

899 Esquimalt Road
Transportation Impact Assessment
Final Report



Prepared for
Farzin Yadegari Architect Inc

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CORPORATE AUTHORIZATION

Prepared By: Simon Button, P.Eng., M.Eng.
Caitlyn Quach, Co-op Student.

Bunt & Associates Engineering Ltd.
421 – 645 Fort Street
Victoria, BC V8W 1G2
Canada

Reviewed By: Jason Potter, PTP
Senior Transportation Planner

Telephone: +1 250 592 6122

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EXECUTIVE SUMMARY

Coastal Priority Property Ltd. is proposing to develop the properties at 899 Esquimalt Road and 896 Wollaston Street. The development will include a small commercial space fronting Esquimalt Road, 66 multi-family dwellings and three townhouses fronting Wollaston Street.

The development is located at the Esquimalt Road and Head Street intersection which is one of the four mixed-use commercial clusters identified in the Township of Esquimalt's OCP. 899 Esquimalt Road is currently a two storey building with a convenience store at ground-level and residential above. 896 Wollaston Street is currently a single-family house. The site is well serviced with transit, good cycling infrastructure and has a variety of commercial amenities within a distance widely considered to be a walkable range.

The development will have three levels of underground parking with each level accessed from a separate driveway. The Esquimalt Parking Bylaw requires the proposed development to provide 107 parking spaces. The development proposes a total of 94 underground vehicle parking spaces, representing a 13 parking space variance from Bylaw.

The P1 level with 21 spaces will be available for the commercial component of the development which is anticipated to be a medical clinic. This exceeds the Bylaw requirement of 15 spaces for the commercial component. Eight of these 21 spaces are reserved for the Clinic; the remaining 13 spaces can be used by either clinic or residential visitors. Peak residential visitor demand is anticipated to be approximately seven parking spaces and to not coincide with the clinic's peak demand period. The proposed 21 spaces are therefore anticipated to meet peak period parking demands for both the clinic and residential visitors. Proposed parking spaces for residents meet Bylaw requirements.

The Esquimalt Road and Head Street intersection currently has approximately 3,000 vehicles travelling through it during the PM peak hour. The proposed development is anticipated to add approximately 40 vehicle trips to the intersection during the PM peak hour.

The Esquimalt Road and Head Street intersection currently operates well during the PM peak hour. The southbound-left and westbound-left movements have vehicle queuing times of 85 seconds and 45 seconds respectively which is reasonable since it is in an urban environment and the vehicle queues typically clear during each traffic signal cycle. The remainder of the vehicle movements do not have significant queuing times.

1. INTRODUCTION

1.1 Study Scope and Objectives

Coastal Priority Property Ltd. is proposing to develop the properties at 899 Esquimalt Road and 896 Wollaston Street. The location of the site is at the intersection of Head Street in Esquimalt, BC and is shown in **Exhibit I.1**.

The development is located in the centre of one of four commercial-mixed land use clusters in Esquimalt. 899 Esquimalt Road is currently a two storey building with a convenience store at ground-level and residential above. 896 Wollaston Street is currently a single-family house.

The proposed development will be providing 69 residential units and a commercial space fronting Esquimalt Road.

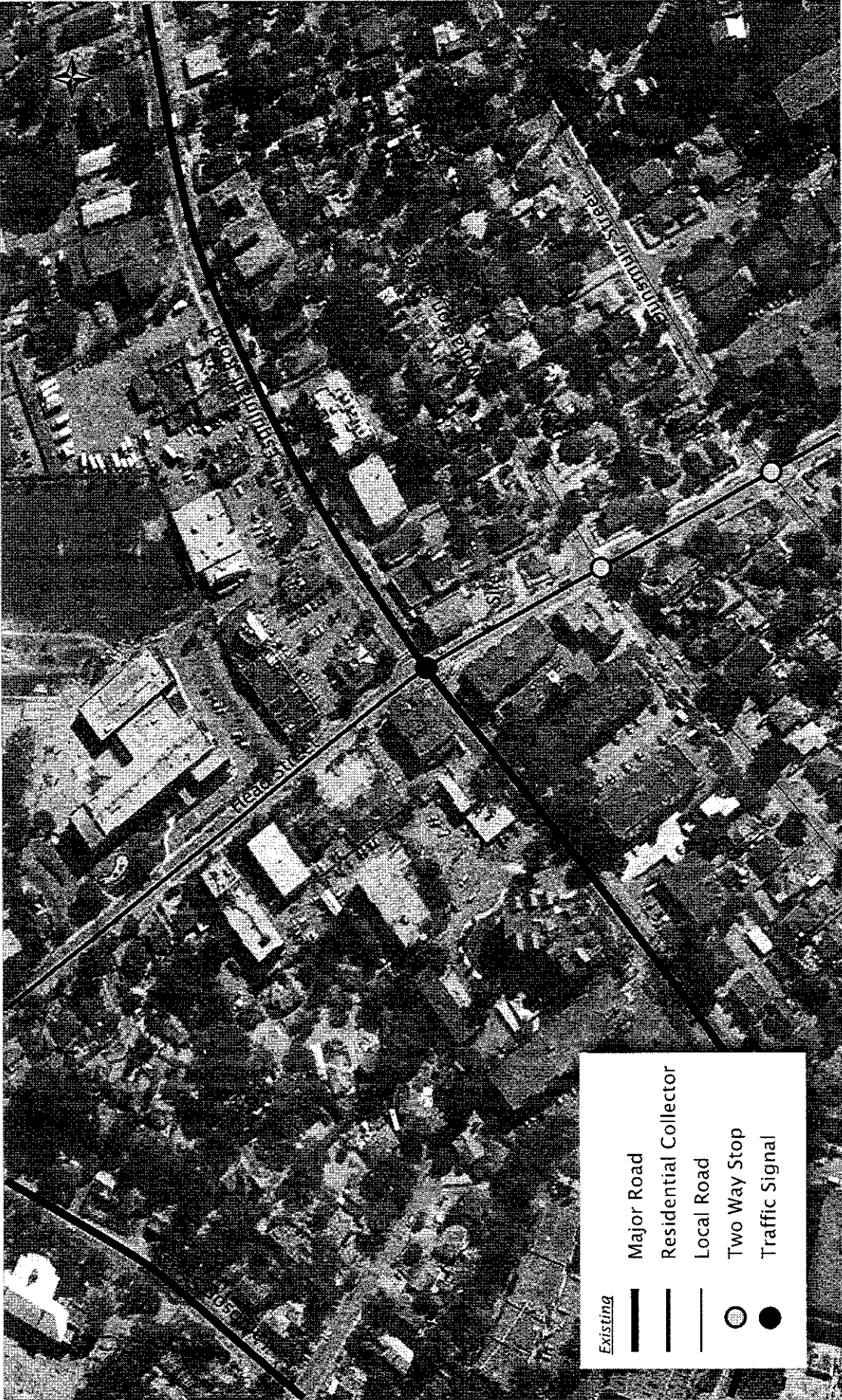
The purpose of this study is to:

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

1.2 Development Details

The development will have a total of 69 residential units and a small commercial space. 64 units in the residential tower will range from 570 square foot one-bedroom units to 996 square foot two-bedroom units. In addition, there will be two two-bedroom residential units on the main floor and three 1,236 square foot townhouses fronting Wollaston Street at ground-level. There will also be 4,095 square feet of commercial space fronting Esquimalt Road.

The site plan for the main floor is provided in **Exhibit 1.2**. The site has significant grade changes along Head Street with Esquimalt Road being three storeys higher than Wollaston Street. Because of this grade difference the three levels of underground parking will be accessed from three separate driveways.



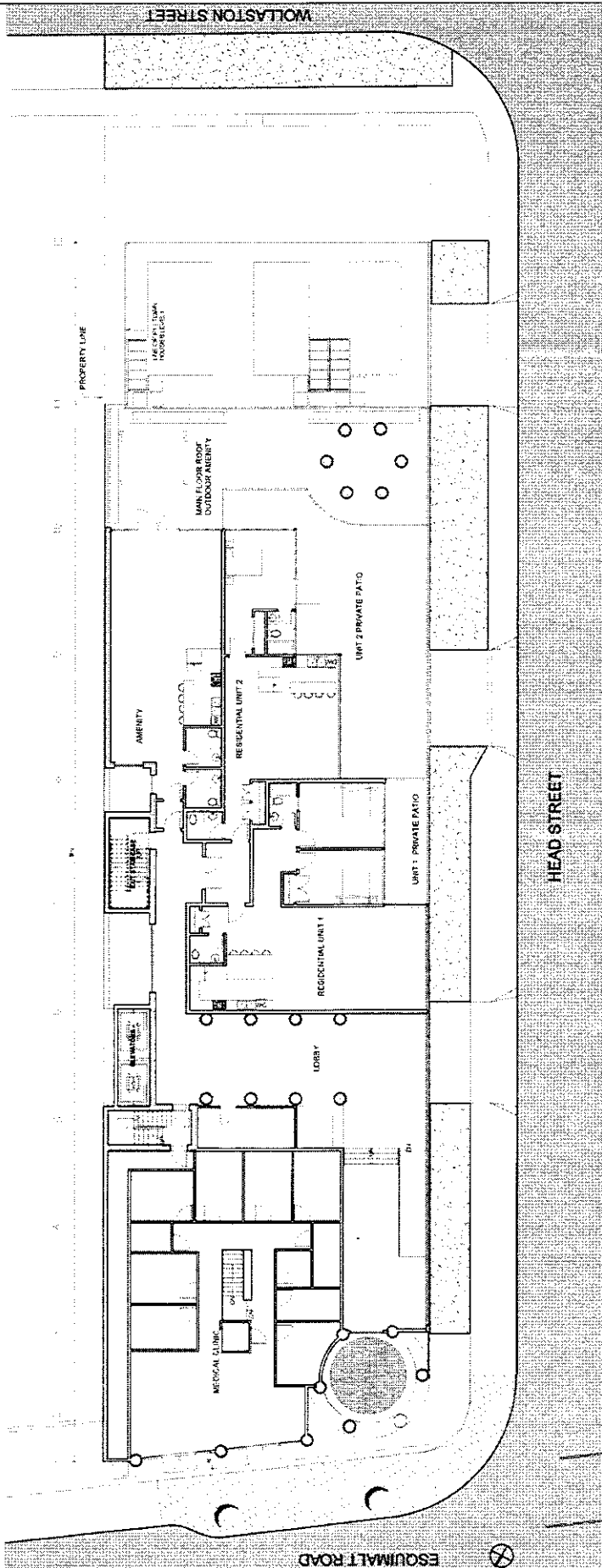
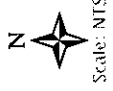


Exhibit 1.2 Site Plan

899 Esquimalt Road TIA
October 2019

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2. LOCAL CONTEXT

2.1 Land Use

The site is located at the intersection of Esquimalt Road and Head Street which is one of four commercial activity clusters in Esquimalt. There are a series of commercial buildings near the intersection which contain a variety of retail stores and restaurants. There are also multi-family residential buildings near the intersection, particularly on Esquimalt Road. The neighbourhood transitions to single-family housing away from Esquimalt Road. A French K-12 school (École Victor-Brodeur) is located on Head Street 150 metres north of Esquimalt Road.

2.2 Street Network

Esquimalt Road is classified as a Major Road while Head Street is classified as a Residential Collector Road. Esquimalt Road provides connections to Victoria-West and downtown Victoria to the east as well as CFB Esquimalt to the west. Head Street connects to Lampson Street 400 metres north of Esquimalt Road. Lampson Street is one of two north/south Major Roads.

2.3 Walking and Cycling

The majority of the nearby streets have sidewalks on both sides. There are limited pedestrian crossings on Esquimalt Road. There are pedestrian push buttons to activate the pedestrian signal phase at the Esquimalt Road / Head Street intersection.

Esquimalt Road has painted bike lanes in both directions on either side of Head Street, but not through the intersection. The bike lanes continue eastwards to the Johnson Street Bridge in the City of Victoria and westwards to approximately 1.1 kilometres to the west.

The site is approximately 1 kilometre from the E&N Regional Trail which currently extends from Esquimalt Road in the east to Songhees First Nation in the west.

2.4 Transit

BC Transit route 15 services the site with eastbound and westbound stops on Esquimalt Road at the Head Street intersection. Route 15 connects the site with CFB Esquimalt to the west as well as Victoria-West, Downtown Victoria and the University of Victoria to the east. Bus Shelters are provided at both eastbound and westbound bus stops at Head Street.

3. SITE PLAN DESIGN REVIEW

3.1 Vehicle Parking

The Esquimalt Parking Bylaw requires 1.3 parking spaces per dwelling in medium and high density buildings and 2.0 parking spaces per townhouse. The parking requirement for commercial spaces is dependent on the specific land use. The tenant for the single commercial unit is currently unknown. For this report it was assumed that the tenant would fall under the 'retail sales of goods and services' category in the Parking Bylaw. As shown in **Table 3.1**, a total of 94 parking spaces are proposed whereas the minimum requirement is 107 spaces.

Table 3.1: Esquimalt Parking Bylaw Requirements and Proposed Supply

PARKING SPACE TYPE	BYLAW REQUIREMENT	PROPOSED SUPPLY	MET / NOT MET
Total Parking Spaces	1.3 spaces per condo x 66 condos = 86 spaces 2.0 spaces per townhouse x 3 townhouses = 6 spaces 1.0 space per 25 m ² of commercial floor area x 380 m ² = 15 spaces Total = 107 spaces	94 spaces	Not met. Variance required.
Disabled Persons Parking Spaces	1 space per 50 required total spaces = 2 spaces	2 spaces	Meets requirements.
Small Vehicle Parking Spaces	Maximum of 50% of total required parking spaces = 53 spaces	51 spaces	Met for 50% of Bylaw required spaces, but not met for provided spaces. 50% of provided spaces equates to 47 small vehicle spaces which is 4 spaces above 50%.

The current development plan does not meet the Parking Bylaw requirements for total parking supply and disabled persons parking spaces. Changes to the development plans may be possible to bring the development in line with the Bylaw requirements. If changes cannot be made, variance(s) will be required.

The Parking Bylaw requires that 25% of the residential parking be reserved for visitors. This equates to a visitor parking supply requirement of 23 spaces out of the 92 residential parking spaces.

3.2 Bicycle Parking

The development offers 84 indoor bicycle spaces, this equates to one space per residential unit plus 15 additional spaces which could be used by commercial employees or residents.

3.3 Vehicle Access

The parking spaces are distributed across three levels of underground parking. Each level of underground parking is accessed from a separate driveway off-of Head Street. This driveway arrangement is possible

due to the steep grade on Head Street. The horizontal distances between the driveways are large enough that conflicts between drivers entering/exiting different driveways are not anticipated. The horizontal distance between the first two driveways is approximately 16.6 metres and the horizontal distance between the second and third driveways is approximately 13.6 metres.

Having three separate driveways could pose some operational difficulties if they are not managed appropriately. It is recommended that all commercial and residential visitor parking spaces be provided on the upper parking level (P1) and all of the parking spaces on P2 and P3 be assigned to residents. Signage reflecting this parking arrangement should be erected at all three driveway entrances. This parking arrangement will simplify the parking arrangement and minimize confusion with the three parkade entrances.

3.4 Commercial Loading

The Esquimalt Parking Bylaw requires off-street loading spaces for commercial land uses when the floor area exceeds 700 square metres. Since the proposed development has 380 square metres of commercial floor area it does not require off-street loading spaces.

There is an existing 9.5 metre long commercial loading space in front of the adjacent property (893 Esquimalt Road) which will provide convenient access to the proposed commercial space. 9.5 metres is a sufficient length for the type of vehicles which will service the 4,095 square foot commercial space.

3.5 Residential Loading

The garbage room for the building is located on P1. Garbage compactors typically require 4.4 metres of vertical clearance which is typically unviable in underground parkades. Due to the vertical clearance restrictions, the development is proposing to construct a loading space on Head Street between the accesses to P3 and P2. The loading space would be used as a staging area for taller vehicles such as garbage compactors. The loading space could also be used for larger moving trucks when residents move in and out of the building.

3.6 Parking Recommendations

The 21 parking spaces (including two disabled persons parking spaces) on P1 are anticipated to exceed the demand for commercial and residential visitor parking. The Esquimalt Parking Bylaw requires 25% of the residential parking be reserved for visitors. For this development 25% of the residential parking requirement is 23 spaces which equals 0.33 spaces per dwelling. The Metro Vancouver Apartment Parking Study analyzed the visitor parking demand at three strata sites in a suburban context (Burnaby, Richmond and Port Coquitlam). The study found that visitor parking at the three sites did not exceed 0.06 parked vehicles per dwelling.

It is anticipated that a visitor parking supply rate of 0.1 spaces per dwelling will be able to meet the visitor parking demand in the proposed development. A visitor parking supply rate of 0.1 spaces per dwelling equates to a visitor parking supply of 7 spaces.

The P1 level with 21 spaces will be available for the commercial component of the development which is anticipated to be a medical clinic. This exceeds the Bylaw requirement of 15 spaces for the commercial component. Eight of these 21 spaces are reserved for the Clinic; the remaining 13 spaces can be used by either clinic or residential visitors. Peak residential visitor demand is anticipated to be approximately seven parking spaces and to not coincide with the clinic's peak demand period. The proposed 21 spaces are therefore anticipated to meet peak period parking demands for both the clinic and residential visitors. Proposed parking spaces for residents meet Bylaw requirements.

A comparison between the Esquimalt Parking Bylaw requirements and the developer's proposed supply is shown in **Table 3.2**. The proposed parking supply is anticipated to exceed the anticipated parking demands. There may be an oversupply of visitor parking. Bunt recommends that the strata monitor the visitor parking occupancy and repurpose the parking spaces if there is an oversupply.

Table 3.2: Esquimalt Parking Bylaw Requirements and Proposed Supply

PARKING TYPE	BYLAW REQUIREMENT	PROPOSED SUPPLY	COMMENT
Residential – Resident¹	69 spaces	73 spaces	Exceeds Bylaw requirement.
Residential – Visitor²	23 spaces	13 spaces which are shared with commercial visitors. ³	Below Bylaw requirement but exceeds anticipated demand.
Commercial	15 spaces	6 reserved for clinic, plus 2 for ambulances, plus 13 visitor spaces which are shared with residential visitors.	Meets Bylaw requirement with consideration of shared use.
TOTAL	107 SPACES	94 SPACES	Below Bylaw requirement but meets anticipated peak demand.

Note 1: 75% of residential parking requirement

Note 2: 25% of residential parking requirement

Note 3: Includes 2 Accessible parking spaces

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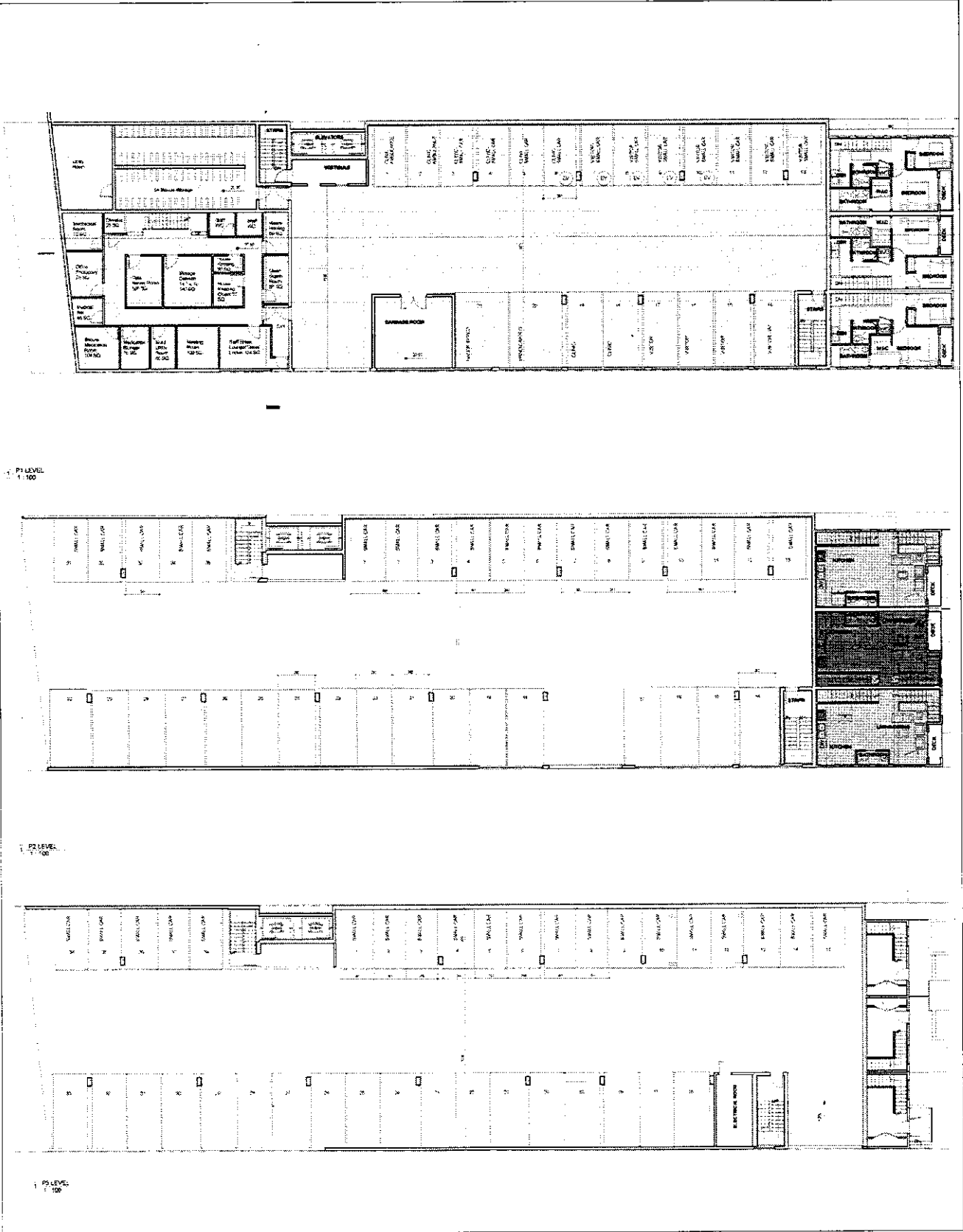


Exhibit 3.1 Parking Plan

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899 Esquimalt Road TIA
October 2019



4. TRAFFIC OPERATIONS

4.1 Traffic Operations Assessment Methodology

The traffic operations were assessed at the Esquimalt Road / Head Street intersection for the PM peak hour. The analysis was completed for the existing conditions (2017) and for the 2028 horizon year (ten years after development completion). The 2028 analysis includes the vehicle trips generated by the proposed development and background traffic.

The operations of study intersections 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. A delay of less than 10 seconds receive an LOS A whereas delays greater than 50 seconds receive and LOS F. In downtown and Town Centre contexts, during peak demand periods, delays 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 conducted a traffic count at the Esquimalt Road / Head Street intersection on Wednesday April 19th from 3:30 to 5:30 PM. During this time period, 4:15PM to 5:15PM was identified as the peak hour.

Bunt observed approximately 1250 westbound vehicles and approximately 1050 eastbound vehicles during the weekday PM peak hour on Esquimalt Road adjacent to the development site.

As shown in **Exhibit 4.1**, there are minimal traffic operations concerns with the existing conditions. The two vehicle movements of potential concern are:

- The westbound through lane is nearing its theoretical capacity. Westbound through vehicles have an average queuing time of approximately 45 seconds. The vehicle queue is cleared each traffic signal cycle.

- The southbound left-turn movement is nearing capacity. Southbound left-turning vehicles have an average queuing time of approximately 85 seconds. The vehicle queue is cleared each traffic signal cycle.

The queuing time for these movements is considered reasonable given the urban nature of the intersection and that this degree of queuing is only achieved during the busiest hour of the day.

4.3 Future Conditions

4.3.1 Background Traffic

Background traffic is the traffic that would exist without the proposed development. Background traffic was estimated by reviewing historical traffic data near the site. Traffic data on Esquimalt Road west of Dominion Road (approximately 450 metres east of the site) was obtained from the Capital Regional District (data collected in 2007) and from the Township of Esquimalt (data collected in 2016). In 2007 there was an average of 16,508 vehicles travelling on Esquimalt Road. In 2016 the number of vehicles decreased to 15,581 which is a 1% decrease in vehicles each year. In order to provide conservatism and robustness it was assumed that the background traffic would remain the same as the existing 2017 traffic.

4.3.2 Development Generated Traffic

The Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition) was used to estimate the number of vehicle trips generated from the proposed building. The vehicle trips rates as per the ITE Trip Generation Manual and are presented in Table 4.1 for the PM peak hour.

Table 4.1: PM Peak Hour Vehicle Trip Generation

LAND USE				TRIP RATES			TRIP VOLUMES		
ITE LAND USE CODE	TITLE	SIZE	VARIABLE	IN	OUT	TOTAL	IN	OUT	TOTAL
232	High-rise condos/ townhouses	69	Units	0.24	0.14	0.38	16	10	26
630	Clinic	4,095	ft ²	0.95	2.3	3.28	4	9	13
TOTALS							20	19	39

As shown in Table 4.1, the ITE trip rate results in approximately 40 total two-way vehicle trips during a typical PM peak hour period which is less than one vehicle a minute. It is anticipated that a number of residents and customers of the proposed development will walk, bike or use transit. Thus the trip volumes shown in Table 4.1 are likely an overestimation of the actual vehicle trips generated by the proposed development.

In addition, a minor commercial floor area increase of approximately 2,007 square feet and one residential unit decrease is represented in report Table 4.1. This alteration, however, is not accounted for in the Synchro analysis or corresponding traffic volume and operation exhibits as this alteration to Clinic use

from Commercial use represents an approximate 15% decrease to the site's overall trips. Therefore, the traffic operation results are considered to be more conservative than anticipated.

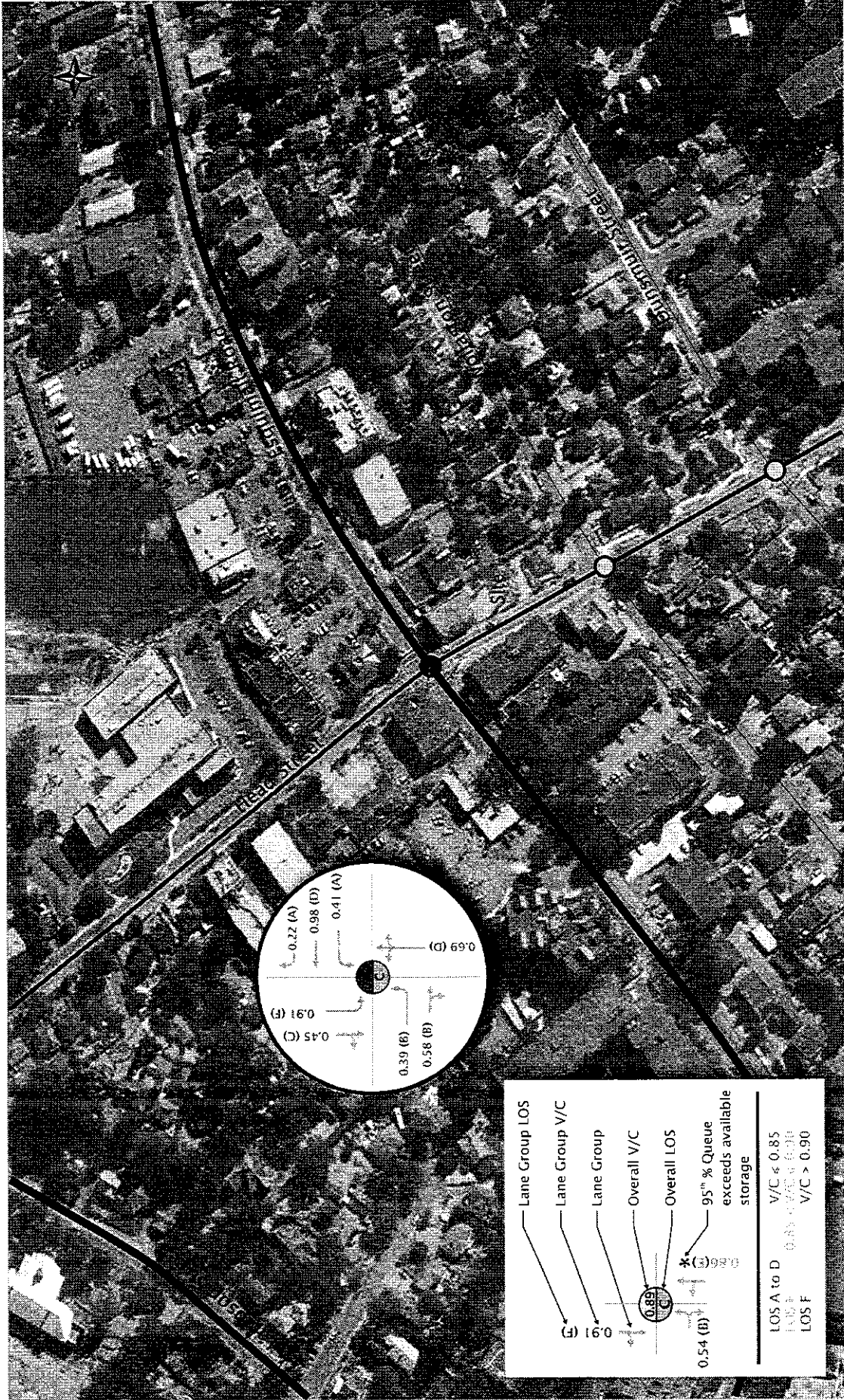
The new vehicle trips were assigned travel directions based on the existing travel patterns at the Esquimalt Road / Head Street intersection. From this data it is estimated that 50% of the traffic into the site is coming from the north, 40% from the east and 10% from the west. Leaving the site, 60% of traffic is going to the north, 35% is going east and 5% is going west.

4.3.3 Traffic Operations Results

As shown in **Exhibit 4.2**, there the proposed development has minimal impact on the traffic operations of the Esquimalt Road / Head Street intersection. The vehicle queuing times and volume/capacity ratios remain relatively unchanged compared to the existing traffic operations. The westbound through movement and the southbound left-turn movement remain the two critical movements. The development does not add any traffic volumes to either of these movements.

4.4 Potential Traffic Mitigation

Bunt tested the impact of adding a protected southbound left turn phase to the signal (protected/ permissive) to address the existing traffic delays for the southbound left and westbound through movement. As shown in **Exhibit 4.3**, this is shown to not result in significant improvements to the intersection's operations. The additional phase results in a 120 second cycle length which is longer than desired. In addition, operations for the intersection as a whole do not improve and deterioration is observed for the northbound movements. As such and in recognition that the proposed development does not exacerbate the existing condition we do not recommend alteration to the intersection's signalization.



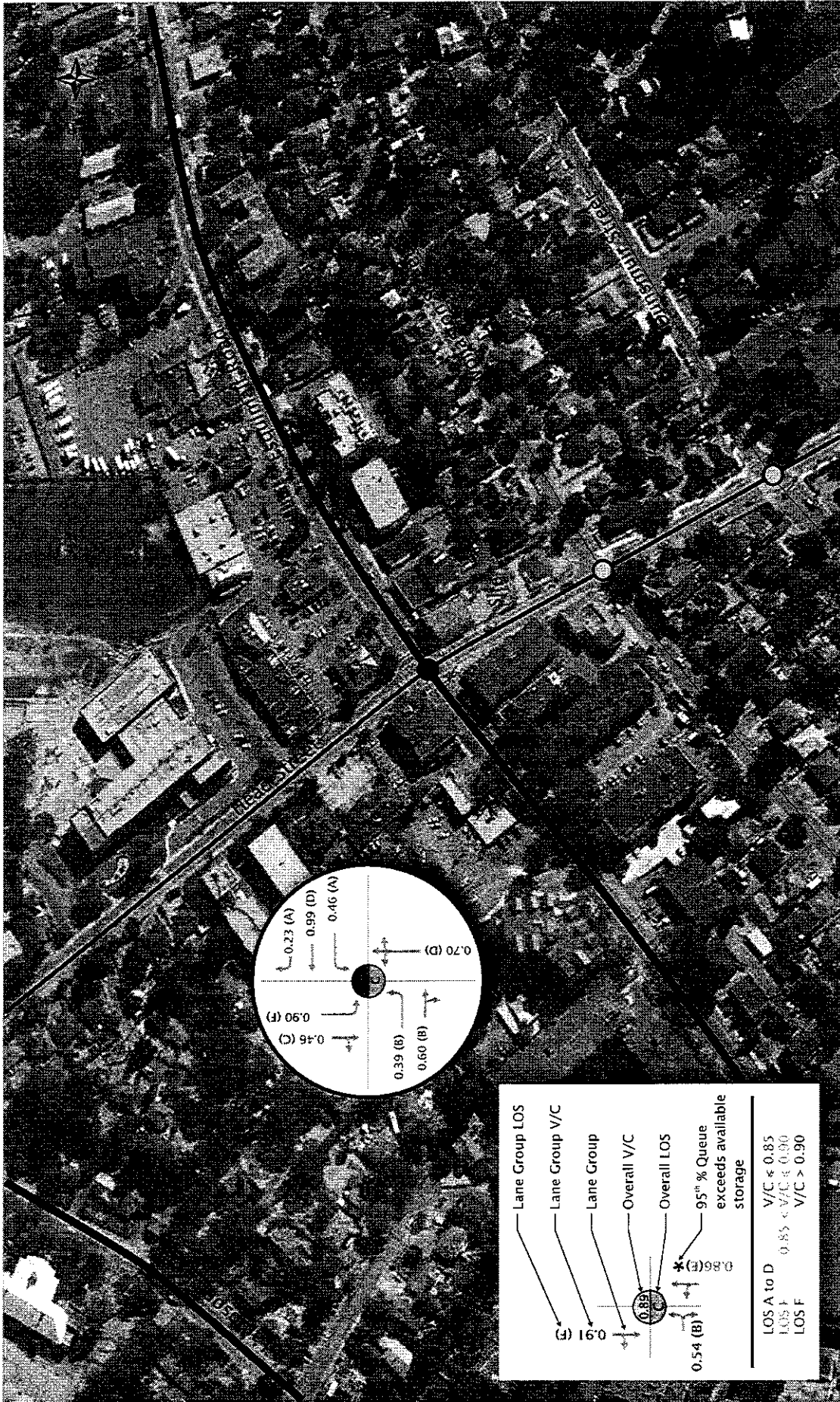
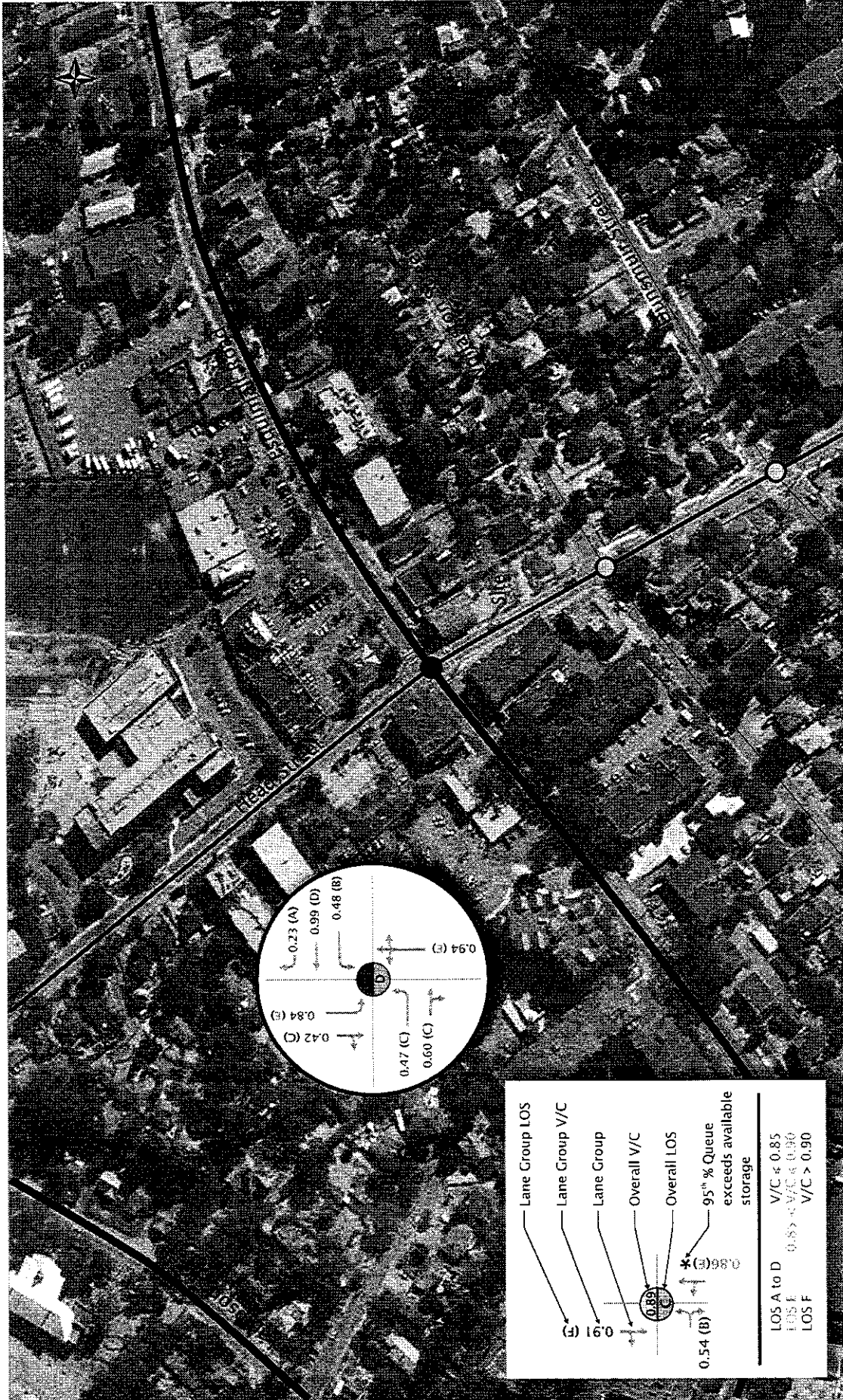


Exhibit 4.3 Future Traffic Operations (Mitigated) - PM Peak Hour

899 Esquimalt Road TIA
May 2017

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5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

- The proposed new residential development at 899 Esquimalt Road has a total of 69 residential units and 4,095 square feet of commercial space.
- The site is well serviced with transit and is within walking range to a wide variety of commercial and service amenities.
- The development offers 84 indoor bicycle spaces, this equates to one space per residential unit plus 15 additional spaces which could be used by commercial employees or residents.
- The development will have three levels of underground parking with each level accessed from a separate driveway.
- The Parking Bylaw requires 92 parking spaces for the residential unit and 15 parking spaces for the 4,095 square feet of commercial space. This equates to a minimum parking requirement of 107 spaces for this project.
- The development plan offers 94 parking spaces which represents a parking variance.
- The development plan currently exceeds Bylaw limits of 50% small vehicle spaces by four small vehicle spaces.
- With shared parking opportunities between commercial and residential visitors it is Bunt's view that the development's proposed parking supply will meet peak period demands.
- The site is expected to generate approximately 40 total vehicle trips per weekday PM peak hour. This is considered to be a negligible amount traffic considering Esquimalt Road currently has approximately 2,300 vehicles during the PM peak hour.
- The existing Esquimalt Road / Head Street intersection is near capacity, but within an acceptable range for an urban intersection during the PM peak hour.
- The proposed development is anticipated to have minimal impact to vehicle operations at the Esquimalt Road / Head Street intersection.

5.2 Recommendations

- Bunt recommends that signage be erected at the three driveway entrances indicating that P1 is for commercial and residential parking whereas P2 and P3 are reserved for residents.
- Bunt recommends the development convert four small vehicle spaces into regular sized spaces.