ATTACHMENT G

TRANSPORTATION PLANNERS AND ENGINEERS

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505 Quadra Street
Transportation Impact Assessment

Final Report

Prepared for

Surfside Holdings (Beacon) Ltd.
c/o Analogue Projects Ltd.

Date

September 13, 2017

Project No.

6215.01

CORPORATE AUTHORIZATION

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TABLE OF CONTENTS

EXHIBITS

TABLES

EXECUTIVE SUMMARY

Surfside Holdings (Beacon) Limited is proposing to develop the properties at 505-521 Quadra Street and 931 Convent Place. The three properties currently have a total of 38 residential units. The development will result in a total of 87 residential units, or a net increase of 49 units. The development is located on Quadra Street, between Southgate Street and Convent Place in the Fairfield neighbourhood.

The development includes 95 vehicle parking spaces which meets the proposed update to the Zoning Bylaw minimum requirement. The current Bylaw and proposed update require buildings to allocate a minimum of 10% of vehicle parking for visitors. The proposed development will be allocating 8% of the parking spaces for visitors, which is anticipated to meet to visitor parking demand given the site's walkability, transit access and proximity to short term on-street parking.

The development will be exceeding the minimum bicycle parking requirements outlined in the current Zoning Bylaw and proposed updated.

There are currently approximately 400 to 450 two-way vehicles driving on Quadra Street adjacent to the proposed development during the PM peak hour. The development is expected to add 30 to 40 two-way vehicle trips during the PM peak hour which is approximately one vehicle every two minutes.

Vehicle access to the site will be provided on Convent Place, this is consistent with the Highway Access Bylaw which states that access must be on the most minor adjacent roadway. This access location is also supported as it will result in the least amount of pedestrians crossing the site's access.

The traffic operations of the three nearest intersections on Quadra Street (Southgate Street, Convent Place and Humbolt Street) were analyzed using the existing vehicle volumes as well as the future volumes which account for the proposed development. There are no traffic operation concerns with either the existing or future scenarios.

1. INTRODUCTION

1.1 Study Scope and Objectives

Surfside Holdings (Beacon) Ltd. is proposing to develop the properties at 505-521 Quadra Street and 931 Convent Place in Victoria BC. The location of the site is at the southern end of Quadra Street, between Southgate Street and Convent Place, immediately north of Beacon Hill Park (see **Exhibit 1.1**).

The development is located in the Fairfield neighbourhood. The three lots currently have a total of 34 apartment units, two houses and one duplex for a total of 38 dwelling units.

The proposed development will be providing a total of 87 dwellings on the site, 49 more than there are currently.

The purpose of this study is to:

- Review the development's parking, access and loading strategies; and
- Evaluate the transportation impacts of the proposed development on the nearby road network.

1.2 Development Details

The development will have a total of 87 residential units. As seen in **Exhibit 1.2**, a multi-family apartment building will be located on the southern portion of the site, fronting onto Quadra Street and Southgate Street. Four townhouses as well as the sole underground parkade entry will be on Convent Place.

In the multi-family apartment building there will be 42 one-bedroom apartments ranging from 539 to 650 square feet and 41 two-bedroom apartments ranging from 833 to 1,008 square feet. Each of the four townhouses will have three bedrooms and are 1,459 square feet.

The development includes 95 vehicle parking spaces as well as secure and public bicycle parking.

Vehicle access to the site will be provided on Convent Place, this is consistent with the Highway Access Bylaw which states that access must be on the most minor adjacent roadway. This access location also offers the least amount of pedestrian / vehicle conflict as the pedestrian volumes on Convent Place are lower than the Quadra Street and Southgate Street frontages.

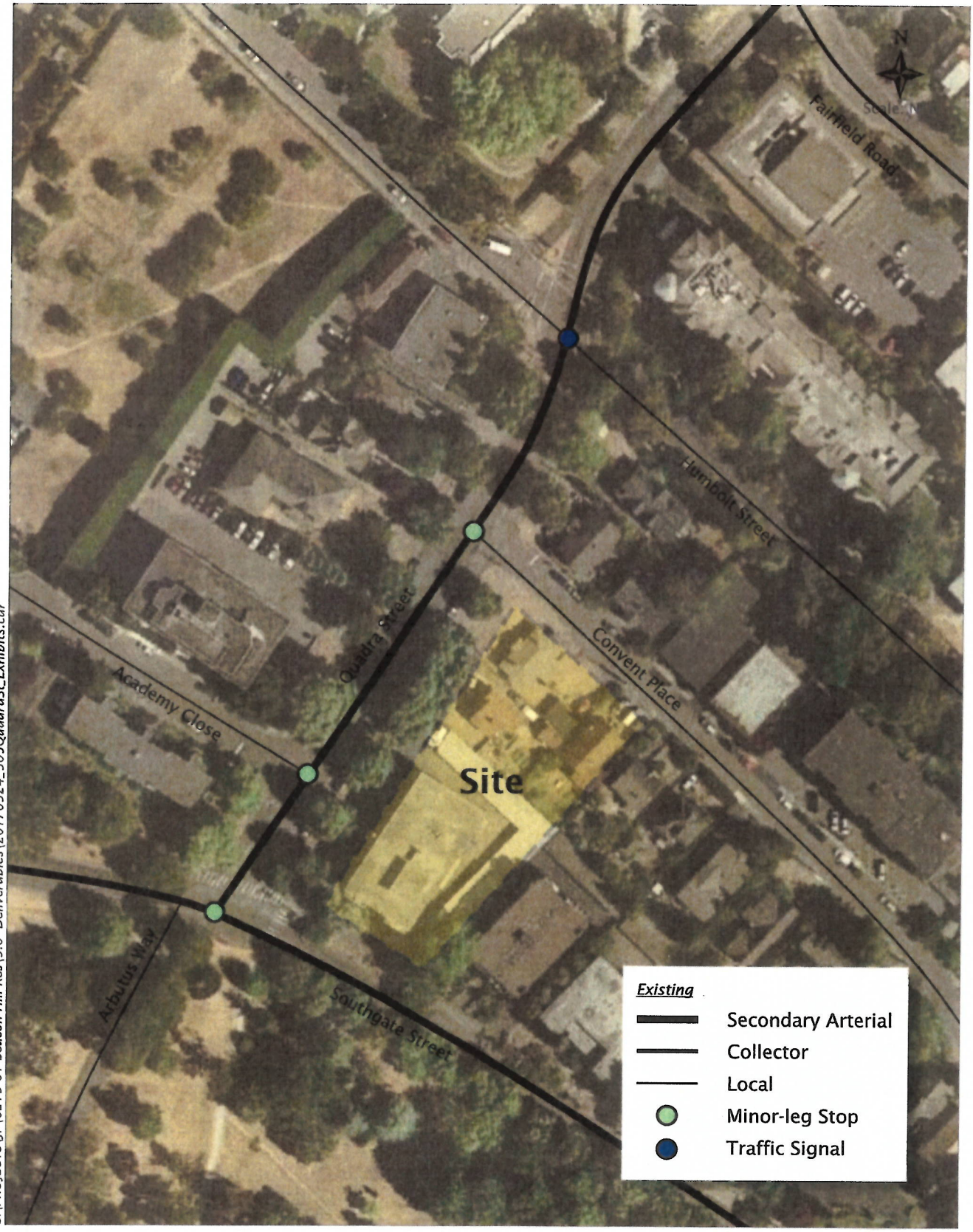

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Exhibit 1.1
Study Area

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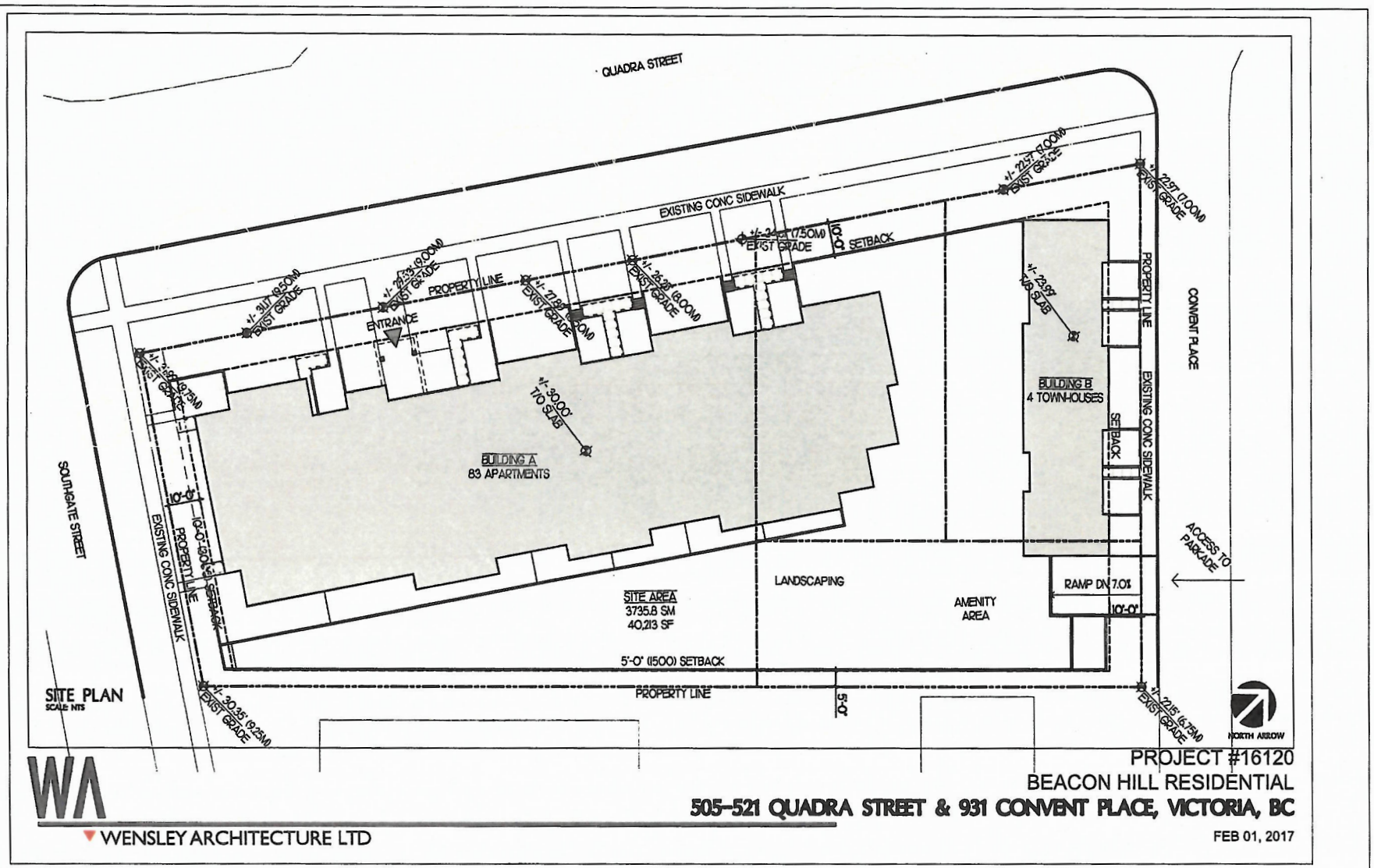

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Exhibit 1.2
Site Plan

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2. LOCAL CONTEXT

2.1 Land Use

The site is located at the southern end of Quadra Street in the Fairfield neighbourhood. The three properties are currently zoned R3A1, RSAM1 and RK but will be rezoned during the development process. Nearby the site, there are multi-family buildings on Southgate Street and Quadra Street as well as a mix of multi-family and single-family buildings on Convent Place. The site is adjacent to Beacon Hill Park and 300 metres east of South Park Elementary School.

2.2 Street Network

Quadra Street and Southgate Street are classified as Secondary Arterial Roads whereas Convent Place is classified as a Local Road. The site is centrally located, near Victoria's downtown core and has several key regional road connections. Neither Quadra Street, Southgate Street nor Convent Place are truck routes.

The three study intersections for this assessment are as follows:

- The Quadra Street and Humbolt Street intersection is signalized and has crosswalks on all four legs. The northbound direction has two travel lanes whereas all other directions have one travel lane. The southbound direction has a channelized right-turn from Quadra Street onto Humbolt Street. There are no cycling facilities at the intersection.
- The Quadra Street and Convent Place intersection is stop-controlled on the Convent Place leg only. The intersection has two travel lanes in northbound direction and one travel lane in the southbound direction on Quadra Street. There is one approach lane from Convent Place. There are no crosswalks or cycling facilities at the intersection.
- The Quadra Street and Southgate Street intersection stop-controlled on the Quadra Street leg only. Arbutus Way is located on the south side of the intersection (within Beacon Hill Park) and only allows vehicles to travel southbound, away from the intersection. There are zebra pedestrian crosswalks across the north and east legs of the intersection. There are no crosswalks of cycling facilities at the intersection.

2.3 Walking and Cycling

The majority of the nearby streets have sidewalks on both sides. There are crosswalks at all of the major intersections on Quadra Street in the vicinity of the site. The unsignalized Quadra Street and Southgate Street intersection has crosswalks on its north and east legs but not on the west leg. The signalized Quadra Street and Humbolt Street intersection has crosswalks on all four legs.

The nearest designated bike route is located on Vancouver Street. Vancouver Street is classified as a local street bikeway which means that it is a comfortable route for people cycling however it does not have any

dedicated cycling infrastructure. The Vancouver Street bike route extends north/south through the entire City of Victoria.

2.4 Transit

The site is well served by transit. There are numerous busses which stop within a 400 metre walk of the site which provide service to the majority of Greater Victoria. A listing of the nearby bus routes are shown in **Table 2.1**.

Table 2.1: Nearby Transit Service

ROUTE NUMBER	KEY DESTINATIONS	DISTANCE FROM SITE
1 (east and westbound)	Downtown, Oak Bay	100 metres
7 (east and westbound)	Downtown, Fairfield Village, Oak Bay Avenue, Royal Jubilee Hospital, UVic	240 metres
19, 27, 28, 30, 31, 50, 61, 70, 71 ,72, 75 (northbound)	Downtown, Hillside Mall, Gordon Head, Shelbourne Valley, James Bay, West Shore, Saanich Peninsula	400 metres
3, 27, 28, 30, 31 (southbound)	James Bay	550 metres

2.5 Vehicle Travel and Parking

Vehicle travel on Quadra Street and Southgate Street is limited to 40 kilometres per hour. Although vehicle travel on Convent Place is limited to 50 kilometres per hour it is not anticipated that this speed will be reached very often. Since Convent Place is less than 8 metres wide (including on-street parking on the north side) it is anticipated that the majority of vehicles would be travelling less than 40 kilometres per hour.

Curbside vehicle parking is available on the majority of the nearby streets including Quadra Street and Convent Place. On-street parking is free but is either limited to "Residential Parking Only" or to "two-hours 9am to 6pm, Monday to Saturday for non-residential uses". Residents as well as their guests and contractors are allowed to park in "Residential Parking Only" zones fronting the property.

The site is well served by car share service. Modo has a vehicle located on Convent Place, three buildings away from the development site and a total of four vehicles within a 400 metre walk of the site.

2.6 Relevant Plans and Policies

2.6.1 Off-street Parking Review

The City of Victoria is currently reviewing the Off-street Parking regulations for vehicles and bicycles in order to support and encourage development, investment and affordable housing. Although the recommendations from this project have not yet been implemented into the Zoning Bylaw, the project's key recommendations that are related to the proposed development are that parking requirements should be based on:

- **Geographic area**: Parking requirements should be lowest in the "core area" and highest in the "other areas". The development is located in "other areas" geographic area however it is only 300 metres from the "core area".
- **Tenure type**: Parking requirements should be different for private ownership, market rental and non-market rental.
- **Unit size**: Parking requirements should be proportional to the dwelling size.

2.6.2 Bike Network Planning

The City of Victoria is currently implementing a network of All Ages and Abilities (AAA) bike routes around the central city. The first phase of implementation includes the construction of an AAA bike route on Humbolt Street which is 60 metres north of the development site. The project schedule includes consultation on the design concept in 2017 and construction occurring during the spring / summer of 2018.

3. OFF-STREET PARKING

3.1 Vehicle Parking

3.1.1 Bylaw Requirements and Proposed Supply

The Victoria Zoning Bylaw requires 1.3 parking spaces per apartment and 1.4 spaces per attached dwelling (townhouses) for residents. The Bylaw requires that at least 10% of those parking spaces be for visitors. Buildings that provide more than 50 parking spaces need to provide parking spaces for persons with disabilities in the ratio of 1 for every 100 total parking spaces. The proposed parking requirements from the City of Victoria's Off-street Parking Review are lower than the current Bylaw requirements.

Table 3.1 summarizes the Bylaw requirement, requirement based on the proposed changes recommend in the Off-street Parking Review and the proposed parking supply. The Off-street Parking Review recommends that parking requirements for multi-family residential buildings be dependent on the building's geographic area. The development site is located in the "other areas" region which has the highest parking requirement.

Table 3.1: Parking Requirements and Proposed Supply

LAND USE	SIZE	UNITS	CURRENT BYLAW MINIMUMS		PROPOSED BYLAW MINIMUMS		PROPOSED SUPPLY	
			RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
1-bedroom Apartments	40 m² to 70 m²	42	1.3	55	0.9[1]	38	1.0	87
2-bedrom Apartments	> 70 m²	41	1.3	53	1.3[1]	53		
Townhouses	N/A	4	1.4	6	1.0	4		
Visitor	-	-	10% of total	-	10% of sub-total	-	Additional 0.09/ unit	8
TOTALS		87		114		95		95

Note 1: Assumes the building is located in the "other areas" region.

The development plan meets the proposed Bylaw requirements for total parking supply but does not meet the current Bylaw requirements. Two barrier free parking spaces are provided which meets both the current and proposed Bylaw requirements.

The following section provides an analysis of the anticipated parking demand at the site.

3.1.2 Parking Demand Analysis

In order to better understand the proposed development's anticipated parking demands, an analysis of similar nearby rental apartment buildings was conducted. Data was obtained from similar (just off downtown core area) buildings during an extensive parking survey conducted by Bunt in 2012. The data was derived from three key sources of information:

- Vehicle ownership information acquired from ICBC;
- Data collected in the field during resident and visitor peak parking periods (i.e. Wednesdays 10-11pm, Fridays 6-8pm, Saturdays 6-8pm, Sundays 9-11pm); and,
- Information gathered from building manager interviews.

The parking data collected in the field and via building manager interviews and questionnaires was used to verify the accuracy of the ICBC information and were aimed towards understanding how the available on and off-street parking supply was utilized and as to whether there was sufficient supply for residents and visitors at their respective rental apartment complexes. This information provided data in determining the unit mix of the buildings, how many units were currently occupied, how many off-street parking stalls are provided for residents and visitors, and whether there is a monthly charge for the on-site parking stalls.

Exhibit 3.1 displays the locations of the apartment buildings included in the study. **Table 3.2** on the following page, supplements the map, identifying (with the associated reference numbers in Exhibit 3.1) and summarizes the vehicle parking demand data collected from ICBC, on-site surveys, and building managers.

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Exhibit 3.1
Location of 2012 Studied Residential Rental Buildings

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Table 3.2: Summary of Rental Apartments Included in 2012 Parking Study

MAP #	NAME AND ADDRESS	TOTAL UNITS (OCCUPIED/ AVAILABLE)	# OF STUDIO UNITS	# OF 1 BDR UNITS	# OF 2 BDR UNITS	# OF ON-SITE RESIDENT PARKING STALLS	# OF ON-SITE VISITOR PARKING STALLS	PARKING STALL COST (MONTHLY)	VEHICLE OWNERSHIP RATE
1	805 Academy Close	9 / 10	0	10	0	0	0	N/A	0.7
2 & 3	360 Douglas Street, Goodacre Towers N. & S.	194 / 197	55	81	61	152	32	$15 - $20	0.68
4	240 Douglas Street, Beacon Tower Apartments	58/60	0	44	16	42	0	$30	0.73
5	151 St. Andrews, Beacon Park Apartments	75/75	3	10	62	90	5	$35	0.81
6	575 Marifield Ave, Kirkcauldy Apartments	43 / 43	7	28	8	28	3	$20	0.53
7	562/566 Simcoe Street	104 / 108	6	78	24	75	12	$20	0.54
8	576 Simcoe Street, Park Plaza	37 / 37	3	27	7	35	1	$0	0.55
9	160 Government Street, Weybridge Manor	33/33	N/A	N/A	N/A	23	3	N/A	0.63
10	890 Academy Close	54 / 55	12	30	13	33	0	$10-$15	0.63
11	505 Quadra Street, Beacon Arms	34 / 34	2	21	11	26	1	$15-$30	0.68
12	955 Humbolt Street	43 / 43	0	37	6	40	3	$45	0.72
13	976 Humbolt Street	23 / 23	6	13	4	15	0	$45	0.52
TOTALS AND AVERAGES		98.5% OCCUPANCY	-	-	-	-	-	$20	0.66

Table 3.2indicatess that on average the approximate vehicle ownership rate (i.e. residential parking demand) of the 13 rental apartment buildings is 0.66 vehicles per unit. This data correlates with the field observation counts and manager surveys. The table data reveals a range of vehicle ownership rates as low as 0.52 and as high as 0.81 vehicles per unit. It also illustrates the impact of unit size as the highest vehicle occupant buildings also have a higher proportion of 2 bedroom units (i.e. the Beacon Park Apartments). The proposed apartments at 505 Quadra Street will have an even split of one bedroom and two bedroom apartments with a small number of three bedroom townhouses. The buildings in the 2012 study which had a higher percentage of two bedroom apartments had a maximum vehicle ownership ratio of 0.81 vehicles per dwelling.

Based on this data we conservatively anticipate that the proposed parking supply of 95 spaces will be able to accommodate the parking demand from 87 residential units.

3.2 Bicycle Parking

Well managed, secure, accessible and covered bicycle parking will be provided as part of the development plan. Class 1 bicycle parking spaces are defined as a secure, weather-protected bicycle parking facility used to accommodate long-term parking. Class 2 bicycle parking spaces is defined as a short-term bicycle parking typically located in a publicly accessible location. The current Zoning Bylaw requires 1 Class 1 space per residential unit plus a 6-space rack the entrance of the building. The Off-street Parking Review recommends increasing the Class 1 requirement to 1.25 spaces per residential unit.

The development will exceed the bylaw requirements and Off-street Parking Review recommendations by supplying 125 Class 1 spaces and at least 6 Class 2 spaces. The Class 1 - Long Term parking spaces will be located in a convenient location in the underground parkade. The Class 2 – Short Term parking will be provided in a publically accessible area near the building entrance in a well lit and highly visible area. Bunt recommends that electric outlets be installed in the bicycle storage room for electric-assisted bicycles.

4. TRAFFIC OPERATIONS

4.1 Traffic Operations Assessment Methodology

The traffic operations were assessed at the three study intersections on Quadra Street (Humbolt Street, Convent Place and Southgate Street) during the PM peak hour. The analysis was completed with and without the proposed development.

The operations of study intersections were assessed using the methods outlined in the 2010 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 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.

4.2 Existing Conditions

Bunt conducted traffic counts at the three study intersections on Thursday May 25th and Thursday June 1, 2017. During this time period, 4:15PM to 5:15PM was identified as the peak hour.

Bunt observed approximately 400 to 450 vehicles during the PM peak hour on Quadra Street adjacent to the development site. The existing vehicle volumes are shown in **Exhibit 4.1** and the associated traffic operations is shown in **Exhibit 4.2.**

As shown in **Exhibit 4.2**, there are minimal traffic operations concerns with the existing conditions. The one location where noticeable queuing occurred is the southbound through/left turn movement at the Quadra Street / Southgate Street intersection. During the PM peak hour queues reached up to four vehicles at this location and had queuing times up to approximately 35 seconds. This degree of queuing 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

The future vehicle volumes were estimated by summing the existing vehicle volumes with the estimated vehicle trips generated by the proposed development.

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 trips rates from the manual typically come from suburban locations which likely overestimates the number of vehicle trips generated by the proposed development. The vehicle trips rates and trip generation are presented in **Table 4.1** for 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
223	Mid-Rise Apartment	83	Units	58%	42%	0.39	19	14	33
230	Residential Townhouse	4	Units	67%	33%	0.52	1	1	2
						TOTALS	20	15	35

As shown in Table 4.1, the ITE trip rate results in approximately 30 to 40 total two-way vehicle trips during peak periods which is approximately one vehicle entering or exiting the site every two minutes. Furthermore, the ITE trip rates are typically obtained from suburban locations with almost all travel completed by vehicle. It is anticipated that a number of residents and visitors 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.

The new vehicle trips were assigned to the network based on the existing travel patterns at the three study intersections.

As shown in **Exhibit 4.3**, the proposed development is anticipated to have minimal impact on the traffic operations of the three study intersections. The vehicle queuing times and volume/capacity ratios remain relatively unchanged compared to the existing traffic operations.

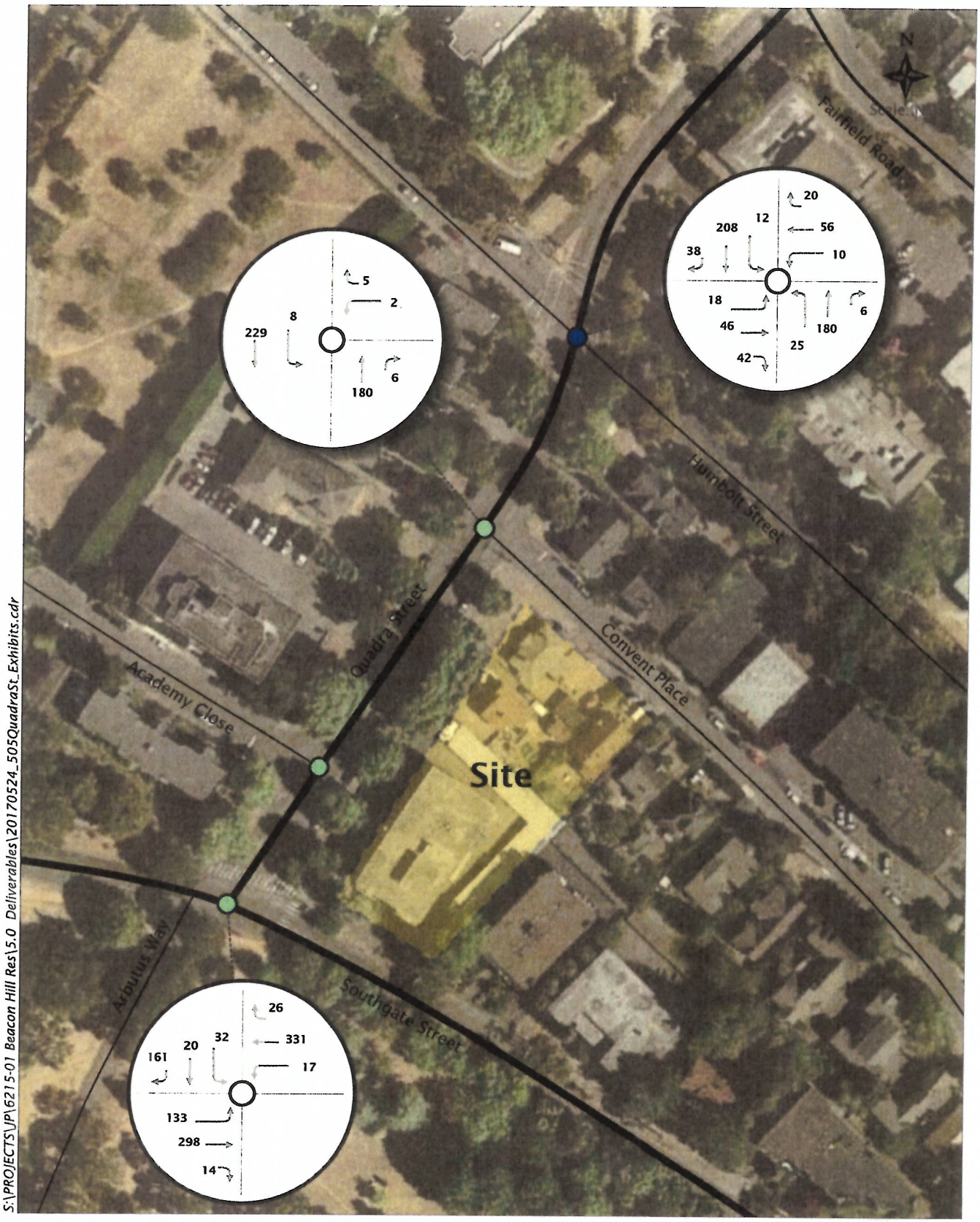

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Exhibit 4.1

Existing Volumes (Vehicles & Bicycles) - PM Peak Hour

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6215.01 June 2017

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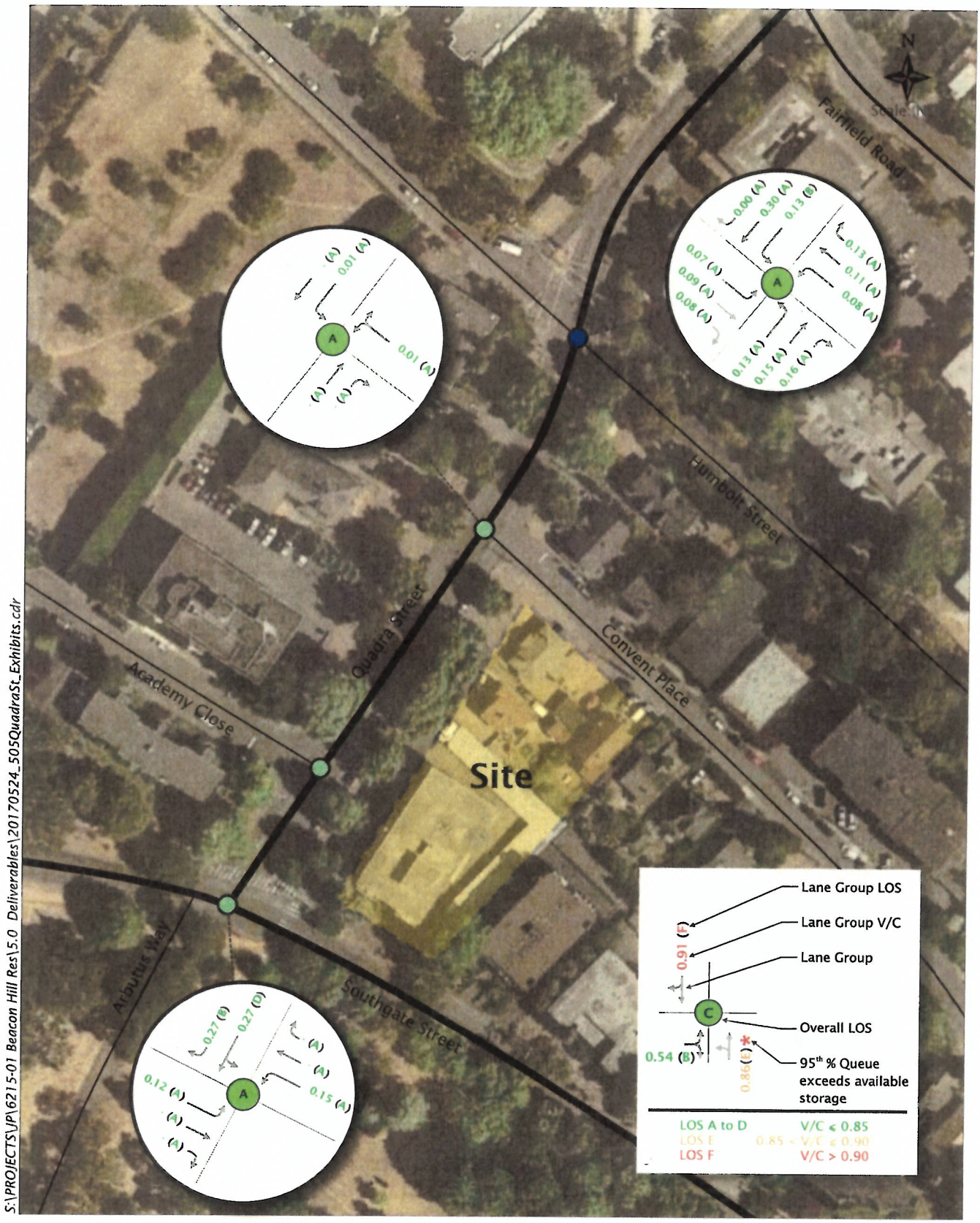

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Exhibit 4.2
Existing Traffic Operations - PM Peak Hour

505 Quadra Street Transportation Impact Assessment
6215.01 June 2017

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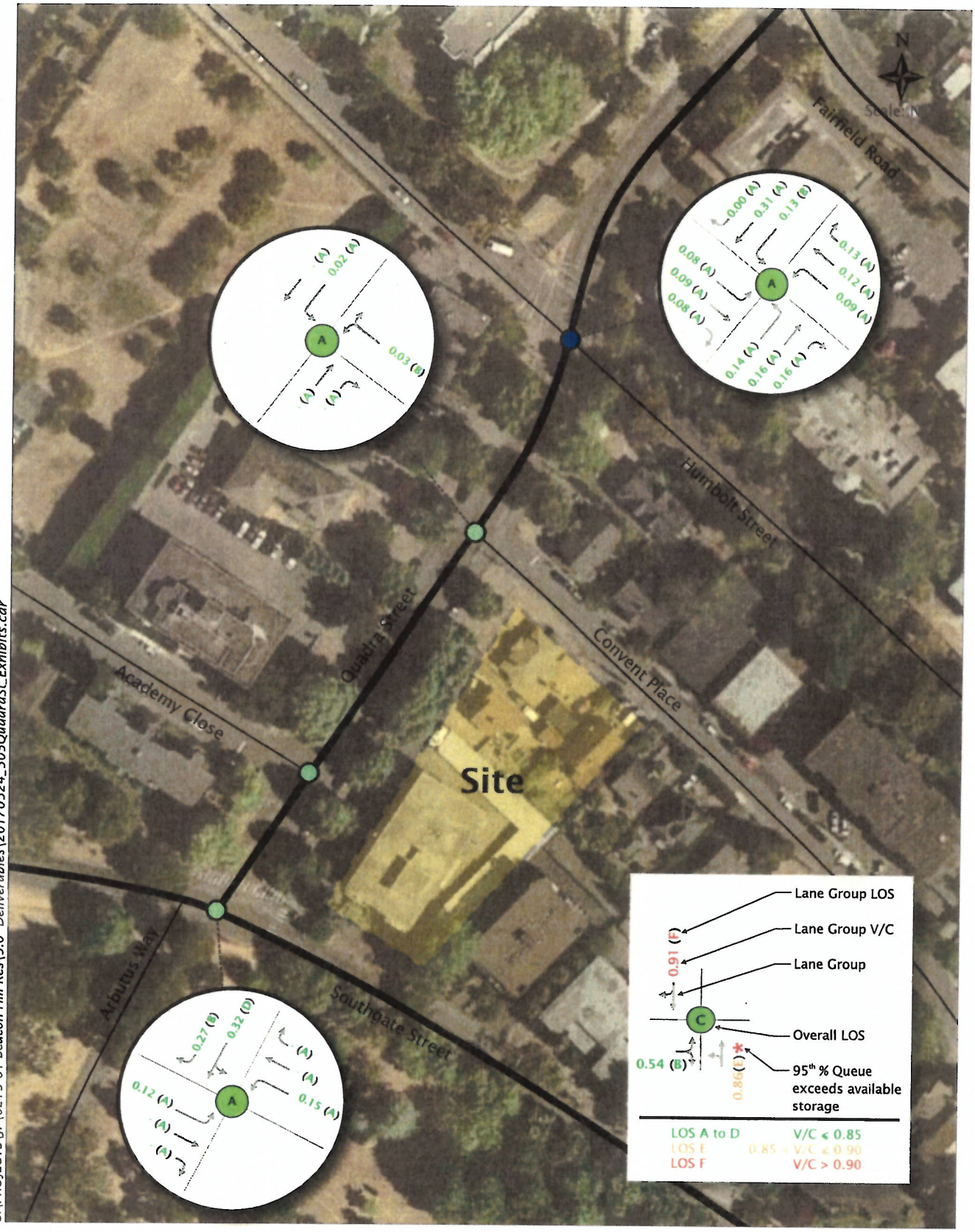

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Exhibit 4.3
Future Traffic Operations (with development) - PM Peak Hour

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6215.01 June 2017

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5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

- The proposed residential development at 505 Quadra Street proposes a total of 87 residential units.
- The site is well serviced with transit and is within walking range to a wide variety of commercial and service amenities.
- The current Zoning Bylaw requires a minimum of 114 parking spaces for this project. Proposed (but not approved) changes to the Bylaw would reduce the requirement to 95 parking spaces.
- The development offers 95 vehicle spaces which meets the proposed Bylaw requirements. The development is providing 8 spaces for visitors (8.4% of 95 spaces or 0.09 visitor spaces per unit) however the Bylaw requires that 10% of the 95 spaces be designated for visitors.
- Vehicle access to the site will be provided on Convent Place, this is consistent with the Highway Access Bylaw which states that access must be on the most minor adjacent roadway. This access location is also supported as it will result in the least amount of pedestrians crossing the site's access.
- The development offers 125 Class 1 and at least 6 Class 2 bicycle parking spaces. This meets or exceeds the minimum requirements in both the current and proposed changes to the Zoning Bylaw.
- The site is expected to generate approximately 20 to 30 total two-way vehicle trips per weekday AM peak hour and 30 to 40 per weekday PM peak hour. This is considered to be a near indiscernible increase in vehicle traffic considering the adjacent Quadra Street currently has 400 to 450 two-way volumes during the PM peak hour.
- The proposed development is anticipated to have minimal impact to vehicle operations at the three study intersections on Quadra Street. Vehicle queuing time for the southbound through/right movement at the Quadra Street/Southgate Street is estimated to reach up to 35 seconds with or without the proposed development.

5.2 Recommendations

- Bunt's analysis indicates that 95 vehicle parking spaces will meet peak period parking demands and proposed Bylaw requirements. We therefore recommend that the vehicle parking supply is appropriate for the proposed development.
- Bunt recommends that the visitor vehicle parking supply of 8 spaces (8.4% of total or 0.09 visitor spaces per unit) be deemed appropriate given the multi-modal connectivity of the site.

- If residential parking demand proves to be less than the proposed resident supply we recommend the building consider converting 1-4 resident spaces to visitor spaces if the proposed visitor supply is frequency occupied.

- We recommend electric charging ability be provided in the Class 1 bicycle parking rooms.