirements.

A total of 60 small car spaces are proposed as part of the parking supply. This equates to 18% of the total parking requirement for the site which is well below the maximum allowable of 33%.

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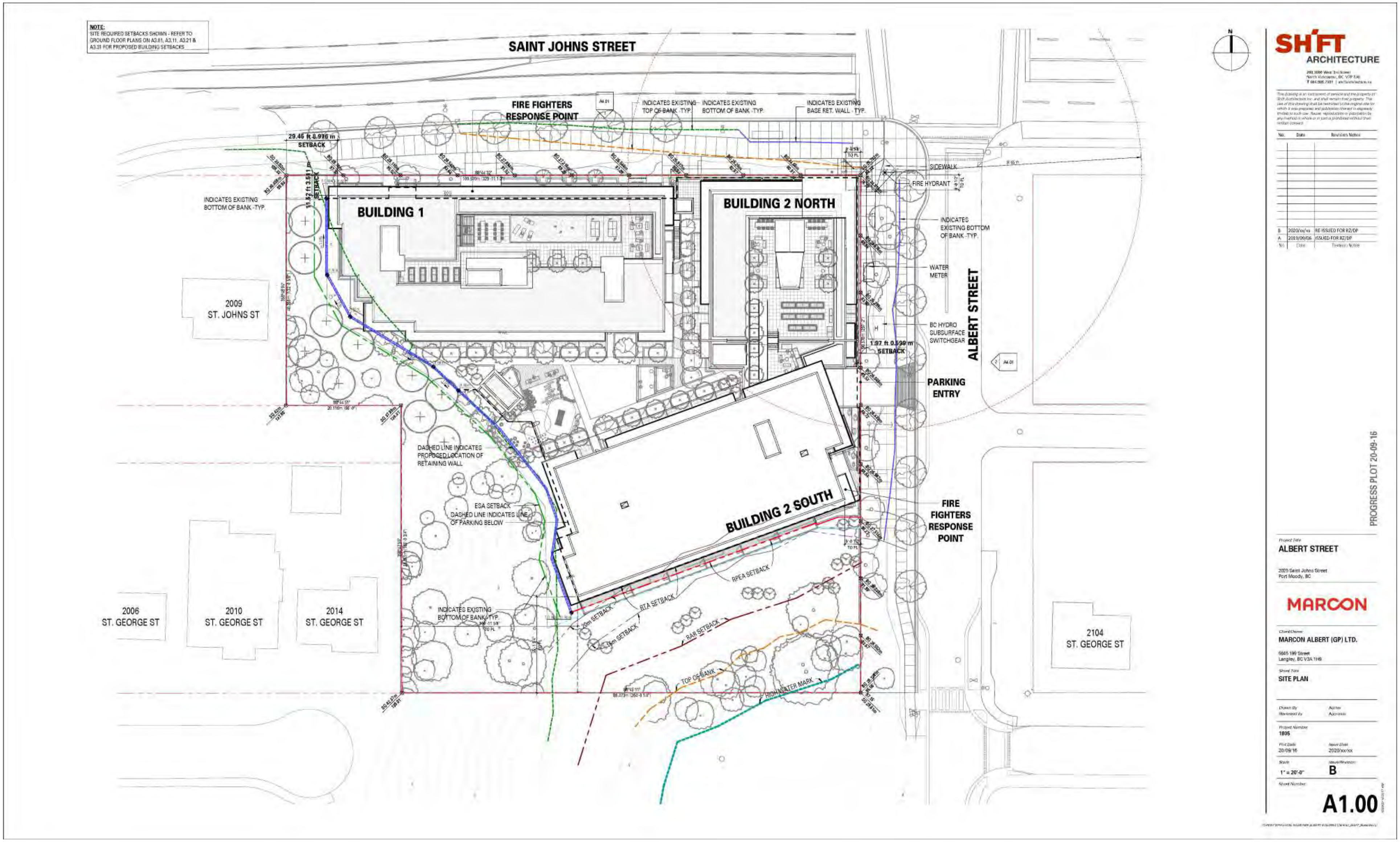

Exhibit 4.1
Site Plan

04-18-0480

2025 St Johns St TIA
September 2020

bunt & associates

Accessible parking is required based on total off-street parking spaces provided. Specifically:

- 4 accessible parking spaces are required for 125-174 total off-street parking spaces; and,
- 1 additional accessible parking space is required for each additional 50 off-street parking spaces or part thereof in excess of 50.

According to this requirement, 7 accessible parking spaces are required for the proposed development. The developer is supplying 8 accessible parking spaces in total, thus, satisfies the bylaw requirements.

4.3 Bicycle Parking Supply

Well managed, secure, accessible and covered bicycle parking will be provided as part of the development plan. **Table 4.2** summarizes bicycle parking requirements and the proposed supply.

Table 4.2: Bicycle Parking Supply Requirement & Provision –both Low and High Scenarios

LAND USE	QUANTITY	UNITS	BYLAW RATE	# OF STALLS REQ.	TOTAL PROVIDED
Residential	242	units	long term: 1.5 spaces/dwelling unit	363	364
Retail/Office	650	sqm	long term: 1 space/>750sqm floor area	0	
Residential/Retail/Office	2	buildings	short term: 6 spaces/building	12	12
TOTAL				375	376

The table shows that the development will supply a total of 376 stalls for long term and short term use. This is more than the minimum bylaw required number of stalls and therefore, satisfies the minimum requirements.

4.4 Loading Supply

The City of Port Moody Zoning Bylaw requires *two* loading spaces for retail use for gross floor area between 465sqm and 2323sqm and *one* loading space for office use for a gross floor area of up to 2,787 sqm. This requirement is based on the worst case scenario of 70% retail use and 30% office use. The loading spaces have to be 9.2m L x 3m W x 4.3m H in size which can fit an SU-9 vehicle. No off-street loading space is required for the residential component of the development.

As the site is small and environmentally constrained on two sides, providing truck-sized loading spaces that meets the bylaw requirement is challenging. Provision of the required loading spaces inside the parkade would require a 4.3m height clearance, which is not feasible. In addition, the commercial area allocated for the proposed development is likely to be used for smaller-scale retail, medical or general office use which would not require frequent use of single-unit trucks for loading and unloading activity. The proposed retail will not include any food services or restaurant uses that may generate larger vehicles.

Previous loading studies conducted by Bunt at residential buildings around the Lower Mainland reveal that PTAC sized vehicles represented 57% of loading activities while only 11% loading activities were done by single-unit trucks larger than 8m long. The rest was done by step van-sized vehicles used by courier, Canada post, etc.

Bunt also conducted loading surveys at various office towers in downtown Vancouver. The survey results indicated that 78% loading activities were done by PTAC sized vehicles, while the rest were done by step van and single-unit trucks. For the size of the commercial space being proposed, it is anticipated that almost all of the loading activities will be done by PTAC sized vehicles.

For a mixed-use site, there is the ability to share loading spaces as the loading demand profile throughout the day varies between different uses. Therefore, Bunt feels that the proposed two PTAC sized loading spaces located underground can accommodate the anticipated demand of the proposed mixed-use site at most times.

Therefore, Marcon is proposing a loading relaxation for the site by providing two passenger car sized loading spaces (5.6m x 2.5m X 2.3m) on the P1 level in place of the bylaw required truck-sized loading spaces. Occasional demand for a large truck is proposed to be provided on-street in a commercial loading zone located in the parking bay on the west side of Albert Street. The loading zone will be designated with standard signage to indicate its use for loading activity during weekday commercial delivery hours (7AM to 3 PM). Outside of these hours, it can be used for residents move-in/move-out activities. The proposed loading zone on Albert Street is shown in **Exhibit 4.2**.

4.5 Parking Layout & On-Site Vehicle Circulation

AutoTURN software was used to test the on-site vehicle circulation, loading and garbage collection operations. The design vehicle used for testing the circulation and loading stalls was a large Transportation Association of Canada large passenger vehicle, or "PTAC" which represents vehicles up to and including panel vans and light duty trucks. Garbage collection was tested using a 7.10m Low Pro Compactor. All turning path exhibits are included in **Appendix E**.

As shown in the exhibits, Bunt recommends one-way circulation (clockwise) for the north drive aisles of the P1 parking level to prevent conflict due to concurrent vehicle movements. It can also been seen that both loading spaces and the garbage area are accessible for the design vehicles.

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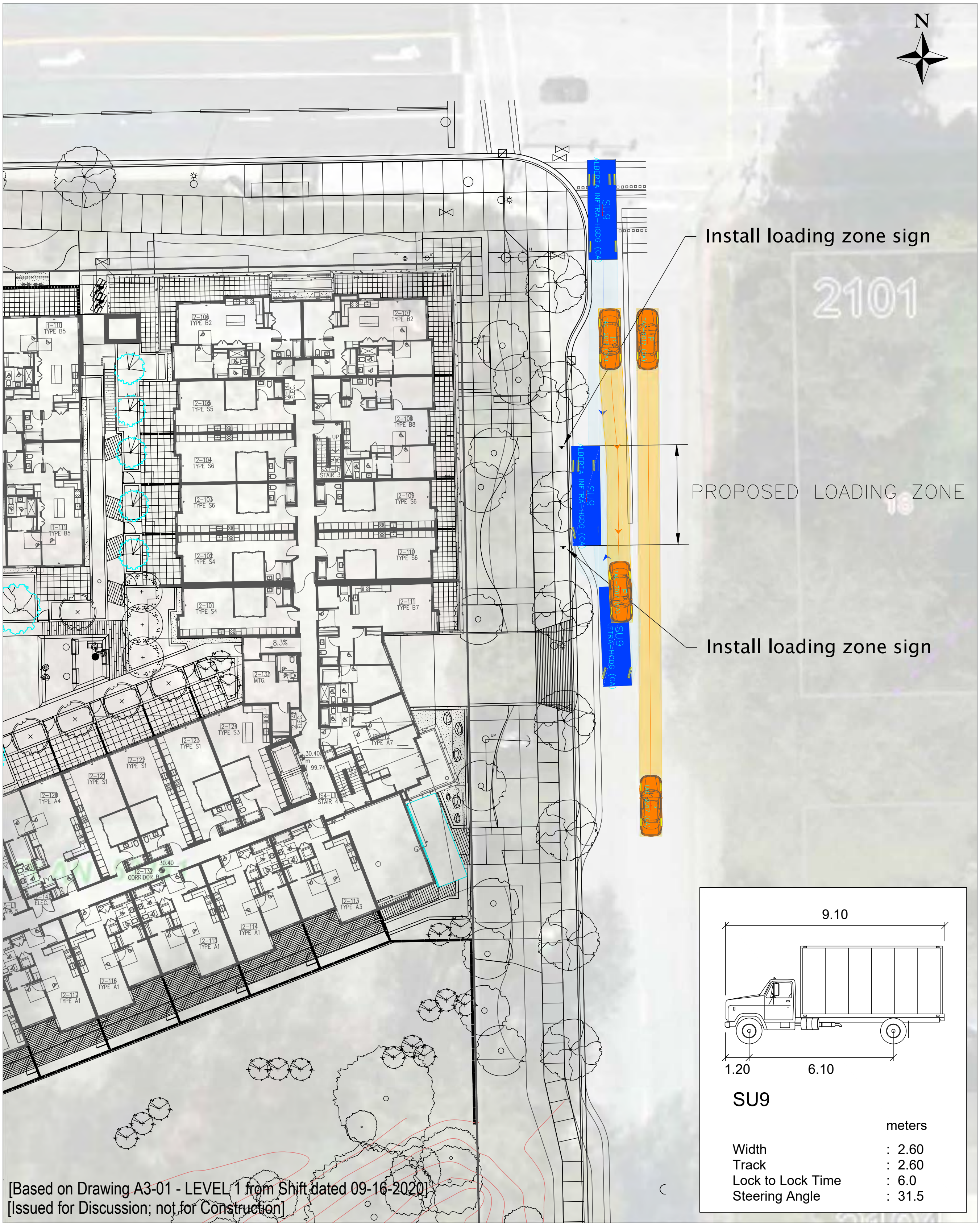

Exhibit 4.2

Proposed Loading Zone

2025 St. Johns St TIA

04.18.0480 September 2020 Scale 1:500 on Letter Prepared by YL

5. SIGHTLINE ANALYSIS

City of Port Moody requested that sightline analysis be completed for the multi-use paths on Albert Street and St. Johns Street fronting 2025 St. Johns Street development. The analysis was conducted for pedestrians and cyclists approaching the signalized intersection from the west and south based on methodology outlined in the Transportation Association of Canada (TAC) Chapters 2, 5, and 6.

Exhibit 5.1 shows a vehicle travelling eastbound on St. Johns Street and northbound on Alberta Street at 50km/h able to see pedestrians walking on the multi-use paths approaching the curb letdown, and have sufficient distance required of 74m to slow down and stop when necessary.

Both St. Johns Street and Albert Street have 8% downgrade approaching the intersection. Based on TAC Chapter 5, cyclists can travel at a speed of 40km/h to 50 km/h on a bike lane/path with a downgrade slope above 5%. Since this is a multi-use path, a speed of 40km/h was assumed as it is unlikely that cyclists can travel faster than that when sharing the paths with pedestrians. The stopping sight distance for 40km/h was calculated to be 65m.

Exhibit 5.2 shows a vehicle stopping at the stop bar on eastbound St. Johns Street and northbound Albert Street able to see cyclists approaching the intersection at 40km/h, and the cyclist has enough distance to break and stop when necessary.

The current design provides clear sight distance for vehicle, cyclist and pedestrian approaching the intersection from the west and south as the building wall was set back from the property line. The design team will ensure that the area within the sight distance triangles in Exhibits 5.1 and 5.2 would be free of shrub higher than 1.2m.

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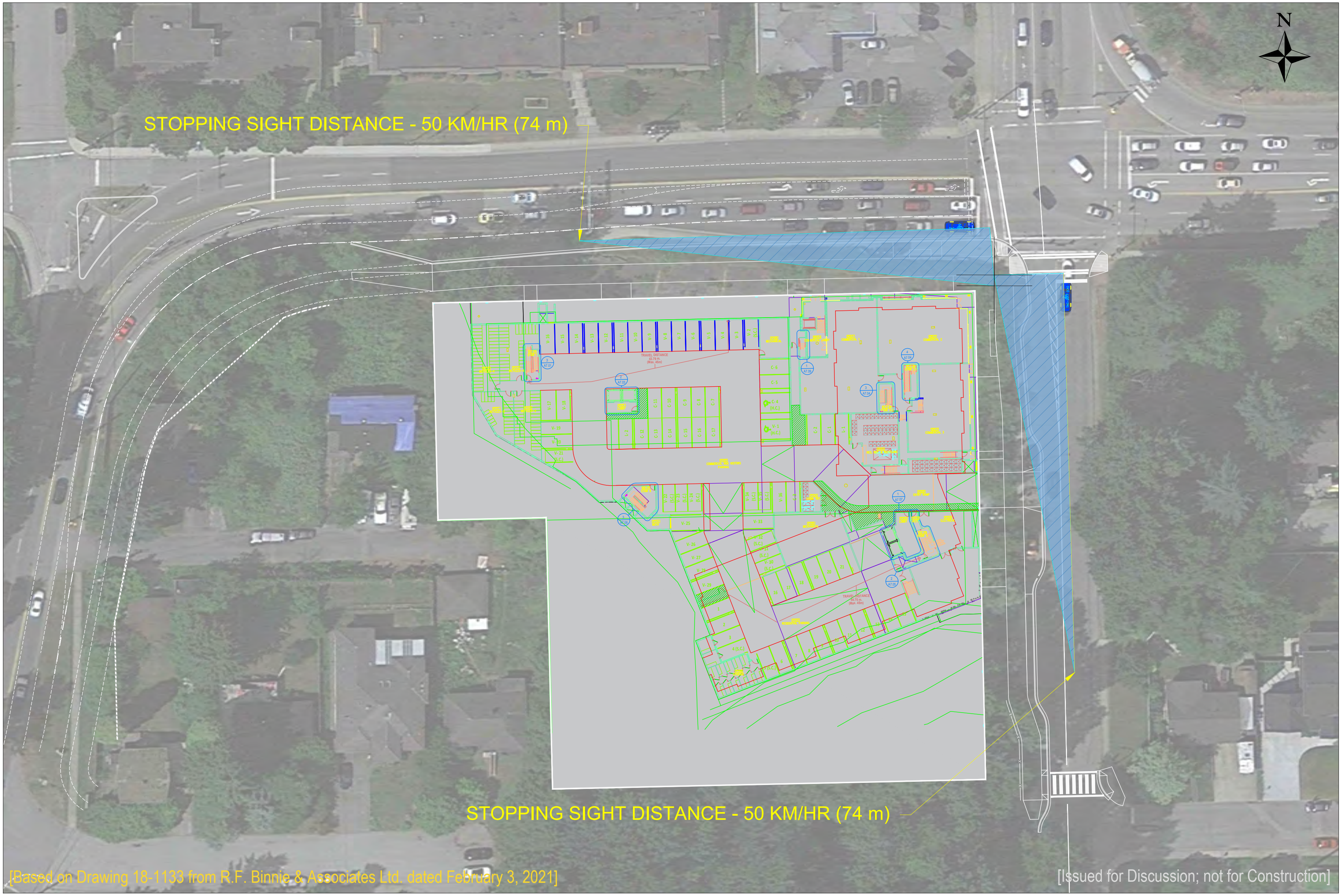

Exhibit 5.1

Vehicle to Pedestrian Sightline Analysis

2525 St. Johns St TIA

04-18-0480 February 2021 Scale 1:1000 on Letter Prepared by BC

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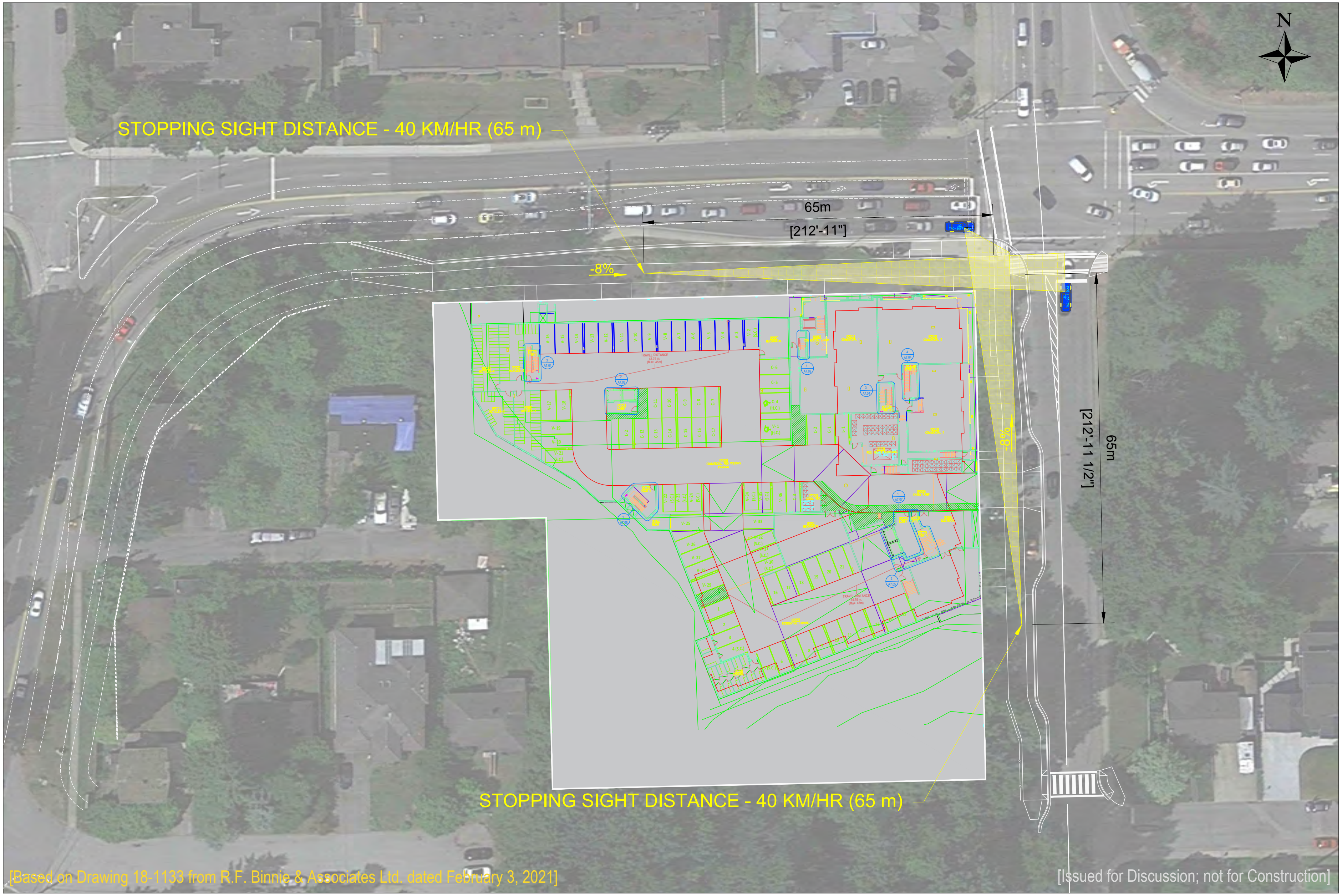

Exhibit 5.2

Vehicle to Cyclist Traveling @40kph Sightline

2525 St. Johns St TIA

04-18-0480 February 2021 Scale 1:1000 on Letter Prepared by BC

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6. CONCLUSIONS & RECOMMENDATIONS

A summary of Bunt's conclusions and recommendations from the analysis conducted in this TIA is provided below.

6.1 Conclusions

ii. Marcon Developments Ltd. (Marcon) is proposing to develop approximately 550 SQM (7,000 sq ft) of commercial space and 242 residential units on the vacant site at the southwest corner of St Johns Street and Barnet Highway/Albert Street in the City of Port Moody.

iii. The proposed development is located on the Frequent Transit Network (FTN), meaning that buses serve the site with headways of 15 minutes or better for 15 hours/day, 7 days a week. These buses connect with the Moody Centre station, providing access to the Sky Train Millennium Line and the West Coast Express commuter rail service, via an approximate 6 minute transit trip.

iv. Sidewalks are provided for pedestrians on Albert Street, St Johns Street, Clarke Road, Barnet Highway and St George Street. Pedestrian crossing opportunities are also provided at the Barnet Highway and St Johns Street intersection with crosswalks on all four legs of the intersection.The study area is well connected for bicyclists to access all directions to and from the proposed development site.

v. In the existing conditions, westbound through movement on St Johns Street at the Barnet Highway intersection is nearing capacity with a V/C ratio of 0.96 during the weekday PM peak hour. This V/C ratio is reported to increase to 1.05 in the 2027 Background Condition, in the PM peak hour. Therefore, this movement will be over capacity regardless of whether the site redevelops.

vi. The northbound movement queue, at Clarke Street and St Johns Street was observed to extend beyond St George Street during the weekday PM peak hour. The westbound left and northbound movements on Barnet Highway at St Johns Street intersection are exceeding the storage lengths available during the weekday AM peak hour.

vii. The proposed form of development is anticipated to generate, under worst case land use assumptions for the commercial uses, approximately 102 to 128 two-way vehicle movements in the AM and PM peak-hour periods, respectively. The site traffic impact onto the road network is expected to be low, as it contributes 4% or less of future total traffic at all study area intersections.

viii. Comparisons between total traffic conditions and background traffic conditions show no significant impacts to the road network due to the proposed development.

ix. The site's parking supply satisfies the bylaw requirements. The proposed plan will supply 333 parking spaces for residential, commercial and visitor use. The total supply for bicycle stalls will include 376 spaces. The City of Port Moody Zoning bylaw requires 332 vehicle parking spaces and 375 bicycle spaces for the proposed development.

x. Marcon is seeking a loading relaxation for the development due to the significant environmental site constraints to the south and west. The proposed loading supply includes two passenger car spaces within the parkade in lieu of the required three truck-sized loading space per the City of Port Moody Zoning Bylaw. Marcon is proposing to utilize the parking bay fronting Albert Street to accommodate occasional loading activities of large single-unit trucks. Based on Bunt's loading observations at various office and residential buildings in the Lower Mainland, the proposed two passenger-sized loading spaces will be able to accommodate the majority of loading demand for the site.

xi. The new multi-use paths on Albert Street and St. Johns Street fronting the development will meet the minimum required sight distance according to TAC guidelines for cyclist and pedestrians approaching the intersection from the south and west.

6.2 Recommendations

Barnet Highway / Albert St / St. Johns Street Intersection

Bunt recommends optiming the split times during the weekday AM peak period to accommodate background traffic growth in 2022. For the PM peak condition, Bunt recommends increasing the signal cycle length from 108 seconds to 125 seconds and optimizing split times. However, any changes in signal cycle length and split times should be reviewed in the context of the overall signal coordination strategy on Barnet Highway and St Johns Street.

Alternate improvement to improve operation performance in 2022 will be modifying the north leg of the intersection into dual southbound left turn lanes, and a shared through/right turn lane.

To further accommodate the background traffic growth in 2027, in particular the planned school expansion to 1500 students, Bunt recommends providing additional lane on the south leg of the intersection to provide a separate northbound left turn lane, through lane, and a right turn lane.

Albert Street / St. George Street

Bunt recommends implementing zebra-crosswalk at Albert Street and St. George Street intersection, as well as constructing curb-bulges on all corners of the intersection to facilitate shorter crossing distance for students and slow down vehicles travelling north-south. This improvement shall be implemented regardless of Albert site development.

APPENDIX A

Terms of Reference

APPENDIX B

Traffic Data

APPENDIX C

Synchro Reports

APPENDIX D

AutoTURN Analysis