TRANSPORTATION PLANNERS AND ENGINEERS

bunt & associates

Esquimalt Lions Lodge Redevelopment: *874 Fleming Street*

Transportation and Parking Study

Final Report

Prepared for

Greater Victoria Housing Society

Date

August 28, 2019

Project No.

04-19-0017

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DEVELOPMENT SERVICES

August 28, 2019
04-19-0017

Daniel Saxton
Greater Victoria Housing Society
2326 Government Street
Victoria, BC
V8T 5G5

Dear Mr. Saxton:

Re: Esquimalt Lions Lodge Redevelopment, 874 Fleming Street
Transportation and Parking Study - Final Report

Please find attached our final Transportation and Parking Study for Greater Victoria Housing Society's Esquimalt Lions Lodge redevelopment which incorporates comments received from the Township on August 22, 2019. Upon reviewing vehicle ownership rates for residents at similar affordable rental buildings, we found the proposed vehicle parking supply appropriate. We also found that redevelopment will cause a modest amount of additional vehicles to use Fleming Street and no substantial impacts.

We trust this information will be helpful for your application approval. Please let us know if you have any questions or comments on the enclosed report.

Yours truly,
Bunt & Associates

SButton

Simon Button, P.Eng.
Transportation Engineer

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1. INTRODUCTION

1.1 Study Scope and Objectives

Greater Victoria Housing Society (GVHS) is proposing to redevelop the existing Esquimalt Lions Lodge at 874 Fleming Street at in Esquimalt, BC. **Exhibit 1.1** shows the site location which is northwest of the northern terminus of Fleming Street. The existing property is a 77-unit affordable housing building operated by GVHS which is past its effective life and does not meet the current residents' needs. The redevelopment will replace the existing building with a 137-unit affordable housing building over a single phase.

The purpose of this study is to:

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

1.2 Development Details

The development proposes to have 137 affordable residential units offered below-market rates. **Table 1.1** summarizes the unit mix. The units are modestly sized with the majority of the units being studios and one-bedrooms designed for one or two residents each.

Table 1.1: Residential Unit Mix

RESIDENTIAL UNIT TYPE	QUANTITY	PERCENT OF UNITS
Studio	28 units	20%
Accessible Studio	7 units	5%
One-bedroom	67 units	49%
Two-bedroom	24 units	18%
Three-bedroom	5 units	4%
Four-bedroom	6 units	4%
TOTALS	**137 UNITS**	**100%**

Exhibit 1.2 illustrates the proposed site plan. The development intends to extend Fleming Street westwards along the site's southern edge only. The Township of Esquimalt already has a right-of-way for this land. The development will have six surface parking stalls accessed off of this new east/west Fleming Street extension as well as access to the underground parkade.

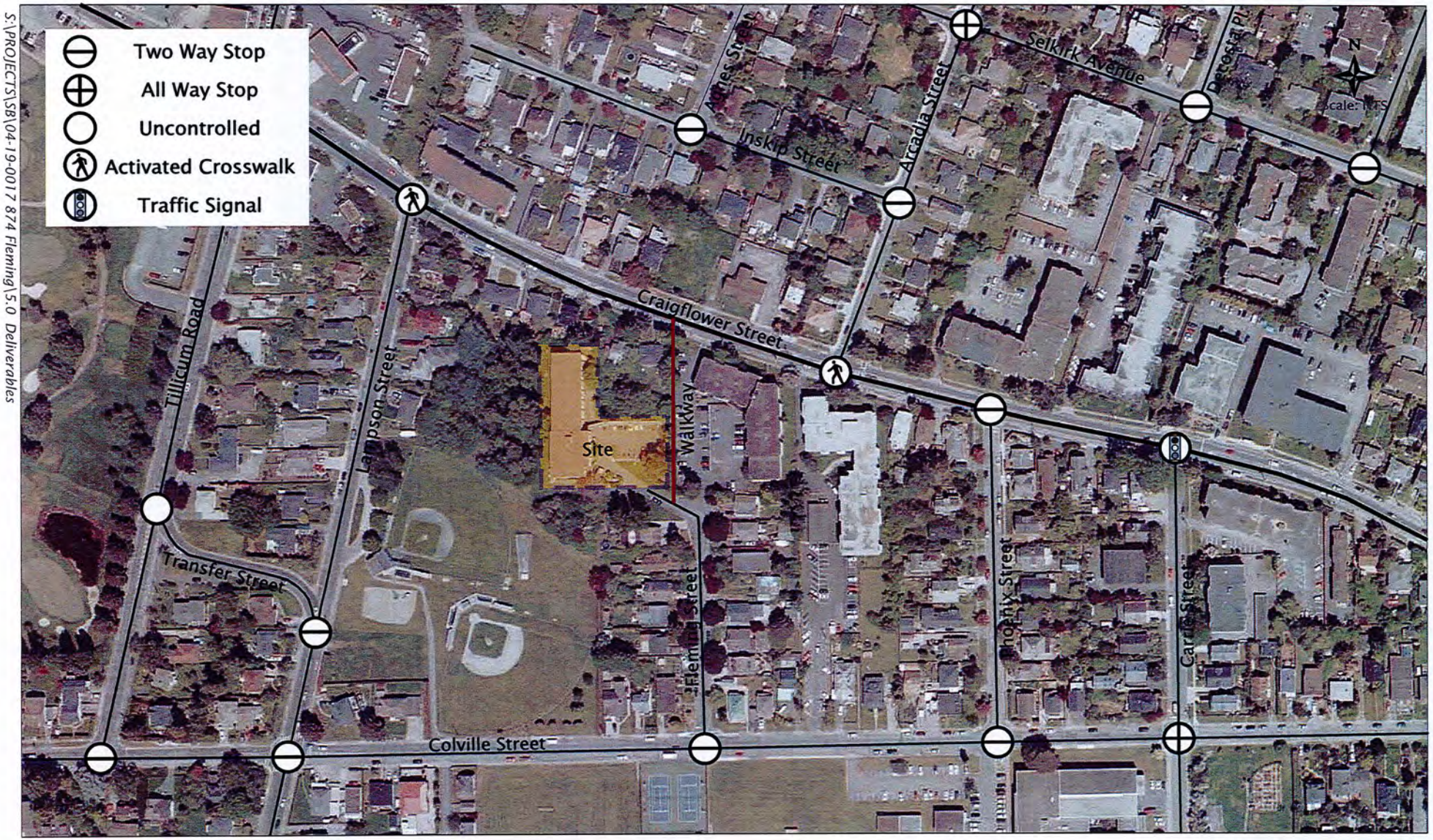

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Exhibit 1.1

Site Location

874 Fleming Street
May 2019

04-19-0017

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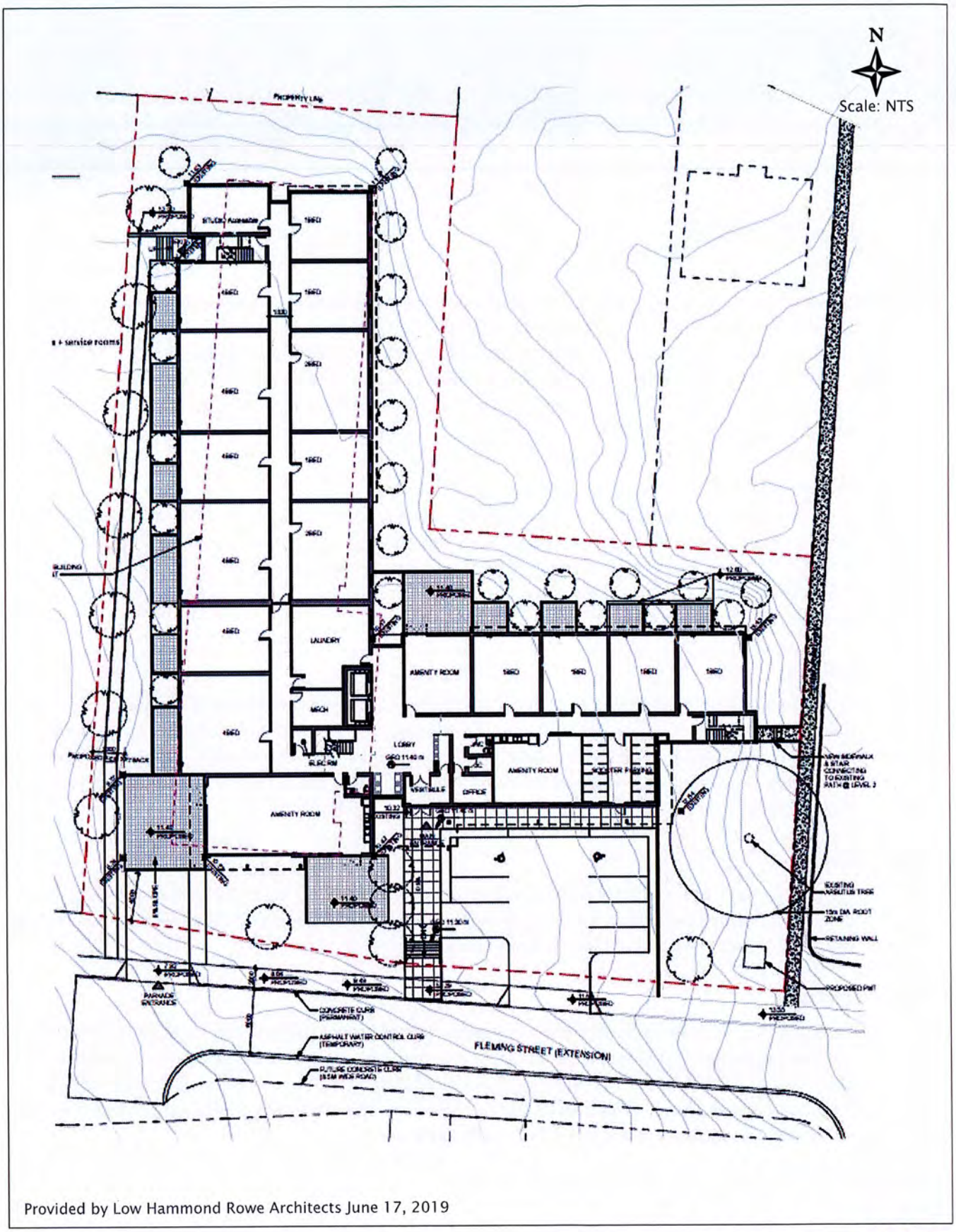

Provided by Low Hammond Rowe Architects June 17, 2019

Exhibit 1.2

Peak Hour Site Plan

874 Fleming Street
June 2019

04-19-0017

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2. LOCAL CONTEXT

2.1 Land Use

The site is located at the northern terminus of Fleming Street, which is located in a mostly residential area. There are multiple recreational facilities nearby such as baseball fields and the Gorge Vale Golf Club. There is also a small cluster of commercial destinations at the Tillicum Road & Craigflower Road intersection and Esquimalt High School is located on the south side of Colville Road, between Phoenix Street and Carrie Street.

2.2 Street Network

The development site is located on Fleming Street which is a short local street terminating at the development site. It is connected to Colville Road which provides east-west connectivity through Esquimalt and has one travel lane in each direction. Craigflower Road is located north of the development site and connects to both View Royal and Victoria. Craigflower Road has one through lane in each direction, in addition to left turn lanes.

2.3 Walking

The nearby collector and arterial roads such as Colville Road, Lampson Street and Craigflower Road have sidewalks on both sides; however, local streets (including Fleming Street) typically do not. Designated pedestrian crossings are provided at major intersections and at regular intervals on Craigflower Road. A public walkway is available immediately east of the development site, connecting the northern terminus of Fleming Street with Craigflower Road.

2.4 Cycling

Craigflower Road has painted bike lanes in both directions in the vicinity of the development site. The other major cycling route nearby is the E&N multi-use trail which connects through Victoria West and View Royal and is 600 metres from the development site

2.5 Transit

The current and future residents are located within 100 metres of the bus stop for BC Transit route 14 which is located on Craigflower Road. Route 14 operates with 10-minute headways during peak periods and connects the site to the Victoria General Hospital, View Royal, Victoria West, Downtown Victoria, Camosun College (Lansdowne Campus) and the University of Victoria. Bus shelters are provided at both eastbound and westbound bus stops on Craigflower Road.

3. DEVELOPMENT PLAN REVIEW

3.1 Bicycle Parking

The Esquimalt Parking (Bylaw 2011) does not have any requirements for bicycle parking for multi-family dwellings. However, the development is planning on providing 137 secure bicycle parking spaces (1.0 per unit) in the parkade. Approximately six short-term bicycle parking spaces with weather protection for visitors should be provided near the building's primary entrance.

3.2 Vehicle Parking

3.2.1 Bylaw Requirement

The Esquimalt Parking (Bylaw 2011) requires 1.30 parking spaces per dwelling unit in medium and high-density buildings such as the proposed development which results in a requirement of 178 spaces. 0.25 spaces/unit are required to be reserved for visitors. This results in a requirement of 144 spaces for residents and 34 spaces for visitors. The Parking Bylaw does not account for the affordable nature of the development which results in residents owning substantially fewer vehicles (and thus requiring fewer parking spaces) than market residential buildings.

3.2.2 Proposed Supply

The development plan includes 66 parking spaces (including 4 accessible spaces) which equates to 0.48 spaces per residential unit. One loading space is also provided.

3.2.3 Vehicle Parking Demand Analysis

Providing the appropriate level of vehicle parking is critical, not enough spaces can cause parking demand to spill onto adjacent streets while over providing vehicle parking can result in wasted resources, unnecessary promotion of vehicle ownership and vehicle dependence.

For low-income residential buildings, the opportunity to provide lower, more appropriate vehicle parking supplies can lead to lower building construction costs and therefore lower rental rates.

To more specifically assess the anticipated vehicle parking demand of the proposed development Bunt examined a variety of development and location-specific factors.

Factors Affecting Resident Auto Ownership

Vehicle ownership, and therefore the need for vehicle storage (parking) depends on a number of factors. Key factors are listed below:

- Size of the household unit (number of bedrooms);
- Tenure of the unit (rental or strata);
- Income level;

- Number of working adults in the household (which related to the size of the unit but also age distribution of residents);
- Proximity to frequent and high-quality transit;
- Proximity and quality of active mode infrastructure; and,
- Transportation Demand Management (TDM) measures in place at the site.

Comparable Affordable Housing Parking Rates

Bunt obtained parking supply and parking demand data comparable GVHS buildings (**Table 3.1**) and comparable Capital Region Housing Corporation buildings (**Table 3.2**). The buildings compared were selected as they share similar characteristics such as expected resident demographics, unit size, proximity to services and that they are all non-downtown locations. Tables 3.1 and 3.2 show that the average parking demand is approximately 0.37 spaces per unit and no building had a parking demand greater than 0.59 spaces per unit. The existing Esquimalt Lions Lodge building has a residential parking demand rate of 0.27 spaces per unit.

Table 3.1: Vehicle Ownership Rates for Comparable GVHS Buildings in Greater Victoria

COMPLEX NAME	LOCATION	SUBSIDIZED	NUMBER OF UNITS	PARKING SPACES	PARKING SPACES OCCUPIED BY TENANT	PARKING DEMAND RATE
Colwood Lodge	85 Belmont Road Victoria	YES	50	37	24	0.48
Constance Court	1325 Esquimalt Road Esquimalt	YES	52	26	18	0.35
Grafton Lodge	506 Crofton Street Esquimalt	YES	29	20	17	0.59
Townley Lodge	1780 Townley Street Saanich	NO	39	16	13	0.33
Esquimalt Lions Lodge	874 Fleming Street Esquimalt	NO	77	23	21	0.27
					Weighted Average	0.37
					Minimum Value	0.27
					MAXIMUM VALUE	**0.59**

Source: Greater Victoria Housing Society

Table 3.2: Vehicle Ownership Rates for Comparable CRHC Buildings in Greater Victoria

COMPLEX NAME	LOCATION	SUBSIDIZED	NUMBER OF UNITS	PARKING SPACES OCCUPIED BY TENANT	PARKING DEMAND RATE
Amberlea	3330 Glasgow Avenue	YES	44	22	0.50
The Birches	1466 Hillside Avenue	YES	49	8	0.16
Leblond Place	390 Waterfront Crescent	YES	53	23	0.43
Rosewood	1827 McKenzie Avenue	YES	44	15	0.34
Springtide	270 Russell Street	YES	48	19	0.40
The Heathers	3169 Tillicum Road	YES	26	11	0.42
Viewmont Gardens	4450 Viewmount Avenue	YES	36	14	0.39
				Weighted Average	0.37
				Minimum Value	0.16
				MAXIMUM VALUE	**0.50**

Source: Capital Region Housing Corporation

Effect of Lower Incomes

The Canada Mortgage and Housing Corporation (CMHC) (Research Highlight, Socio-Economic Series Issue 50- Revision 2) concluded that household income is the second best predictor of vehicle ownership. As income increases, auto ownership and use increase. A study reported in the Australia Transportation Forum (2007) confirmed a strong correlation between vehicle ownership and household income. A study published by Pushkar et al (TRB 2000) based on a survey of 115,000 households in Toronto indicated that higher income households had more vehicles. A study conducted by Bunt & Associates in the Vancouver area in the early 1990s and in the Calgary area in 2003 also supported the positive, almost linear relationship between income and vehicle ownership.

Effect of Tenure & Size of Units

Rental units tend to have lower vehicle ownership levels compared to strata units. This contention is supported by findings from the 2012 and 2018 *Metro Vancouver Apartment Parking Studies* (MVAPS). The study included research and a comprehensive survey program of over 1,000 apartment household units in the Greater Vancouver area, including strata and rental units.

A key finding in the MVAPS was that residents of rental apartment units had average vehicle ownership that was approximately 65% of that of strata units. There was also a clear link between the number of bedrooms and vehicle ownership.

As discussed in Section 1, the units in the proposed development tend to be small in size. The building's units are designed to provide housing for low- to moderate-income families and seniors. All units are to be designated rental units.

Visitor Parking

The Township of Esquimalt Parking Bylaw (Bylaw 2011) requires a high level of residential visitor parking at 0.32 spaces per unit for multi-unit residential uses. However, based on Bunt's previous experience for similar village centres in municipalities across Greater Victoria and Metro Vancouver, a visitor parking supply rate of 0.05 to 0.10 spaces per unit is more appropriate for the proposed development.

This recommendation stems from the Metro Vancouver Residential Apartment Parking Study[1] which found that visitor parking demand never exceeded 0.06 vehicles per dwelling unit during the study period. These rates have been further substantiated by previous Bunt studies for similar projects.

3.2.4 Vehicle Parking Summary

Due to location, unit size and demographic factors we anticipate that the proposed parking supply rate of 66 spaces total (0.48 spaces per unit) is appropriate for the proposed development. The empirical parking demand data presented above indicates that the parking supply should approximately consist of 52 to 59 residential spaces and 7 to 14 visitor spaces.

[1] The visitor parking demand results from the Metro Vancouver Residential Parking Study was obtained from suburban sites in Burnaby, Port Coquitlam and Richmond which had varying levels of transit service. The visitor parking demand was not correlated with proximity to the Frequent Transit Network; in fact the site with the worst transit service had the lowest peak visitor parking demand of 0.02 visitor vehicles per dwelling. Therefore the results from the Metro Vancouver Residential Parking Study are seen as applicable to the proposed development.

4. TRAFFIC OPERATIONS REVIEW

4.1 Traffic Operations Assessment Methodology

The traffic operations were assessed at the Fleming Street & Colville Road intersection for the weekday AM & PM peak hours. The analysis was completed for the existing conditions (2019) and for the 2032 horizon year (ten years after development completion). The 2032 analysis includes the vehicle trips generated by the proposed development and background traffic (i.e. future traffic without development).

The operation of study intersection was 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 minimal queuing time conditions while a LOS "F" represents an over-capacity condition with considerable congestion and/or queuing time. A queuing time of fewer than 10 seconds receive a LOS A whereas queuing times greater than 50 seconds receive a LOS F. In downtown and Town Centre contexts, during peak demand periods, queuing times greater than 50 seconds (LOS F) are common.

The volume to capacity (V/C) ratio of an intersection represents the 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 congested intersection where drivers may have to wait through multiple signal cycles. In urban downtown and town centre contexts, during peak demand periods, V/C ratios over 0.90 and even 1.0 are common.

4.2 Existing Conditions

Bunt collected the morning transportation data on February 1, 2019, and the afternoon transportation data on January 31, 2019. During this time period, 7:45 to 8:45 am was identified as the AM peak hour and 3:30 to 4:30 pm was identified as the PM peak hour. These peak hours are earlier than usual, likely impacted by the travel patterns caused by Esquimalt High School and CFB Esquimalt. **Exhibit 4.1** illustrates the vehicle volumes for these two peak hours.

Bunt observed approximately 100 vehicles per hour (both directions) on Colville Road during peak hours. 10 to 15 vehicles per hour (both directions) were observed on Fleming Street during peak hours. During data collection, the number of vehicles travelling on Fleming Street was separated into two categories: vehicles accessing the existing Esquimalt Lions Lodge and vehicles accessing the remaining 13 homes on Fleming Street. Although the sample size was fairly small, it is clear that the existing Esquimalt Lions Lodge contributes to less than half of the existing vehicle travel on Fleming Street.

Exhibit 4.1 also shows the existing traffic operations for which there are no concerns. All movements operate within their capacity and have reasonable queuing times.

4.3 Future Conditions

4.3.1 Background Traffic Growth

Background traffic is the traffic that would exist without the proposed development. Background traffic was estimated by growing the existing vehicle volumes on Colville Road by 1% per year. This is a conservative assumption as the vehicle volumes in other locations in Esquimalt (such as Admirals Road and Esquimalt Road) are growing by less than this rate.

4.3.2 Development Generated Traffic

The proposed redevelopment will increase the number of affordable residential units from 77 to 137. The resulting increase in vehicle traffic due to the 60 additional affordable residential units was estimated using two methods:

1. Using the observed number of vehicles entering/exiting the existing building.
2. Using industry standard vehicle trip rates.

Vehicle Trip Generation using Observed Travel Patterns

As previously mentioned in Section 4.2, the existing Esquimalt Lions Lodge contributes to less than half of the existing vehicle travel on Fleming Street. This equates to less than 7 vehicle trips during the AM peak hour and less than 8 vehicle trips during the PM peak hour. Since the existing building has 77 units, it generates 0.09 vehicle trips per unit during the AM peak hour and 0.10 vehicle trips per unit during the PM peak hour. If residents of the redeveloped Esquimalt Lions Lodge use their vehicle in a similar pattern to the existing residents, the additional 60 residential units equate to an additional 5 vehicles on Fleming Street during the AM peak hour and 6 vehicles during the PM peak hour.

Vehicle Trip Generation using Standard Trip Rates

The Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition) was also be used to estimate vehicle trip generation. The ITE trip rate for Mid-Rise Multifamily Housing was used as it is the most appropriate land use included in the manual. This trip rate likely overestimates the number of vehicle trips the building will generate because it is based on market-residential buildings. Low-income apartments generally having lower vehicle ownership rates and thus have lower vehicle trips. There are no ITE rates for low-income apartments.

Table 4.1 presents the vehicle trips rates from the ITE Trip Generation Manual and the resulting vehicle trip generation. This vehicle trip generation method results in 22 additional vehicles on Fleming Street during the AM peak hour and 26 additional vehicles on Fleming Street during the PM peak hour.

Table 4.1: Peak Hour Vehicle Trip Generation

	AM PEAK HOUR			PM PEAK HOUR		
	TOTAL	IN	OUT	TOTAL	IN	OUT
Trip Rate	0.36 trips/unit	26%	74%	0.44 trips/unit	61%	39%
Trip Generation	22 trips	6 trips	16 trips	26 trips	16 trips	10 trips

Vehicle Trip Generation Estimate

The two vehicle trip generation methods provide a significant range of 5 to 26 additional vehicle trips per peak hour. The realized vehicle trip generation post-redevelopment is anticipated to be near the lower end of this range since the observed travel patterns are likely more accurate than the values in the ITE Trip Generation Manual.

4.3.3 Traffic Operations Results

In order to complete a 'worst-case' analysis, the future conditions were assessed using the higher ITE Trip Generation Manual estimate of 25 additional vehicles during AM peak hour and 26 additional vehicles during the PM peak hour. **Exhibit 4.2** illustrates the 2032 vehicle traffic forecast which is based on vehicle traffic on Colville Road growing at 1% per year and the 'worst-case' traffic forecasts for the proposed redevelopment.

Exhibit 4.2 also demonstrates the traffic operation results for the year 2032. As with the existing conditions, there are no traffic operational concerns with the study intersection well within its capacity.

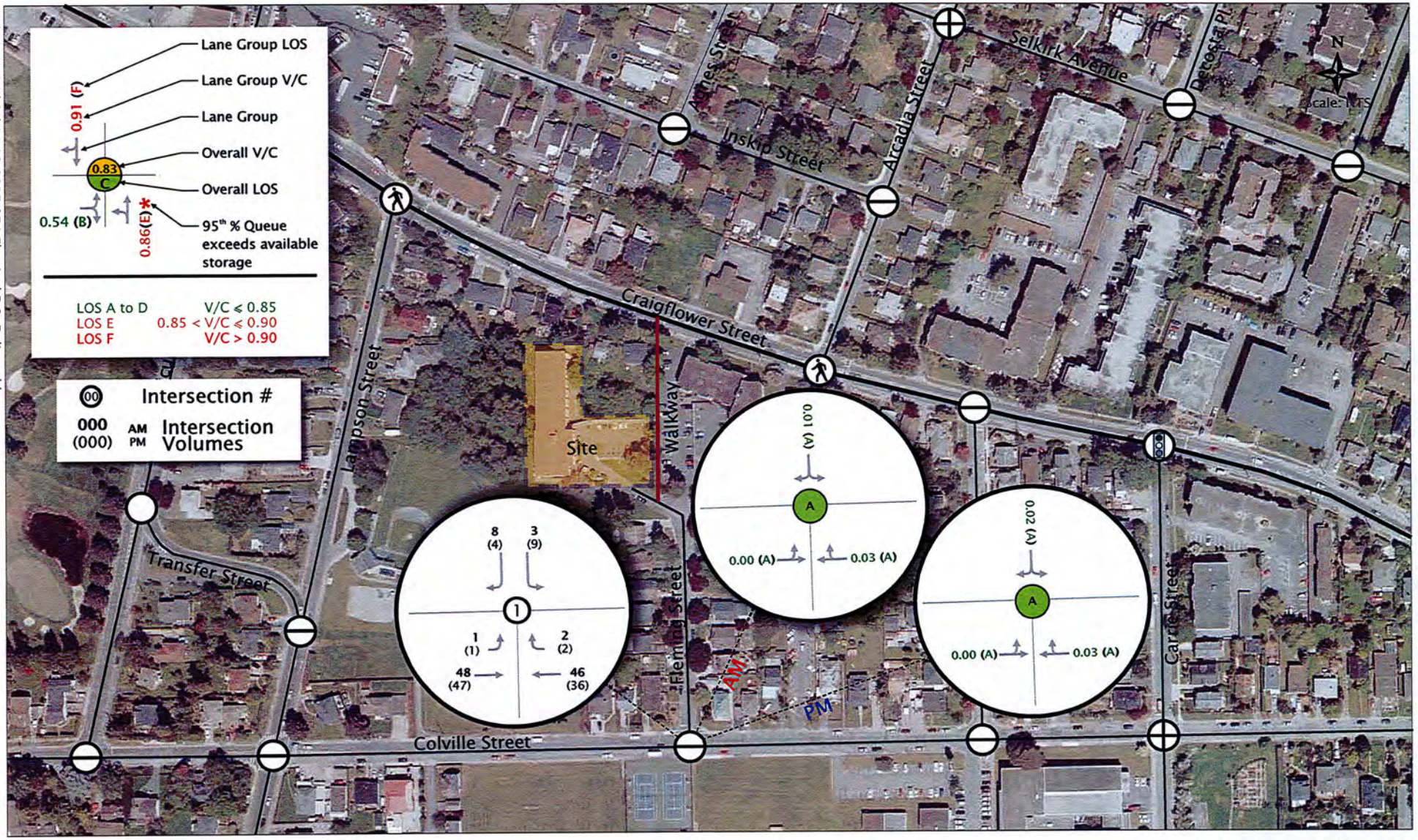

Exhibit 4.1

Existing Vehicle Volumes & Operations

874 Fleming Street
May 2019

04-19-0017

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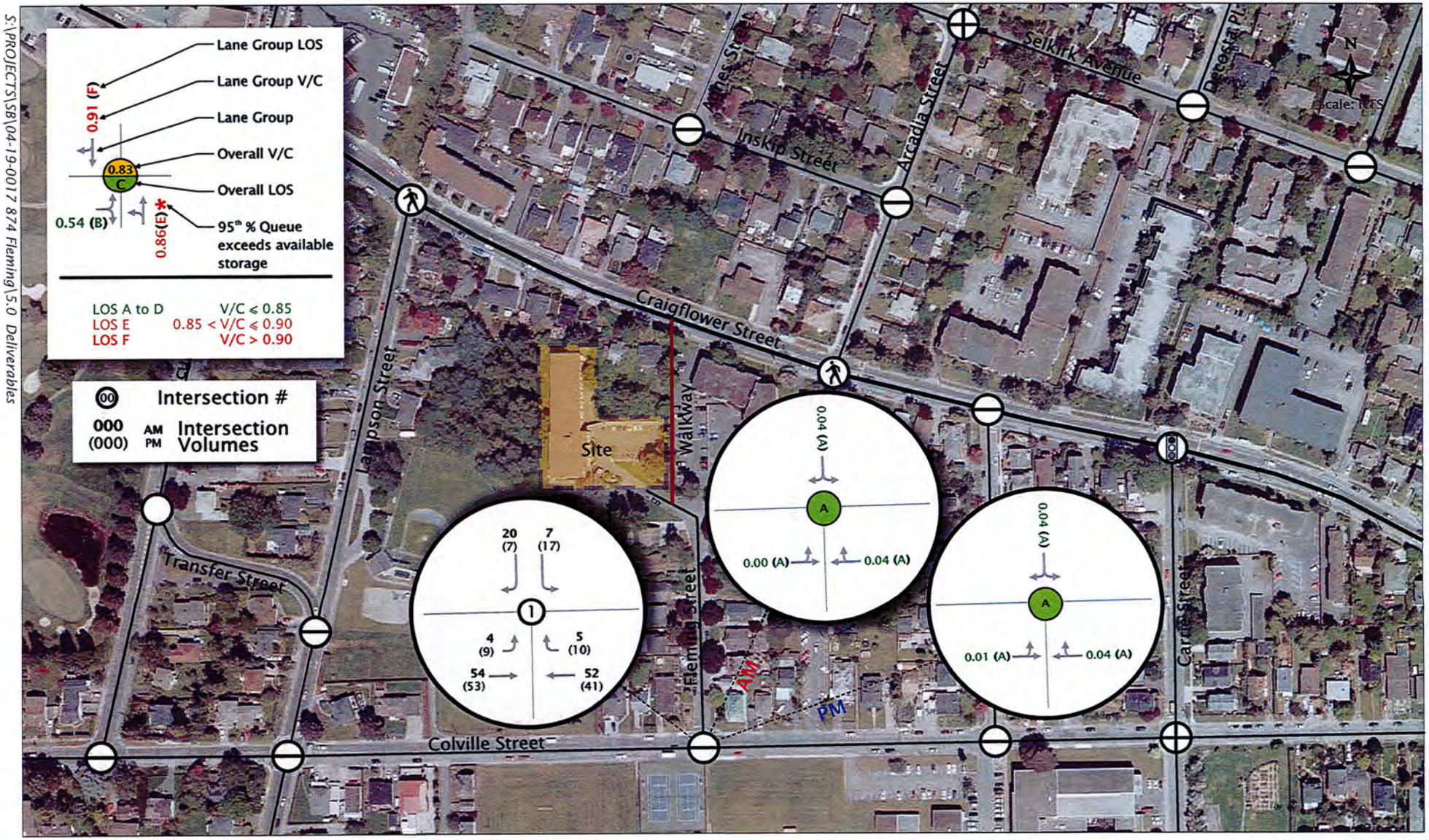

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Exhibit 4.2

2032 Vehicle Volumes & Operations (with Development)

874 Fleming Street
May 2019

04-19-0017

bunt & associates

5. SUMMARY AND RECOMMENDATIONS

5.1 Summary

- GVHS intends to redevelop Esquimalt Lions Lodge which will increase the number of residential units from 77 to 137 (60 unit increase). All existing and future homes will be affordable rental apartments.
- Esquimalt Lions Lodge is located to the northwest of the northern terminus of Fleming Street. The development intends to extend Fleming Street westwards along the site's southern edge only. The Township of Esquimalt already has a right-of-way for this land.
- The Esquimalt Parking (Bylaw 2011) does not have a minimum vehicle parking supply rate specifically for affordable homes.
- The development plans to provide 0.48 vehicle parking spaces per unit. This supply rate was empirically tested against vehicle ownership rates in affordable residential buildings and visitor parking observations.
- Redevelopment is anticipated to add 5 to 10 vehicles to Fleming Street per peak hour.
- The intersection of Fleming Street & Colville Road currently operates within capacity and is forecasted to continue operating within capacity with the proposed development and background traffic growth.

5.2 Recommendations

- Supplying approximately 0.48 vehicle parking spaces is appropriate for the proposed development. Of the 66 parking spaces provided, approximately 52 to 59 spaces should be reserved for residents and 7 to 14 spaces for visitors.
- Short-term bicycle parking should be provided on-site near the primary building entrance with weather protection.