



December 21, 2017
04-17-0240

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VIA E-MAIL: wlebreton@larco.ca

Dear: Wendy:

**Re: Arbutus Blocks C & D Rezoning
Transportation Rationale**

We have prepared a summary of the current proposed Arbutus Blocks C & D development, the projected traffic generation, the proposed parking, loading and bicycle provisions, in comparison with the 2009 TIA report prepared by Bunt for the entire Arbutus Blocks A, B, C, and D rezoning proposal.

As discussed with John Turecki at the City of Vancouver Senior Development Review Engineer, this summary letter is sufficient for the rezoning application package submission. A full Transportation Assessment and Management Study (TAMS) will be prepared at a later date when a new set of traffic count data of the nearby intersections can be collected during a typical weekday in January 2018.

Please do not hesitate to contact us should you have any questions.

Yours truly,
Bunt & Associates

A handwritten signature in black ink, appearing to read "S. Button".

Simon Button, P.Eng.
Transportation Engineer

A handwritten signature in black ink, appearing to read "Yulia Liem".

Yulia Liem, P.Eng., PTOE
Associate

1. INTRODUCTION

City of Vancouver Rezoning Approval for the Arbutus Centre development was achieved in July 2011 for the entire project inclusive of the Blocks A, B, C and D development components. Since that time the project has been working through design development and Development Permit approvals for the Blocks A and B component which are now under construction with completion scheduled for mid 2020. The revised development program for Blocks C and D is shown in **Table 1**.

Table 1: Blocks C & D Development Changes

LAND USE	2009 PLANS	CURRENT PLANS	DIFFERENCE
Residential	150 units	240 units	+ 90 units
Restaurant/Retail	553.4 m ²	998 m ²	+ 445 m ²
Recreation	854 m ²	1,761 m ²	+ 907 m ²
		TOTAL	+90 RESIDENTIAL UNITS & 1,442 M²

As part of this increased floor area, Larco is committing to provide additional non-market residential units, up to 20% of the increased residential floor area, which will be added on top of the Block A non-market residential building. Separate transportation study will be conducted for this component.

In December 2009, Bunt prepared a comprehensive Transportation Impact Assessment report for the project that was included as part of the rezoning submission materials to the City of Vancouver. The City has requested that a brief transportation rationale is prepared which summarizes the anticipated change to the vehicle trip generation with the added density planned for Blocks C & D, together with a description of the planned on-site transportation elements (parking and loading supply, bicycle storage and end of trip facilities). The transportation rationale for Blocks C & D is presented herein.

2. VEHICLE TRIP GENERATION

The trip generation estimates for the previous and current development plans are shown in **Table 2**. The values were generated using the Institute of Transportation Engineer's Trip Generation Manual, 10th Edition. Within the manual, the residential trip rate was selected for a dense multi-use location which is appropriate for the proposed development. Trip rates for a dense multi-use location were not available for the restaurant, recreation and retail land uses, therefore trip rates were obtained for a general urban/suburban location which likely overestimates the trip generation for the proposed development. The resulting trip generation for Blocks C & D is presented in **Table 3**.

Table 2: Trip Rates

LAND USE	SOURCE	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Residential	ITE 222	12%	88%	0.21	70%	30%	0.19
Restaurant	ITE 932	55%	45%	9.94	62%	38%	9.77
Recreation	ITE 495	66%	34%	1.76	47%	53%	2.31
Retail	ITE 820	62%	38%	0.94	48%	52%	3.81

Note: Trip rates from the ITE Trip Generation Manual, 10th Edition

Table 3: Blocks C & D Trip Generation

LAND USE	SIZE	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
2009 Plans							
Residential	150 units	4	28	32	20	9	29
Restaurant	5,957 ft ²	33	26	59	36	22	58
	Sub-totals	37	54	91	56	31	87
Current Plans							
Residential	215 units	12	38	50	32	14	46
Restaurant	7,470 ft ²	46	37	83	50	31	81
Recreation	22,507 ft ²	22	11	33	21	23	44
Retail	3,250 ft ²	1	1	2	4	5	9
	Sub-totals	81	87	168	107	73	180
	DIFFERENCE	+44	+33	+77	+51	+42	+93

Using conservative trip rates, the new trip generation from Blocks C & D will be approximately 75 to 95 vehicles per hour, or 1-2 vehicles a minute higher than the previous development plans.

3. TRAFFIC OPERATIONS

3.1 2009 Transportation Assessment

Bunt's 2009 Transportation Assessment report for the Arbutus Centre Redevelopment assessed the traffic operations at the following intersections for the existing conditions (2009) and future conditions with redevelopment (2015 and 2018):

- Arbutus Street & W King Edward Avenue
- Arbutus Street & Nanton Avenue;
- Arbutus Street & Valley Drive;
- Arbutus Street & W 33rd Avenue;
- Arbutus Street & Site Access North;
- Arbutus Street & W 32nd Avenue;
- Yew Street & Nanton Avenue;
- Yew Street & Valley Drive; and,
- Yew Street & W 32nd Avenue.

The analysis determined that both the Arbutus Street & W King Edward Avenue and Arbutus Street & W 33rd Avenue intersections are expected to operate at over 90% capacity in the 2018 horizon year with the additional site traffic increasing V/C ratios by 1% to 5% over background conditions. All other intersections are expected to operate without significant operational issues.

The 2009 report did not recommend any vehicle capacity improvements at the Arbutus Street & W King Edward Avenue intersection. The 2009 report recommended a reconfiguration of the east/west approaches of the Arbutus Street & W 33rd Avenue intersection to provide separate left-turn lanes. As of 2017, the east/west approaches have not been reconfigured.

3.2 Impact of New Development Plans

65% to 70% of the additional 75 to 95 vehicle trips generated by the expanded Blocks C & D are forecasted to use the Arbutus Street & W King Edward Avenue intersection while 30% to 35% are forecasted to use the Arbutus Street & W 33rd Avenue intersection. These result in approximately 50-65 additional vehicles using the W King Edward Avenue intersection, and 25-30 vehicles using the W 33rd Avenue intersection.

The 2009 report forecasted approximately 4,800 vehicles using the W King Edward intersection per peak hour in 2018 (following redevelopment) and 3,000 vehicles using the W 33rd Avenue intersection per peak hour. The proposed expanded Blocks C & D would therefore increase the vehicle volumes at these intersections by about 1% at each of two most critical intersections.

The additional 75 to 95 vehicle trips generated by the expanded Blocks C & D are not anticipated to significantly impact the traffic operations of the study intersections listed in **Section 3.1** or change the traffic operation recommendations in the 2009 report.

4. BICYCLE STORAGE AND END OF TRIP FACILITIES

The development is planned to provide bicycle parking spaces as per the Bylaw requirements as shown in **Table 4**. Class A bicycle parking spaces will be provided on P1 level while Class B bicycle racks will be provided on the south end of Block C property and north end of Block D property.

Table 4: Bylaw Bicycle Parking Requirements

LAND USE		GFA (M ²)	DWELLING UNITS	PARKING BYLAW	BYLAW REQUIRED	
					Class A	Class B
Residential	Market Rental	28,112	240	6.2.1.2	300	6
	Residential Totals	28,112	240		300	6
Non Residential	Neighbourhood House	998		6.2.3.1	4	6
	Adult Day Care	763		6.2.3.1		
	Restaurant	774		6.2.5.1	2	6
	Retail	224		6.2.5.1		
	Non-Residential Totals	2,759			6	12
DEVELOPMENT TOTALS		31,362			306	18

5. VEHICLE PARKING

The Bylaw parking requirements for Blocks C & D are shown in **Table 5**. The market rental housing component applied the same parking rate as the approved Blocks A & B. As the Bylaw parking requirement does not have specific rates for neighbourhood house and adult daycare, we applied the community centre parking requirement which is unreasonably too high for the intended uses.

Table 5: Bylaw Vehicle Parking Requirements

LAND USE		GFA (M ²)	DWELLING UNITS	PARKING BYLAW	BYLAW REQUIRED PARKING
Residential	Market Rental	28,112	240	4.2.1.13	263 ⁽¹⁾
	Disability			4.8.4(a)	9
	Residential Totals	28,112	240		263
Non Residential	Neighbourhood House	998		4.2.4.1	54
	Adult Day Care	763		4.2.4.1	41
	Restaurant	774		4.2.5.11	56
	Retail	224		4.2.5.1	2
	Disability				2
	Non-Residential Totals	2,759			153
	DEVELOPMENT TOTALS		30,871		

(1) Assumed net floor area of 85% of GFA

We have done surveys at other community centres in the Lower Mainland area which are located within close proximity to frequent transit network. The peak parking demand at these community centres (gross floor area between 45,000 ft² and 65,000 ft²) were found to be 2 per 1,000 ft² or 2.15 per 100 m². The proposed Arbutus neighbourhood house is much smaller than these observed community centres as it is intended to serve local community; therefore the peak parking demand for this Arbutus site is expected to be at 2.15 per 100 m² of gross floor area or less.

The adult daycare will be intended for people with mobility issues or early onset dementia. Most people will either be dropped-off/picked-up by relatives or bus/HandyDart; hence parking demand for this use is expected to be low. Spaces will only be required to accommodate staff and pick-up/drop-off. For this reason, we feel it is reasonable to apply the observed community centre parking demand for this use as well.

Considering the above rationale for the neighbourhood house and adult daycare uses, the proposed on-site parking supply is tabulated in **Table 6** below.

Table 6: Proposed Vehicle Parking Provisions

	LAND USE	# ACTUAL STALLS	# CALCULATED STALLS ⁽¹⁾
Residential	Market Rental	220	220
	Disability	9	18
	Car-share	5	25
	Residential Totals	234	263
Non Residential	Neighbourhood House	21	21
	Adult Day Care	16	16
	Restaurant	48	48
	Retail	3	3
	Disability	8	16
	Non-Residential Totals	97	105
DEVELOPMENT TOTALS		331	368

(1) Adjusted to include 2 for 1 credit for disability stall, and 5 for 1 credit for car-share vehicle

The development is planned to provide a total of 331 parking spaces including:

- 220 spaces for residential use (at 0.92 spaces per unit),
- 89 spaces for non-residential use,
- 16 disability stalls, and
- 5 car-share vehicles.

The total calculated parking spaces, taking into account the disability and car-share vehicle credits, are 368 which is 48 spaces less than the bylaw requirement.

6. LOADING

As shown in **Table 7**, the revised Bylaw loading requirements for Blocks C & D result in four Class B loading spaces.

Table 6: Bylaw Loading Requirements

LAND USE		GFA (M ²)	DWELLING UNITS	PARKING BYLAW	BYLAW REQUIRED PARKING	
					Class A	Class B
Residential	Market Rental	28,112	240	5.2.1	0	1
	Residential Totals	28,112	240		0	1
Non Residential	Neighbourhood House	998		5.2.3	0	1
	Adult Day Care	763				
	Restaurant	774		5.2.5	0	2
	Retail	224				
	Commercial Totals	2,759			0	3
DEVELOPMENT TOTALS		30,871			0	4

Based on loading surveys at similar buildings, Bunt recommends that the development provide a total of four Class A loading spaces and two Class B loading spaces for Blocks C & D with loading management plan in place. One class B loading space will be provided for Block C at the south end of the building and one Class B loading space will be provided for Block D building. Both loading bays will be accessible off Yew Street. The four Class A loading spaces will be provided underground.

7. SUMMARY

Key points from the study above are listed below:

- i. The floor area increase of Blocks C&D is estimated to add between 75 and 95 vehicles per hour during the weekday AM and PM peak hour compared to the 2009 rezoning application. This increase translates to an increase of 1% vehicles at the intersections of Arbutus at King Edward and at W 33rd Avenue.
- ii. The development will provide 306 Class A bicycle spaces and 18 Class B bicycle spaces to meet the bylaw requirement.
- iii. Applying the bylaw parking requirement, the proposed Blocks C&D is required to provide a total of 416 spaces. Based on the intended patrons using the neighbourhood house and adult daycare uses, we propose a total of 331 parking spaces to be provided on-site including 16 disability stalls and 5 car-share vehicles. This proposed parking is anticipated to be able to accommodate the projected demand of the site.
- iv. The loading bylaw requires a total of 4 Class B spaces for the development. Bunt recommends 2 Class B spaces and 4 Class A spaces to be provided for the development.