TRANSPORTATION PLANNERS AND ENGINEERS

bunt & associates

1005 Tillicum Road

Transportation Review and Parking Variance

Version 2

Prepared for

Xquimalt Developments Ltd

Date

March 6, 2024

Project No.

08-23-0067

March 6, 2024
08-23-0067

Xeniya Vins
Xquimalt Developments Ltd.
842 Carrie Road
Victoria, BC
V9A 4N9

Dear Xeniya:

Re: 1005 Tillicum Road
Transportation Review and Parking Variance

Please find attached our Transportation Review and Parking Variance report for the proposed development at 1005 Tillicum Road in Esquimalt, BC. This study provides a parking supply review and parking variance rationale, reviews site access operations, outlines a Transportation Demand Management (TDM) Plan, and provides a swept path analysis of on-site vehicle manoeuvres.

We trust this study will be helpful in the development rezoning application. Please do not hesitate to contact us if you have any questions.

Yours truly,
Bunt & Associates

Jason Potter, M.Sc., PTP
Associate | Senior Transportation Planner

Abdi Idle, EIT
Transportation Analyst

CORPORATE AUTHORIZATION

Prepared By:	Abdi Idle, EIT Transportation Analyst	Bunt & Associates Engineering Ltd. 530-645 Fort Street Victoria, BC V8W 1G2 Canada
Reviewed By:	Jason Potter, M.Sc., PTP Senior Transportation Planner	Telephone: +1 604 685 6427 Facsimile: +1 604 685 6579
		Date: March 6, 2024 Project No. 08-23-0067
Approved By:	Yulia Liem, P.Eng. PTOE Principal	Status: Version 2

TABLE OF CONTENTS

EXHIBITS

FIGURES

TABLES

EXECUTIVE SUMMARY

Xquimalt Developments Ltd. proposes 34 residential condo units with approximately 47 m^2 of ground-floor commercial space at 1005 Tillicum Road.

The proposed parking supply of 19 spaces (0.56 spaces per unit) is 12 spaces short of the Bylaw requirement of 31 vehicle spaces, therefore a vehicle parking variance is required.

This variance from Bylaw is comprised of:

- 13 residential spaces under bylaw requirements,
- +1 Modo car-share vehicle over bylaw requirements.

The discrepancy between the variance of 12 spaces and the 13 spaces presented above is due to one of the on-site parking spaces being provided to a car-share vehicle, The car-share vehicle is a primary transportation demand management offering of the site and is in our view a significant support for the proposed parking supply.

The development proposes a list of TDM measures to reduce the parking requirements. The TDM measures proposed includes:

- Bicycle parking (68 Long Term & 8 Short-Term) that exceeds the bylaw requirements. The long-term spaces include 8 cargo spaces,
- One Modo car-share vehicle and an on-site parking space for the car-share vehicle,
- Up to 71 Modo car share memberships for the 34 units,
- $100 of driving credits to each occupant joining Modo for the first time,
- A promotional incentive to the commercial tenant of the proposed development allowing them to open Modo business accounts and register their employees with Modo for business usage without paying membership/set-up fees,
- Transportation Option Information Package or Brochure for new residents.

Bunt applied Esquimalt's parking bylaw update to our analysis. With the new bylaw's TDM measures reduction factors applied, the vehicle parking space requirement is reduced by eight (8) spaces.

Additionally, cash in lieu of parking can be added to account for up to 4 parking spaces, equating to 13% of the total spaces required. This results in a net zero variance.

The site's proposed access on Tillicum Road was examined using Synchro 11 traffic modeling software. This analysis indicated the full movement site access is anticipated to operate well within typically acceptable performance thresholds. This access analysis was further supported by SimTraffic results which better account for the gaping impacts of the adjacent intersection (Tillicum & Craigflower).

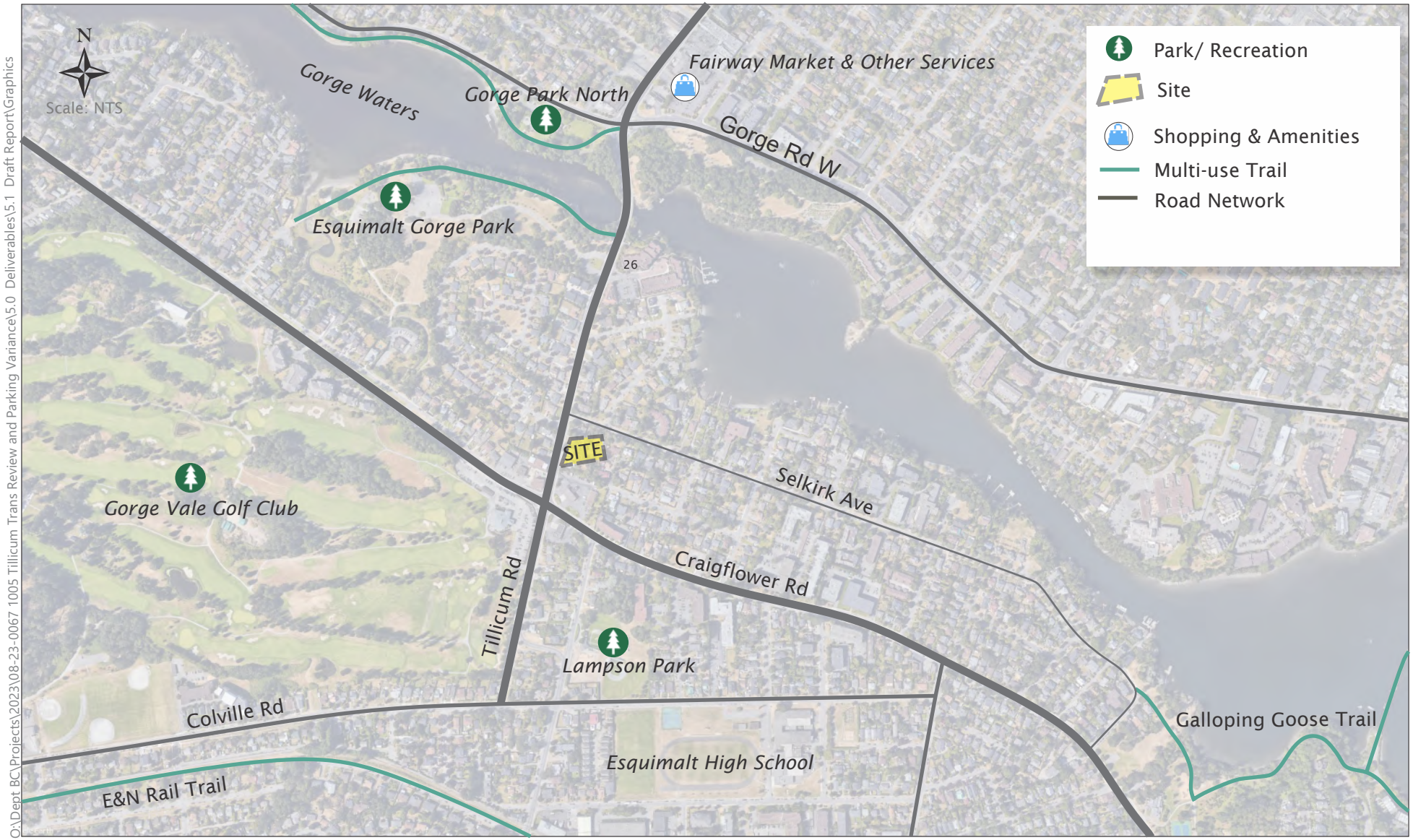
1. INTRODUCTION

1.1 Proposed Development Plan

Xquimalt Developments Ltd is proposing a 5-storey mixed-use building with 34 condo residential units and 1 commercial retail unit at 1005 Tillicum Road in Esquimalt, BC. The tenure of the residential units (rental or strata) is yet to be determined; therefore this report will present impacts of both tenure scenarios. The retail component comprises of approximately 47m^2 gross floor area (GFA) on the ground floor. The apartment residential units are a mix of unit sizes: studio (9%), one bedroom (38%), two-bedroom (29%), and three-bedrooms (24%).

The purpose of this study is to:

- Provide information on land use, relevant plans, as well as existing and future land road, transit, cycling, and walking networks in the study area;
- Review traffic operations at the proposed site access. Summarize the requirements from the Township of Esquimalt Zoning Bylaw and assess the viability of the proposed vehicle parking supply;
- Confirm functionality of required vehicle maneuvers on the proposed site plan; and,
- Provide a Transportation Demand Management (TDM) Strategy for the proposed development that is appropriate for the site and level of parking variance sought.



O:\Dept BC\Projects\2023\08-23-0067 1005 Tillicum Trans Review and Parking Variance\5.0 Deliverables\5.1 Draft Report\Graphics

Exhibit 1.1

Site Location

1005 Tillicum Transportation Review & Parking Study
08-23-0067 January 2024

bunt & associates

1.2 Proposed Development

The proposed development consists of 34 residential condo units and approximately 47 m^2 of ground-floor commercial space. At this stage of development planning, it is assumed the commercial space will be a local area serving café or restaurant. **Table 1.1** summarizes the proposed land uses.

Table 1.1: Proposed Land Uses

LAND USE	DENSITY	UNITS
Condos	34	Dwelling Units
Café / Restaurant	47	Square Metres

The development proposes 19 at-grade vehicle parking spaces and 1 loading space. This results in a parking supply ratio of 0.56 space/unit.

Vehicle access to the site's vehicle parking is on Tillicum Road.

The proposed site plan illustrated **Exhibit 1.2**.

N

Scale: NTS

TILLICUM RD

UTILITY POLE

FENCE ALONG PL

36" OVERHANG

34" OVERHANG

UNOBSTRUCTED AREA

BALCONY ABOVE

LINE OF WALL ABOVE

LOADING

MODO

DRIVEWAY

WATER METER

19 STALLS

BBQ AREA

OPEN SPACE
298.6m² (3,214.1sf)

FENCE ALONG PL

ELECT

RETAINING WALL

GUTTER LINE

SIDEWALK

CRU

ELEVATOR

LOBBY

WASTE ROOM

MECH. ROOM

UNIT B
LIVE WORK

GARAGE

UNIT A
LIVE WORK

GARAGE

KAYAK RACK

LINE OF CANOPY ABOVE

PLAZA

WIDENED PUBLIC WALKWAY

CENTRELINE OF PUBLIC THROUGHFARE

FUTURE EDGE OF PUBLIC THROUGHFARE

A301

A302

Exhibit 1.2
Site Plan

bunt & associates

2. EXISTING CONDITIONS

2.1 Land Use

Exhibit 2.1 illustrates the site context and accessibility to the surrounding area which is predominantly residential. The exhibit highlights cycling and transit infrastructure, as well as walk-estimated times and nearby points of interest, including schools, parks, and other goods and services.

2.2 Existing Transportation Network

A site visit was conducted on January 3rd, 2024, and January 4th, 2024, to document existing conditions in the study area. The existing road, transit, cycling, and walking networks are described below.

2.2.1 Road Network

The proposed site is bounded by Tillicum Road to the west. Tillicum Road is a major north-south arterial road that intersects with Craigflower Road approximately 70m south of the site. **Table 2.1** summarizes the existing street characteristics of the study area road network.

Table 2.1: Existing Street Characteristics

STREET	CLASSIFICATION	NUMBER OF TOTAL TRAVEL LANES	POSTED SPEED	PARKING FACILITIES
Tillicum Road	Arterial	2	50 km/h	None
Craigflower Road	Arterial	2	30 km/h	None

2.3 Walking Network

Sidewalks are provided on both sides of Tillicum Road, including along the bridge north of the site that provides access to the District of Saanich and Fairway Market, the nearest grocery store. The development site has a "Walk score" of 77 out 100 using the "Walk score" tool. This indicates the location is walkable and that most errands can be accomplished on foot.

Pedestrian crossings are available at the Tillicum Road and Craigflower Road intersection which is approximately 70m south of the site or at the Tillicum Road and Gorge Road West intersection which is approximately 570m to the north of the site. Walking trails along the Gorge Waterway and waterfront parks including Esquimalt Gorge Park are within an approximate five-minute walk from the site.

2.4 Cycling Network

A bike lane is provided for cyclists crossing Tillicum Bridge, and bike lanes/ shoulder bikeways are provided in both directions along Craigflower Road south of the site. To the east, Craigflower Road provides cyclists with a safe connection to downtown Victoria via the Johnson Street Bridge. Two major multi-use trails can be accessed in Esquimalt: the east-west E&N trail south of the site and the Galloping Goose Trail east of the site. Selkirk Avenue connects directly to the Galloping Goose at its eastern extremity.

Tillicum Road adjacent to the site will have cycling lanes as per Esquimalt's Active Transportation Improvement Project plan, providing protected cycling lanes along the development's frontage.

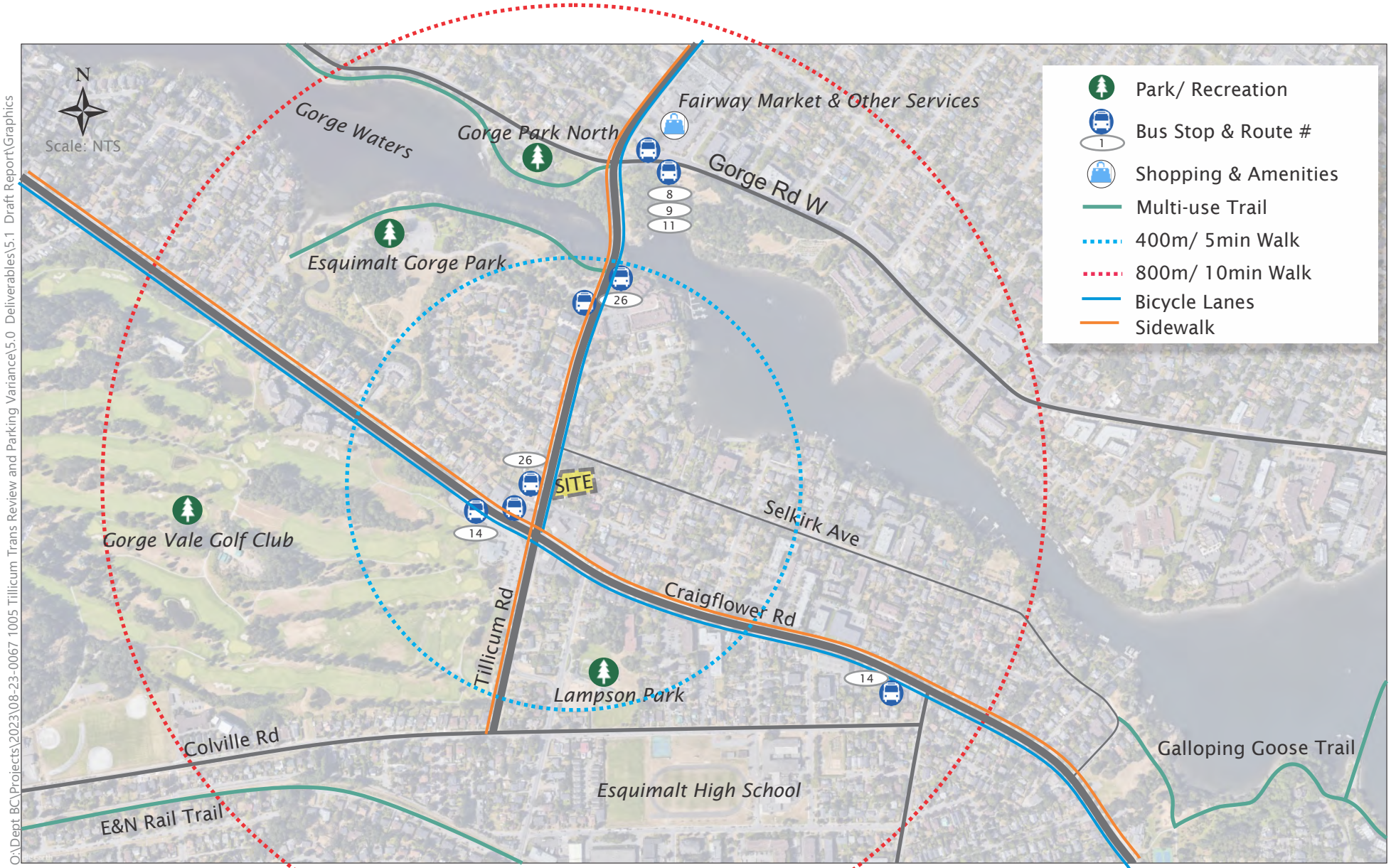
2.5 Transit Network

Two (2) BC Transit bus routes stop within proximity of the site:

- Route #26 (Dockyard/ UVic) stops within a one-minute walk of the site.
- Routes #14 (Vic General/ UVic) stops within a 5-minute walk from the site:

Routes #14 and #26 are classified as frequent routes, providing service every 15 minutes or more often from 7am-7pm from Monday to Friday.

Exhibit 2.1 illustrates the existing road, transit, cycling, and walking networks.



O:\Dept BC\Projects\2023\08-23-0067 1005 Tillicum Trans Review and Parking Variance\5.0 Deliverables\5.1 Draft Report\Graphics

Exhibit 2.1

Transportation Network

1005 Tillicum Transportation Review & Parking Study
08-23-0067 January 2024

bunt & associates

2.6 Esquimalt Policy

The Township's Official Community Plan (OCP) states a policy to prioritize medium/high density residential developments that reduce single occupancy vehicle use. Esquimalt's OCP notes that the Township should consider a parking reduction when a parking study is provided which supports the variance. The Township also has substantial goals of reducing greenhouse gas emissions by 38% below 2007 levels by 2030 and to become a net-zero emission community by 2050 (OCP).

As such, right-sizing vehicle parking for new developments is a key tool in achieving these environmental goals. A reduced parking supply is directly linked to reduced vehicle ownership, which is directly linked to lowered vehicle distances traveled. Therefore, when other forms of transportation are considered viable and are supported by the development, reducing the parking supply can positively impact private vehicle use while also reduce housing costs by providing fewer costly parking spaces.

3. SITE PLAN DESIGN REVIEW

3.1 Site Access Design

The proposed development will have one vehicle access point from Tillicum Road.

3.2 Parking Supply

3.2.1 Bylaw Requirement

The Township of Esquimalt is developing a new parking bylaw. While it is not yet been formalized, Bunt has been asked to apply the requirements from this new bylaw. The new zoning bylaw requires that multi-family residential developments that are in frequent transit areas provide 0.6 vehicle parking spaces per unit for studios, 0.7 spaces per unit for 1-bedroom units, and 0.9 spaces per unit for dwelling units greater than one bedroom. In addition, the bylaw mandates the provision of residential visitor parking of 0.1 spaces per unit, along with a requirement of 1 space per 45 square meters of gross floor area (GFA) for the commercial/retail segment. **Table 3.1** presents the Bylaw parking requirements.

Table 3.1: Bylaw Vehicle Parking Supply Requirement

LAND USE	DEVELOPMENT SIZE	BYLAW RATE	BYLAW REQUIRED PARKING SPACES
Condo - studios	3 units	0.6 spaces per unit	2
Condo – 1 bedroom	13 units	0.7 spaces per unit	9
Condo – 2 or more bedrooms	18 units	0.9 spaces per unit	16
Residential Visitors	34 units	0.1 spaces per unit	3
Retail	47 m2	1 space per 45m2 (GFA).	1
Loading	*34 units*	*1 space per 10 to 100 units*	*1*
	TOTAL		31

*** Loading space is not included in the total required parking spaces.*

As shown in Table 3.1, The total number of parking spaces required bylaw is calculated to be 31 spaces, which includes 3 parking spaces for residential visitors, and 1 space for the site's retail portion.

In addition to vehicle parking requirement, bylaw requires the provision of one (1) loading space for residential units between 10 to 100 units.

3.2.2 Proposed Parking Supply

The proposed parking supply is summarized in **Table 3.2** below.

Table 3.2: Vehicle Parking Supply Requirement & Provision

LAND USE	DENSITY	BYLAW MIN. RATE	BYLAW REQ. MIN PARKING SPACES	PROPOSED PARKING RATE	PROPOSED PARKING SPACES	VARIANCE FROM BYLAW
Condo - studios	3 units	0.6 spaces per unit	2	0.56 spaces/ unit	19 total (14 for residents, 4 for residential & commercial visitor, 1 modo)	-13
Condo – 1 bedroom	13 units	0.7 spaces per unit	9			
Condo – 2 or more bedrooms	18 units	0.9 spaces per unit	16			
Residential Visitors	34 units	0.1 spaces per unit	3			
Retail	47 m2	1 space per 45m2 (GFA).	1			
Loading	*34 units*	*1 space per 10 to 100 units*	*1*	-	*1*	-
TOTAL			31	0.56	19	-12

*** Loading space is not included in the variance total.*

As shown in **Table 3.2**, the proposed total parking supply of 19 spaces is 12 spaces below Bylaw requirements. This variance from Bylaw is comprised of:

- 13 residential spaces under bylaw requirements,
- +1 Modo car-share vehicle over bylaw requirements.

3.3 Transportation Demand Management Measures

The following section describes the individual TDM measures proposed for the development. These measures are intended to support the reduced parking supply by promoting the use of non-private vehicle transportation modes and therefore reducing the site's reliance on private vehicle ownership. The measures were identified by Bunt to be suitable for the size, location, and requested parking variance of the proposed development, and have been agreed to by the developer.

3.3.1 Proposed TDM Strategies

The developer has proposed a list of TDM measures to support the variance. The list of proposed strategies with eligible vehicle parking supply reductions, as per Esquimalt's updated parking bylaw is summarized in **Table 3.3**.

Table 3.3: TDM Strategies with Eligible Vehicle Parking Supply Reductions

TDM MEASURES	PARKING REDUCTION (%)	PROPOSED	REDUCTION
Carshare vehicle on-site	5% of total vehicle parking supply	1 Modo vehicle	1.6 spaces
Car memberships for all units	10% of total required vehicle parking supply	$500 per unit	3 spaces
Additional Long term bicycle parking spaces (20% or more)	5% of total required vehicle parking supply	68 Long term spaces	1.6 spaces
Oversized bicycles spaces (20% or more)	5% of total required vehicle parking supply	8 Oversized bicycles spaces	1.6 spaces
TOTAL		-	8 SPACES

3.4 Vehicle Parking Analysis

3.4.1 Vehicle Parking Requirement Summary

This section outlines the vehicle parking requirements for condominium and apartment rental developments (as it is yet to be determined if the residential units will be rental or strata), factoring in applicable deductions from Transportation Demand Management (TDM) measures. The details are summarized in **Table 3.4**, which presents a comparative summary of the initial parking space requirements, TDM reductions, and the final parking space requirements after TDM measures were factored.

Table 3.4: Vehicle Parking Requirement Summary with Applicable Deductions

SUMMARY	CONDO	APARTMENT RENTAL
Vehicle parking spaces required before TDM Measures	31 spaces	28 spaces
TDM Reductions	8 spaces	7 spaces
Vehicle parking spaces required After TDM Measures	23 spaces	21 spaces
Up to 20% of stalls -Maximum cash in lieu stalls	4 spaces	2 spaces
Minimum parking spaces required	19 spaces	19 spaces
Provided	19 spaces	19 spaces

For the proposed condo development, the initial requirement stands at 31 vehicle parking spaces. With TDM reductions applied, this requirement is reduced by 8 spaces, resulting in a need for 23 parking spaces. Additionally, cash in lieu of parking was added for up to 4 parking spaces, equating to 13% of the total spaces required. This results in a net zero variance; however, the developer is obligated to pay a total of $120,000 for the four cash in lieu stalls.

In comparison, apartment rentals will require cash in lieu of parking for 2 spaces, resulting in a total of $60,000 for cash in lieu.

3.4.2 Resident Parking

The proposed vehicle parking ratio of 0.56 spaces per unit (0.44 for residents and 0.12 for residential visitors) represents a variance from bylaw for both residents and visitors but is consistent with Township's objectives to right size vehicle parking. The 2 units with the garages will each have 1 stall and the remaining 12 stalls will be distributed on first come first serve basis. The variance is considered viable as the site is well connected by walking and cycling routes, has good transit service and will be supported by significant transportation demand management offerings such as the car-share vehicle, car-share memberships as well as a significant amount of bicycle parking.

3.4.3 Visitor Parking

Previous research conducted by Bunt has repeatedly suggested that a visitor parking rate of 0.05 -0.07 spaces per unit for residential buildings is adequate to accommodate peak demands. This is supported by

Metro Vancouver's comprehensive "*2012 Metro Vancouver Residential Apartment Parking Study*"[1]. The study found peak visitor parking demand rates in the range of 0.05 to 0.07 vehicles per unit for multi-family residential. This is consistent with Bunt's in-house database of peak visitor parking demand rates.

A visitor parking demand rate of 0.07 spaces per unit would translate to peak period demand of approximately two parking spaces for the proposed 34 units. This is below the proposed 4 visitor space provision.

The proposed 4 visitor parking spaces would accommodate the two required commercial/ retail parking space and provide 2 spaces for residential visitors. The 4 spaces can all be signed as visitor spaces. This can provide an additional buffer against peak demand periods as the two uses tend to occur at separate times with the commercial peak being during typical business hours and resident visitor demand peaking during non-regular business hours.

3.4.4 Bicycle Parking Bylaw Requirements

The Township of Esquimalt's Bylaw does not specify the bicycle space requirement; however, the development is proposing to provide both long-term or Class 1 bicycle storage and short-term or Class 2 on site. The bicycle space provision is summarized in **Table 3.3**.

"Class 1" bicycle parking is a secure, weather-protected bicycle parking facility used to accommodate long-term parking, such as for residents or employees, usually within a room or covered, fenced area.

"Class 2" refers to a short-term visitor bicycle parking facility provided near a building entry in a well lit, preferably covered area, for example, a bike rack at a building's entrance.

Table 3.3: Bicycle Parking Supply Requirement & Provision

LAND USE	DENSITY	BYLAW RATE	PROVIDED	DIFFERENCE
Condo - studios	3 units	-	68 Class I 8 Class II	+ 68 CLASS I +8 CLASS II
Condo – 1 bedroom	13 units	-		
Condo – 2 or more bedrooms	18 units	-		
Residential Visitors	34 units	-		
Retail	47 m2	-		
TOTAL	**34 UNITS**	-	**68 CLASS I 8 CLASS II 76 TOTAL**	**+68 CLASS I +8 CLASS II 76 TOTAL**

[1] 2012 Metro Vancouver Apartment Parking Study available at:
https://www.esquimalt.ca/sites/default/files/docs/municipal-hall/EVP/schedule_m_parking_study.pdf

The development is proposing to provide significant bicycle parking. Many neighbouring municipalities require one Class 1 space per unit therefore the provision of two Class I spaces per unit is noted as a considerable offering. This supply will allow bicycles to be safely stored for each anticipated resident rather than just one per unit. Among these, 64 will be located in a dedicated bicycle parking room at level 2, an additional 4 will be allocated for the two units with garages. Additionally, eight Class 2 spaces will be provided at ground level.

3.5 Vehicle Swept Path Review

Bunt completed a swept path analysis, attached in **Appendix A** of the proposed site plan using AutoTURN software. Bunt confirmed functionality of the loading space and passenger vehicle maneuvers in and around the proposed development. The following summarizes the analysis:

- **Exhibit A.1 & A.2** illustrates regular stall access with passenger vehicle. No issues were identified.
- **Exhibit A.3** illustrates small stall access with a small vehicle (Honda Civic). There was a small overlap with the curb identified. We recommend a rollover curb at this location.
- **Exhibit A.4** illustrates the loading space access with a delivery type vehicle (LSU). The plans indicate an angled loading space. Our recommendation is to orient the stall at a 90-degree angle, facilitating on-site maneuverability and removing the need for the vehicle to back-out onto Tillicum Road. This creates a narrower than bylaw drive-aisle in this location, however due to the short distance of the narrowed drive aisle and in consideration of the small number of parking spaces being accessed, it is our view that the short segment of narrowed drive aisle is preferred over a configuration that may lead to vehicles backing out onto Tillicum Road.

4. SITE ACCESS TRAFFIC OPERATIONS

Bunt examined traffic operations at the future site access point on Tillicum Road. To account for potential gapping impacts of traffic along Tillicum Road, Bunt also collected vehicle volumes and included the nearby Tillicum Road & Craigflower Road intersection in our traffic model.

4.1 Existing Traffic Volumes

Bunt collected traffic volumes on Tillicum Road adjacent to the site on Wednesday January 3rd, 2024, and Thursday January 4th, 2024. The counts conducted included a 1- hour roadway count at Tillicum Road and two-15 min turning movement spot counts at the Tillicum Road & Craigflower Road intersection.

Bunt's operations analysis does not include the Tillicum Road and Craigflower Road intersection, however, including this intersection in our modeling process allows us to better account for gaping impacts from the nearby traffic signal more accurately.

Table 5.1 summarizes the available and counted traffic data used in this study.

Table 5.1: Summary of Available and Counted Traffic Data

INTERSECTION	SOURCE	COUNT TYPE	DATE OF COUNT
Tillicum Road	Bunt	Roadway	January 3, 2024
Tillicum Road & Craigflower Road	Bunt	Turning Movement	January 4, 2024

The PM peak hour was determined to be from 4:00 - 5:00PM.

4.2 Site Traffic

Bunt estimated the vehicle trips from the proposed development (using the most trip rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. **Table 5.2** summarizes the trip generation rates applied to each of the proposed land uses. **Table 5.3** proposes the resulting estimated peak hour vehicle trips.

Table 5.2: Peak Hour Vehicle Trip Rates

LAND USE	UNITS	PM PEAK HOUR		
		IN	OUT	VEHICLE TRIPS/UNIT
ITE 221 – Multifamily Housing (Mid-Rise)	Dwelling Units	61%	39%	0.39
ITE 814 – Variety Store	1,000 ft2	51%	49%	6.79

Table 5.3: Estimated Peak Hour Site Vehicle Trips

LAND USE	PM PEAK HOUR		
	In	Out	tOTAL
ITE 221 – Multifamily Housing (Mid-Rise)	8	5	13
ITE 814 – Variety Store	2	2	4
TOTAL	**10**	**7**	**17**

The ITE trip rates indicate the site will generate approximately 17 two-way trips in the PM peak hour. In our analysis, a total of 20 trips was used to be conservative. Bunt distributed these vehicle trips across the study network based on existing travel patterns. This equates to a new vehicle trip in the study area road network approximately every 3 minutes during peak times.

These estimated trip rates are considered conservative due to the subject site having a lower parking rate than buildings in the ITE database.

This magnitude of generated vehicle trips is anticipated to have a negligible impact to local area traffic operations, however the site access is further evaluated.

Exhibit 5.1 illustrates site access forecasted traffic volumes.

O:\Dept BC\Projects\2023\08-23-0067 1005 Tillicum Trans Review and Parking Variance\5.0 Deliverables\5.1 Draft Report\Graphics

Exhibit 5.1

Forecasted Site Access Volumes

1005 Tillicum Transportation Review & Parking Study
08-23-0067 January 2024

bunt & associates

4.3 Operations Analysis method

4.3.1 Performance Thresholds

The operations of the site's vehicle access was assessed using the methods outlined in the Highway Capacity Manual (HCM), 6th Ed., using Synchro 11 analysis software. The traffic operations were assessed using the performance measures of Level of Service (LOS) and volume-to-capacity (V/C) ratio.

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

Table 5.4: 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.

For reference, the general performance thresholds used to trigger consideration of roadway or traffic control improvements are listed below:

Unsignalized Intersections and Site Accesses:

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

4.4 Total Traffic

Bunt estimated the total (with site) peak hour traffic volumes by adding the site traffic forecasts to the existing traffic volumes.

Our traffic model incorporated the envisioned Tillicum Road cross-section as outlined in the "Tillicum & Lampson Active Transportation Improvement Project plan." This plan specifically underscores the integration of protected bike lanes on Tillicum Road, extending from Gorge to Craigflower Rd, as well as the implementation of a two-way left turn lane on Tillicum Road. The inclusion of the two-way left turn lane is advantageous for the future site access, facilitating left turn movements into the site. **Figure 5.1** illustrates the future proposed Tillicum Road cross-section.

Figure 5.1: Future Proposed Tillicum Road Cross-Section

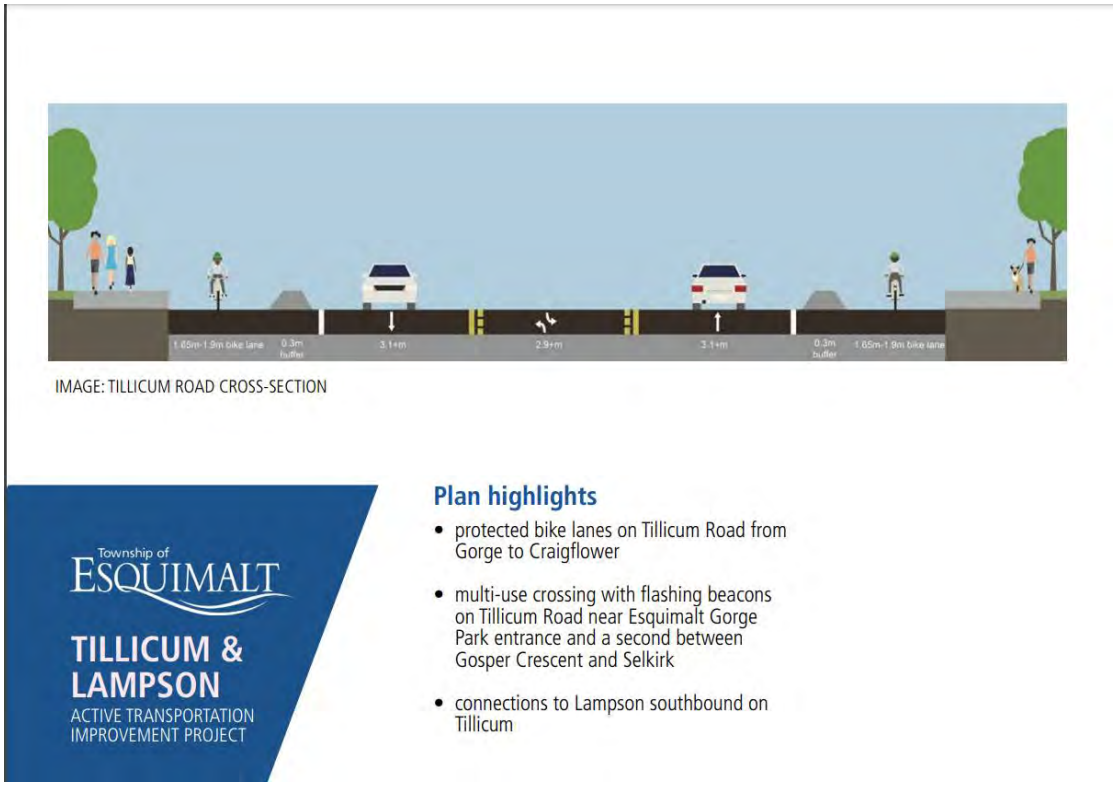


Exhibit 5.2 illustrates the modelled total (with site) peak hour traffic volumes and operations at the site access.

O:\Dept BC\Projects\2023\08-23-0067 1005 Tillicum Trans Review and Parking Variance\5.0 Deliverables\5.1 Draft Report\Graphics

Exhibit 5.2

Total Peak Hour Traffic Volumes & Operations Performance

bunt & associates

4.5 Operations Results

The Synchro results indicated a peak hour delay of approximately 15 seconds for vehicles exiting the site and turning left onto Tillicum Road. This translates to a level of service of B, which represents a typically acceptable delay condition.

Additionally, SimTraffic was employed to better account for potential gapping impacts from the adjacent signalized intersection. The SimTraffic results indicate a similar performance as the Synchro outputs (LOS B), indicating operations within typical thresholds.

Figure 5.2 illustrates the anticipated average weekday PM peak hour delays in seconds for each site access movement.

Future road improvements along Tillicum Road will need to account for the proposed site access in regards to permitting left turn movements (no centre median on Tillicum Road fronting the site).

Figure 5.2: Site Access Weekday PM peak Hour Delay

5. SUMMARY

5.1 Conclusions

i. The proposed development at 1005 Tillicum Road features 34 residential condo units and approximately 47 m^2 of ground-floor commercial space.

ii. Vehicle access to the building's parking spaces will be from Tillicum Road, on the site's west frontage.

iii. The proposed development is conservatively estimated to generate approximately 15-20 two-way vehicle trips per weekday PM peak hour.

iv. Synchro 11 and Simtraffic model analysis indicates the site access on Tillicum Road is anticipated to operate well within typically acceptable performance thresholds.

v. The development proposes 19 residential vehicle parking spaces located at underground level (0.56 spaces per unit). The 19 vehicle spaces are comprised of 14 residential space, 4 residential visitors & commercial spaces, and 1 modo space.

vi. The proposed total parking supply of 19 spaces is 12 spaces below Bylaw requirements of 31 vehicle spaces.

vii. The development proposes a list of TDM measures to reduce the parking requirements.

viii. With TDM measures reduction factors applied, the vehicle parking space requirement is reduced by eight (8) spaces, leading to a net zero parking variance.

ix. The TDM plan includes the following initiatives:

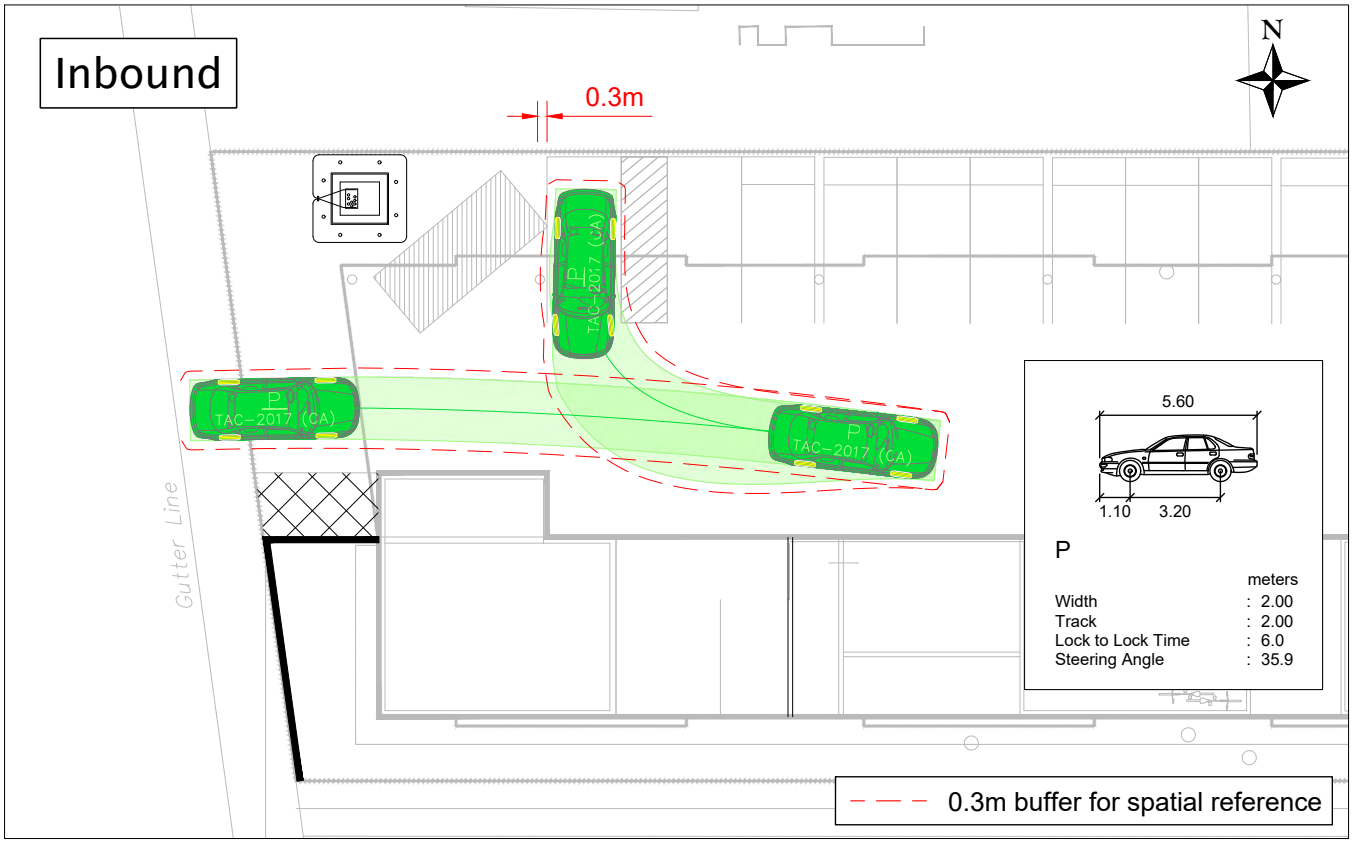
- An on-site car-share vehicle which will come with up to 71 memberships that will stay with the development in perpetuity as well as $100 worth of car-share driving credits.
- Bicycle parking (68 Long Term & 8 Short-Term) will meet the bylaw requirements. The long-term spaces will have eight Cargo Bike spaces.
- Transportation Option Information Package or Brochure for new residents.

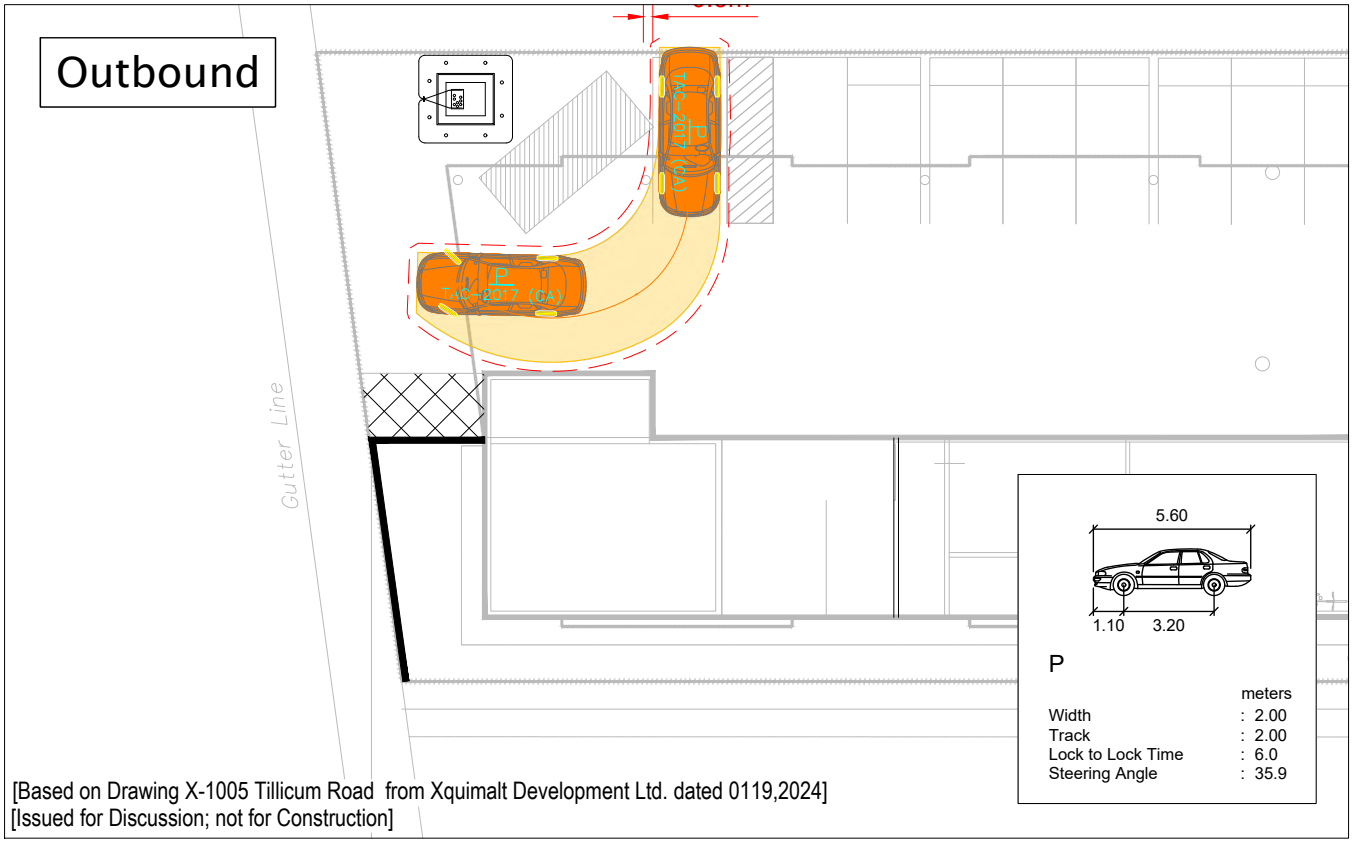
x. Additionally, cash in lieu of parking may be added to account for up to 4 parking spaces, equating to 13% of the total spaces required. This would result in a net zero variance.

5.2 Recommendations

1. Bunt recommends orientating the loading stall to a 90-degree angle from the drive aisle. This will assist on-site maneuverability and removing the likelihood of the vehicle back-out onto Tillicum Road. This 90-degree orientation will create a narrower than bylaw drive-aisle in this location, however due to the short distance of the narrowed drive aisle and in consideration of the small number of parking spaces being accessed, it is our view that the short segment of narrowed drive aisle is preferred over a configuration that may lead to vehicles backing out onto Tillicum Road.

APPENDIX A
SWEPT PATH ANALYSIS





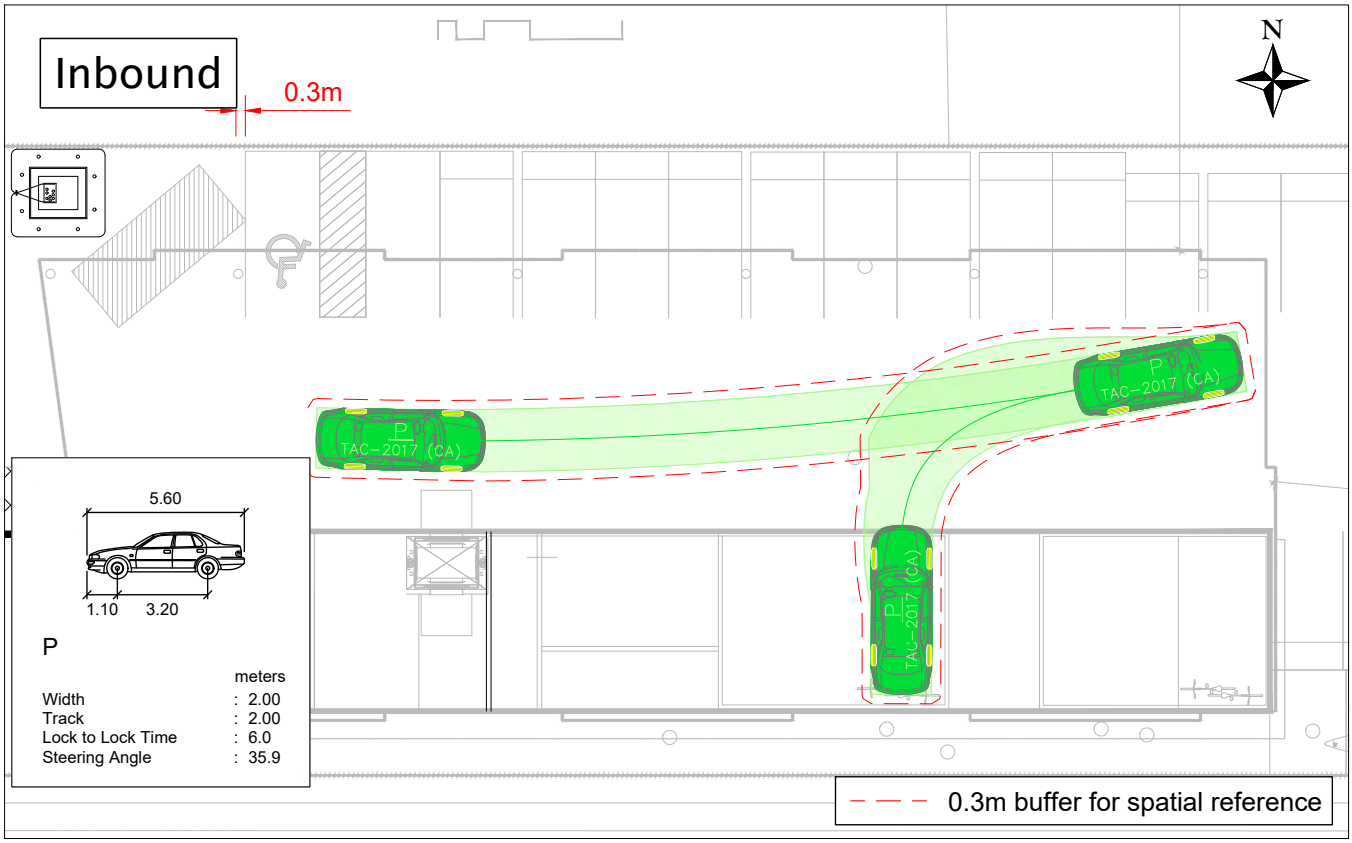
[Based on Drawing X-1005 Tillicum Road from Xquimalt Development Ltd. dated 0119,2024]
[Issued for Discussion; not for Construction]

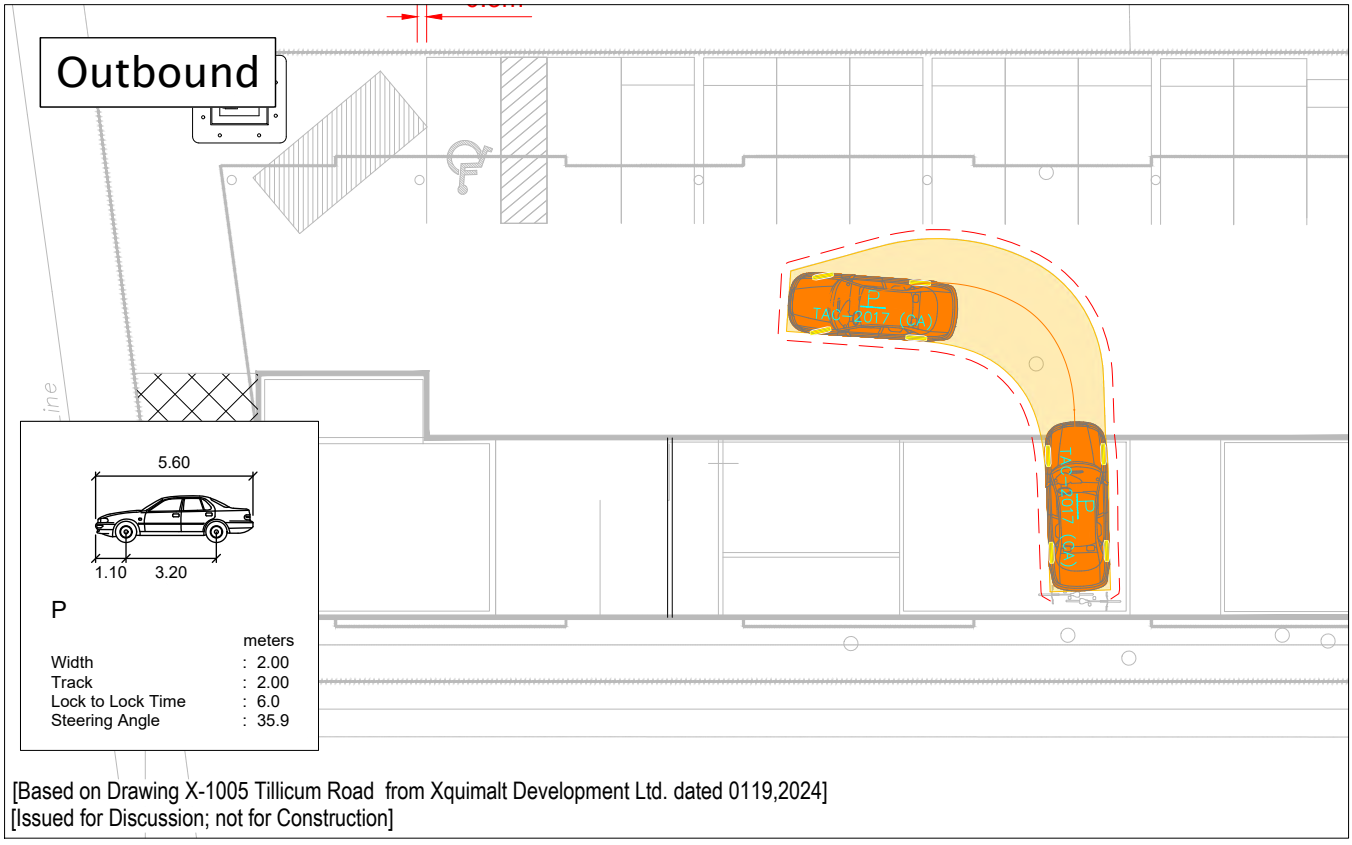
Exhibit A.1

Front End Stall Passenger Vehicle (P-TAC) Access

1005 Tillicum Road
08-23-0067 January 2024 Scale 1:250 on Letter Prepared by AI

bunt & associates





[Based on Drawing X-1005 Tillicum Road from Xquimalt Development Ltd. dated 0119,2024]
[Issued for Discussion; not for Construction]

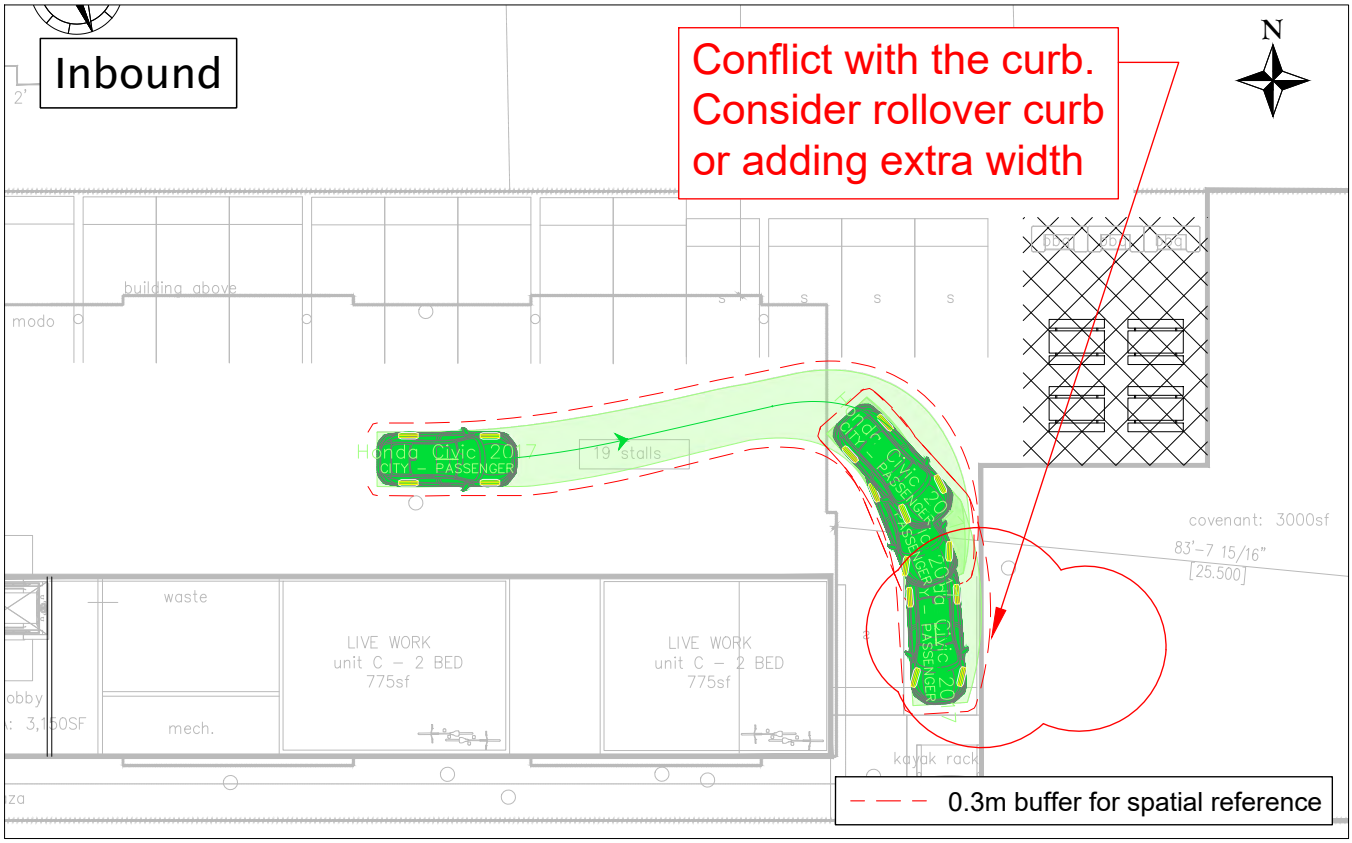
Exhibit A.2

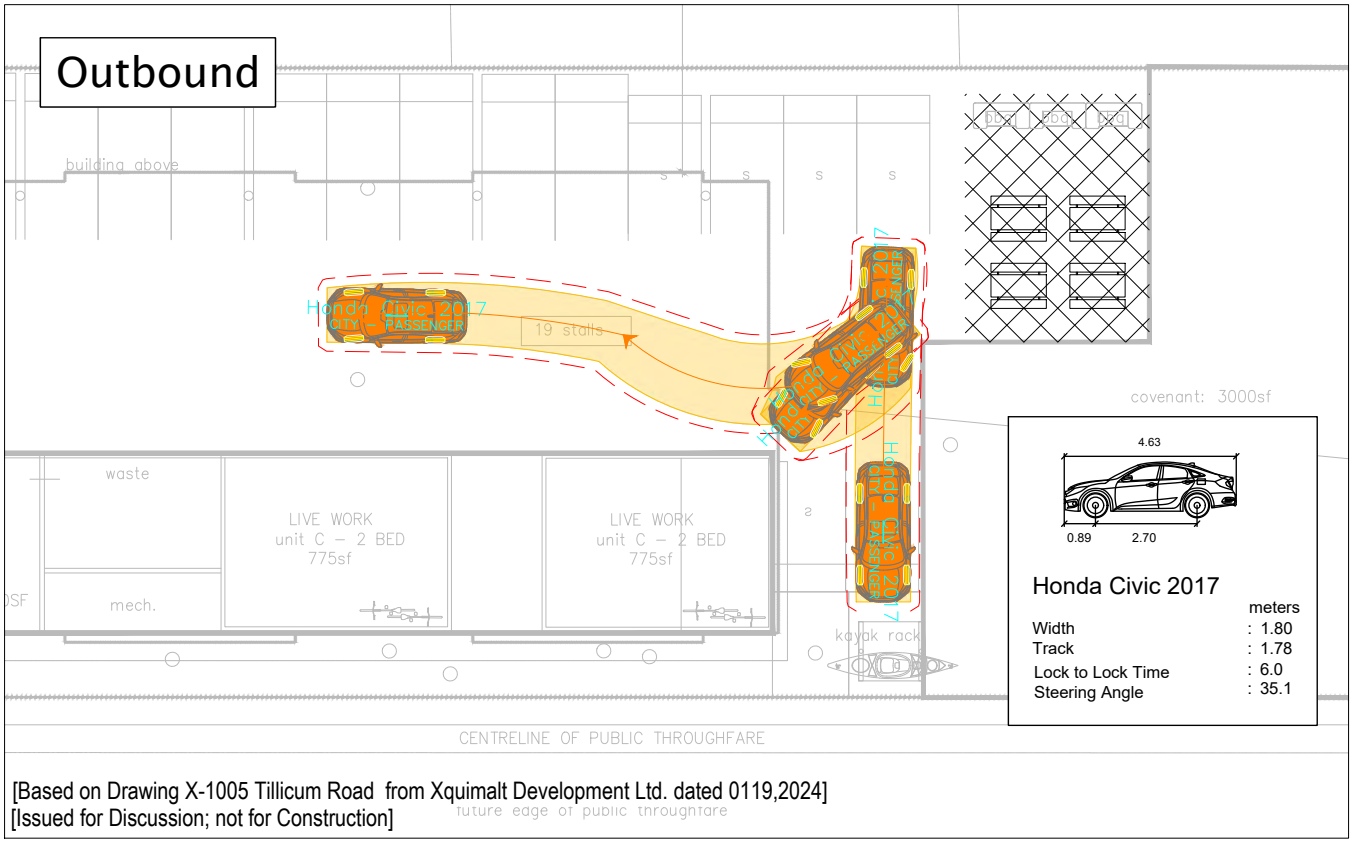
Middle Stall Passenger vehicle (P-TAC) Access

1005 Tillicum Road
08-23-0067 January 2024 Scale 1:250 on Letter Prepared by AI

bunt & associates

O:\Dept BC\Projects\2023\08-23-0067 1005 Tillicum Trans Review and Parking Variance\4.0 Analysis & Design\AT\Swpt_Path\08-23-0067_1005-AT-V01.dwg
2024/02/08 13:12, Plotted by Abdi Idle





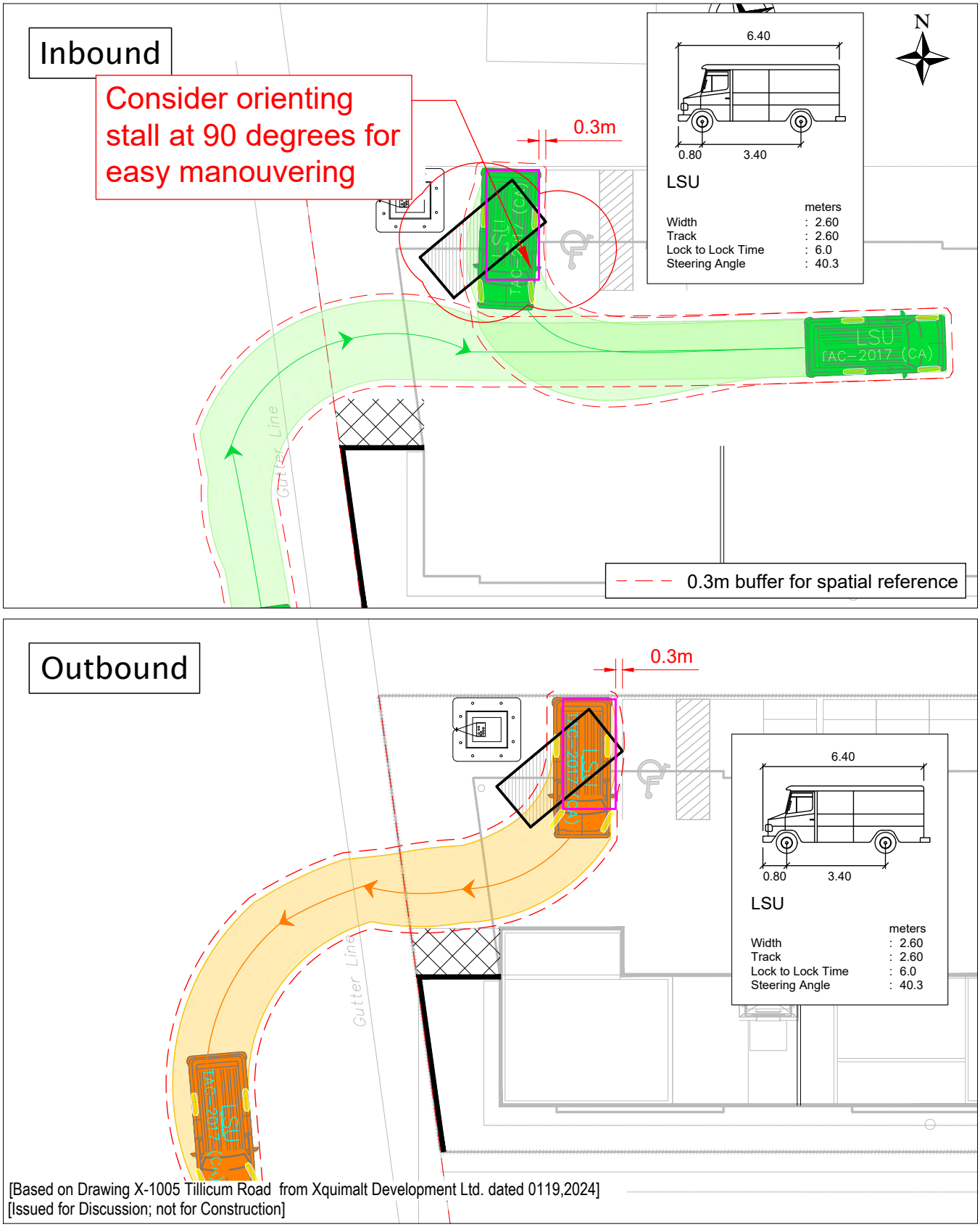
[Based on Drawing X-1005 Tillicum Road from Xquimalt Development Ltd. dated 0119,2024]
[Issued for Discussion; not for Construction]

Exhibit A.3

End Small Car Stall Access

1005 Tillicum Road
08-23-0067 January 2024 Scale 1:250 on Letter Prepared by AI

bunt & associates



[Based on Drawing X-1005 Tillicum Road from Xquimalt Development Ltd. dated 0119,2024]
[Issued for Discussion; not for Construction]

Exhibit A.4

Loading Stall LSU Access

1005 Tillicum Road
08-23-0067 January 2024 Scale 1:250 on Letter Prepared by AI

bunt & associates