



Cook Street Plaza Redevelopment Transportation Impact Assessment

Final

Prepared for
Chard Development

Date
December 12, 2018

Project No.
04-18-0322

December 12, 2018
04-18-0322
Daniel Eagling
Development Manager
Chard Development
Suite 500 – 509 Richards Street
Vancouver, BC
V6B 2Z6

Dear Daniel:

**Re: Cook Street Plaza Redevelopment
Transportation Impact Assessment – Final Report**

Please find attached our Transportation Impact Assessment report in support of the Rezoning and Development Permit applications for the proposed Cook Street Plaza redevelopment. We found that the proposed mixed-use development provides an adequate level of bicycle and vehicle parking and that there are no traffic operational concerns on the adjacent streets. Furthermore, the development provides improved sidewalks and public realm including a series of walking paths which will improve the area's walkability.

We trust this report will be helpful for your application. Please do not hesitate to contact us should you have any questions or comments in this regard.

Yours truly,
Bunt & Associates



Tyler Thomson, MURB MCIP RPP PTP
Associate | Transportation Planner



Simon Button, P.Eng., M.Eng.
Transportation Engineer

cc: Dave Chard, Chard Development
Hugh Cochlin, Proscenium Architecture + Interiors Inc.
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Senior Transportation Engineer

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EXECUTIVE SUMMARY

Chard Development (Chard) is proposing to redevelop the properties at 1100 & 1120 Yates Street and 1109 & 1115 & 1138 Johnson Street in Victoria, BC. The development is planning on providing 47 purpose built rental apartment units, 47 affordable condominium units, 107 market condominium units, 320 square meters of restaurant space, 240 square meters of ground floor retail space, 930 square meters of daycare space and retaining the existing 4,140 m² medical offices building.

The development is located on the corner of Cook Street & Yates Street and east of Cook Street and Johnson Street, which is less than one kilometre from the downtown core. The site is well serviced with transit, quality cycling infrastructure and has a variety of commercial and service amenities within walking distance.

The development provides one driveway on Johnson Street (consolidated from 3 existing) and one driveway on Yates Street for vehicle access to the two underground parkades. The development will also remove all driveways from Cook Street, and widen sidewalks on all frontages as well as feature a number of walking routes through the site to improve the pedestrian permeability.

The Victoria Zoning Bylaw requires the proposed development to provide 286 vehicle parking spaces. The development will slightly exceed this amount in order to maintain the current parking supply for the medical office building. The development will also satisfy the bicycle parking requirements. The Long Term commercial bicycle parking will be conveniently located at ground level with end of trip facilities.

The intersections of Cook Street with Yates Street and Johnson Street intersection currently operate within acceptable capacity thresholds during the weekday PM peak hour. As the proposed development is anticipated to add less than 1% to the existing vehicle volumes at the Johnson Street intersection and 3% to the Yates Street intersection which are within the typical fluctuations in traffic from day to day, the nearby intersections are forecasted to continue operating within similar performance thresholds as today.

1. INTRODUCTION

1.1 Study Purpose & Objectives

Chard Development (Chard) is proposing to redevelop Cook Street Plaza as well as the surface parking lots at 1109 & 1115 Johnson Street and the medical office building at 1120 Yates Street. The site location is shown in **Exhibit 1.1**, 1 kilometre east of Victoria's downtown core.

The purpose of this study is to:

- Review the development's parking strategy and determine its suitability;
- Review the development's vehicle accesses and circulation; and,
- Evaluate the transportation impacts the proposed development has on the nearby road network.

The scope of this study was approved by the City of Victoria (City) as is detailed in **Appendix A**.

1.2 Proposed Development

The development site currently comprises of a series of individual properties. The existing office building at 1120 Yates will remain (with renovations) and the remainder of the buildings will be removed for redevelopment. Following redevelopment, there will be two standalone properties: the east site will consist solely of a purpose built rental apartment building in the northeast corner and the remainder of the land will form the west site which comprises of the retained office building, a mixed-use building with market condominiums and commercial spaces, and an affordable condominium building. The site plan is shown in **Exhibit 1.2** and a summary of the various land uses is summarized in **Table 1.1**. The east site will have vehicle access from Johnson Street whereas the west site will have vehicle access from Yates Street. The development will also feature a number of walking routes through the site to improve pedestrian permeability.

Table 1.1: Proposed Land Uses

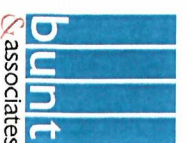
BUILDING	LAND USE	QUANTITY
East Site		
6-storey Residential	Residential – Rental	47 units
West Site		
8-storey Residential	Residential – Condo (Affordable)	47 units
	Residential – Condo (Market)	107 units
	Restaurant	324 m ²
12-storey Mixed-use	Ground Floor Retail	236 m ²
	Daycare	929 m ²
5-storey Office	Medical Office	4,140 m ²



Exhibit 1.1 Site Location

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Cook Street Plaza
November 2018



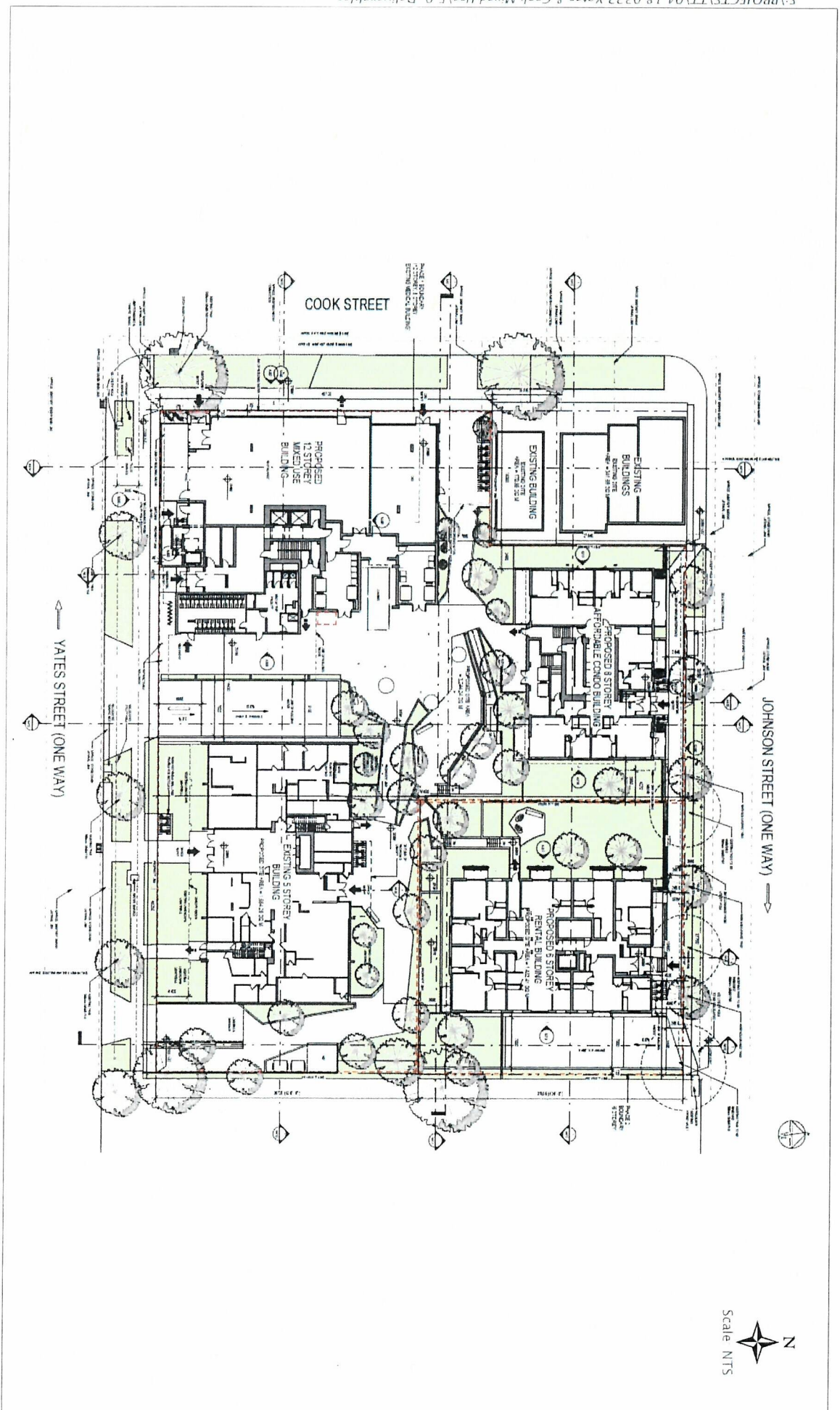


Exhibit 1.2
Site Plan

04-18-0322

Cook Street Plaza
December 2018

2. EXISTING CONDITIONS

2.1 Land Use

The sites are located near downtown Victoria at the corner of Cook Street and Yates Street, and just east of Cook Street and Johnson Street. Although the building is just outside of the downtown core, the site is surrounded by a mix of commercial buildings with variety of retail stores and restaurants and residential buildings.

2.2 Existing Transportation Network

2.2.1 Road Network

Cook Street is classified as an arterial road and Yates Street and Johnson Street are classified as secondary arterial roads, as shown in **Exhibit 2.1**. Cook Street provides north-south connectivity. Yates Street provides connectivity to the west (one-way street westbound) and Johnson Street provides connectivity to the east (one-way street eastbound).

2.2.2 Transit Network

As indicated in **Exhibit 2.2**, the three BC Transit bus stops nearest the site service bus routes 2, 3, 11, 14, 15, 22, 24, 25, 27 and 28. Together, these bus routes provide service to downtown, the University of Victoria, James Bay, Oak Bay, Victoria General and Royal Jubilee Hospitals, Tillicum, Esquimalt, Hillside Mall, Cedar Hill, Lake Hill and Gordon Head.

2.2.3 Pedestrian & Cycling Networks

All of the nearby streets (Johnson Street, Cook Street and Yates Street) have sidewalks on both sides. Crosswalks are provided on all four legs of the Johnson Street & Cook Street and Yates Street & Cook Street intersections. East of Cook Street, the next crosswalks on Johnson Street and Yates Street are located at Camosun Street, 350 metres east of the development site. The site has a WalkScore of 97 which is categorized as a "Walker's Paradise".

Yates Street and Johnson Street east of Cook Street have painted bike lanes in the vicinity of the development site. West of Cook Street, the Johnson Street bike lane has a painted buffer to provide additional separation between people cycling and vehicle traffic.

2.3 Current Relevant Policies & Plans

The City is currently implementing the first phase of its all ages and abilities (AAA) cycling network which focuses on the downtown core. AAA facilities are already constructed on Pandora Street and Fort Street and there are plans in place to construct AAA facilities on Humbolt Street, Wharf Street and Vancouver Street in the near future. The Vancouver Street AAA facility will greatly improve the cycling access to the proposed development as it is located only one block away.



Exhibit 2.1 Existing Laning & Traffic Control

04-18-0322

Cook Street Plaza
November 2018



Exhibit 2.2 Transit Routes & Stops

04-18-0322

Cook Street Plaza
November 2018



2.4 Data Collection

2.4.1 Peak Hour Volumes

Vehicle volumes for the two study intersections were provided by the City for the PM peak hour. To supplement this data, Bunt collected additional data at the site's existing driveways. The PM peak hour vehicle volumes for the two study intersections and existing site driveways are shown in **Exhibit 2.3**.

2.4.2 Existing Site Vehicle Trip Generation

The existing site generated 61 vehicle trips during the PM peak hour (4 to 5 pm) on Wednesday November 22, 2018. As shown in **Table 2.1**, the majority of the vehicles entering and exiting the site (48) are related to the medical office and paid parking lot. The single-storey commercial building on Cook Street generated a modest 13 vehicle trips during the PM peak hour.

Table 2.1: Existing PM Peak Hour Site Trip Generation

PARKING GENERATOR	IN	OUT	TOTAL
Medical Office & Paid Parking Lot	27	21	48
Cook Street Commercial	7	6	13
TOTAL	34	27	61

2.4.3 Existing Parking Demand & Supply

The paid parking lot associated with the medical building has approximately 100 parking spaces and the commercial building on Cook Street has 20 parking spaces for a total of 120 parking spaces on the entire site. At 4 pm on Wednesday November 22, 2018 the two parking lots combined were 48% occupied. Although data was only collected at one point in time, this indicates that the medical building may not fully utilize its parking supply.

2.5 Existing Operations

2.5.1 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), using the Synchro 9 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 2.2 summarizes the LOS thresholds for the six Levels of Service, for both signalized and unsignalized intersections.



Exhibit 2.3 Existing PM Peak Hour Vehicle Volumes

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Cook Street Plaza
November 2018

Table 2.2: 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.

The performance thresholds that were used to trigger consideration of roadway or traffic control improvements to support roadway or traffic control improvements employed in this study are listed below:

- Overall intersection Level of Service = LOS D or worse;
- Overall intersection V/C ratio = 0.85 or higher;
- Individual movement Level of Service = LOS E or worse; and,
- Individual movement V/C ratio = 0.90 or higher.

In interpreting of the analysis results, note that the HCM methodology provides an output for overall LOS and V/C as well as individual movement LOS and V/C. 95th percentile queues are estimated by Synchro.

2.5.2 Existing Conditions Analysis Assumptions

The operational analysis was completed using the Synchro model provided by the City. The Synchro model uses the existing signal timings at each of the study intersections. It also incorporates actual conflicting pedestrian numbers and peak hour factors for each individual movement obtained from traffic data. The majority of the remaining analysis inputs such as heavy vehicle percentages, lane widths, bus blockages and conflicting bicycles are left unchanged from their default values.

2.5.3 Existing Operational Analysis Results

The existing operational results are summarized in **Exhibit 2.4**. As shown, there are minimal operational concerns with all movements operating at LOS C or better and queues are typically less than 6 vehicles long.



Exhibit 2.4

Existing PM Peak Hour Traffic Operations

3. DEVELOPMENT REVIEW – EAST SITE

The follow section reviews the bicycle and vehicle parking provisions for the proposed purpose built rental building which will form a standalone property.

3.1 Bicycle Parking

Well managed, secure and accessible bicycle parking will be provided as part of the development. The development will satisfy the Bylaw requirements for bicycle parking by supplying at least 56 Long Term spaces and 6 Short Term spaces (see **Table 3.1**). The Long Term parking spaces will be located in a convenient location in the parkade. The Short Term parking will be provided in a publically accessible area near the building entry in a well lit and highly visible area.

Table 3.1: Bicycle Parking Supply Requirement

PARKING TYPE	DENSITY	BYLAW RATE	BYLAW SUPPLY REQUIREMENT
Long Term	11 units < 45 m ² 36 units > 45 m ²	0.75 per unit 1.25 per unit	56
Short Term	47 units	The greater of 6 spaces or 0.10 per unit	6

3.2 Vehicle Parking

The rental apartment building is located in the "Other Areas" geography as defined in Figure 1 of Schedule C of the City's Zoning Bylaw. This location has the highest vehicle parking requirements in the City. The vehicle parking supply requirement is summarized in **Table 3.2**. The development will satisfy the bylaw requirement by supplying 46 vehicle parking spaces.

Table 3.2: Vehicle Parking Supply Requirement

LAND USE	DENSITY	BYLAW RATE	BYLAW SUPPLY REQUIREMENT
Residential –Other Area Apartment	11 units < 45 m ² 36 units > 45 m, <70 m ²	1.0 per unit 0.90 per unit	41
Residential – Rental (Visitors)	47 units	0.10 per unit	5
TOTAL			46

4. DEVELOPMENT REVIEW – WEST SITE

The follow section reviews the bicycle and vehicle parking provisions for the west site which comprises of the new affordable condominium building, new mixed-use building and the renovated medical office building which will share parking with the west site but function as its own legal property.

4.1 Bicycle Parking

Similar to the east site, well managed, secure and accessible bicycle parking will be provided as part of the development. The development will satisfy the Bylaw requirements for bicycle parking by supplying at least 209 Long Term spaces and 39 Short Term spaces (see **Table 4.1**). The commercial Long Term parking spaces will be conveniently located at ground level along with showers. The residential Long Term parking spaces will be located in the parkade. The Short Term parking will be provided in publically accessible areas near the building entries in well lit and highly visible areas.

Table 4.1: Bicycle Parking Supply Requirement & Provision

LAND USE	PARKING TYPE	DENSITY	BYLAW RATE	LONG TERM REQUIREMENT	SHORT TERM REQUIREMENT
Residential	Long Term	25 units < 45 m ² 129 units > 45 m ²	1.00 per unit 1.25 per unit	186	-
Residential	Short Term	154 units	The greater of 6 spaces or 0.10 per unit	-	17
Commercial	Long Term	Medical Office – 4,140 m ² Restaurant – 324 m ² Services – 236 m ² Daycare – 929 m ²	1 per 200 m ² 1 per 400 m ² 1 per 200 m ² 1 per 700 m ²	23	-
Commercial	Short Term	Medical Office – 4,140 m ² Restaurant – 324 m ² Services – 236 m ² Daycare – 929 m ²	1 per 300 m ² 1 per 100 m ² 1 per 200 m ² 1 per 200 m ²	-	22
TOTALS				209	39

4.2 Vehicle Parking

The west site is located in the "Core Area" geography as defined in Figure 1 of Schedule C of the City's Zoning Bylaw. The vehicle parking supply requirement and proposed supply are summarized in **Table 4.2**. The development will exceed the bylaw requirement for commercial parking in order to replace of the existing parking for the medical office building. The development will provide the minimum bylaw amount for residential parking.

Table 4.2: Vehicle Parking Supply Requirement & Supply

LAND USE	DENSITY	BYLAW RATE	BYLAW SUPPLY REQUIREMENT	PROVIDED	DIFFERENCE
Residential – Market Condominium (Residents)	18 units < 45 m ² 62 units > 45 m ² , < 70 m ² 27 units > 70 m ²	0.75 per unit 0.90 per unit	94	94	-
Residential – Market Condominium (Visitors)	107 units	0.10 per unit	11	11	-
Residential – Affordable Condominium (Residents)	7 units < 45 m ² 25 units > 45 m ² , < 70 m ² 15 units > 70 m ²	0.20 per unit 0.50 per unit 0.75 per unit	25	25	-
Residential – Affordable Condominium (Visitors)	47 units	0.10 per unit	5	5	-
Medical Office	4,140 m ²	1 per 50 m ²	83	124	+19
Restaurant	324 m ²	1 per 40 m ²	8		
Services	236 m ²	1 per 50 m ²	5		
Daycare	929 m ²	1 per 100 m ²	9		
TOTALS			240	259	+19

5. FUTURE TRAFFIC CONDITIONS

5.1 Traffic Forecasts

5.1.1 Site Traffic

Trip Generation

Table 5.1 summarizes the anticipated future site generated vehicle trips for the proposed development based on the stated rates. The medical office is assumed to generate the same number of vehicle trips as the size of the building and the number of available parking spaces is remaining unchanged. The residential, retail and daycare trip generation rates were obtained from the ITE Trip Generation Manual, 10th Edition. The residential trip rate accounts for the site's urban location however, the retail and daycare trip rates do not as there is insufficient data on these land uses in the manual. Therefore the trip generation of 10 and 111 vehicle trips respectively for these two land uses is likely an overestimation. Since the ITE trip rate for restaurants caused the trip generation to greatly exceed the number of supplied parking spaces, it was conservatively assumed that each of the restaurant's 5 assigned parking spaces would turnover once during the PM peak hour.

Table 5.1: PM Peak Hour Vehicle Trip Generation

LAND USE	UNITS	TRIP RATES			TRIP GENERATION		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Medical Office	N/A	Same as existing			27	21	48
Residential	Units	72%	28%	0.18	26	10	36
Restaurant	Parking spaces	50%	50%	2.00	10	10	20
Retail	1,000 sf	48%	52%	3.81	5	5	10
Daycare	1,000 sf	47%	53%	11.12	52	59	111
Total					120	105	225
Existing					-34	-27	-61
NET NEW					84	78	164

The assumed trip generation rates result in 225 vehicles associated with the proposed development, 164 above the existing site's trip generation. As previously noted, the assumptions likely cause an overestimation in the trip generation.

Trip Distribution & Assignment

The vehicle trips were assigned to the road network based on existing travel patterns and likely routes to town centres across the region. It was assumed that 75% of the daycare traffic would enter the parkade and use the designated parking spaces on P1 and the remaining 25% would drop-off/pick-up on Yates Street. The resulting new impact of the development on existing vehicle volume is shown in **Exhibit 5.1**.



Exhibit 5.1
Site Traffic Forecast

Table 5.2 shows the existing PM peak hour volumes for the Cook Street & Johnson Street and Cook Street & Yates Street intersections as well as the additional traffic generated by the site at the same locations.

Table 5.2: Net Change in Future Intersection Vehicle Volumes with New Site Trips

INTERSECTION	PM PEAK HOUR VOLUMES		
	EXISTING	SITE	% CHANGE
Cook Street & Johnson Street	2,461	10	<1%
Cook Street & Yates Street	2,291	80	3%

As shown in **Table 5.2**, even with the conservative trip generation assumptions, the development is still only expected to increase the number of vehicles using the Cook Street & Johnson Street intersection by less than 1% and the Cook Street & Yates Street intersection by 3%.

5.1.2 Total Traffic

Total traffic was estimated by summing the existing traffic with the site traffic forecast (Exhibit 5.1). The resulting total traffic forecast is shown in **Exhibit 5.2**.

5.2 Future Traffic Operations

The future traffic operations (post-development) were assessed using the same analysis assumptions as the existing conditions. The results are summarized in **Exhibit 5.3** and show that the operations minimally change compared to the existing conditions. There are no operational concerns with the two study intersections as a result of the proposed development.



00 Intersection #
 000 Intersection
 PM Volumes

Exhibit 5.2 Total Traffic Forecast

04-18-0322

Cook Street Plaza
November 2018

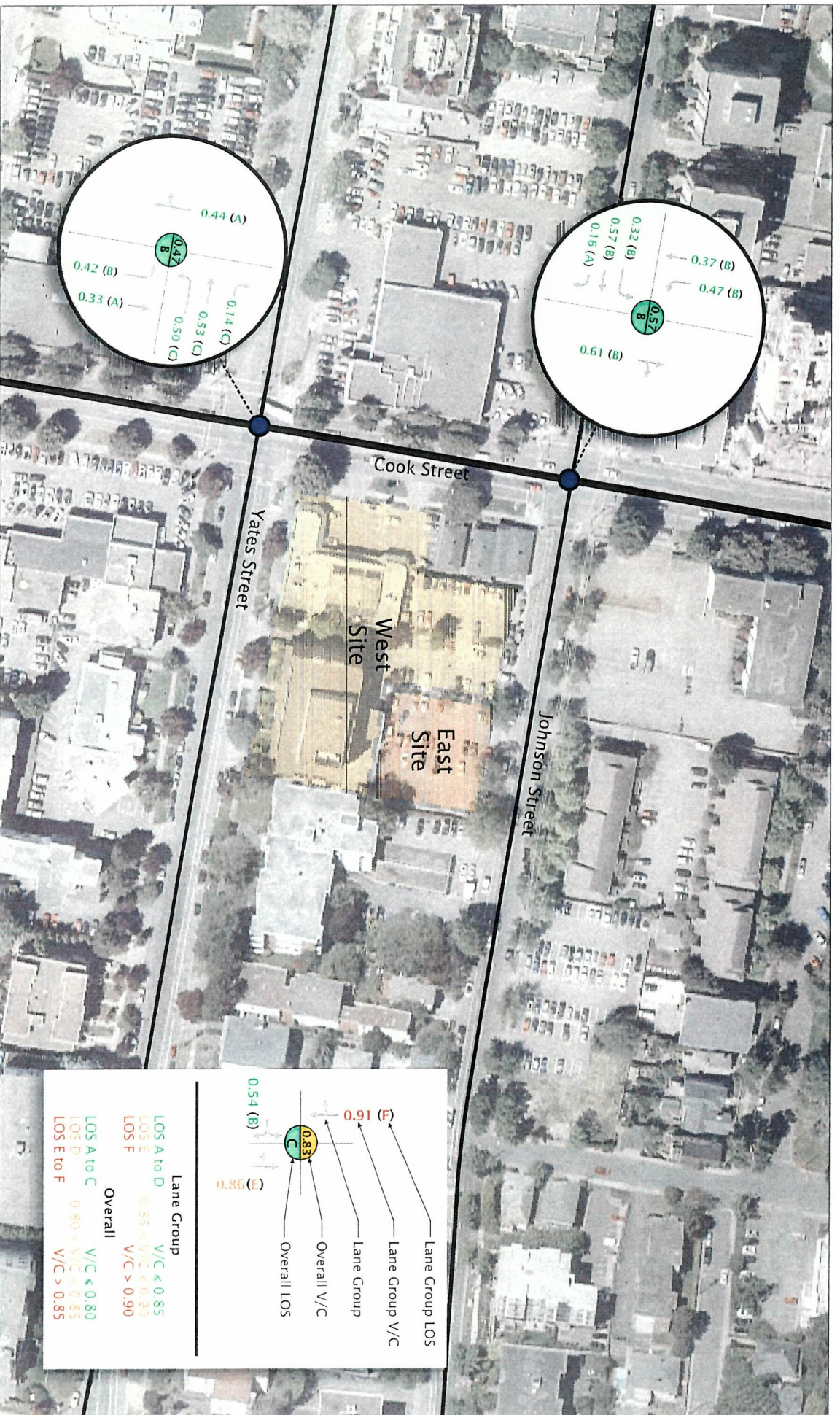


Exhibit 5.3 Total PM Peak Hour Traffic Operations

04-18-0322

Cook Street Plaza
November 2018

6. CONCLUSIONS

1. The proposed mixed-use development retains the existing medical office building and constructs 47 purpose built rental units, 47 affordable condominium units, 107 market condominium units, 560 m² of ground floor commercial space for retail and a restaurant square meters of restaurant space as well as a 930 m² daycare.
2. Vehicle accesses will be from Yates Street and Johnson Street.
3. The site is well serviced with transit and is within walking range to a wide variety of commercial and service amenities.
4. The development will satisfy the Zoning Bylaw requirement for bicycle and vehicle parking. The Long Term commercial bicycle parking will be located at ground level with end of trip facilities.
5. Even with conservative analysis assumptions, the development is not anticipated to cause noticeable impacts to the operations of the two study intersections: Cook Street & Johnson Street and Cook Street & Yates Street.

APPENDIX A

Terms of Reference

From: [Steve Hutchison](#)
To: [Simon Button](#)
Cc: [Tyler Thomson](#)
Subject: RE: Cook Street Plaza Transportation Study Assumptions
Date: Thursday, November 08, 2018 1:59:36 PM
Attachments: [image002.png](#)
[image007.png](#)

Thanks Simon,

Your description of the proposed scope appears appropriate for the proposed redevelopment.

Steve Hutchison, ASCT
Transportation Planner
Engineering and Public Works Department
City of Victoria
1 Centennial Square, Victoria BC V8W 1P6

T 250.361.0338 F 250.361.0311



From: Simon Button [mailto:sbutton@bunteng.com]
Sent: Friday, Nov 2, 2018 8:36 AM
To: Steve Hutchison
Cc: Tyler Thomson
Subject: Cook Street Plaza Transportation Study Assumptions

Hi Steve,

Thanks for meeting with us and Chard last week to discuss their project adjacent to Johnson, Cook and Yates. I believe the project team is looking to change the loading access from Cook Street to Yates Street to comply with the Highway Access Bylaw. In terms of our transportation study, would you be able to confirm our proposed scope and assumptions below? Could you also provide us with the most recent version of the City's downtown Synchro model?

Parking Supply Review:

- Review the development's bicycle and vehicle parking supplies and compare them to the Bylaw requirements. If the supply is less than the Bylaw requirement, a rationale will be provided

Design Review:

- Provide a design review of the parking and loading areas, illustrating that the proposed design can adequately accommodate personal vehicles, loading vehicles and waste

collection vehicles.

Transportation Network Review:

- Review CoV plans to confirm potential road network changes, with a focus on the AAA bike network expansion
- Collect traffic data at the site's existing driveways
- Analyze the existing traffic operations at the two nearby signalized intersections during the weekday PM peak hour:
 - o Cook Street & Johnson Street
 - o Cook Street & Yates Street
- Analyze the future traffic operations at the two signalized intersections by adding the net additional vehicle traffic the proposed development will generate on top of the existing vehicle traffic generated by the site.

Cheers,

Simon Button, M.Eng., P. Eng. | Transportation Engineer



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Total Control Panel

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