



**AGENDA FOR THE REGULAR MEETING OF COUNCIL,  
HELD ELECTRONICALLY FROM CITY HALL,  
141 WEST 14<sup>TH</sup> STREET, NORTH VANCOUVER, BC, ON  
MONDAY, NOVEMBER 16, 2020 AT 5:30 PM**

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"Live" Broadcast via City Website [www.cnv.org/LiveStreaming](http://www.cnv.org/LiveStreaming)  
Complete Agenda Package available at [www.cnv.org/CouncilMeetings](http://www.cnv.org/CouncilMeetings)

**CALL TO ORDER**

**APPROVAL OF AGENDA**

1. Regular Council Meeting Agenda, November 16, 2020

**ADOPTION OF MINUTES**

2. Regular Council Meeting Minutes, November 2, 2020

**PUBLIC INPUT PERIOD**

**CONSENT AGENDA**

Items \*3 and \*4 are listed in the Consent Agenda and may be considered separately or in one motion.

**BYLAWS – ADOPTION**

- \*3. "Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8775"  
(Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724)
- \*4. "Housing Agreement Bylaw, 2020, No. 8776" (Cascadia Green Development,  
2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments)

**PRESENTATION**

City of North Vancouver Community Wildfire Protection Plan 2020  
– Bruce Blackwell, Principal, B.A. Blackwell & Associates Ltd.

**REPORT**

5. Community Wildfire Protection Plan

**BYLAW – THIRD READING**

6. "Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8700"  
(Bryan Lockhart / Black Kettle Brewing Inc., 720 Copping Street, CD-728)

## **MOTIONS**

7. Development Variance Permit No. PLN2020-00013 (366 East 3<sup>rd</sup> Street – Rooftop Antenna)
8. Development Permit No. DPA2018-00005 (366 East 3<sup>rd</sup> Street – Rooftop Antenna)

## **REPORT**

9. Low Carbon Building Bylaw Amendments

## **BYLAW – FIRST, SECOND AND THIRD READINGS**

10. “Construction Regulation Bylaw, 2003, No. 7390, Amendment Bylaw, 2020, No. 8810” (Low Carbon Pathway Amendments Under the BC Energy Step Code)

## **REPORT**

11. Rezoning Application: 115 East 1<sup>st</sup> Street (Eggs Cana / Oana Nicoara)

## **BYLAW – FIRST AND SECOND READINGS**

12. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8808” (Eggs Cana / Oana Nicoara, 115 East 1<sup>st</sup> Street, CD-731)

## **REPORT**

13. Rezoning and Official Community Plan Amendment Application: 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue

## **BYLAWS – FIRST AND SECOND READINGS**

14. “Official Community Plan Bylaw, 2014, No. 8400, Amendment Bylaw, 2020, No. 8806” (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue, Land Use Designation and Permitted Height Change)
15. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8807” (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street, and 341-343 St. Davids Avenue, CD-730 and “Moodyville Development Permit Area Guidelines” amendment)

## **REPORT**

16. 2020 – 2029 Revised Financial Plan

## **BYLAW – FIRST, SECOND AND THIRD READINGS**

17. “Financial Plan for the Years 2020 to 2029 Bylaw, 2020, No. 8771, Amendment Bylaw, 2020, No. 8797” (Revised Financial Plan)



**COVID-19 UPDATE**

**COUNCIL INQUIRIES / REPORTS**

**NEW ITEMS OF BUSINESS**

**NOTICES OF MOTION**

**RECESS TO CLOSED MEETING**

THAT Council recess to the Committee of the Whole, Closed session, pursuant to the *Community Charter*, Sections 90(1)(a) [personal information], 90(1)(e) [land matter], 90(1)(g) [legal matter] and 90(1)(i) [legal advice].

**REPORT OF THE COMMITTEE OF THE WHOLE (CLOSED SESSION)**

**ADJOURN**

## **CALL TO ORDER**

## **APPROVAL OF AGENDA**

1. Regular Council Meeting Agenda, November 16, 2020

## **ADOPTION OF MINUTES**

2. Regular Council Meeting Minutes, November 2, 2020

## **PUBLIC INPUT PERIOD**

The Public Input Period is addressed in sections 12.20 to 12.28 of “Council Procedure Bylaw, 2015, No. 8500.”

The time allotted for each speaker addressing Council during the Public Input Period is 2 minutes, with the number of speakers set at 5 persons. Speakers’ comments will be audio recorded, as well as live-streamed on the City’s website, and will form part of the public record.

As City Hall remains closed to the public, the Regular Council Meetings will be held electronically via “WebEx”. To speak during the Public Input Period of a Regular Council Meeting, pre-registration is required by completing an online form at [cnv.org/PublicInputPeriod](http://cnv.org/PublicInputPeriod). Persons can also pre-register by phoning 604-990-4230 and providing contact information. **All pre-registration must be submitted no later than 12:00 noon on the day of the meeting.**

Once you have pre-registered, you will receive login/call-in instructions via email/phone.

You will be required to login or phone into the Council meeting between 5:00 and 5:15 pm on the day of the meeting. At the meeting, speakers will be asked to state their name and address for the record. If speakers have written materials to accompany their presentation, these materials must be emailed to the Corporate Officer at [clerks@cnv.org](mailto:clerks@cnv.org) no later than 12:00 noon on the day of the meeting.

The Public Input Period provides an opportunity for comment only and places the speaker’s concern on record, without the expectation of a response from Council.

Speakers must comply with the General Rules of Conduct set out in section 5.1 of “Council Procedure Bylaw, 2015, No. 8500” and may not speak with respect to items as listed in section 12.25(2).

Speakers are requested not to address matters that refer to items from a concluded Public Hearing/Public Meeting or to Public Hearings, Public Meetings and Committee meetings when those matters are scheduled on the same evening’s agenda, as an opportunity for public input is provided when the particular item comes forward for discussion.

Please address the Mayor as “Your Worship” or “Mayor, followed by his/her surname”. Councillors should be addressed as “Councillor, followed by their surname”.

## **CONSENT AGENDA**

Items \*3 and \*4 are listed in the Consent Agenda and may be considered separately or in one motion.

### **RECOMMENDATION:**

THAT the recommendations listed within the “Consent Agenda” be approved.

## **START OF CONSENT AGENDA**

### **BYLAWS – ADOPTION**

- \*3. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8775”  
(Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724)

### **RECOMMENDATION:**

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8775”  
(Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724) be  
adopted, signed by the Mayor and Corporate Officer and affixed with the  
corporate seal.

- \*4. “Housing Agreement Bylaw, 2020, No. 8776” (Cascadia Green Development,  
2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments)

### **RECOMMENDATION:**

THAT “Housing Agreement Bylaw, 2020, No. 8776” (Cascadia Green  
Development, 2540-2590 Lonsdale Avenue, CD-724, Rental Housing  
Commitments) be adopted, signed by the Mayor and Corporate Officer and  
affixed with the corporate seal.

## **END OF CONSENT AGENDA**

### **PRESENTATION**

City of North Vancouver Community Wildfire Protection Plan 2020  
– Bruce Blackwell, Principal, B.A. Blackwell & Associates Ltd.

*Item 5 refers.*

## **REPORT**

5. Community Wildfire Protection Plan – File: 12-5810-01-0001/2020

Report: Parks and Greenways Planner and Assistant Fire Chief, Prevention,  
November 4, 2020

### **RECOMMENDATION:**

PURSUANT to the report of the Parks and Greenways Planner and Assistant Fire Chief, Prevention, dated November 4, 2020, entitled “Community Wildfire Protection Plan”:

THAT the Community Wildfire Protection Plan be endorsed;

THAT staff be directed to pursue available external funding and resources to help implement the recommendations;

AND THAT funding for high priority actions be included for consideration in the City’s annual Financial Planning Process.

## **BYLAW – THIRD READING**

6. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8700”  
(Bryan Lockhart / Black Kettle Brewing Inc., 720 Copping Street, CD-728)

### **RECOMMENDATION:**

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8700”  
(Bryan Lockhart / Black Kettle Brewing Inc., 720 Copping Street, CD-728) be given third reading.

*Public Hearing waived.*

## **MOTIONS**

7. Development Variance Permit No. PLN2020-00013 (366 East 3<sup>rd</sup> Street  
– Rooftop Antenna) – File: 08-3400-20-0029/1

### **RECOMMENDATION:**

THAT Development Variance Permit No. PLN2020-00013 (366 East 3<sup>rd</sup> Street) be issued to Magnolia House Holdings Ltd., Inc. No. BC1024751, in accordance with Section 490 of the *Local Government Act*;

AND THAT the Mayor and Corporate Officer be authorized to sign Development Variance Permit No PLN2020-0013.

*Public Meeting waived.*

**MOTIONS – Continued**

8. Development Permit No. DPA2018-00005 (366 East 3<sup>rd</sup> Street – Rooftop Antenna) – File: 08-3400-20-0029/1

**RECOMMENDATION:**

THAT Development Permit No. DPA2018-00005 (366 East 3<sup>rd</sup> Street) be issued to Magnolia House Holdings Ltd., Inc. No. BC1024751, in accordance with Section 490 of the *Local Government Act*,

AND THAT the Mayor and Corporate Officer be authorized to sign Development Variance Permit No DPA2018-00005.

*Public Meeting waived.*

**REPORT**

9. Low Carbon Building Bylaw Amendments – File: 11-5280-14-0001/2020

Report: Chief Building Official and Manager, Environmental Sustainability,  
November 4, 2020

**RECOMMENDATION:**

PURSUANT to the report of the Chief Building Official and the Manager, Environmental Sustainability, dated November 4, 2020, entitled “Low Carbon Building Bylaw Amendments”:

THAT “Construction Regulation Bylaw, 2003, No. 7390, Amendment Bylaw, 2020, No. 8810” (Low Carbon Pathway Amendments Under the BC Energy Step Code) be considered;

AND THAT the City’s Sustainable Development Guidelines be updated to reflect the new requirements.

*Item 10 refers.*

**BYLAW – FIRST, SECOND AND THIRD READINGS**

10. “Construction Regulation Bylaw, 2003, No. 7390, Amendment Bylaw, 2020, No. 8810” (Low Carbon Pathway Amendments Under the BC Energy Step Code)

**RECOMMENDATION:**

THAT “Construction Regulation Bylaw, 2003, No. 7390, Amendment Bylaw, 2020, No. 8810” (Low Carbon Pathway Amendments Under the BC Energy Step Code) be given first, second and third readings.

## **REPORT**

11. Rezoning Application: 115 East 1<sup>st</sup> Street (Eggs Cana / Oana Nicoara)  
– File: 08-3400-20-0027/1

Report: Development Planner, November 4, 2020

### **RECOMMENDATION:**

PURSUANT to the report of the Development Planner, dated November 4, 2020, entitled “Rezoning Application: 115 East 1<sup>st</sup> Street (Eggs Cana / Oana Nicoara)”:

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8808” (Eggs Cana / Oana Nicoara, 115 East 1<sup>st</sup> Street, CD-731) be considered and referred to a Public Hearing;

AND THAT notification be circulated in accordance with the *Local Government Act*.

*Item 12 refers.*

## **BYLAW – FIRST AND SECOND READINGS**

12. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8808” (Eggs Cana / Oana Nicoara, 115 East 1<sup>st</sup> Street, CD-731)

### **RECOMMENDATION:**

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8808” (Eggs Cana / Oana Nicoara, 115 East 1<sup>st</sup> Street, CD-731) be given first and second readings.

## **REPORT**

13. Rezoning and Official Community Plan Amendment Application: 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue – File: 08-3400-20-0005/1

Report: Manager, Development Planning, November 4, 2020

### **RECOMMENDATION:**

PURSUANT to the report of the Manager, Development Planning, dated November 4, 2020, entitled “Rezoning and Official Community Plan Amendment Application: 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue”:

*Continued...*

**REPORT – Continued**

13. Rezoning and Official Community Plan Amendment Application: 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue – File: 08-3400-20-0005/1 – Continued

THAT “Official Community Plan Bylaw, 2014, No. 8400, Amendment Bylaw, 2020, No. 8806” (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue, Land Use Designation and Permitted Height Change) be considered and referred to a Public Hearing;

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8807” (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street, and 341-343 St. Davids Avenue, CD-730 and “Moodyville Development Permit Area Guidelines” amendment) be considered and referred to a Public Hearing;

THAT the community benefits listed in the report section “Density Bonus and Community Benefits” be secured, including a 16-space child care facility, through agreements at the applicant’s expense and to the satisfaction of staff;

THAT the statutory requirements for “Official Community Plan Bylaw, 2014, No. 8400, Amendment Bylaw, 2020, No. 8806”, as described in the “Statutory Review”, be considered;

AND THAT notification be circulated in accordance with the *Local Government Act*.

*Items 14 and 15 refer.*

**BYLAW – FIRST AND SECOND READINGS**

14. “Official Community Plan Bylaw, 2014, No. 8400, Amendment Bylaw, 2020, No. 8806” (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue, Land Use Designation and Permitted Height Change)

**RECOMMENDATION:**

THAT “Official Community Plan Bylaw, 2014, No. 8400, Amendment Bylaw, 2020, No. 8806” (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue, Land Use Designation and Permitted Height Change) be given first and second readings.

**BYLAW – FIRST AND SECOND READINGS – Continued**

15. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8807” (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street, and 341-343 St. Davids Avenue, CD-730 and “Moodyville Development Permit Area Guidelines” amendment)

**RECOMMENDATION:**

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8807” (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street, and 341-343 St. Davids Avenue, CD-730 and “Moodyville Development Permit Area Guidelines” amendment) be given first and second readings.

**REPORT**

16. 2020–2029 Revised Financial Plan – File: 05-1715-20-0020/2020

Report: Director, Finance, November 4, 2020

**RECOMMENDATION:**

PURSUANT to the report of the Director, Finance, dated November 4, 2020, entitled “2020–2029 Revised Financial Plan”:

THAT an increase of 0.4 Full-Time Equivalent position to the approved Community and Partner Engagement Department authorized complement be approved;

AND THAT “Financial Plan for the Years 2020 to 2029 Bylaw, 2020, No. 8771, Amendment Bylaw, 2020, No. 8797” (Revised Financial Plan) be considered.

*Item 17 refers.*

**BYLAW – FIRST, SECOND AND THIRD READINGS**

17. “Financial Plan for the Years 2020 to 2029 Bylaw, 2020, No. 8771, Amendment Bylaw, 2020, No. 8797” (Revised Financial Plan)

**RECOMMENDATION:**

THAT “Financial Plan for the Years 2020 to 2029 Bylaw, 2020, No. 8771, Amendment Bylaw, 2020, No. 8797” (Revised Financial Plan) be given first, second and third readings.



**COVID-19 UPDATE**

**COUNCIL INQUIRIES / REPORTS**

**NEW ITEMS OF BUSINESS**

**NOTICES OF MOTION**

**RECESS TO CLOSED MEETING**

THAT Council recess to the Committee of the Whole, Closed session, pursuant to the *Community Charter*, Sections 90(1)(a) [personal information], 90(1)(e) [land matter], 90(1)(g) [legal matter] and 90(1)(i) [legal advice].

**REPORT OF THE COMMITTEE OF THE WHOLE (CLOSED SESSION)**

**ADJOURN**

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**MINUTES OF THE REGULAR MEETING OF COUNCIL, HELD  
ELECTRONICALLY FROM CITY HALL, 141 WEST 14<sup>TH</sup> STREET, NORTH  
VANCOUVER, BC, ON **MONDAY, NOVEMBER 2, 2020****

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**PRESENT**

**COUNCIL MEMBERS**

Mayor L. Buchanan\*  
Councillor H. Back\*  
Councillor D. Bell\*  
Councillor A. Girard\*  
Councillor T. Hu\*  
Councillor J. McIlroy\*  
Councillor T. Valente\*

*\*Participated electronically*

**STAFF MEMBERS**

L. McCarthy, CAO\*  
K. Graham, Corporate Officer  
C. Baird, Deputy Corporate Officer  
H. Granger, City Solicitor\*  
B. Themens, Director, Finance\*  
M. Epp, Director, Planning and Development\*  
A. Devlin, Manager, Transportation Planning\*  
Y. Zeng, Manager, Development Planning\*  
K. Magnusson, Deputy Director, Engineering, Parks and  
Environment\*  
R. Skene, Director, Community and Partner Engagement\*  
D. Koep, Chief Librarian\*

The meeting was called to order at 5:30 pm.

**APPROVAL OF AGENDA**

Moved by Councillor Girard, seconded by Councillor Back

1. Regular Council Meeting Agenda, November 2, 2020

**CARRIED UNANIMOUSLY**

**ADOPTION OF MINUTES**

Moved by Councillor Girard, seconded by Councillor Bell

2. Regular Council Meeting Minutes, October 26, 2020

**CARRIED UNANIMOUSLY**

**PROCLAMATION**

Mayor Buchanan declared the following proclamation and virtually presented a framed proclamation to the Colour Party of the Royal Canadian Legion, Branch 118.

Veterans' Week – November 5-11, 2020

**PUBLIC INPUT PERIOD**

Nil.

## **CONSENT AGENDA**

Moved by Councillor Back, seconded by Councillor Bell

THAT the recommendations listed within the "Consent Agenda" be approved.

**CARRIED UNANIMOUSLY**

## **START OF CONSENT AGENDA**

### **CORRESPONDENCE**

- \*3. Board in Brief, Metro Vancouver Regional District, October 2, 2020  
– File: 01-0400-60-0006/2020

Re: Metro Vancouver – Board in Brief

Moved by Councillor Back, seconded by Councillor Bell

THAT the correspondence from Metro Vancouver, dated October 2, 2020, regarding the "Metro Vancouver – Board in Brief", be received and filed.

**(CARRIED UNANIMOUSLY)**

### **BYLAWS – ADOPTION**

- \*4. "Development Cost Charge (Parks) Reserve Fund Bylaw, 2020, No. 8803" (2020 Project Plan Funding)

Moved by Councillor Back, seconded by Councillor Bell

THAT "Development Cost Charge (Parks) Reserve Fund Bylaw, 2020, No. 8803" (2020 Project Plan Funding) be adopted, signed by the Mayor and Corporate Officer and affixed with the corporate seal.

**(CARRIED UNANIMOUSLY)**

- \*5. "Development Cost Charge (Transportation) Reserve Fund Bylaw, 2020, No. 8804" (2020 Project Plan Funding)

Moved by Councillor Back, seconded by Councillor Bell

THAT "Development Cost Charge (Transportation) Reserve Fund Bylaw, 2020, No. 8804" (2020 Project Plan Funding) be adopted, signed by the Mayor and Corporate Officer and affixed with the corporate seal.

**(CARRIED UNANIMOUSLY)**

## **END OF CONSENT AGENDA**

## **BYLAW – ADOPTION**

6. “Street and Traffic Bylaw, 1991, No. 6234, Amendment Bylaw, 2020, No. 8801”  
(Ridgeway Neighbourhood 30 km per hour Zone)

Moved by Councillor McIlroy, seconded by Councillor Girard

THAT “Street and Traffic Bylaw, 1991, No. 6234, Amendment Bylaw, 2020, No. 8801”  
(Ridgeway Neighbourhood 30 km per hour Zone) be adopted, signed by the Mayor  
and Corporate Officer and affixed with the corporate seal.

**CARRIED**

Councillor Back is recorded as voting contrary to the motion.

## **DELEGATION**

Yavanna Arnold, President, and Greg Holmes, Executive Director, Lower Lonsdale  
Business Improvement Area

Re: The Shipyards District – Lower Lonsdale: The Place to Be

Yavanna Arnold, President, and Greg Holmes, Executive Director, Lower Lonsdale Business  
Improvement Area, provided a PowerPoint presentation on “The Shipyards District – Lower  
Lonsdale: The Place to Be” and responded to questions of Council.

## **CORRESPONDENCE**

7. Greg Holmes, Executive Director, Lower Lonsdale Business Improvement Area,  
October 6, 2020 – File: 01-0230-20-0026/2020

Re: Delegation request for the Lower Lonsdale Business Improvement Area (LLBIA)

Moved by Councillor Bell, seconded by Councillor Girard

THAT the correspondence from Greg Holmes, Executive Director, Lower Lonsdale  
Business Improvement Area, dated October 6, 2020, regarding the “Delegation  
request for the Lower Lonsdale Business Improvement Area (LLBIA)”, be received  
with thanks.

**CARRIED UNANIMOUSLY**

## **PRESENTATION**

Report to Our Community and Pandemic Response and Service Restoration Update –  
Chief Librarian and Library Board Chair

The Chief Librarian and Library Board Chair provided a PowerPoint presentation on the  
“Report to Our Community and Pandemic Response and Service Restoration Update” and  
responded to questions of Council.

## **REPORT**

8. Rezoning Application: 801-925 Harbourside Drive and 18 Fell Avenue (518166 British Columbia Ltd., CD-646 Text Amendment) – File: 08-3400-20-0034/1

Report: Planner 1, October 21, 2020

Moved by Councillor Valente, seconded by Councillor Bell

PURSUANT to the report of the Planner 1, dated October 21, 2020, entitled “Rezoning Application: 801-925 Harbourside Drive and 18 Fell Avenue (518166 British Columbia Ltd., CD-646 Text Amendment)”:

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8805” (518166 British Columbia Ltd., 801-925 Harbourside Drive and 18 Fell Avenue, CD-646 Text Amendment) be considered and the Public Hearing be waived;

THAT notification be circulated in accordance with the *Local Government Act*;

AND THAT legal agreements assuring access to the bicycle parking and facilities for the appropriate persons be secured at the applicant’s expense and to the satisfaction of staff.

**CARRIED UNANIMOUSLY**

## **BYLAW – FIRST AND SECOND READINGS**

9. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8805” (518166 British Columbia Ltd., 801-925 Harbourside Drive and 18 Fell Avenue, CD-646 Text Amendment)

Moved by Councillor Valente, seconded by Councillor Bell

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8805” (518166 British Columbia Ltd., 801-925 Harbourside Drive and 18 Fell Avenue, CD-646 Text Amendment) be given first and second readings.

**CARRIED UNANIMOUSLY**

## **REPORTS**

10. E-Bike Share Planning Framework – File: 16-8530-01-0001/2020

Report: North Shore Mobility Options Coordinator and Sustainable Transportation Coordinator, October 21, 2020

Moved by Mayor Buchanan, seconded by Councillor McIlroy

PURSUANT to the report of the North Shore Mobility Options Coordinator and the Sustainable Transportation Coordinator, dated October 21, 2020, entitled “E-Bike Share Planning Framework”:

THAT the E-Bike Share Policy be endorsed;

*Continued...*

## **REPORTS – Continued**

10. E-Bike Share Planning Framework – File: 16-8530-01-0001/2020 – Continued

THAT the E-Bike Share Policy be implemented on a pilot basis for 2 years;

THAT staff be directed to limit the number of permits the City issues to 1 E-Bike Share provider during the pilot;

AND THAT staff be directed to draft the required amendments to applicable City bylaws to enable the E-Bike Share Policy for Council consideration and approval.

**CARRIED UNANIMOUSLY**

11. Amendment to “Housing Agreement Bylaw, 2020, No. 8776” (Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments) – File: 08-3360-20-0498/1

Report: Manager, Development Planning, October 21, 2020

Moved by Councillor Bell, seconded by Mayor Buchanan

PURSUANT to the report of the Manager, Development Planning, dated October 21, 2020, entitled “Amendment to Housing Agreement Bylaw, 2020, No. 8776” (Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments):

THAT second and third readings of “Housing Agreement Bylaw, 2020, No. 8776” (Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments) be rescinded;

THAT “Housing Agreement Bylaw, 2020, No. 8776” (Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments) be amended to include the final form of agreement, which has been substantially revised to better secure the rental housing commitments for the property;

AND THAT “Housing Agreement Bylaw, 2020, No. 8776” (Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments) be given second and third readings, as amended.

**CARRIED UNANIMOUSLY**

## **BYLAW – RESCIND SECOND AND THIRD READINGS**

12. “Housing Agreement Bylaw, 2020, No. 8776” (Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments)

Moved by Councillor Bell, seconded by Mayor Buchanan

THAT second and third readings of “Housing Agreement Bylaw, 2020, No. 8776” (Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments) be rescinded.

**CARRIED UNANIMOUSLY**

## **BYLAW – SECOND AND THIRD READINGS, AS AMENDED**

13. “Housing Agreement Bylaw, 2020, No. 8776” (Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments)

Moved by Councillor Bell, seconded by Mayor Buchanan

THAT “Housing Agreement Bylaw, 2020, No. 8776” (Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments) be given second and third readings, as amended.

**CARRIED UNANIMOUSLY**

## **NOTICE OF MOTION**

14. Retractable Balcony Glass Systems – File: 09-3760-03-0001/2020

Submitted by Councillor Valente

Moved by Councillor Valente, seconded by Councillor Bell

WHEREAS the COVID-19 pandemic continues to result in hardships for residents, especially those living in smaller homes, across the City of North Vancouver;

WHEREAS City staff are already undertaking a review to simplify the Zoning Bylaw;

WHEREAS many multi-family and other dwelling buildings have balconies that often cannot be used year-round due to inclement weather;

WHEREAS being able to better utilize balcony space may result in increased options for City residents to workout, play and benefit from a semi-outdoor, weather-protected space;

AND WHEREAS the City is committed to supporting the well-being of its residents;

THEREFORE BE IT RESOLVED THAT staff investigate removing barriers in the Zoning Bylaw to better utilize balconies and other outdoor spaces through retractable balcony glass systems.

**CARRIED UNANIMOUSLY**

## **COVID-19 UPDATE**

Nil.

## **COUNCIL INQUIRIES / REPORTS**

Nil.

## **NEW ITEMS OF BUSINESS**

Nil.



## **NOTICES OF MOTION**

Nil.

## **ADJOURN**

Moved by Councillor Bell, seconded by Councillor Girard

THAT the meeting adjourn.

**CARRIED UNANIMOUSLY**

The meeting adjourned at 8:07 pm.

*“Certified Correct by the Corporate Officer”*

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CORPORATE OFFICER

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# THE CORPORATION OF THE CITY OF NORTH VANCOUVER

## BYLAW NO. 8775

### A Bylaw to amend “Zoning Bylaw, 1995, No. 6700”

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as “**Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8775**” (**Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724**).
2. Division VI: Zoning Map of Document “A” of “Zoning Bylaw, 1995, No. 6700” is hereby amended by reclassifying the following lots as henceforth being transferred, added to and forming part of CD-724 (Comprehensive Development 724 Zone):

Lots	Block	D.L.	Plan	
Amended Lot A of Lots 3 and 4	229	545	6709	from RM-1
Amended Lot C of Lots 3 and 4	229	545	6709	from RM-1

3. Part 11 of Division V: Comprehensive Development Regulations of Document “A” of “Zoning Bylaw, 1995, No. 6700” is hereby amended by:

- A. Adding the following section to Section 1100, thereof, after the designation “CD-723 Comprehensive Development 723 Zone”:

“CD-724 Comprehensive Development 724 Zone”

- B. Adding the following to Section 1101, thereof, after the “CD-723 Comprehensive Development 723 Zone”:

“CD-724 Comprehensive Development 724 Zone”

In the CD-724 Zone, permitted Uses, regulations for permitted Uses, regulations for the size, shape and siting of Buildings and Structures and required Off-Street Parking shall be as in the RM-1 Zone, except that:

- (1) The permitted Principal Use on the Lot shall be limited to:

- (a) Rental Apartment Residential Use;
- (b) Residential Care Facility Use;
- (c) Accessory Home Occupation Use subject to Section 507(6), (7), and (8);
- (d) Accessory Home Office Use;
- (e) Accessory Off-Street Parking Use;

(2) Gross Floor Area

- (a) The Principal Building shall not exceed a Gross Floor Area of 1.0 times the Lot Area, provided that this amount may be increased to a maximum of 1.6 times the Lot Area through the provision of Adaptable Design subject to Section 423;
- (b) Notwithstanding 2(a), the maximum Gross Floor Area may be further increased, upon entering into a Housing Agreement with the City, from the “Base Density” to the “Total Density” as follows:

BASE DENSITY			
OCP Schedule 'A'		1.6 FSR	
ADDITIONAL (BONUS) DENSITY			
ADDITIONAL DENSITY CATEGORY	DESCRIPTION	ADDITIONAL DENSITY (BONUS)	POLICY REFERENCE
100% Rental Housing	Secured rental apartment building, of which 7 units are mid-market	1.0 FSR	OCP Section 2.2
TOTAL DENSITY		2.6 FSR	

To a maximum of 2.6 FSR;

- (c) Notwithstanding 2(a) and (b), for the purpose of CD-724 zone, patios and balconies that are at least 22% unenclosed shall be considered an Open Appendage; up to a maximum of 12% of Gross Floor Area;
- (3) The Lot Coverage of the Principal Building shall not exceed a maximum of 55 percent;
- (4) Height:
- (a) The Principal Building shall not exceed a Height of five storeys and 15.0 metres (48.87 feet) as measured from the average Building Grade at the North property line along East 26<sup>th</sup> Street;
  - (b) Notwithstanding 4(a), the following exceptions shall apply:
    - i. Common elevator and its mechanical penthouse may not exceed a height of 4.8 metres (15.7 feet);
    - ii. Common stair structures and landscape structures may not exceed a height of 3 metres (10 feet).

- (5) The minimum required Principal Building setback, measured to each building face, shall be limited to:
- (a) 3 metres (10.0 feet) from the Front Lot Line (Lonsdale Avenue), plus a maximum permitted projection up to 1.3 metres (4.25 feet) for the entrance canopy;
  - (b) 3.5 metres (12.0 feet) from the Rear Lot Line;
  - (c) 3.5 metres (12.0 feet) from the Interior Lot Line;
  - (d) 3 metres (10.0 feet) from the Exterior Lot Line (East 26<sup>th</sup> Street);
- (6) Section 510(3) Building Width and Length shall not apply;
- (7) All exterior finishes, design and landscaping shall be approval by the Advisory Design Panel.

READ a first time on the 11<sup>th</sup> day of May, 2020.

READ a second time on the 11<sup>th</sup> day of May, 2020.

READ a third time on the 15<sup>th</sup> day of June, 2020.

RECEIVED APPROVAL FROM THE  
MINISTRY OF TRANSPORTATION ON THE  
19<sup>TH</sup> DAY OF OCTOBER, 2020.

ADOPTED on the <> day of <>, 2020.

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MAYOR

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CORPORATE OFFICER

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THE CORPORATION OF THE CITY OF NORTH VANCOUVER

BYLAW NO. 8776

**A Bylaw to enter into a Housing Agreement (2540-2590 Lonsdale Avenue)**

**WHEREAS** Section 483 of the *Local Government Act* R.S.B.C. 2015 c.1 permits a local government to enter into a housing agreement for rental housing.

**NOW THEREFORE** the Council of The Corporation of the City of North Vancouver, in open meeting assembled enacts as follows:

1. This Bylaw shall be known and cited for all purposes as “**Housing Agreement Bylaw, 2020, No. 8776**” (**Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724, Rental Housing Commitments**).
2. The Council hereby authorizes the agreement substantially in the form attached to this bylaw between The Corporation of the City of North Vancouver and Cascadia Green Development with respect to the lands referenced as 2540-2590 Lonsdale Avenue, “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8775” (Cascadia Green Development, 2540-2590 Lonsdale Avenue, CD-724).
3. The Mayor and Corporate Officer are authorized to execute any documents required to give effect to the Housing Agreement.

READ a first time on the 11<sup>th</sup> day of May, 2020.

READ a second time on the 11<sup>th</sup> day of May, 2020.

READ a third time on the 15<sup>th</sup> day of June, 2020.

SECOND AND THIRD READINGS RESCINDED  
ON THE 2<sup>ND</sup> DAY OF NOVEMBER, 2020.

Read a second time, as amended, on the 2<sup>nd</sup>  
day of November, 2020.

Read a third time, as amended, on the 2<sup>nd</sup> day  
of November, 2020.

ADOPTED on the <> day of <>, 2020.

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MAYOR

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CORPORATE OFFICER

## RENTAL HOUSING AGREEMENT

THIS AGREEMENT dated for reference the \_\_\_\_\_ day of \_\_\_\_\_, 2020.

BETWEEN:

**1200272 B.C. LTD.,**  
106 - 252 Esplanade W  
North Vancouver V7M 1A1

(the "Owner")

AND:

**THE CORPORATION OF THE CITY OF NORTH VANCOUVER,**  
a municipal corporation pursuant to the *Local Government Act* and  
having its offices at 141 West 14th Street, North Vancouver,  
British Columbia, V7M 1H9

(the "City")

WHEREAS:

- A. The Owner is the registered owner of the Lands.
- B. The City is a municipal corporation incorporated pursuant to the Act.
- C. As a condition of the Rezoning Bylaw, the Owner has agreed to enter into a housing agreement with the City in accordance with section 483 of the Act.
- D. Section 483 authorizes the City, by bylaw, to enter into a housing agreement in respect of the form of tenure of housing units, availability of such units to classes of identified person, administration and management of such units and the rent that may be charged for such units.

**NOW THEREFORE** in consideration of the sum of Ten Dollars (\$10.00) now paid by the City to the Owner and for other good and valuable consideration (the receipt and sufficiency of which the Owner hereby acknowledges), the Owner and the City covenant each with the other as follows:

### 1. DEFINITIONS

- (a) "Act" means the *Local Government Act*, RSBC. 2015 c.1 as amended from time to time;
- (b) "Affordable Rent" means with respect to each Mid-Market Rental Unit, rent that is 10% less than:
  - (i) a rent payment amount equal to the "Private Apartment Average Rents" for the corresponding bedroom type in the City of North Vancouver as established by CMHC's Housing Market Information Portal for the year the tenancy is entered into;



- (ii) if such amount has not yet been set for the year, a rent payment amount equal to the "Private Apartment Average Rents" for the corresponding bedroom type in the City of North Vancouver as established by CMHC's Housing Market Information Portal for the year previous to the year the tenancy is entered into plus an annual rent increase then permitted under the RT Act; or
  - (iii) if such amount is no longer set out in CMHC's Housing Market Information Portal, then such amount determined by a survey conducted by an independent consultant acceptable to the City, acting reasonably;
- (c) **"Agreement"** means this agreement as amended from time to time;
- (d) **"Commencement Date"** has the meaning set out in section 2.1 herein;
- (e) **"Council"** means the municipal council for the Corporation of the City of North Vancouver;
- (f) **"CMHC"** means Canada Mortgage and Housing Corporation;
- (g) **"Director of Planning"** means the chief administrator of the Department of Planning and Development of the City and his or her successors in function and their respective nominees;
- (h) **"Dwelling Unit"** means a dwelling unit as defined in the City of North Vancouver's Zoning Bylaw 1995, No. 6700 as amended from time to time;
- (i) **"Lands"** means those lands and premises legally described as
 

Parcel Identifier: 010-834-532  
 AMENDED LOT A (SEE 313560L) OF LOTS 3 AND 4 BLOCK 229 DISTRICT LOT 545 PLAN 6709; and

Parcel Identifier: 010-834-567  
 AMENDED LOT C (SEE 313561L) OF LOTS 3 AND 4 BLOCK 229 DISTRICT LOT 545 PLAN 6709;
- (j) **"Mid-Market Rental Units"** means Dwelling Units that are rented to tenants for Affordable Rent;
- (k) **"Market Rental Units"** means Dwelling Units that are rented to tenants for market rental rates as set by the Owner;
- (l) **"Rental Purposes"** means an occupancy or intended occupancy which is or would be governed by a tenancy agreement as defined in Section 1 of the *Residential Tenancy Act*, SBC 2002 c. 78 as amended from time to time between the Owner and the tenant;
- (m) **"Rental Units"** means, collectively, all of the Market Rental Units and all of the Mid-Market Rental Units;

- (n) **"Residential Building"** means the five storey residential building to be constructed on the Lands to be used for Rental Purposes with 64 Dwelling Units, of which 57 Dwelling Units will be Market Rental Units and 7 Dwelling Units will be Mid-Market Rental Units;
- (o) **"RT Act"** means the *Residential Tenancy Act*, SBC 2002 c. 78;
- (p) **"Rezoning Bylaw"** means the rezoning bylaw applicable to the Lands described as "Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8775"; and
- (q) **"Term"** has the meaning set out in section 2.1 herein.

## 2. TERM

- 2.1 This Agreement will commence upon adoption by Council of Cascadia Green Development Housing Agreement Bylaw, 2020, No. 8776, (the **"Commencement Date"**) and will continue until terminated in accordance with section 2.2 or section 8.3(c) (the **"Term"**).
- 2.2 This Agreement will terminate immediately upon the removal or destruction of the Residential Building provided the Residential Building is not repaired or rebuilt following the destruction thereof.
- 2.3 Subject to section 7.3, upon termination of this Agreement, this Agreement will be at an end and of no further force and effect.

## 3. USE OF LANDS

- 3.1 The Owner covenants and agrees with the City that during the Term, notwithstanding the Rezoning Bylaw, the Lands will be used and built on only in strict compliance with the terms and conditions of this Agreement and that:
  - (a) the Lands will not be subdivided or stratified;
  - (b) the Residential Building will be used for Rental Purposes only;
  - (c) no Dwelling Unit in the Residential Building will be occupied for any purpose except for Rental Purposes; and
  - (d) at least seven Dwelling Units in the Residential Building will be Mid-Market Rental Units, rented to tenants at Affordable Rent, in accordance with this Agreement.
- 3.2 The Owner further covenants and agrees with the City that the Lands and any buildings or structures constructed thereon including the Residential Building will be developed, built and maintained in accordance with all City bylaws, regulations and guidelines as amended from time to time.

## 4. TENANCY RESTRICTIONS

- 4.1 At least seven Rental Units will be 3-bedroom Dwelling Units, unless otherwise approved in writing by the Director of Planning in his or her discretion.
- 4.2 Mid-Market Rental Units will be comprised of the following:

- (a) 2 studio Dwelling Units;
- (b) 2 one-bedroom Dwelling Units;
- (c) 2 two-bedroom Dwelling Units; and
- (d) 1 three-bedroom Dwelling Unit.

The Owner may only change the composition of Mid-Market Rental Units with the approval in writing by the Director of Planning and Development with such approval to be granted in his or her discretion. The Owner will be entitled to determine the locations of the Mid-Market Rental Units within the Residential Building.

- 4.3 The Owner will enter into a minimum 1 year tenancy agreement for each of the Mid-Market Rental Units which may convert to a month to month tenancy at the end of the fixed term. For greater certainty, at the end of each tenancy, the Mid-Market Rental Unit will continue to be rented as a Mid-Market Rental Unit at Affordable Rent, which obligation will be ongoing at all times during the Term.

## 5. OWNER'S OBLIGATIONS

- 5.1 Without limiting section 3.1 of this Agreement:

- (a) **Management and administration:** The management, administration, and associated costs with the management and administration of the Rental Units, including the Mid-Market Rental Units, will be borne by the Owner or its designated rental agent, unless otherwise approved by the City in writing;
- (b) **Advertisement:** The Owner will feature the tenure restrictions set out in this Agreement prominently in all advertising of Mid-Market Rental Units;
- (c) **First Right of Refusal:** The Owner will provide a first right of refusal, regardless of income, to tenants from the existing rental building on the Lands. For certainty, section 5.1(d) will not apply to tenants from the existing rental building on the Lands;
- (d) **Tenant Selection:** The Owner will determine the selection of the tenants of the Mid-Market Rental Units by applying the suggested income qualification of a maximum household income determined by multiplying the low-end of market rents by 12 to yield the households' annual housing costs, and dividing by 30% to meet the standard definition of affordability. In determining financial eligibility, the Owner or its rental agent, so long as it acts honestly and in good faith, is entitled to rely on all information provided by the prospective tenant and the Owner will have no liability if the prospective tenant intentionally or unintentionally provides any incorrect information. The Owner is under no obligation to monitor or update the financial circumstances of the tenant once the lease is signed;
- (e) **Common Amenities:** All tenants and occupants of the Residential Building, including tenants and occupants of Mid-Market Rental Units, will have equal access, at equal rates, to all indoor and outdoor amenities on the Lands from time to time, including visitor parking stalls, storage units, recreation facilities and the like.

- (f) **Short Term Rentals:** Mid-Market Rental Units will only be used as a principal residence of a tenant. The Owner will not permit a Mid-Market Rental Unit to be used for short term rental purposes (being rentals for periods shorter than 30 consecutive days).
- (g) **Parking:** All tenants and occupants of the Residential Building, including tenants and occupants of Mid-Market Rental Units, will have equal access, at equal rates, to parking stalls assignable for exclusive use in the Residential Building, acknowledging that due to the ratio of parking stalls per Dwelling Unit in the Residential Building, there may be instances when no parking stalls are available for exclusive use of a Dwelling Unit.
- (h) **Rent Amount and Permitted Increases:** Affordable Rent for Mid-Market Rental Units is to be determined in accordance with this Agreement at the time of tenancy. Rent amounts may be subsequently increased by the permitted annual rent increase then set under the RT Act;
- (i) **Compliance with applicable laws:** Without restricting the foregoing, the Owner will comply with all applicable provisions of the RT Act and any other provincial or municipal enactments imposing obligations on landlords in relation to residential tenancies;
- (j) **Performance:** The Owner will perform its obligations under this Agreement diligently and in good faith; and
- (k) **Evidence of compliance:** Provided that the same can be done without breaching the *Personal Information Protection Act* (British Columbia) (as amended or replaced from time to time) the Owner will, upon request by the City (which request, without limitation, may be made at the time of Business License renewal or at such other time as the City deems necessary or expedient), supply to the City copies of any documentation in possession of the Owner necessary to establish compliance with the Owner's obligations under this Agreement.

## 6. DEFAULT AND REMEDIES

- 6.1 The City may, acting reasonably, give to the Owner a written notice (in this section 6.1, the "**Notice**") requiring the Owner to cure a default under this Agreement within 30 days of receipt of the Notice. The Notice must specify the nature of the default. The Owner must act with diligence to correct the default within the time specified.
- 6.2 If the Owner fails to correct a default as contemplated in section 6.1, the Owner will pay to the City, within 30 days of receiving a written request by the City:
  - (a) \$2,000.00 for each default under this Agreement that has not been remedied as provided under section 6.1; and
  - (b) \$200.00 each day the default remains un-remedied beyond the date for correcting the default as provided under section 6.1;

This section is without prejudice to any other remedies available to the City under this Agreement and at law or in equity.



- 6.3 The Owner will pay to the City on demand by the City all the City's costs of exercising its rights or remedies under this Agreement, on a full indemnity basis.
- 6.4 The Owner acknowledges and agrees that in case of a breach of this Agreement which is not fully remediable by the mere payment of money and promptly so remedied, the harm sustained by the City and to the public interest will be irreparable and not susceptible of adequate monetary compensation.
- 6.5 Each party to this Agreement, in addition to its rights under this Agreement or at law, will be entitled to all equitable remedies including specific performance, injunction and declaratory relief, or any of them, to enforce its rights under this Agreement.
- 6.6 The Owner acknowledges and agrees that it is entering into this Agreement to benefit the public interest in providing housing for Rental Purposes, and that the City's rights and remedies under this Agreement are necessary to ensure that this purpose is carried out and that the City's rights and remedies under this Agreement are fair and reasonable and ought not to be construed as a penalty or forfeiture.
- 6.7 No reference to nor exercise of any specific right or remedy under this Agreement or at law or at equity by any party will prejudice, limit or preclude that party from exercising any other right or remedy. No right or remedy will be exclusive or dependent upon any other right or remedy, but any party, from time to time, may exercise any one or more of such rights or remedies independently, successively, or in combination. The Owner acknowledges that specific performance, injunctive relief (mandatory or otherwise) or other equitable relief may be the only adequate remedy of a default by the Owner under this Agreement.

## **7. LIABILITY**

- 7.1 Except for the negligence of the City or its employees, agents or contractors, the Owner will indemnify and save harmless each of the City and its elected officials, board members, officers, directors, employees, and agents, and their heirs, executors, administrators, personal representatives, successors and assigns, from and against all claims, demands, actions, loss, damage, costs and liabilities, which all or any of them will or may be liable for or suffer or incur or be put to by reason of or arising out of:
- (a) any act or omission by the Owner, or its officers, directors, employees, agents, contractors, or other persons for whom at law the Owner is responsible;
  - (b) the Owner's default under this Agreement; and
  - (c) the Owner's ownership, operation, management or financing of the Lands for the provision of housing for Rental Purposes.
- 7.2 Except to the extent such advice or direction is given negligently, the Owner hereby releases and forever discharges the City, its elected officials, board members, officers, directors, employees and agents, and its and their heirs, executors, administrators, personal representatives, successors and assigns from and against all claims, demands, damages, actions or causes of action by reason of or arising out of advice or direction respecting the ownership, operation or management of the Lands for the provision of housing for Rental Purposes which has been or hereafter may be given to the Owner by all or any of them.

- 7.3 The covenants of the Owner set out in sections 7.1 and 7.2 of this Agreement will survive the expiration or the earlier termination of this Agreement and will continue to apply to any breach of the Agreement and to any claims arising under this Agreement during the ownership by the Owner of the Lands.

## **8. GENERAL PROVISIONS**

- 8.1 The Owner agrees to reimburse the City for all legal costs reasonably incurred by the City for the preparation, execution and registration of this Agreement. The Owner will bear their own costs, legal or otherwise, connected with the preparation, execution or registration of this Agreement.

- 8.2 Nothing in this Agreement:

- (a) affects or limits any discretion, rights, powers, duties or obligations of the City under any enactment or at common law, including in relation to the use or subdivision of land;
- (b) affects or limits any enactment relating to the use of the Lands or any condition contained in any approval including any development permit concerning the development of the Lands; or
- (c) relieves the Owner from complying with any enactment, including the City's bylaws in relation to the use of the Lands.

- 8.3 The Owner and the City agree that:

- (a) this Agreement is entered into only for the benefit of the City;
- (b) this Agreement is not intended to protect the interests of the Owner, occupier or user of the Lands or any portion of it including the Rental Units; and
- (c) without limiting section 2 of this Agreement, the City may at any time execute a release and discharge of this Agreement in respect of the Lands, without liability to anyone for doing so.

- 8.4 This Agreement burdens and runs with the Lands and any part into which any of them may be subdivided or consolidated, by strata plan or otherwise. All of the covenants and agreements contained in this Agreement are made by the Owner for itself, its successors and assigns, and all persons who acquire an interest in the Lands after the date of this Agreement. Without limiting the generality of the foregoing, the Owner will not be liable for any breach of any covenant, promise or agreement herein in respect of any portion of the Lands sold, assigned, considered or otherwise disposed of, occurring after the Owner has ceased to be the owner of the Lands.

- 8.5 The covenants and agreements on the part of the Owner in this Agreement have been made by the Owner as contractual obligations as well as being made pursuant to section 483 of the Act and as such will be binding on the Owner.

- 8.6 The Owner will, at its expense, do or cause to be done all acts reasonably necessary to ensure this Agreement is registered against the title to the Lands, including any amendments

to this Agreement as may be required by the Land Title Office or the City to effect such registration.

- 8.7 The City and the Owner each intend by execution and delivery of this Agreement to create both a contract and a deed under seal.
- 8.8 An alleged waiver by a party of any breach by another party of its obligations under this Agreement will be effective only if it is an express waiver of the breach in writing. No waiver of a breach of this Agreement is deemed or construed to be a consent or waiver of any other breach of this Agreement.
- 8.9 If a Court of competent jurisdiction finds that any part of this Agreement is invalid, illegal, or unenforceable, that part is to be considered to have been severed from the rest of this Agreement and the rest of this Agreement remains in force unaffected by that holding or by the severance of that part.
- 8.10 All notices, demands, or requests of any kind, which a party may be required or permitted to serve on another in connection with this Agreement, must be in writing and may be served on the other parties by registered mail, by facsimile or e-mail transmission, or by personal service, to the following address for each party:

City: The Corporation of the City of North Vancouver  
141 West 14<sup>th</sup> Street  
North Vancouver, BC V7M 1H9  
**Attention: Director, Planning & Development Department**

Owner: At the address set out on the registered title to the Lands, from time to time.

Service of any such notice, demand, or request will be deemed complete, if made by registered mail, 72 hours after the date and hour of mailing, except where there is a postal service disruption during such period, in which case service will be deemed to be complete only upon actual delivery of the notice, demand or request; if made by facsimile or e-mail transmission, on the first business day after the date when the facsimile or e-mail transmission was transmitted; and if made by personal service, upon personal service being effected. Any party, from time to time, by notice in writing served upon the other parties, may designate a different address or different or additional persons to which all notices, demands, or requests are to be addressed.

- 8.11 Upon request by the City, the Owner will promptly do such acts and execute such documents as may be reasonably necessary, in the opinion of the City, to give effect to this Agreement.
- 8.112 This Agreement will ensure to the benefit of and be binding upon each of the parties and their successors and permitted assigns.

## **9. INTERPRETATION**

- 9.1 Gender specific terms include both genders and include corporations. Words in the singular include the plural, and words in the plural include the singular.
- 9.2 The division of this Agreement into sections and the use of headings are for convenience of reference only and are not intended to govern, limit or aid in the construction of any provision.

In all cases, the language in this Agreement is to be construed simply according to its fair meaning, and not strictly for or against either party.

- 9.3 The word "including" when following any general statement or term is not to be construed to limit the general statement or term to the specific items which immediately follow the general statement or term to similar items whether or not words such as "without limitation" or "but not limited to" are used, but rather the general statement or term is to be construed to refer to all other items that could reasonably fall within the broadest possible scope of the general statement or term.
- 9.4 The words "must" and "will" are to be construed as imperative.
- 9.5 Any reference in this Agreement to any statute or bylaw includes any subsequent amendment, re-enactment, or replacement of that statute or bylaw.
- 9.6 This is the entire agreement between the City and the Owner concerning its subject, and there are no warranties, representations, conditions or collateral agreements relating to the subject matter of this Agreement, except as included in this Agreement. This Agreement may be amended only by a document executed by the parties to this Agreement and by bylaw, such amendment to be effective only upon adoption by City Council of an amending bylaw to Bylaw 8776.
- 9.7 This Agreement is to be governed by and construed and enforced in accordance with the laws of British Columbia.
- 9.8 This Agreement can be signed in counterpart and delivered electronically.


**IN WITNESS WHEREOF** each of the City and the Owner have executed this Agreement under seal by their duly authorized officers as of the reference date of this Agreement.


**THE CORPORATION OF THE CITY OF NORTH VANCOUVER,**  
by its authorized signatories:

\_\_\_\_\_  
MAYOR

\_\_\_\_\_  
CITY CLERK

**1200272 B.C. LTD.,** by its authorized signatories:

  
\_\_\_\_\_  
Authorized Signatory

  
\_\_\_\_\_  
Authorized Signatory



# CITY OF NORTH VANCOUVER COMMUNITY WILDFIRE PROTECTION PLAN 2020



Presented by: Bruce A. Blackwell, RPF, RPBio  
Presented to: City of North Vancouver Mayor and  
Council

October 20, 2020



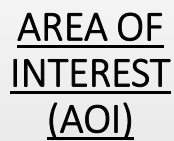
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## INTRODUCTION

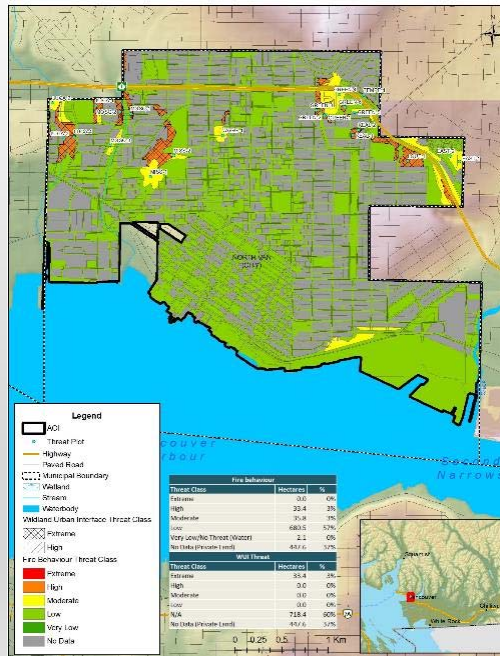
- In early 2020, B.A. Blackwell & Associates Ltd. was retained to develop a Community Wildfire Protection Plan (CWPP) for the City of North Vancouver (the City).
- The CWPP Program was created in BC to:
  - **Aid communities in developing plans to assist in improving safety; and**
  - **Reduce the risk of damage to property.**



- Fuel reduction treatments, updates to plans/policies/bylaws, and FireSmart initiatives;
- The provincial Community Resiliency Investment (CRI) program can be leveraged to support the City in implementing recommendations from the 2020 CWPP

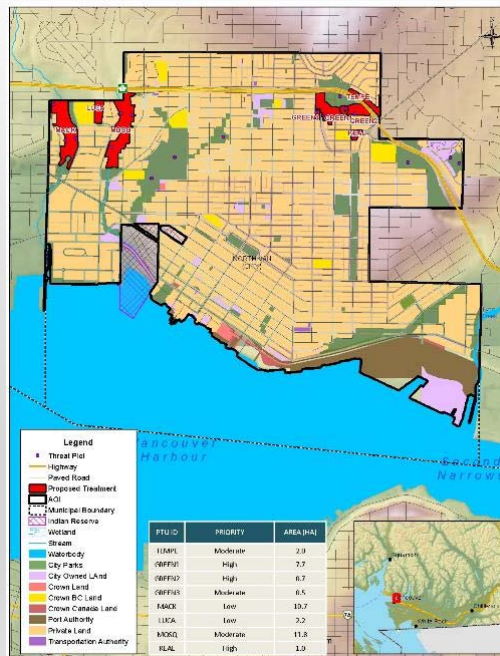


## FIRE THREAT AND FIRE BEHAVIOUR



5

## PROPOSED TREATMENT AREAS (~36.6 ha)



6

## Summary of Key Recommendations & Objectives

A total of 41 draft recommendations have been outlined in the CWPP, a selection of which will be highlighted in this presentation under the following categories:

- Fuel Management;
- Access/Evacuation;
- Policies & Bylaws;
- FireSmart;
- Communication and Education;
- Wildfire Preparedness; and
- Fire Suppression Resources.



## Summary of Key Recommendations & Objectives

### **Fuel Management**

**#12:** Develop prescriptions to treat hazardous fuels. Consult with First Nations and stakeholders to address all concerns.



Photo by: B.A. Blackwell & Associates





## Summary of Key Recommendations & Objectives

### **Access/Evacuation**

**#35:** Conduct a review of fire suppression accessibility, safety, and staging of anchor points for firefighting equipment and personnel, especially on all dead end roads.

- Areas of difficult access should be identified.



## Summary of Key Recommendations & Objectives

### **Policies & Bylaws**

**#17:** Update the OCP and amend the Zoning bylaw No. 6700 to incorporate the Wildland Urban Interface (WUI) as a component of Hazard Lands (HL) within the CNV.

- Wildfire interface guidelines and policies should be developed for the HL DPA based on FireSmart principles.
- This should include building material and landscaping guidelines



## Summary of Key Recommendations & Objectives

### FireSmart

**#6:** Complete FireSmart assessments for all critical infrastructure.

- The use of fire-resistant construction materials, building design and landscaping should be considered for all CI adjacent to high wildfire risk areas.
- Vegetation setbacks around new and existing CI should be compliant with FireSmart guidelines.



## Summary of Key Recommendations & Objectives

### Communication & Education

**#22:** Create a FireSmart resources page with links to the “Home Owners FireSmart Manual” and other useful FireSmart Canada resources.



Image source: FireSmart Canada



## Summary of Key Recommendations & Objectives

### **Communication & Education**

**#24:** Update the CNV website and use the NSEM website/social media platforms regularly during the fire season.

- Especially to promote for wildfire prevention initiatives and FireSmart activities
- Use social media to inform the public when parks maintenance and wood waste management is scheduled near neighbourhoods and high-use recreation areas.



## Summary of Key Recommendations & Objectives

### **Wildfire Preparedness**

**#21:** The NVCFD should discuss options with adjacent municipalities (DNV and DWV), to discuss mutually shared initiatives to reduce wildfire risk.

- Joint gatherings should be held with the NSEM prior to the fire season to design and participate in
  - mock exercises,
  - review of equipment, and
  - sharing of resources during a potential wildfire event.





## Summary of Key Recommendations & Objectives

### **Wildfire Preparedness**

- **#30:** The CNV should continue to coordinate and participate in annual or bi-annual Dry Lightning III joint exercises at the start of each fire season.
- These exercises can be expanded to include structural and interface training programs.
- Yearly training with BCWS should cover how to deploy; pump, hose, hydrant, air tanker awareness, and employment of SPUs.
- Interface training should include safety training specific to wildland fire and risks inherent with natural areas.



Photo by: J. A. Blackwell & Associates



## SUMMARY / CONCLUSION

- This CWPP sets the stage for implementing important actions to reduce the risk of wildfire to the City;
- A total of 41 draft recommendations have been outlined for the City to reduce the community's wildfire risk profile;
- The City has already made progress on seeking funding for implementation; and
- Collaboration with Metro Vancouver, First Nations, and other stakeholders (BC Hydro / FortisBC) is key to successfully addressing risk in the WUI.







Thank you!  
Questions?

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 Department Manager	 Director	 CAO
 Department Manager	 Director	

The Corporation of **THE CITY OF NORTH VANCOUVER**  
**ENGINEERING, PARKS & ENVIRONMENT DEPARTMENT**  
**FIRE DEPARTMENT**

**REPORT**

To: Mayor Linda Buchanan and Members of Council

From: Adam Vasilevich, Parks and Greenways Planner  
Dave Owens, Assistant Fire Chief-Prevention

Subject: COMMUNITY WILDFIRE PROTECTION PLAN

Date: November 4, 2020 File No: 12-5810-01-0001/2020

*The following is a suggested recommendation only. Refer to Council Minutes for adopted resolution.*

**RECOMMENDATION**

PURSUANT to the report of the Parks and Greenways Planner and Assist Fire Chief-Prevention, dated November 4, 2020, entitled "Community Wildfire Protection Plan":

THAT the Community Wildfire Protection Plan be endorsed;

THAT staff be directed to pursue available external funding and resources to help implement the recommendations;

AND THAT funding for high priority actions be included for consideration in the City's annual Financial Planning Process.

**ATTACHMENT**

1. Community Wildfire Protection Plan ([CD#1978276](#))

## **BACKGROUND**

The Community Wildfire Protection Plan (CWPP) process was created in British Columbia as a response to the devastating 2003 wildfire in Kelowna. As an integral part of the Community Resiliency Investment program, administered by the Union of BC Municipalities, CWPP's aim to develop strategic recommendations to assist in improving safety and to reduce the risk of damage to property from wildfires.

In 2020, the City of North Vancouver received grant funding from the provincial Community Resiliency Investment Program to develop a CWPP. The intent of the plan is to compliment, and improve on, the previous Natural Areas Parks Fire Management Plan (NAPFMP) completed by the City in 2007. The outdated information contained within the 2007 NAPFM Plan does not meet, or align with, the standards of the CWPP.

The purpose of a CWPP is to create a comprehensive approach to wildfire reduction and compliment the adjacent District of North Vancouver's work in forest interface areas. The CWPP will guide the future wildfire reduction and education activities of the City for the next five to ten years and allow the opportunity for appropriate engagement with the community.

## **DISCUSSION**

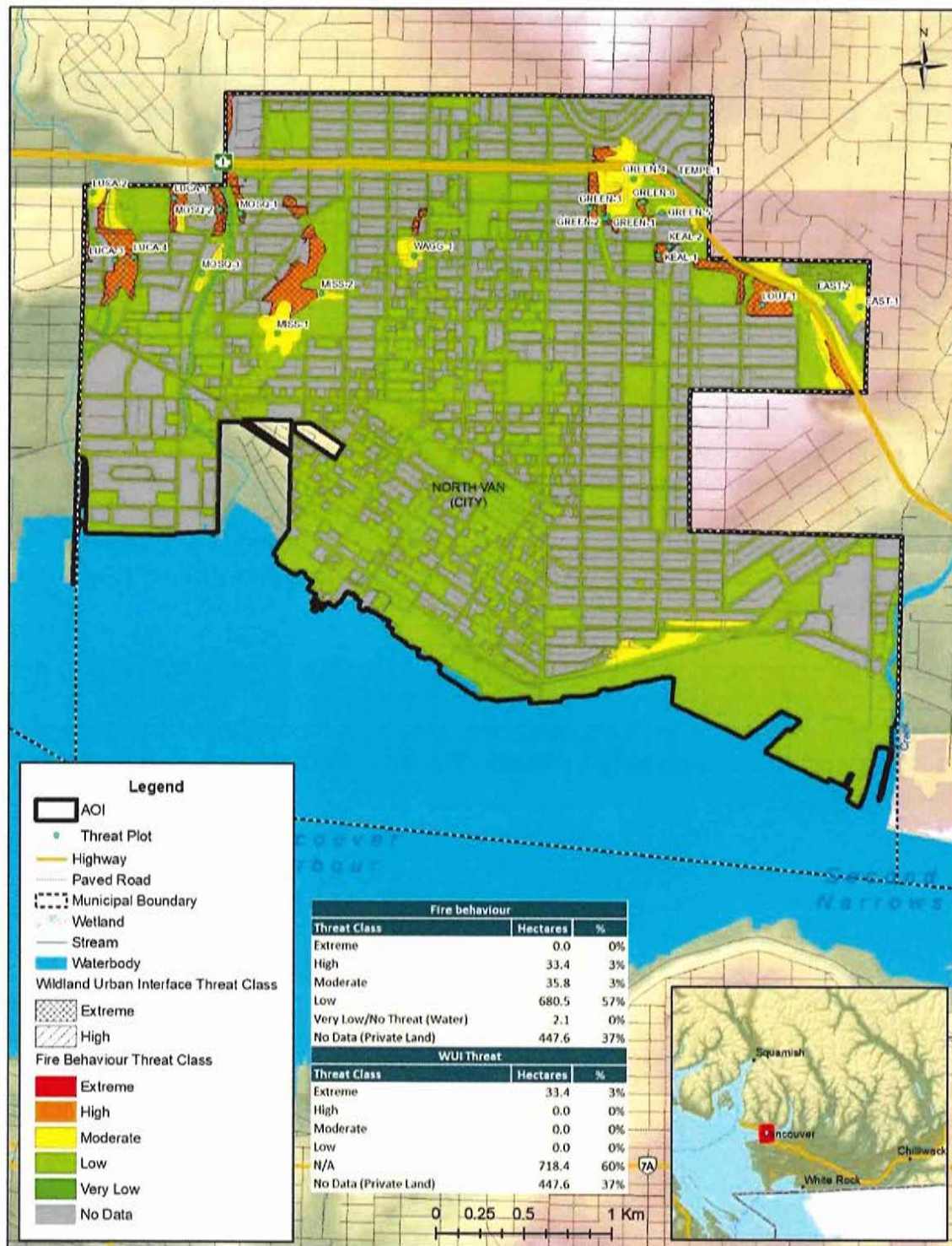
The completed CWPP provides the City of North Vancouver with a framework to review and assess areas of identified high fire risk in the community. Additionally, the information contained in the CWPP can help to guide the enhancement and/or development of emergency plans, emergency response, evacuation plans, communication and education programs, bylaw development in areas of fire risk, and the management of forest lands in the community. The implementation goals of the CWPP are to reduce the likelihood of wildfire entering the community, reduce the impacts and losses to property and critical infrastructure if wildfire were to enter, and reduce the negative economic and social impacts of wildfire to the community.

The CWPP was developed by BA Blackwell, a consultancy that has completed similar plans for the Districts of North and West Vancouver. The consultant was given direction from a working group that consisted of staff from various City departments and groups such as Fire, Strategic & Corporate Services (GIS), Engineering, Parks and Environment and North Shore Emergency Management. This working group held meetings and reviewed draft CWPP's and provided feedback for the development of the plan. Due to the breadth of the recommendations, the plan was also shared with the Planning & Development Department, Community & Partner Engagement (Bylaw Services), as well as external stakeholders such as the District of North Vancouver, North Vancouver School District, BC Hydro, FortisBC and 9 First Nations including, Musqueam, Squamish Nation, and Tsleil-Waututh. Any feedback received was integrated into the plan and then shared with the BC Wildfire Service for review.

The methodology for the CWPP included review of existing policy and plans, identification of critical infrastructure, understanding information on wildfire risk mitigation initiatives currently in place or completed, current resources, areas of concern, and to determine priorities and potential mitigation strategies.



The consultants analysed orthophotos and provincial forestry data to identify the fire threat to the community and fire risk activities such as the impact of human behaviours. The results show that the City has an overall low to medium fire risk; however, field inspections confirmed some high hazard areas, shown in the map below. These areas of high risk are generally located in the larger natural areas such as Mosquito Creek, Greenwood, Heywood, Mahon and Loutet Parks. Many of these areas are adjacent to or contiguous with larger natural areas in the District of North Vancouver elevating the risk.



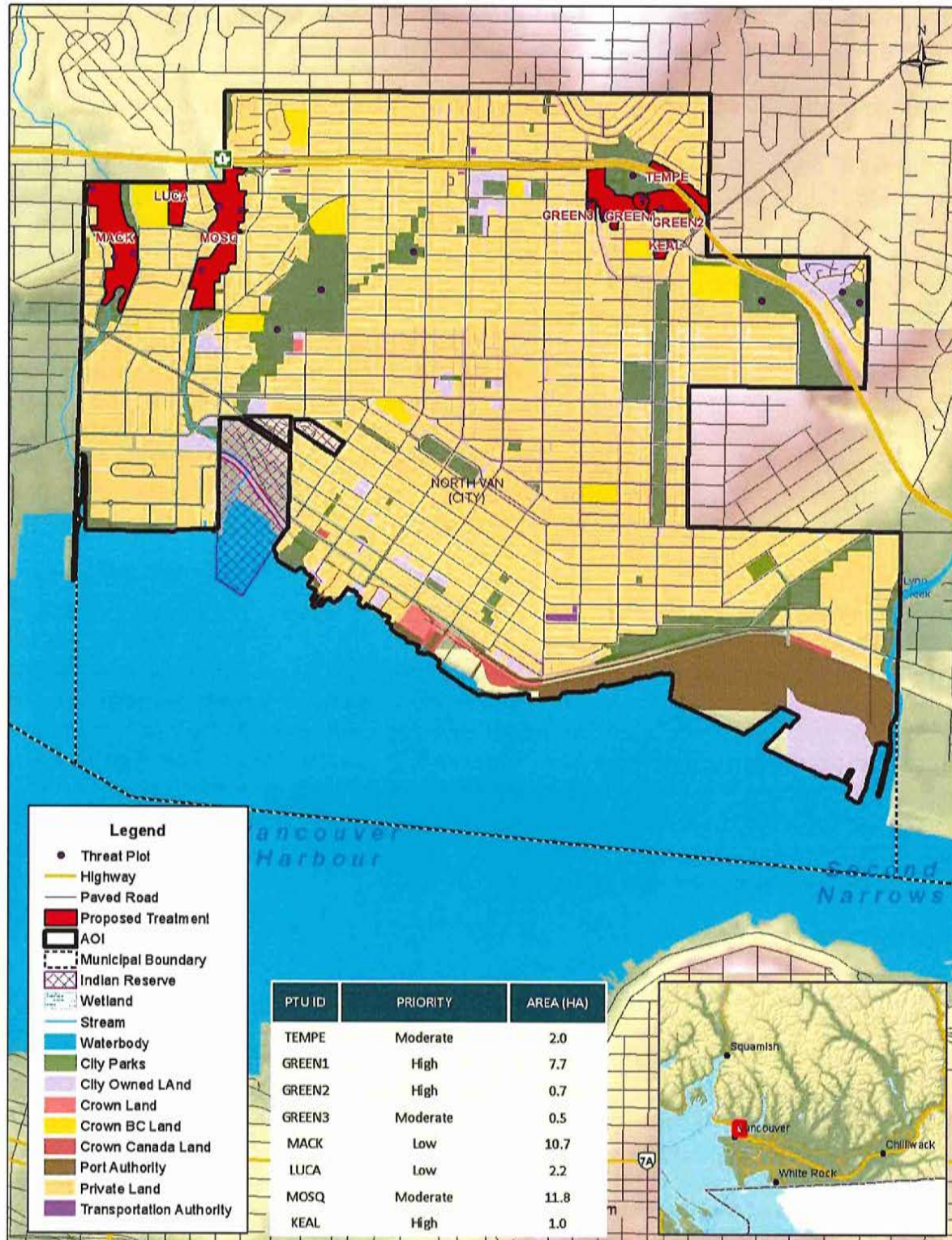
A total of 41 strategic recommendations are presented in the plan to assist the community to reduce the threat of wildfire. These recommendations were based in the nationally accepted set of principles, practices and programs for reducing losses from wildfire known as FireSmart. The highest level of planning within the FireSmart program is strategic direction, such as that provided in CWPPs. The FireSmart approach spans the disciplines of hazard/threat assessment, including planning and collaboration, policy and regulations, public communication and education, vegetation/fuel management, training and equipment, and emergency preparedness and response. The broad range of recommendations include suggested revisions to the City's Official Community Plan (OCP) and specific bylaws, training for staff, and targeted education and communications to reduce the risk of wildfire and the potential damage or loss of infrastructure and property.

One example of a recommendation in the CWPP includes specific wildfire training for the Fire Department such as safety training for wildland fire and risks inherent with natural areas. The plan suggests additional Pump Operator training that includes drafting from natural water sources, the use of portable pumps, and the purchase of specialized equipment.

Another example of a CWPP recommendation is the suggested review of treatments for natural areas to reduce the fuel loading and potential for more and larger wildfires. Typical treatments in parks occur close to existing homes in the area often referred to the "wildfire urban interface". Trees in this area are typically pruned up to 3 metres from the ground, smaller understory trees are removed and the larger trees remain. Surface debris (such as piles of branches, green waste, etc.) and hazard trees are removed from the area. This type of treatment has the added co-benefits of improving long-term forest health, and promoting biodiversity.

Finally, the CWPP recommendations have several suggestions for utilizing the FireSmart program as a basis for developing locally relevant education and communications for residents and homeowners. This will provide the opportunity for residents to prepare for a wildfire emergency and their ability to reduce the impacts of wildfire on their property and families.





The implementation of the plan will require both staff and financial resources over time. There is no one course of action or combination of actions that is the singular answer to the challenge of wildfire risk in communities. The City must further prioritize the implementation of the plan based on resources, strengths, constraints, and availability of funding, regularly updating prioritizations and courses of action as variables and circumstance change through time. Many of the tasks can be completed by consultants

or contractors such as forest treatment prescriptions, fuel management activities, or developing and providing education and communications that follow the FireSmart approach. There is considerable annual provincial grant funding available for training, education and other FireSmart activities such as wildfire fuel reduction in natural areas.

While the CWPP identifies that the City is located in a lower risk area for wildfire, it does consider the future impact of climate change. An increased frequency of natural disturbance events is expected to occur as a result of climate change with coincident impacts to ecosystems. These include storm events, including catastrophic blowdown and damage to trees from snow and ice, wildfire events and drought. Furthermore, an increase in winter precipitation may result in slope instability, mass wasting, and increased peak flows. Therefore, climate change is expected to increase the fire threat to the City over time. However, the CWPP does offer many ways to prepare, adapt and mitigate the affects of climate change as it relates to wildfires. Implementation of the Community Wildfire Protection Plan can help protect homes and make City parks more wildfire resilient. The education and communications suggestions in the plan can help create wildfire awareness for residents, reduce the overall wildfire risk to the community and lessen the social and economic impacts of wildfire.

### **Next Steps**

Based on the results of the CWPP, staff have identified a number of high priority actions for implementation in the next few years. For example, one of the first actions is to retain a consultant to provide specific treatment prescriptions for the forested natural areas that have been identified as high risk. These detailed assessments will help identify the required work and associated costs for forest management and wildfire fuel reduction in Mosquito Creek, Greenwood, Heywood, Mahon and Loutet Parks. The City is in the process of preparing a trail improvement and forest restoration plan for Greenwood Park and implementation of the fuel management recommendations will become part of that project. Another high priority action is to start a training program for Fire Department staff in specific wildfire prevention and suppression in 2021.

### **FINANCIAL IMPLICATIONS**

The preparation of the CWPP was entirely funded by a \$25,000 grant from the provincial Community Resiliency Investment Program (CRI). Upon adoption by Council, submission of the completed CWPP to the Province allows the City to apply for additional provincial funding for implementation of priority actions. Due to the scope and range of recommendations, plan implementation will be executed over several years as resources allow and to take advantage of available grants. It is currently estimated that it would require \$140,000 to implement the highest priority actions in the CWPP. There is project funding available to complete many of the priority actions with ongoing projects such as Greenwood and Kealy Woods forest management. Additional capital funding would be required to fund other priority actions and each action would be presented for funding consideration over time through the capital plan and additional available grant opportunities.

Staff have applied for 2021 funding through UBCM and CRI for \$50,000 for specific wildfire training for the Fire Department, prescriptions for fuel reduction in certain natural



areas and fuel reduction treatments to reduce the fuel loading in the urban wildfire interface.

## INTER-DEPARTMENTAL IMPLICATIONS

Through the development of the plan there has been collaboration across departments and the potential impacts are known to the North Shore Emergency Management, Fire, Engineering, Parks and Environment, Planning and others. This report and presentation has been shared with the Projects and Policy Team on October 20, 2020 for review and feedback.

## STRATEGIC PLAN, OCP OR POLICY IMPLICATIONS

The Community Wildfire Protection Plan supports many aspects of the Strategic Plan such as; *a city for people* is welcoming, inclusive, safe, accessible and supports the health and well-being of all and, *a livable city* leads the way in climate action and acts as a steward of the environment for future generations.

The CWPP supports the OCP in to achieve several goals:

- Goal 3.2: Safeguard the community and protect life, property and the environment.
- Goal 3.3: Support community resiliency and increase the capacity to recover from emergencies and disasters.
- Goal 4.1: Develop, promote and implement strategies to mitigate and adapt to climate change.

The plan suggests an eventual update to the OCP to include the Wildfire Urban Interface as part of a broader Hazard Lands Development Area to raise awareness about the risks of development in the wildfire urban interface zone.

RESPECTFULLY SUBMITTED:



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Adam Vasilevich  
Parks and Greenways Planner



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Dave Owens  
Assistant Fire Chief-Prevention

# City of North Vancouver

## Community Wildfire Protection Plan 2020



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September 11, 2020

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**Submitted by:**

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**city**  
**of north**  
**vancouver**





## ACKNOWLEDGEMENTS

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The authors would like to thank the following City of North Vancouver (CNV) staff: Engineering, Parks & Environment: Adam Vasilevich (Parks and Greenways Planner), Rick Greenlees (Utility Operations), and Jonathan Budgell (Parks Supervisor); Strategic and Corporate Services: Rachel Browne (GIS Coordinator); North Vancouver City Fire Department: Dave Owens (Assistant Fire Chief - Prevention) and Mike Danks (Assistant Fire Chief – Operations & Support). The authors would also like to thank John Chapmen from North Shore Emergency Management (NSEM). These individuals invested substantial time in meetings, answering questions, reviewing and commenting on the contents of this document.

In addition, invaluable support and background information was provided by the BC Wildfire Service (BCWS), including: Dana Hicks (BCWS Fuel Management Specialist), Diane Cooper (Archaeologist); and Natasha Boettcher (First Nations Advisor).

This report would not be possible without the Community Resiliency Investment (CRI) Program and funding from the Union of British Columbia Municipalities (UBCM).

Cover photo: View of the north shore from the Tempe neighbourhood; Aga Duszynska, B.A. Blackwell & Associates



## REGISTERED PROFESSIONAL SIGN AND SEAL

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DRAFT



## EXECUTIVE SUMMARY / SUMMARY OF CWPP RECOMMENDATIONS

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The Community Wildfire Protection Plan (CWPP) process was created in British Columbia (BC) as a response to the devastating 2003 wildfire in Kelowna. As an integral part of the Community Resiliency Investment (CRI) program, administered by the Union of BC Municipalities, CWPPs aim to develop strategic recommendations to assist in improving safety and to reduce the risk of damage to property from wildfires.

This CWPP Update will provide the City of North Vancouver (CNV) with a framework that can be used to review and assess areas of identified high fire risk within the Area of Interest (AOI) which is defined by the municipal boundary. Additionally, the information contained in this report should help to guide the enhancement and/or development of emergency plans, emergency response, evacuation plans, communication and education programs (including FireSmart), bylaw development in areas of fire risk, and the management of potentially hazardous forest lands adjacent to the community.

Wildfire management requires a multi-faceted approach for greatest efficacy and risk reduction outcomes. A total of 41 strategic recommendations are summarized in Table 1 below and are discussed more thoroughly in relevant sections throughout the document. The recommendations within this plan are a toolbox of options to assist the community to reduce the threat of wildfire. There is no one course of action or combination of actions that is the singular answer to the challenge of wildfire risk in communities; the CNV must further prioritize based on resources, strengths, constraints, and availability of funding, regularly updating prioritizations and courses of action as variables and circumstance change through time.

**Table 1: Summary of CWPP Recommendations by document section.**

Document Section 2: Local Area Description (2.5: Development Permit Areas)				
Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$) or Person hours
<b>Objective: Review and Amend the Current Regulatory Framework to Incorporate Wildfire Mitigation and Preparedness Considerations.</b>				
1	11	Moderate	Review the Fire Bylaw No. 7709-2005 to include language specific to green waste, not just garbage, under the prohibitions section to ensure that there is a legally enforceable bylaw to prevent flammable materials to accumulate, collect or to remain on the property unless securely contained. Special consideration should be made for dumping in parks, ravines and in natural areas behind homes.	~ 5-10 in-house hours (municipal funding)
2	14	Moderate	The Parks Master Plan should be updated and revised to include the wildfire threat and risk information developed for this CWPP to inform the planning of new, and enhancement of, existing parkland. Additional language should be added pertaining to the importance of park maintenance in relation to wildfire risk mitigation, especially where greenspaces and parks are adjacent to private property	Local Government Funding
3	15	Moderate	Consideration should be given to replace the CNV Tree Policy with a Tree Management bylaw similar to the District of North and West Vancouver. The bylaw should allow for the maintenance and removal of trees on City property, and regulate the cutting of trees on private property which pose a wildfire risk to private properties and critical infrastructure. Language should be included to allow the issuance of a permit for cutting of trees if it is required to reduce wildfire hazard within the wildland urban interface, as determined by a qualified professional (QP). The bylaw should not limit the ability of homeowners to address wildfire hazards associated with trees on private property immediately adjacent to homes.	Local Government Funding



Document Section 3: Values at Risk (3.1: Human Life and Safety, 3.2: Critical Infrastructure, 3.3: High Environmental and Cultural Values)				
Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$ ) or Person hours
<b>Objective: Review and Amend the Current Regulatory Framework to Incorporate Wildfire Mitigation and Preparedness Considerations.</b>				
4	19	Low	North Shore Emergency Management (NSEM) in collaboration with the three North Shore communities should lobby the provincial government or local Medical Health Officer(s) to develop a strategy for communities to draw upon when they are exposed to smoke from wildfire for extended periods of time. This may include smoke exposure risk assessments, exposure reduction measures, and a decision-key for when to evacuate a community due to wildfire smoke.	5-12 CNV / NSEM staff hours required for internal work with the province. Additional 16 hours (each organization) for material development and distribution.
5	20	Low	Create an inventory, map and catalogue all critical infrastructure for the City and make available to all City departments through inclusion in the updated emergency evacuation guidelines document.	CRI / UBCM funding available for updating emergency evacuation plan
6	20	High	It is recommended that formal FireSmart assessments (by a Qualified Professional) be completed for all critical infrastructure such as the fire hall, emergency operations centers, water infrastructure and other CI identified in this CWPP (Table 3) and by the City in moderate or high fire risk areas such as identified in this CWPP (Table 3). In addition, use of fire-resistant construction materials, building design and landscaping should be considered for CI located near moderate or high wildfire risk areas when completing upgrades or establishing new infrastructure and vegetation setbacks around critical infrastructure should be compliant with FireSmart guidelines.	~\$1,500-2,000 per location (consultant cost)

**Document Section 3: Values at Risk (3.1: Human Life and Safety, 3.2: Critical Infrastructure, 3.3: High Environmental and Cultural Values)**

Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$ ) or Person hours
<b>Objective: Protect Critical Infrastructure and Mitigate Post-Wildfire Impacts</b>				
7	21	Moderate	There are multiple BC Hydro transmission lines that intersect the AOI. Consequently, utility right-of-way best management practices (BMPs) of regular brushing, clearing of woody debris, and removal of flammable vegetation including Spanish broom, ( <i>Cytisus scoparius</i> ) and regenerating conifers should be communicated in coordination with BC Hydro to reduce fire risk, pole damage and subsequent outages. Brushing and mowing work should not occur during high fire danger times to reduce chance of ignitions as per the Wildfire Act. It is recommended that communications are coordinated via weekly fire calls.	Local government funding in the form of 2 meetings per fire season with BC Hydro
8	21	Moderate	The Engineering, Parks & Environment department, Utility Operations section, should complete current capacity and vulnerability assessments of all critical infrastructure. As necessary, upgrade or realign resources, and develop a back-up water delivery plan with the District of North Vancouver and Metro Vancouver, to be enacted in the event of an emergency.	~\$1,500-\$5,000 per location (consultant cost) or ~80 in-house hours or CRI program funding
9	24	Moderate	The CNV should collaborate with the DNV and NSEM to spatially map and create a detailed inventory list of all critical water infrastructures within the municipality and disseminate this information to all emergency services, especially the NVCFD and NSEM.	Local Government Funding
10	25	Low	As part of the Integrated Stormwater Management Plans (ISMP) currently being developed for Mosquito Creek and Mackay Creek, the CNV should consider the option of including future assessments to explore the potential hydrologic and geomorphic impacts of wildfire on the ravine systems and community.	To be determined, cost depends on the scope of the assessment (\$10,000-\$40,000).





Document Section 4: Wildfire Threat and Risk Recommendations (4.1: Fire Regime, Fire Weather and Climate Change)				
Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$) or Person hours
<b>Objective: Reduce Wildfire Threat through Invasive Species Management</b>				
11	31	Low	The City's Engineering, Parks & Environment department should review findings from the 2020 Invasive Plant Inventory Update to assess implementation progress and success. This Update should identify potential fuel loading issues to determine future invasive plant maintenance strategies or management requirements. If fuel treatments will occur, address invasive species management during implementation in the WUI, to improve forest resilience and promote ecological restoration of degraded sites.	Local government funding

Document Section 5: Risk Management and Mitigation Factors Recommendations (5.1: Fuel Management, 5.2: FireSmart Planning and Activities, 5.3: Communication and Education, 5.4: Other Prevention Measures)				
Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$) or Person hours
<b>Objective: Reduce Wildfire Threat through Fuel Management</b>				
12	45	High	Proceed with detailed assessment, prescription development, and treatment of hazardous units identified and prioritized in this CWPP. If and when operational fuel treatments are conducted within the AOI, treatment monitoring should be completed by a Qualified Professional in order to schedule the next set of maintenance activities (5 – 10 years out).	UBCM CRI Program Funding/Local Government Funding



Document Section 5: Risk Management and Mitigation Factors Recommendations (5.1: Fuel Management, 5.2: FireSmart Planning and Activities, 5.3: Communication and Education, 5.4: Other Prevention Measures)				
Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$) or Person hours
<b>Objective: Increase Public Wildfire Awareness and Encourage FireSmart Initiatives</b>				
13	55	Moderate	The CNV should consider training a local FireSmart Representative (LFR) from the NVCFD, if capacity allows, to promote FireSmart initiatives and help promote fire preparedness, awareness and be trained to conduct FireSmart home assessments within the community. In order to increase public uptake and participation future initiatives should focus efforts following an active fire season in BC to maximize the resources available for community engagement.	Local Government Funding
14	55	High	Ensure that the NVCFD, if capacity allows, is incorporated into the development planning process for the routine review of all development permit applications in the WUI. Provide ample opportunity for fire department input prior to application approval. Increase the NVCFD's integration into the process as development proceeds.	Dependent on number of DP applications.
15	56	Moderate	Explore additional opportunities for residents to dispose of wood waste and greenwaste by providing additional methods for them to inexpensively and easily dispose of wood waste removed from their property. This could include scheduled community chipping opportunities; Programs should be available during times of greatest resident activity (likely spring and fall).	Time dependent upon program and number of neighbourhoods. May be eligible for UBCM CRI program funding. ~\$400 promotion for a community chipping day.
<b>Objective: Reduce Wildfire Hazard on Private Land</b>				
16	56	Low	Develop a landscaping standard which lists flammable non-compliant vegetation and landscaping materials, non-flammable drought and pest resistant alternatives, and tips on landscape design to reduce maintenance, watering requirements, avoid wildlife attractants, and reduce wildfire hazard. Consider including the landscaping standard as a development permit requirement, as well as making it publicly available for all residents and homeowners.	\$2,000 - \$3,000 to outsource. FireSmart landscaping information is free of charge, but is not regionally specific



**Document Section 5: Risk Management and Mitigation Factors Recommendations (5.1: Fuel Management, 5.2: FireSmart Planning and Activities, 5.3: Communication and Education, 5.4: Other Prevention Measures)**

Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$) or Person hours
17	57	High	Update the OCP and amend the Zoning bylaw No. 6700 to incorporate the wildland urban interface (WUI) as a component of Hazard Lands (HL) within the CNV. Develop wildfire interface guidelines and policies for the HL DPA based on FireSmart principles and consider including new development and single-family lot redevelopment scenarios into the scope of the HL DPA. The Planning & Development, and Engineering, Parks & Environment departments should jointly develop building material and landscaping guidelines to inform the wildfire component of the HL DPA.	~40-80 in-house hours and \$15,000 for consultant analysis and support (local government funding/UBCM CRI funding).
18	57	Moderate	Create incentives and/or targeted education and outreach to promote FireSmart renovations of exterior elements of existing buildings within the WUI. Incentives should target roof replacements as a first priority, followed by replacement of exterior siding and decking with flame-proof/fire resistant materials to increase the resiliency of homes and neighbourhoods in the WUI. These incentives may include granting rebates for roof replacement.	UBCM funding with the CRI program may be available
19	58	Moderate	As development and densification of multi-residential projects or single-lot redevelopment in the CNV unfolds over time, hire a QP to re-assess the fire hazard of adjacent green spaces prior to the granting of re-zoning approvals, development permits as well as public consultation. If fuel treatment of green spaces, natural areas, or forests is required to lower the fire hazard, then the costs of such work should be funded by developers as Development Cost Charges.	Local government funding and Development Cost Charges
20	59	Moderate	The CNV should apply for funding from the UBCM CRI Program to develop a FireSmart local rebate program. This will allow homeowners to access partial rebates for FireSmart activities on their properties, if rated as high or extreme risk in a FireSmart home and property assessment. The rebate program is described in detail in the CRI Program 2020 FireSmart Community Funding and Supports – Program & Application Guide and must adhere to the goals and objectives of FireSmart, as outlined in Section 0	UBCM funding with the CRI program



**Document Section 5: Risk Management and Mitigation Factors Recommendations (5.1: Fuel Management, 5.2: FireSmart Planning and Activities, 5.3: Communication and Education, 5.4: Other Prevention Measures)**

Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$) or Person hours
21	62	High	The NVCFD should discuss options with adjacent municipalities (DNV and DWV), to discuss mutually shared initiatives to reduce wildfire risk. This includes joint gatherings with NSEM prior to the fire season to design and participate in mock exercises, review of equipment, and sharing of resources during a potential wildfire event.	~ 10 – 15 hours NVCFD Staff hours (Local government funding)
22	62	High	The NVCFD should create a FireSmart resources page on their website which links the “Home Owners FireSmart Manual” and other useful FireSmart Canada resources to educate residents on pre-planning and preventative measures they can take to address the risk posed by wildfire to their home and property (prior to an evacuation order).	~30-50 in-house hours (local government funding).
23	63	High	This CWPP report and associated maps to be made publicly available through the CNV’s website, social media, and future public FireSmart meetings. In addition, this CWPP should be shared with local industry and utility partners who may be interested in collaborating on fuel management treatments.	~3-6 in-house hours depending on method of distribution.
24	63	High	Update the CNV website and use the NSEM website/social media platforms regularly during the fire season to ensure that fire bans, high or extreme Fire Danger days, wildfire prevention initiatives and FireSmart activities, updates on current fires and associated air quality, road closures, and other real-time information is well communicated and implemented in an accurate and timely manner. Furthermore, as an effective communications strategy with the public, the Fire Department and CNV staff should use Twitter, Facebook and/or other social media platforms to inform the public when parks maintenance and wood waste management is scheduled near neighbourhoods and high-use recreation areas, or as an effective tool to gauge public sentiment or concern.	~30-50 in-house hours (local government funding).
25	63	Moderate	Promote the use of the FireSmart Home Partners Program offered by the Partners in Protection Association, which facilitates voluntary FireSmart assessments on private property. Use the opportunity to educate the home or business owner about the hazards which exist on their property and provide easy improvements to reduce their risk. This program can be administered by the NVCFD.	~3 hours/assessment.



Document Section 5: Risk Management and Mitigation Factors Recommendations (5.1: Fuel Management, 5.2: FireSmart Planning and Activities, 5.3: Communication and Education, 5.4: Other Prevention Measures)				
Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$) or Person hours
26	63	High	Develop and work with the DNV, DWV and Metro Vancouver as needed to identify ongoing and emerging wildfire related issues in the CNV and to develop collaborative solutions to minimize wildfire risks. The following subject areas are recommended for the group to explore: 1) Public education and awareness needs; 2) Multi-jurisdictional fuel treatment projects/hazard abatement projects; 3) Development of funding strategies; and 4) Reduction of human-caused fires, fire prevention and right of way management.	~40 hours to initiate; additional ~50 hours per year to plan, advertise /communicate, attend, and debrief meetings; additional hours dependent on implementable actions.
27	63	High	Given the high public and recreational usage of parks and trails, along the western and northern portion of the AOI, the CNV in collaboration with the DNV and Metro Vancouver should develop public education focused on increasing awareness of good wildfire prevention practices. Public information or signage could be posted at busy parks, trailheads, and/or posted on the City's and NSEM's website in the form of seasonal notices (similar to summer parking and access notices posted for popular destinations).	Local Government Funding
28	63	High	For private landowners whose properties are located adjacent to forested creeks and ravines or in low water pressure zones, promote and provide information related to residential rooftop exterior sprinklers that can be purchased and installed during the fire season as a FireSmart prevention measure.	Local Government Funding
29	64	High	The NVCFD in coordination with the NSEM should consider additional Fire Danger Rating signs at key locations in the AOI and possible sites could include Mosquito Creek Park and Greenwood Park trail entrances. Signage should be updated regularly with current fire danger ratings during the peak wildfire season (May through to October).	~\$5,000 for signage, Local Government Funding



Document Section 6: Wildfire Response Resources Recommendations (6.1: Local Firefighting Resources, 6.2 Structure Protection)				
Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$) or Person hours
<b>Objective: Enhance Wildfire Equipment and Training &amp; Encourage FireSmart Initiatives &amp; Enhance Protection of Municipal Infrastructure from Wildfire</b>				
30	66	High	The CNV should continue to coordinate and participate in annual or bi-annual Dry Lightning III joint exercises with the emergency response agencies of the DNV, DWV, Grouse Mountain Resort and Metro Vancouver Watershed Protection at the start of each fire season. These exercises can be expanded to include structural and interface training programs. As part of the training, it is recommended to conduct reviews to ensure PPE and wildland equipment resources are complete, in working order, and the crews are well-versed in their set-up and use. It is recommended the NVCFD engage in yearly practical wildland fire training with BCWS that covers at a minimum: pump, hose, hydrant, air tanker awareness, and employment of SPUs. Interface training should include safety training specific to wildland fire and risks inherent with natural areas	~10 – 15 Hours, Local Government Funding
31	66	Moderate	The NVCFD should stratify their call-out data between structural and wildland interface incidents. This data will allow the NVCFD to assess not only the number of calls in any given year, but will allow the department to observe trends and changes over time, or have as supporting information when additional interface firefighting equipment resources are needed.	Local Government Funding
32	67	Moderate	The NVCFD should continue to exercise NFPA – 1002 Pump Operator training which includes drafting from natural water sources and the use of portable pumps through annual training. Suitable sites for drafting water in Burrard Inlet, and Mosquito, Mahon, and Mackay creeks should be selected as areas for training. Firefighting staff with these skills will be particularly useful should a large-scale wildfire impact North Vancouver. The NVCFD should consider purchasing two wildfire pumps to deploy in the event of a wildfire.	Local Government Funding: approximately. \$15,000 for two pumps



Document Section 6: Wildfire Response Resources Recommendations (6.1: Local Firefighting Resources, 6.2 Structure Protection)				
Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$) or Person hours
<b>Objective: Enhance Wildfire Equipment and Training &amp; Encourage FireSmart Initiatives &amp; Enhance Protection of Municipal Infrastructure from Wildfire</b>				
33	68	High	All new development in the AOI should have a water system which meets or exceeds minimum standards of NFPA 1142, <i>Standard on Water Supplies for Suburban and Rural Fire Fighting</i> <sup>1</sup> . The NVCFD should review the water supply to ensure it provides sufficient placement, flow, and reliability for suppression. Furthermore, all low-pressure water zones should be spatially mapped and added to the CNV's Citymap and be made accessible to all emergency services.	~5-10 hours per development
34	68	High	Commission a scenario-based cost/benefit analysis to improve limitations of the water system to support domestic water needs and firefighting demands, concurrently in an emergency. The analysis should identify resources required to upgrade pipe infrastructure, flows, hydrant number or location; the costs associated with implementation, and a workplan that targets priority high risk areas first (i.e., areas of low pressure).	Local Government Funding. Outsource to qualified consultant. Cost would be between \$5,000 – \$7,000.
35	69	High	The NVCFD should conduct a review of fire suppression accessibility, safety, and staging of anchor points for firefighting equipment and personnel on all dead-end roads including those structures backing onto creek ravines and greenspaces. Areas of difficult access should be identified. Explore alternative equipment such as ATVs fitted with tanks and / or pumps.	Local Government Funding

<sup>1</sup>National Fire Protection Association (NFPA). 2017. Standard on Water Supplies for Suburban and Rural Fire Fighting. Retrieved online at: <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1142>



Document Section 6: Wildfire Response Resources Recommendations (6.1: Local Firefighting Resources, 6.2 Structure Protection)				
Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$) or Person hours
36	69	Moderate	Once the update to the NSEM's Evacuation Guidelines document is complete, the NSEM in partnership with the three north shore municipalities should operationalize the Evacuation Guidelines by completing mock evacuation exercises at night to mimic poor visibility from smoke conditions.	Local Government Funding
37	69	Moderate	Develop a community wildfire pre-planning brochure, for neighbourhoods near high risk areas to be shared with key Metro Vancouver and NSEM staff, that addresses the following: 1) designates evacuation routes for each neighbourhood and provides emergency evacuation procedures; 2) identifies water reservoirs, 3) includes an emergency contact list; 4) communications hierarchy and protocols (i.e., who to call first); and 5) maps for each neighbourhood. Collaborate with the Districts of North and West Vancouver to ensure similar information is provided.	Local Government Funding
38	70	Low	Develop a Total Access Plan for the CNV to create, map and inventory trail and road network in natural areas for suppression planning, and identification of areas with insufficient access. The plan should include georeferenced maps with associated spatial data, identify the type of access available for each access route, identify those trails that are secondary trails, steep and narrow, or have flights of stairs or other barriers. Access assessment should consider land ownership, proximity of values at risk, wildfire threat, opportunities for use as fuel break or control lines, trail and road network linkages, and requirements for future maintenance activities such as operational access for fuel treatments and other hazard reduction activities.	Local Government Funding
39	71	Moderate	NVCFD should improve engagement with the BCWS Coastal Fire Zone to foster a strong relationship and identify potential cooperative wildfire risk reduction opportunities.	Local Government Funding





Document Section 6: Wildfire Response Resources Recommendations (6.1: Local Firefighting Resources, 6.2 Structure Protection)				
Item	Page No.	Priority	Recommendation / Next Steps	Estimated Cost (\$) or Person hours
<b>Objective: Enhance Wildfire Equipment and Training</b>				
40	71	High	Ensure that the NVCFD maintains the capability to effectively suppress wildland fires, through wildfire-specific training sessions. Specifically, members should continue to receive task force leader training and training that includes S-100 and S-185 (combined) or SPP-WFF-1, at a minimum <sup>2</sup> . Consider expanding the training program to maintain a high level of member education and training specific to interface and wildland fires. For example, SPP-115 provides training to structural firefighters on the use of wildfire pumps and hose (and fire service hose and hydrants) in the application of Structural Protection Units (SPUs).	UBCM CRI Program Funding/Local Government Funding
41	72	High	The NVCFD should explore the feasibility of purchasing their own SPU by conducting a cost-benefit analysis to be informed with call-out data in the last few years. The NVCFD could potentially explore the possibility of contracting an agreement with the DNV for sharing or borrowing their SPU, however it should be recognized that during a wildfire event on the North shore, the SPU may be unavailable.	UBCM CRI Program Funding/Local Government Funding

<sup>2</sup> Office of the Fire Commissioner, 2013: <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/fire-safety/wildfire/spp-wff1-info.pdf>. The SPP-WFF 1 course is acceptable to BCWS for structure firefighters to action wildfires on their behalf. This training SPP-WFF 1 (or the S-100) is a prerequisite for all structure firefighters to participate on Structure Protection Crews as deployed provincially by the OFC.



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## COMMONLY USED ACRONYMS

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AOI	Area of Interest
BCWS	British Columbia Wildfire Service
BEC	Biogeoclimatic Ecosystem Classification
CDC	B.C. Conservation Data Centre
CFFDRS	Canadian Forest Fire Danger Rating System
CI	Critical Infrastructure
CNV	City of North Vancouver
CRI	Community Resiliency Investment Program
CWPP	Community Wildfire Protection Plan
DNV	District of North Vancouver
DPA	Development Permit Area
DWV	District of West Vancouver
EOC	Emergency Operations Centre
FMP	Fire Management Plan
FSCCRP	FireSmart Canada Community Recognition Program
HCA	Heritage Conservation Act
HIZ	Home Ignition Zone
LRF	Local FireSmart Representative
MFLNRORD	Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
NSEM	North Shore Emergency Management
NVCFD	North Vancouver City Fire Department
OCP	Official Community Plan
PSTA	Provincial Strategic Threat Analysis
PTU	Proposed Treatment Unit
QP	Qualified Professional
SPU	Structural Protection Unit
UBCM	Union of British Columbian Municipalities
VAR	Values at Risk
WUI	Wildland Urban Interface



## SECTION 1: INTRODUCTION

---

The City of North Vancouver ('CNV' 'the City') staff have recognized that wildfire mitigation and planning is an important component of emergency planning and preparedness for the community. In 2020, B.A. Blackwell and Associates Ltd. was contracted to assist in developing a Community Wildfire Protection Plan (CWPP); hereinafter referred to as the 'CWPP' or 'Plan'. This CWPP will focus on integrating the Provincial Strategic Threat Analysis (PSTA), BC Wildfire Service (BCWS) Fuel Type mapping, and improved wildfire threat analysis methodology into the document.

The 2003, 2004, 2009, 2010, 2015, 2017 and 2018 wildfire seasons resulted in significant economic, social and environmental losses in BC. The 2018 fire season was the most extensive in terms of area burned, surpassing the 2017 fire season. The total suppression costs for the 2018 season were calculated at \$615 million and the 2017 fire season costs were estimated at over \$649 million<sup>3</sup>. Recent wildfire disasters like those experienced in Slave Lake, Alberta (2011), Washington State (2014 and 2015), Fort McMurray, Alberta (2016) and BC and California (2017, 2018 and 2019) all display the vulnerability of communities and the potential toll of wildfires on families, neighbourhoods and the economy of entire regions. These events, along with critical lessons learned and important advances in knowledge and loss prevention programs have spurred the need for greater consideration and due diligence with respect to fire risk in the wildland urban interface<sup>4</sup> (WUI).

### 1.1 PURPOSE

---

The purpose of this CWPP is to identify the wildfire risks within the administrative boundary of the CNV, to describe the potential consequences if a wildfire was to impact the area, and to examine options and strategies to reduce the wildfire risks. Each community has a unique risk profile. This CWPP provides an assessment of the level of risk with respect to the Area of Interest (AOI), in order to give the CNV a current and accurate understanding of the threats to human life, property and critical infrastructure from wildfires. The goal of this CWPP, in addition to defining the threats, is to identify mitigation measures and serve as a framework to inform decisions for implementation that will serve to: 1) reduce the likelihood of wildfire entering the community, 2) reduce the impacts and losses to property and critical infrastructure if wildfire were to enter, and 3) reduce the negative economic and social impacts of wildfire to the community.

### 1.2 CWPP PLANNING PROCESS

---

This CWPP is a review and synthesis of the background information and current data related to the AOI which represents the municipal boundary of the CNV and consists of four general phases outlined in Sections 1.2.1 to 1.2.4 as described below.

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<sup>3</sup> BCWS, 2020. Wildfire Season Summary. Retrieved From: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary>

<sup>4</sup> Wildland/urban interface is defined as the presence of structures in locations in which conditions result in the potential for their ignition from flames and firebrands/embers of a wildland fire (National Fire Protection Association). See Appendix E for a more detailed discussion.

## CONSULTATION

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Engagement with local government, provincial government, stakeholders and First Nations played a key role in developing this CWPP. The first step in the consultation process was to assemble the key players in the 'Wildfire Working Group'. This group was composed of key internal CNV staff representatives, which included: Dave Owens, Assistant Fire Chief – Prevention and Michael Danks, Assistant Fire Chief – Operations & Support from the North Vancouver City Fire Department; John Chapman (NSEM), Rick Greenlees (Operations), Jonathan Budgell (Engineering, Environment & Parks), Rachel Browne (GIS Coordinator – Strategic and Corporate Services) and Adam Vasilevich (Parks and Greenways Planner). At the initial meeting of the Wildfire Working Group, the objective was to obtain information on wildfire risk mitigation initiatives currently in place or completed, existing plans and policies, current resources, areas of concern, and to determine priorities and potential mitigation strategies. Members of the Working Group were consulted on an ongoing basis throughout Plan development and were integral in providing review and approval.

BCWS representatives from the Coastal Fire Centre (Wildfire Prevention Officer and Forest Protection Specialist) were consulted as follows: 1) at the onset of the project planning phase and 2) throughout the CWPP development process, via the submission of Fuel Type Change Rationales and a questionnaire regarding concerns and priorities with respect to wildfire and emergency planning in the CNV; and 3) revision of draft document upon plan completion.

Information sharing took place with the Musqueam Nation, Seabird Island Band, Shxw'ōwhámel First Nation, Skawahlook First Nation, Soowahlie First Nation, Stó:lo Nation, Sto:lo Tribal Council, Squamish Nation and the Tsleil-Waututh Nation as identified through the Consultative Areas Database (See Section 3.3) and in consultation with MFLNRORD and the CNV, regarding the CWPP and locations or potential for possible cultural values at risk requiring protection consideration. Information sharing consisted of an initial phone call, and subsequent distribution of a referral letter and information package (maps, explanation of CWPP, and CWPP draft).

Additional stakeholders were consulted to identify synergies, opportunities for collaboration, and ensure linkages with adjacent and overlapping planning. These stakeholders included Metro Vancouver watershed protection, BC Hydro and Fortis BC. Combined, these various consultation and engagement opportunities have generated a shared understanding of the CWPP objectives and expected outcomes among local government, stakeholders, residents, and land managers.

## IDENTIFICATION OF VALUES AT RISK AND LOCAL WILDFIRE THREAT ASSESSMENT

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The risks associated with wildfire must be clearly identified and understood before a CWPP can define strategies or actions to mitigate risks. The identified values at risk are described in Section 3 and concepts of wildfire threat and risk are elaborated on in 0 The wildfire threat in the CNV was assessed through a combination of the following approaches:

- Natural fire regime and ecology (Section 4.1);
- Provincial Strategic Threat Analysis (section 4.2); and
- Local wildfire threat analysis (Section 4.3).

## DEVELOPMENT OF A RISK MANAGEMENT STRATEGY

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An effective risk management strategy was developed considering a full range of activities relating to the following:

- Fuel management;
- FireSmart planning and activities;
- Community communication and education;
- Structure protection and planning (i.e., FireSmart activities);
- Emergency response and preparedness;
- Evacuation and access; and
- Planning and development.

## BUILDING COMMUNITY ENGAGEMENT AND EDUCATION STRATEGY

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Engaging the community from local government staff and officials, to key stakeholders and residents in wildfire protection planning activities is key to ensuring successful implementation. Community engagement and education strategies are described in Section 5.3. A presentation to CNV Council will aim to ensure high level approval and support for this CWPP.

## SECTION 2: LOCAL AREA DESCRIPTION

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This section defines AOI and describes the City of North Vancouver. It also summarizes the current community engagement in wildfire prevention and mitigation and identifies linkages to other plans and policies with relevance to wildfire planning.

### 2.1 AREA OF INTEREST

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The CNV is located in the south coast region of BC, approximately 5 kilometers (km) north of Vancouver, at the foot of the North Shore mountains and is defined by the municipal boundary, as illustrated below in Map 1. Some of the commercial/ residential areas within the AOI are Lonsdale, Esplanade, Grand Boulevard, and Keith. Mission 1 Squamish First Nation Indian reserve is surrounded by the City but is not a part the projects scope. The developed portions of the municipality are characterized by a mix of residential, commercial, heavy industrial and waterfront properties. In its entirety, the CNV has a population of 52,898 people and a total land area of 11.83 km<sup>2</sup>, 80.3 ha are natural areas that includes Mackay Creek, Mosquito Creek and Wagg Creek.<sup>5</sup> A breakdown of the City's land ownership is provided in Table 2.

The AOI is topographically diverse, with steep terrain, numerous creeks and watercourses. Due to this variable topography elevation varies significantly from sea-level to roughly 200 m in elevation. The largest freshwater bodies are Mosquito Creek, Mackay Creek and the Burrard Inlet.

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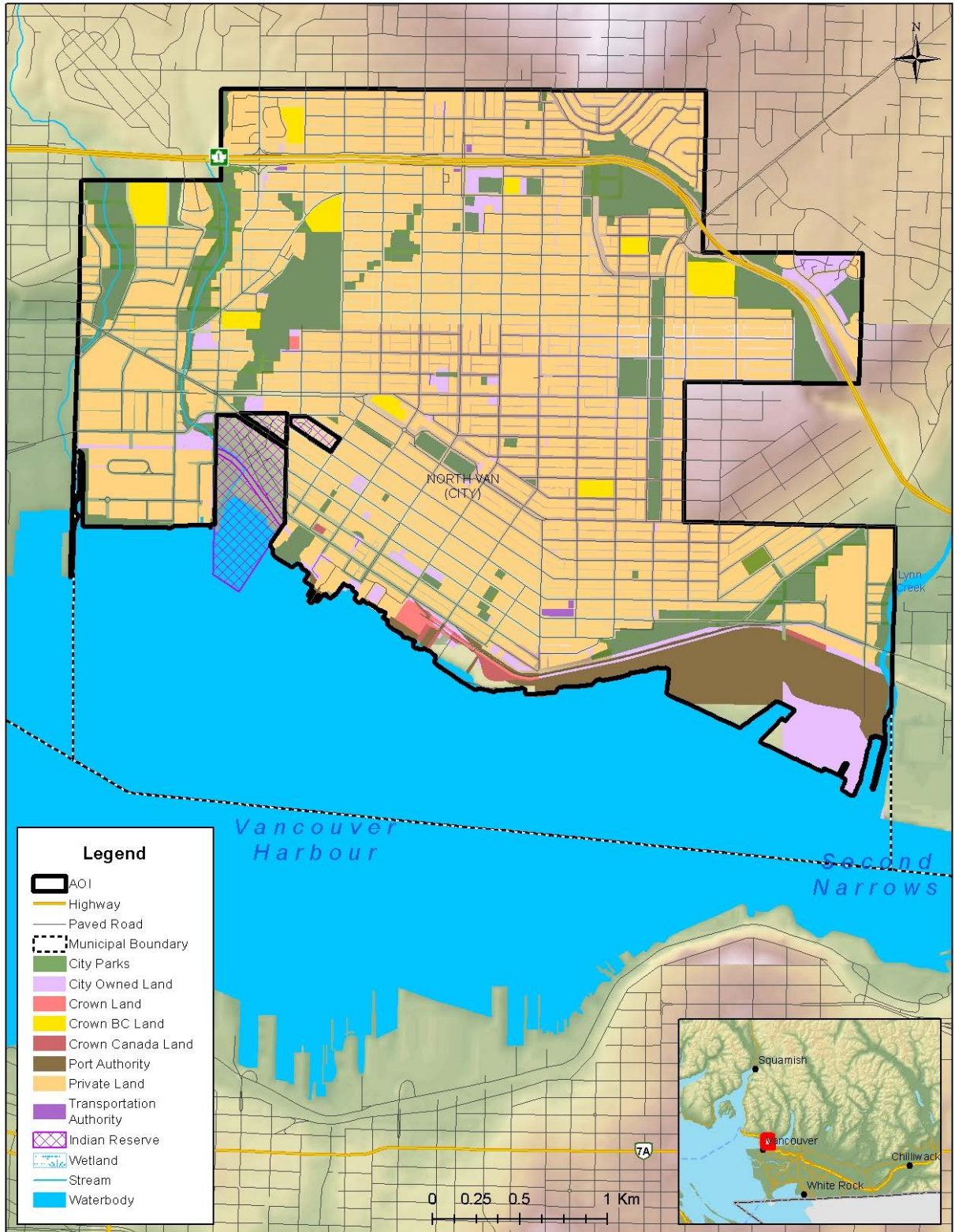
<sup>5</sup>Statistics Canada, 2016. District of Mission Census Profile. Retrieved From: <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=5909056&Geo2=PR&Code2=59&SearchText=Mission&SearchType=Begins&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=5909056&TABID=1&type=0>

**Table 2: Summary of AOI by land ownership**

Land Ownership	Hectares
CITY OWNED LAND	239.3
CROWN	3.9
CROWN BC	23.4
CROWN CANADA	4.4
PORT AUTHORITY	76.1
PRIVATE	567.4
TRANSPORTATION AUTHORITY	1.3
<b>Total</b>	<b>915.7</b>

\*The land ownership source is the City of North Vancouver. This dataset does not differentiate Indian Reserves as Federal Crown parcels.





Map 1: Area of Interest (AOI).

## COMMUNITY DESCRIPTION

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The CNV is surrounded by the District of North Vancouver to the north, east and west and bound by the Burrard Inlet to the south. The CNV provides services to its residents and businesses such as; drinking water (through Metro Vancouver), sewer and drainage, garbage and green waste, energy, streets and transportation. Additional services provided include; parks and recreation, bylaw enforcement and public health and safety services such as; the North Vancouver City Fire Department (NVCFD), North Vancouver RCMP, North Shore Emergency Management (NSEM), and North Shore Search and Rescue.

The CNV also ensures the health and safety of citizens through various community organizations. Some of these committees and organizations include bear and wildfire awareness, floods and hazards, slope stability, smoking bylaws and swimming pool safety. The CNV in cooperation with provincial and federal entities is also equipped with emergency preparedness policies that are aimed at protecting the public. These policies are geared towards natural disaster response and relief (such as extreme weather notices, water quality advisories, and wind and power outage notices) and include regular emergency preparedness workshops and courses. The CNV wishes to continue to coordinate all emergency response efforts including the development of governance policies in collaboration with the DNV, DWV and the NSEM as all three municipalities and partnering organization share joint emergency preparedness and response resources.

Prior to colonial settlement, the Musqueam, Squamish and Tsleil-Waututh First Nations were among the many Coast Salish First Nations that historically occupied the land, some of whom continue to live within the CNV today. Within the CNV boundary, but outside the AOI, there is one Squamish First Nation reserve (Mission #1). This IR is outside the scope of this CWPP document.

The economy of the CNV was historically driven by the forestry industry (shake and shingle manufacturing, logging and milling), shipping and shipbuilding. Although the port and its industries continue to remain important to the local economy, in recent decades the economic focus has shifted to light industry and manufacturing, retail and wholesale trade, a wide range of public and private service industries, construction, information and cultural industries, tourism, film and commercial and industrial real estate.<sup>6</sup>

Fire protection within the AOI is the responsibility of the North Vancouver City Fire Department (NVCFD) which is in charge of the fire station at 165 East 13<sup>th</sup> Street in North Vancouver. Mutual aid agreements also exist between the District of North Vancouver and the District of West Vancouver Fire Departments, and Metro Vancouver (see Section 0).

In the event of a wildfire, a number of neighbourhoods within the AOI have limited emergency access and egress routes and identified as areas of concern by CNV. These areas include residences at the top of Mackay Avenue, between Heywood Park and Mosquito Creek Park, and especially between Westmoreland Crescent and Alden Lane. The CNV should also expect to receive a large number of

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<sup>6</sup> City of North Vancouver, 2020. About the City. Retrieved from: <https://www.cnv.org/your-government/about-the-city>



evacuees from surrounding municipalities such as the DNV and DWV should a large wildfire event that requires extensive evacuation occur. The Upper Levels Highway (Highway 1) and Marine Drive are two of the only reliable access routes out of the AOI. Furthermore, the CNV is surrounded by the urbanized and developed portions of the DNV meaning the CNV is not immediately adjacent to extensive areas of forest land. Typically, the wildland urban interface (WUI) is the area where homes and developments meet the forest edge. Thus, the WUI in the CNV takes on a unique form being primarily located in greenbelts, creek ravines, parkland, and remnant forested areas that exist within its urban fabric and may contain hazardous fuels in proximity to homes (see Appendix E – Wildland Urban Interface Defined for a complete description of the WUI) (also refer to Map 1). Because the creek ravines represent breaks in the street grid layout within the urban fabric, many residences are located on single access roads which branch off of side streets. This not only presents a challenge for emergency access and egress, but also limits the ability of fire crews to establish anchor points for suppression and to safely evacuate residents.

## 2.2 PAST WILDFIRES, EVACUATIONS AND IMPACTS

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BCWS Coastal Fire Zone Staff (Jordan Struthers) communicated that the majority of past wildfire activity within the AOI was human-caused and ignitions are primarily due to abandoned campfires and poor recreation practices (discarded cigarettes). Parks staff have reported that slash accumulations following right-of-way clearing and hazard tree removal can be an issue, particularly next to ravines and greenbelts.

Based on the BCWS historical wildfire dataset (1919-2019), there were no large fires that occurred within the AOI; however, there were fires that have burned in close proximity. The two closest fires to have burned adjacent to the AOI occurred in 1934 and 1925, and covered a total area of 99 ha; both fires were human caused. Additionally, in 1923 roughly 2.5 km north of the AOI a large, human caused fire burned an area of 57.8 ha. The majority of the historical fires occurred within the early 20's and late 30's when resource extraction and industrial activities were most prevalent. Although there are no recorded ignitions within the AOI, a number of fire points were recorded. The majority of these ignitions occurred in the latter half of the 20th century and were all human caused.

The BCWS historical ignition dataset demonstrates that the proportion of human-caused fires surrounding the CNV is substantially greater than that of the province as a whole.<sup>7</sup> This ignition data shows that surrounding the AOI, approximately 100% of ignitions since 1919 have been human-caused, versus 40% in the province of BC.<sup>8</sup> This statistic may be explained by the lower proportion and occurrence of dry lightning strikes in wet coastal regions of the province and high recreational use and accessibility within many parts of the region, specifically for recreating and hiking, and the historical prevalence of forestry activities, railways, and other industrial activities, also contribute to this statistic.

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<sup>7</sup> BC Wildfire Service, 2019: Fire Incident Locations – Historical.

<sup>8</sup> BC Wildfire Service, 2019:

## 2.3 CURRENT COMMUNITY ENGAGEMENT

There are varying levels of recognition and awareness, from CNV staff and the community, of the threat posed to the community by wildfire. As a result, there has been minimal community interest and varying levels of engagement in wildfire prevention activities and FireSmart initiatives to this point. The NVCFD has held Hot Summer Nights community engagement events, posted a fire danger rating sign at the firehall, and increased social media during summer months, as well as implementing no smoking signage when the fire danger rating is high or extreme. The NVCFD has done an excellent job at promoting the local Fire Department and their services, however FireSmart education and awareness has been lacking and should be improved. See section 5.2 for detailed recommendations pertaining to FireSmart. No fuel treatments have occurred within the CNV.

## 2.4 LINKAGES TO OTHER PLANS AND POLICIES

The following is a summary of CNV and provincial policies and guidelines that relate to strategic wildfire management, wildfire threat reduction, operational fuel treatments and emergency planning.

### LOCAL AUTHORITY EMERGENCY PLAN

Emergency response in the CNV is managed at both a regional and municipal level. The North Shore Emergency Management (NSEM) is the CNV's emergency management department. The NSEM interacts with neighboring municipalities, the districts of North Vancouver and West Vancouver (DNV and DWV, respectively) to share Emergency Operation Centres (EOC), disaster plans and form mutual aid agreements. At the municipal level, the CNV has developed the 'City of North Vancouver Evacuation Guidelines'<sup>9</sup> document which provides policies and procedures for municipal leaders, managers, staff and local first responder agencies to use in the event of an emergency or disaster. The objective of the evacuation guidelines document is to outline who is responsible in the event of an emergency and how resources will be requested or coordinated. Furthermore, this document relates to wildfire preparedness as it addresses operational protocols including special evacuation considerations, coordination of external agencies and evacuation teams, public notification, evacuation strategies and evacuation routing. Contingent upon achieving realistic evacuation goals and objectives, the evacuation guidelines document specifies the development of operational evacuation work plans, planning zone profiles, and provides emergency checklists and forms, and a directory of facilities for vulnerable populations.

The CNV's primary Emergency Operations Centre (EOC) is located at 147 E 14th St., which serves all three north shore municipalities. The CNV has also provided links online for individual homeowner preparedness, such as Prepared BC's 'Household Preparedness Guide'.<sup>10</sup> This guide provides direction on protecting homes when a fire is approaching (prior to an evacuation order). Other useful links provided

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<sup>9</sup> City of North Vancouver, 2009. City of North Vancouver Evacuation Guidelines. Date accessed: 6/16/2020

<sup>10</sup> City of North Vancouver, 2020. Emergency Preparedness. Retrieved from: <https://www.cnv.org/city-services/health-and-public-safety/emergency-preparedness>

by the CNV are to the BC Emergency Preparedness, Response & Recovery website, the NSEM Emergency Preparedness webpage, the PrepareBC website and Public Safety Canada.<sup>11</sup>

## AFFILIATED CWPPS

Community Wildfire Protection Plans have been developed for neighbouring jurisdictions to the CNV and include the District of North Vancouver CWPP Update (2018) and the District of West Vancouver CWPP Update (2019). These documents, were reviewed for relevance (i.e. synergistic project opportunities, as well as to confirm that there are no contradicting recommendations). Furthermore, the CWPPs listed above were developed by the same consultant, ensuring consistency in recommendation and synergies within proposed future fuel treatment works.

## LOCAL GOVERNMENT POLICIES AND RECOMMENDATIONS

The intent of this section is to review all relevant local government plans, policies and bylaws and identify sections within that are relevant to the CWPP. The following municipal bylaws, strategies and policies are relevant to wildfire planning in the CNV.

### *City of North Vancouver Official Community Plan*

The Official Community Plan (OCP)<sup>12</sup> provides the CNV with a long-range framework to guide, monitor and evaluate future land uses and development under its jurisdiction. The following sections contain the goals and objectives in the OCP that are directly relevant to wildfire risk reduction, emergency response and community resilience post-disaster.

#### *Development Permit Areas:*

Development Permit Areas (DPA) require development to respond to design contexts, environmentally sensitive areas or identified hazards regulated by applicable policies and procedures unique to each one. The Streamside Protection DPA- (Schedule C, Appendix 1.0) ensures that development does not negatively impact watercourse environments nor result in a net loss of productive fish habitat. The Hazard Lands DPA (Schedule D, Appendix 1.0) identifies lands within steep areas in order to protect property and life, and minimize risks posed by development in areas with identified natural hazards.

#### *City of North Vancouver OCP, Chapter 2.0 Transportation, Mobility and Access*

Identifies how the City is part of a broader regional transportation network and describes the City's major routes, and challenges for access, the impacts of emissions on air quality, and how to implement and enhance a safe, reliable transportation for a densifying population (Goal 2.3).

#### *City of North Vancouver OCP, Chapter 3.0 Community Well-Being*

Describes potential natural hazard events (flooding, extreme weather, fire and landslides), emergency scenarios, and the risks to human health and safety. Establishes the City's responsibilities for preparedness, understanding the community's vulnerabilities and risks and adopting appropriate

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<sup>11</sup> City of North Vancouver, 2020. Emergency Preparedness. Retrieved from: <https://www.cnv.org/city-services/health-and-public-safety/emergency-preparedness>

<sup>12</sup> City of North Vancouver OCP Update (2014). Retrieved from: <https://www.cnv.org/Your-Government/Official-Community-Plan/CityShaping-OCP-Update>

policies and actions to mitigate risk including preparation and testing of an emergency management plan (Goals 3.2 and 3.3).

#### **City of North Vancouver OCP, Chapter 4.0 Natural Environment, Energy and Climate**

Aims to protect environmentally sensitive areas and improve ecological health, reduce energy use and greenhouse gas emissions, and integrate climate adaptation measures to improve air and water quality while promoting water conservation. Strategies will be promoted, implemented and/or updated to steer the community towards climate change adaptation and to manage development in a manner that ensures future resiliency to climate-related hazards (Goal 4.1).

#### **City of North Vancouver OCP, Chapter 5.0 Parks, Recreation and Open Space**

Sets forth the City's priorities for the acquisition, planning, design, conservation and maintenance of park infrastructure and recreational facilities in both the natural and built environments. Recognizes the importance of long-range planning for parkland acquisition, particularly for parks larger than a single lot (Goals 5.1 and 5.2). Given the geographical constraints of the municipality mean that land acquisition for new parks and greenways is challenging.

#### **City of North Vancouver OCP, Chapter 8.0 Municipal Services & Infrastructure**

Acknowledges life-cycle planning is needed to plan for infrastructure, facilities, and piped systems for water supply, sewage, energy, and stormwater to meet residents' needs and to protect the environment at an affordable cost (Goal 8.1). This includes planning for new infrastructure but also upgrades, retrofit and decommissioning of existing systems to meet changing demands as development proceeds, the community densifies, and land uses adjust (Goal 8.2). Mentions that water systems need to provide adequate fire suppression and be maintained to ensure adequate supply for firefighting needs. Strategic expansion of these utility infrastructure systems must occur over time as part of ongoing maintenance and expected growth.

### **CITY OF NORTH VANCOUVER BYLAWS**

#### **City of North Vancouver Bylaw No. 5124-1978 Minimum Maintenance Standards**

Establishes minimum standards for the maintenance of property in the City land, dwellings, and accessory buildings. Outlines penalties and enforcement for non-compliance.

#### **City of North Vancouver Bylaw No. 5437-1982 Fire Department Regulation**

A Bylaw for the regulation of the Fire Department of the City of North Vancouver. Establishes roles within the fire department, duties for each designated role within the organization, as well as thresholds for members living outside city boundaries, training, equipment, and annual inspections of all pre-fire planned structures.

#### **City of North Vancouver Bylaw No. 6417-1994 Water Utility**

Provides for the operation and management of the City's water utility. Defines required service levels, the design, construction and repair of piping systems and meters, and protection of the water utility system through prevention of contamination. Describes regulations restricting the use of water, fees and water rates, pressure supply and quantity (Part 8).

#### City of North Vancouver Bylaw No. 6611-1996 Parks Regulation

Regulates the use, protection and management of parks and natural areas within the City and includes information on park inventory, municipal responsibilities for park management including recreation and maintenance, types and locations of park amenity facilities, prohibitions, traffic regulations, and enforcement.

#### City of North Vancouver Bylaw No. 6700-1995 Zoning

Part 2 outlines Development Permit Area and Heritage Conservation Guidelines. The only DPA with detailed guidelines is Streamside Protection. Policies, procedures and guidelines for the Hazard Lands DPA is not included in the Zoning Bylaw.

#### City of North Vancouver Bylaw No. 6920-1997 Solid Waste Management Service

Defines the operation of the City's solid waste services. Includes information on garbage and recycling collection, acceptable and non-acceptable materials, notices to remove garbage, general provisions of waste removal, containers, responsibilities of users of the solid waste collection services, payment and enforcement.

**RECOMMENDATION #1:** Review Fire Bylaw No. 7709-2005 to include language specific to green waste, not just garbage, under the prohibitions section to ensure that there is a legally enforceable bylaw to prevent flammable materials to accumulate, collect or to remain on the property unless securely contained. Special consideration should be made for dumping in parks, ravines and in natural areas behind homes.

#### City of North Vancouver Bylaw No. 7026-1998 Smoking Regulation

Regulates smoking in public places including workplace environments. Includes information on general smoking regulations, smoking in parks and other municipal property, duties of responsible person, sign requirements, offences, penalties, and enforcement.

#### City of North Vancouver Bylaw No. 7343-2001 Development Procedures

Establishes procedures for development for all zoning types and land use designation categories, and includes information on the issuance of development applications, the application process, types of development permit applications and associated fees.

#### City of North Vancouver Bylaw No. 7390-2003 Construction Regulation

A bylaw for the regulation and administration of Codes, Acts and regulations pertaining to building construction, plumbing systems, and electrical and gas installations. This bylaw was enacted for the purpose of regulating construction within the City in the general public interest. Part 10 discusses Building Sprinklers and Fire Limit Areas

#### City of North Vancouver Bylaw No. 7418-2002 Emergency Plan

Establishes the requirement to prepare and operate a plan or scheme for preparedness, response and recovery in the case of emergencies pursuant to the provisions of *the Emergency Program Act*. Describes the duties, powers and responsibilities of the North Shore Emergency Planning and Operations Group



and the Municipal Emergency Operations Group, including disaster response and recovery activities, training, and development of a Disaster Plan, liabilities, and compensation for loss.

#### [City of North Vancouver Bylaw No. 7583-2004 Fire Chief Powers](#)

Outlines the powers of the Fire Chief which include entering and inspecting properties, duties regarding fire suppression, enforcement, fire prevention, powers to close natural areas and forests from public entry, and the review of plans and inspection of new buildings and structures.

#### [City of North Vancouver Bylaw No. 7677-2005 Fireworks Regulation](#)

Regulates the sale, purchase, possession, disposal and discharge of Fireworks in the City of North Vancouver pursuant to section 264 of the Community Charter.

#### [City of North Vancouver Bylaw No. 7709-2005 Fire](#)

Sets out requirements to protect life and property through prevention of fire and prevention of fire spread. Includes information on the fire department, fire protection equipment, fire permits, regulations respecting fire hazards, inspection of premises, fire watch, water supply and emergency power systems. Part 6 references Open Air Fires (604), Forests (611), and Requirements to Evacuate (610).

#### [City of North Vancouver Bylaw No. 7809-2006 North Shore Disaster](#)

Stipulates protocols to establish and implement a North Shore Disaster plan and a North Shore Emergency Operations Centre in response to a multi-municipal, or regional disaster affecting two or more of the North Shore Municipalities.

#### [City of North Vancouver Bylaw No. 8014-2010 Subdivision Control](#)

Regulates and requires the provision of works and services in respect of the subdivision and development of lands and to establish the standard of services to be provided. Regulates provision of and required level of water services, including those installed to provide fire protection such as fire hydrants along highways, roads, streets and in residential areas. Describes stormwater and sanitary pump stations and facilities design criteria, requirements and flow rates.

#### [City of North Vancouver Bylaw No. 8090-2011 Life Safety Upgrade](#)

Recognizes the need to upgrade fire alarm systems in pre-1992 Multi-Unit Residential Buildings, in an effort to address the health and life safety of individuals; to improve life safety through enhanced protection of persons and property from fire. Describes permitting and enforcement process. References interior sprinklers only.

#### [City of North Vancouver Bylaw No. 8627-2018 Drinking Water Conservation](#)

Regulates the consumption of water in accordance with the Metro Vancouver (MV) Drinking Water Conservation Plan. Is based on MV's four key principles regarding optimizing the quality and supply of drinking water and minimizing adverse impacts to the system and watershed. Defines water restriction stages and powers, requirement of users of large amounts of water to develop a water management plan, watering permits, and offences.



## HIGHER LEVEL PLANS AND RELEVANT LEGISLATION

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### City Plans

#### ***Climate Change Adaptation Plan***

The CNV's Climate Change Adaptation Plan<sup>13</sup> aims to support climate change initiatives and long-term adaptation planning, while incorporating these throughout all City activities and into policy documents. The Plan provides an opportunity to promote the City's adaptive capacity and resiliency to the expected social, economic and environmental impacts of climate change, while reducing the long-term costs and impacts associated with climate change.

This Plan document describes regional climate and weather, generally accepted causes of climate change, mitigation and adaption measures, and the City's risk profile. The Plan addresses local climate change projections, the impacts and benefits that these changes may have on the community, and potential adaption measures to address the multidisciplinary challenges posed by climate change. The Plan mentions the incidence of wildfire events are projected to increase in frequency due to anticipated decreases in precipitation during the summer months and higher average annual temperatures as a result of climate change.

A number of adaption objectives and actions are relevant to community wildfire protection planning, including the following:

- AO 6.2 Transportation, Mobility & Access – *Minimize the risks and potential transportation disruptions from extreme weather events and decrease climate related barriers to active transportation and transit use.*
- AO 6.4 Natural Environment, Energy and Climate – *Maintain and improve the long-term health of natural ecosystems and native species.*
- AO 6.5 Parks, Recreation and Open Space – *Continue to expand access to recreation opportunities and high-quality park and outdoor recreation space, take advantage of the adaption benefits of parks and greenspaces to reduce flood and extreme heat risks.*
- AO 6.8 Municipal Services and Infrastructure – *Ensure all new and retrofitted infrastructure is adapted to future climatic conditions to the end of its expected lifespan and maintain or improve service levels related to water supply, sewers, transportation, communication and energy infrastructure.*
- AO 6.9 Implementation – *Integrate climate adaption into all City policies and operations. Regularly monitor and review the current state of climate science, adaption best practices, and the City's adaption policies and progress. Engage with City staff and local, provincial, and federal stakeholders and organization planning and information sharing.*

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<sup>13</sup> City of North Vancouver, 2013. Climate Change Adaption Plan. Retrieved from: <https://www.cnv.org/your-government/living-city/climate-action/climate-change-adaptation>

### *Invasive Plant Inventory Update 2020*<sup>14</sup>

This document provides a detailed summary of invasive plant species within the CNV and an evaluation of invasive plant control programs and restoration projects including a summary of recommendations to be implemented in the future. These recommendations include:

1. Continue knotweed and hogweed treatment program;
2. Continue program to remove climbing ivy;
3. Target specific species for control; and
4. Build on success of restoration projects.

The document also evaluates restoration and invasive plant control programs for their effectiveness.

### *Parks Master Plan*<sup>15</sup>

Developed in 2010, this document provides a comprehensive strategy for the maintenance, development and renewal of the parks, trails and open spaces throughout the City of North Vancouver over the next 10 years. It identifies park and recreational needs, trends and gaps, while also listing recommendations to address those needs. The document provides an analysis of existing park inventory, and identifies the possibility for new facilities, future capital projects, the current operational pressure points and service levels, as well as the opportunities and deficiencies in the present parks system.

This document is an overarching document that provides a general overview of parks within the CNV. This overarching document describes the past, present and future goals and objectives of parks within the CNV. Furthermore, this document describes park system trends, future park visions, parkland tenures and recommendations. This plan details park management within the CNV, specifically in relation to operations and maintenance, environmental management, managing for use in parks and current park infrastructure conditions. This plan also sets out an implementation strategy consistent with the OCP, and in coordination with CNV financing methods, priorities and phasing. Through this plan decisions-making processes regarding park planning processes are defined.

High-use recreational parks and trails can be beneficial when high-use times provide increased early detection and reporting for fires. Alternatively, these areas can also potentially be locations of increased ignitions in the interface (high-use areas). For trails in particular, depending upon the width, clearance and surfacing, they can provide points of access for suppression efforts, serve as surface fire fuel breaks, and act as control lines for suppression efforts if a fire is nearby.

**RECOMMENDATION #2:** The Parks Master Plan should be updated and revised to include the wildfire threat and risk information developed for this CWPP to inform the planning of new, and enhancement of, existing parkland. Additional language should be added pertaining to the importance of park

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<sup>14</sup> City of North Vancouver, 2015. City of North Vancouver Invasive Plant Inventory Update 2015. Retrieved from: <https://www.cnv.org/your-government/living-city/environmental-protection/invasive-species/invasive-plants>

<sup>15</sup> City of North Vancouver, 2010. Parks Master Plan: Activity and Diversity. Retrieved from: <https://www.cnv.org/parks-recreation-and-culture/parks-and-greenways/plans-policies-and-bylaws/parks-master-plan>



maintenance in relation to wildfire risk mitigation, especially where greenspaces and parks are adjacent to private property.

### *Tree Policy for the Management of Trees on City Property*<sup>16</sup>

This document provides a design and long-term planning framework for the funding, maintenance and planting of street trees in the City of North Vancouver. The primary objectives of the plan are to integrate various City master plans and strategies together, define specific landscape character areas, such as heritage trees and landscape features, provide detailed site-specific street tree plans and guidelines through demonstration projects and provide an implementation strategy, and finally survey community attitudes towards urban forests and develop methods to inform and educate the public.

**RECOMMENDATION #3:** Consideration should be given to replace the CNV Tree Policy with a Tree Management bylaw similar to the District of North and West Vancouver. The bylaw should allow for the maintenance and removal of trees on City property, and regulate the cutting of trees on private property which pose a wildfire risk to private properties and critical infrastructure. Language should be included to allow the issuance of a permit for cutting of trees if it is required to reduce wildfire hazard within the wildland urban interface, as determined by a qualified professional (QP). The bylaw should not limit the ability of homeowners to address wildfire hazards associated with trees on private property immediately adjacent to homes.

### *CNV Urban Forest Management Plan 2011*<sup>17</sup>

This document provides a detailed description of the City of North Vancouver's urban forest including; terrain features, plant inventory, forest health, ecosystem succession, disturbance regimes and ecological biodiversity. The plan also provides a detailed description of management concerns and treatment recommendations as well as inventory results for many of the forested greenways and parks within the CNV, a few of these areas include; Kealey Woods, Tempe Heights, Mosquito Creek, Heywood/Hyak, Wagg, Mahon and Greenwood Park.

### *Regional Plans*

#### *Urban Forest Climate Adaptation Framework for Metro Vancouver 2017*<sup>18</sup>

This document provides a comprehensive framework for building urban forest resilience and addressing climate change requirements at a regional level, through the following steps:

1. Risk identification within regional and urban forests;
2. Assessment of urban forest vulnerabilities to issues such as forest health, pests, invasive species, and wildfire;

<sup>16</sup> City of North Vancouver, 2011. Tree Policy for the Management of Trees on City Property. Retrieved from: <https://www.cnv.org/parks-recreation-and-culture/parks-and-greenways/plans-policies-and-bylaws/street-trees>

<sup>17</sup> City of North Vancouver, 2007. City of North Vancouver Urban Forest Management Plan. Retrieved from: <https://vancouver.ca/home-property-development/urban-forest-strategy.aspx>

<sup>18</sup> Diamond Head Consulting. 2017. Urban Forest Climate Adaptation Framework for Metro Vancouver. Tree Species Selection, Planting and Management

3. Development of guidelines to build resilience (i.e., through species selection, management techniques, soil and planting infrastructure and water management guidelines); and
4. Development of a 144 tree species selection decision support tool for street tree plantings.

The framework is complemented by a *Design Guidebook*<sup>19</sup> and a tree species selection database<sup>20</sup>, which considers urban forest climate change adaptation requirements and provides best management practices and serves as a reference guide for Metro Vancouver member municipalities in support of landscape design for existing and new developments. This framework has relevance to fuel treatment planning, particularly if re-planting or species conversion treatments are prescribed.

#### ***Metro Vancouver 2040 Shaping Our Future, 2017*<sup>21</sup>**

This document outlines a regional vision and strategy for sustainable growth within all member municipalities. The document identifies the importance of environmental protection and climate change impact (Goal 3), and provides the following four strategies to guide high-level management decisions within Metro Vancouver:

**Strategy 3.1:** Protect conservation and recreation lands;

**Strategy 3.2:** Protect and enhance natural features and connectivity;

**Strategy 3.3:** Encourage land use and transportation infrastructure that reduce energy consumption and greenhouse gas emissions, and improve air quality; and

**Strategy 3.4:** Encourage land use and transportation infrastructure that improve the ability to withstand climate change impacts and natural hazard risks (wildfire, earthquakes, flooding, mudslides).

#### ***Sensitive Ecosystem Inventory for Metro Vancouver and Abbotsford, 2010-2012*<sup>22</sup>**

This technical report outlines the methodology and results of a Sensitive Ecosystem Inventory (SEI) to generate a standardized ecological mapping layer for the Metro Vancouver region. The SEI contains ecosystems that are 'Sensitive Ecosystems' (i.e., wetlands and old forest), and 'Modified Ecosystems' (human modified but with significant ecological and biological value). Several classes and subclasses within each ecosystem type are assigned and delineated in the inventory. This inventory is an important resource to support land and environmental decisions and is relevant in the context of fuel treatment planning. The AOI contains Sensitive Ecosystems primarily within the ravines of Mackay, Mosquito and Mission Creeks and designated as Riparian Fringe (RI:ff). Riparian R Fringe areas are sensitive ecosystems with natural and semi-natural plant communities 'fringing' rivers, streams, lakes and ponds. Modified Ecosystems in the AOI generally are found in parkland and greenway systems managed for active and

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<sup>19</sup> Diamond Head Consulting. 2017. Design Guidebook – Maximizing Climate Adaptation Benefits with Trees

<sup>20</sup> Diamond Head Consulting. 2017. Urban Forest Climate Adaptation – Tree Species Selection Database. Available online at: <http://www.metrovancouver.org/services/regional-planning/conserving-connecting/resources/Pages/default.aspx>

<sup>21</sup> Metro Vancouver, 2020. Regional Growth Strategy – Bylaw No. 1136, 2010. Adopted 2011 and updated to 2017. Retrieved from: <http://www.metrovancouver.org/services/regional-planning/PlanningPublications/RGSAcceptedbyGVRDBoard.pdf>

passive recreation pursuits, community farming (Loutet Park) and remnant forest sites (Greenwood Park and Kealy Woods Park) and designated as coniferous Young Forest (YS:co) which are defined as small patches of forest (<5 ha) with an age class distribution of 30 – 80 years. Although Modified Ecosystems have been human-modified they hold significant ecological and biological values. Interspersed throughout the AOI are isolated small patches of Mature Forest (ME).

## MINISTRY OR INDUSTRY PLANS

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Reviewing and incorporating other important forest management planning initiatives into the CWPP planning process is a critical step in ensuring a proactive and effective wildfire mitigation approach. The South Coast Response Fire Management Plan (FMP)<sup>23</sup> was developed for the Sea to Sky Natural Resource District (NRD), the Sunshine Coast NRD, and the Chilliwack NRD. The FMP was reviewed to identify any regional fire management planning objectives and their interpretation in the context of management considerations for the CNV. The 2018 South Coast FMP identifies values at risk and prioritizes broad categories of values as ‘themes’ for response planning through the Resource Strategic Wildfire Allocation Protocol (RSWAP). The South Coast FMP briefly speaks to the concept of wildfire prevention engineering within the region, which includes fuel management such as locally identified fuel breaks, proposed treatment areas, or demonstration and operational treatment areas. In order to reduce local fire threat and to build defensible space around critical infrastructure and/or residential neighbourhoods, this CWPP identifies various fuel treatment opportunities (Section 0).

## SECTION 3: VALUES AT RISK

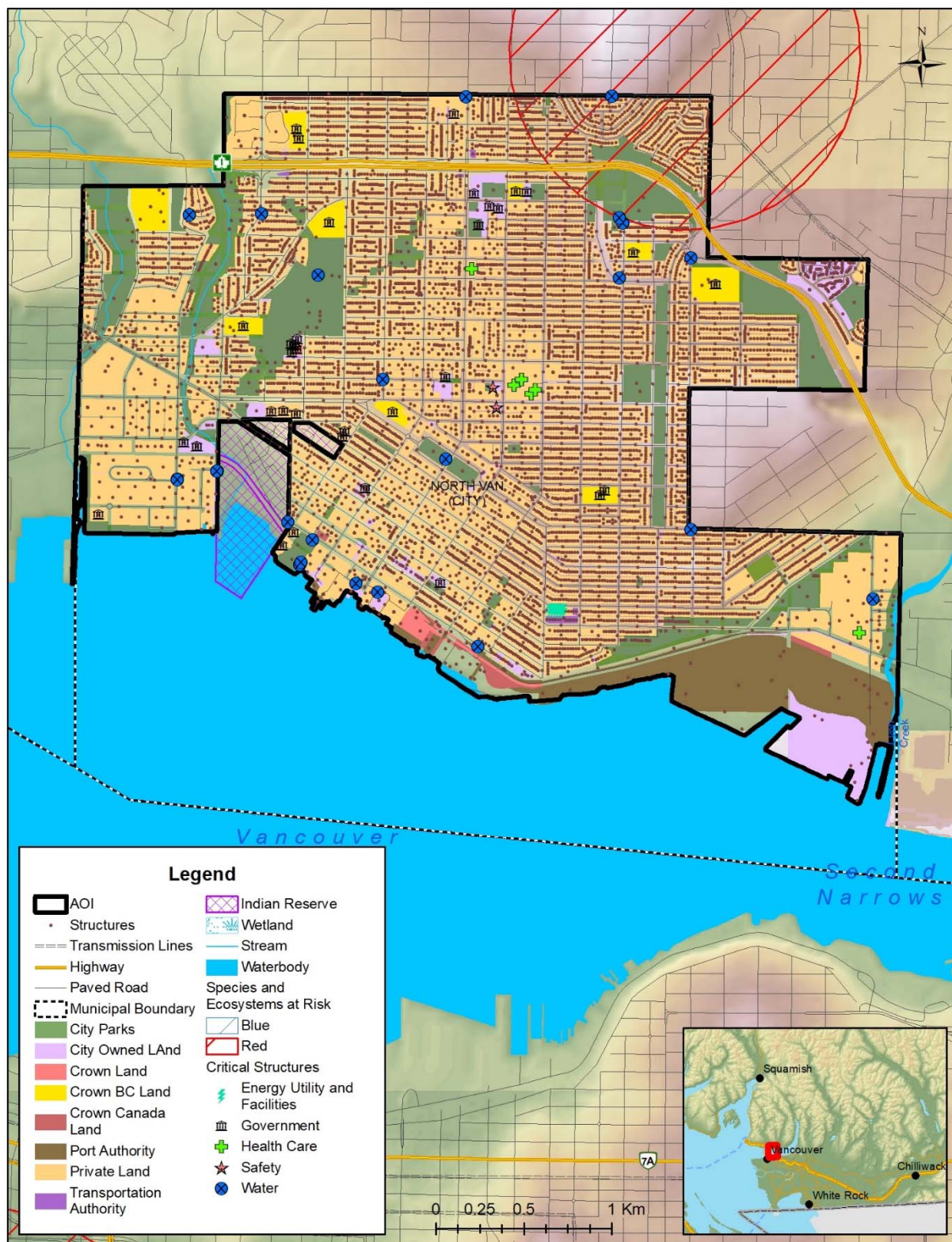
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Following is a description of the extent to which wildfire has the potential to impact the values at risk (VAR) within the City of North Vancouver. VAR or the human and natural resources that may be impacted by wildfire include human life and property, critical infrastructure, high environmental and cultural values, and other resource values. VAR also include hazardous values that pose a safety hazard. Key identified VAR are illustrated below in Map 2.

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<sup>23</sup> South Coast Fire Management Plan. 2018. (Internal government document)





Map 2. Values at Risk within the AOI.



### 3.1 HUMAN LIFE AND SAFETY

One of the primary goals of the BCWS is to support emergency response and provide efficient wildfire management on behalf of the BC government. BCWS aims to protect life and values at risk, while enhancing the health and resilience of BC ecosystems.<sup>24</sup>

Human life and safety are the first priority in the event of a wildfire. A key consideration is the evacuation of at-risk areas and safe egress. Evacuation can be complicated by the unpredictable and dynamic nature of wildfire, which can move quickly. Evacuation takes time and safe egress routes can be compromised by wildfire causing limited visibility, or by traffic congestion and/or accidents (see Section 0).

The population distribution (both people and structures) within the AOI is important in determining the wildfire risk and identifying mitigation activities. The population of the CNV has increased in recent years and was measured at 52,898 residents in the 2016 Census; compared to 2011 numbers which were measured at 48,196 residents.<sup>25</sup> The CNV has a growth rate of 9.8% almost double the growth rate of the province of BC which has an average growth rate of 5.6%. Within the CNV there are approximately 26,426 private dwellings, 6.7 % of which are occupied on a part-time basis. The CNV attracts visitors for hiking, walking, biking, and other recreational endeavors, particularly during the fire season (May – October). Several parks and recreation sites throughout the AOI are highly used during the summer months, including Heywood Park, Mosquito Creek Park, Mahon Park, Greenwood Park, Grand Boulevard and Loutet Park. Furthermore, the Upper Levels Highway (Highway 1) is a main transportation corridor between the Greater Vancouver Area and the Sea to Sky corridor and would be the evacuation route carrying people away from the City of North Vancouver in the event of a wildfire.

Knowledge of, and access to updated structure locations within the CNV is a critical step in efficient and successful emergency response planning. Through field visits and review of recent orthophotography and spatial data, a new spatial layer with current structure locations was created.

**RECOMMENDATION #4:** North Shore Emergency Management (NSEM) in collaboration with the three North Shore communities should lobby the provincial government or local Medical Health Officer(s) to develop a strategy for communities to draw upon when they are exposed to smoke from wildfire for extended periods of time. This may include smoke exposure risk assessments, exposure reduction measures, and a decision-key for when to evacuate a community due to wildfire smoke.

### 3.2 CRITICAL INFRASTRUCTURE

Publicly and provincially owned critical infrastructure (CI) are assets owned by the Provincial government, local government, public institution (such as health authority or school district) and First

<sup>24</sup>BC Provincial Coordination Plan for Wildland Urban Interface Fires. 2016. [https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire\\_revised\\_july\\_2016.pdf](https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire_revised_july_2016.pdf)

<sup>25</sup>Statistics Canada, 2020. 2016 Census. Retrieved from: <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=5915051&Geo2=PR&Code2=59&SearchText=North%20Vancouver&SearchType=Begins&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=5915051&TABID=1&type=0>

Nations. These CIs are essential to the health, safety, security or economic well-being of the community and the effective functioning of government, and assets identified in spatial data provided by the CNV's GIS department and identified in their Evacuation Guidelines document.

Protection of critical infrastructure (CI) during a wildfire event is an important consideration for emergency response effectiveness, ensuring that coordinated evacuation can occur if necessary, and that essential services can be maintained and/or restored quickly in the case of an emergency. Critical infrastructure includes emergency and medical services, electrical services, transportation, water and sanitation, social services, and communications infrastructure. A critical infrastructure dataset was provided by the CNV's GIS staff and this data is included in Map 2. The critical infrastructure detailed in 2 details an inventory of critical infrastructure identified by the CNV and confirmed via field visits and stratified into the following sub-sections: Municipal Buildings, Water & Sewage, Electrical Power; and Communications.

Protection of critical infrastructure has shown itself to be an essential wildfire preparedness function. Survival and continued functionality of these facilities not only support the community during an emergency but also determine, to a great degree, the extent and cost of wildfire recovery and economic and public disruption during post wildfire reconstruction. Critical infrastructure provides important services that may be required during a wildfire event or may require additional considerations or protection. As outlined in Section 5.2, FireSmart principles are important when reducing wildfire risk to structures and are reflected in the outlined recommendations. During field visits, it was observed that the CNV's critical infrastructure (i.e., fire halls, community centers, and schools etc.) are in compliance with FireSmart principles with the exception of older buildings. The proximity of flammable vegetation was variable in surrounding hazardous landscaping / vegetation, irrespective of building age.

**RECOMMENDATION #5:** Create an inventory, map and catalogue all critical infrastructure for the City and make available to all City departments through inclusion in the updated emergency evacuation guidelines document.

**RECOMMENDATION #6:** It is recommended that formal FireSmart assessments (by a Qualified Professional) be completed for all critical infrastructure within moderate or high fire risk areas such as the fire hall, emergency operations centres, water infrastructure, and other CI as identified in this CWPP (Table 3) and by the City. In addition, use of fire-resistant construction materials, building design and landscaping should be considered for CI located near moderate or high wildfire risk areas when completing upgrades or establishing new infrastructure and vegetation setbacks around critical infrastructure should be compliant with FireSmart guidelines.

## ELECTRICAL POWER

Electrical service for most of the CNV is received from BC Hydro through a network of primarily above- and a few below-ground distribution lines (lower voltage) which receive power from local generating substations that are distributed in an east west direction across the AOI via line 60L064 in the north and

lines 60L061, 60L062, 60L063 in the south. There is one substation located in the CNV near the southeast corner of East 4th Street and St. Davids Avenue. This system is well-mapped and BC Hydro states that staff will work with local fire departments and BCWS to mitigate impacts to this infrastructure in the event of a wildfire.<sup>26</sup>

Within the CNV almost entirely all of the neighbourhoods are serviced by above-ground, street-side wooden poles that connect to homes and are therefore particularly vulnerable to wildfire. A large fire has the potential to impact this service by causing a disruption in network distribution through direct or indirect means. For example, heat from the flames or fallen trees associated with a fire event may cause power outages. Consideration must be given to protecting this critical service and providing power back up at key facilities to ensure that the emergency response functions are reliable.

Secondary power sources are important to reduce critical infrastructure vulnerability in the event of an emergency which cuts power for days, or even weeks. Secondary power is largely available for the majority of critical infrastructure within the AOI such as the Fire Hall, RCMP building, City Hall, Lions Gate Hospital and all sewer pumping stations which are equipped with backup diesel generators. Nevertheless, vulnerabilities for secondary power sources include mechanical failure, potentially insufficient power sources should a wide-scale or long-term power outage occur, and fuel shortage in the event of prolonged outages. Refer to Section 0 for discussion and recommendations related to backup power and water availability for fire suppression.

**RECOMMENDATION #7:** There are multiple BC Hydro transmission lines that intersect the AOI in an east to west direction. Consequently, the utility right-of-way best management practices (BMPs) of regular brushing, clearing of woody debris, and removal of flammable vegetation including Spanish broom, (*Cytisus scoparius*) and regenerating conifers should be communicated in coordination with BC Hydro to help reduce fire risk, utility pole damage and subsequent outages. Brushing and right-of-way mowing work should not occur during high fire danger times to reduce chance of ignitions as per the Wildfire Act. It is recommended that communications are coordinated via weekly fire calls.

**RECOMMENDATION #8:** The Engineering, Parks & Environment department, Utility Operations section, should complete vulnerability assessments of all critical infrastructure. The CNV should upgrade or realign resources, as prioritized and develop a back-up water delivery plan with the District of North Vancouver and Metro Vancouver, to be enacted in the event of an emergency. In addition, annual testing of this plan should be conducted to address any inefficiencies or beneficial improvements.

## COMMUNICATIONS, PIPELINES AND MUNICIPAL BUILDINGS

Within the AOI there are no airports, however there is one hospital, the Lions Gate Hospital that services residents of the CNV. There are also five intermediate FortisBC transmission pipelines that intersects the

<sup>26</sup>BC Hydro, 2020. Power Smart – Earthquakes, wildfires, and floods. Retrieved from: <https://www.bchydro.com/safety-outages/emergency-preparation/natural-disasters.html>

AOI, east to west (along 3<sup>rd</sup> St, 4<sup>th</sup> St and 6<sup>th</sup> St) and north to south (along Jones Ave), these segments are active and are owned and managed by FortisBC Energy Inc. In the event of an emergency, the FortisBC company website states that employees will consult with local authorities and emergency response officials in the event of a wildfire.<sup>27</sup> A full inventory of critical infrastructure for emergency services, education and municipal city buildings with updated locations is presented in Table 3 below. Pipelines are inventoried with other hazardous infrastructure in Table 6.

**Table 3. Critical Infrastructure Identified in CWPP field visits.**

Critical Infrastructure Type	Location
Lions Gate Hospital *(5)	231 15th St E
City Hall	141 W 14th St
Firehall	165 E 13th St
Presentation House	333 Chesterfield Ave
Library	120 14th St W
North Shore Neighbourhood House **	225 2nd St E
City Works Yard *(3)	61 Bewicke Ave
RCMP	147 East 14 Street
Centennial Theatre	2300 Lonsdale Ave
Armoury	1513 Forbes Ave
Lawn Bowling	2160 Lonsdale Ave
Memorial Gym **	123 East 23rd Street
Harry Jerome Rec Centre	123 23rd St E
McDougall Gym **	23rd St E
Queensbury Elementary School	2020 Moody Ave
Westview Elementary School	641 17th Street West
Larson Elementary School	2605 Larson Rd
Queen Mary School	230 Keith Rd W
St. Thomas Aquinas School *(3)	541 W Keith Rd
Ridgeway Elementary School *(3)	420 8th St E
Bodwell High School	955 Harbourside Dr
Holy Trinity Elementary School	128 27th St W
St. Edmonds Elementary School	535 Mahon Ave
Pacific Marine Training Institute *(2)	265 W Esplanade
Carson Graham Secondary School	2145 Jones Ave
Sutherland Secondary School *(2)	1860 Sutherland Ave

<sup>27</sup> FortisBC, 2020. Wildfires and Evacuations. Retrieved from: <https://www.fortisbc.com/safety-outages/preparing-for-emergencies/wildfires-and-evacuations#tab-0>

\* Place names with a single asterisk have multiple structures within the building complex

\*\* Place names with two asterisks are ESS centers (Delbrook Community Center is also an ESS center for the CNV but is within the DNV municipal boundary and has therefore not been included in the CNV spatial)

\*\*\* Lonsdale Quay SeaBus Terminal is not included in the CI list due to its location outside of CNV jurisdiction but is considered a critical access and egress structure

## WATER S

The City of North Vancouver receives all of its domestic water supply from Metro Vancouver's Greater Vancouver Water District (GVWD), this water supply is sourced from the Capilano and Seymour watersheds and treatment plant.<sup>28</sup> The CNV then distributes this water to approximately 50,000 residents and businesses within the municipality, under the permission of Vancouver Coastal Health. From the reservoirs water is transmitted via large diameter Metro Vancouver transmission mains and the Greenwood Reservoir then eventually through smaller City mains to individual properties. In total, the utility data provided by the CNV included over 1900 water mains and 15 pressure reducing stations. The GVWD and the CNV have adopted a multi-barrier approach to reducing the risk of water borne infections, which includes: watershed protection, water treatment, distribution system maintenance and water quality monitoring.<sup>29</sup> The GVWD has also decommissioned unnecessary access roadways within all of its watersheds (Capilano, Seymour, Coquitlam) to avoid contamination of the water source from human activities.

Generally, water availability for fire suppression within the AOI is not a concern. Fire hydrants are well distributed and adequate throughout the AOI. In the majority of the service areas flow testing and pressure checks are done annually to assess overall system performance; through these tests certain areas within the AOI such as Mosquito Creek have been found to have limited volume and flow.

Locations for water infrastructure (current as of 2020) within the CNV are detailed below in Table 4.

**Table 4. Critical Water and Sewage Infrastructure Identified in CWPP field visits.**

Critical Infrastructure Type	Location
Pressure Reducing Valve - WMS-000078	Intersection of Mahon Ave and W 14th St
Pressure Reducing Valve - WMS-000083	1900 Sutherland Ave

<sup>28</sup>City of North Vancouver, 2020. City Services - Water. Retrieved From: <https://www.cnv.org/city-services/water-sewer-and-drainage/water>

<sup>29</sup> City of North Vancouver, 2019. Drinking Water Quality – 2018 Annual Report. Retrieved from: <https://www.cnv.org/city-services/water-sewer-and-drainage/water>

Pressure Reducing Valve - WMS-000080	744 Westmoreland Cres
Pressure Reducing Valve - WMS-000082	29th St and Lonsdale
Pressure Reducing Valve - WMS-000076	657 E Keith Rd
Pressure Reducing Valve - WMS-000077	650 Lonsdale Ave and Victoria Park West
Pressure Reducing Valve - WMS-000085	1906 Grand Blvd
Pressure Reducing Valve - WMS-000075	440 Brooksbank Ave
Pressure Reducing Valve - WMS-000081	473 E 29th St
Pressure Reducing Valve - WMS-000079	576 W 22nd St
Pressure Reducing Valve - WMS-000091	Intersection of Forbes and W Esplanade
Pressure Reducing Valve - WMS-000092	360-364 E Esplanade
GVRD Greenwood Reservoir	Intersection of Moody Ave and E 22nd St

**RECOMMENDATION #9:** The CNV should collaborate with the DNV and NSEM to spatially map and create a detailed inventory list of all critical water infrastructures within the municipality and disseminate this information to all emergency services, especially the NVCFD and NSEM.

### 3.3 HIGH ENVIRONMENTAL AND CULTURAL VALUES

The following section identifies high environmental and cultural values and where they are located. Environmental, cultural and recreational values are high throughout the AOI. A more detailed account of environmental and biodiversity aspects of this region is presented in Section 4.1.

#### DRINKING WATER SUPPLY AREA AND COMMUNITY WATERSHEDS

As outlined above, the City of North Vancouver receives its potable water primarily from the Greater Vancouver Water District's Capilano and Seymour reservoirs, and if needed, from the Coquitlam reservoir. Protection from contamination for these valuable water sources is ensured through the following avenues: 1) restricted access to watersheds; 2) restoration of disturbed areas and deactivation of watershed roads that are no longer in use; 3) management of watershed via minimal intervention (i.e., in the event infrastructure is required); and 4) cooperative management with adjoining municipalities to preserve water quality.<sup>30</sup>

City staff did not express immediate concerns related to water availability from the Greater Vancouver Water District distribution system. Recent drinking water quality reports are available on the City of North Vancouver's website and yearly drinking water supply reports are available on the Metro Vancouver Regional District's website from 2013 onwards. These CNV drinking water reports provide information pertaining to bacteriological quality, physical parameters, chemical parameters and response to potential contamination.

<sup>30</sup>Metro Vancouver Drinking Water Management Plan, 2011. Available online at: <http://www.metrovancouver.org/services/water/WaterPublications/DWMP-2011.pdf>



According to the iMap BC, there are 4 identified watersheds that exist within the AOI, all 4 of these watersheds have been classified as 3<sup>rd</sup> order or greater based on the Strahler stream order classification system.<sup>31</sup> These watersheds include Mosquito Creek, Mackay Creek, Lynn Creek and one unnamed watershed. None of the aforementioned creeks are within a community watershed.

The potential impacts to watercourses from wildfire may extend past the time a fire is extinguished and is dependent on fire size and burn severity, there is the potential for significant hydrological, soil, and channel impacts.<sup>32</sup> Some areas may have a lower threshold for precipitation-triggered events and would be particularly vulnerable to post-wildfire debris flows, mass wasting, landslides, or flooding. This may directly impact the community (i.e., structure loss, risk to public safety) or indirectly, through loss or damage of critical infrastructure, roads, or impacts on the watershed affecting water quality.

**RECOMMENDATION #10:** As part of the Integrated Stormwater Management Plans (ISMP) currently being developed for Mosquito Creek and Mackay Creek, the CNV should consider the option of including future assessments to explore the potential hydrologic and geomorphic impacts of wildfire on the ravine systems and community.

## CULTURAL VALUES

The Coast Salish are the main Aboriginal peoples group whose territory overlaps the CNV. Within this group, a total of 13 First Nations and one treaty organization with aboriginal interests in the AOI were identified in the BC Consultative Areas Database. However, because the CWPP will not be impacting fisheries and marine interests the Cowichan Tribes, Halalt First Nation, Lake Cowichan First Nation, Lyackson First Nation, Penelakut Tribe, and Stz'uminus First Nation were removed from the final consultation list. First Nations who were consulted with include the Musqueam Nation, Seabird Island Band, Shxw'ōwhámel First Nation, Skawahlook First Nation, Soowahlie First Nation, Stó:lo Nation, Sto:lo Tribal Council, Squamish Nation and the Tsleil-Waututh Nation.

Archaeological sites and remains in BC that pre-date 1846 are protected from disturbance, intentional and inadvertent, by the *Heritage Conservation Act* (HCA), which applies on both private and public lands. Sites that are of an unknown age that have a likely probability of dating prior to 1846 (i.e., lithic scatters) as well as Aboriginal pictographs, petroglyphs, and burials (which are likely not as old but are still considered to have historical or archaeological value) are also protected. Under the HCA, protected sites may not be damaged, altered or moved in any way without a permit. It is a best practice that cultural heritage resources such as culturally modified tree (CMT) sites be inventoried and considered in both operational and strategic planning.

Due to site sensitivity, the locations of archaeological sites may not be made publicly available. However, data provided by the MFLNRORD Archaeology Branch confirms that numerous sites exist in the AOI. The City should ensure that they have direct access to Remote Access to Archaeological Data (RAAD) which

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<sup>31</sup> Strahler, A. N., 1957. Quantitative analysis of watershed geomorphology, *Eos Trans. AGU*, 38(6),913–920

<sup>32</sup>Jordan, P., K. Turner, D. Nicol, D. Boyer. 2006. Developing a Risk Analysis Procedure for Post-Wildfire Mass Movement and Flooding in British Columbia. Part of the 1<sup>st</sup> Specialty Conference on Disaster Mitigation. Calgary, AB May 23 -26, 2006.

the City can procure at the fuel management prescription phase for fuel treatments. Access to RAAD, will allow the City to look up or track any archeological sites in the area.<sup>33</sup> Prior to stand modification for fire hazard reduction, and depending on treatment location, preliminary reconnaissance surveys may be undertaken to ensure that cultural heritage features are not inadvertently damaged or destroyed.

The use of machinery has the potential to damage artifacts that may be buried in the upper soil horizons. Above ground archaeological resources may include features such as CMTs, which could be damaged or accidentally harvested during fire hazard reduction activities. Fuel treatment activities should include consultation with all identified First Nations at the site level and with sufficient time for review and input regarding their rights and interests prior to prescription finalization or implementation.

## HIGH ENVIRONMENTAL VALUES

The Conservation Data Centre (CDC), which is part of the Environmental Stewardship Division of the Ministry of Environment and Climate Change Strategy, is the repository for information related to plants, animals and ecosystems at risk in BC. To identify species and ecosystems at risk within the CNV, the CDC database was referenced. Two classes of data are kept by the CDC: non-sensitive occurrences for which all information is available (species or ecosystems at risk and location); and masked, or sensitive, occurrences where only generalized location information is available.

There is one documented species at risk occurrence present within the AOI which pertains to the *Sorex bendirii* also known as the Pacific water shrew (Table 5). There are no masked species at risk occurrences within the AOI and no known areas identified as critical habitat for federally listed species at risk.

Through consultation with the CDC and a biologist or qualified professional, all site level operational plans must determine if the occurrence will be impacted by fuel management or other wildfire mitigation activities. All future fuel treatment activities or those associated with recommendations made in this plan should consider the presence of, and impact upon, potentially affected species. Additionally, all site level operational plans should consult the most recent data available to ensure that any new occurrences or relevant masked occurrences are known and considered in the operational plan to mitigate any potential impacts on species at risk.

**Table 5. Publicly available occurrences of Red and Blue-listed species recorded within the AOI.**

Common Name	Scientific Name	Category	BC List	Habitat Type	Area (Ha)
Pacific Water Shrew	<i>Sorex bendirii</i>	Vertebrate Animal	Red	TERRESTRIAL	65.5

## 3.4 OTHER RESOURCE VALUES

There are multiple resources values associated with the land base, including recreation and tourism, railway industries, and marine industries. Recreational and tourist values in the City are significant. Several top ranked tourist attractions and heavily visited sites and trails are located in the AOI including:

<sup>33</sup> MFLNRORD, Archaeology. Retrieved online at:  
[https://www.for.gov.bc.ca/archaeology/accessing\\_archaeological\\_data/obtaining\\_access.htm](https://www.for.gov.bc.ca/archaeology/accessing_archaeological_data/obtaining_access.htm)

Lonsdale Quay and Waterfront Park, Grand Boulevard, Mosquito Creek Park, Mahon Park, Mackay Park and many others. In addition to a vast network of hiking trails within the creek corridors, there are also playgrounds and picnic areas within the park. Consequently, the City serves as a busy recreational area and access hub to backcountry areas beyond. Considerations for raising awareness of wildfire prevention among the public and backcountry user groups (i.e., hikers, bikers, trail runners, dog walkers and others) are discussed in Section 5.3.

### 3.5 HAZARDOUS VALUES

Hazardous values are defined as values that pose a safety hazard to emergency responders and have the fuel that could ignite during an ember shower. A comprehensive list of hazardous values within the AOI is itemized in Table 6. The management and treatment of fuels in proximity to hazardous infrastructure is critical in order to reduce the risks associated with both structural fire and wildfire. Specifically, best management practices recommended for management of hazardous values include: 1) incorporating FireSmart planning and setback requirements for all infrastructure in this category; 2) maintaining emergency fuel/propane emergency shut off procedures to be enacted immediately and efficiently in the event of an approaching wildfire or ember shower; and 3) reducing hazardous materials in the wildland urban interface.

**Table 6. Hazardous Infrastructure Identified in CWPP field visits.**

Critical Infrastructure Type	Location
North Vancouver Substation ** (7)	Southeast intersection of E 4th Street and St. Davids Avenue
NVR - North Vancouver -> NOR - Norgate - 60L063 (69 Volts)	Runs from the west to the east of the CNV along 3rd Street
CAP - Capilano -> WLT - Walters - 60L064 (69 Volts)	Runs from the west to the east of the CNV along east 21st Street and east 16th Street
WLT - Walters -> NVR - North Vancouver - 60L061 (69 Volts)	Runs west to east through the AOI along east 4th Street
WLT - Walters -> NVR - North Vancouver - 60L062 (69 Volts)	Runs west to east through the AOI along east 3rd Street
Intermediate FortisBC Transmission Line - NVN WVN IP-SEG16; Permit ID# 2674	Runs along Jones Ave. north from McEwen Park
Intermediate FortisBC Transmission Line - NVN WVN IP-SEG18; Permit ID# 3063	Runs along W 6th St. and east along E 7th St.

*\*\* Place names with two asterisks have multiple structures within the building complex*

## SECTION 4: WILDFIRE THREAT AND RISK

This section summarizes the factors that contribute to and were assessed in the determination of wildfire threat around the community. These factors include the natural fire regime and ecology, the Provincial Strategic Threat Analysis, and the local wildfire risk analysis completed for the AOI.

The relationship between wildfire hazard, threat and risk can be demonstrated in the following example. If a fire (the hazard) ignites and spreads towards a community, the wildfire can become a threat to life and property, with an associated risk of loss, where:

$$\text{Wildfire risk} = \text{Probability} \times \text{Consequence}$$

and:

- **Wildfire risk** is defined as the potential losses incurred to human life, property and critical infrastructure within a community in the event of a wildfire;
- **Probability** is the likelihood of fire occurring in an area and is related to the susceptibility of an area to fire (fuel type, climate, probability of ignition etc.); and
- **Consequences** refers to the repercussions associated with fire occurrence in an area (higher consequences are associated with densely populated areas, or areas of high biodiversity).

## 4.1 FIRE REGIME, FIRE WEATHER AND CLIMATE CHANGE

The ecological context of wildfire and the role of fire in the local ecosystem under historical conditions is an important basis for understanding current conditions and the potential implications of future scenarios on wildfire threat to the community. Historical conditions may be altered by the interruption of the natural fire cycle (i.e., due to fire exclusion, forest health issues, human development) and/or climate change.

### FIRE REGIME AND FIRE WEATHER

#### *Historic Fire Regime*

The Biogeoclimatic Ecosystem Classification (BEC) system describes zones by vegetation, soils, and climate. Regional subzones are derived from relative precipitation and temperature. Subzones may be further divided into variants based upon climatic variation and the resulting changes in the vegetative communities; variants are generally slightly drier, wetter, snowier, warmer, or colder than the climate of the regional subzone.<sup>34</sup> Biogeoclimatic subzones are categorized into five Natural Disturbance Types (NDTs) occurring in BC NDTs are based on the size and frequency of natural disturbances (largely fire) that historically occur within the subzone. NDTs have influenced the vegetation dynamics and ecological functions and pathways that determine many of the characteristics of natural systems. The physical and temporal patterns, structural complexity, vegetation communities, and other resultant attributes should be used to help design fuel treatments, and where possible, to help ensure that treatments are ecologically and socially acceptable.<sup>35</sup> The AOI is characterized by the BEC subzones and associated NDTs as outlined in Table 7 and illustrated in Map 3.

**Table 7. BEC zones and natural disturbance types found within the AOI<sup>36</sup>.**

<sup>34</sup> Retrieved from Province of BC BECWeb:

<https://www.for.gov.bc.ca/HRE/becweb/resources/classificationreports/subzones/index.html>

<sup>35</sup> Province of British Columbia, 1995. Biodiversity Guidebook, s.l.: s.n.

<sup>36</sup> MFLNRORD BEC Map (DataBC)

Biogeoclimatic Zone	Natural Disturbance Type	Area (ha)	Percent (%)
CWHdm: Coastal Western Hemlock, Dry Maritime	NDT2	1,192.44	100%

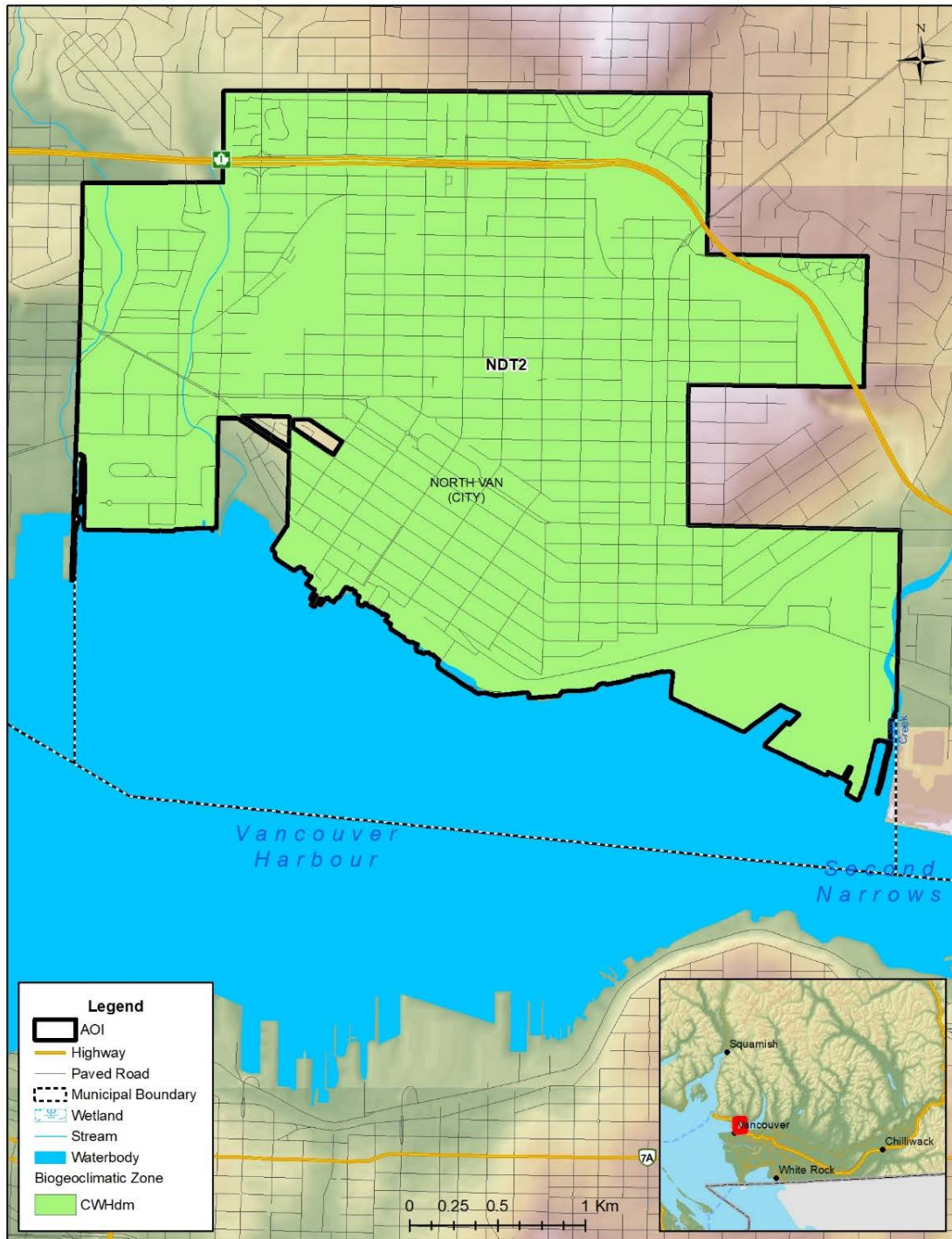
The CNV AOI is entirely dominated by the Coastal Western Hemlock, dry maritime (CWHdm) BEC Zone which makes up 100% of the total administrative area. This BEC Zone is characterized by a Type 2 Natural Disturbance Type (NDT2) which is defined by forest ecosystems historically having infrequent stand initiating events as described in more detail below:

**Natural Disturbance Type 2** is historically characterized by infrequent stand initiating events where fires are often of moderate size (20 to 1,000 ha) with a mean return interval of approximately 200 years. Many of these fires occur after periods of extended drought and produce extensive areas of mature forest with intermixed patches of younger forests. Although the fire frequency is not high and fires are generally not large, pre-planning and preparation are essential to reduce the negative impacts of a wildfire.

While natural disturbance regimes are useful for describing the historical disturbance pattern typical for an area, fire history is complex and highly variable across space and time for many ecosystems<sup>37</sup>. Furthermore, forest health issues, human development and natural events contribute to changes in the fire regime, forest attributes and fuel hazard around the community. The CNV is a highly human-modified urbanized landscape with sporadic patches of parks, greenways and creek ravines representative of natural systems and forest ecosystems.

<sup>37</sup>Hall, E. 2010. Maintaining Fire in British Columbia's Ecosystems: An Ecological Perspective. Report submitted to the Wildfire Management Branch, Ministry of Forests and Range.





**Map 3. Biogeoclimatic Zones and natural disturbance regimes within the AOI.**



### Forest Health Issues

The Coast Forest Health Overview outlines forest health issues present within the Fraser TSA.<sup>38</sup> This overview and forest health strategy (2015-2017) outlines several forest health issues that are most prevalent within the Fraser Timber Supply Area which encompasses the AOI. Abiotic factors of concern are drought and windthrow. Pests of particular concern are the Douglas-fir beetle (*Dendroctonus pseudotsugae*), forest tent caterpillar (*Malacosoma disstria*), and the parasitic plant western hemlock dwarf mistletoe (*Arceuthobium tsugense*). Ranging from minimal amounts to high-severity patches, western hemlock dwarf mistletoe-infected trees have the potential to significantly impact fuel loading throughout the AOI as mortality and tree failure occurs. Diseases of particular concern include laminated root disease (*Phellinus sulphureus*) and Armillaria root disease (*Armillaria ostoyae*). Both laminated and armillaria root rot can also result in high levels of windthrow due to the destabilization of infected trees' root systems. Sporadic outbreaks of western hemlock looper (*Lambdina fuscicollis*) have occurred in the south coast; however, occurrences of this pest have declined in recent years, although forest land managers are noting a greater incidence of the foliar disease Swiss needle cast (*Rhabdochile pseudotsugae*) on Douglas-fir. These forest health factors may have implications for the level of surface fuel accumulation in affected stands, as well as access and working conditions for fire fighters in the event of wildfire.

The occurrence of invasive plant species such as Himalayan blackberry (*Rubus armeniacus*), English holly (*Ilex aquifolium*), English ivy (*Hedera helix*) and Scotch broom (*Cytisus scoparius*) were noted in low-to-high amounts in interface forest stands and varied likely due to the time since disturbance and level of maintenance (*i.e.* areas recently cleared or with soil disturbance had higher levels of invasive plant species establishment and encroachment). The incidence and spread of invasive species were directly correlated to greenwaste dumping in natural areas and parks behind homes. If deemed necessary, and in conjunction with work completed by the Engineering, Parks and Environment Dept, the removal of invasive species should occur concurrently with fuel treatments to ensure cost efficiencies and improve the success of ecosystem restoration work. Site monitoring should occur post-treatment to evaluate treatment efficacy and assess further mitigation requirements.

**RECOMMENDATION #11:** The City's Engineering, Parks & Environment department should review the findings from its Invasive Plant Management Strategy and the 2020 Invasive Plant Inventory Update to assess implementation progress and success. This Update should identify potential fuel loading issues along with forest structure attributes to determine future invasive plant maintenance strategies or management requirements. If fuel treatments will occur, address invasive species management during implementation in the WUI, in order to improve forest resilience and promote ecological restoration of degraded sites.

<sup>38</sup> 2015-17 Coastal Timber Supply Areas Forest Health Overview. 2015. Retrieved from: [https://www.for.gov.bc.ca/ftp/HFP/external/!publish/Forest\\_Health/TSA\\_FH\\_Strategies/2015-Coast%20FH%20Strategy.pdf](https://www.for.gov.bc.ca/ftp/HFP/external/!publish/Forest_Health/TSA_FH_Strategies/2015-Coast%20FH%20Strategy.pdf)

### ***Human Development and Natural Events***

Since the establishment of the City of North Vancouver, there have been numerous anthropogenic and natural changes that have occurred on the landscape. Most of these changes can be described as residential, infrastructure/institutional, and industrial or commercial development. This process entails land clearing and road building that cleared much of the intact forest. The overall implication of human development and ongoing anthropogenic disturbance with respect to wildfire, is an increase in human ignition potential with a decrease in hazardous fuels cover, as land clearing for human development generally increases the non-fuel and O 1a/b fuel types (see Appendix O for a description of fuel types). Alternatively, there is an increase in hazardous woody fuel accumulations in parks and natural areas as they are relatively closed systems and separated from the larger forested landscape.

The following is a list of notable changes observed within the AOI and a description of associated implications regarding wildfire behaviour.

- Residential land development since the mid-19th century following wide-spread settlement by early pioneers engaging in resource-based activities. This has generally resulted in the creation and expansion of the wildland-urban interface for those residences in close proximity to parks, natural areas, and greenways (see Section O), and an increase in fire suppression to protect people, homes and property in an ecosystem that had a historic fire interval of 200 years. The CNV's favourable climate, high recreational and landscape values, and proximity to Vancouver and the North Shore mountains continue to make it a desirable place to move to live, work or retire.
- With a densifying population, the use of trails within the CNV has increased in recent years. Increased recreational use of forested areas has implications for human caused ignitions, particularly when these activities are undertaken during the hot and dry summer months.
- Furthermore, backyard barbeque usage and greenwaste dumping especially behind homes located adjacent to greenbelts and steep creeks and ravines have the potential to significantly increase human caused ignitions that may lead into larger interface fires.
- Nevertheless, the increase in green spaces and open parks that are characterized by well maintained (regularly mowed and watered) grass and turf fields have the potential to reduce wildfire risk within communities.

### ***Fire Weather Rating***

Fire Weather refers to weather conditions that are conducive to fire. These conditions determine the fire season, which is the annual period(s) of the year during which fires are likely to start, spread, and cause sufficient damage to warrant organized fire suppression.

The Canadian Forestry Service developed the Canadian Forest Fire Danger Rating System (CFFDRS) to assess fire danger and potential fire behaviour. Fire Danger Classes provide a relative index of the ease of ignition and the difficulty of suppression. A network of fire weather stations is maintained during the fire season by MFLNRORD and the recorded data are used to determine fire danger, represented by Fire Danger Classes, on forestlands within a community. The information can be obtained from the BCWS

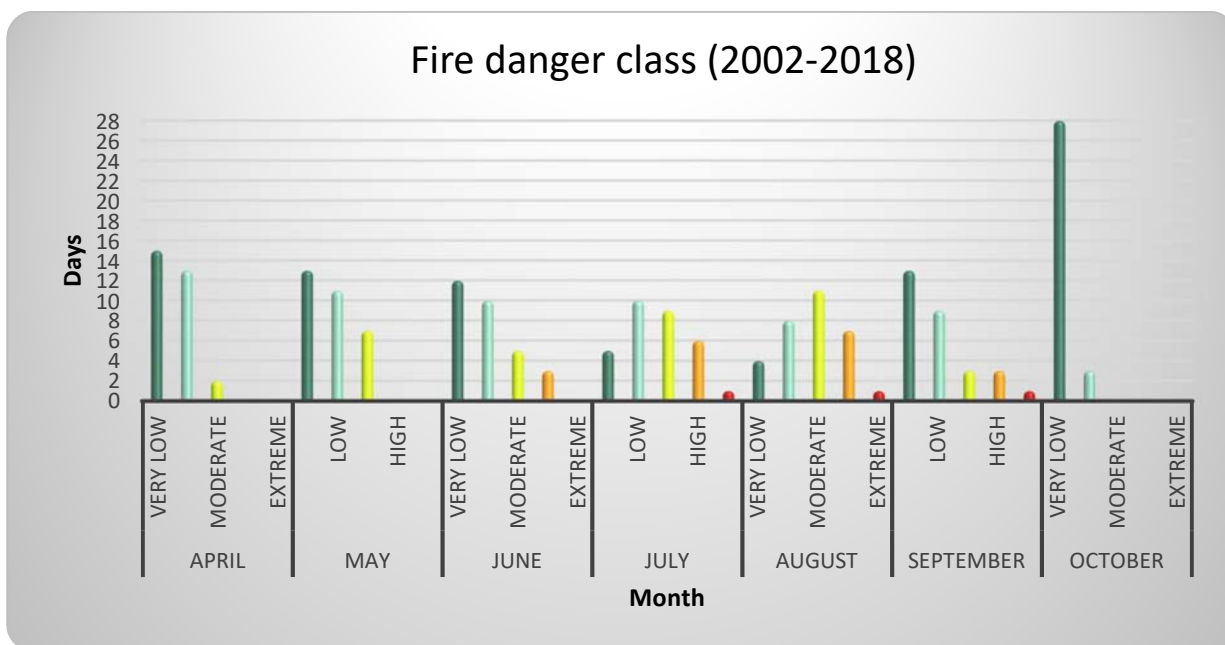
and is most commonly utilized by municipalities and regional districts to monitor fire weather, restrict high risk activities when appropriate, and to determine hazard ratings associated with bans and closures.

The BC *Wildfire Act* [BC 2004] and *Wildfire Regulation* [BC Reg. 38/2005], which specify responsibilities and obligations with respect to fire use, prevention, control and rehabilitation, and restrict high risk activities based on these classes. Fire Danger Classes are defined as follows:

- **Class 1 (Very Low):** Fires are likely to be self-extinguishing and new ignitions are unlikely. Any existing fires are limited to smoldering in deep, drier layers.
- **Class 2 (Low):** Creeping or gentle surface fires. Ground crews easily contain fires with pumps and hand tools.
- **Class 3 (Moderate):** Moderate to vigorous surface fires with intermittent crown involvement. They are challenging for ground crews to handle; heavy equipment (bulldozers, tanker trucks, and aircraft) are often required to contain these fires.
- **Class 4 (High):** High-intensity fires with partial to full crown involvement. Head fire conditions are beyond the ability of ground crews; air attack with retardant is required to effectively attack the fire's head.
- **Class 5 (Extreme):** Fires with fast spreading, high-intensity crown fire. These fires are very difficult to control. Suppression actions are limited to flanks, with only indirect actions possible against the fire's head.

It is important for the development of appropriate prevention programs that the average exposure to periods of high fire danger is determined. 'High fire danger' is considered as Danger Class ratings of 4 (High) and 5 (Extreme). Danger class days were summarized to provide an indication of the fire weather in the AOI. Considering fire danger varies from year to year, historical weather data can provide information on the number and distribution of days when the AOI is typically subject to high fire danger conditions, which is useful information in assessing fire risk.

Figure 1 displays the average frequency of Fire Danger Class days between the months of April and October. The data summarized comes from the Capilano weather station (daily data for the years 2002 – 2018). According to Figure 1, the months with the highest average number of 'high' fire danger class days are July and August. Historically, 'high' fire danger days also occur in June and September. The average number of 'extreme' fire danger class days is highest in July, August, and September. July historically has the highest number of days in the 'extreme' class when compared to June and September and August has the highest number of 'high' danger class days.



**Figure 1. Average number of danger class days for the Capilano weather station. Summary of fire weather data for the years 2010 - 2019.**

## CLIMATE CHANGE

Climate change is a complex aspect to consider in wildfire management planning. Numerous studies outline the nature of climate change impacts on wildland fire across Canada, and globally.<sup>39</sup> Current climate change projections point to a warmer and drier environment and shifts in vegetation with the following implications in some areas of the province:

- Increased disturbances due to insects and disease
- Increased forest fire frequency
- Longer and more intense wildfire seasons
- Increased number of high and extreme fire danger days for an average year.

As a result, some existing forests have an increased probability of more frequent, intense and more difficult to control wildfires that are likely to result in increased tree mortality, detrimental impacts to soils and hydrology, and increased threat to the community and interface areas. Although there are uncertainties regarding the extent of these impacts on wildfire, it is clear that the frequency, intensity, severity, duration and timing of wildfire and other natural disturbances is expected to be altered significantly with the changing climate.<sup>40</sup> Despite the uncertainties, trends within the data are visible.

<sup>39</sup>Flannigan, M.D et al. 2009. Implications of changing climate for global wildland fire. *International Journal of Wildland Fire* 18, 483-507.

<sup>40</sup>Dale, V., L. Joyce, S. McNulty, R. Neilson, M. Ayres, M. Flannigan, P. Hanson, L. Irland, A. Lugo, C. Peterson, D. Simberloff, F. Swanson, B. Stocks, B. Wotton. *Climate Change and Forest Disturbances*. *BioScience* 2001 51 (9), 723-734.

As outlined in *Climate 2050 Strategic Framework – Metro Vancouver*<sup>41</sup>, the following climate projections were made:

- Year round increases in temperature, with the greatest increases occurring in the summer months (daytime and nighttime temperatures) and fewer winter days with frost and ice;
- Decline in summer precipitation, with longer dry spells, and extended drought periods;
- Increase in winter precipitation by 5%, with the majority of the rainfall occurring in the fall and winter;
- More extreme precipitation events, with increased rainfall during the wettest days of the year and increased frequency in extreme rainfall events; and
- Decreasing snowpack, as increasing temperatures may cause deep spring snow-packs to melt sooner and faster, resulting in a 50% reduction compared to the present day.

An increased frequency of natural disturbance events is also expected to occur as a result of climate change with coincident impacts to ecosystems. These include: storm events, including catastrophic blowdown and damage to trees from snow and ice; wildfire events and drought. Furthermore, an Increase in winter precipitation may result in slope instability, mass wasting, and increased peak flows (loss of forest cover from fire or other disturbance may increase the chance of mass wasting).

Insects and disease occurrence of Douglas-fir beetle (*Dendroctonus pseudotsugae*), spruce beetle (*Dendroctonus rufipennis*) and Swiss needle cast (*Phaeocryptopus gaeumannii*) may increase; outbreaks of western hemlock looper (*Lambdina fiscellaria lugubrosa*) may also increase.<sup>42</sup> Other research regarding the intricacies of climate change and potential impacts on wildfire threats to Canadian forests has found that: firstly, fuel moisture is highly sensitive to temperature change and projected precipitation increases will be insufficient to counteract the impacts of the projected increase in temperature. Results conclude that future conditions will include drier fuels and a higher frequency of extreme fire weather days.<sup>43</sup> Secondly, the future daily fire severity rating (a seasonally cumulative value) is expected to have higher peak levels and head fire intensity is expected to increase significantly in Western Canada. A bi-modal (spring-late summer) pattern of peak values may evolve to replace the historical late summer peak which is the current norm.<sup>44</sup> Fire season severity seems to be sensitive to increasing global temperatures; larger and more intense fires are expected and fire management will become more challenging.<sup>45</sup> Thirdly, Future climatic conditions may be more suitable for, or give

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<sup>41</sup>Metro Vancouver, 2019. Climate 2050 Strategic Framework. Retrieved From: [http://www.metrovancouver.org/services/air-quality/AirQualityPublications/AQ\\_C2050-StrategicFramework.pdf](http://www.metrovancouver.org/services/air-quality/AirQualityPublications/AQ_C2050-StrategicFramework.pdf)

<sup>42</sup> MFLNRO, 2016. BC Provincial Government extension note 'Adapting natural resource management to climate change in the West and South Coast Regions'. Accessed online at: <https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/nrs-climate-change/regional-extension-notes/coasten160222.pdf>

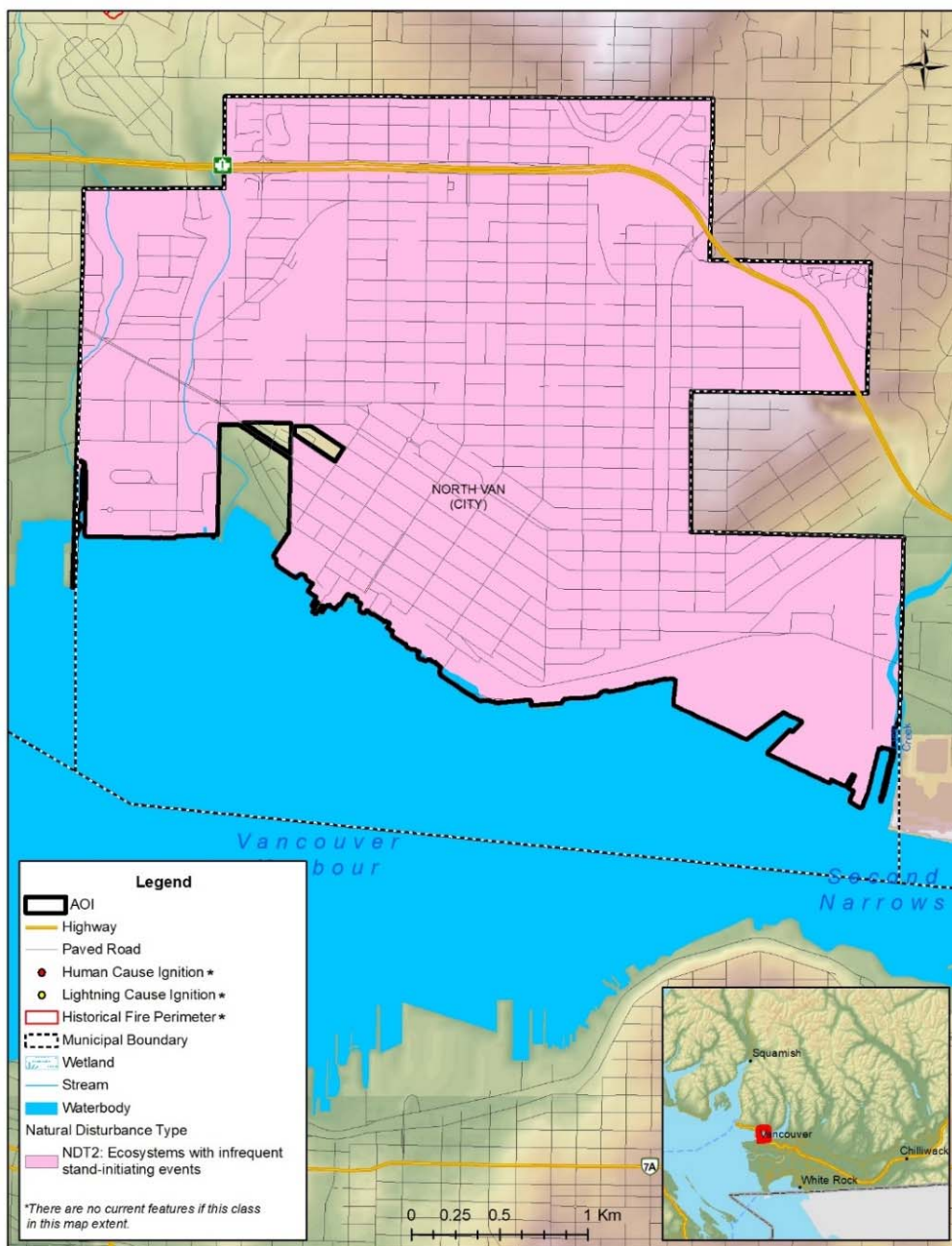
<sup>43</sup> Flannigan, M.D., B.M. Wotton, G.A. Marshall, W.J. deGroot, J. Johnston, N. Jurko, A.S. Cantin. 2016. *Fuel moisture sensitivity to temperature and precipitation: climate change implications*. Climatic Change (2016) 134: 59 -71. Accessed online at <https://link.springer.com/content/pdf/10.1007%2Fs10584-015-1521-0.pdf>.

<sup>44</sup>deGroot, W. J., M. D. Flannigan, A.S. Cantin. 2013. *Climate change impacts on future boreal fire regimes*. Forest Ecology and Management. 294: 35 -44.

<sup>45</sup> Pacific Climate Impacts Consortium (PCIC). Accessed from: [https://www.pacificclimate.org/sites/default/files/publications/Climate\\_Summary-South\\_Coast.pdf](https://www.pacificclimate.org/sites/default/files/publications/Climate_Summary-South_Coast.pdf)



competitive advantage to, new species of plants, including invasive species.<sup>46</sup> In summary, climate scientists expect that the warming global climate will trend towards wildfires that are increasingly larger, more intense and difficult to control. Furthermore, it is likely that these fires will be more threatening to WUI communities due to increased potential fire behaviour, fire season length, and fire severity.



**Map 4. Fire Regime, Ecology and Climate Change.**

<sup>46</sup> All projected change values are the ensemble median - a mid-point value, chosen from a PCIC standard set of Global Climate Model (GCM) projections.



## 4.2 PROVINCIAL STRATEGIC THREAT ANALYSIS

The Provincial Strategic Threat Analysis (PSTA) evaluates multiple data sets to provide a coarse (high-level) spatial representation of approximate relative wildfire threats across BC. It provides a starting point to assess the local wildfire threat. Three inputs are combined to create the PSTA wildfire threat analysis component.<sup>47</sup>

- 1) **Historic fire density:** represents the ignition and fire spread potential based upon historic patterns and fire density weighted by fire size (larger fire perimeters were given a higher weight in order to reflect the greater cost and damage usually associated with larger fires).
- 2) **Spotting impact:** represents the ability of embers or firebrands from a burning fire to be sent aloft and start new fires in advance of the firefront, or outside of the fire perimeter. Spotting is most associated with high intensity crown fires in coniferous fuels and structure losses. For the wildfire threat analysis, the spotting analysis is based on estimating the threat to a given point on the landscape from the fuels surrounding it, up to a distance of 2 km. Spotting distances greater than 2 km are rare and unpredictable.
- 3) **Head fire intensity (HFI):** represents the intensity (kW/m) of the fire front. HFI is correlated with flame length and fire behaviour. The greater the fire intensity (kW/m), or HFI and fire intensity class, the more extreme the fire behaviour is likely to be and the more difficult the fire will likely be to suppress. The HFI used in the wildfire threat analysis was developed using the 90<sup>th</sup> percentile fire weather index value.

The final wildfire threat analysis value was developed through an average weighting process of the aforementioned three layers.<sup>48</sup> The values were then separated into 10 classes (1 – 10) which represent increasing levels of overall fire threat (the higher the number, the greater the fire threat); threat class 7 is considered the threshold. Threat classes of 7 and higher are locations where the threat is severe enough to potentially cause catastrophic losses in any given fire season, when overlapping with values at risk. Classes were grouped into the following general threat class descriptions: low (1 – 3); moderate (4 – 6); high (7 – 8); and, extreme (9 – 10).

There are considerable limitations associated with the PSTA wildfire threat analysis component based upon the accuracy of the source data and the modelling tools, the most notable being:

- Limited accuracy and variability of the fire history point data;
- Sensitivity to fuel type and the associated limitations of using fuel type approximations for fire behaviour modelling; and,

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<sup>47</sup>BC Wildfire Service. 2015. *Provincial Strategic Threat Analysis 2015 Wildfire Threat Analysis Component*. Retrieved from: [https://www.for.gov.bc.ca/ftp/!Project/WildfireNews/PSTA/Provincial\\_Strategic\\_Threat\\_Analysis\\_PSTA\\_2015\\_REPORT.pdf](https://www.for.gov.bc.ca/ftp/!Project/WildfireNews/PSTA/Provincial_Strategic_Threat_Analysis_PSTA_2015_REPORT.pdf). Accessed January 9, 2018.

<sup>48</sup>Weighting of the three PSTA wildfire threat analysis components: Fire density 30%; HFI 60%; spotting impact 10% (water bodies were automatically given a value of 'no threat' [-1])



- 90<sup>th</sup> percentile rating for HFI, which represents a near worst-case scenario which may be artificial in some circumstances.

Consequently, the PSTA is complemented by a finer scale local wildfire threat analysis considering local factors to improve the wildfire threat assessment. The key steps to completing the local wildfire threat analysis and a detailed assessment of the local wildfire threat are described in Section 4.3 and

DRAFT

## Appendix A – Local Wildfire Threat Process.

The fire threat ratings from the 2018 PSTA are summarized in Table 8. In summary, 22% of the AOI is categorized as either private land or private managed forest land and has no data for wildfire threat in the PSTA dataset. Low threat areas cover 70% of the AOI and water covers 1% of the total study area. Approximately 6% of the AOI is categorized as having a moderate wildfire threat rating in the provincial Wildfire Threat Analysis. High and extreme threat rating covers less than 1% of the study area, likely due to the heavily developed and urbanized nature of the CNV.

**Table 8. Overall PSTA Wildfire Threat Analysis for the study area (rounded to the nearest hectare).**

Threat Class	Area (ha)	Threat Class Description	Percent of AOI
-3	268	No Data (Private Land)	22%
-2	0	No Data (Private Managed Forest Land)	0%
-1	10	Water	1%
0	0	No Threat	0%
1	101	Low	70%
2	739		
3	0		
4	3	Moderate	6%
5	72		
6	0		
7	0	High	0%
8	0		
9	0	Extreme	0%
10	0		
<b>Total</b>	<b>1,192</b>	<b>-</b>	<b>100%</b>

## FIRE HISTORY

The following PSTA fire ignition data is available from 1950-2018 and fire perimeter data is available from 1919-2019 for the area. It was reported from BCWS (personal communication) that most fire activity in the City has occurred after the lifting of fire bans (the fire bans are effective and change human behaviour). Locally, BCWS prevention activity is focused on open fires and mechanical ignition sources, while smoking and lightning caused ignitions are of lower concern.

Based on the provincial PSTA data there have been zero fire occurrences within the AOI. There have however been a number of historical fire ignitions and polygons which have occurred within the DNV which surrounds the CNV.

## 4.3 LOCAL WILDFIRE THREAT ASSESSMENT

The local wildfire threat assessment process includes several key steps as outlined in

Appendix A – Local Wildfire Threat Process and summarized as follows:

- Fuel type attribute assessment, ground truthing/verification and updating as required to develop a local fuel type map
- (Appendix O).
- Consideration of the proximity of fuel to the community, recognizing that fuel closest to the community usually represents the highest hazard (Appendix A-2).
- Analysis of predominant summer fire spread patterns using wind speed and wind direction during the peak burning period using ISI Rose(s) from BCWS weather station(s) (Appendix A-3). Wind speed, wind direction, and fine fuel moisture condition influence wildfire trajectory and rate of spread.
- Consideration of topography in relation to values (Appendix A-4). Slope percentage and slope position of the value are considered, where slope percentage influences the fire's trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill.
- Stratification of the WUI according to relative wildfire threat based on the above considerations, other local factors and field assessment of priority wildfire risk areas.

WUI Threat Assessments were completed over five field days in June 2020, in conjunction with verification of fuel types (see Appendix C for WUI Threat Assessment worksheets and photos). WUI Threat Assessments were completed in interface (i.e., abrupt change from forest to urban development) areas of the study area to support development of priority treatment areas, and in order to confidently ascribe threat to polygons which may not have been visited or plotted, but which have similar fuel, topographic, and proximity to structure characteristics to those that were.

Field assessment locations were prioritized based upon:

- PSTA wildfire threat analysis class - Field assessments were clustered in those areas with wildfire threat analysis classes of 6 or higher.
- Proximity to values at risk – Field assessments were clustered in the interface, as well as around critical infrastructure.
- Prevailing fire season winds – More field time was spent assessing areas upwind of values at risk.
- Slope position of value – More field time was spent assessing areas downslope of values at risk. Similarly, values at top of slope or upper third of the slope were identified as particularly vulnerable.
- Land ownership – Crown and municipal land was the main focus of field assessments.
- Local knowledge – Areas identified as hazardous, potentially hazardous, with limited access / egress, or otherwise of particular concern as vulnerable to wildfire, as communicated by local fire officials and BCWS zone staff.
- Observations – Additional areas potentially not recognized prior to field work were visually identified as hazardous and assessed during the week.

A total of 22 WUI threat plots were completed and over 300 other field stops (e.g., qualitative notes, fuel type verification, and/or photograph documentation) were made across the AOI (see Appendix F for WUI threat plot locations).

Using the verified and updated fuel types (Appendix 0, Map 7) combined with field wildfire threat assessments and office-based analysis (Appendix 0 to A-4), local wildfire threat for the study area was updated (Table 9). Using the Wildfire Threat Assessment methodology<sup>49</sup>, there are two main components of the threat rating system: the wildfire behaviour threat class (fuels, weather and topography sub-components) and the WUI threat class (structural sub-component).

The result of the analysis shows that the study area is composed of a majority of low threat class stands and some moderate threat class stands. The widespread occurrence of lower threat class stands is due to the anthropogenic disturbances that have historically occurred and persist on the land base. In summary, the study area is made up of roughly 3% high threat class rating, 3% moderate, and 57% low. The remaining 37% of the AOI is classified as private land and as such has not been allocated fire threat data. Assessment of fire threat on private land is outside the scope of this CWPP.

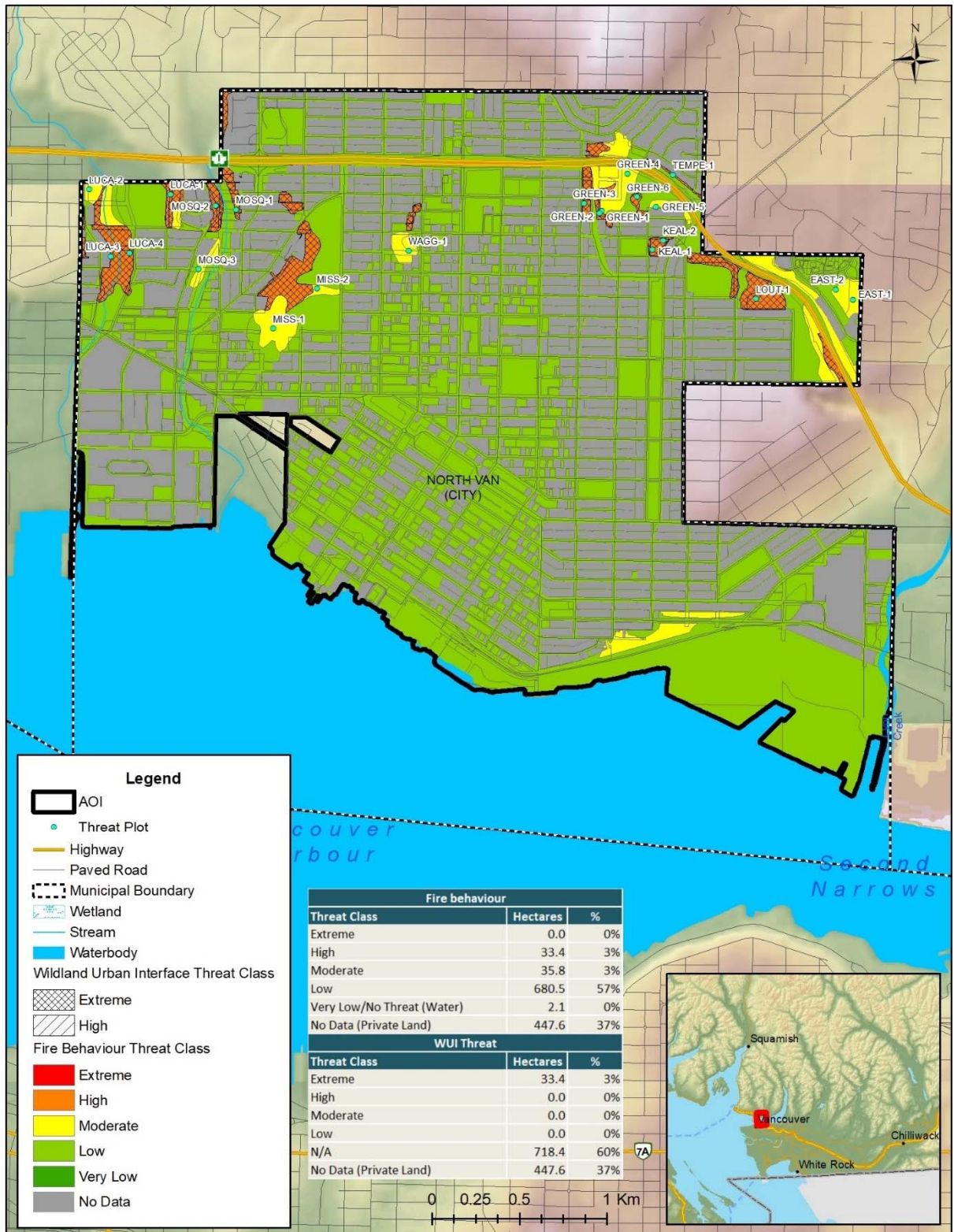
The areas that represent the highest wildfire behavior potential and greatest risk to values within the CNV are areas of high and extreme threat class surrounding steep creeks and ravines and large isolated patches of mature forest adjacent to homes (Map 5). For detailed field data collection and spatial analysis methodology for the local threat assessment and classification, see Appendix H – WUI Threat Assessment Methodology.

**Table 9. Fire behaviour threat summary for the study area.**

Wildfire Behaviour Threat Class	2018 PSTA Data	2020 CWPP
	Percent of AOI	Percent of AOI
Extreme	0.0%	0.0%
High	0.0%	2.8%
Moderate	6.3%	3.0%
Low	70.4%	56.7%
Very Low/ No Threat (Water)	0.8%	0.2%
No Data (Private Land)	22.5%	37.3%

<sup>49</sup>Using the 2012 WUI Wildfire Threat Assessments in B.C. Guide(<https://www.ubcm.ca/assets/Funding~Programs/LGPS/SWPI/Resources/swpi-WUI-WTA-Guide-2012-Update.pdf>)





Map 5. Local Fire Behaviour Threat Rating and WUI Threat Rating.



## SECTION 5: RISK MANAGEMENT AND MITIGATION FACTORS

This section outlines a wildfire risk management and mitigation strategy that accounts for fuel types present within the community, local ecology, hazard, terrain factors, land ownership, and capacity of local government and First Nations. Wildfire risk mitigation is a complex approach that requires cooperation from applicable land managers/owners, which includes all level of governments (local, provincial, federal and First nations), and private landowners. The cooperative effort of the aforementioned parties is crucial in order to develop and proactively implement a wildfire risk mitigation program. Development of a successful wildfire risk mitigation strategy is dependent on hazard identification within the community, which accounts for forest fuels, high risk activities, frequency and type of human use, and other important environmental factors. The resulting wildfire risk management and mitigation strategy aims to build more resilient communities and produces strategic recommendations or actionable items that can be categorized as follows:

1. Fuel management opportunities to reduce fire behaviour potential in the WUI;
2. Applications of FireSmart approaches to reduce fire risk and impacts within the community; and,
3. Implementation of communication and education programs to inform and remind the public of the important role it plays in reducing fire occurrence and impacts within its community.

### 5.1 FUEL MANAGEMENT

Fuel management, also referred to as vegetation management or fuel treatment, is a key element of wildfire risk reduction. For the purpose of this discussion, fuel management generally refers to native vegetation/fuel modifications in forested areas greater than 30 m from homes and structures. However, given the urbanized and high structural density of the CNV, the fuel treatment zone can be considered in natural areas, parkland, and greenways within the Home Ignition Zone 0-300m, outside the bounds of private property. (priority Zone 3 and beyond).

The objectives for fuel management are to:

- Reduce wildfire threat on private and public lands nearest to values at risk; and,
- Reduce fire intensity, rate of spread, and ember/spot fire activity such that the probability of fire containment increases and the impacts on the forested landscape and the watershed are reduced (create more fire resilient landscapes).

Ideally, these objectives will enhance protection to homes and critical infrastructure. Caveats associated with the statement include: 1) wildfire behaviour will only be reduced if the fire burns in the same location as treatments occurred, and 2) protection of homes and critical infrastructure is highly dependent upon the vulnerability to ignition by embers (ignition potential) directly around the value at risk. In summary, fuel treatments alone should not be expected to protect a community from the effects of wildfire, namely structure loss.

Fuel treatments are designed to reduce the possibility of uncontrollable crown fire through the reduction of surface fuels, ladder fuels and crown fuels. However, the degree of fire behaviour reduction achieved by fuel management varies by ecosystem type, current fuel type, fire weather, slope and other

variables and it is important to note that it does not stop wildfire. It should also be noted that although fuel treatments have the potential to decrease potential fire intensity and the likelihood of extreme fire behaviour, they can also increase surface wind speeds and potentially reduce fuel moisture content by opening up the canopy and therefore have the potential to increase the speed at which a fire may spread across the landscape. Those undertaking the planning and implementation of fuel treatments should acknowledge this and plan accordingly.

Fuel management on Crown lands may be funded by the Union of BC Municipalities (UBCM), through the Community Resiliency Investment (CRI) Program). Fuel management on provincial Crown land only, may be funded by the new Crown Land Wildfire Risk Reduction (WRR) funding category<sup>50</sup> under the CRI Program. The CRI Program (formerly the Strategic Wildfire Prevention Initiative or SWPI) also provides funding for selected FireSmart activities and planning on private land.<sup>51</sup> The best approach to mitigate fuels on private lands is to urge private landowners to comply with FireSmart guidelines (as described below in Section 5.2) and to conduct appropriate fuel modifications using their own resources (CRI program funding may be available). In general, when considering fuel management to reduce fire risk, the following steps should be followed:

- Carefully anticipate the likely wildfire scenarios to properly locate fuel modification areas;
- Acquire an understanding of local ecological, archaeological, and societal values of the site;
- Prescriptions should be developed by a qualified professional forester working within their field of competence;
- Public consultation should be conducted during the process to ensure community support;
- Potential treatment areas and draft prescriptions should be referred to First Nations with sufficient time for meaningful review and input (30-45 days, preferably);
- Treatment implementation should weigh the most financially and ecologically beneficial methods of fulfilling the prescription's goals;
- Pre- and post-treatment plots should be established to monitor treatment effectiveness; and
- A long-term maintenance program should be in place or developed to ensure that the fuel treatment is maintained in a functional state.

The fuel treatment opportunities identified in this CWPP include the use of interface fuel breaks as defined in Section 0, to reduce the wildfire potential within and around the AOI. Potential treatment activities include surface fuel removal, thinning of stems (usually smaller diameter), stand conversion of tree vegetation from coniferous to deciduous, pruning, and chipping, or a combination of two or more of these activities. Stand conversion encourages forests with a higher proportion of deciduous trees, and has been shown to be effective at reducing wildfire potential in mixed-wood or conifer dominated

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<sup>50</sup> Crown Land WRR is a recently introduced category of CRI Program funding for risk reduction activities on provincial Crown Land effective 2020 that will be led by MFLNRORD (in partnership with local government and others) for wildfire risk reduction activities targeting provincially identified critical infrastructure, and treatment activities on provincial Crown land around communities.

<sup>51</sup> CRI FireSmart Community Funding & Supports – Program & Application Guide. 2020. Retrieved from: <https://www.ubcm.ca/assets/Funding~Programs/LGPS/CRI/cri-2020-program-guide.pdf>

stands. This approach generally involves the retention of broadleaf species (*i.e.* deciduous); and targeting the removal of conifer species by thinning small or suppressed tree stems to reduce ladder fuels and prevent tree crowns from overlapping and touching one another. and.

## PROPOSED TREATMENT UNITS

Funding opportunities from UBCM under the CRI Program will consider fire prevention activities on provincial Crown land and local government land.<sup>52</sup> Fire prevention activities on private land that may be funded under this program are related to FireSmart activities (including FireSmart planning and assessments, local rebate programs for completion of eligible FireSmart activities, and provision of off-site disposal of vegetation management debris).

The potential treatment areas represent moderate, high and extreme fire hazard areas which are close to values at risk (structures, infrastructure, or areas of high use during the fire season) or have been identified as landscape level fuel treatments and are located on provincial Crown or municipal land. *It should be noted that the location of proposed treatment units on these land ownership types does not imply that high and extreme hazard areas do not exist on private land within the AOI.* As stated in Section 5.1, mitigation approaches should also be pursued on private land where hazard exists, bearing in mind the different funding resources and objectives on this land type. Although the potential treatment areas have been ground-truthed during field work, additional refinement of these sites will be required when prescriptions are developed. Detailed site-level assessment will stratify treatment sites (including areas in the polygon that do not require treatment), identify values and constraints, and identify and engage all appropriate Provincial agencies, First Nations, and stakeholders. Eight recommended potential fuel treatments are outlined in Table 10 and displayed in Map 6. These fuel treatment opportunities include the use of interface fuel treatments as defined below.

### Fuel Treatment Types

The intent of establishing a fuel treatment is to modify fire behaviour and create a fire suppression option that is part of a multi-barrier approach to reduce the risk to values (e.g. structures). A fuel break in and of itself, is unlikely to stop a fire under most conditions. The application of appropriate suppression tactics in a timely manner with sufficient resources, is essential for a fuel break to be effective. Lofting of embers (*i.e.*, “spotting”) over and across a fuel break is a possibility (increasing with more volatile fuel types and fire weather) and has the potential to create spot fires beyond the fuel break that can expand in size and threaten values at risk. Spotting should be evaluated and treated to create conditions where extinguishment of spot fires is possible and FireSmart standards should be applied to structures and associated vegetation and other fuel to reduce the risk of structures igniting. Fuel treatments require periodic maintenance to retain their effectiveness.

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<sup>52</sup>This new funding program (up to \$50 million over three years) was initiated in 2018 as per recommendations from the 2017 BC Flood and Wildfire Review Report by Abbott and Chapman (<https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/bc-flood-and-wildfire-review-addressing-the-new-normal-21st-century-disaster-management-in-bc-web.pdf>). Program details are available on the UBCM’s website: <https://www.ubcm.ca/EN/main/funding/lgps/community-resiliency-investment.html>

## Interface Fuel Breaks

Fuel breaks on Crown or municipal land immediately adjacent to values are termed interface fuel breaks. These are designed to modify fire behaviour, create fire suppression options, and improve suppression outcomes. Interface fuel breaks are relatively small (approximately 100 meters wide) and when treated with appropriate fuel reduction measures can break the crown fire threshold and reduce the risk of a crown fire reaching values at risk. Treatment widths can be varied to allow for alignment and to take advantage of natural and human-constructed fire resilient features that enhance effectiveness. Surface fire spread across the fuel treatment and spotting across the fuel treatment, are both concerns and rely on suppression actions to be effective. In order to reduce potential fire intensity and spotting, fuel on private land between the interface fuel break and structures should be treated according to FireSmart vegetation management standards. Structures in interface areas should be constructed or retrofitted to FireSmart design standards. All of the proposed fuel treatments for the CNV are interface fuel breaks.

## Primary Fuel Break

Primary fuel breaks are located in strategic locations beyond the interface fuel treatments. Primary fuel breaks are designed to modify fire behaviour and create fire suppression options that reduce the risk of a crown fire reaching a community and/or adjacent private lands. Primary fuel breaks may be located to completely surround a community or be strategically placed upwind of communities and perpendicular to fire season winds. Primary fuel breaks have sufficient width and appropriate fuel reduction measures to break the crown fire threshold and reduce fire intensity such that overstory fire moves to the ground surface and spread rates are reduced. While there are no absolute standards for fuel break width or fuel manipulation in the literature, distances will vary based on fuel type, topography, and expected fire behaviour.<sup>53</sup> A 300-metre fuel break width is generally recommended. The spotting and fire suppression concerns with regards to primary fuel breaks are the same as the ones described for interface fuel breaks. No primary fuel breaks have been recommended as part of this CWPP, but the east-west BC Hydro transmission line alignment across the north central part of the AOI can be considered a primary fuel break if regular brushing, and removal of regenerating conifers, and woody surface debris accumulations occurs. In addition, flammable invasive species such as Scotch broom (*Cytisus scoparius*) should not be allowed to establish en-masse, nor should the biomass from woody perennials and shrubs accumulate as these represent flashy fuels. During field assessments the fuel types noted in the right-of-way included N (non-fuel), D-1/2 (deciduous), and M-1/2 (a mix of deciduous and coniferous with the coniferous component comprising 25% or 50%). These fuel types are considered low hazard.

**RECOMMENDATION #12:** Proceed with detailed assessment, prescription development, and treatment of hazardous units identified and prioritized in this CWPP. If and when operational fuel treatments are conducted within the AOI, treatment monitoring should be completed by a Qualified Professional in order to schedule the next set of maintenance activities (5 – 10 years out).

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<sup>53</sup> Agee, J.K., Bahro, B., Finney, M.A., Omi, P.N., Sapsis, D.B., Skinner, C.N., van Wagtenonk, J.W., Weatherspoon, C.P. The use of shaded fuelbreaks in landscape fire management. *Forest Ecology and Management*, 127 (2000), 55-66.

Table 10. Proposed Treatment Area Summary Table.

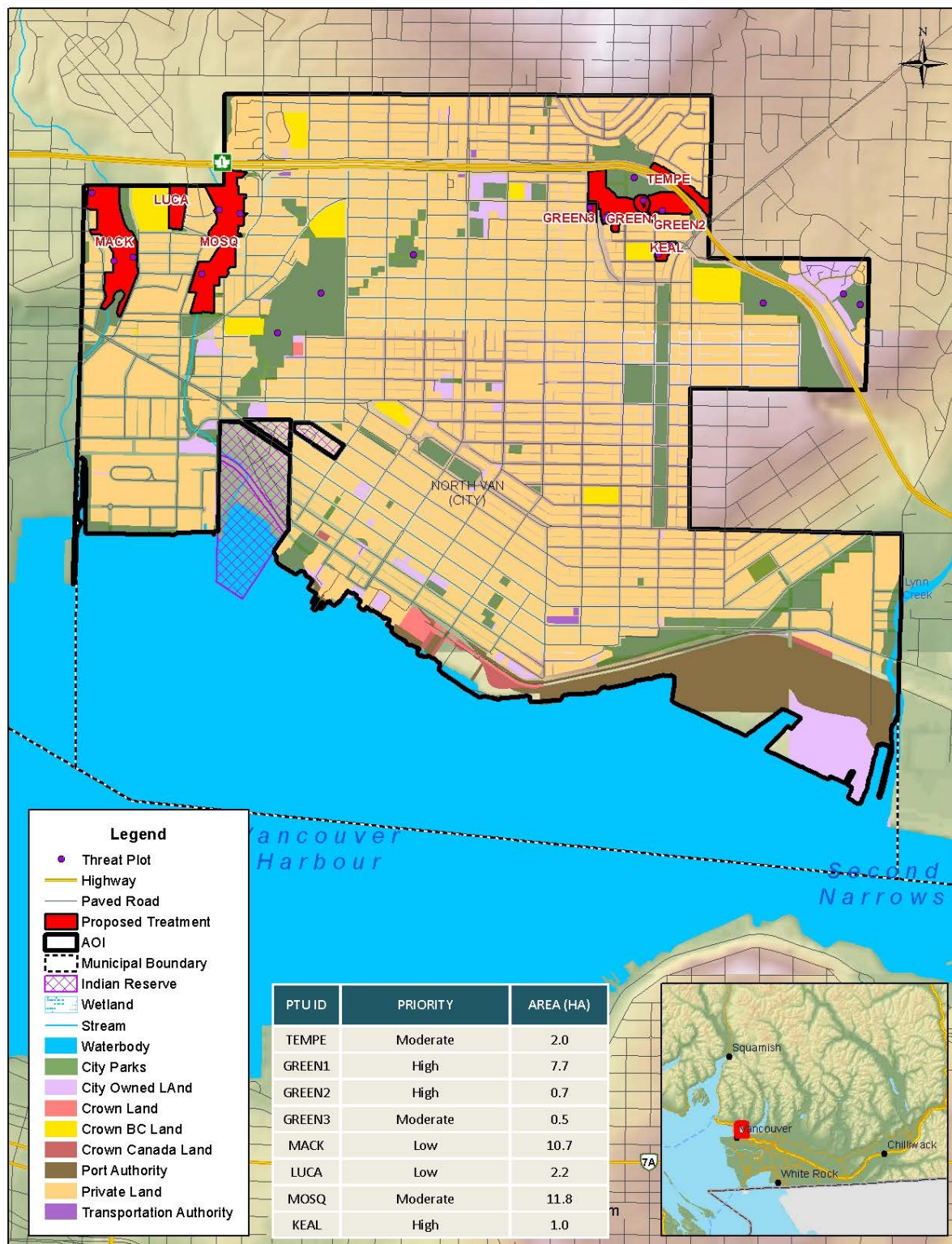
PTU #	Geographic Area	Priority	Total Area (ha)	Treatment Unit Type/ Objective	Local Fire Threat (ha)			Overlapping Values / Treatment Constraints*	Treatment Rationale
					Extreme / High	Mod	Low/Very Low		
*All PTUs fall within the Fraser TSA and are entirely overlapped by the Seymour-Capilano landscape unit which is a part of the Chilliwack Natural Resource District and is guided by the Lower Fraser Sustainable Resource Management Plan.									
**Due to the presence of archeological site occurrences within the AOI, an archeologist and all affected First Nations must be consulted with during prescription development and prior to implementation.									
1	Tempe Knoll (TEMPE)	#5 (Moderate)	2.0	<b>Interface Fuel Break:</b> Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	0.4	0.0	1.6	This PTU overlaps with Tempe Heights Park and the Lynn Creek watershed. One species at risk occurrence of Pacific water shrew ( <i>Sorex bendirii</i> ) entirely overlaps the PTU. Consultation with private land holders, ecological societies and relevant consultants including a qualified wildlife biologist must occur during prescription development and prior to implementation to ensure all concerns are addressed.	Located on an embankment <100m to the west of private residences in the Tempe neighbourhood and east of Highway 1, this PTU is characterized by a dense C-3 fringe of planted Cw, with 0.5m inter-tree spacing, ladder fuels, and interconnected tree crowns. High surface fuel loading (<7cm diam) from branch shedding exists due to crowded and shaded conditions. Regenerating conifers and interlocking ladder fuels could transition a surface fire into tree crowns and towards homes through fire pathways (hedging, fences) thereby increasing fire behaviour. Recommended treatments include thinning, removal of understory conifers, pruning to increase crown base height, and removal of excess surface fuels. This interface fuel break is intended to provide separation between homes and flammable vegetation.
2	Greenwood 1 (GREEN1)	3 (Higher)	7.7	<b>Interface Fuel Break:</b> Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	1.8	3.2	2.7	This PTU overlaps with Greenwood Park, and partially with Mosquito Creek Park and the Lynn Creek watershed. The proposed treatment unit also overlaps the Hazards Lands development permit area. There is partial overlap with a windthrow polygon from 2007 that was identified as light severity. There is one species at risk occurrence of Pacific water shrew ( <i>Sorex bendirii</i> ) that partially intersects the PTU. Consultation with private land holders and a qualified wildlife biologist must occur during prescription development and prior to implementation to ensure all concerns are addressed.	This PTU is a 100m wide interface fuel break located in Greenwood Park and forms a fuelbreak for residential homes. The dense C-3 fuel type fringe of young Cw, has high crown closure, ladder fuels, and is interspersed with patches of C-5 fuel-type with dwarf hemlock mistletoe ( <i>Arceuthobium tsugensae</i> ). Hazard tree removal in the park has left patches of high fine, medium and coarse woody surface debris loading, increasing the risk of a surface fire laddering into tree crowns. Overstory Cw branch layering creates fire pathways to homes via sheds, hedges and wooden fences. High recreational usage due to the Greenwood Park trail network increases the possibility of human ignitions and campfires. Patches of established invasive plant species occur throughout the park and their dead biomass contributes to surface fuel accumulations. Treatment recommendations include removal of understory conifers, pruning of overstory ladder fuels to 3m height and surface debris removal. This PTU forms a connected interface fuel break with GREEN-2 and GREEN-3 PTUs.
3	Greenwood 2 (GREEN2)	2 (Higher))	0.7	<b>Interface Fuel Break:</b> Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	0.4	0.0	0.3	This PTU overlaps with Greenwood Park and the Lynn Creek watershed. There is partial overlap with a windthrow polygon from 2007 that was identified as light severity. The PTU is entirely overlapped by Pacific water shrew ( <i>Sorex bendirii</i> ) species at risk occurrence, and partially overlapped by the Hazards Lands development permit area. Consultation with tenure holders and private land holders and a qualified wildlife biologist must occur during prescription development and prior to implementation to ensure all concerns are addressed.	Contiguous with GREEN-1, this PTU forms treatment unit around a rocky outcrop surrounded by dead and dying mature and young Cw with <1.5 m inter tree spacing and low dead and dying crown base heights. Terrain within this PTU is generally steep. Dead Cw foliage and branch materials contribute to heavier fine and medium woody debris surface fuel loading and increases the potential for fire to ladder into the crowns of surrounding mature conifer trees. Due to the high level of recreational use and the presence of unsanctioned fire pits observed on site, this area in the park poses a significant fire risk to safety and should be treated for surface fuel removal and pruning.



4	Greenwood 3 (GREEN3)	6 (Moderate)	0.5	<b>Interface Fuel Break:</b> Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	0.5	0.0	0.0	This PTU is overlapped by Greenwood Park and partially by the Mosquito Creek Watershed. There is slight overlap with a Pacific water shrew ( <i>Sorex bendirii</i> ) species at risk occurrence. This PTU overlaps the hazards lands development permit area. Consultation with private land holders and a qualified wildlife biologist must occur during prescription development and prior to implementation to ensure all concerns are addressed.	Located in the southwest corner of Greenwood Park this PTU is characterized by a multi-aged conifer leading stand, comprised of Cw and Hw. Horizontal and ladder fuel continuity is high due to dense understory vegetation such as young (Hw and Cw) saplings. Severe disease infection centers composed of dwarf hemlock mistletoe ( <i>Arceuthobium tsugensae</i> ) contribute to heavy fine, medium and coarse fuel loading as well as dead elevated fuels. Surface fuel removal, pruning to 3m in height and thinning understory conifers are recommended treatments.
8	Mackay Creek (MACK)	7 (Lower)	10.7	<b>Interface Fuel Break:</b> Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	6.5	2.7	1.5	This PTU is overlapped by the Hazards Lands development permit area, the Mackay Creek watershed and Heywood Park. One transmission line (60L064), which runs from the CAP-Capilano substation to the WLT-Walters substation intersects the PTU. Consultation with private land holders must occur during prescription development and prior to implementation to ensure all concerns are addressed.	Located in Mackay Creek park, this PTU is characterized by steep terrain, high recreation use and the presence of residential homes located along both the west and east embankments of the park. The stand type is characterized by a high hazard M-1/2 75% young conifer fuel type with low crown base heights on mature trees and patchy horizontal and ladder fuel continuity with patches of C-5. Due to unsanctioned green waste dumping, slash like conditions exist behind many private properties, these patches of high surface fuel loading in combination with high density stands, low crown base height and high ladder and horizontal fuel continuity have the potential to easily spread a surface fire into the crown of adjacent stands. Recommended treatments in order of highest priority, include; surface fuel removal, pruning and thinning from below (removal of understory conifers).
7	Lucas Center (LUCA)	8 (Lower)	2.2	<b>Interface Fuel Break:</b> Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	1.6	0.5	0.1	This PTU overlaps with the Hazards Lands development permit area, the Mackay Creek watershed, and with a CNV Park named Lots 1-18, BL17, DL552. Consultation with private land holders must occur during prescription development and prior to implementation to ensure all concerns are addressed.	This PTU is located in an isolated patch of mature forest, characterized by dense C-3 stands with patches of wetter soils and deciduous shrubs and trees. Young conifers are densely spaced. Many dead and elevated conifer stems and branches contribute to patchy horizontal and vertical ladder fuel continuity with heavier pockets of fine and medium surface fuel loading. Low crown base heights on young and mature conifers has the potential to act as a fire path for a surface fires to spread into the tree canopy. The overall WUI threat risk is increased by residential communities located upslope from the PTU on an embankment. In order of highest priority, recommended treatments include thinning from below, surface fuel removal and pruning.
6	Mosquito Creek (MOSQ)	4 (Moderate)	11.8	<b>Interface Fuel Break:</b> Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	3.0	1.4	7.3	This PTU is entirely overlapped by Mosquito Creek Park and Mosquito Creek watershed. There is one transmission line (60L064) that travels from CAP-Capilano substation to the WLT-Walters substation. Consultation with private land holders must occur during prescription development and prior to implementation to ensure all concerns are addressed.	Located in Mosquito Creek Park, this PTU is characterized by a mixed deciduous and coniferous stand. The terrain within the PTU is steep and the majority of the structures bordering the park are wooden construction with exposed and open stairways, joints and decks, increasing the WUI threat risk. The forest is characterized by high crown closure, patchy horizontal and ladder fuel continuity and high surface fuel loading due to dead and downed fallen branches and trees. High fine and medium surface woody debris exists as a result of hemlock dwarf mistletoe ( <i>Arceuthobium tsugensae</i> ) infection sites, and dead biomass from invasive species such as English ivy, laurel and Himalayan blackberry. Proposed treatments include pruning lower branches up to 3m, thinning understory seedlings, saplings and poles and surface fuel removal.



5	Kealey Woods Park (KEAL)	1 (Higher)	1.0	<b>Interface Fuel Break:</b> Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	1.0	0.0	0.0	<p>This PTU is entirely overlapped by Kealey Woods Park and the Lynn Creek watershed. Consultation with private land holders must occur during prescription development and prior to implementation to ensure all concerns are addressed.</p> <p>This PTU is characterized by an urban pocket park composed of a mature coniferous forest with dense understory and scattered patches of deciduous shrubs and trees. A dense C-3 fuel type pocket exists in the north-west corner by the trail entrance off of E.21<sup>st</sup> St. This site is dry rocky site, attributing to forest health issues such as drought stress and tree mortality. Horizontal and ladder fuel continuity is variable, with low crown base heights on mature Cw trees increasing the potential for a surface fire to ladder up into the crown. Illegal dumping and unsanctioned green waste disposal; for example, dead Christmas trees, contribute to high surface fuel loading within the PTU. Recommended treatments include surface fuel removal, thin from below and pruning.</p>
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Map 6. Proposed Fuel Treatments



## MAINTENANCE OF PREVIOUSLY TREATED AREAS

As no fuel treatments have occurred within the CNV, maintenance activities of previously treated areas are not applicable. However, if fuel treatments occur in the CNV in the future, maintenance activities such as removing standing dead, reducing surface fuels, or additional thinning (overstorey reduction and thinning suppressed conifers or conifer regeneration) should occur as needed to maintain the effectiveness of these treatments. The return interval for maintenance activities depends upon site productivity and the type and intensity of treatment. Less productive areas can likely withstand a longer frequency between maintenance activities, while more productive sites require treatments more often.

## 5.2 FIRESMART PLANNING AND ACTIVITIES

This section provides detail on: 1) the current level of FireSmart implementation and uptake within the community; 2) identified FireSmart subdivisions and/or acceptance into the FireSmart Canada Community Recognition Program (FSCCRP); and 3) recommended potential FireSmart activities that can be applied within the AOI in the future.

### FIRESMART GOALS AND OBJECTIVES

FireSmart® is the comprehensive nationally accepted set of principles, practices and programs for reducing losses from wildfire.<sup>54</sup> FireSmart spans the disciplines of hazard/threat assessment; regional planning and collaboration; policy and regulations; public communication and education; vegetation/fuel management; training and equipment; and, emergency preparedness and response. FireSmart concepts provide a sound framework for advancing the goal of wildfire loss reduction.

The FireSmart approach and concepts, including recommended FireSmart guidelines,<sup>55</sup> have been formally adopted by almost all Canadian provinces and territories, including British Columbia in 2000; FireSmart has become the de facto Canadian standard. FireSmart is founded in standards published by the National Fire Protection Association (NFPA). The objective of FireSmart is to help homeowners, neighbourhoods, whole communities and agencies with fire protection and public safety mandates to work together to prepare for the threat of wildfire in the WUI. Coordinated efforts between all levels of planning and action are integral to effectively and efficiently reducing the risk to communities.

The highest level of planning within the FireSmart program is strategic direction, such as that provided in CWPPs.

The following are key principles of FireSmart:

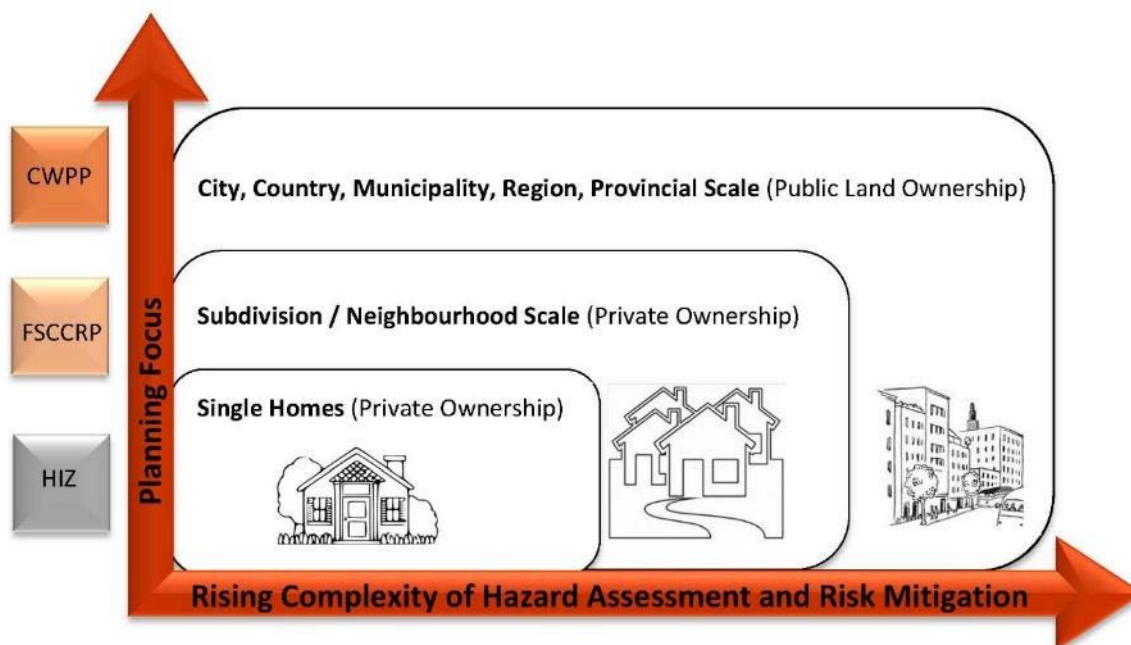
- Wildland fires are a natural process and critical to the health of Canadian ecosystems.
- Mitigation and response efforts must be carefully coordinated through all stages of planning and implementation.

<sup>54</sup> FireSmart is the registered trademark held by the Partners in Protection Association.

<sup>55</sup> FireSmart guidelines first published in the 1999 manual "*FireSmart: Protecting Your Community from Wildfire*", with a second edition published in 2003. The most recent "*FireSmart Begins at Home Manual*" is available at <https://firesmartcanada.ca/resources/>. The "*British Columbia FireSmart Begins at Home Manual*" provides detailed guidance and is available at BC FireSmart: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/firesmart>



- Threats and losses due to wildfires can be reduced by working together. Responsibility for effectively mitigating hazards must be shared between many entities including homeowners, industry, businesses and governments.<sup>56</sup>
- There are seven broad disciplines to help address the threat of wildfire: education, vegetation management, legislation and planning, development considerations, interagency cooperation, emergency planning, and cross training.<sup>56</sup>
- Solutions are required at all scales from individual backyards, to communities and the wider landscape. In order to succeed, these efforts must be integrated across the mosaic of land ownership (Figure 2).



**Figure 2. Diagram of the various, coordinated levels of the FireSmart program.<sup>57</sup> CWPP: Community Wildfire Protection Plan, FSCCRP: FireSmart Canada Community Recognition Program, HIZ: Home Ignition Zone.**

The overarching goal of FireSmart is to encourage communities and citizens to adopt and conduct FireSmart practices to mitigate the negative impacts of wildfire to assets on public and private property. While responsibility for effectively mitigating hazards must be shared between many entities including homeowners, industry, businesses and governments;<sup>58</sup> the ultimate root of the WUI interface problem is the vulnerability of structures and homes to ignition during wildfire events, in particular vulnerability to embers. This leads to an emphasis on risk mitigations on private properties. Findings from an investigation of how homes survived and ignited during the Fort McMurray 2016 Horse River wildfire, indicate that the vast majority of initial home ignitions in the WUI were caused by embers rather than direct contact by

<sup>56</sup> <https://www.firesmartcanada.ca>

<sup>57</sup> Figure and content developed by A. Westhaver. Adapted by A. Duszynska, 2017.

<sup>58</sup> <https://www.firesmartcanada.ca>





flames or radiant heat.<sup>59</sup> Surviving homes in both urban and rural areas exhibited many attributes of FireSmart principles, regardless of the broader wildfire threat surrounding them.<sup>59</sup>

The goal of FireSmart with respect to private properties is to encourage homeowners to implement FireSmart practices to reduce damages to their property and minimize the hazards associated with wildfire. These FireSmart practices should aim to accomplish the following:

- Reduce the potential for an active crown fire to move through private land
- Reduce the potential for ember transport through private land and structures
- Create landscape conditions around properties where fire suppression efforts can be effective and safe for responders and resources
- Treat fuel adjacent and nearby to structures to reduce the probability of ignition from radiant heat, direct flame contact and ember transport
- Implement measures to structures and assets that reduce the probability of ignition and loss<sup>60</sup>

### **Home Ignition Zone**

Multiple studies (including the previously referenced recent Fort McMurray WUI fire investigation) have shown that the principal factors regarding home loss to wildfire are the structure's characteristics and immediate surroundings; the area that determines the ignition potential is referred to as the Home Ignition Zone (HIZ).<sup>61,62</sup> The HIZ includes the structure itself and four concentric, progressively wider Priority Zones. HIZ Priority Zones are based upon distance from structure: 0 to 1.5 m (Priority Zone 1a- fuel free zone), 0 – 10 m (Priority Zone 1), 10 – 30 m (Priority Zone 2), and 30 – 100 m (Priority Zone 3). These zones help to guide risk reduction activities, with Recommended FireSmart Guidelines being most stringent closest to the structure. The likelihood of home ignition is mostly determined by the area within 30 m of the structure (Priority Zones 1a, 1 and 2). Recommended FireSmart guidelines address a multitude of hazard factors within the HIZ: building materials and design; vegetation (native or landscaped materials); and the presence of flammable objects, debris, and vulnerable ignition sites. More detail on priority zones can be found in the FireSmart Manual.<sup>63</sup>

It has been found that, during extreme wildfire events, most home destruction has been a result of low-intensity surface fire flame exposures, usually ignited by embers. Firebrands can be transported long distances ahead of the wildfire, across fire guards and fuel breaks, and accumulate within the HIZ in densities that can exceed 600 embers per square meter. Combustible materials found within the HIZ combine to provide fire pathways allowing spot surface fires ignited by embers to spread and carry flames or smoldering fire into contact with structures.

Because ignitability of the HIZ is the main factor driving structure loss, the intensity and rate of spread of wildland fires beyond the community has not been found to necessarily correspond to loss potential. For

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<sup>59</sup> Westhaver, A. 2017. Why some homes survived: Learning from the Fort McMurray wildland/urban interface fire disaster. Institute for Catastrophic Loss Reduction (ICLR) research paper series – number 56.

<sup>60</sup> Community Resiliency Investment Program. 2018. Community Wildfire Protection Plan Template.

<sup>61</sup> Reinhardt, E., R. Keane, D. Calkin, J. Cohen. 2008. Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States. *Forest Ecology and Management* 256:1997 - 2006.

<sup>62</sup> Cohen, J. Preventing Disaster Home Ignitability in the Wildland-urban Interface. *Journal of Forestry*. p 15 - 21.

<sup>63</sup> <https://firesmartcanada.ca/> and <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/firesmart>



example, FireSmart homes with low ignitability may survive high-intensity fires, whereas highly ignitable homes may be destroyed during lower intensity surface fire events.<sup>62</sup> Increasing ignition resistance would reduce the number of homes simultaneously on fire; extreme wildfire conditions do not necessarily result in WUI fire disasters.<sup>64</sup> It is for this reason that the key to reducing WUI fire structure loss is to reduce home ignitability; mitigation responsibility must be centered on homeowners. Risk communication, education on the range of available activities, and prioritization of activities should help homeowners to feel empowered to complete simple risk reduction activities on their property.

### ***FireSmart Canada Community Recognition Program***

In the case of adjacent homes with overlapping HIZs, a neighbourhood (or subdivision) approach can be an effective method of reducing ignition potential for all homes within the neighbourhood. The FireSmart Canada Community Recognition Program (FSCCR Program) is an 8-step resident-led program facilitated by trained Local FireSmart Representatives designed for this purpose. It provides groups of residents with critical information and a means of organizing themselves to progressively alter hazardous conditions within their neighbourhood. The program also facilitates FireSmart knowledge and practices to quickly filter downwards onto the property of individual residents to further mitigate wildfire hazards at the single-home scale within the HIZ.

### ***WUI Disaster Sequence***

Calkin et al (2014) coined the 'WUI disaster sequence', a six-step sequence which has been used to describe the situation in which the firefighting capacity of a community is overwhelmed by wildland / interface fires in highly ignitable communities: 1) extreme wildfire behaviour weather combined with, 2) a fire start, which 3) exposes numerous homes with high ignition potential, and results in numerous structures burning, 4) overwhelms suppression efforts and capabilities, and 5) leads to unprotected homes, and therefore 6) considerable structure loss. Figure 3 illustrates that it is possible to break up the disaster sequence by decreasing the number of highly ignitable homes exposed to embers, therefore reducing the number of homes ignited and removing the consequences of multiple structures lost.

Once multiple homes are ignited in an urban area, there is increasing potential for fire to spread from structure to structure, independently of the wildland vegetation. This is known as an urban conflagration. Effective fire protection depends on ignition resistant homes and properties during extreme wildfire events.<sup>65</sup>

Overall, FireSmart leads to communities that are better adapted to wildfire, more resilient and able to recover following wildfires by sustaining fewer losses and disruption, and safer places to live and recreate. Action by homeowners is the number one priority for reducing structure loss in the event of a WUI fire, but the overall adaptation of the community to wildfire is a multi-pronged approach.

<sup>64</sup>Calkin, D., J. Cohen, M. Finney, M. Thompson. 2014. *How risk management can prevent future wildfire disasters in the wildland-urban interface*. Proc Natl Acad Sci U.S.A. Jan 14; 111(2): 746-751. Retrieved from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3896199/>.

<sup>65</sup>Calkin, D., J. Cohen, M. Finney, M. Thompson. How risk management can prevent future wildfire.



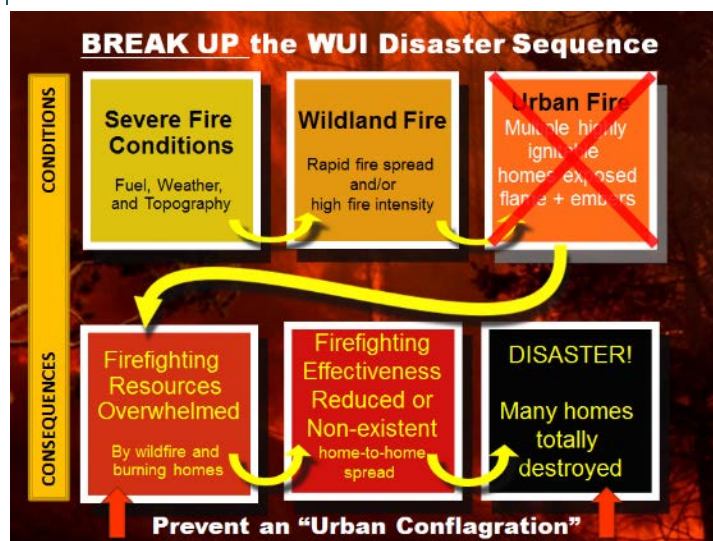


Figure 3. The wildland/urban interface disaster sequence and the possibility to break up the disaster sequence by decreasing the number of highly ignitable homes.<sup>66</sup>

## KEY ASPECTS OF FIRESMART FOR LOCAL GOVERNMENTS

Reducing the fire risk profile of a community through FireSmart implementation requires coordinated action from elected officials, local government planners, developers, private land owners and industrial managers. This section presents various options of FireSmart practices, which when enacted, provide avenues for reducing fire risk within the community. An evaluation of the current level of FireSmart implementation within the CNV is also presented in this section.

### Education

Communicating effectively is a key aspect of any education strategy. Communication materials must be audience specific and delivered in a format and through mediums that reach the target audience. Audiences should include home and landowners, local businesses, elected officials, municipal staff, and local utilities providers. Education and communication messages should be simple yet comprehensive. A basic level of background information is required to enable an understanding of fire risk issues and the level of complexity and detail of the message should be specific to the target audience.

FireSmart information material is readily available and simple for municipalities to disseminate. It provides concise and easy-to-use guidance that allows homeowners to evaluate their homes and take measures to reduce fire risk. However, the information needs to be supported by locally relevant information that illustrates the vulnerability of individual houses to wildfire.

The CNV has undertaken some public outreach in the community and online. The CNV fire department staff have held annual community events such as Hot Summer Nights to meet and inform the public about fire prevention and education as well as answered questions and displayed firefighting equipment. The CNV has also posts a fire danger rating sign at their firehall and non-smoking signage when the fire danger rating sign is high or extreme. Furthermore, the CNV fire department has hosted numerous public education events such as fire safety lectures to community organizations, participated in burn awareness

<sup>66</sup>Graphic adapted from Calkin et. al, by A. Westhaver.



weeks and fire prevention week, assisted with fire drills at seniors' centers and schools as well as provided portable fire extinguishers and training.

**RECOMMENDATION #13:** The CNV should train a local FireSmart Representative (LFR) from the NVCFD, if capacity and resources allow, to promote FireSmart initiatives and help promote fire preparedness, awareness and be trained to conduct FireSmart home assessments within the community. The LRF should act as a liaison between the community and the NVCFD and cultivate FireSmart engagement within the community. In order to increase public uptake and participation future initiatives should focus efforts following an active fire season in BC to maximize the resources available for community engagement.

Recommendations pertaining to Communication and Education is presented in Section 5.3.

### *Planning and Development Considerations*

Municipal policies and bylaws are tools available to mitigate wildfire risk to a community. It is recognized that, to be successful, all levels of government (municipal, provincial, and federal) and individual landowners need to work together to successfully reduce their risk. To that end, local government can use a range of policy tools and practices to help the community to incrementally increase FireSmart compliance over the mid-term (5 – 20 years) and therefore play a role in reducing the chance of structure loss from wildfire. The planning objectives/considerations for the CNV are:

- To include wildfire considerations in the master and site level planning; and acquisition strategy for parks and natural areas;
- To develop policies and practices for design and maintenance of FireSmart publicly owned land such as community parks and open spaces and FireSmart publicly owned buildings; and
- To conduct FireSmart and/or risk assessments of publicly owned lands and buildings to inform planning for prevention and mitigation activities as required.

FireSmart policies and practices can be incorporated in various aspects of development design, zoning and permitting to reduce wildfire hazard on private land and in the community at large. The development objectives/considerations for the CNV are:

- To utilize regulatory and administrative tools to reduce wildfire hazard on private land and increase number of homes compliant with FireSmart guidelines (with low ignition potential);
- To ensure higher level planning and regulation (i.e., OCP and/or land use, engineering and public works bylaws) incorporate FireSmart policies, as applicable, to reduce wildfire hazard in vulnerable WUI neighbourhoods, and include measures that address wildfire prevention and suppression in subdivision design; and
- To ensure multiple departments (including fire departments and/or emergency management staff) are included in the referral process for new developments.

**RECOMMENDATION #14:** Ensure that the NVCFD, if capacity allows, is Incorporated into the development planning process for the routine review of all development permit applications in the WUI as identified in this CWPP. Provide ample opportunity for fire department input prior to application



approval. As more development permit applications are received, the importance of communication and integration between NVCFD and Planning & Development will increase.

### ***FireSmart Vegetation Management***

Some examples of actionable items for the CNV with regards to vegetation or fuel management include: 1) policy development and implementation of FireSmart maintenance for community parks and open spaces; and 2) provision of incentives (i.e., a local rebate program) and/or collection services for private landowners with a focus on pruning, yard and thinning debris (as per FireSmart activities for private land discussed below).

An important component of FireSmart vegetation management is the disposal of woody debris incurred from fuel treatments or routine vegetation or landscape practices. Currently residents can dispose of green waste either curb-side or at the North Shore Transfer Station where the material is chipped and composted.

**RECOMMENDATION #15:** Explore additional opportunities for residents to dispose of wood waste and greenwaste by providing additional methods for them to inexpensively and easily dispose of wood waste removed from their property. This could include scheduled community chipping opportunities, Programs should be available during times of greatest resident activity (likely spring and fall).

**RECOMMENDATION #16:** Develop a landscaping standard which lists flammable non-compliant vegetation and landscaping materials, non-flammable drought and pest resistant alternatives, and tips on landscape design to reduce maintenance, watering requirements, avoid wildlife attractants, and reduce wildfire hazard. Consider including the landscaping standard as a development permit requirement, as well as making it publicly available for all residents and homeowners. For further assistance in creating a FireSmart landscape and to obtain a list of fire-resistant plants, refer to the FireSmart Guide to Landscaping at <https://www.firesmartcanada.ca/resources-library/firesmart-guide-to-landscaping>.<sup>67</sup>

Other helpful links for finding fire resistant landscaping options can be found at:

- <http://www.wacdpmc.org/images/Fire-Resistant-Plants.pdf>
- <http://www.firefree.org/wp-content/uploads/2016/02/Fire-Resistant-Plants.pdf>
- <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/for-your-home-community>
- <http://articles.extension.org/pages/32729/selecting-firewise-plants>

### ***Development Permit Areas for Wildfire Hazard***

The Hazard Lands DPA, as outlined in the OCP is considered 'area specific' (Section 2.5, Schedule D, Appendix 1.0) and identifies lands within the 200-year floodplain or steep areas in order to protect property and life, and minimize risks posed by development in areas with identified natural hazards. Some DPAs (Shipyards, Moodyville) are written into the Zoning Bylaw and have detailed guidelines for

<sup>67</sup> Government of Alberta. "FireSmart Guide to Landscaping"



development. Other DPAs, such as the Hazard Lands DPA does not have policies applicable to the area and is not subject to guidelines.

To address wildfire risk mitigation and development in the WUI, the Hazard Lands (HL) DPA should be formalized to incorporate FireSmart principles for the purposes of protecting people, structures and property, and include acceptable fire-resistant exterior building materials in new construction in order to create defensible space based on FireSmart Fire Priority Zones 1a, 1, 2, and 3 (10m, 30m, and 100m, respectively). The major components comprising the guidelines and requirements of the HL DPA should include: 1) the use of fire-resistant exterior construction materials based on FireSmart; 2) minimum building setbacks from forested edges (10 m) and top of slope (10 m set from the crest of a slope where the slope is >25%); 3) the use of FireSmart landscaping (low flammability plants, appropriate spacing and low flammability aggregates/ground cover) in Fire Priority Zones 1 and 1a; 4) underground servicing where feasible; and 5) educate residents how flammable vegetation around homes can intensify the spread of fire.

**RECOMMENDATION #17:** Update the OCP and amend the Zoning bylaw No. 6700 to incorporate the wildland urban interface (WUI) as a component of Hazard Lands (HL) within the CNV. Develop wildfire interface guidelines and policies for the HL DPA based on FireSmart principles and consider including new development and single-family lot redevelopment scenarios into the scope of the HL DPA. The Planning & Development, and Engineering, Parks & Environment departments should jointly develop building material and landscaping guidelines to inform the wildfire component of the HL DPA.

The spatial extent should cover the majority of City except for the urbanized core and the Mission #1 First Nation reserve and be illustrated in the OCP. The construction and installation of a new building or structure in the HL DPA should be a trigger for the Planning & Development department to include the HL requirements and guidelines in a project prior to issuing a development or building permit in conjunction with the Subdivision and Development Control Bylaw.

**RECOMMENDATION #18:** Create incentives and/or targeted education and outreach to promote FireSmart renovations of exterior elements of existing buildings within the WUI. Incentives should target roof replacements as a first priority, followed by replacement of exterior siding and decking with flame-proof/fire resistant materials to increase the resiliency of homes and neighbourhoods in the WUI. These incentives may include granting rebates for roof replacement.

### ***Subdivision Design***

Subdivision design should include consideration to decrease the overall threat of wildfire. Aspects of subdivision design that influence wildfire risk are access, water pressure and hydrant locations. The number of access points and the width of streets and cul-de-sacs determine the safety and efficiency of evacuation and emergency response. When the time for evacuation is limited, poor access has



contributed to deaths associated with entrapments and vehicle collisions during wildfires.<sup>68</sup> Methods for access design at the subdivision level can provide tools that help manage the volume of cars that need to evacuate an area within a given period of time.

For new development in areas of low flow or where hydrants are limited, the NFPA 1142 can be used to help determine minimum requirements for alternative water supply (natural or artificial). Alternative water sources, such as dry hydrant systems, water usage agreements for accessing water on private land, cisterns or other underground storage, etc., should be reviewed by the DNV and the fire departments prior to development approval.

The Mosquito Creek, Mackay Creek and Mahon Creek corridor as well as Greenwood Park host significant trail infrastructure through the western and northern area of the AOI. Any new developments or subdivisions in this area will lead to an increase in the residential population which will increase the risk from human ignitions in these greenspaces. Although some of these areas were assessed as lower hazard during the field assessment and consisted of M-1/2, C-5, and D-1/2 fuel types, the forest stand composition will change over time as the vegetation matures, conifer regeneration occurs, surface debris accumulates, and mortality occurs via natural means or human-caused disturbances, possibly resulting in higher hazard fuel types requiring treatment.

**RECOMMENDATION #19:** As development and densification of multi-residential projects or single-lot redevelopment in the CNV unfolds over time, hire a QP to re-assess the fire hazard of adjacent green spaces prior to the granting of re-zoning approvals, development permits as well as public consultation. If fuel treatment of green spaces, natural areas, or forests is required to lower the fire hazard, then the costs of such work should be funded by developers as Development Cost Charges.

#### *Increasing Local Capacity – Interagency Cooperation, Emergency Planning and Cross Training*

Local capacity for emergency management and efficient response to wildland urban interface fires can be enhanced by addressing the following steps:

- Conducting a comprehensive review of Emergency Management BC SPU deployment procedures for the purpose of fighting interface fires;
- Provision of sprinkler kits to community residents (at a cost);
- Engagement in annual cross-training exercises with adjacent fire departments and/or BCWS in order to increase both local and regional emergency preparedness with regards to structural fire and wildfire training;
- Participation in cross-jurisdictional tabletop exercises and seasonal readiness meetings;
- Participation in regional or multi-agency fire or fuel management tables (i.e., interface steering committee or wildfire working group) to facilitate communication and co-operation between groups and agencies responsible for wildfire preparation and response; and

<sup>68</sup>De Ronde, C. 2002. Wildland fire-related fatalities in South Africa – A 1994 case study and looking back at the year 2001. Forest Fire Research & Wildland Fire Safety, Viegas (ed.), <http://www.fire.uni-freiburg.de/GlobalNetworks/Africa/Wildland.cdr.pdf>





- Provision of training and/or professional development for Local FireSmart Representatives, community champions to increase capacity for FireSmart activities.

Current local capacity for the CNV and recommendations to address gaps is provided in Section 0

### ***FireSmart Demonstration Projects***

FireSmart demonstration projects for publicly owned buildings or public and provincially owned critical infrastructure (as identified in Section 3.2) can display the practices and principles of FireSmart to the public. This may be in the form of replacing building materials with fire resistant materials, replacing landscaping with fire-resistant plants, and demonstration fuel treatments. Ideally, these projects would include elements of public education (signage, public tours, active demonstrations of operations, etc.). Appropriate/candidate FireSmart demonstration projects may be identified by the CNV based on assessment by a potential internally trained Local FireSmart Representative or external Local FireSmart Representative consultant.

### ***FireSmart Activities for Private Land***

The best approach to mitigate fuels on private lands is to urge private landowners to comply with FireSmart guidelines and to conduct appropriate fuel modifications using their own resources (CRI program funding may be available). The CNV can facilitate uptake within the community by: 1) supporting and/or facilitating planning for private land (with property owners' consent); 2) offering local rebate programs to homeowners on private land who complete eligible FireSmart activities on their properties; 3) providing off-site debris disposal for private landowners who undertake their own vegetation management (with a focus on pruning, yard and thinning). Off-site debris disposal options include providing a dumpster and/or chipper; providing curbside debris pick-up; and waiving tipping fees. Planning for private land may include developing FireSmart Community Plans for identified areas (i.e., a WUI neighbourhood, subdivision) and conducting FireSmart home and property assessments.

**RECOMMENDATION #20:** The CNV should apply for funding from the UBCM CRI Program to develop a FireSmart local rebate program. This will allow homeowners to access partial rebates for FireSmart activities on their properties, if rated as high or extreme risk in a FireSmart home and property assessment. The rebate program is described in detail in the CRI Program 2020 FireSmart Community Funding and Supports – Program & Application Guide and must adhere to the goals and objectives of FireSmart, as outlined in Section 0. **Error! Reference source not found.**

### ***FireSmart Compliance within the Area of Interest***

There is a wide range of FireSmart compliance on private properties in the AOI. There are large differences in the degree to which FireSmart best practices for both building and landscaping are visible within individual HIZs (home ignition zones), and in neighbourhoods throughout the CNV. Generally speaking, most homes in interface neighbourhoods such as properties bordering Mosquito Creek, Mackay Creek, Mahon Park and Greenwood Park do not maintain 10 m defensible space. The main concern in the aforementioned areas is the ubiquity of flammable landscaping options (i.e., cedar hedging) combined





with forested vegetation (*i.e.*, conifers) in proximity to residences, as well as the lack of defensible space between property footprints and adjacent forested / natural areas. Bark mulch is commonly used as a landscaping material and the accumulations of conifer foliage in roof corners and gutters was not uncommon. Storage of combustible items such as fire wood under decks, carports, and other horizontal surfaces was common. On the other hand, many residences are surrounded by lawn, and/or hardscaping (driveways, sidewalks and rocks), all of which are FireSmart compliant.

Aside from differing levels of awareness, understanding and acceptance of recommended FireSmart guidelines by residential and commercial property owners, there are a number of other factors that add variability to the level of FireSmart compliance within the AOI, such as creek ravines and structures situated at the top of steep slopes. Ultimately, these also impact the vulnerability of structures and the amount of effort required to achieve a FireSmart rating for individual homes, neighbourhoods or the communities as a whole. These factors include but are not limited to: the age of homes; prevailing design features and standardized building materials; proximity to forested area (both on private land and adjacent Crown or CNV-owned land); positioning of the home or neighbourhood in relation to slope, aspect and prevailing winds; and the stage and maturity of landscaping.

Neighbourhoods in the CNV were unofficially reviewed during field work. The following observations were made:

- Wildfire hazard levels range from low to high across neighbourhoods within the AOI;
- The bulk of hazards are associated with natural and landscaped vegetation immediately surrounding residential properties;
- For new development, where landscaping is not yet completed, educational approaches may aid in promoting fire resistant landscaping options and achieving defensible space in the HIZ;
- Hazards may be magnified in some neighbourhoods due to poor access (*i.e.*, presence of one-way access roads), or by being within a low water pressure servicing zone; nevertheless,
- All neighbourhoods have good opportunities to mitigate risk through individual and collective action.

## **PRIORITY AREAS WITHIN THE AOI FOR FIRESMART**

This section identifies priority areas within the AOI that would benefit from FireSmart planning and activities. These priorities are based on general field observations and input from the CNV and are not based on a scientific sample or formal data collection. Recommended FireSmart activities are essentially the same for each neighbourhood or area; however, it is recommended that the CNV conduct their own interdepartmental review to refine the neighbourhoods in Table 11.



**Table 11. Summary of FireSmart Priority Areas.**

Area	FireSmart Y/N	FireSmart Canada Recognition Received Y/N	Recommended FireSmart Activities
<b>Priority Area #1:</b> Western and eastern edge of Heywood Park, along Mackay Ave and Hamilton Ave.	N	N	<p>The following is a non-extensive list of FireSmart activities for which the DM can engage suggested neighbourhood residents:</p> <ol style="list-style-type: none"> <li>1) Provide guidance to ensure landscaping is to an established FireSmart standard;</li> <li>2) Incentivise private landowners to engage in retrofitting homes with building materials and design based on NFPA 1144 or FireSmart standards;</li> <li>3) Encourage prompt removal of combustible construction materials or yard waste from private properties; and</li> <li>4) Coordinate monthly or bi-monthly yard waste removal days prior to and during the fire season to reduce WUI fire hazard.</li> </ol>
<b>Priority Area #2:</b> Residential developments along the western and eastern edges of Mosquito Creek Park.	N	N	
<b>Priority Area #3:</b> Homes to the east and west of Mahon Park	N	N	
<b>Priority Area #4:</b> Residential areas surrounding Wagg Creek Park	N	N	
<b>Priority Area #5:</b> Homes to the south and west of Greenwood Park, specifically along E 23 <sup>rd</sup> St and E 22 <sup>nd</sup> St	N	N	
<b>Priority Area #6:</b> Residential areas surrounding Tempe Park and along Tempe Knoll Dr	N	N	
<b>Priority Area #7:</b> Residential developments to the northwest and south of Eastview Park	N	N	
<b>Priority Area #8:</b> Homes adjacent to Loutet Park, specifically along Rufus Ave	N	N	<p>Based on field observations, most critical infrastructure has not had any FireSmart setbacks from forested areas. Consider conducting FireSmart treatments to ensure the wildfire risk does not reach higher than moderate. FireSmart treatments may include thinning from below to reduce ladder fuels and crown fire potential, pruning of retained trees to 3 m, and reducing surface fuels. Additionally, consider adding regular brushing activities to the maintenance treatment schedule to control weeds and grasses around critical infrastructure.</p>



### 5.3 COMMUNICATION AND EDUCATION

Establishing effective communications and actively engaging key stakeholders in risk reduction activities are keystones to building a FireSmart community. Without the support and involvement of residents, businesses, public officials, industry, the efforts of public officials, fire departments, and others to reduce wildfire losses will be hindered. In many communities, there is a general lack of understanding about interface fire, the relationship between ignition potential and loss of homes, and the simple steps that can be taken to minimize risk on private land. In addition, public perceptions regarding responsibility for risk reduction and the ability of firefighters to safely intervene to protect homes during a wildfire are often underdeveloped or inaccurate.

Based on the consultation completed during the development of this CWPP, it is evident that CNV staff and some residents have a good level of awareness of interface fire risk. However, field observations highlighted the need to further educate the community at large on what private land owners can do to build a FireSmart community and take personal responsibility for the ignition potential of their homes, businesses, lands, and neighbourhoods. Often, the risk of wildfire is at the forefront of public awareness during or after major wildfire events, whether close to home or further afield. The challenge is to retain this level of awareness beyond these times. Communication and education objectives for the CNV are:

- To improve public understanding of fire risk and personal responsibility by increasing resident and property owner awareness of the wildfire threat in their community, to establish a sense of responsibility for risk mitigation among property owners, and to empower them to act;
- To enhance the awareness of, and participation by, elected officials and all WUI stakeholders regarding proactive WUI risk mitigation activities; and,
- To reduce or avoid ignitions from industrial sources.

Bringing organizations together to address wildfire issues that overlap physical, jurisdictional or organizational boundaries is a good way to help develop interagency structures and mechanisms to reduce wildfire risk. Engagement of various stakeholders can help with identifying valuable information about the landscape and help provide unique and local solutions to reducing wildfire risk.

**RECOMMENDATION #21:** The NVCFD should discuss options with adjacent municipalities (DNV and DWV), to discuss mutually shared initiatives to reduce wildfire risk. This includes joint gatherings with NSEM prior to the fire season to design and participate in mock exercises, review of equipment, and sharing of resources during a potential wildfire event.

Moving from the CWPP to implementation of specific activities requires that the community is well informed of the reasons for, and the benefits of specific mitigation activities. In order to have successful implementation, the following communication and public education recommendations are made:

**RECOMMENDATION #22:** The NVCFD should create a FireSmart resources page on their website which links the “Home Owners FireSmart Manual” and other useful FireSmart Canada resources to educate residents on pre-planning and preventative measures they can take to address the risk posed by wildfire to their home and property (prior to an evacuation order).



**RECOMMENDATION #23:** This CWPP report and associated maps to be made publicly available through the CNV's website, social media, and future public FireSmart meetings. In addition, this CWPP should be shared with utility partners who may be interested in collaborating on fuel treatments.

**RECOMMENDATION #24:** Update the CNV website and use the NSEM website/social media platforms regularly during the fire season to ensure that fire bans, high or extreme Fire Danger days, wildfire prevention initiatives and FireSmart activities, updates on current fires and air quality, road closures, and other real-time information is well communicated and implemented in an accurate and timely manner. Furthermore, as an effective communications strategy with the public, the Fire Department and CNV staff should use Twitter, Facebook and/or other social media platforms to inform the public when parks maintenance and wood waste management is scheduled near neighbourhoods and high-use recreation areas, or as an effective tool to gauge public sentiment or concern.

**RECOMMENDATION #25:** Promote the use of the FireSmart Home Partners Program offered by the Partners in Protection Association, which facilitates voluntary FireSmart assessments on private property. Use the opportunity to educate the home or business owner about the hazards which exist on their property and provide easy improvements to reduce their risk. This program can be administered by the NVCFD.

**RECOMMENDATION #26:** Develop and work with the DNV, DWV and Metro Vancouver as needed to identify ongoing and emerging wildfire related issues in the CNV and to develop collaborative solutions to minimize wildfire risks. The following subject areas are recommended for the group to explore: 1) Public education and awareness needs; 2) Multi-jurisdictional fuel treatment projects/hazard abatement projects; 3) Development of funding strategies; and 4) Reduction of human-caused fires, fire prevention and right of way management.

**RECOMMENDATION #27:** Given the high public and recreational usage of parks and trails, along the western and northern portion of the AOI, the CNV in collaboration with the DNV and Metro Vancouver should develop public education focused on increasing awareness of good wildfire prevention practices. Public information or signage could be posted at busy parks, trailheads, and/or posted on the City's and NSEM's website in the form of seasonal notices (similar to summer parking and access notices posted for popular destinations).

**RECOMMENDATION #28:** For private landowners whose properties are located adjacent to forested creeks and ravines or in low water pressure zones, promote and provide information related to residential rooftop exterior sprinklers that can be purchased and installed during the fire season as a FireSmart prevention measure.



## 5.4 OTHER PREVENTION MEASURES

In addition to fuel treatment and community communication and education, fire prevention in the AOI is also addressed via the following avenues: 1) public display of a danger class rating sign, which should be updated on a weekly basis; 2) fire ban alignment with provincial fire bans; 3) potential enforcement of restricted access to certain park areas similar to provincial requirements; and 4) enforcement of local bylaws such as the Fire bylaw, Fireworks Regulation bylaw and Smoking Regulation bylaw. The aforementioned activities are either currently being applied or have potential to be applied in order to reduce the potential and/or threat of wildfire ignitions.

Only one fire danger rating sign is located within the CNV at Fire Hall #1. The signs are updated as necessary by the CNV Fire Department staff.

In addition to human-caused fire starts, power lines and industrial activities pose a risk of ignition, particularly in areas where cured fuels or fuel accumulations exist. Tree failures adjacent to power lines (transmission and distribution) are common occurrences and represent significant risks to ignition within the AOI. A cooperative approach for addressing the industrial area concerns must be undertaken by the CNV, BC Hydro and pertinent industrial partners.

**RECOMMENDATION #29:** The NVCFD in coordination with the NSEM should consider additional Fire Danger Rating signs at key locations in the AOI and possible sites could include Mosquito Creek Park and Greenwood Park trail entrances. Signage should be updated regularly with current fire danger ratings during the peak wildfire season (May through to October).

## SECTION 6: WILDFIRE RESPONSE RESOURCES

This section provides a high-level overview of the local government resources accessible for emergency response and preparedness use. Accordingly, in emergency situations when multiple fires are burning in different areas of the Province, resource availability may be scarce. Therefore, local government preparedness and resource availability are critical components of efficient wildfire prevention and planning. Deployment of provincial resources occurs as per the process detailed in the *Provincial Coordination Plan for Wildland Urban Interface Fires* document.<sup>69</sup> The aforementioned document establishes a protocol for collaborative and integrated emergency management in the event of WUI fires within British Columbia.

### 6.1 LOCAL GOVERNMENT FIREFIGHTING RESOURCES

Firefighting efforts and effectiveness can be affected by access to secondary power sources, water pressure and supply, and existing local government contingency plans. In the event of a wildfire emergency situation and loss of power, the CNV has access to mobile, diesel backup generators to power critical infrastructure such as the RCMP Building (also used as EOC), Firehall, Lions Gate Hospital and City

<sup>69</sup> Provincial Coordination Plan for Wildland Urban Interface Fires. 2016. Available online at: [https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire\\_revised\\_july\\_2016.pdf](https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire_revised_july_2016.pdf)





Hall. However, should a wide-scale outage occur, known vulnerabilities to secondary power sources include mechanical failure and potential fuel shortages. Although the local government has not identified any major issues with water pressure within areas that have fire hydrant service, there are likely limitations to water volume and flow in areas with older private water systems, or for residents along Mosquito Creek. Maintenance and upgrades to PRVs (pressure reducing valves) and existing water infrastructure was observed during the field assessment. Specific limitations of the CNV water system with regards to wildfire suppression are detailed in Section 0.

Formal mutual aid agreements are in effect between the neighbouring municipal fire departments including the District of North Vancouver and the District of West Vancouver more detail is provided in Section 0).

## FIRE DEPARTMENT AND EQUIPMENT

North Vancouver City Fire Department (NVCFD) responds to all incidents within the municipal boundaries of the CNV, including structural and interface fires. Response services are provided by the main firehall - Hall #1 which could also act as an alternate Emergency Operations Center (EOC) in the event of an emergency. **Error! Not a valid bookmark self-reference.** Table 12 provides an overview of the fire services capacity in the AOI, including fire department personnel and equipment. The CNV is comprised of one single fire protection area (FPA) which is under the jurisdiction of the NVCFD. Areas that are particularly vulnerable to wildfire include neighbourhoods surrounding large forested parks and creek corridors such as Mackay Creek, Mahon Creek and Mosquito Creek.

NVCFD has automatic aid agreements in place with the District of North Vancouver and the District of West Vancouver. WUI fire events may also lead to aid requests from the BCWS, and alternatively BCWS may request the aid of NVCFD beyond its fire protection zone. The CNV has assisted BCWS in the past and would request aid from BCWS if the fire had the potential to become a wildfire/interface fire. The CNV may also ask Metro Vancouver Watershed Protection for assistance if extra resources are needed.

The NVCFD is staffed with 5 chief officers, 56 full-time firefighters, 6 fire prevention staff, one training officer, one mechanic and 3 support staff. The NVCFD fire protection equipment is composed primarily of structural firefighting equipment, some of which can be used for wildland interface fires (manual tools such as pulaskis, backpack handpumps (piss cans), as well as protective clothing, and hoses). Some equipment deficiencies specified by the NVCFD encompass hose lengths with quick connect forestry couplings (300 psi) and associated couplings and nozzles, and a Mark-3-V2 high pressure pump and tool kit. The Park Operations division in the Engineering, Parks & Environment department are equipped with the following wildland interface firefighting equipment: backpack handpumps (piss cans), hand tools including pulaskis, shovels and spades, mop-up hosing, water pump with 20' suction intake hose / foot valve, a 500 gallon water tank mounted on truck flatbed, and protective clothing. In addition, the NSEM has compiled wildfire equipment across the North Shore and updates this annually.

**Table 12. Fire department capacity and equipment within the AOI.**



Fire Protection Zones	Fire Department	Number of Stations	Number of Members	Apparatus type and number
City of North Vancouver	North Vancouver City Fire Department	1	56 full-time firefighters, 5 Chief Officers. 6 Fire Prevention staff, 1 Training Officer, 1 EVT (Mechanic) and 3 support staff.	4 engines (Ladder 10 is equipped with ladder platform apparatus), 1 Rescue, 1 Hazmat, (3-4x4 pickup trucks to transport crews; 2 SUVs (Command and Unit 236) to transport utilities and crews, 4 smaller trucks (Units 230-232), and 2 trailers to transport equipment

Over the previous 8 years (2011-2018), the NVCFD has responded to an average of 4,392 calls per year (averaged over all fire halls from 2011 to 2018). Total calls include alarms, assistance, burning complaints, grass fires, other fires, hydro lines fires, structure fires, hazardous materials, medical aid, mutual aid, motor vehicle accidents, and rescue. From a review of the data, interface calls in the CNV are not filtered out from the structural / motor vehicle accident call-outs, and although these capture a greater percentage of total call-outs, the exact number of interface fire starts is unknown.

**RECOMMENDATION #30:** The CNV should continue to coordinate and participate in annual or bi-annual Dry Lightning III joint exercises with the emergency response agencies of the DNV, DWV, Grouse Mountain Resort and Metro Vancouver Watershed Protection at the start of each fire season. These exercises can be expanded to include structural and interface training programs. As part of the training, it is recommended to conduct reviews to ensure PPE and wildland equipment resources are complete, in working order, and the crews are well-versed in their set-up and use. It is recommended the NVCFD engage in yearly practical wildland fire training with BCWS that covers at a minimum: pump, hose, hydrant, air tanker awareness, and employment of SPUs. Interface training should include safety training specific to wildland fire and risks inherent with natural areas.

**RECOMMENDATION #31:** The NVCFD should stratify their call-out data between structural and wildland interface incidents. This data will allow the NVCFD to assess not only the number of calls in any given year, but will allow the department to observe trends and changes over time, or have as supporting information when additional interface firefighting equipment resources are needed.

## WATER AVAILABILITY FOR WILDFIRE SUPPRESSION

Water is the single most important suppression resource. In an emergency response scenario, it is critical that a sufficient water supply be available. The Fire Underwriters Survey summarizes their recommendations regarding water works systems fire protection requirements, in *Water Supply for Public Fire Protection* (1999).<sup>70</sup> Some key points from this document include the need for:

<sup>70</sup>Fire Underwriters Survey, 1999. Water Supply for Public Fire Protection. Retrieved from: <http://www.scm-rms.ca/docs/Fire%20Underwriters%20Survey%20-%201999%20Water%20Supply%20for%20Public%20Fire%20Protection.pdf>



- Duplication of system parts in case of breakdowns during an emergency;
- Adequate water storage facilities;
- Distributed hydrants, including hydrants at the ends of dead-end streets;
- Piping that is correctly installed and in good condition; and
- Water works planning should always take worst-case-scenarios into consideration. The water system should be able to serve more than one major fire simultaneously, especially in larger urban centers.

Water service within the AOI is an important component of emergency response for a wildland urban interface fire in the event of a large-scale emergency, and in particular for structural fires. As previously noted in Sections 0 and 0, water service is provided by the CNV via Metro Vancouver system. This system is sourced from surface water (Capilano, Seymour, and Coquitlam watershed) monitored by a central computer and have the ability to send an alarm when critical conditions occur. For suppression within the AOI, hydrant service is provided throughout the entire AOI via 820 fire hydrants. The majority of the areas within the AOI are serviced quite well by gravity fed utilities. However, certain areas and properties such as those adjacent to Mosquito Creek, are serviced by hydrants with lower flows due to the water utilities pipe sizing and single feeds. These areas were identified as areas which could potentially create suppression challenges in the AOI.

In consultation with the Wildfire Working Group, the CNV is well-served by hydrants although some older neighbourhoods are in lower pressure zones due to pipe sizing. The CNV Operations (utilities) and CNV GIS department have collaborated in producing a spatial dataset of these low-pressure zones.

Water supply within the CNV has the potential to become limited in summer months as shortages can occur into the future and as climate change has the potential to affect drought periods into the future. In the event of a prolonged drought, the City has the ability to draw from a number of creeks within the AOI, however the duration of how long the supply will last is unknown. In areas where water supply is limited, the NVCFD can draft water from natural water sources (e.g. Burrard Inlet, Mosquito Creek, Mackay Creek and Mahon Creek) These natural water sources are known and mapped; however, pre-planning does need to be completed to identify all of these resources.

**RECOMMENDATION #32:** The NVCFD should continue to exercise NFPA – 1002 Pump Operator training which includes drafting from natural water sources and the use of portable pumps through annual training. Suitable sites for drafting water in Burrard Inlet, and Mosquito, Mahon, and Mackay creeks should be selected as areas for training. Firefighting staff with these skills will be particularly useful should a large-scale wildfire impact North Vancouver. The NVCFD should consider purchasing two wildfire pumps to deploy in the event of a wildfire.

**RECOMMENDATION #33:** All new development in the AOI should have a water system which meets or exceeds minimum standards of NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire*



*Fighting*<sup>71</sup>. The NVCFD should review the water supply to ensure it provides sufficient placement, flow, and reliability for suppression needs. Furthermore, all low-pressure water zones should be spatially mapped and added to the CNV's Citymap and be made accessible to all emergency services.

**RECOMMENDATION #34:** Commission a scenario-based cost/benefit analysis to improve limitations of the water system to support domestic water needs and firefighting demands, concurrently in an emergency. The analysis should identify resources required to upgrade pipe infrastructure, flows, hydrant number or location; the costs associated with implementation, and a workplan that targets priority high risk areas first (i.e., areas of low pressure).

## ACCESS AND EVACUATION

Road networks in a community serve several purposes including providing access for emergency vehicles, providing escape/evacuation routes for residents, and creating fuel breaks. Access and evacuation during a wildfire emergency often must happen simultaneously and road networks should have the capacity to handle both. In the event of a wildfire emergency, The Upper Levels Highway (Highway 1), Lonsdale Avenue, 13<sup>th</sup> Street and Marine Drive are the most direct paved access and egress routes east and west and north and south of the AOI. Paved roads such as Grand Boulevard and Keith Road also connect residents from the north to south and east to west within the AOI.

There are a number of areas in the AOI with evacuation and fire suppression challenges. Private properties along MacKay Creek, Mosquito Creek and Mahon Creek are particularly confined and restricted in terms of quick access and egress. Additional areas within the AOI that are within confined access and egress locations include residential areas east of Grand Boulevard adjacent to Loutet Park and private homes along Mahon Avenue specifically surrounding Heywood, Mosquito and Wagg Creek Park (see Section0) for a detailed description of these areas.

In the event of an emergency, evacuation would be conducted by the NSEM, NVCFD, First Responders and RCMP. If a wildfire were to block MacKay Avenue, Fell Avenue, Larson Avenue, or Grand Boulevard evacuation from the AOI would be complicated and difficult. Smoke and poor visibility, car accidents, and other unforeseen circumstances can further complicate evacuations, hinder safe passage, and limit the ability of suppression crews to respond to incidents and safely evacuate residents.

Within the AOI, some of the critical infrastructure is reached via narrow and/or serviced roads, which may impede suppression efforts and response times, especially homes that back onto Mahon Park, Heywood Park or Mosquito Creek ravines. One mitigating factor is the compact layout of the AOI and the proximity of most structures of 300-500m to a main or arterial road. surrounding municipal fire departments which typically have the ability to aid in immediate response efforts.

<sup>71</sup>National Fire Protection Association (NFPA). 2017. Standard on Water Supplies for Suburban and Rural Fire Fighting. Retrieved online at: <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1142>



**RECOMMENDATION #35:** The NVCFD should conduct a review of fire suppression accessibility, safety, and staging of anchor points for firefighting equipment and personnel on all dead-end roads including those structures backing onto creek ravines and greenspaces. Areas of difficult access should be identified. Explore alternative equipment such as ATVs fitted with tanks and / or pumps.

Emergency access and evacuation planning is of particular importance in the event of a wildfire event or other large-scale emergency. The CNV does not have a stand-alone document, but instead, its emergency planning and preparedness is encompassed in the NSEM's North Shore Evacuation Guidelines document, developed by the NSEM in collaboration with the DNV, CNV, and DWV. Currently the NSEM is in the process of updating the North Shore Evacuation Guidelines which is to include updated evacuation information. As stated previously, in the event of a wildfire emergency within the AOI, the NSEM office at (147 E 14 St, North Vancouver, BC V7L 2N4) will be designated as the EOC.

Walking paths and recreation trails can provide access for ground crews and act as fuel free zones and prevent the spread of ground fires, particularly in natural areas. Strategic recreational trail development to a standard that supports crew access (ie. trail widening and grading) can be used as a tool that increases the ability of local fire departments to access interface areas.

In order to effectively use these trails during suppression efforts, it is recommended that a Total Access Plan be developed. This plan should be made available to NSEM, NVCFD, CNV parks staff, and the BCWS in the event that they are aiding suppression efforts on an interface fire in the AOI.

**RECOMMENDATION #36:** Once the update to the NSEM's Evacuation Guidelines document is complete, the NSEM in partnership with the three north shore municipalities should operationalize the Evacuation Guidelines by completing mock evacuation exercises at night to mimic poor visibility from smoke conditions.

**RECOMMENDATION #37:** Develop a community wildfire pre-planning brochure, for neighbourhoods near high risk areas to be shared with key Metro Vancouver and NSEM staff, that addresses the following: 1) designates evacuation routes for each neighbourhood and provides emergency evacuation procedures; 2) identifies water reservoirs, 3) includes an emergency contact list; 4) communications hierarchy and protocols (i.e., who to call first); and 5) maps for each neighbourhood. Collaborate with the Districts of North and West Vancouver to ensure similar information is provided.

**RECOMMENDATION #38:** Develop a Total Access Plan for the CNV to create, map and inventory trail and road network in natural areas for suppression planning, and identification of areas with insufficient access. The plan should include georeferenced maps with associated spatial data, identify the type of access available for each access route, identify those trails that are secondary trails, steep and narrow, or have flights of stairs or other barriers. Access assessment should consider land ownership, proximity of values at risk, wildfire threat, opportunities for use as fuel break or control lines, trail and road





network linkages, and requirements for future maintenance activities such as operational access for fuel treatments and other hazard reduction activities.

## TRAINING

Provision of training opportunities for structural firefighters in the realm of wildland firefighting is critical to building capacity for suppression and emergency management at the local level. It is important for fire departments to maintain their current level of structural firefighting and increase the focus on interface training in S-100 (introductory) and S-215 (advanced) wildfire suppression training combined with mock exercises in partnership with surrounding municipalities (DNV, DWV), Metro Vancouver Watershed and Grouse Mountain Resort and BCWS.

Fire fighters within NVCFD maintain a current level of structural protection training as described below. Forty-six members have WFF-1 training, two members have received OFC / BCWS / Strike Team Leaders training, and the department has three WFF-1 trainers to build capacity and maintain training levels for all members. In addition to the NVCFD training, CNV Park Operations has four staff trained in S-100 with annual refreshers. As a complement to this training, Park Operations has one WCB qualified tree faller, three ISA TRAQ (Tree Risk Assessment Qualification from the International Society of Arboriculture), and two Wildlife Danger Tree Assessors (WDTA). Furthermore, NSEM coordinates a seasonal wildfire readiness workshop and weekly wildfire coordination calls during the fire season with all three municipal fire departments, parks departments, communications departments, as well as Squamish Nation and Tsleil Waututh Nation. When fire danger rating is high or extreme, BC Parks, BCWS, Metro Vancouver Watershed Protection, Cypress and Seymour provincial parks, Grouse Mountain Resorts, North Shore Rescue, RCMP Search and Rescue, and British Properties are invited to participate in calls.

It is recommended that all fire department members continue to at minimum have S100 and/or SPP-WFF1 (or equivalent), and that the fire departments engage in yearly practical wildland fire training with DNV, DWV, Metro Vancouver Watershed, Grouse Mountain Resort and BCWS. It must be noted that SPP-WFF 1 is a new S-100 equivalent course for structure firefighters only, and as such BCWS has phased out instruction of S-100 training for fire departments. SPP-WFF-1 also replaces S-185 (Fire Entrapment Avoidance and Safety) and takes only 6 hours to be delivered.<sup>72</sup>

NVCFD maintains communication with BCWS throughout the year, as required by the fire season demands; however, however engagements with the BCWS are minimal and do not often occur. It is recommended that the fire department in conjunction with the DNV and DWV work cooperatively with the BCWS (Coastal Fire Centre) to conduct yearly mock exercises, where information and technical/practical knowledge are shared, such as: fireline construction, Mark 3 pump operations, sprinkler protection, skid pack operations, portable water tank deployment, and wildland hose

<sup>72</sup> Office of the Fire Commissioner. 2013. SPP-WFF-1 (Wildland Firefighter Level 1), as per NFPA 1051 Level 1 standard, backgrounder.





operations. In the past, the NVCFD has partnered with Metro Vancouver Watershed Protection and BCWS during extreme circumstances.

**RECOMMENDATION #39:** NVCFD should improve engagement with the BCWS Coastal Fire Zone to foster a strong relationship and identify potential cooperative wildfire risk reduction opportunities.

**RECOMMENDATION #40:** Ensure that the NVCFD maintains the capability to effectively suppress wildland fires, through wildfire-specific training sessions. Specifically, members should continue to receive task force leader training and training that includes S-100 and S-185 (combined) or SPP-WFF-1, at a minimum<sup>73</sup>. Consider expanding the training program to maintain a high level of member education and training specific to interface and wildland fires. For example, SPP-115 provides training to structural firefighters on the use of wildfire pumps and hose (and fire service hose and hydrants) in the application of Structural Protection Units (SPUs).

## 6.2 STRUCTURE PROTECTION

Overall, the NVCFD is well resourced in structural fire suppression equipment, but lacking in wildland firefighting equipment, likely due to the fact that the majority of call-outs are for structural fires. However, the highly urbanized character of the CNV with its isolated patches of forested parkland and ravine corridors with areas of hazardous fuels does represent a risk to structures and homes, if these fuels ignited and a surface fire spread into tree crowns and transitioned into a much more dangerous crown fire. See Section 5.1 Fuel – Management, Proposed Treatment Units and Map 7 for the locations of hazardous fuels in the CNV. Therefore, it is recommended that the NVCFD conduct a comprehensive review of their firefighting equipment with the findings of this CWPP to determine if the purchase or enactment of a mutual aid agreement with the DNV to share their Type II Sprinkler Protection Unit (SPU) would be beneficial to the community. SPUs can be useful tools in the protection of interface homes in the event of a wildfire, and be mobilized to allow safe suppression activities in areas not easily accessible with engines.

An important consideration in protecting the WUI zone from fire is ensuring that homes can withstand an interface fire event. An additional resource the department can draw on are the UBCM-owned four SPUs, each equipped to protect 30 – 35 structures. The kits are deployed by the MFLNRORD/BCWS incident command structure and are placed strategically across the province during the fire season based on fire weather conditions and fire potential. When the kits are not in use, they may be utilized by fire departments for training exercises. Structure protection is focused on ensuring that building materials and construction standards are appropriate to protect individual homes from interface fire. Materials and construction standards used in roofing, exterior siding, window and door glazing, eaves, vents, openings, balconies, decks, and porches are primary considerations in developing FireSmart neighbourhoods.

<sup>73</sup> Office of the Fire Commissioner, 2013: <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/fire-safety/wildfire/spp-wff1-info.pdf>. The SPP-WFF 1 course is acceptable to BCWS for structure firefighters to action wildfires on their behalf. This training SPP-WFF 1 (or the S-100) is a prerequisite for all structure firefighters to participate on Structure Protection Crews as deployed provincially by the OFC.



Housing built using appropriate construction techniques and materials in combination with fire resistant landscaping are less likely to be impacted by interface fires.

While many BC communities established were built without significant consideration of interface fire, there are still ways to reduce home vulnerability. Changes to surrounding vegetation, roofing materials, siding, and decking can be achieved over the long-term through voluntary upgrades, as well as changes in bylaws and building codes. The FireSmart approach has been adopted by a wide range of governments and is a recognized process for reducing and managing fire risk in the wildland urban interface. More details on FireSmart construction can be found in the *"FireSmart Begins at Home Manual"*.<sup>74</sup>

It is recommended that homeowners take a building envelope – out approach, that is, starting with the home and working their way out. Addressing little projects first can allow for quick, easy, and cost-effective risk reduction efforts to be completed sooner, while larger, more costly projects can be completed as resources and planning allow. For example, prior to the fire season, clearing roofs and gutters of combustible materials (leaves and needles), cleaning out any combustible accumulations or stored materials from under decks, moving large potential heat sources such as firewood, spare building materials or vehicles as far from the structure as possible, maintaining a mowed and watered lawn, removing dead vegetation, and pruning trees are actionable steps that residents can start working on immediately. The following link from the Institute of Home and Building Safety (IBHS) accesses an excellent four-minute video demonstrating the importance of FireSmart building practices during a simulated ember shower: <http://www.youtube.com/watch?v=Vh4cQdH26g>.

The structure protection objectives for the CNV are to:

- Encourage private homeowners to voluntarily adopt FireSmart principles on their properties and to reduce existing barriers to action;
- Enhance protection of critical infrastructure from wildfire (and post-wildfire impacts); and,
- Enhance protection of residential / commercial structures from wildfire.

**RECOMMENDATION #41:** The NVCFD should explore the feasibility of purchasing their own SPU by conducting a cost-benefit analysis to be informed with call-out data in the last few years. The NVCFD could potentially explore the possibility of contracting an agreement with the DNV for sharing or borrowing their SPU, however it should be recognized that during a wildfire event on the North shore, the SPU may be unavailable.

<sup>74</sup>Available at <https://firesmartcanada.ca/resources/> (FireSmart Canada) and <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/firesmart> (BC FireSmart)



## SECTION 7: REFERENCES

- Agee, J.K., Bahro, B., Finney, M.A., Omi, P.N., Sapsis, D.B., Skinner, C.N., van Wagtendonk, J.W., Weatherspoon, C.P. The use of shaded fuelbreaks in landscape fire management. *Forest Ecology and Management*, 127 (2000), 55-66.
- BC Hydro, 2020. Power Smart – Earthquakes, wildfires, and floods. Retrieved from: <https://www.bchydro.com/safety-outages/emergency-preparation/natural-disasters.html>
- BC Provincial Coordination Plan for Wildland Urban Interface Fires. 2016. [https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire\\_revised\\_july\\_2016.pdf](https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire_revised_july_2016.pdf)
- BC Wildfire Service (BCWS), 2019: Fire Incident Locations – Historical.
- BC Wildfire Service (BCWS), 2015. Provincial Strategic Threat Analysis 2015 Wildfire Threat Analysis Component. Retrieved from: [https://www.for.gov.bc.ca/ftp/!Project/WildfireNews/PSTA/Provincial\\_Strategic\\_Threat\\_Analysis\\_PSTA\\_2015\\_REPORT.pdf](https://www.for.gov.bc.ca/ftp/!Project/WildfireNews/PSTA/Provincial_Strategic_Threat_Analysis_PSTA_2015_REPORT.pdf). Accessed January 9, 2018.
- BC Wildfire Service (BCWS), 2020. Wildfire Season Summary. Retrieved From: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary>
- Calkin, D., J. Cohen, M. Finney, M. Thompson. “How risk management can prevent future wildfire”
- Calkin, D., J. Cohen, M. Finney, M. Thompson. 2014. How risk management can prevent future wildfire disasters in the wildland-urban interface. *Proc Natl Acad Sci U.S.A.* Jan 14; 111(2): 746-751. Retrieved from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3896199/>.
- City of Coquitlam, 2020. GVRD Public Works Mutual Aid Agreement (1999).
- City of North Vancouver OCP Update (2014). Retrieved from: <https://www.cnv.org/Your-Government/Official-Community-Plan/CityShaping-OCP-Update>
- City of North Vancouver, 2002. Parks and Greenways Strategic Plan. Retrieved from: <https://www.cnv.org/parks-recreation-and-culture/parks-and-greenways/plans-policies-and-bylaws/parks-and-greenways-strategic-plan>
- City of North Vancouver, 2007. Urban Forest Management Plan. Retrieved from: <https://vancouver.ca/home-property-development/urban-forest-strategy.aspx>
- City of North Vancouver, 2009. Evacuation Guidelines. Date accessed: 6/16/2020
- City of North Vancouver, 2010. Parks Master Plan: Activity and Diversity. Retrieved from: <https://www.cnv.org/parks-recreation-and-culture/parks-and-greenways/plans-policies-and-bylaws/parks-master-plan>
- City of North Vancouver, 2011. Tree Policy for the Management of Trees on City Property. Retrieved from: <https://www.cnv.org/parks-recreation-and-culture/parks-and-greenways/plans-policies-and-bylaws/street-trees>
- City of North Vancouver, 2004. Street Tree Master Plan.



- City of North Vancouver, 2013. Climate Change Adaption Plan. Retrieved from:  
<https://www.cnv.org/your-government/living-city/climate-action/climate-change-adaptation>
- City of North Vancouver, 2013. Climate Change and Impacts for the City of North Vancouver - Summary Report for ICLEI Adaption Milestone 2.
- City of North Vancouver, 2015. Invasive Plant Inventory Update 2015. Retrieved from:  
<https://www.cnv.org/your-government/living-city/environmental-protection/invasive-species/invasive-plants>
- City of North Vancouver, 2019. Drinking Water Quality – 2018 Annual Report. Retrieved from:  
<https://www.cnv.org/city-services/water-sewer-and-drainage/water>
- City of North Vancouver, 2020. About the City. Retrieved from: <https://www.cnv.org/your-government/about-the-city>
- City of North Vancouver, 2020. City Services - Water. Retrieved From: <https://www.cnv.org/city-services/water-sewer-and-drainage/water>
- City of North Vancouver, 2020. Emergency Preparedness. Retrieved from: <https://www.cnv.org/city-services/health-and-public-safety/emergency-preparedness>
- City of North Vancouver, 2020. Wastewater Treatment and Facilities. Retrieved from:  
<http://www.metrovancouver.org/services/liquid-waste/treatment/treatment-plants/lions-gate/Pages/default.aspx>
- Cohen, J. Preventing Disaster Home Ignitability in the WUI. *Journal of Forestry*. p 15 - 21.
- Community Resiliency Investment Program. 2018. Community Wildfire Protection Plan Template.
- CRI FireSmart Community Funding & Supports – Program & Application Guide. 2020. Retrieved from:  
<https://www.ubcm.ca/assets/Funding~Programs/LGPS/CRI/cri-2020-program-guide.pdf>
- Dale, V., L. Joyce, S. McNulty, R. Neilson, M. Ayres, M. Flannigan, P. Hanson, L. Irland, A. Lugo, C. Peterson, D. Simberloff, F. Swanson, B. Stocks, B. Wotton. Climate Change and Forest Disturbances. *BioScience* 2001 51 (9), 723-734.
- De Ronde, C. 2002. Wildland fire-related fatalities in South Africa – A 1994 case study and looking back at the year 2001. *Forest Fire Research & Wildland Fire Safety*, Viegas (ed.), <http://www.fire.uni-freiburg.de/GlobalNetworks/Africa/Wildland.cdr.pdf>
- deGroot, W. J., M. D. Flannigan, A.S. Cantin. 2013. Climate change impacts on future boreal fire regimes. *Forest Ecology and Management*. 294: 35 -44.
- Diamond Head Consulting. 2017. Design Guidebook – Maximizing Climate Adaptation Benefits with Trees
- Diamond Head Consulting. 2017. Urban Forest Climate Adaptation – Tree Species Selection Database. Available online at: <http://www.metrovancouver.org/services/regional-planning/conserving-connecting/resources/Pages/default.aspx>
- Diamond Head Consulting. 2017. Urban Forest Climate Adaptation Framework for Metro Vancouver. Tree Species Selection, Planting and Management



- Fire Underwriters Survey, 1999. Water Supply for Public Fire Protection. Retrieved from: <http://www.scm-rms.ca/docs/Fire%20Underwriters%20Survey%20-%201999%20Water%20Supply%20for%20Public%20Fire%20Protection.pdf>
- FireSmart guidelines first published in the 1999 manual “FireSmart: Protecting Your Community from Wildfire”, with a second edition published in 2003. The most recent “FireSmart Begins at Home Manual” is available at <https://firesmartcanada.ca/resources/>. The “British Columbia FireSmart Begins at Home Manual” provides detailed guidance and is available at BC FireSmart: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/firesmart>
- Flannigan, M.D et al. 2009. Implications of changing climate for global wildland fire. *International Journal of Wildland Fire* 18, 483-507.
- Flannigan, M.D., B.M. Wotton, G.A. Marshall, W.J. deGroot, J. Johnston, N. Jurko, A.S. Cantin. 2016. Fuel moisture sensitivity to temperature and precipitation: climate change implications. *Climatic Change* (2016) 134: 59 -71. Accessed online at <https://link.springer.com/content/pdf/10.1007%2Fs10584-015-1521-0.pdf>.
- FortisBC, 2020. Wildfires and Evacuations. Retrieved from: <https://www.fortisbc.com/safety-outages/preparing-for-emergencies/wildfires-and-evacuations#tab-0>
- Government of Alberta. “FireSmart Guide to Landscaping”
- Government of Canada, 2020. National Disaster Mitigation Program (NDMP). Retrieved from: <https://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/dsstr-prvntn-mtgn/ndmp/index-en.aspx>
- Hall, E. 2010. Maintaining Fire in British Columbia's Ecosystems: An Ecological Perspective. Report submitted to the Wildfire Management Branch, Ministry of Forests and Range.
- Jordan, P., K. Turner, D. Nicol, D. Boyer. 2006. Developing a Risk Analysis Procedure for Post-Wildfire Mass Movement and Flooding in British Columbia. Part of the 1st Specialty Conference on Disaster Mitigation. Calgary, AB May 23 -26, 2006.
- Metro Vancouver Drinking Water Management Plan, 2011. Available online at: <http://www.metrovancouver.org/services/water/WaterPublications/DWMP-2011.pdf>
- Metro Vancouver, 2019. Climate 2050 Strategic Framework. Retrieved From: [http://www.metrovancouver.org/services/air-quality/AirQualityPublications/AQ\\_C2050-StrategicFramework.pdf](http://www.metrovancouver.org/services/air-quality/AirQualityPublications/AQ_C2050-StrategicFramework.pdf)
- Metro Vancouver, 2020. Regional Growth Strategy – Bylaw No. 1136, 2010. Adopted 2011 and updated to 2017. Retrieved from: <http://www.metrovancouver.org/services/regional-planning/PlanningPublications/RGSAdoptedbyGVRDBoard.pdf>
- Ministry of Forests, Lands and Natural Resource Operations (MFLNRO), 2005. Sustainable Resource Management Plan - Biodiversity Chapter for Chilliwack Landscape Unit.
- Ministry of Forests, Lands and Natural Resource Operations (MFLNRO), 2015. 2015-17 Coastal Timber Supply Areas Forest Health Overview. 2015. Retrieved from: [https://www.for.gov.bc.ca/ftp/HFP/external/!publish/Forest\\_Health/TSA\\_FH\\_Strategies/2015-Coast%20FH%20Strategy.pdf](https://www.for.gov.bc.ca/ftp/HFP/external/!publish/Forest_Health/TSA_FH_Strategies/2015-Coast%20FH%20Strategy.pdf)





- Ministry of Forests, Lands and Natural Resource Operations (MFLNRO), 2013. Lower Fraser Sustainable Resource Management Plan.
- Ministry of Forests, Lands and Natural Resource Operations (MFLNRO), 2016. BC Provincial Government extension note 'Adapting natural resource management to climate change in the West and South Coast Regions'. Accessed online at:  
<https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/nrs-climate-change/regional-extension-notes/coasten160222.pdf>
- Ministry of Forests, Lands and Natural Resource Operations and Rural Development (MFLNRORD) BEC Map (DataBC)
- Ministry of Forests, Lands and Natural Resource Operations and Rural Development (MFLNRORD), Archaeology. Retrieved online at:  
[https://www.for.gov.bc.ca/archaeology/accessing\\_archaeological\\_data/obtaining\\_access.htm](https://www.for.gov.bc.ca/archaeology/accessing_archaeological_data/obtaining_access.htm)
- National Fire Protection Association (NFPA), 2017. Standard on Water Supplies for Suburban and Rural Fire Fighting. Retrieved online at: <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1142>
- National Fire Protection Association (NFPA), 2017. Standard on Water Supplies for Suburban and Rural Fire Fighting. Retrieved online at: <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1142>
- Office of the Fire Commissioner, 2013: <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/fire-safety/wildfire/spp-wff1-info.pdf>
- Office of the Fire Commissioner, 2013: <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/fire-safety/wildfire/spp-wff1-info.pdf>
- Office of the Fire Commissioner. 2013. SPP-WFF-1 (Wildland Firefighter Level 1), as per NFPA 1051 Level 1 standard, background.
- Pacific Climate Impacts Consortium (PCIC). Accessed from:  
[https://www.pacificclimate.org/sites/default/files/publications/Climate\\_Summary-South\\_Coast.pdf](https://www.pacificclimate.org/sites/default/files/publications/Climate_Summary-South_Coast.pdf)
- Province of British Columbia, 1995. Biodiversity Guidebook, s.l.: s.n.
- Provincial Coordination Plan for Wildland Urban Interface Fires, 2016. Available online at:  
[https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire\\_revised\\_july\\_2016.pdf](https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire_revised_july_2016.pdf)
- Reinhardt, E., R. Keane, D. Calkin, J. Cohen, 2008. Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States. *Forest Ecology and Management* 256:1997 - 2006.
- Province of British Columbia. BECWeb:  
<https://www.for.gov.bc.ca/HRE/becweb/resources/classificationreports/subzones/index.html>





South Coast Fire Management Plan, 2018. (Internal government document)

Statistics Canada, 2016. District of Mission Census Profile. Retrieved From:

<https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=5909056&Geo2=PR&Code2=59&SearchText=Mission&SearchType=Begins&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=5909056&TABID=1&type=0>

Statistics Canada, 2016 Census. Retrieved from: <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=5915051&Geo2=PR&Code2=59&SearchText=North%20Vancouver&SearchType=Begins&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=5915051&TABID=1&type=0>

Strahler, A. N., 1957. Quantitative analysis of watershed geomorphology, Eos Trans. AGU, 38(6),913–920

Union of BC Municipalities, 2020. Community Resiliency Investment. Retrieved from:

<https://www.ubcm.ca/EN/main/funding/lgps/community-resiliency-investment.html>

Westhaver, A. 2017. Why some homes survived: Learning from the Fort McMurray wildland/urban interface fire disaster. Institute for Catastrophic Loss Reduction (ICLR) research paper series – number 56.



## APPENDIX A – LOCAL WILDFIRE THREAT PROCESS

The key steps to complete the local wildfire threat assessment are outlined below:

1. Fuel type attribute assessment, ground truthing/verification and updating as required to develop a local fuel type map (Appendix A-1).
2. Consideration of the proximity of fuel to the community, recognizing that fuel closest to the community usually represents the highest hazard (Appendix A-2).
3. Analysis of predominant summer fire spread patterns using wind speed and wind direction during the peak burning period using ISI Rose(s) from BCWS weather station(s) (Appendix A-3). Wind speed, wind direction, and fine fuel moisture condition influence wildfire trajectory and rate of spread.
4. Consideration of topography in relation to values (Appendix A-4). Slope percentage and slope position of the value are considered, where slope percentage influences the fire's trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill.
5. Stratification of the WUI based on relative wildfire threat, considering all of the above.
6. Consider other local factors (i.e., previous mitigation efforts, and local knowledge regarding hazardous or vulnerable areas)
7. Identify priority wildfire risk areas for field assessment.

The basis for the prioritization of field assessment locations is further detailed in Section 4.3. Wildfire Threat Assessment plot worksheets are provided in Appendix C (under separate cover), plot locations are summarized in Appendix F, and the field data collection and spatial analysis methodology is detailed in Appendix H.

### A-1 FUEL TYPE ATTRIBUTE ASSESSMENT

The Canadian Forest Fire Behaviour Prediction (FBP) System outlines five major fuel groups and sixteen fuel types based on characteristic fire behaviour under defined conditions.<sup>75</sup> Fuel typing is recognized as a blend of art and science. Although a subjective process, the most appropriate fuel type was assigned based on research, experience, and practical knowledge; this system has been used within BC, with continual improvement and refinement, for 20 years.<sup>76</sup> It should be noted that there are significant limitations with the fuel typing system which should be recognized. Major limitations include: a fuel typing system designed to describe fuels which do not occur within the AOI, fuel types which cannot accurately capture the natural variability within a polygon, and limitations in the data used to create initial fuel types.<sup>76</sup> Details regarding fuel typing methodology and limitations are found in Appendix G. There are several implications of the aforementioned limitations, which include: fuel typing further from the developed areas of the study has a lower confidence, generally; and, fuel typing should be used as a starting point for more detailed assessments and as an indicator of overall wildfire threat, not as an operational, or site-level, assessment.

<sup>75</sup>Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System: Information Report ST-X-3.

<sup>76</sup>Perrakis, D.B., Eade G., and Hicks, D. 2018. Natural Resources Canada. Canadian Forest Service. *British Columbia Wildfire Fuel Typing and Fuel Type Layer Description* 2018 Version.



Table 13 summarizes the fuel types by general fire behaviour (crown fire and spotting potential). In general, the fuel type that may be considered hazardous in terms of fire behaviour and spotting potential in the AOI is C-3, particularly if there are large amounts of woody fuel accumulations or denser understory ingrowth. C-5 fuel types have a moderate potential for active crown fire when wind-driven.<sup>76</sup> An M-1/2 fuel type can be considered hazardous, when representing a young conifer plantation and depending on the proportion of conifers within the forest stand; conifer fuels include those in the overstory, as well as those in the understory. An O-1b fuel type, although not encountered in the CNV can easily develop from an N (field) fuel type, often can support a rapidly spreading grass or surface fire capable of damage or destruction of property, and jeopardizing human life, although it is recognized as a highly variable fuel type dependent upon level of curing.<sup>77</sup> The O-1b fuel type was also attributed to sites dominated by invasive shrubs such as Scotch Broom. These fuel types were used to guide the threat assessment.

Forested ecosystems are dynamic and change over time: fuels accumulate, stands fill in with regeneration, and forest health outbreaks occur. Regular monitoring of fuel types and wildfire threat assessment should occur every 5 – 10 years to determine the need for threat assessment updates and the timing for their implementation.

**Table 13. Fuel Type Categories and Crown Fire Spot Potential. Only summaries of fuel types encountered within the AOI are provided (as such, other fuel types, i.e., C-1, C-2, C-4, O-1a/b, S-1/2 and C-7 are not summarized below).**

Fuel Type	FBP / CFDDRS Description	Study Area Description	Wildfire Behaviour Under High Wildfire Danger Level	Fuel Type – Crown Fire / Spotting Potential
C-3	Mature jack or lodgepole pine	Fully stocked, late young forest (western red cedar, hemlock, and/or Douglas-fir), with crowns separated from the ground	Surface and crown fire, low to very high fire intensity and rate of spread	High*
C-5	Red and white pine	Well-stocked mature forest, crowns separated from ground. Moderate understory herbs and shrubs. Often accompanied by dead woody fuel accumulations.	Moderate potential for active crown fire in wind-driven conditions. Under drought conditions, fuel consumption and fire intensity can be higher due to dead woody fuels	Low

<sup>77</sup>Ibid.



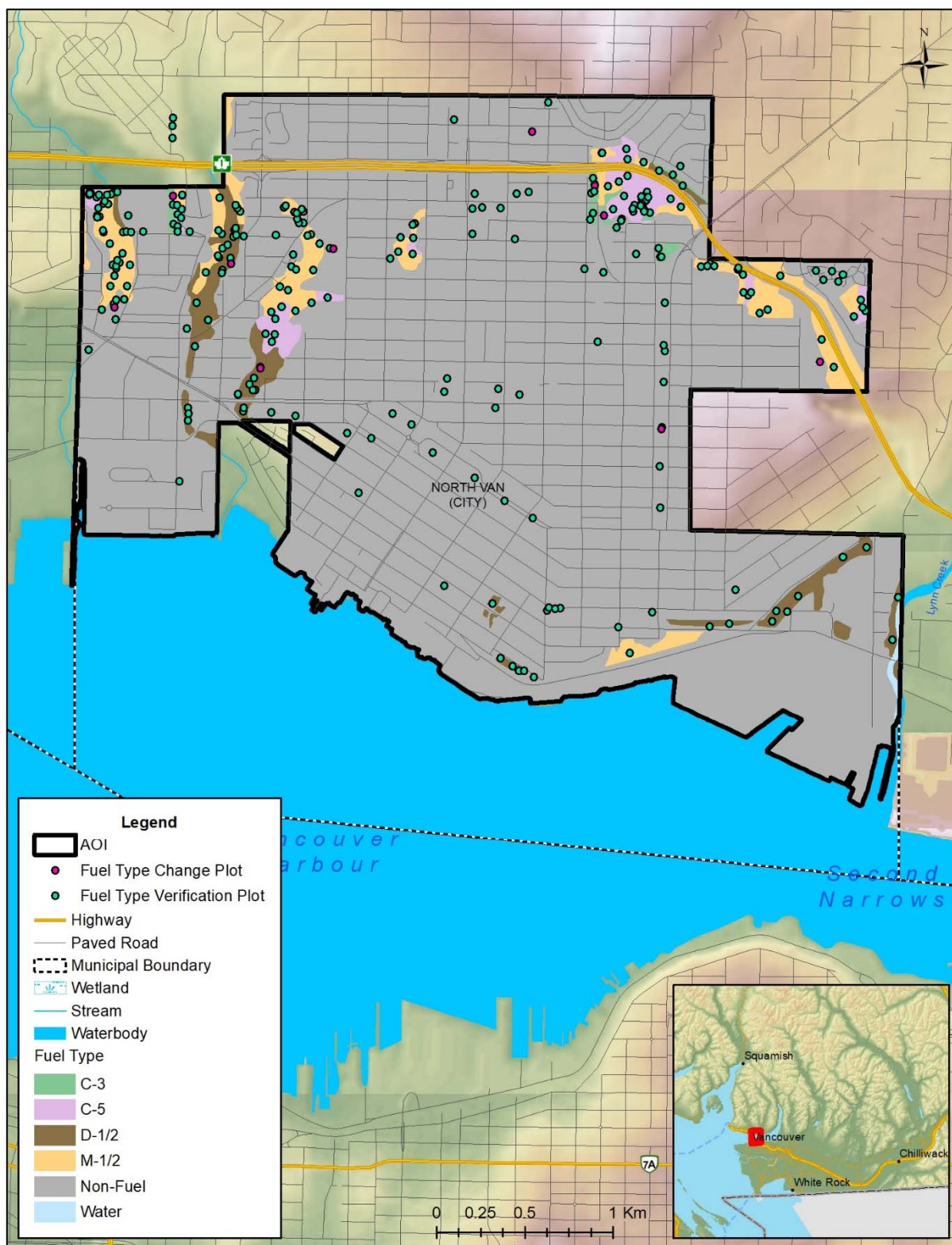
Fuel Type	FBP / CFDDRS Description	Study Area Description	Wildfire Behaviour Under High Wildfire Danger Level	Fuel Type – Crown Fire / Spotting Potential
M-1/2	Boreal mixedwood (leafless and green)	Moderately well-stocked mixed stand of conifers and deciduous species, low to moderate dead, down woody fuels.	Surface fire spread, torching of individual trees and intermittent crowning, (depending on slope and percent conifer)	<26% conifer (Very Low); 26-49% Conifer (Low); >50% Conifer (Moderate)
D-1/2	Aspen (leafless and green)	Deciduous stands	Always a surface fire, low to moderate rate of spread and fire intensity	Low
W	N/A	Water	N/A	N/A
N	N/A	Non-fuel: irrigated agricultural fields, golf courses, alpine areas void or nearly void of vegetation, urban or developed areas void or nearly void of forested vegetation.	N/A	N/A

\*C-3 fuel type is considered to have a high crown fire and spotting potential within the study area due to the presence of moderate to high fuel loading (dead standing and partially or fully down woody material), and continuous conifer ladder fuels (i.e., western redcedar, Cw, and/or Douglas-fir, Fd).

During field visits, 12 recurring patterns of fuel type errors were found in the provincial dataset. They were:

- C-3 fuel types being incorrectly identified by the PSTA as C-5,
- C-3 fuel types identified as D-1/2,
- C-3 fuel types identified as M-1/2,
- C-5 fuel types identified as M-1/2,
- D-1/2 fuel types identified as C-5,
- D-1/2 fuel types identified as M-1/2,
- M-1/2 25% fuel types identified as C-5,
- M-1/2 25% fuel types identified as N,
- M-1/2 50% fuel types identified as C-5,
- M-1/2 50% fuel types identified as D-1/2,
- N fuel types identified as D-1/2,
- N fuel types identified as M-1/2, and
- N fuel types identified as O-1ab.

All fuel type updates were approved by BCWS, using stand and fuel descriptions and photo documentation for the review process (see Appendix B for submitted fuel type change rationales).



Map 7. Updated Fuel Type.





## A-2 PROXIMITY OF FUEL TO THE COMMUNITY

Fire hazard classification in the WUI is partly dictated by the proximity of the fuel to developed areas within a community. More specifically, fuels closest to the community are considered to pose a higher hazard in comparison to fuels that are located at greater distances from values at risk. As a result, it is recommended that the implementation of fuel treatments prioritizes fuels closest to structures and / or developed areas, in order to reduce hazard level adjacent to the community. Continuity of fuel treatment is an important consideration, which can be ensured by reducing fuels from the edge of the community outward. Special consideration must be allocated to treatment locations to ensure continuity, as discontinuous fuel treatments in the WUI can allow wildfire to intensify, resulting in a heightened risk to values. In order to classify fuel threat levels and prioritize fuel treatments, fuels immediately adjacent to the community are rated higher than those located further from developed areas. Table 14 describes the classes associated with proximity of fuels to the interface.

**Table 14. Proximity to the Interface.**

Proximity to the Interface	Descriptor*	Explanation
<b>WUI 100</b>	(0-100 m)	This Zone is always located adjacent to the value at risk. Treatment would modify the wildfire behaviour near or adjacent to the value. Treatment effectiveness would be increased when the value is FireSmart.
<b>WUI 500</b>	(101-500m)	Treatment would affect wildfire behaviour approaching a value, as well as the wildfire's ability to impact the value with short- to medium- range spotting; should also provide suppression opportunities near a value.
<b>WUI 2000</b>	(501-2000 m)	Treatment would be effective in limiting long - range spotting but short- range spotting may fall short of the value and cause a new ignition that could affect a value.
	>2 000 m	This should form part of a landscape assessment and is generally not part of the zoning process. Treatment is relatively ineffective for threat mitigation to a value, unless used to form a part of a larger fuel break / treatment.

*\*Distances are based on spotting distances of high and moderate fuel type spotting potential and threshold to break crown fire potential (100m). These distances can be varied with appropriate rationale, to address areas with low or extreme fuel hazards.*

## A-3 FIRE SPREAD PATTERNS

Wind speed, wind direction, and fine fuel moisture condition influence wildfire trajectory and rate of spread. Wind plays a predominant role in fire behaviour and direction of fire spread and is summarized in the Wind Rose from the local representative Metro Vancouver weather station, Capilano (Figure 4).<sup>78</sup> A more representative MFLNRORD weather station (and associated Initial Spread Index reporting) was not available for the AOI. The wind rose data is compiled hourly and provides an estimate of prevailing wind directions and wind speed in the area of the weather station.

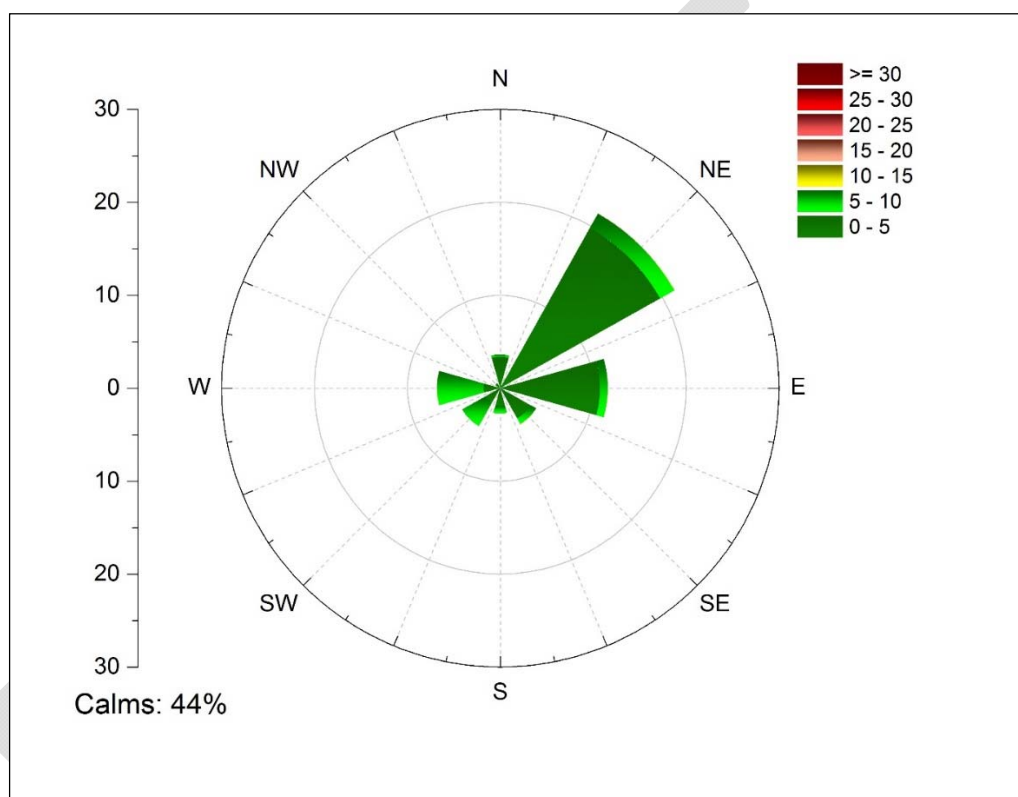
During the fire season (April – October) winds are predominantly from the northeast and to a lesser degree from the east with wind speeds of 0-5 km/hour the majority of the time and increasing 5-10

<sup>78</sup> Data provided by Metro Vancouver.





km/hour. Winds occur from the northeast at speeds of 0-5 km/hour less than 20% of the time, and at speeds of 5-10 km/hour approximately 3% of the time. Winds from the east occur approximately 12% of the time (predominantly at speeds of 0-5 km/hour and up to 10 km/hour). Winds occur least frequently from the west (approximately 6% of the time), and from the southwest, southeast, north and south, in declining order (less than 5% of the time). The highest wind speeds (5 to 10 km/hour) tend to occur more frequently from the west and southwest during the fire season. Potential treatment areas were identified and prioritized with the predominant wind direction in mind; wildfire that occurs upwind of a value poses a more significant threat to that value than one which occurs downwind.



**Figure 4. Wind rose for Capilano weather station based on hourly wind speed data during the fire season (April 1 – October 31) 2002-2018. Data courtesy of Metro Vancouver. The length of each bar represents the frequency of readings in percent and bar colour indicates the windspeed range.**

## A-4 TOPOGRAPHY

Topography is an important environmental component that influences fire behaviour. Considerations include slope percentage (steepness) and slope position where slope percentage influences the fire's trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill. Other factors of topography that influence fire behaviour include aspect, elevation and land configuration.

### *Slope Class and Position*



Slope steepness affects solar radiation intensity, fuel moisture (influenced by radiation intensity) and influences flame length and rate of spread of surface fires. Table 15 summarizes the fire behaviour implications for slope percentage (the steeper the slope the faster the spread). In addition, slope position affects temperature and relative humidity. A value placed at the bottom of the slope is equivalent to a value on flat ground (see Table 16). A value on the upper 1/3 of the slope would be impacted by preheating and faster rates of spread (Table 16). The majority of the slopes (92%) in the AOI are on less than 20% slope and will likely not experience accelerated rates of spread due to slope class. Approximately 8% percent of the AOI is likely to experience an increased or high rate of spread. On the larger topographic scale, the CNV and its commercial, recreational, and residential developments would be considered to be at the bottom of the slope through to mid slope in the higher elevation residential areas.

**Table 15. Slope Percentage and Fire Behaviour Implications.**

Slope	Percent of AOI	Fire Behaviour Implications
<20%	92%	Very little flame and fuel interaction caused by slope, normal rate of spread.
20-30%	4%	Flame tilt begins to preheat fuel, increase rate of spread.
30-40%	2%	Flame tilt preheats fuel and begins to bathe flames into fuel, high rate of spread.
40-60%	2%	Flame tilt preheats fuel and bathes flames into fuel, very high rate of spread.
>60%	1%	Flame tilt preheats fuel and bathes flames into fuel well upslope, extreme rate of spread.

**Table 16. Slope Position of Value and Fire Behaviour Implications.**

Slope Position of Value	Fire Behaviour Implications
Bottom of Slope/ Valley Bottom	Impacted by normal rates of spread.
Mid Slope - Bench	Impacted by increase rates of spread. Position on a bench may reduce the preheating near the value. (Value is offset from the slope).
Mid slope – continuous	Impacted by fast rates of spread. No break in terrain features affected by preheating and flames bathing into the fuel ahead of the fire.
Upper 1/3 of slope	Impacted by extreme rates of spread. At risk to large continuous fire run, preheating and flames bathing into the fuel.



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## **APPENDIX B – WILDFIRE THREAT ASSESSMENT – FBP FUEL TYPE CHANGE RATIONALE**

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Provided separately as PDF package.

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## APPENDIX C – WILDFIRE THREAT ASSESSMENT WORKSHEETS AND PHOTOS

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Provided separately as PDF package.

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## APPENDIX D – MAPS

Provided separately as PDF package.

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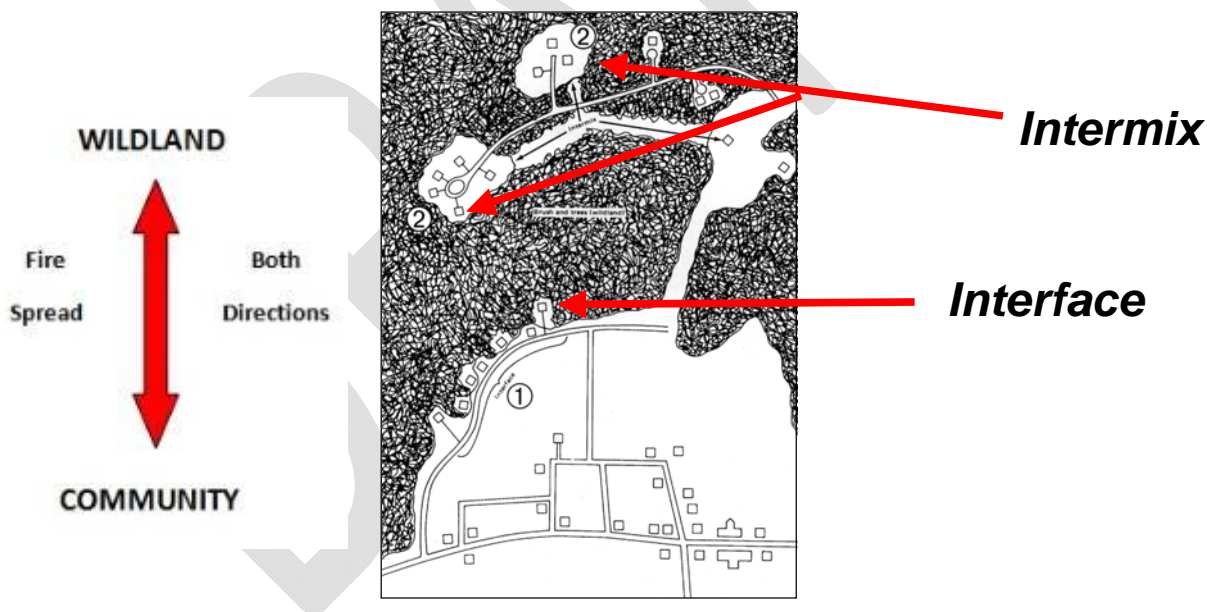


## APPENDIX E – WILDLAND URBAN INTERFACE DEFINED

The traditional and most simple definition for the wildland/urban interface (WUI) is “the place where the forest meets the community”. However, this definition can be misleading. Incorrectly, it implies that neighbourhoods and structures well within the perimeter of a larger community are not at risk from wildfire. As well, it fails to recognize that developments adjacent to grassland and bush are also vulnerable.

A more accurate and helpful definition of the WUI is based on a set of conditions, rather than a geographical location: “the presence of structures in locations in which conditions result in the potential for ignition of structures from the flames, radiant heat or embers of a wildland fire.” This definition was developed by the National Fire Protection Association and is used by the US Firewise program. It recognizes that all types of wildland fuel/fire can lead to structural ignition (i.e. forest, grassland, brush) and also identifies the three potential sources of structural ignition.

Two situations are differentiated. Locations where there is a clean/abrupt transition from urban development to forest lands are usually specified as the “interface” whereas locations where structures are embedded or mingled within a matrix of dense wildland vegetation are known as the “intermix”. An example of interface and intermixed areas is illustrated in **Error! Reference source not found..**



**Figure 5. Illustration of intermix and interface situations.**

Within the WUI, fire has the ability to spread from the forest into the community or from the community out into the forest. Although these two scenarios are quite different, they are of equal importance when considering interface fire risk. Regardless of which scenario occurs, there will be consequences for the





community and this will have an impact on the way in which the community plans and prepares itself for interface fires.

Fires spreading into the WUI from the forest can impact homes in two distinct ways:

1. From sparks or burning embers carried by the wind, or convection that starts new fires beyond the zone of direct ignition (main advancing fire front), that alight on vulnerable construction materials or adjacent flammable landscaping (roofing, siding, cedar hedges, bark mulch, etc.) (Figure 6).
2. From direct flame contact, convective heating, conductive heating or radiant heating along the edge of a burning fire front (burning forest), or through structure-to-structure contact. Fire can ignite a vulnerable structure when the structure is in close proximity (within 10 meters of the flame) to either the forest edge or a burning house (Figure 7).



**Figure 6. Firebrand caused ignitions:** burning embers are carried ahead of the fire front and alight on vulnerable building surfaces.



**Figure 7. Radiant heat and flame contact** allows fire to spread from vegetation to structure or from structure to structure.

Current research confirms that the majority of homes ignited during major WUI events trace back to embers as their cause (e.g. 50% – 80+ %). Firebrands can be transported long distances ahead of the wildfire, across any practicable fire guards, and accumulate on horizontal surfaces within the home ignition zone in densities that can reach 600+ /m<sup>2</sup>. Combustible materials found within the home ignition zone combine to provide fire pathways allowing spot fires ignited by embers to spread and carry flames or smoldering fire into contact with structures.



## APPENDIX F – WUI THREAT PLOT LOCATIONS

Table 17 displays a summary of all WUI threat plots completed during CWPP field work. The original WUI threat plot forms and photos will be submitted as a separate document. The following ratings are applied to applicable point ranges:

- Wildfire Behaviour Threat Score – Low (0-40); Moderate (41 – 95); High (96 – 149); Extreme (>149); and,
- WUI Threat Score – Low (0 – 13); Moderate (14 – 26); High (27 – 39); Extreme (>39).

**Table 17. Summary of WUI Threat Assessment Worksheets.**

Plot #	Geographic Location	Wildfire Behaviour Threat Class	WUI Threat Class*
EAST-1	Located in Eastview Park, south of Cedar Village Close	Moderate	n/a
EAST-2	Located in Eastview Park, south of Cedar Village Close	Moderate	n/a
GREEN-1	Located in Greenwood Park, southeast of Grand Boulevard and E23rd Street	Moderate	n/a
GREEN-2	Located in Greenwood Park, southeast of Grand Boulevard and E23rd Street	High	Extreme
GREEN-3	Located in Greenwood Park, south of Grand Boulevard and E23rd Street	High	Extreme
GREEN-4	Located in Greenwood Park, south of the Trans Canada Highway	Moderate	n/a
GREEN-5	Located in Greenwood Park, northeast of Queensbury avenue and E22nd Street	Moderate	n/a
GREEN-6	Located in Greenwood Park, north of Queensbury avenue and E22nd Street	High	Extreme
KEAL-1	Located in Kealey Woods Park, northeast of Queensbury avenue and E20th Street	High	Extreme
KEAL-2	Located in Kealey Woods Park, southwest of Boulevard Crescent and E21st Street	High	High
LOUT-1	Located in Loutet Park, Northeast of William Avenue and E17th Street	High	High
LUCA-1	Located east of the Lucas Center, north of W21st Street	High	High



LUCA-2	Located in Heywood Park, west of the Lucas Center	Moderate	n/a
LUCA-3	Loacted in Heywood Park, northeast of MacKay Avenue and W19th Street	High	Extreme
LUCA-4	Loacted in Heywood Park, southwest of Hamilton Avenue and W20th St	High	Extreme
MISS-1	Loacted in Mahon Park, west of Forbes Avenue and W16th Street	Moderate	n/a
MISS-2	Located in Mahon Park, west of Jones Avenue and W18th Street	Moderate	n/a
MOSQ-1	Located in Mosquito Creek Park, west of Westview Drive and W22nd Street	High	Extreme
MOSQ-2	Located in Mosquito Creek Park, east of Alden Lane and Westmoreland Crescent	High	Extreme
MOSQ-3	Loacted in Mosquito Creek Park, east of Fell Avenue and West 19th Street	Moderate	n/a
TEMPE-1	Loacted in Tempe Heights Park, Northwest of Wilding Way and Tempe Knoll Drive	High	High
WAGG-1	Located in Wagg Creek Park, west of Chesterfield Avenue and W20th Street	Moderate	n/a

\*Note that WUI threat scores are only collected for untreated polygons that rate high or extreme for Wildfire Behaviour Threat score. WUI threat scores are collected regardless of Wildfire Behaviour Threat score for treated polygons.



## APPENDIX G – FUEL TYPING METHODOLOGY AND LIMITATIONS

The initial starting point for fuel typing for the AOI was the 2018 provincial fuel typing layer provided by BCWS as part of the *2018 Provincial Strategic Threat Analysis* (PSTA) data package. This fuel type layer is based on the FBP fuel typing system. PSTA data is limited by the accuracy and availability of information within the Vegetation Resource Inventory (VRI) provincial data; confidence in provincial fuel type data is very low on private land. The PSTA threat class for all private land within the AOI was not available. Fuel types within the AOI have been updated using ortho imagery of the area with representative fuel type calls confirmed by field fuel type verification. Polygons not field-verified were assigned fuel types based upon similarities visible in orthophotography to areas field verified. Where polygons were available from the provincial fuel typing layer, they were utilized and updated as necessary for recent harvesting, development, etc.

It should be noted that fuel typing is intended to represent a fire behaviour pattern; a locally observed fuel type may have no exact analog within the FBP system. The FBP system was almost entirely developed for boreal and sub-boreal forest types, which do not occur within the AOI. As a result, the local fuel typing is a best approximation of the Canadian Forest Fire Danger Rating System (CFFDRS) classification, based on the fire behaviour potential of the fuel type during periods of high and extreme fire danger within the local MFLNRORD region. Additionally, provincial fuel typing depends heavily on VRI data, which is gathered and maintained in order to inform timber management objectives, not fire behaviour prediction. For this reason, VRI data often does not include important attributes which impact fuel type and hazard, but which are not integral to timber management objectives. Examples include: surface fuels and understory vegetation.

In some cases, fuel type polygons may not adequately describe the variation in the fuels present within a given polygon due to errors within the PSTA and VRI data, necessitating adjustments required to the PSTA data. In some areas, aerial imagery is not of sufficiently high resolution to make a fuel type call. Where fuel types could not be updated from imagery with a high level of confidence, the original PSTA fuel type polygon and call were retained.

For information on the provincial fuel typing process used for PSTA data as well as aiding in fuel type updates made in this document, please refer to Perrakis, Eade, and Hicks, 2018.<sup>79</sup>

<sup>79</sup>Perrakis, D.B., Eade G., and Hicks, D. 2018. Natural Resources Canada. Canadian Forest Service. *British Columbia Wildfire Fuel Typing and Fuel Type Layer Description* 2018 Version



## APPENDIX H – WUI THREAT ASSESSMENT METHODOLOGY

As part of the CWPP process, spatial data submissions are required to meet the defined standards in the Program and Application Guide. As part of the program, proponents completing a CWPP or CWPP update are provided with the Provincial Strategic Threat Analysis (PSTA) dataset. This dataset includes:

- Current Fire Points
- Current Fire Polygons
- Fuel Type
- Historical Fire Points
- Historical Fire Polygons
- Mountain pine beetle polygons (sometimes not included)
- PSTA Head Fire Intensity
- PSTA Historical Fire Density
- PSTA Spotting Impact
- PSTA Threat Rating
- Structure Density
- Structures (sometimes not included)
- Wildland Urban Interface Buffer Area

The required components for the spatial data submission are detailed in the Program and Application Guide Spatial Appendix – these include:

- AOI
- Fire Threat
- Fuel Type
- Proposed Treatment
- Threat Plot

The provided PSTA data does not necessarily transfer directly into the geodatabase for submission, and several PSTA feature classes require extensive updating or correction. In addition, the Fire Threat determined in the PSTA is fundamentally different than the Fire Threat feature class that must be submitted in the spatial data package. The Fire Threat in the PSTA is based on provincial scale inputs - fire density; spotting impact; and head fire intensity, while the spatial submission Fire Threat is based on the components of the Wildland Urban Interface Threat Assessment Worksheet. For the scope of this project, completion of WUI Threat Assessment plots on the entire AOI is not possible, and therefore an analytical model has been built to assume Fire Threat based on spatially explicit variables that correspond to the WUI Threat Assessment worksheet.

### *Field Data Collection*

The primary goals of field data collection are to confirm or correct the provincial fuel type, complete WUI Threat Assessment Plots, and assess other features of interest to the development of the CWPP. This is



accomplished by traversing as much of the study area as possible (within time, budget and access constraints). Threat Assessment plots are completed on the 2012 version form, and as per the Wildland Urban Interface Threat Assessment Guide.

For clarity, the final threat ratings for the study area were determined through the completion of the following methodological steps:

1. Update fuel-typing using orthophotography provided by the client and field verification.
2. Update structural data using critical infrastructure information provided by the client, field visits to confirm structure additions or deletions, and orthophotography
3. Complete field work to ground-truth fuel typing and threat ratings (completed 22 WUI threat plots on a variety of fuel types, aspects, and slopes and an additional 300+ field stops with qualitative notes, fuel type verification, and/or photographs)
4. Threat assessment analysis using field data collected and rating results of WUI threat plots – see next section.

### *Spatial Analysis*

Not all attributes on the WUI Threat Assessment form can be determined using a GIS analysis on a landscape/polygon level. To emulate as closely as possible the threat categorization that would be determined using the Threat Assessment form, the variables in Table 18 were used as the basis for building the analytical model. The features chosen are those that are spatially explicit, available from existing and reliable spatial data or field data, and able to be confidently extrapolated to large polygons.

**Table 18. Description of variables used in spatial analysis for WUI wildfire threat assessment.**

WUI Threat Sheet Attribute	Used in Analysis?	Comment
FUEL SUBCOMPONENT		
Duff depth and Moisture Regime	No	Many of these attributes assumed by using 'fuel type' as a component of the Fire Threat analysis. Most of these components are not easily extrapolated to a landscape or polygon scale, or the data available to estimate over large areas (VRI) is unreliable.
Surface Fuel continuity	No	
Vegetation Fuel Composition	No	
Fine Woody Debris Continuity	No	
Large Woody Debris Continuity	No	
Live and Dead Coniferous Crown Closure	No	
Live and Dead Conifer Crown Base height	No	
Live and Dead suppressed and Understory Conifers	No	
Forest health	No	
Continuous forest/slash cover within 2 km	No	
WEATHER SUBCOMPONENT		
BEC zone	Yes	
Historical weather fire occurrence	Yes	
TOPOGRAPHY SUBCOMPONENT		
Aspect	Yes	





WUI Threat Sheet Attribute	Used in Analysis?	Comment
Slope	Yes	Elevation model was used to determine slope.
Terrain	No	
Landscape/ topographic limitations to wildfire spread	No	
<b>STRUCTURAL SUBCOMPONENT</b>		
Position of structure/ community on slope	No	
Type of development	No	
Position of assessment area relative to values	Yes	Distance to structure is used in analysis; position on slope relative to values at risk is too difficult to analyze spatially.

The field data is used to correct the fuel type polygon attributes provided in the PSTA. The corrected fuel type layer is then used as part of the initial spatial analysis process. The other components are developed using spatial data (BEC zone, fire history zone) or spatial analysis (aspect, slope). A scoring system was developed to categorize resultant polygons as having relatively low, moderate, high or extreme Fire Threat, or Low, Moderate, High or Extreme WUI Threat.

These attributes are combined to produce polygons with a final Fire Behaviour Threat Score. To determine the Wildland Urban Interface Score, only the distance to structures is used. Buffer distances are established as per the WUI Threat Assessment worksheet (<200, 200-500 and >500) for polygons that have a 'high' or 'extreme' Fire Behaviour Threat score. Polygons with structures within 200m are rated as 'extreme', within 500m are rated as 'high', within 2km are 'moderate', and distances over that are rated 'low'.

There are obvious limitations in this method, most notably that not all components of the threat assessment worksheet are scalable to a GIS model, generalizing the Fire Behaviour Threat score. The WUI Threat Score is greatly simplified, as determining the position of structures on a slope, the type of development and the relative position are difficult in an automated GIS process. This method uses the best available information to produce the initial threat assessment across the study area in a format which is required by the UBCM SWPI program.

Upon completion of the initial spatial threat assessment, individual polygon refinement was completed. In this process, the WUI threat plots completed on the ground were used in the following ways:

- fuel scores were reviewed and applied to the fuel type in which the threat plot was completed;
- conservative fuel scores were then applied to the polygons by fuel type to check the initial assessment;
- high Wildfire Behaviour Threat Class polygons were reviewed in google earth to confirm their position on slope relative to values at risk.

In this way, we were able to consider fuel attributes outside the fuel typing layer, as well as assessment area position on slope relative to structures, which are included in the WUI threat plot worksheet.



### ***Limitations***

The threat class ratings are based initially upon (geographic information systems) GIS analysis that best represents the WUI wildfire threat assessment worksheet and are updated with ground-truthing WUI threat plots. WUI threat plots were completed in a variety of fuel types, slopes, and aspects in order to be able to confidently refine the GIS analysis. It should be noted that there are subcomponents in the worksheet which are not able to be analyzed using spatial analysis; these are factors that do not exist in the GIS environment.

The threat assessment is based largely on fuel typing, therefore the limitations with fuel typing accuracy (as detailed in Appendix A-1 and Appendix G) impacts the threat assessment, as well.

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The Corporation of **THE CITY OF NORTH VANCOUVER**  
**PLANNING & DEVELOPMENT DEPARTMENT**

**REPORT**

To: Mayor Linda Buchanan and Members of Council

From: Meg Wray, Planner 1

Subject: REZONING APPLICATION: BLACK KETTLE BREWING INC., 720  
COPPING STREET

Date: October 7, 2020 File No: 08-3360-20-0504/1

*The following is a suggested recommendation only. Refer to Council Minutes for adopted resolution.*

**RECOMMENDATION**

PURSUANT to the report of the Planner 1, dated October 7, 2020, entitled  
"Rezoning Application: Black Kettle Brewing Inc., 720 Copping Street":

THAT "Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8700"  
(Bryan Lockhart / Black Kettle Brewing Inc., 720 Copping Street, CD-728) be  
considered and the Public Hearing be waived;

AND THAT notification be circulated in accordance with the *Local Government  
Act*.

**ATTACHMENTS**

1. Context Map (Doc# [1951140](#))
2. Architectural Plans, dated September 30, 2020 (Doc# [1951807](#))
3. Public Consultation Summary (Doc# [1951147](#))
4. Zoning Bylaw Amendment Bylaw No. 8700 (Doc# [1951195](#))

**PROJECT DESCRIPTION**

Black Kettle Brewing is an existing beer manufacturer located at 720 Copping Street,  
and has been operating since 2014.

The current zoning at 720 Copping Street allows for the manufacturing and storage of  
beer and the provision of a small amount of samples. This rezoning would add  
Accessory Lounge Use to the zoning, which would allow customers to purchase and

consume products as opposed to only sample. Also, the addition of Accessory Manufacturing Retail Use to the zoning would allow the sale of a small amount of complementary items, such as food, in addition to products manufactured on site.

This proposal would allow Black Kettle Brewing to continue to operate in a manner that is in line with their current business operations. Provincial liquor licensing standards, such as restrictions around maximum alcohol serving sizes, have changed over the last few years. Black Kettle Brewing has applied to the City to rezone, so the business' operations can adapt and conform to current Provincial requirements for lounges.

The requested changes to the Zoning Bylaw are identified in Table 1 below.

**Table 1. Requested Changes to the Zoning By-law**

	Current Regulation	Proposed Regulation
Accessory Uses	As permitted in the W-1 zone	<p>In addition to the uses permitted in the W-1 zone:</p> <p>(a) Accessory Lounge Use, subject to Section 702(7), except that:</p> <p>i. together with Accessory Retail Service Use and Accessory Manufacturing Retail Use, shall not occupy a combined area of more than 30% of the Gross Floor Area of the Principal Industrial Use up to a maximum of 157.6 square metres (1696.4 square feet).</p> <p>(b) Accessory Manufacturing Retail Use, subject to 702(4), except that:</p> <p>i. together with Accessory Retail Service Use and Accessory Lounge Use, shall not occupy a combined area of more than 30% of the Gross Floor Area of the Principal Industrial Use.</p>

## SITE CONTEXT

The site is centrally located within a light industrial area of the city. Marine Drive is two blocks to the north, Squamish Nation lands to the east, Harbourside and the Waterfront to the south, and Automall Drive to the west. Black Kettle Brewing is also in close proximity to the North Shore Spirit Trail, an active transportation route.

The buildings and uses immediately surrounding the site are described in Table 2 below.



**Table 2. Surrounding Uses**

Direction	Address	Description	OCP Designation
North	Railway Corridor 61-63 Bewicke Ave	Railway Corridor City Operations Centre	Mixed Employment Mixed Employment
South	40 Gostick Pl 55 Gostick Pl	Light Industrial uses Light Industrial uses	Mixed Employment Mixed Employment
East	758 Copping St 788 Copping St	Light Industrial uses Light Industrial uses	Mixed Employment Mixed Employment
West	51-59 Bewicke Ave & 700-712 Copping St	Light Industrial uses	Mixed Employment

## **POLICY FRAMEWORK & PLANNING ANALYSIS**

The subject site is designated Mixed Employment in the 2014 Official Community Plan, which allows for light industrial uses, and a limited amount of complementary, low trip-generating commercial uses.

In 2019, Council approved an amendment to the zoning to allow for Accessory Lounge and Accessory Manufacturing Retail Uses within the M-4 Industrial-Commercial Zone. The M-4 zone is located on a number of sites along East Esplanade and East 1<sup>st</sup> Street between Lonsdale Avenue and St. Patricks Avenue. This area includes a number of breweries.

Accessory Lounge Use in the M-4 zone is permitted to make up 30% of the floor area (with the remaining floor area being the principal industrial use) up to a maximum of 80 square metres (861.1 square feet). In the M-4 zone, this 80 square metre maximum is sensitive to the small scale of light industrial units in this area, and discourages unit consolidation.

This application for 720 Copping Street would allow Accessory Lounge Use up to a maximum of 30% of floor area or 157.6 square metres (1696.4 square feet). Black Kettle Brewing has applied for an increased maximum overall floor area of 157.6 square metres due to the larger size of the lot at 720 Copping Street, compared to lots in the M-4 area. The 30% maximum ensures that manufacturing remains the principal use, and the lounge a complementary accessory use. The Accessory Lounge would accommodate all customer areas including seating, bar area, and washrooms.

Similar to the M-4 zone, the proposed zoning for 720 Copping Street would also allow for the potential of an on-site outdoor dining area in addition to the indoor lounge.

The proposal is consistent with both regional and City goals of protecting industrial lands, whilst also supporting the diversification of businesses to include a small portion of complementary accessory commercial use.



<b>Regional Growth Strategy – Metro 2040</b>	
<i>Strategy 2.1</i> Promote land development patterns that support a diverse regional economy and employment close to where people live	The proposal is in keeping with the mixed-employment designation, and would continue to provide local employment.
<i>Strategy 2.2</i> Protect the supply of industrial land	The proposal is an appropriate accessory commercial use, which supports and complements the principal industrial manufacturing use.

<b>Official Community Plan</b>	
<i>Policy 7.1.1</i> Support existing business in the City and encourage innovation and the development of small business	Permitting the addition of Accessory Lounge in the zoning would support the existing small business, and would allow the business to continue its current operations. Lounges support a business' brewing activities.
<i>Policy 7.2.7</i> Maintain the City's mixed employment areas which provide light industrial and service commercial uses in the City	The proposal complements the principal industrial use with production remaining the focus.

This proposal is largely consistent with the business' current operations on site. This rezoning would support the continued viability of an existing liquor manufacturing business in the city.

The overall impacts to the area and neighbours of the brewery is low. The property is surrounded by light industrial uses, and there are no nearby residents as the closest residential area in the City is approximately 150 metres to the north. Black Kettle Brewing's peak times are evenings and weekends when the other businesses on the lot are typically closed.

The application exceeds the current Zoning Bylaw parking requirement of 18 stalls, so does not trigger any need for additional parking. Trip generation is also mitigated by proximity to the Spirit Trail active transportation route, peak hours (evenings) not generally in competition with surrounding businesses, and the use (consumption of alcohol) means that vehicle transportation is unlikely to be the primary mode of transportation for those consuming alcohol. Many patrons are also nearby workers who may not be seeking parking on-site.

## COMMUNITY CONSULTATION

A Developer's Information Session was held on February 18, 2020. There were seven people who attended the session, and all were supportive of the application. Five comments forms were received. Comments included support for additional indoor and outdoor space for customers, and observations of the business being a 'community hub' for nearby workers.

Given the conformity of the proposal with the existing light industrial character of the area, the minimal expected impacts on neighbours, and support from the community,

staff is recommending that the Public Hearing be waived. Should Council wish to refer the application to a Public Hearing, the first active clause in the resolution should be amended to read:

THAT "Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8700"  
(Bryan Lockhart / Black Kettle Brewing, 720 Copping Street) be considered and referred to a Public Hearing;

## INTER-DEPARTMENTAL CONSIDERATIONS

If this rezoning application were to be approved by Council, Black Kettle Brewing would seek to receive a Lounge Endorsement from the Province. Black Kettle has been working with the Province, and a rezoning would be required to allow the business to obtain a Lounge Endorsement from the Province.

In accordance with the City's *Lounge Endorsement for Manufacturing Liquor Licenses Policy*, the Lounge Endorsement for this site would not be referred to Council for further comments. The proposed lounge does not fall under one of the conditions that triggers referral to Council; for example, the site is not directly adjacent to any residential uses.

This rezoning would not add to the floor area of the building, with only interior renovations required to meet BC Building Code. If this rezoning were approved, next steps would include Building Permit and Occupancy Permit applications to resolve any BC Building Code issues, and determine the number of permitted patrons.

## CONCLUSION

The proposal has a very low impacts on neighbours. The current parking provision exceeds the requirements in the Zoning Bylaw. The site is well-served by active transportation, and also acts as a point of interest along the Spirit Trail corridor.

The site is considered by staff to be appropriate for the addition of a lounge, given the similarities to the M-4 zoned area in the eastern part of the city where lounges are currently permitted.

The application supports the continued viability of an existing small business in the city.

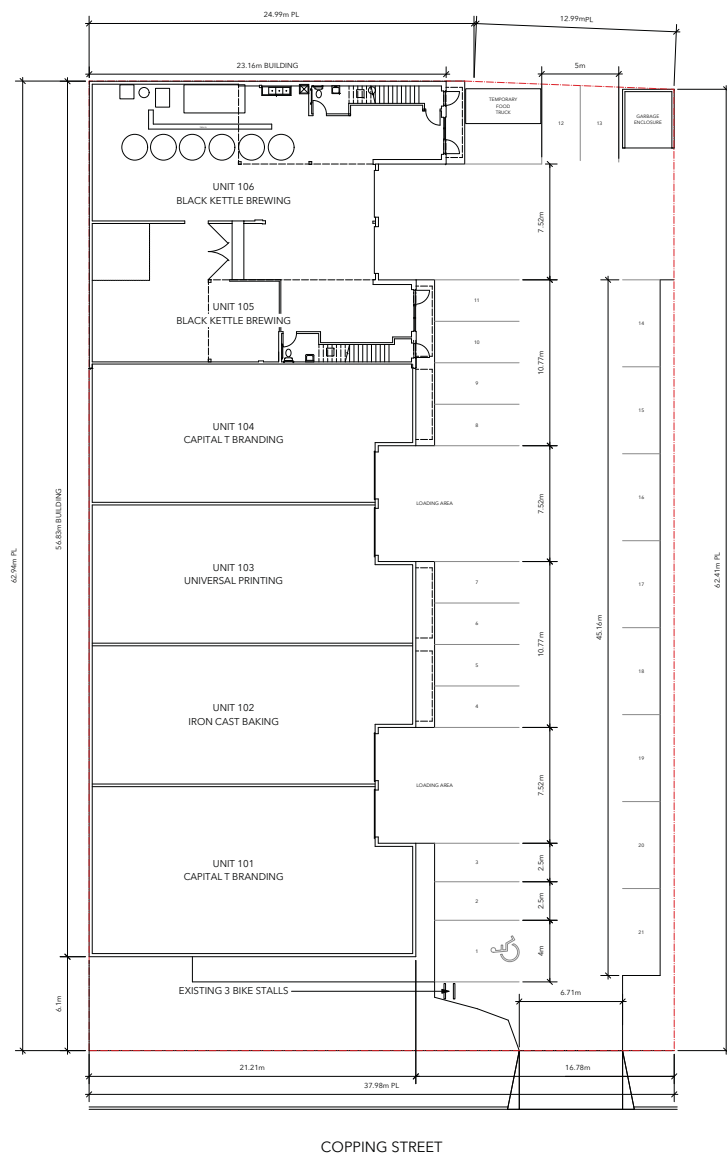
RESPECTFULLY SUBMITTED:

  
\_\_\_\_\_  
Meg Wray  
Planner 1









## ZONING SUMMARY

CIVIC ADDRESS:	720 COPPING STREET
LEGAL ADDRESS:	LOT A, DLs 265 AND 2654, PLAN 16779, P.I.D. 007-365-276
SITE AREA:	2,386.5 m <sup>2</sup>
GROUND FLOOR AREA:	1,160.3 m <sup>2</sup>
SECOND FLOOR AREA:	436.8 m <sup>2</sup>
TOTAL BUILDING AREA:	1,597.1 m <sup>2</sup>
DENSITY:	0.67
SITE COVERAGE:	48.6 %
PARKING REQUIRED (1/95 m <sup>2</sup> ):	18 STALLS
PARKING PROVIDED:	21 STALLS
LOADING PROVIDED:	6 STALLS



SUBJECT SITE



**1 SITE PLAN AND GROUND FLOOR**  
RZ-01 1:150

**2 KEY PLAN**  
RZ-01 N.T.S.

**MGBA**  
MALLEN GOWING BERZINS  
ARCHITECTURE  
SUITE 300, 7 EAST SIXTH AVENUE  
VANCOUVER, BRITISH COLUMBIA, CANADA  
604.454.8285 info@mgb.ca www.mgb.ca

**black  
kettle**  
brewing company

5	2020-09-30	REZONING	PJM	PJM
4	2020-08-26	REZONING	PJM	PJM
3	2020-07-27	REZONING	PJM	PJM
2	2020-07-16	REZONING	PJM	PJM
1	2019-06-12	REZONING	PJM	PJM

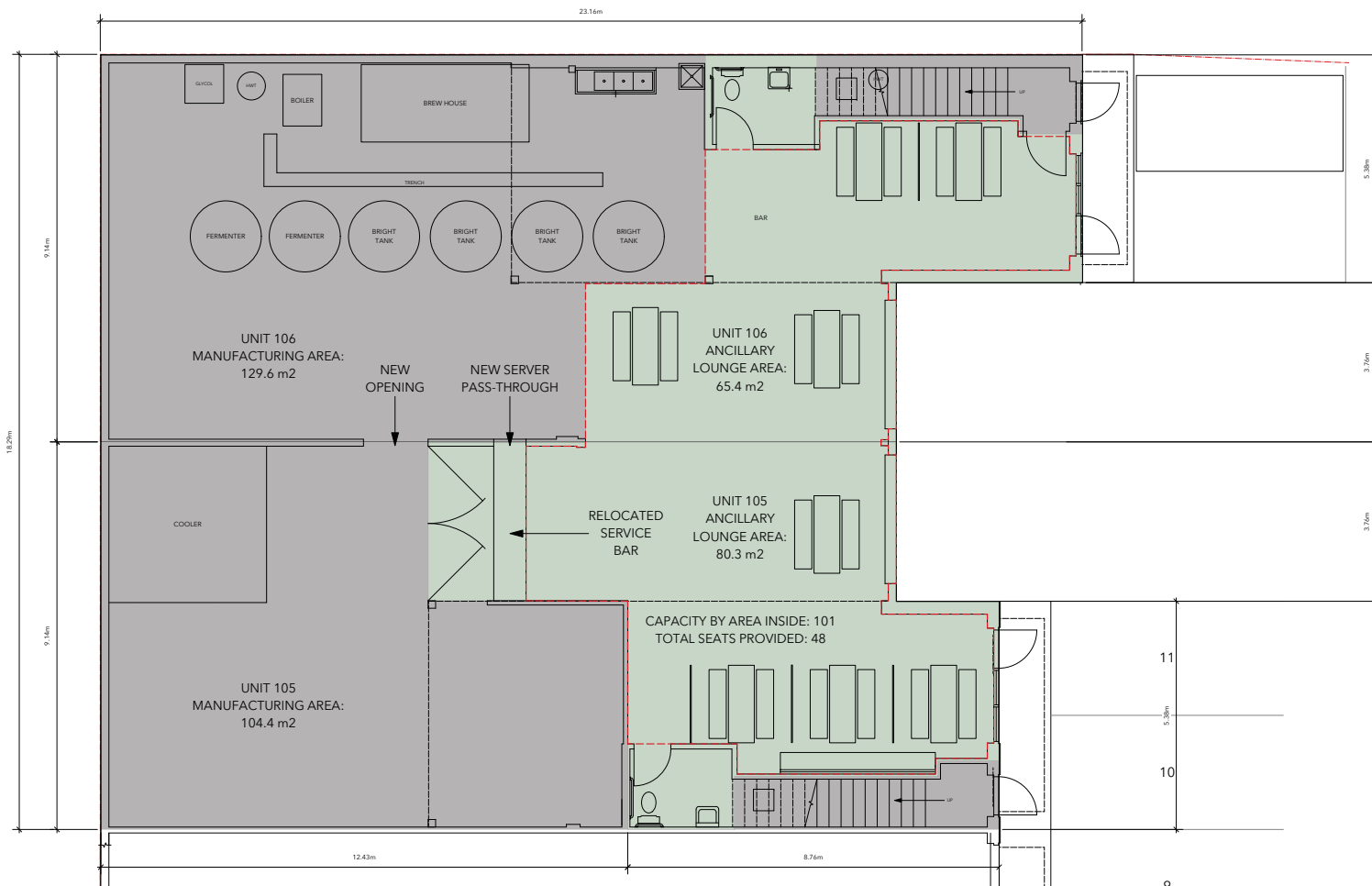
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PROJECT:  
**BLACK KETTLE  
BREWING**  
720 COPPING STREET,  
NORTH VANCOUVER, BC

SHEET TITLE  
**SITE AND KEY PLAN**

PROJECT NO.	19054	PLOT DATE	SEP. 30, 2020
SCALE	AS NOTED		
DRAWING NO.	RZ-01	REVISION	5



**GROUND FLOOR PLAN**  
RZ-02 1:50



AREA USE SUMMARY		
AREAS BY USE:		% OF TOTAL:
UNIT 105 GROUND FLOOR MANUFACTURING:	104.4 m²	
UNIT 106 GROUND FLOOR MANUFACTURING:	129.6 m²	
UNIT 105 UPPER FLOOR STORAGE:	72.9 m²	
UNIT 106 UPPER FLOOR STORAGE:	72.8 m²	
MANUFACTURING USE:	379.7 m²	72.27 %
UNIT 105 GROUND FLOOR LOUNGE:	80.3 m²	
UNIT 105 UPPER FLOOR LOUNGE:	0 m²	
UNIT 106 GROUND FLOOR LOUNGE:	65.4 m²	
LOUNGE USE:	145.7 m²	27.73 %
TOTAL COMBINED UNIT AREAS:	525.4 m²	100.00 %

5	2020-09-30	REZONING	PJM	PJM
4	2020-08-26	REZONING	PJM	PJM
3	2020-07-27	REZONING	PJM	PJM
2	2020-07-16	REZONING	PJM	PJM
1	2019-06-12	REZONING	PJM	PJM
REV	DATE	DESCRIPTION	DESIGNED	CHECKED

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PROJECT:  
**BLACK KETTLE  
BREWING**  
720 COPPING STREET,  
NORTH VANCOUVER, BC

SHEET TITLE:  
**GROUND FLOOR PLAN**

PROJECT NO.	19054	PLOT DATE	SEP. 30, 2020
DRAWING NO.	RZ-02	SCALE	AS NOTED
REVISION	5		

5	2020-09-30	REZONING	PJM	PJM
4	2020-08-26	REZONING	PJM	PJM
3	2020-07-27	REZONING	PJM	PJM
2	2020-07-16	REZONING	PJM	PJM
1	2019-06-12	REZONING	PJM	PJM
REV	DATE	DESCRIPTION	DESIGNED	CHECKED

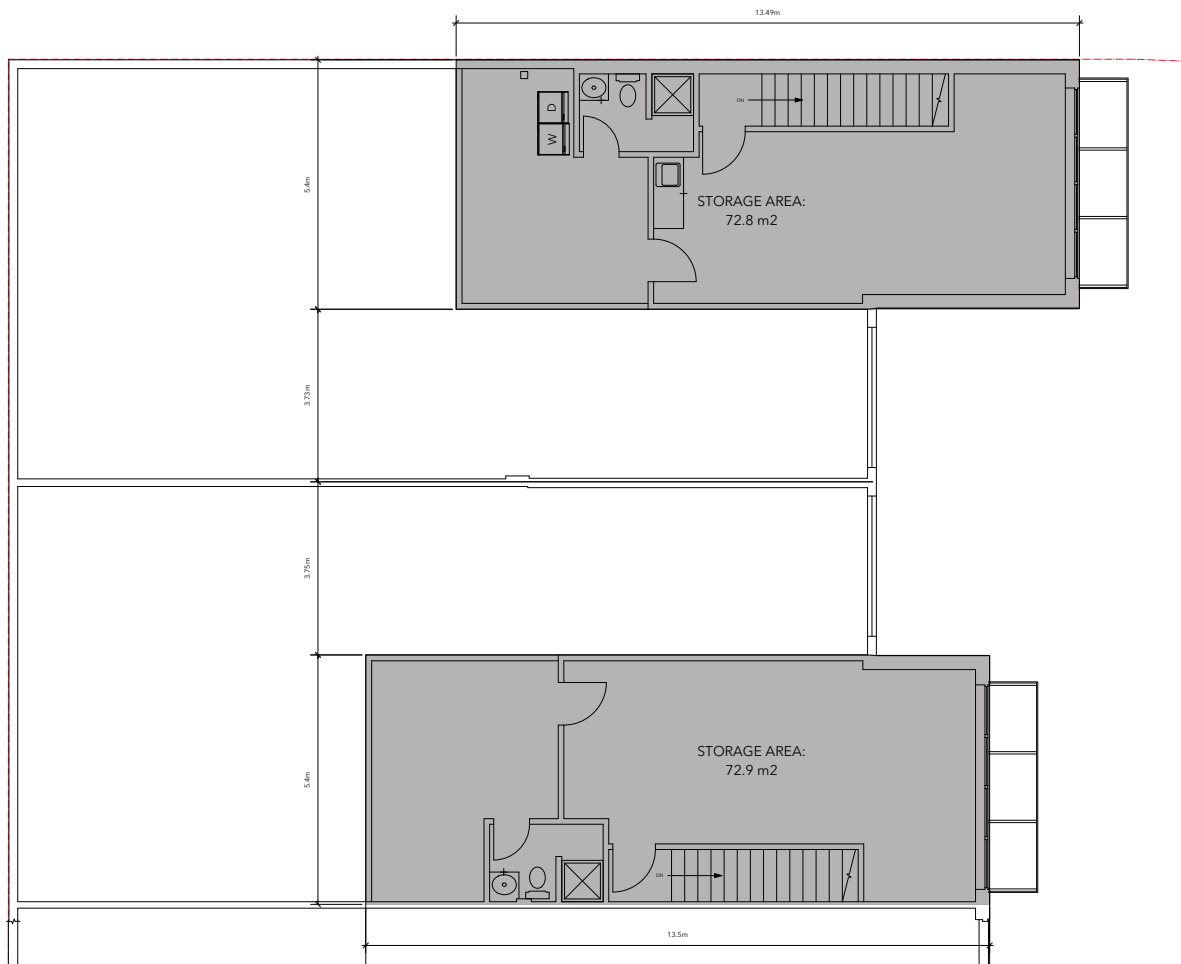
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THIS DRAWING MUST NOT BE SCALED. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND SPECIFICATIONS AND REPORT ANY DISCREPANCIES TO THE ARCHITECT IMMEDIATELY. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.

PROJECT:  
**BLACK KETTLE  
BREWING**  
720 COPPING STREET,  
NORTH VANCOUVER, BC

SHEET TITLE:  
**SECOND FLOOR PLAN**

PROJECT NO.	19054	PLOT DATE	SEP. 30, 2020
DRAWING NO.	RZ-03	SCALE	AS NOTED
REVISION	5		



AREA USE SUMMARY		
AREAS BY USE:		% OF TOTAL:
UNIT 105 GROUND FLOOR MANUFACTURING:	104.4 m²	
UNIT 106 GROUND FLOOR MANUFACTURING:	129.6 m²	
UNIT 105 UPPER FLOOR STORAGE:	72.9 m²	
UNIT 106 UPPER FLOOR STORAGE:	72.8 m²	
MANUFACTURING USE:	379.7 m²	72.27 %
UNIT 105 GROUND FLOOR LOUNGE:	80.3 m²	
UNIT 105 UPPER FLOOR LOUNGE:	0 m²	
UNIT 106 GROUND FLOOR LOUNGE:	65.4 m²	
LOUNGE USE:	145.7 m²	27.73 %
TOTAL COMBINED UNIT AREAS:	525.4 m²	100.00 %







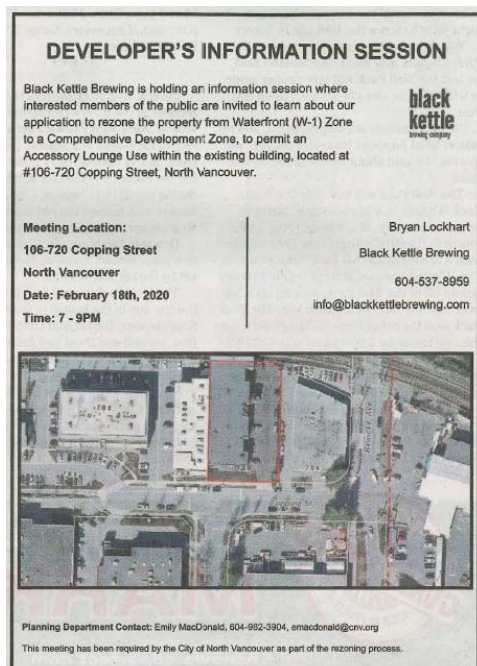
March 16, 2020

To: Whom it may concern,

The open house occurred at Black Kettle Brewing, #106-720 Copping Street on February 18th, 2020 from 7pm - 9pm after the normal operating hours of 11:30 – 8pm.

Notifications of the proposed development application were handed out to the neighbouring properties within 40 metres of #106-720 Copping Street. Two newspaper ads in the North Shore News ran on February 12th and 14th and the development application sign was installed on February 7th.

7 people attended the open house, 5 people provided comments, and all were in support of the development application. All of those who attended agreed that Black Kettle Brewing is a community hub for people that work nearby to get together and socialize and they love that it's a local business. Four people would like to see more beverage and food offerings, all five people would like to see more space including an increased patio, and two people mentioned they would like to see Black Kettle able to showcase more local artists.



# NOTICE OF PUBLIC HEARING (WAIVED)

**WHO:** Black Kettle Brewing Inc.  
**WHAT:** Zoning Bylaw, 1995, No. 6700,  
 Amendment Bylaw, 2020, No. 8700  
**WHERE:** **720 Copping Street**  
**WHEN:** Monday, November 16, 2020  
 at 5:30 pm  
**HOW:** View the meeting online at  
[cnv.org/LiveStreaming](http://cnv.org/LiveStreaming)



Notice is hereby given that Council will consider:

## **Zoning Amendment Bylaw, 2020, No. 8700**

to rezone the subject property to permit the addition of Accessory Lounge Use and Accessory Manufacturing Retail Use, which would allow the retail sale of alcohol and a limited amount of complementary items, accessory to the brewery.

As City Hall remains closed to the public, the Regular Council Meeting will be held electronically via "WebEx". All persons who believe their interest in property may be affected by the proposed bylaw will be afforded an opportunity to be heard by email or written submission. To ensure all submissions are available for Council at the meeting, certain deadlines have been implemented.

For email submissions (preferred):  
 include your name and address and send to [input@cnv.org](mailto:input@cnv.org) **no later than 12:00 noon on Monday, November 16, 2020.**

For written submissions:  
 include your name and address and mail or deposit into a drop-box at City Hall **no later than 4:00 pm on Friday, November 13, 2020.** Written submissions are subject to a 24-hour quarantine period before being opened due to COVID-19.

No further information or submissions can be considered by Council after third reading of the bylaw.

The proposed Zoning Amendment Bylaw and background material will be available for viewing online at [cnv.org/PublicHearings](http://cnv.org/PublicHearings) on Friday, November 6, 2020.

Please direct any inquiries to Meg Wray, Planner, at [mwray@cnv.org](mailto:mwray@cnv.org) or 604-982-3989.

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# THE CORPORATION OF THE CITY OF NORTH VANCOUVER

## BYLAW NO. 8700

### A Bylaw to amend “Zoning Bylaw, 1995, No. 6700”

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as “**Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8700**” (Bryan Lockhart / Black Kettle Brewing Inc., 720 Copping Street, CD-728).
2. Division VI: Zoning Map of Document “A” of “Zoning Bylaw, 1995, No. 6700” is hereby amended by reclassifying the following lots as henceforth being transferred, added to and forming part of CD-728 (Comprehensive Development 728 Zone):

Lots	D.L.	Plan	
A	265 AND 2654	16779	from W-1

3. Part 11 of Division V: Comprehensive Development Regulations of Document “A” of “Zoning Bylaw, 1995, No. 6700” is hereby amended by:

- A. Adding the following section to Section 1100, thereof, after the designation “CD-727 Comprehensive Development 727 Zone”:

“CD-728 Comprehensive Development 728 Zone”

- B. Adding the following to Section 1101, thereof, after the “CD-727 Comprehensive Development 727 Zone”:

“CD-728 Comprehensive Development 728 Zone”

In the CD-728 Zone, permitted Uses, regulations for permitted Uses, regulations for the size, shape and siting of Buildings and Structures and required Off-Street Parking shall be as in the W-1 Zone, except that:

- (1) Permitted Accessory Uses shall include, in addition to the uses permitted in the W-1 zone:

- (a) Accessory Lounge Use, subject to Section 702(7), except that:

- i. together with Accessory Retail Service Use and Accessory Manufacturing Retail Use, shall not occupy a combined area of more than 30% of the Gross Floor Area of the Principal Industrial Use up to a maximum of 157.6 square metres (1696.4 square feet).

(b) Accessory Manufacturing Retail Use, subject to 702(4), except that:

- i. together with Accessory Retail Service Use and Accessory Lounge Use, shall not occupy a combined area of more than 30% of the Gross Floor Area of the Principal Industrial Use.

READ a first time on the 19<sup>th</sup> day of October, 2020.

READ a second time on the 19<sup>th</sup> day of October, 2020.

READ a third time on the <> day of <>, 2020.

ADOPTED on the <> day of <>, 2020.




---

MAYOR

---

CORPORATE OFFICER



 Division Manager	 Director	 CAO
--	---	--

The Corporation of **THE CITY OF NORTH VANCOUVER**  
**PLANNING & DEVELOPMENT DEPARTMENT**

**REPORT**

To: Mayor Linda Buchanan and Members of Council

From: Emily Macdonald, Planner 1

Subject: DEVELOPMENT VARIANCE PERMIT APPLICATION: 366 EAST 3<sup>RD</sup> STREET – ROOFTOP ANTENNAS (FREEDOM MOBILE)

Date: October 7, 2020 File No: 08-3400-20-0029/1

*The following is a suggested recommendation only. Refer to Council Minutes for adopted resolution.*

**RECOMMENDATION:**

PURSUANT to the report of the Planner 1, dated October 7, 2020, entitled "Development Variance Permit Application: 366 East 3<sup>rd</sup> Street – Rooftop Antennas (Freedom Mobile)":

THAT Development Variance Permit No. PLN2020-00013 and Development Permit No. DPA2018-00005 be considered for issuance under Sections 498 and 489 of the *Local Government Act* and the Public Meeting be waived;

AND THAT staff be directed to review the Rooftop Antenna Development Permit Guidelines and Zoning Bylaw with regard to requirements for Third Party Rooftop Antennas, and to prepare revisions to the Development Permit Guidelines and a Zoning Bylaw text amendment for Council's consideration.

**ATTACHMENTS:**

1. Context Map (Doc# [1951307](#))
2. Architectural Plans, dated September 3, 2020 (Doc# [1944895](#))
3. Photo Renderings of Proposed Antennas/Shrouding (Doc# [1951076](#))
4. Public Consultation Summary (Doc# [1938015](#))
5. Proposed Development Variance Permit (Doc# [1951028](#))
6. Proposed Development Permit (Doc# [1951164](#))



## PROJECT DESCRIPTION

The proposal includes the addition of eight radio frequency panel antennas and two microwave dishes, located within two shroud enclosures on the rooftop of the existing building at 366 East 3<sup>rd</sup> Street. The installation is proposed as an addition to Freedom Mobile's network to improve services for their mobile phone customers on the North Shore. Associated equipment is proposed to be installed within the building. The antennas and shroud structures are proposed to project 2.2 metres above the parapet of the building and to be set back from the side edges of the building by 0.3 metres. The proposed location of the antennas is set back from both the front and rear edges of the building to reduce visual bulk from the south, and shadow impacts on the properties to the north.

Several reasons have lead to the need for variances, including:

- dimensions of the antennas;
- technical siting requirements for both effectiveness of the antennas as well as health and safety standards (neither of which are regulated by CNV);
- minimum cable curve radii of cables connected to the antennas.

The proposal requires a variance to the Zoning Bylaw as well as the Rooftop Antenna Development Permit Guidelines. The requested variance to the Zoning Bylaw is identified in Table 1 below. The requested variances to the Rooftop Antenna Development Permit Guidelines are identified in Table 2.

**Table 1.** Requested Variance to the Zoning By-law

	Current Regulation	Proposed Regulation
Section 409 (9) Height Exceptions for Third Party Rooftop Antenna Systems	Up to 1.22 metres (4.0 feet) above roof or mechanical penthouse	Up to 2.2 metres (7 feet) from roof parapet

**Table 2.** Requested Variance to the Development Permit Guidelines

	Current Regulation	Proposed Regulation
Guideline 3.3.1 (a)	Antennas may not project more than 1.22 metres beyond the top of the building	Antennas may project up to 2.2 metres beyond the top of the building parapet
Guideline 3.3.1 (b)	Antennas are set back a minimum of .91 metres from the parapet	Antennas are set back a minimum of .3 metres from the parapet
Guideline 3.3.1 (c)	Panel antennas are not to exceed .15 metres in width or 1.22 metres in length	(waived)

## REGULATORY FRAMEWORK

Rooftop antennas fall within Federal jurisdiction with their location and installation regulated by Innovation, Science and Economic Development (ISED, formerly Industry Canada); however, practice has been to encourage cooperation with local municipalities, giving some influence to local governments to oversee community consultation and guide the location and design of rooftop antenna installations.

The health and safety aspects of rooftop antennas falls outside of municipal jurisdiction and are governed by Health Canada's Safety Code 6. ISED ensures that installations operate within the parameters outlined in Safety Code 6.

## POLICY FRAMEWORK

The 2014 Official Community Plan and Rooftop Antenna Development Permit Guidelines identify areas where Third Party Rooftop Antennas may be considered. These include areas designated as Residential Level 5 and 6, Mixed-Use, Commercial, Industrial and Mixed Employment, on buildings not less than three storeys in height.

Prior to the adoption of the Rooftop Antenna Development Permit Guidelines in 2017, Rooftop Antennas were processed as Development Variance Permits, requiring Council review. In 2017, the Rooftop Antenna Development Permit Guidelines were adopted and the Zoning Bylaw was amended to permit a height exception of up to 1.22 metres for rooftop antennas. The intention of these changes was to allow staff to review and approve applications for rooftop antennas, provided that the location and design meet the Development Permit Guidelines, and that public notification is conducted in accordance with the Guidelines. Since 2017, no applications have successfully met all Guidelines and, consequently, no Development Permits have been issued.

Official Community Plan	
Policy 1.1.2 Align growth with the development of community amenities and infrastructure	Improvements to mobile phone and data services will support the needs of a growing population in the Lower Lonsdale and Moodyville areas.
Policy 1.3.5 Encourage design excellence in developments through carefully considered, high quality architecture and landscaping, with varied designs which are interesting, sensitive and reflective of their surroundings	The proposed installation includes shrouding to reduce visual clutter that the antennas may otherwise create and are sited to reduce visual and shadow impacts on the street and surrounding properties.
Policy 7.2.11 Support the development of intelligent infrastructure, such as high-efficiency energy systems and advanced communications, needed to support businesses in the future;	The proposed installation will support small and large businesses and employees through the provision of improved mobile communication services on the North Shore.



## PLANNING ANALYSIS

### Site Context and Surrounding Use

The subject site is designated Residential Level 5 in the Official Community Plan. The property was rezoned in 2016 and the building on site is a recently-constructed six-storey rental building.

The site is located on the north side of East 3<sup>rd</sup> Street. The properties directly across the lane are duplexes. Buildings to the east and west and south are all multi-unit residential, either strata or rental. The buildings and uses immediately surrounding the site are described in Table 1 below.

**Table 3. Surrounding Uses**

Direction	Address	Description	Zoning
North	357/359 East 4 <sup>th</sup> St.	Duplex (under construction)	RT-1
	363/365 East 4 <sup>th</sup> St.	Duplex	RT-1
	367/369 East 4 <sup>th</sup> St.	Duplex	RT-1
	373/375 East 4 <sup>th</sup> St.	Duplex	RT-1
South	360 East 2 <sup>nd</sup> St.	Low-rise 58-unit strata	RM-1
	357 East 3 <sup>rd</sup> St.	Low-rise 31-unit rental	RM-1
East	372 East 3 <sup>rd</sup> St	Low-rise 17-unit rental	RM-1
West	358 East 3 <sup>rd</sup> St	Low-rise 21-unit rental (Heritage Class B)	RM-1

The subject building is an appropriate location for rooftop antennas in terms of the OCP designation (Level 5) and building height (3 or more storeys). The initial proposal, which showed the installations sited at the rear edge of the building, presented some issue due to a minor increase in the shadow impact on the properties directly across the lane. The proposal was revised to address shadow concerns, which have now been mitigated. The proposed installations are now sited more centrally between the front and rear edges of the rooftop. Photo renderings show that the installations will be visible from East 3<sup>rd</sup> Street when viewed from the east and west (Attachment #3), however, the installations would not be visible from a vantage point directly south of the building on East 3<sup>rd</sup> Street. Shrouding, which would be painted to match the building, serves to make the installations appear as an integrated building element.

The proposal largely meets the intent of key guidelines, including integration with building design, and reduction of visual impact from the street and limited visual clutter from any perspective.

Reviews of this application and other past rooftop cell phone antennas have revealed that some sections of the Guidelines may be too specific or restrictive and it is possible that the requirements cannot be achieved for any proposal due to current radio communication technology design, including antenna dimensions and other considerations such as minimum cable curve radii. Through a review of the current Development Permit Guidelines, staff would consult with industry representatives to determine how the Guidelines can better accommodate current technology as well as be flexible enough to consider potential future technology.

Staff are recommending that Council ask for staff to review the Zoning Bylaw and Rooftop Antenna Development Permit Guidelines in order to identify specific requirements that are presenting issues for compliance, and to prepare amendments that would allow for flexibility when reviewing current and future technology while still maintaining appropriate and contextual controls over form and character.

## **COMMUNITY CONSULTATION**

The applicant provided opportunities for public input in the form of mail-out feedback forms with applicant and City staff contact information, as well as a Public Information Session held on September 12, 2019. Concerns raised by residents are summarized in the Public Input Summary.

Some concerns were raised that relate to the existing building in terms of the initial rezoning process and design of the building. Other comments related to the proposed antennas; some were generally opposed, while others expressed specific concerns regarding shadowing, especially on properties directly across the lane to the north. The proposed location of the antennas on the rooftop has been amended slightly to eliminate shadow impacts that the shrouding structures would have had on these properties.

Because the number of concerned responses received was relatively low and issues of shadowing have been resolved, a Public Meeting has not been recommended. Should Council wish to refer the application to a Public Meeting, the first active clause in the resolution should be amended to read:

THAT Development Variance Permit No. PLN2020-00013 and Development Permit No. DPA2018-00005 be considered for issuance under Sections 498 and 489 of the *Local Government Act* and referred to a Public Meeting;

## **CONCLUSION**

Cell phone use has become widespread. The vast majority of households subscribe to mobile carriers and dependence on land lines has significantly declined. Mobile connectivity has become important for social connections as well as economic

development. City policies support the provision of infrastructure and amenities for residents and businesses. This proposal will allow for improvements to services provided to Freedom Mobile's customers. The design of the installation has taken the existing building design and contextual considerations into account, resulting in an addition to the building that is sensitive to the context and does not add visual clutter to building form. Policy and planning analysis supports the proposal.

The additional recommendation for changes to the Zoning Bylaw and Development Permit Guidelines would allow for future applications to be processed in a more streamlined way with a goal of granting flexibility to respond to changes in technology that are very likely to continue in a rapidly changing sector.

RESPECTFULLY SUBMITTED:



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Emily Macdonald  
Planner 1

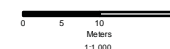




City of North Vancouver  
Context Map

Legend

- Subject Site
- Legal\_Parcels
- Aerial 2019



DISCLAIMER

This map was produced on the City of North Vancouver's Geographic Information System. Data provided herein is derived from sources with varying levels of accuracy and detail. The City of North Vancouver disclaims all responsibility for the accuracy or completeness of information contained herein.

GIS Division, Information Technology,  
City of North Vancouver

**city**  
of north  
vancouver





PROJECT NAME:	NEW ROOFTOP
PROJECT TYPE:	ROOFTOP MOUNT & EQUIP. INSTALL
PROJECT SITE No.:	BVA0527C
ADDRESS:	362-368 EAST 3RD ST. NORTH VANCOUVER, BC



BUILDING PHOTO

APPROVALS			
DEPARTMENT	SIGNATURE	DATE	

DRAWING INDEX			
SHEET	DRAWING DESCRIPTION	NO.	DATE
COV.	TITLE SHEET & SITE KEY PLAN	0	03 SEP 20
A01	REFERENCE SHEET/LOADING	0	03 SEP 20
A02	SITE PLAN	0	03 SEP 20
A03	ROOF PLAN	0	03 SEP 20
A04	NORTH-EAST ELEVATION	0	03 SEP 20
A05	SOUTH-EAST ELEVATION	0	03 SEP 20
A06	NORTH-WEST ELEVATION	0	03 SEP 20
E01	ELECTRICAL ROUTING	0	03 SEP 20
N01	EQUIPMENT DETAILS	0	03 SEP 20

ISSUE	
NO.	DESCRIPTION
0	PRELIMINARY

KEY MAP (NTS)	

GEOGRAPHIC COORDINATES	
LATITUDE:	N 49.310023°
LONGITUDE:	W 123.068753°

UTILITY — CONTACT	
BRITISH COLUMBIA ONE CALL: (BEFORE YOU DIG) 1-800-474-6886	

NOTES:	
1. ENSURE ALL ASPECTS OF WORK CONFORM TO FREEDOM MOBILE SPECIFICATIONS.	
2. CONTRACTOR TO VERIFY NORTH DIRECTION AND REPORT ANY DISCREPANCIES.	
3. ALL DIMENSIONS ARE IN mm UNLESS NOTED OTHERWISE.	
4. READ THESE DRAWINGS IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS.	
5. CONTRACTOR TO VERIFY EXISTING CONDITIONS ON SITE PRIOR TO FABRICATION FOR EXACT FIT. NOTIFY CONSULTANT/ENGINEER REGARDING ANY DISCREPANCIES.	
6. DO NOT SCALE DRAWINGS.	

ROEHAMPTON WEST	
1112 WEST PENDER ST, SUITE 908	
VANCOUVER, BC V6E 2S1	
TEL. (778)300-1233	
VANCOUVER - EDMONTON - CALGARY	



**ROEHAMPTON  
WEST**  
1112 WEST PENDER ST,  
SUITE 908  
VANCOUVER, BC V6E 2S1  
TEL. (778)300-1233  
VANCOUVER - EDMONTON - CALGARY

## EQUIPMENT SCHEDULE

RADIO ANTENNA SCHEDULE

MT.	SECTOR	RADIO ANTENNA MODEL	AZIM.(DEG.)	QTY.	RRU MODEL	DC/FIBER LENGTH (m)	STATUS
1	1	COMMScope R2V4PX308R	±0°	1/1/1	FRIJ/AHFIB/AHBCC/ AHLOA/AHHB	±50	PROPOSED
2	2	COMMScope R2V4PX308R	±90°	1/1/1	FRIJ/AHFIB/AHBCC/ AHLOA/AHHB	±50	PROPOSED
2	3	COMMScope R2V4PX308R	±180°	1/1/1	FRIJ/AHFIB/AHBCC/ AHLOA/AHHB	±50	PROPOSED
1	4	COMMScope R2V4PX308R	±270°	1/1/1	FRIJ/AHFIB/AHBCC/ AHLOA/AHHB	±50	PROPOSED
1	1	COMMScope R2V4PX308R	±0°	1/1/1	FRIJ/AHFIB/AHBCC/ AHLOA/AHHB	±50	PROPOSED
2	2	COMMScope R2V4PX308R	±90°	1/1/1	FRIJ/AHFIB/AHBCC/ AHLOA/AHHB	±50	PROPOSED
2	3	COMMScope R2V4PX308R	±180°	1/1/1	FRIJ/AHFIB/AHBCC/ AHLOA/AHHB	±50	PROPOSED
1	4	COMMScope R2V4PX308R	±270°	1/1/1	FRIJ/AHFIB/AHBCC/ AHLOA/AHHB	±50	PROPOSED
JUMPERS = LDF4 DC=1/2-3/4" FIBER = 3/8"-1/2" DC/FIBER LENGTH=FROM EQUIPMENT TO RRU LOCATION							

MICROWAVE SCHEDULE

MT.	#	RADIO ANTENNA MODEL (SIZE)	AZIMUTH(DEG.)	CABLE LENGTH (m)	STATUS
1	1	2' DIA.	TBD	TBD	PROPOSED
2	2	2' DIA. (FACING BVA0576)	TBD	TBD	PROPOSED

## REFERENCES AND DESIGN INFO

## LEGEND

- NOTES
- CONTRACTOR IS RESPONSIBLE TO MAKE PROVISION TO SUPPORT OR WORK AROUND EXISTING BUILDING STRUCTURES, EXISTING EQUIPMENTS, PIPES AND CABLE ROUTES.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AT SITE BEFORE PROCEEDING WITH FABRICATION AND INSTALLATION OF ANY MATERIALS. ANY DISCREPANCIES TO BE REPORTED TO THE DESIGN ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
  - THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT ALL WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
  - ALL WORK TO BE COMPLETED IN ATMOSPHERIC CONDITIONS THAT WILL NOT IMPACT THE STRUCTURAL CAPACITY OF ANY PART OF THE EXISTING BUILDING STRUCTURE.

## SCOPE OF WORK

NORTH ARROW



MOUNT #

# - PROPOSED MT#  
# - MODIFIED MT#

DETAIL TITLE

1 SECTION A-A  
N.T.S.

PROPOSED  
ANTENNA

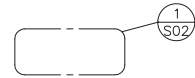
SECTOR #1  
Az: 0°

SECTION/DETAIL

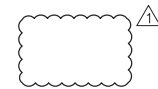
EXISTING  
ANTENNA

SECTOR #1  
Az: 0°

PARTIAL DETAIL

EXISTING ANTENNA  
OTHER CARRIER

REVISION CLOUD

PLAN VIEW  
ANTENNA  
DESCRIPTION

PROPOSED  
KRE  
ELEV.=  
Az.

PROPOSED  
INSTALLATIONELEVATION  
MARKER

T/O LOWER PH  
= 50m

CLIENT:

CARRIER:



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0	MJ	PRELIMINARY	03 SEP 20
NO. BY	DESCRIPTION		DATE

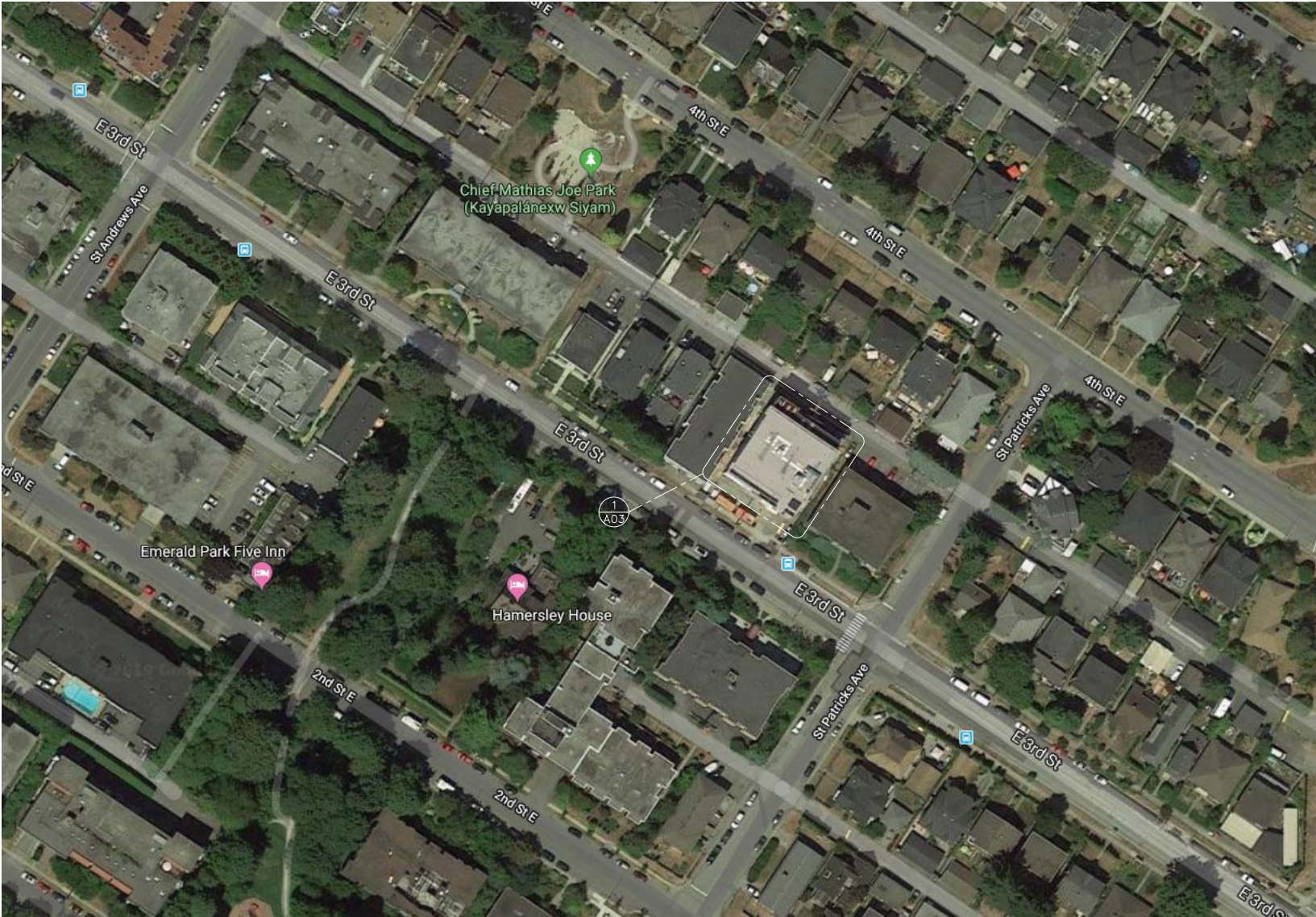


**ROEHAMPTON  
WEST**  
1112 WEST PENDER ST.  
SUITE 100  
VANCOUVER, BC V6E 2S1  
TEL: (778)300-1233  
VANCOUVER • EDMONTON • CALGARY

LOCATION: 362-368 EAST 3RD ST. NORTH VANCOUVER, BC		
TITLE: REFERENCE SHEET/LOADING		
PROJECT NAME: NEW ROOFTOP	PROJECT NO: BVA0527C	DWG. NO: A01



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1 SITE PLAN



- NOTES:
1. DO NOT SCALE DRAWINGS. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
  2. ONLY RELEVANT INFORMATION FOR THE PROPOSED PROJECT SHOWN ON THESE DRAWINGS.

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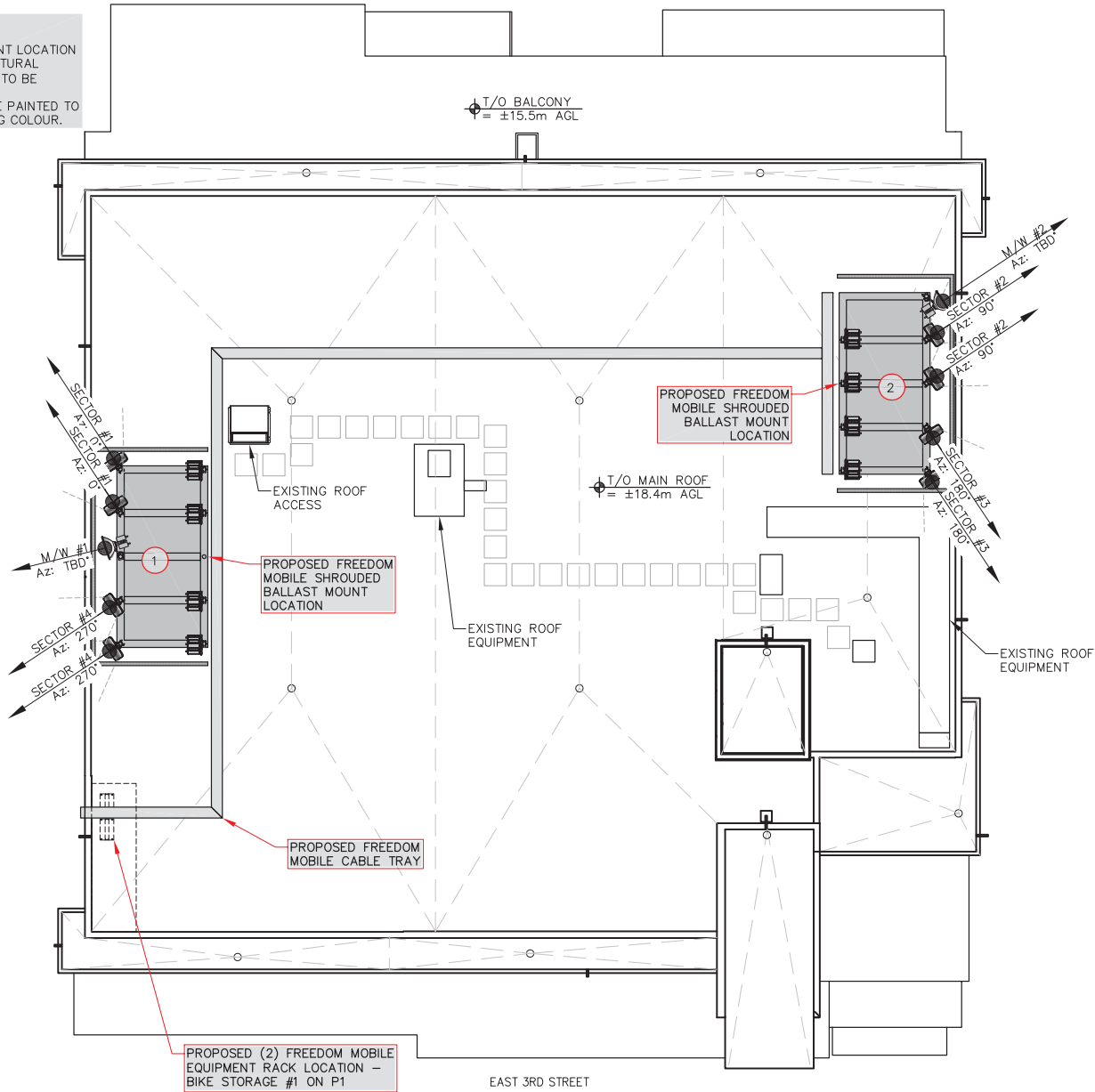
LOCATION:  
362-368 EAST 3RD ST. NORTH VANCOUVER, BC

TITLE:  
SITE PLAN

PROJECT NAME: NEW ROOF TOP	PROJECT NO: BVA0527C	DWG. NO: A02
-------------------------------	-------------------------	-----------------

**NOTE:**

1. PROPOSED BALLAST MOUNT LOCATION TO BE CONFIRMED. STRUCTURAL CAPACITY OF P/H NEEDS TO BE VERIFIED AND CHECKED.
2. PROPOSED SHROUD TO BE PAINTED TO MATCH EXTERIOR BUILDING COLOUR.



PROPOSED (2) FREEDOM MOBILE EQUIPMENT RACK LOCATION - BIKE STORAGE #1 ON P1

EAST 3RD STREET

1 ROOF PLAN

**NOTES:**

1. DO NOT SCALE DRAWINGS. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ONLY RELEVANT INFORMATION FOR THE PROPOSED PROJECT SHOWN ON THESE DRAWINGS.
3. SHROUD MATERIAL CONSTRUCTED WITH FIBERGLASS AND PAINTED TO MATCH WHITE ON BUILDING.
4. EXISTING ROOF PLAN WAS OBTAINED FROM ARCHITECTURAL DRAWINGS BY HEARTH ARCHITECTURAL DATED 19 FEB 2016.

CLIENT:

CARRIER:



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**ROEHAMPTON WEST**  
 1112 WEST PENDER ST.  
 SUITE 100  
 VANCOUVER, BC V6E 2S1  
 TEL: (778) 300-1233  
 VANCOUVER - EDMONTON - CALGARY

LOCATION:  
 362-368 EAST 3RD ST. NORTH VANCOUVER, BC

TITLE:  
 ROOF PLAN

PROJECT NAME:  
 NEW ROOFTOP

PROJECT NO:  
 BVA0527C

DWG. NO:  
 A03



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NOTE:

1. BOTTOM OF ANTENNA MIN. 500mm FROM ROOFTOP TO ACCOMMODATE FIBRE CABLE BEND RADIUS.
2. PROPOSED SHROUD TO BE PAINTED TO MATCH EXTERIOR BUILDING COLOUR.



1 NORTH-EAST ELEVATION VIEW

- T/O SHROUD =  $\pm 21.2\text{m}$  AGL
- T/O PENTHOUSE =  $\pm 20.5\text{m}$  AGL
- C/L OF ANTENNA =  $\pm 20.1\text{m}$  AGL
- B/O ANTENNA =  $\pm 19.1\text{m}$  AGL
- T/O PARAPET =  $\pm 19.0\text{m}$  AGL
- T/O MAIN ROOF =  $\pm 18.4\text{m}$  AGL

T/O GRADE = 0.0m

NOTES:

1. ONLY RELEVANT INFORMATION FOR THE PROPOSED PROJECT SHOWN ON THESE DRAWINGS.
2. SHROUD MATERIAL CONSTRUCTED WITH FIBERGLASS AND PAINTED TO MATCH WHITE ON BUILDING.

CLIENT:

CARRIER:



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NO. BY	DESCRIPTION	DATE



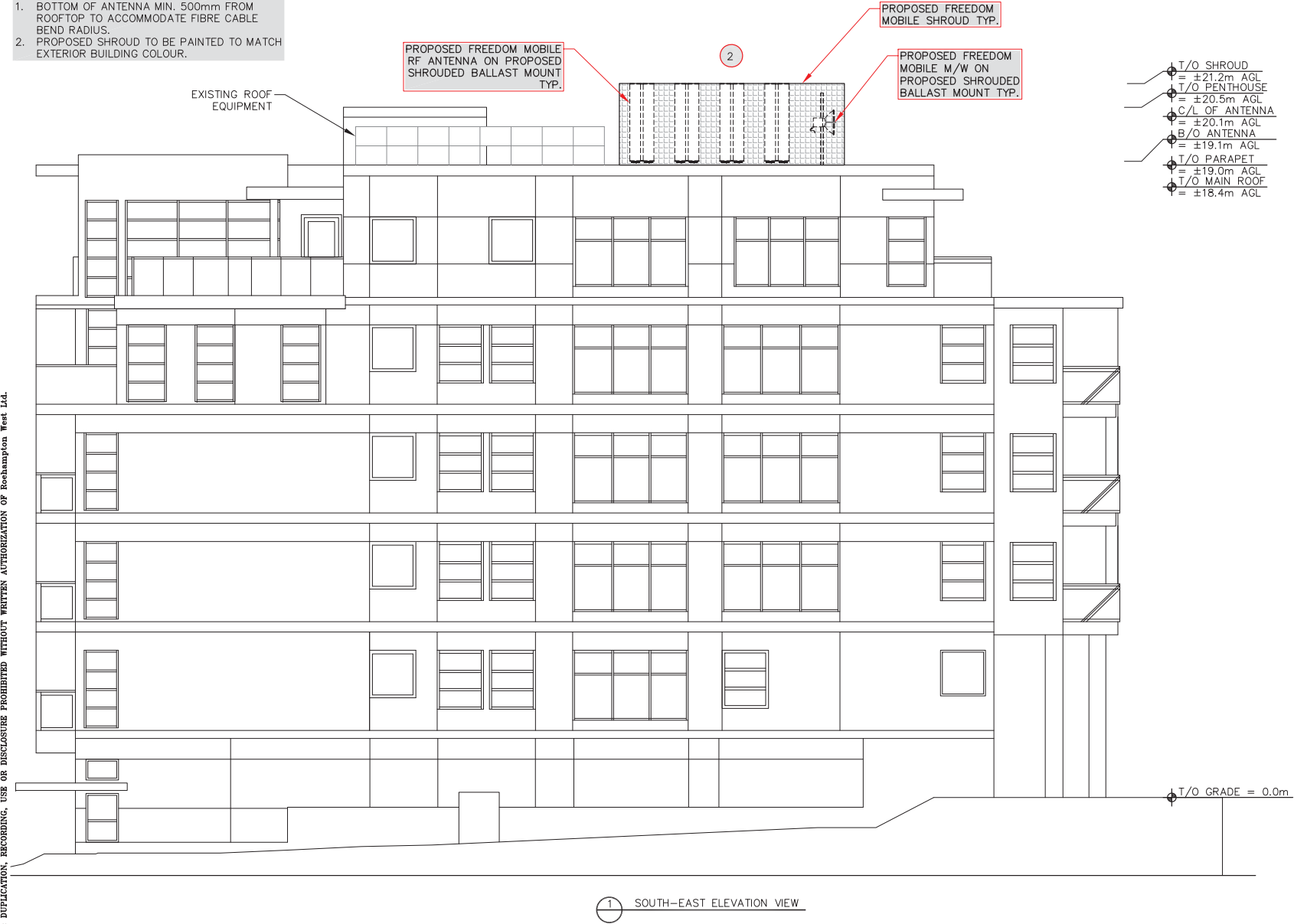
**ROEHAMPTON  
WEST**  
1112 WEST PENDER ST.  
SUITE 100  
VANCOUVER, BC V6E 2S1  
TEL: (778) 300-1233  
VANCOUVER • EDMONTON • CALGARY

LOCATION: 362-368 EAST 3RD ST. NORTH VANCOUVER, BC		
TITLE: NORTH-EAST ELEVATION		
PROJECT NAME: NEW ROOFTOP	PROJECT NO: BVA0527C	DWG. NO: A04

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NOTE:-

1. BOTTOM OF ANTENNA MIN. 500mm FROM ROOFTOP TO ACCOMMODATE FIBRE CABLE BEND RADIUS.
2. PROPOSED SHROUD TO BE PAINTED TO MATCH EXTERIOR BUILDING COLOUR.



1 SOUTH-EAST ELEVATION VIEW

- T/O SHROUD = ±21.2m AGL
- T/O PENTHOUSE = ±20.5m AGL
- C/L OF ANTENNA = ±20.1m AGL
- B/O ANTENNA = ±19.1m AGL
- T/O PARAPET = ±19.0m AGL
- T/O MAIN ROOF = ±18.4m AGL

NOTES:

1. ONLY RELEVANT INFORMATION FOR THE PROPOSED PROJECT SHOWN ON THESE DRAWINGS.
2. SHROUD MATERIAL CONSTRUCTED WITH FIBERGLASS AND PAINTED TO MATCH WHITE ON BUILDING.

CLIENT:

CARRIER:



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NO. BY	DESCRIPTION	DATE



**ROEHAMPTON WEST**  
1112 WEST PENDER ST.  
SUITE 100  
VANCOUVER, BC V6E 2S1  
TEL. (778)300-1233  
VANCOUVER • EDMONTON • CALGARY

LOCATION:  
362-368 EAST 3RD ST. NORTH VANCOUVER, BC

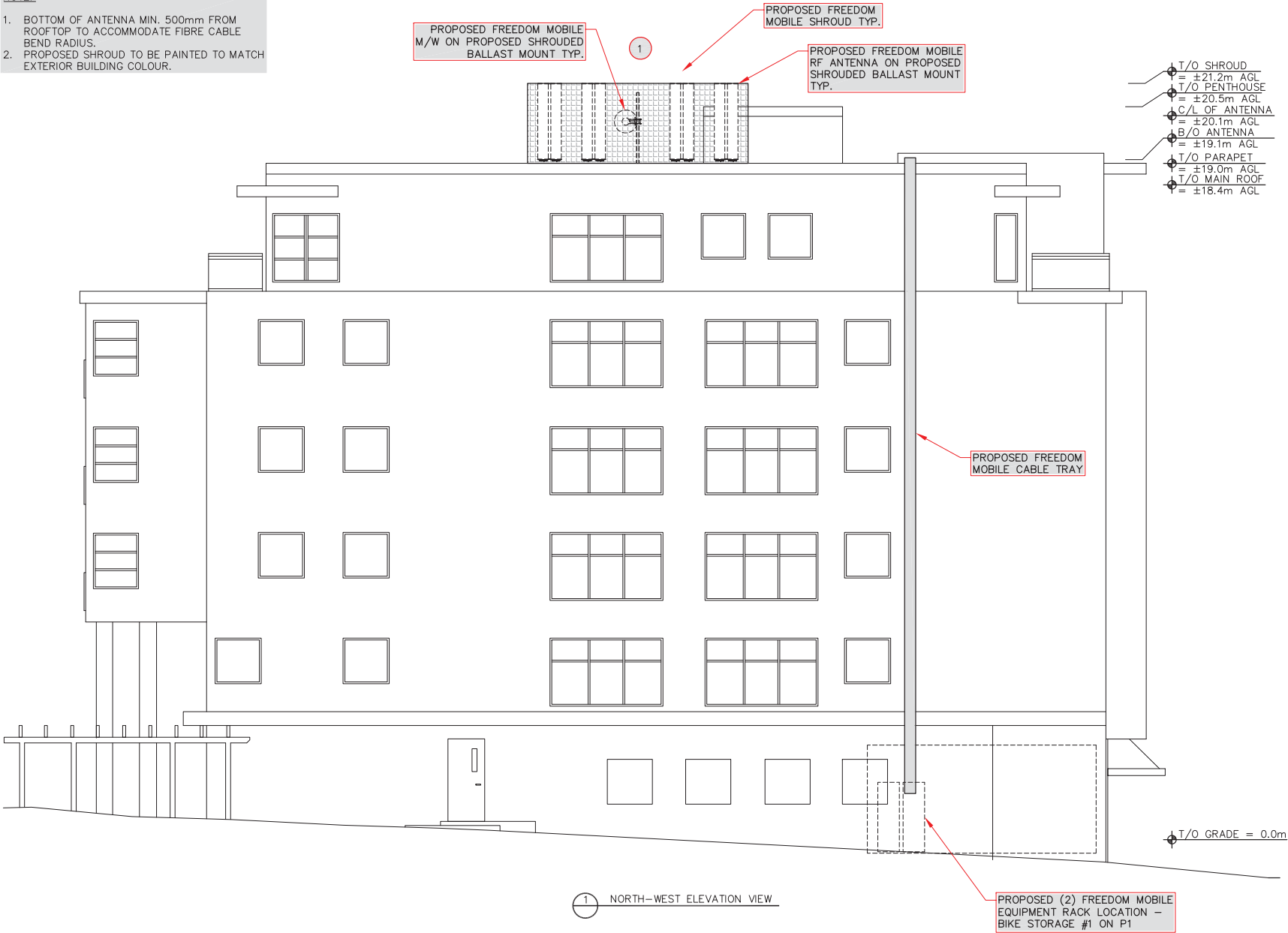
TITLE:  
SOUTH-EAST ELEVATION

PROJECT NAME: NEW ROOFTOP	PROJECT NO: BVA0527C	DWG. NO: A05
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NOTE:

1. BOTTOM OF ANTENNA MIN. 500mm FROM ROOFTOP TO ACCOMMODATE FIBRE CABLE BEND RADIUS.
2. PROPOSED SHROUD TO BE PAINTED TO MATCH EXTERIOR BUILDING COLOUR.



1 NORTH-WEST ELEVATION VIEW

- T/O SHROUD = ±21.2m AGL
- T/O PENTHOUSE = ±20.5m AGL
- C/L OF ANTENNA = ±20.1m AGL
- B/O ANTENNA = ±19.1m AGL
- T/O PARAPET = ±19.0m AGL
- T/O MAIN ROOF = ±18.4m AGL

NOTES:

1. ONLY RELEVANT INFORMATION FOR THE PROPOSED PROJECT SHOWN ON THESE DRAWINGS.
2. SHROUD MATERIAL CONSTRUCTED WITH FIBERGLASS AND PAINTED TO MATCH WHITE ON BUILDING.

CLIENT:

CARRIER:



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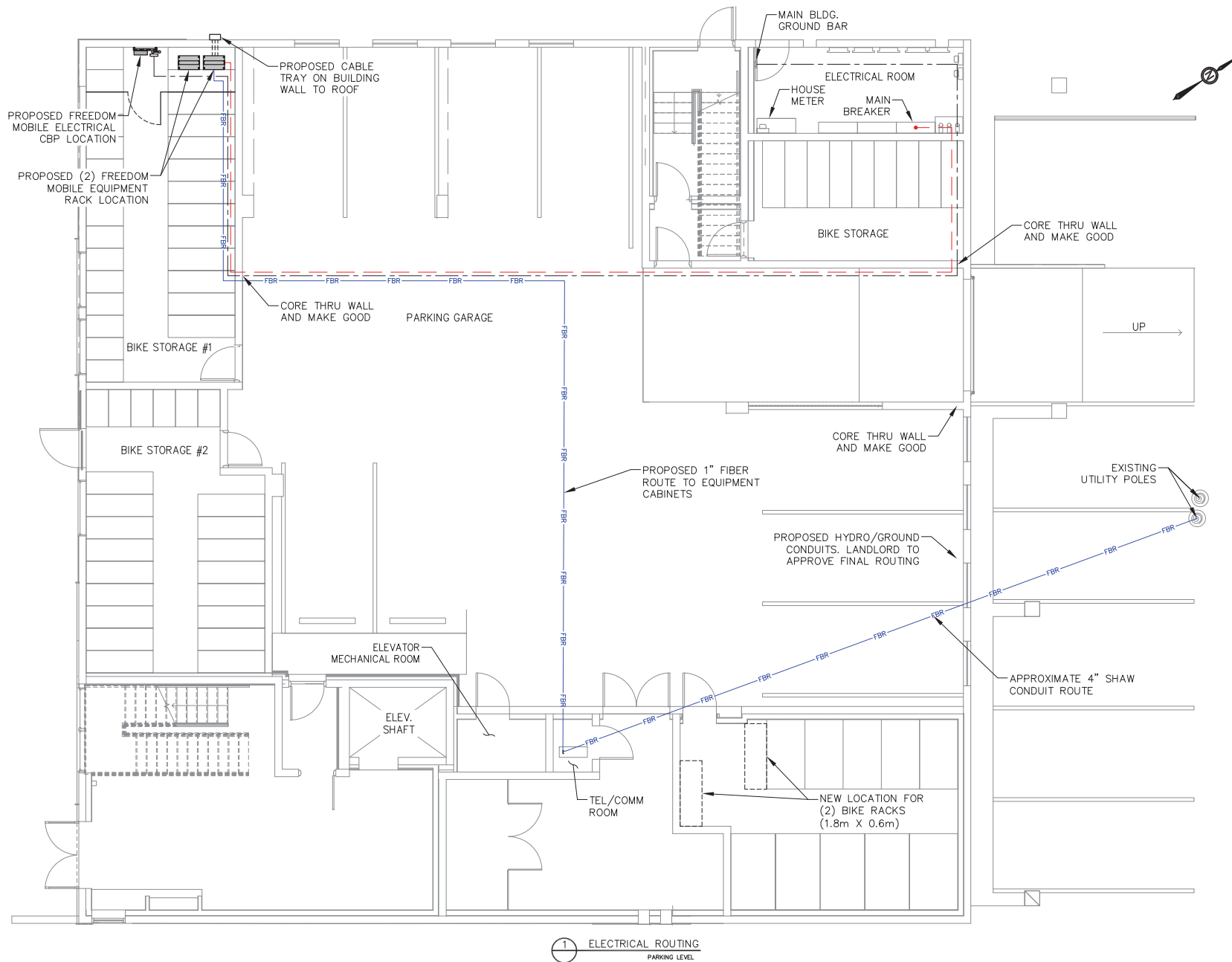
**ROEHAMPTON WEST**  
1112 WEST PENDER ST.  
SUITE 100  
VANCOUVER, BC V6E 2S1  
TEL: (778) 300-1233  
VANCOUVER • EDMONTON • CALGARY

LOCATION:  
362-368 EAST 3RD ST. NORTH VANCOUVER, BC

TITLE:  
NORTH-WEST ELEVATION

PROJECT NAME: NEW ROOFTOP	PROJECT NO: BVA0527C	DWG. NO: A06
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NOTES:

1. ONLY RELEVANT INFORMATION FOR THE PROPOSED PROJECT SHOWN ON THESE DRAWINGS.

CLIENT:

CARRIER:



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**ROEHAMPTON  
WEST**  
1112 WEST PENDER ST.  
SUITE 100  
VANCOUVER, BC V6E 2S1  
TEL. (778)300-1233  
VANCOUVER • EDMONTON • CALGARY

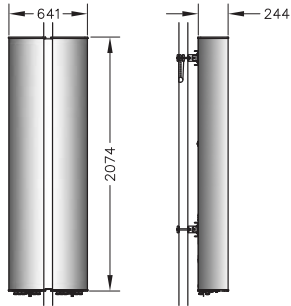
LOCATION:  
362-368 EAST 3RD ST. NORTH VANCOUVER, BC

TITLE:  
ELECTRICAL ROUTING

PROJECT NAME: NEW ROOFTOP	PROJECT NO: BVA0527C	DWG. NO: E01
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1 RELAY RACK UNIT  
N.T.S.

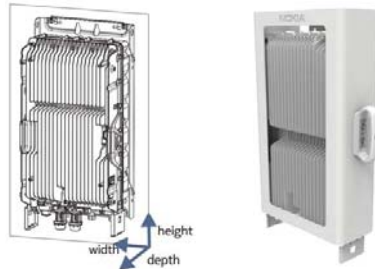


COMMScope R2V4PX308R  
Height/Width/Depth: 2074x641x244mm  
Weight: 60.0kg

2 RF ANTENNA DETAIL  
N.T.S.



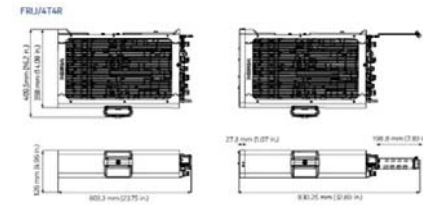
AHLOA  
Height/Width/Depth: 730x240x390mm  
Weight: 38kg



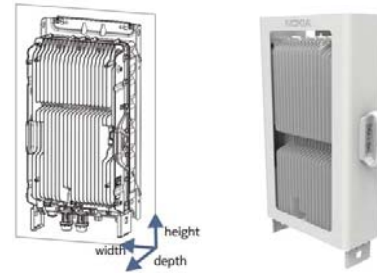
AHFB  
Height/Width/Depth: 675x327x165mm  
Weight: 30kg



AHHB  
Height/Width/Depth: 337x295x141mm  
Weight: 15.7kg

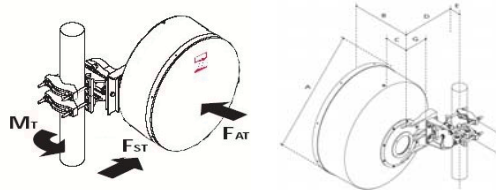


FRIJ  
Height/Width/Depth: 603x126x409mm  
Weight: 24.5kg



AHBCC  
Height/Width/Depth: 675x327x205mm  
Weight: 38kg

3 RRU's  
N.T.S.



4 M/W ANTENNA DIMENSIONS CHART  
N.T.S.

M/W ANTENNA DIMENSIONS CHART											
MODEL	BA	B	C	ØD FOR MOUNTING PIPE DIAM.					E	F	NET WEIGHT (kg)
				219 (8.5)	114 (4.5)	89 (3.5)	51 (2.0)				
SC2-XXXX(CONT.)	670 (26.4)	293 (11.5)	254 (10)	-	293 (11.4)	293 (11.4)	293 (11.4)	123 (4.8)	100 (3.9)	9	
SBK2-190CB (CONT.)	700 (28)	289 (11.5)	114 (4.5)	-	371 (14.6)	357 (14.0)	333 (13.1)	99 (3.9)	146 (5.7)	9	
SBK2-220CB (CONT.)	700 (28)	289 (11.5)	114 (4.5)	-	371 (14.6)	357 (14.0)	333 (13.1)	99 (3.9)	146 (5.7)	9	
SBK3-190AB (CONT.)	970 (38.3)	500 (19.8)	170 (6.8)	-	317 (12.5)	299 (11.8)	299 (11.8)	100 (3.9)	365 (14.4)	18	
SBK3-220AB (CONT.)	970 (38.3)	500 (19.8)	170 (6.8)	-	317 (12.5)	299 (11.8)	299 (11.8)	100 (3.9)	365 (14.4)	18	
SBK4-190AB (CONT.)	1262 (49.7)	631 (24.9)	248 (9.8)	-	365 (14.4)	-	-	115 (4.5)	365 (14.4)	35	
UXA4-190CB (CONT.)	700 (28)	389 (15.4)	114 (4.5)	-	371 (14.6)	357 (14.0)	333 (13.1)	99 (3.9)	146 (5.7)	15	
UXA4-190BB (CONT.)	1313 (51.7)	816 (32.1)	248 (9.8)	-	365 (14.4)	-	-	115 (4.5)	365 (14.4)	40	
UXA4-220BB (CONT.)	1313 (51.7)	248 (9.8)	248 (9.8)	-	365 (14.4)	-	-	115 (4.5)	365 (14.4)	40	

CLIENT:

CARRIER:



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NO.	BY	DESCRIPTION	DATE



**ROEHAMPTON WEST**  
1112 WEST PENDER ST.  
SUITE 100  
VANCOUVER, BC V6E 2S1  
TEL: (778) 300-1233  
VANCOUVER - EDMONTON - CALGARY

LOCATION:  
362-368 EAST 3RD ST. NORTH VANCOUVER, BC  
TITLE:  
EQUIPMENT DETAILS  
PROJECT NAME:  
NEW ROOFTOP  
PROJECT NO:  
BVA0527C  
DWG. NO:  
N01



### 336 East 3<sup>rd</sup> Street – Proposed Rooftop Antenna Installation Photo Renderings

Current view from East 3<sup>rd</sup> looking east:



View from East 3<sup>rd</sup> looking east with proposed antennas/shroud:



**336 East 3<sup>rd</sup> Street – Proposed Rooftop Antenna Installation Photo Renderings**

Current view from East 3<sup>rd</sup> looking west:



View from East 3<sup>rd</sup> looking west with proposed antennas/shroud:





Emily MacDonald, Planner 1  
Planning and Development  
City of North Vancouver

Via Email: [emacdonald@cnv.org](mailto:emacdonald@cnv.org)

Re: Freedom Mobile DVP Consultation/Project Summary

Ms. MacDonald,

Cypress, on behalf of Freedom Mobile, has concluded our public consultation regarding the antenna installation at 366 East 3<sup>rd</sup>, North Vancouver. Below is a summary of the consultation process. Key consultation milestones include the following:

- March 29, 2018 - Cypress submitted Development Permit for a rooftop antenna installation at 366 E 3<sup>rd</sup>.
- June 18, 2019 – Cypress completed notification of the project as per City requirements
- August 27, 2019 – Sent Public Open House notifications to neighbors
- August 30, 2019 - Posted and on-site sign
- September 12, 2019 – Hosted a Public Open House Meeting

During the consultation process, ten (10) comments were received regarding the project. Attached is a summary of all public comments received with responses from Cypress. Nine of the ten expressed concerns. There were really two common themes/concerns raised through the consultation process. First, historical issues related to the development of the building including a variety of issues unrelated to Freedom's application to add antennas. Second, was the visual and/or shadow impact of the antenna installation to properties north of the building (across the lane, from the north side of 4<sup>th</sup> Avenue and a few homes on 5<sup>th</sup> Avenue). Cypress focused on the visibility/shadow concerns related to the antennas themselves. Cypress engaged an architect to complete a shadow analysis for review by staff and concerned residents. The shadow analysis displayed that the antennas installation (either shrouded or unshrouded) had very little shadow impact to neighbouring properties. A suggestion was made by both staff and a member of the public to have the antennas moved even further towards the front of the building. Freedom revised its plans to move the antennas further towards the front of the building to further reduce any visual or shadow impact to properties to the north. Freedom consulted staff regarding the preference for shrouding or no shrouding. It was determined that shrouding the antennas (while increasing the height of the installation minimally) would best reduce visibility of the antennas. Freedom shared the final designs (which included setting the antennas further away from the rear of the building and shrouding the antennas) with community members on March 25, 2020. No further comments were received from the community.

Please let me know if you need anything further to complete your report to Council.

Regards,

**Chad Marlatt**

**Cypress Land Services, Agents for Freedom Mobile**

Suite 1051, 409 Granville Street, Vancouver, BC V6C 1T2

# NOTICE OF PUBLIC MEETING (WAIVED)

**WHO:** Cypress Land Services  
**WHAT:** Development Variance Permit  
 No. PLN2020-00013 and  
 Development Permit  
 No. DPA2018-00005  
**WHERE:** 366 East 3<sup>rd</sup> Street  
**WHEN:** Monday, November 16, 2020  
 at 5:30 pm  
**HOW:** View the meeting online at  
[cnv.org/LiveStreaming](http://cnv.org/LiveStreaming)



Notice is hereby given that Council will consider:

**Development Variance Permit No. PLN2020-00013 and Development Permit No. DPA2018-00005** to permit the installation of a Third Party Rooftop Antenna by allowing an increase in the height exception for Third Party Rooftop Antennas from 1.2 metres to 2.2 metres and varying the "Rooftop Antenna Development Permit Guidelines" for height, antenna dimensions and siting.

As City Hall remains closed to the public, the Regular Council Meeting will be held electronically via "WebEx". All persons who believe their interest in property may be affected by the proposed permits will be afforded an opportunity to be heard by email or written submission. To ensure all submissions are available for Council at the meeting, certain deadlines have been implemented.

For email submissions (preferred):  
 include your name and address and send to [input@cnv.org](mailto:input@cnv.org) **no later than 12:00 noon on Monday, November 16, 2020.**

For written submissions:  
 include your name and address and mail or deposit into a drop-box at City Hall **no later than 4:00 pm on Friday, November 13, 2020.** Written submissions are subject to a 24-hour quarantine period before being opened due to COVID-19.

The proposed Development Variance Permit, Development Permit and background material will be available for viewing online at [cnv.org/PublicMeetings](http://cnv.org/PublicMeetings) on Friday, November 6, 2020.

Please direct any inquiries to Emily Macdonald, Planner, at [emacdonald@cnv.org](mailto:emacdonald@cnv.org) or 604-982-3904.



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**THE CORPORATION OF THE CITY OF NORTH VANCOUVER**  
**DEVELOPMENT VARIANCE PERMIT**

---

Permit No. PLN2020-00013

File: 08-3400-20-0029/1

---

Issued to owner(s): **MAGNOLIA HOUSE HOLDINGS LTD., INC.NO. BC1024751**

---

Respecting the lands located at **366 East 3<sup>rd</sup> Street**, North Vancouver, BC, legally described as:

**LOT A BLOCK 130 DL 274 NEW WESTMINSTER DISTRICT PLAN EPP66585**  
**PID: 030-035-694**

(the “Lands”)

---

**List of Attachments:**

Schedule “A”: List of Plans

---

**Authority to Issue:**

1. This Development Variance Permit is issued pursuant to Section 498 of the *Local Government Act*.
- 

**Bylaws Supplemented or Varied:**

2. The provisions of the City of North Vancouver “Zoning Bylaw, 1995, No. 6700” are hereby varied as follows:
    - A. Section 409(9) shall be varied to allow a Third Party Rooftop Antenna System to project up to 2.2 metres above the roof parapet of the building.
- 

**Special Terms and Conditions of Use:**

3. The Buildings and Structures shall be developed in accordance with the plans dated and listed on the attached Schedule A “List of Plans” and filed in the offices of the City, approved by Council, and in compliance with the regulations and conditions listed hereunder including:

- A. The owner shall obtain a Development Permit for the proposed Third Party Rooftop Antenna installation; and
    - B. The owner shall obtain a Building Permit for the proposed Third Party Rooftop Antenna installation.
  - 4. No variances other than those specifically set out in this permit are implied or to be construed.
  - 5. All plans attached to this Permit and specifications referred to above are subject to any changes required by the Building Inspector or other officials of the City where such plans and specifications do not comply with any bylaw or statute, and such non-compliance is not specifically permitted by this Development Variance Permit. The Lands may be subject to additional regulations, restrictive covenants and agreements which may affect their use, development and amenities, if any section or lesser portion of this Development Variance Permit is held invalid for any reason the invalid portion shall be severed from this Development Variance Permit and the validity of the remainder of the Development Variance Permit shall not be affected.
- 

#### **General Terms and Conditions:**

- 6. Pursuant to Section 504 of the *Local Government Act*, this Permit lapses if the work authorized herein is not commenced within 24 months following issuance of this Development Variance Permit. In the event the Owner is delayed or interrupted or prevented from commencing or continuing the construction on or about the subdivision by reason of any Act of God, labour unrest (including strike and lockouts), weather conditions or any similar cause reasonably beyond the control of the Owner, the time for the completion of the works shall be extended for a period equal to the duration of the contingency that occasioned the delay, interruption or prevention, provided that the commercial or financial circumstances of the Owner shall not be viewed as a cause beyond the control of the Owner.
- 7. This Development Variance Permit shall not vary the permitted uses or densities of land use in the applicable zoning bylaw nor a flood plain specification designated under Section 524(3) of the *Local Government Act*.
- 8. Nothing in this Permit shall in any way relieve Land Owner/Developers obligation to ensure that the development proposal complies in every way with the statutes, regulations, requirements, covenants and licences applicable to the undertaking.

9. Nothing in this Permit shall in any way relieve the Land Owner/Developers obligation to comply with all setback regulations for construction of structures or provision of on-site services pursuant to the *Health Act*, the *Fire Services Act*, the *Electrical Energy Inspection Act*, and any other provincial statutes.
- 

Authorized by Council: \_\_\_\_\_  
Year / Month / Day

\_\_\_\_\_  
Linda C. Buchanan, Mayor

\_\_\_\_\_  
Karla Graham, City Clerk

Date Signed: \_\_\_\_\_  
Year / Month / Day

---

Note: As required by Section 503 of the *Local Government Act*, the City of North Vancouver shall file a notice of this permit in the Land Title Office stating that the land described in this Permit is subject to Development Variance Permit No. PLN2020-00013.

Notice filed the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

THIS IS NOT A BUILDING PERMIT

**Schedule A**  
**List of Plans – 366 East 3<sup>rd</sup> Street**

<b>Designer</b>	<b>Project Name</b>	<b>Sheet Description</b>	<b>Sheet No.</b>	<b>Sheet Date</b>	<b>CityDocs File Number</b>
Rohampton West	New Rooftop	Title Sheet & Site Key Plan	-	September 3, 2020	1944895
Rohampton West	New Rooftop	Reference Sheet/Loading	A01	September 3, 2020	1944895
Rohampton West	New Rooftop	Site Plan	A02	September 3, 2020	1944895
Rohampton West	New Rooftop	Roof Plan	A03	September 3, 2020	1944895
Rohampton West	New Rooftop	North-East Elevation	A04	September 3, 2020	1944895
Rohampton West	New Rooftop	South-East Elevation	A05	September 3, 2020	1944895
Rohampton West	New Rooftop	North-West Elevation	A06	September 3, 2020	1944895
Rohampton West	New Rooftop	Electrical Routing	E01	September 3, 2020	1944895
Rohampton West	New Rooftop	Equipment Details	N01	September 3, 2020	1944895





**THE CORPORATION OF THE CITY OF NORTH VANCOUVER**

**DEVELOPMENT PERMIT**

**ROOFTOP ANTENNA**

---

Permit No. DPA2018-00005

File: 08-3060-20-0191/1

---

Issued to owner(s): **MAGNOLIA HOUSE HOLDINGS LTD., INC.NO. BC1024751**

---

Respecting the lands located at **366 East 3<sup>rd</sup> Street**, North Vancouver, BC, legally described as:

**LOT A BLOCK 130 DL 274 NEW WESTMINSTER DISTRICT PLAN EPP66585**  
**PID: 030-035-694**

(the “**Lands**”)

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**List of Attachments:**

Schedule “A”: List of Plans

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**Authority to Issue:**

1. This Development Permit is issued pursuant to Section 489 of the *Local Government Act*.
  2. This permit is specifically in accordance with The City of North Vancouver “Official Community Plan Bylaw, 2014, No. 8400”, Section 2.5 and applicable Rooftop Antenna Development Permit Guidelines contained in “Zoning Bylaw, 1995, No. 6700”, Division VII, except as specified below, and all other applicable bylaws and guidelines of the City.
- 

**Bylaws Supplemented or Varied:**

3. Guideline 3.3.1 Standard of Design:
    - a. Guideline 3.3.1 (a), maximum height, shall be varied to permit rooftop antennas to project 2.2 metres above the roof parapet;
    - b. Guideline 3.3.1 (b), minimum setback, shall be reduced to .3 metres from the roof edge;
    - c. Guideline 3.3.1 (c), maximum antenna dimensions, shall be waived.
-

### **Special Terms and Conditions of Use:**

4. The antennas and shroud structures shall be developed in accordance with the plans dated and listed on the attached Schedule A "List of Plans" and filed in the offices of the City, approved by Mayor and Council, and in compliance with the regulations and conditions listed hereunder:
  - A. All secure bicycle parking that will be relocated to accommodate mechanical equipment associated with the installation shall conform with Zoning Bylaw section 10A requirements;
  - B. All antennas and dishes shall be shrouded as shown in the List of Plans. Shrouding shall be painted to match the appearance of the Principal Building;
  - C. The owner shall not construct or apply for a building permit to construct the proposed antenna installation until and unless a Development Variance Permit has been obtained to allow the proposed height of the installation;
  - D. The owner shall not construct the proposed antenna installation until and unless a Building Permit has been issued for the proposed antenna installation.
5. No variances other than those specifically set out in this permit are implied or to be construed.
6. All plans attached to this Permit and specifications referred to above are subject to any changes required by the Building Inspector or other officials of the City where such plans and specifications do not comply with any bylaw or statute, and such non-compliance is not specifically permitted by this Development Permit. The Lands may be subject to additional regulations, restrictive covenants and agreements which may affect their use, development and amenities, if any section or lesser portion of this Development Permit is held invalid for any reason the invalid portion shall be severed from this Development Permit and the validity of the remainder of the Development Permit shall not be affected.

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### **General Terms and Conditions:**

7. Pursuant to Section 504 of the *Local Government Act*, this Permit lapses if the work authorized herein is not commenced within 24 months following issuance of this Development Permit. In the event the Owner is delayed or interrupted or prevented from commencing or continuing the construction on or about the subdivision by reason of any Act of God, labour unrest (including strike and lockouts), weather conditions or any similar cause reasonably beyond the control of the Owner, the time for the completion of the works shall be extended for a period equal to the duration of the contingency that occasioned the delay, interruption or prevention, provided that the commercial or financial circumstances of the Owner shall not be viewed as a cause beyond the control of the Owner.

8. This Development Permit shall not vary the permitted uses or densities of land use in the applicable zoning bylaw nor a flood plain specification designated under Section 524(3) of the *Local Government Act*.
9. Nothing in this permit shall in any way relieve Land Owner/Developers obligation to ensure that the development proposal complies in every way with the statutes, regulations, requirements, covenants and licences applicable to the undertaking.
10. Nothing in this permit shall in any way relieve the Land Owner/Developers obligation to comply with all setback regulations for construction of structures or provision of on-site services pursuant to the *Health Act*, the *Fire Services Act*, the *Electrical Energy Inspection Act*, and any other provincial statutes.
11. The Permit holder acknowledges that a Building Permit and other City Permits are required. This is not a Building Permit.
12. The holder of the permit shall provide the general contractor and all professionals associated with this project with copies of this permit.

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Authorized by Council: \_\_\_\_\_  
Year / Month / Day

\_\_\_\_\_  
Linda C. Buchanan, Mayor

\_\_\_\_\_  
Karla Graham, City Clerk

Date Signed: \_\_\_\_\_  
Year / Month / Day

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Note: As required by Section 503 of the *Local Government Act*, the City of North Vancouver shall file a notice of this permit in the Land Title Office stating that the land described in this Permit is subject to Development Permit No. DPA2018-00005.




Notice filed the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

**THIS IS NOT A BUILDING PERMIT**

**Schedule A**  
**List of Plans – 366 East 3<sup>rd</sup> Street**

<b>Designer</b>	<b>Project Name</b>	<b>Sheet Description</b>	<b>Sheet No.</b>	<b>Sheet Date</b>	<b>CityDocs File Number</b>
Rohampton West	New Rooftop	Title Sheet & Site Key Plan	-	September 3, 2020	1944895
Rohampton West	New Rooftop	Reference Sheet/Loading	A01	September 3, 2020	1944895
Rohampton West	New Rooftop	Site Plan	A02	September 3, 2020	1944895
Rohampton West	New Rooftop	Roof Plan	A03	September 3, 2020	1944895
Rohampton West	New Rooftop	North-East Elevation	A04	September 3, 2020	1944895
Rohampton West	New Rooftop	South-East Elevation	A05	September 3, 2020	1944895
Rohampton West	New Rooftop	North-West Elevation	A06	September 3, 2020	1944895
Rohampton West	New Rooftop	Electrical Routing	E01	September 3, 2020	1944895
Rohampton West	New Rooftop	Equipment Details	N01	September 3, 2020	1944895



 Department Manager	 Director	 CAO
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The Corporation of **THE CITY OF NORTH VANCOUVER**  
**PLANNING & DEVELOPMENT DEPARTMENT**

**REPORT**

To: Mayor Linda Buchanan and Members of Council

From: Tim Ryce, Chief Building Official  
Caroline Jackson, Manager, Environmental Sustainability

Subject: LOW CARBON BUILDING BYLAW AMENDMENTS

Date: November 4, 2020 File No: 11-5280-14-0001/2020

*The following is a suggested recommendation only. Refer to Council Minutes for adopted resolution.*

**RECOMMENDATION**

PURSUANT to the report of the Chief Building Official and the Manager, Environmental Sustainability, dated November 4, 2020, entitled "Low Carbon Building Bylaw Amendments":

THAT "Construction Regulation Bylaw, 2003, No. 7390, Amendment Bylaw, 2020, No. 8810" (Low Carbon Pathway Amendments Under the BC Energy Step Code) be considered;

AND THAT the City's Sustainable Development Guidelines be updated to reflect the new requirements.

**ATTACHMENTS**

1. Construction Regulation Bylaw, 2003, No. 7390, Amendment Bylaw, 2020, No. 8810 (Low Carbon Pathway Amendments Under the BC Energy Step Code) (Document [#1987950](#))
2. Report to Council from the Manager, Environmental Sustainability, and the Chief Building Official, dated June 17, 2020, entitled "Proposed Consultation on Low Carbon Building Bylaw Amendments (Document [#1928254](#))

**SUMMARY**

The purpose of this report is to provide Council with the results of stakeholder consultation regarding low carbon building bylaw amendments, and to present for



Council's consideration Construction Regulation Amendment Bylaw, No. 8810 to introduce a low carbon compliance pathway for the City's BC Energy Step Code requirements. This policy directly supports the City's target of zero emissions by the year 2050.

## **BACKGROUND**

At the June 22, 2020 Council meeting, the following resolution was unanimously endorsed:

"PURSUANT to the report of the Manager, Environmental Sustainability, and Chief Building Official, dated June 17, 2020, entitled "Proposed Consultation on Low Carbon Building Bylaw Amendments":

THAT staff be directed to consult with stakeholders with respect to proposed low carbon amendments to "Construction Regulation Bylaw, 2003, No. 7390".

The transition to low carbon heating systems presents a significant opportunity to reduce greenhouse gas emissions from buildings and is a key strategy in achieving the City's target of zero emissions by 2050. While the BC Energy Step Code provides a pathway to more energy efficient and higher quality construction homes, it does not specify limits for greenhouse gas emissions from buildings. In BC, due to the Province's low carbon electricity supply, buildings that rely on electricity compared to natural gas produce relatively few emissions, regardless of the Step under the Energy Step Code.

This report provides an update to Council on the results of consultation with stakeholders and presents a bylaw amendment informed by this consultation for consideration for Part 9 buildings. Part 9 buildings under the Building Code are small residential buildings (three storeys and under) including single family homes, duplexes, coach homes and some townhouses. Further background on the BC Energy Step Code and the low carbon compliance pathway is summarized in the staff report entitled "Proposed Consultation on Low Carbon Building Bylaw Amendments," dated June 17, 2020 (Attachment #2).

## **DISCUSSION**

Staff held a series of meetings with various stakeholder groups to obtain feedback on the proposed changes to the Construction Regulation Bylaw. For Part 9 buildings, these changes consist of updating the City's Step Code requirement to Step 5, the highest step of Energy Step Code while adding a low carbon compliance pathway of the current step, Step 3, provided a low carbon energy system, potentially an electrically powered heat pump, is in place. For Part 3 buildings, these changes consisted of migrating the City's existing Rezoning Policy requirements into the Construction Regulation Bylaw to achieve greater administrative efficiency.

## Stakeholder Consultation

Meetings were held to obtain feedback on the proposed approach as outlined in the following table:

Stakeholder Group	Meeting Date
Urban Development Institute (UDI) and Homebuilders Association Vancouver (HAVAN) members	July 7, 2020
Climate and Environment Task Force	July 7, 2020
HAVAN members	July 22, 2020
Thermal Environmental Comfort Association (TECA) members and Heating, Ventilation and Air Conditioning (HVAC) contractors	October 2, 2020

Through these meetings, follow up correspondence with stakeholders and conversations with industry experts, staff heard the following:

- General support for pursuing low carbon requirements for new buildings as a response to the climate crisis;
- Maintaining consistency of requirements across the North Shore and the broader region is very important;
- Proposed Step 3 with low carbon system option is reasonable since it is one of two options provided and only requires a change in mechanical system, not in energy performance;
- Industry is ready for widespread installations of air to air heat pumps for space heating in new Part 9 homes, although contractor certification requirements are advisable to avoid poor installations of low quality heat pumps;
- Significant challenges remain for air to water heat pump system installations due to a lack of technology available on the market and a lack of industry installation capacity and experience;
- A greenhouse gas intensity limit could be easily met with conventional electric tanks or electric baseboards;
- Encouragement to also consider embodied carbon, especially the impact of higher steps on embodied carbon of building materials, and to collect data to make informed policy decisions and understand their unintended consequences;
- Concerns remain about the impact of building electrification to affordability and the ability of BC Hydro to meet increased demand; and
- An extended implementation timeline would be appreciated to allow for sufficient contractors to go through certification and training programs that have recently been developed.

## Flexible Approach

Feedback obtained from stakeholders provided significant insight into industry readiness for the proposed low carbon compliance pathway and has influenced the bylaw requirements and implementation timeline outlined in this report. While the air to air heat pump market and industry is well developed, gaps in technology and capacity

exist for the air to water heat pump market, making a heat pump requirement premature in staff's view.

Bylaw 8810 thus requires that low carbon energy system homes must simply meet an overall greenhouse gas intensity (GHGI) limit for the building. The GHGI limit can be met in a number of ways and staff expect that some builders will choose to install air to air heat pumps or air to water heat pumps, while others may choose to install electric baseboards. While this is a departure from the District of West Vancouver's approach, where heat pump technology is a requirement, this approach is consistent with the City of Vancouver's approach (regulations coming into effect in January 2022).

Natural gas fireplaces and cooktops can also still be accommodated within the GHGI limit proposed in the bylaw.

### **Energy Step Code Requirements for Part 9 (Simple) Buildings**

The Energy Step Code for Part 9 buildings consists of five steps with the highest (Step 5) similar to net zero building performance. The City has required Step 3 since July 1, 2018 for all Part 9 buildings. Bylaw 8810 increases the City's current requirement for Part 9 buildings to Step 5, while also offering an alternate pathway of Step 3 with a low carbon energy system (Table 1). The low carbon energy system option is defined as a maximum modeled greenhouse gas intensity (GHGI) for all space and water heating systems in the building. This approach provides flexibility in the technologies installed and is consistent with the performance-based approach of the Energy Step Code.

**Table 1. Summary of Part 9 Changes**

	<b>Current Requirement</b>	<b>Proposed Requirement</b>	
		<b>Pathway 1: Low Carbon</b>	<b>Pathway 2: Higher Step</b>
<b>Small Part 9 residential buildings</b>	Step 1 of 5	Step 3 of 5 + Low Carbon	Step 5 of 5
<b>Part 9 residential buildings over 1,200 sq. ft.</b>	Step 3 of 5	Step 3 of 5 + Low Carbon	Step 5 of 5

### **Energy Step Code Requirements for Part 3 (Complex) Buildings**

As discussed in the June 2020 staff report, migrating the current Rezoning Policy requirements for Part 3 buildings into the Construction Regulation bylaw (Table 2) will achieve greater administrative efficiency. As the majority of Part 3 projects undergo a rezoning process prior to Building Permit application, this proposal will standardize the energy efficiency requirements that are largely already in effect for Part 3 buildings. Part 3 buildings under the Building Code are larger buildings (over three storeys) with a variety of uses including multi-family residential, commercial and institutional buildings.

An Energy Step Code requirement of Step 1 for institutional buildings is also included, as the Energy Step Code was recently expanded to include buildings with institutional occupancies such as schools and hospitals. Currently, the Step Code for these



buildings consists of only one step, Step 1, which requires energy modeling and airtightness testing for new buildings, but does not require specific energy performance targets to be achieved. Performance requirements beyond Step 1 have yet to be set by the Province for institutional buildings.

**Table 2. Summary of Proposed Part 3 Changes**

Use	Current Requirement	Proposed Requirement
Residential	Step 2 of 4 (Rezoning: Step 3 of 4)	Step 3 of 4
Commercial	Step 1 of 3 (Rezoning: Step 2 of 3)	Step 2 of 3
Institutional	None	Step 1

### **North Shore Coordination and Implementation Timeline**

Since the Energy Step Code was first implemented in December 2017, the City has collaborated with the neighbouring North Shore municipalities regarding Energy Step Code requirements, and all three municipalities intend to introduce a low carbon compliance pathway to take effect in 2021. The District of West Vancouver adopted a low carbon Energy Step Code bylaw amendment in March 2020 with an implementation date of March 2021, while the District of North Vancouver Council recently directed staff to introduce low carbon Energy Step Code requirements with an anticipated implementation date of July 1, 2021.

Should Council adopt Bylaw 8810, requirements would take effect on July 1, 2021, consistent with the District of North Vancouver's expected timeline and exactly three years after Energy Step Code requirements were last increased across the North Shore. While staff had originally considered an implementation date of March 2021 consistent with the District of West Vancouver, following the feedback received during industry consultation, an extended implementation timeline is advisable to allow the industry additional time to deliver new certification and training programs already underway. The extended timeline will also allow staff sufficient time to develop robust internal administration processes. The timeline is approximately six months ahead of similar low carbon requirements taking effect in the City of Vancouver (January 2022).

### **Carbon Pollution Impact**

Implementing a low carbon Energy Step Code compliance pathway for Part 9 buildings in the City is estimated to result in a reduction in greenhouse gas emissions of over 1,500 tonnes, the equivalent of taking almost 500 passenger vehicles off the road over the next 30 years.

### **FINANCIAL IMPLICATIONS**

The implementation of the proposed low carbon Energy Step Code requirements will be accommodated within existing budgets and staff resources.

## INTER-DEPARTMENTAL IMPLICATIONS

This report and accompanying bylaw amendment were reviewed by the City Solicitor.

## STRATEGIC PLAN, OCP OR POLICY IMPLICATIONS

This policy supports the City's Livable City goal as articulated in Council's Strategic Plan along with the City's climate target of achieving net zero emissions by 2050.

RESPECTFULLY SUBMITTED:



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Tim Ryce, P. Eng.  
Chief Building Official



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Caroline Jackson, M.Sc.  
Manager, Environmental Sustainability



**THE CORPORATION OF THE CITY OF NORTH VANCOUVER**

**BYLAW NO. 8810**

**A Bylaw to amend “Construction Regulation Bylaw, 2003, No. 7390”**

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as **“Construction Regulation Bylaw, 2003, No. 7390, Amendment Bylaw, 2020, No. 8810” (Low Carbon Pathway Amendments Under the BC Energy Step Code)**.
2. “Construction Regulation Bylaw, 2003, No. 7390” is amended as follows:

- A. In Part 3 – Definitions, by adding the following definitions:

“Energy Step Code” means the incremental energy performance requirements defined in sections 9.36.6 and 10.2.3 of the Building Code.

“Low Carbon Energy Systems” means all mechanical systems in a Building that provide thermal conditioning and domestic hot water heating such that the modeled Greenhouse Gas Intensity for the floor area of conditioned space of the Building is no more than 3 kg CO<sub>2</sub>e/m<sup>2</sup>/year.

- B. By deleting Subsections 8.7.3. and 8.7.4. and replacing with the following:

8.7.3 Applications for a Building Permit for a Building that contains one or more uses contained in Table 1 and is required to comply with Part 3 of the Building Code shall:

- (a) be designed to meet or exceed the specified Energy Step Code requirements for the Step indicated in Table 1; and
- (b) provide sufficient documentation to demonstrate compliance with this Step to the satisfaction of the Chief Building Official.

Table 1

Use	Energy Step Code Step
Schools other than colleges	Step 1
Libraries	Step 1
Colleges	Step 1
Recreation Centres	Step 1
Hospitals	Step 1
Care Centres	Step 1

Hotels and Motels	Step 3
Other Residential Occupancies	Step 3
Offices	Step 2
Other Business and Personal Service or Mercantile Occupancies	Step 2

8.7.4 Applications for a Building Permit for a building containing a residential Occupancy that is required to comply with Part 9 of the Building Code shall:

- (a) be designed to meet or exceed the specified Energy Step Code requirements for the Step indicated in Table 2; and
- (b) provide sufficient documentation to demonstrate compliance with this Step to the satisfaction of the Chief Building Official.

Table 2

Energy System	Energy Step Code Step
Buildings equipped with Low Carbon Energy Systems	Step 3
Buildings not equipped with Low Carbon Energy Systems	Step 5

C. By deleting Subsections 8.7.5 and 8.8.4. in their entirety.

3. This Bylaw is to come into force and take effect on July 1, 2021.

READ a first time on the <> day of <>, 2020.

READ a second time on the <> day of <>, 2020.

READ a third time on the <> day of <>, 2020.

ADOPTED on the <> day of <>, 2020.

\_\_\_\_\_  
MAYOR

\_\_\_\_\_  
CORPORATE OFFICER

**MINUTES OF THE REGULAR MEETING OF COUNCIL, HELD IN THE CAO MEETING ROOM, CITY HALL, 141 WEST 14<sup>TH</sup> STREET, NORTH VANCOUVER, BC, ON  
MONDAY, JUNE 22, 2020**

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**REPORTS**

16. Proposed Consultation on Low Carbon Building Bylaw Amendments  
– File: 11-5280-14-0001/2020

Report: Manager, Environmental Sustainability, and Chief Building Official,  
June 17, 2020

Moved by Councillor McIlroy, seconded by Councillor Girard

PURSUANT to the report of the Manager, Environmental Sustainability, and Chief Building Official, dated June 17, 2020, entitled “Proposed Consultation on Low Carbon Building Bylaw Amendments”:

THAT staff be directed to consult with stakeholders with respect to proposed low carbon amendments to “Construction Regulation Bylaw, 2003, No. 7390”.

**CARRIED UNANIMOUSLY**



----- Department Manager	 Director	 CAO
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The Corporation of **THE CITY OF NORTH VANCOUVER**  
**PLANNING & DEVELOPMENT DEPARTMENT**

**REPORT**

To: Mayor Linda Buchanan and Members of Council

From: Caroline Jackson, Manager, Environmental Sustainability  
Tim Ryce, Chief Building Official

Subject: PROPOSED CONSULTATION ON LOW CARBON BUILDING BYLAW  
AMENDMENTS

Date: June 17, 2020 File No: 11-5280-14-0001/2020

*The following is a suggested recommendation only. Refer to Council Minutes for adopted resolution.*

**RECOMMENDATION**

PURSUANT to the report of the Manager, Environmental Sustainability, dated June 17, 2020, entitled "Proposed Consultation on Low Carbon Building Bylaw Amendments":

THAT staff be directed to consult with stakeholders with respect to proposed low carbon amendments to the Construction Regulation Bylaw as detailed in this report.

**PURPOSE**

The purpose of this report is to advise Council of the need for a low carbon pathway in the City's BC Energy Step Code requirements for new buildings in order to achieve the City's climate targets, and to seek direction to consult with stakeholders regarding proposed low carbon amendments to the City's Construction Regulation Bylaw.

**BACKGROUND**

**A Critical Decade for Climate Action**

The International Panel on Climate Change (IPCC) released a report in October 2018 warning that urgent and unprecedented action is required over the next decade to avoid the most far-reaching effects of climate change. In February 2019, Council unanimously adopted new community-wide greenhouse gas emissions reduction targets of an 80% reduction in emissions by 2040 and net zero emissions by 2050, and directed staff to incorporate these targets into plans, policies, and business practices.

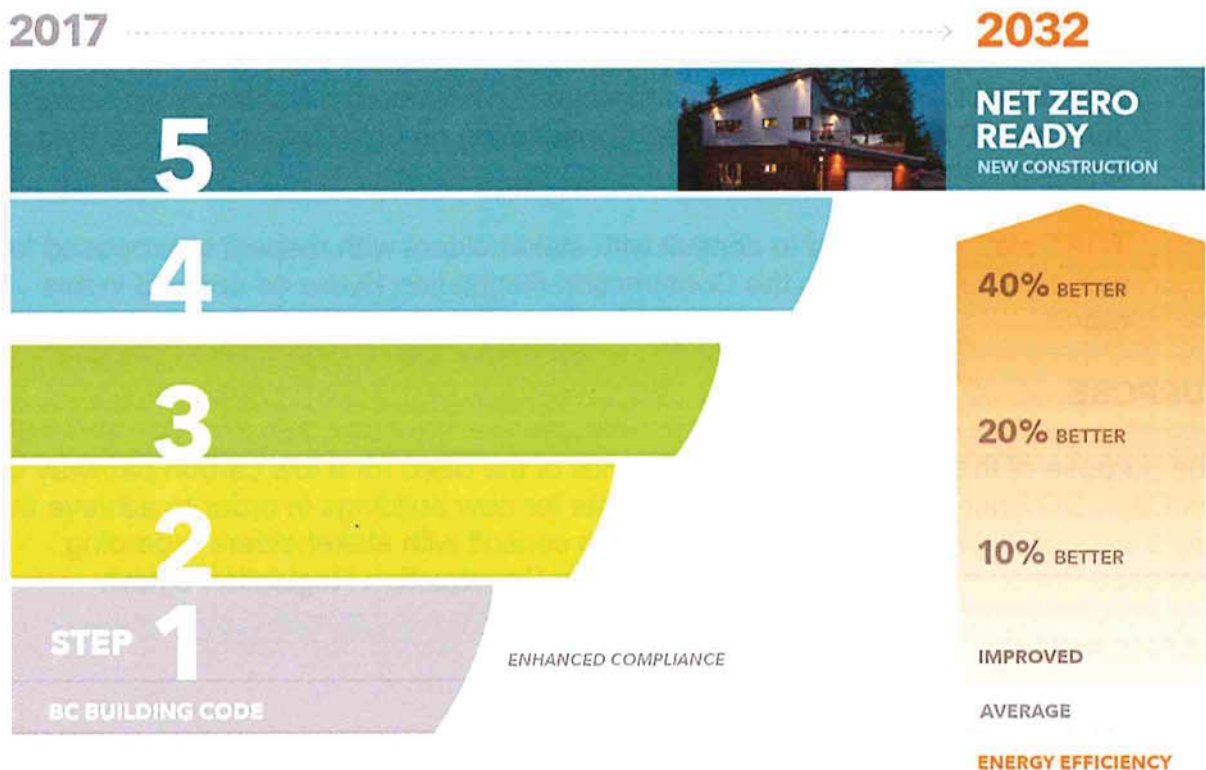
## Building Emissions

Approximately half of the City's greenhouse gas emissions, on a community-wide basis, are attributed to building energy use. These emissions are primarily due to space and water heating using natural gas heating systems. Transitioning to electric and other low carbon heating systems represents a significant opportunity to reduce emissions from buildings and will be a critical strategy in achieving the City's emissions reduction targets.

Given that buildings constructed today will be in operation in 2050 and beyond, it is important that they are powered by zero emission heating systems. Equipping buildings with low emission electric heating systems at the time of construction is simpler and more cost-effective than retrofitting them later.

## BC Energy Step Code

The BC Energy Step Code was introduced in 2017 to support market transformation towards higher performance buildings through progressive energy efficiency targets, and to provide consistency in building requirements across BC. As a voluntary compliance pathway in the BC Building Code, the Energy Step Code establishes a series of incremental energy efficiency targets for new buildings that local governments can encourage or require. The Energy Step Code also communicates the future intent of Building Code requirements with the goal of all new buildings being net zero energy ready by 2032 (all energy needs could be met through on-site energy generation).



**Figure 1. BC Energy Step Code**

The Step Code thus allows local governments to require higher levels of energy efficiency in new construction above the minimum requirements of the BC Building Code. Over time, the minimum requirements of the Building Code will be increased



according to the Steps with the target of all buildings achieving the highest Step by 2032.

The transition to higher performance buildings through the Energy Step Code supports better quality construction, improved comfort, and better indoor air quality.

### **Step Code Requirements on the North Shore**

The City first introduced Step Code requirements in December 2017, becoming one of the first municipalities in BC to implement Step Code requirements for all buildings. The City has coordinated closely with the District of West Vancouver (DWV) and the District of North Vancouver (DNV) to provide builders with consistent requirements across the North Shore. Builders have now been building to the current Step Code requirements for approximately two years and have consistently met or exceeded the energy performance targets.

**Part 9 (Simple) Buildings.** Part 9 buildings under the Building Code are typically small residential buildings (three storeys and under) and other non-complex buildings. The City has required Step 3 of 5 for the majority of residential buildings in this category (with the exception of coach houses, where Step 1 is required) since 2018. The exception was made for coach houses as the cost differential is higher for smaller buildings.

**Part 3 (Complex) Buildings.** Part 3 buildings under the Building Code are typically larger and taller (over three storeys) buildings with a variety of uses including multi-family residential buildings, commercial buildings and institutional buildings. The City has required Step 2 of 4 for the majority of Part 3 residential buildings and Step 1 of 3 for Part 3 commercial buildings since 2018. In both cases, projects seeking rezoning are required to achieve an additional step above these base requirements per the Step Code Rezoning Policy.

## **DISCUSSION**

While the Energy Step Code has been successful in increasing overall energy efficiency, achieving better construction quality and building more comfortable and climate resilient homes, it does not alone accomplish the emissions reductions necessary to achieve the City's climate targets.

### **BC Energy Step Code and Greenhouse Gas Emissions**

In BC, due to the Province's low carbon electricity supply, building-related greenhouse gas emissions are directly correlated with heating type. Buildings that rely on electricity compared to natural gas produce relatively few emissions, regardless of the step under the Energy Step Code.

While the Step Code can result in emissions reductions, it can still result in buildings that continue to emit significant emissions over their lifetimes, and does not guarantee the level of emissions reductions necessary to drive emission to zero or near-zero levels.

Depending on the home heating system selected, the greenhouse gas emissions intensity can vary by over 90%, since the Step Code does not require designers to select a low-carbon heating system. For example, when a home is heated using natural gas, even at the highest Step, emissions are only reduced by half (Figure 2).

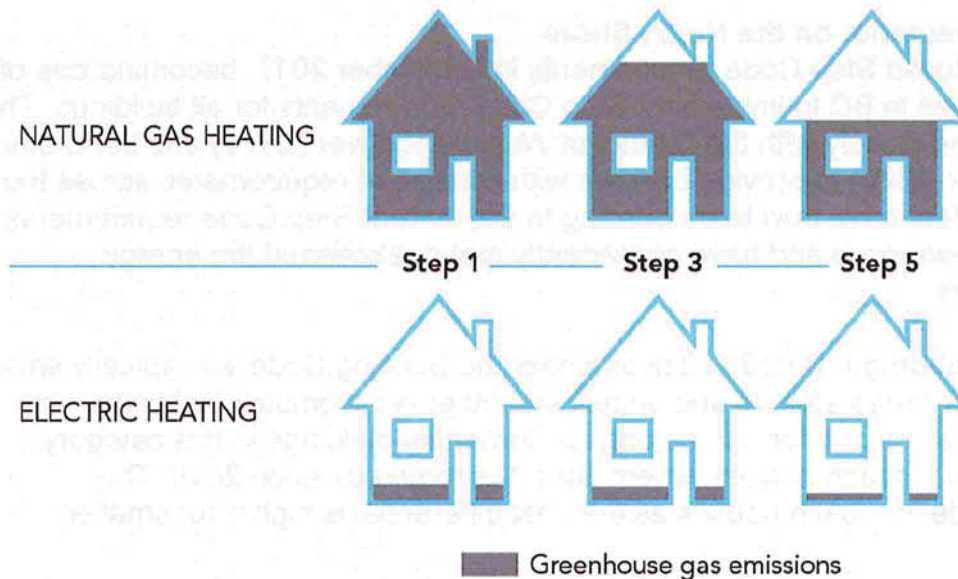


Figure 2. Greenhouse gas emissions by heating type and step of Energy Step Code  
(Source: Metro Vancouver Climate 2050 Buildings Discussion Paper)

### Low Carbon Path in Part 9 Buildings

To achieve the necessary reductions in emissions from buildings, low carbon heating systems are needed in addition to the Energy Step Code performance requirements. Recent guidance from the Province has highlighted that local governments can use the inherent flexibility of the Energy Step Code requirements to advance emissions reductions goals by offering a low carbon compliance pathway.

A number of municipalities, including Surrey, Burnaby, and Richmond have implemented a Step Code low carbon path option by requiring a higher step and offering a voluntary compliance of a lower step with a low carbon (electric) heating system. Most recently, the District of West Vancouver implemented a requirement for Part 9 buildings for Step 5 with an option permitting Step 3 (the City's current step) when a low carbon heat pump energy system is used.

### Heat Pump Technology in Part 9 Buildings

Heat pumps are increasingly being implemented as heating systems in Part 9 buildings. Heat pump technology involves using a small amount of energy to pull heat from the outside air to heat a building. Heat pumps work very efficiently, as they simply transfer heat rather than burning a fuel to create heat.

A key advantage of heat pumps is that they also function in reverse to provide cooling, resulting in a more resilient housing stock. Climate projections predict that over the coming decades, our region will experience summer heat similar to that currently



experienced in Southern California, and mandatory mechanical cooling is already being considered by Provincial authorities to safeguard health under a warming climate. During heat and forest fire smoke events, heat pumps can contribute to maintaining comfortable temperatures and good air quality in homes.

**Proposed Requirement for Part 9 Residential Buildings: Increase to highest step with voluntary low carbon compliance option**

An increase is proposed to the City's current requirement for most Part 9 buildings to the highest Step (Step 5) while offering a voluntary compliance option of the City's current (2018) requirements along with a low carbon (electric heat pump) heating system (Table 1). This proposed requirement is consistent with bylaws adopted by the District of West Vancouver earlier this year, and with a proposed approach currently under consideration by the District of North Vancouver.

This approach offers a number of advantages:

- Harmonized approach with the Districts of West and North Vancouver, maintaining consistency across the North Shore;
- Maintaining the City's existing Step 3 standard for Part 9 residential buildings (in place since 2018), with the addition of a low carbon heating system requirement thus providing flexibility and reducing the need for industry to adopt substantial new building practices; and
- Ensuring mechanical cooling can be provided, creating a more resilient future-proof residential building stock; and
- Avoiding future retrofit costs for these buildings to ensure zero emissions are achieved by 2050.

**Table 1. Summary of Proposed Part 9 Changes**

	Current Requirement	Proposed Requirement	
		Pathway 1: Low Carbon	Pathway 2: Higher Step
<b>Small Part 9 residential buildings</b>	Step 1 of 5	Step 3 of 5 + Low Carbon	Step 5 of 5
<b>Part 9 residential buildings over 1,200 sq. ft.</b>	Step 3 of 5	Step 3 of 5 + Low Carbon	Step 5 of 5

**Approach for Part 3 (Complex) Buildings**

Staff are also examining requirements for Part 3 buildings to determine options for achieving the City's 2050 target. Given the complexity and diversity of these building types, analysis specific to Part 3 buildings is required before determining any future proposed changes.

For these building types, the B.C. Energy Step Code consists of four steps for residential Part 3 buildings, and three steps for commercial Part 3 buildings. Under the City's current requirements in the Construction Regulation Bylaw, residential Part 3

buildings are required to meet Step 2 of 4 while commercial Part 3 buildings are required to meet Step 1 of 3. However, the majority of these Part 3 buildings undergo a rezoning process and thus are subject to the City's 2017 Step Code Rezoning Policy, where residential buildings are required to be built to Step 3 of 4 and commercial buildings are required to be built to Step 2 of 3.

Most Part 3 buildings are over 1,000 m<sup>2</sup> and thus are required to connect to the City's Lonsdale Energy Corporation (LEC) district energy system. LEC is currently incorporating low carbon heat sources including waste heat from the new North Shore Wastewater Treatment Plant to reduce emissions.

Further research and dialogue is required with internal and external stakeholders to determine potential policy options for consideration for Part 3 buildings, and staff will bring forward further information in due course for Council's consideration.

### **Proposed Requirement for Part 3 (Complex) Buildings**

A measure under consideration would be to achieve greater administrative efficiency by migrating the current Rezoning Policy requirements into the Construction Regulation bylaw directly, while continuing to review possible future changes to achieve low carbon objectives.

As the majority of projects undergo a rezoning process prior to Building Permit application, this proposal will standardize the energy efficiency requirements that are largely already in effect for Part 3 buildings.

**Table 2. Summary of Proposed Part 3 Changes**

	<b>Current Requirement</b>	<b>Proposed Requirement</b>
<b>Part 3 residential buildings</b>	Step 2 of 4 (Rezoning: Step 3 of 4)	Step 3 of 4
<b>Part 3 commercial buildings</b>	Step 1 of 3 (Rezoning: Step 2 of 3)	Step 2 of 3

### **NEXT STEPS**

Should Council direct staff to proceed with consultation regarding the above proposed requirements, staff will initiate industry consultation, and work to achieve consistency across the North Shore, with the goal of matching the District of West Vancouver's implementation date of March 2021. Staff will report back to Council in the fall.

### **CONCLUSION**

Incentivizing low carbon heating systems in new construction will play a significant role in reducing emissions from buildings. Given the long lifespan of buildings and high retrofit cost, it is important that this transition happens in the near term in order to advance carbon reduction goals. Bringing these requirements forward now for

consideration will maintain a coordinated North Shore approach and achieve greater consistency for industry.

### **FINANCIAL IMPLICATIONS**

Should Council endorse the report recommendation, staff will proceed with consultation with industry using existing resources and will report back to Council.

### **INTER-DEPARTMENTAL IMPLICATIONS**

This report and recommendation were reviewed by the City Solicitor.

### **STRATEGIC PLAN, OCP OR POLICY IMPLICATIONS**

This policy supports the City's Livable City goal as articulated in Council's Strategic Plan of achieving net zero emissions by 2050, and is considered an early action in progressing the City's Environment Strategy.

RESPECTFULLY SUBMITTED:



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Caroline Jackson, M.Sc.  
Manager, Environmental Sustainability

RESPECTFULLY SUBMITTED:



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Tim Ryce, P. Eng.  
Chief Building Official



# THE CORPORATION OF THE CITY OF NORTH VANCOUVER

## BYLAW NO. 8810

### A Bylaw to amend “Construction Regulation Bylaw, 2003, No. 7390”

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as “**Construction Regulation Bylaw, 2003, No. 7390, Amendment Bylaw, 2020, No. 8810**” (Low Carbon Pathway Amendments Under the BC Energy Step Code).
2. “Construction Regulation Bylaw, 2003, No. 7390” is amended as follows:

- A. In Part 3 – Definitions, by adding the following definitions:

“Energy Step Code” means the incremental energy performance requirements defined in sections 9.36.6 and 10.2.3 of the Building Code.

“Low Carbon Energy Systems” means all mechanical systems in a Building that provide thermal conditioning and domestic hot water heating such that the modeled Greenhouse Gas Intensity for the floor area of conditioned space of the Building is no more than 3 kg CO<sub>2</sub>e/m<sup>2</sup>/year.

- B. By deleting Subsections 8.7.3. and 8.7.4. and replacing with the following:

8.7.3 Applications for a Building Permit for a Building that contains one or more uses contained in Table 1 and is required to comply with Part 3 of the Building Code shall:

- (a) be designed to meet or exceed the specified Energy Step Code requirements for the Step indicated in Table 1; and
- (b) provide sufficient documentation to demonstrate compliance with this Step to the satisfaction of the Chief Building Official.

Table 1

Use	Energy Step Code Step
Schools other than colleges	Step 1
Libraries	Step 1
Colleges	Step 1
Recreation Centres	Step 1
Hospitals	Step 1
Care Centres	Step 1

Hotels and Motels	Step 3
Other Residential Occupancies	Step 3
Offices	Step 2
Other Business and Personal Service or Mercantile Occupancies	Step 2

8.7.4 Applications for a Building Permit for a building containing a residential Occupancy that is required to comply with Part 9 of the Building Code shall:

- (a) be designed to meet or exceed the specified Energy Step Code requirements for the Step indicated in Table 2; and
- (b) provide sufficient documentation to demonstrate compliance with this Step to the satisfaction of the Chief Building Official.

Table 2

Energy System	Energy Step Code Step
Buildings equipped with Low Carbon Energy Systems	Step 3
Buildings not equipped with Low Carbon Energy Systems	Step 5

C. By deleting Subsections 8.7.5 and 8.8.4. in their entirety.

3. This Bylaw is to come into force and take effect on July 1, 2021.

READ a first time on the <> day of <>, 2020.

READ a second time on the <> day of <>, 2020.

READ a third time on the <> day of <>, 2020.

ADOPTED on the <> day of <>, 2020.

\_\_\_\_\_  
MAYOR

\_\_\_\_\_  
CORPORATE OFFICER



 Department Manager	 Director	 CAO
---	---	--

The Corporation of **THE CITY OF NORTH VANCOUVER**  
**PLANNING & DEVELOPMENT DEPARTMENT**

**REPORT**

To: Mayor Linda Buchanan and Members of Council

From: David Johnson, Development Planner

Subject: REZONING APPLICATION: 115 EAST 1<sup>ST</sup> STREET (EGGS CANA / OANA NICOARA)

Date: November 4, 2020 File No: 08-3400-20-0027/1

*The following is a suggested recommendation only. Refer to Council Minutes for adopted resolution.*

**RECOMMENDATION**

PURSUANT to the report of the Development Planner, dated November 4, 2020, entitled "Rezoning Application: 115 East 1<sup>st</sup> Street (Eggs Cana / Oana Nicoara)":

THAT "Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8808" (Eggs Cana / Oana Nicoara, 115 East 1<sup>st</sup> Street, CD-731) be considered and referred to a Public Hearing;

AND THAT notification be circulated in accordance with the *Local Government Act*.

**ATTACHMENTS**

1. Context Map (CityDocs# [1952300](#))
2. Submitted Drawings (CityDocs# [1925038](#))
3. Business Plan and Community Impact Statement (CityDocs# [1925039](#))
4. Security Plan (CityDocs# [1925043](#))
5. Change to Provincial Cannabis Licensing Regulation (CityDocs# [1988760](#))
6. Recreational Cannabis Retail Policy (CityDocs# [1774193](#))
7. Public Consultation Summary (CityDocs# [1982452](#))
8. "Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8808" (CityDocs# [1952293](#))

**PURPOSE**

The purpose of this report is to present, for Council consideration, a rezoning application for a recreational cannabis retail store at 115 East 1<sup>st</sup> Street and options for Council's consideration.

## BACKGROUND

With the legalization of recreational cannabis on October 17, 2018, the federal government, under the *Cannabis Act*, provided the legal framework for the production, distribution, sale and possession of both medical and non-medical (recreational) cannabis. The Province of British Columbia created a legislative framework through the Cannabis Control and Licensing Act to supplement federal legislation and facilitate legal and controlled access to recreational cannabis in the province.

In coordination with both federal and provincial regulations, Council approved the Recreational Cannabis Retail Policy on September 17, 2018, which created the framework under which recreational cannabis retail businesses can be established in the City (Attachment #6). The policy considers the sale of non-medical grade cannabis and does not consider the production, distribution or sale of medicinal cannabis. Medicinal cannabis can be obtained through a federally licensed producer.

The policy focused on the location criteria for where businesses can be located in the City, as well as establishing an application procedure due to the anticipated high level of interest. The criteria included limiting Cannabis Retail Stores to properties with the following Official Community Plan designations:

- Mixed Use Level 2 (Medium Density);
- Mixed Use Level 3 (Medium Density);
- Mixed Use Level 4A (High Density);
- Mixed Use Level 4B (High Density)
- Harbourside Waterfront (Mixed Use); and
- Commercial.

The policy also limits locations that are within 100 metres of the following sensitive uses:

- Community Recreational Centres;
- North Shore Neighbourhood House;
- North Shore Shelter;
- North Vancouver school District Office; and
- Public elementary and secondary schools.

The policy includes a maximum of six (6) retail cannabis businesses to be considered, and prescribes a distribution throughout the City as a maximum of:

- Two businesses in the Central Lonsdale area;
- Two in the Lower Lonsdale area;
- One in the west part of the City; and
- One to the east part of the City.

To date, four of the six retail cannabis spots have been filled with the first two at 221 West 1<sup>st</sup> Street (Lower Lonsdale) and 333 Brooksbank Avenue (Park and Tilford – east part of the City) getting Council approval in July 2019, another two at 820 Marine Drive (west part of the City) and 1433 Lonsdale Avenue (Central Lonsdale) getting approval in February 2020. To date, only 221 West 1<sup>st</sup> Street and 820 Marine Drive locations have opened for business.



1433 Lonsdale Avenue is expected to open soon, and a Building permit application for the new building at 333 Brooksbank Avenue is expected shortly.

Those that were denied rezoning of the property to allow Cannabis Sales use include the following:

- 1717 Lonsdale Avenue (Central Lonsdale);
- 1200 Lonsdale Avenue (Central Lonsdale);
- 315 Lonsdale Avenue (Lower Lonsdale);
- 143 East 2<sup>nd</sup> Street (Lower Lonsdale); and
- 725 West 14<sup>th</sup> Street (West).

This report is for a potential store in the Lower Lonsdale area that was the next location on the list to make a rezoning application. Should Council decide to approve the application, the two Lower Lonsdale locations would be fulfilled, leaving only Central Lonsdale with one available business spot to consider a cannabis retail store. Under the Recreational Cannabis Retail Policy, the City is accepting rezoning applications for Central and Lower Lonsdale areas on a first-come-first-served basis, with each application to be evaluated through the rezoning process and presented for Council's consideration.

## DISCUSSION

### Project Description

The building on the subject site is a three-level mixed-use building that was built in 1911 and has two commercial units on the ground floor, which face East 1<sup>st</sup> Street, and 18 residential rental apartments above. On March 30, 2020, Council approved a development application for this site, granting the building protected heritage status as well as approving two additional commercial spaces in the basement of the building with access off of the rear lane. The application also granted variances to the existing building that would bring any non-conforming Zoning Bylaw items into conformance in exchange for the heritage designation. The ability for awnings to encroach onto City road allowances were also approved by Council as part of the heritage designation. The location for this application is the east unit on the ground floor fronting East 1<sup>st</sup> Street.

Pursuant to the application requirements of the City's Recreational Cannabis Retail Policy, the applicant has submitted a Community Impact Statement (Attachment #3), and their Security Plan (Attachment #4), which is intended to describe the positive economic, social and environmental impacts the business may have on the immediate neighbourhood and broader community. It also describes strategies for mitigating potential negative impacts, as well as outlining their security measures to meet Provincial regulations. The submitted Community Impact Statement is attached for Council's information, noting that the statement does not create an agreement between the City and the applicant that binds either party to carry out the proposed mitigation strategies. An agreement with the applicant will be made through a Community Good Neighbour Agreement at the time of the Business License application that would outline such mitigation measures to the immediate area.



## Site Context and Surrounding Use

The subject site at 115 East 1<sup>st</sup> Street is along the south side of the street, between Lonsdale Avenue to the west and St. Georges Avenue to the east (Attachment #1). It is adjacent to other older one to three storey buildings, and across from the old post office building and a two storey building, as well as a parking lot and open space to the east. The immediate area is predominately older commercial and mixed-use buildings with newer mixed-use buildings to the south. The location is near the Lonsdale Avenue public transit corridor, and has several other commercial businesses within easy walking distance.

## PLANNING ANALYSIS

### Policy Context

#### *2014 Official Community Plan*

The subject site has a designated land use of Mixed-Use Level 4A which supports a mix of higher density multi-family and commercial uses in Lower Lonsdale. The proposed location is suited to this designation and no amendment to the OCP is required.

Since the last Zoning Bylaw amendment approvals for cannabis retail sales in February, the Province announced changes to the Cannabis Licencing Regulations to allow greater street front transparency by no longer requiring stores to screen the front of their stores from the street (Attachment #5). The new regulations will still not allow cannabis packaging and accessory products from being viewed from the outside, but viewing into the store from the outside will be possible as well as viewing onto the street from inside the store.

#### *Zoning Bylaw 1995, No. 6700*

The Zoning Bylaw currently does not allow Cannabis Sales as a permitted use anywhere in the City, but the Recreational Cannabis Retail Policy sets the framework where it can be permitted through the rezoning of the property. Cannabis Sales is defined in the Zoning Bylaw as follows:

*means the retail or wholesale sale of Cannabis, and includes an operation which provides referrals and facilitates access to Cannabis not physically sold on the premises, but does not include sales by a British Columbia Registered Pharmacist In a British Columbia regulated Pharmacy.*

Zoning Amendment Bylaw 8808 (Attachment #8) would allow Cannabis Sales in this location. The current Zone of Lower Lonsdale 2 (LL-2) does permit retail stores.

On March 30, 2020, Council adopted a Heritage Revitalization Agreement bylaw for the building that included specific variances to the existing building that otherwise did not conform to the LL-2 Zone, in exchange for Heritage Designation. One of these was to support zero off-street parking for the site as the size of the building has never provided enough space for any off-street parking. Council also permitted the signing of an Encroachment Agreement to allow limits of such things as awnings to encroach onto City road allowances. Should Council approve this application, a separate application for signage for the store is required and the review will take this agreement into account.

## COMMUNITY CONSULTATION

A virtual Developer Information Session (DIS) was held on October 1, 2020 for members of the public to learn about and make comment on this application. Notifications for the DIS were conducted accordingly, and no one signed into the event. A summary of the consultation is provided in the applicant's report (Attachment #7).

As part of the applicant's Business Plan and Community Impact Statement (Attachment #3), the applicant outlines their social responsibilities to the local community. These include descriptions on how they will manage the surrounding area by enforcing non-smoking zones, litter pick-up, nuisance and noise mitigation, odour, and introducing community programs and open houses.

## RECREATIONAL CANNABIS RETAIL POLICY

When Council approved the Recreational Cannabis Retail Policy on September 24, 2018, it stated that staff would monitor businesses and keep Council informed on the state of recreational cannabis retail in the City. The direction was that after a two-year period, staff would reassess the policy to determine whether any amendments would be warranted. Two options for proceeding are presented below:

- 1. Proceed with monitoring and policy review and report back to Council (Recommended)**

This option would allow staff to monitor and assess the approved cannabis stores as they begin operation and provide Council with a policy review in the first half of 2021. In the interim, staff would continue processing rezoning applications on a case by case basis. Should Council wish to pursue this option, no further resolution is required.

- 2. Direct staff to modify the Recreational Cannabis Retail policy per Council's direction**

This option would direct changes to the existing policy at Council's discretion. For example, Council may wish to limit the maximum number of cannabis retail stores further than currently suggested by the policy.

## CONCLUSION

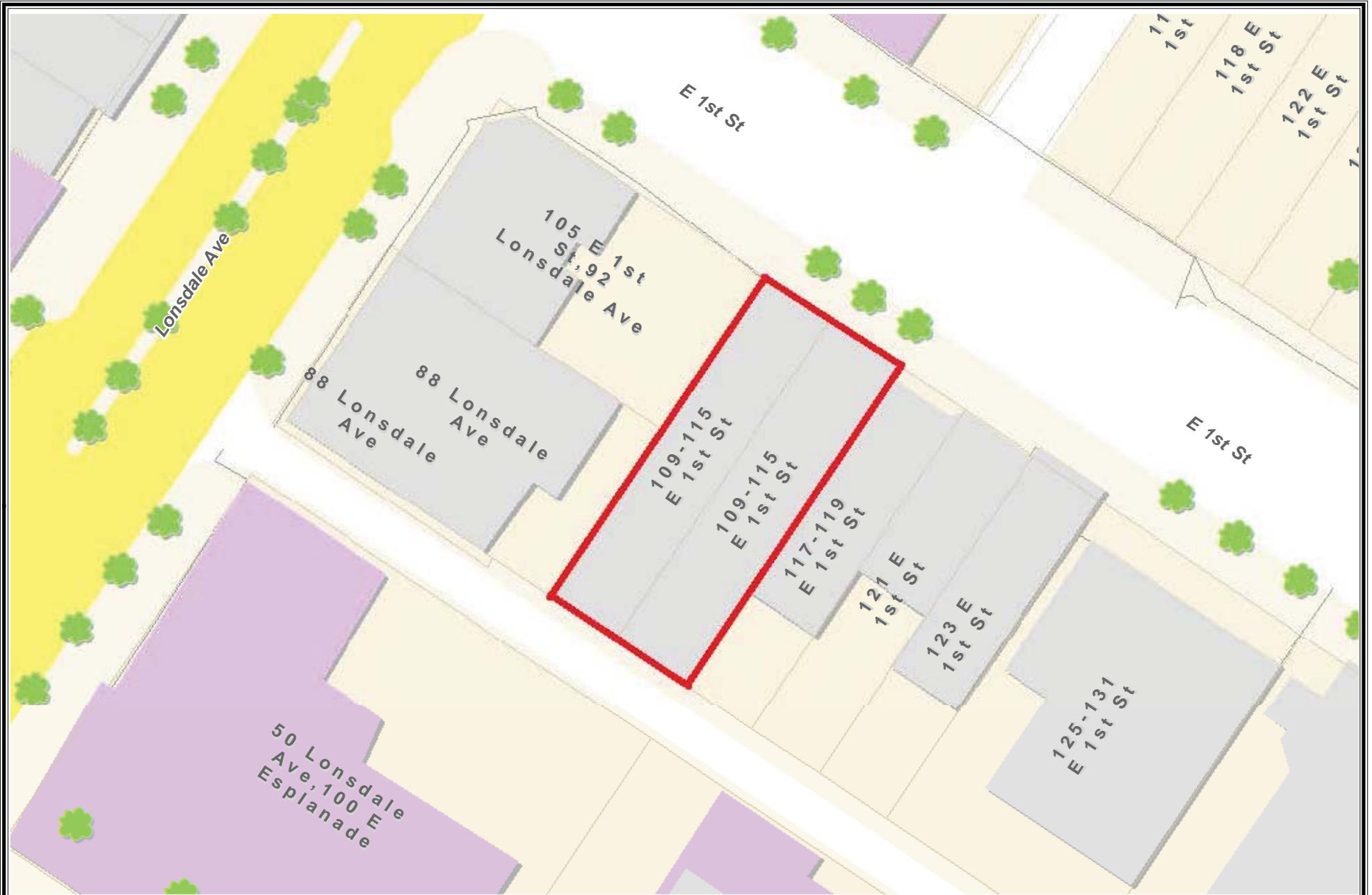
The proposal is consistent with the Official Community Plan and the criteria of the Recreational Cannabis Retail Policy. The proposed location of the store supports the commercial and retail orientation of the area.

RESPECTFULLY SUBMITTED:



David Johnson  
Development Planner







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All dimensions shall be verified on site by contractor before proceeding with work.

Supersedes all prints bearing previous revision number.

# EGGS CANNA

## DEVELOPMENT PERMIT

115 East 1st Street  
North Vancouver, BC  
V7L 1B2

PROJECT DIRECTORY

**OWNER**  
EGGS CANNA  
2303 EAST HASTINGS STREET  
VANCOUVER, BC CANADA, V6L 1V6  
778.375-4344  
ATTN: CANA NICORA

**INTERIOR DESIGNER**  
SSDG INTERIORS INC.  
606 GRANVILLE ST, SUITE 310  
VANCOUVER, BC CANADA, V7Y 1G5  
604.680-4846  
ATTN: JASLEY KIM, LEANNA CHEUNG

SHEET INDEX

ID0.1 COVER SHEET  
ID1.0 FURNITURE PLAN  
ID1.1 EXTERIOR STONEFRONT ELEVATION

SYMBOL LEGEND

ELEVATION REFERENCE

ELEVATION REFERENCE

SECTION REFERENCE

DETAIL NAME

BREAK LINE

BREAK ARROW

CENTER LINE

NC

WALL TYPE

DOOR TYPE

DOOR NUMBER

NOTE NUMBER

MILLWORK NUMBER

FIXTURES

MISCELLANEOUS SPECIALTIES

FINISH TAG

CEILING TAG

FURNITURE NUMBER

REVISION NO.

CARD READER

SECURITY KEY PAD

04		
03		
02		
01	ISSUED FOR DEVELOPMENT	20.06.10
NO.	REVISIONS	DATE

**SSDG**  
**INTERIORS INC.**

SSDG Interiors Inc.  
310-409 Granville Street Vancouver, BC Canada V7Y 1G5  
O 604.685-4301 www.ssdg.com

Job Title:

EGGS CANNA  
115 EAST 1ST ST  
NORTH VANCOUVER, BC  
V7L 1B2, CANADA

Drawing Title:

COVER SHEET

Project Date:	20.06.10
Drawn by: SM	Checked by: RB
Project No.: 2016 180	Scale: 1" = 1'-0" (24" X 36")
Drawing No.:	

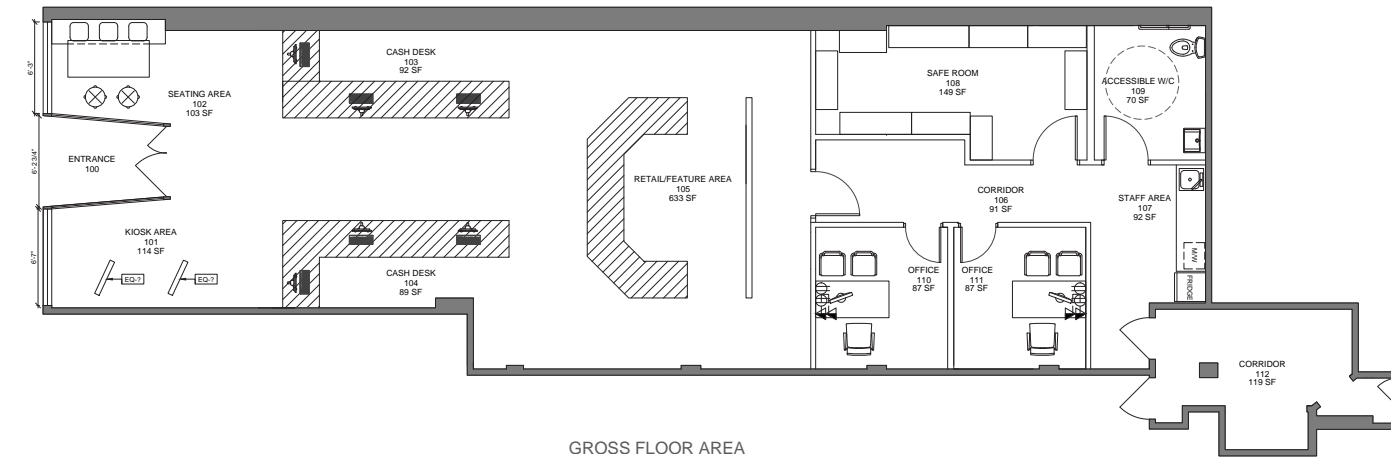
ID0.1



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GROSS FLOOR AREA  
1762 SF

01 FURNITURE PLAN  
15.17

04		
03		
02		
01	ISSUED FOR DEVELOPMENT	20.06.10
NO.	REVISIONS	DATE

**SSDG**  
**INTERIORS INC.**

SSDG Interiors Inc.  
310-459 Granville Street Vancouver, BC Canada V7Y 1G5  
O: 604.685.4301 www.ssdg.com

Job Title:

EGGS CANNA  
115 EAST 1ST ST  
NORTH VANCOUVER, BC  
V7L 1B2, CANADA

Drawing Title:

SPACE PLAN

Project Date: 20.06.10

Drawn by: SM Checked by: RB

Project No.: 2016 180 Scale: 1/8" = 1'-0" (24" X 36")

Drawing No.:

ID5.1





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01 ELEVATION  
SCALE 1/4\"/>

04		
03		
02		
01	ISSUED FOR DEVELOPMENT	20.06.10
NO.	REVISIONS	DATE

**SSDG**  
**INTERIORS INC.**

SSDG Interiors Inc.  
3511-450 Granville Street, Vancouver, BC Canada V7Y 1G5  
© 804.685.4301 www.ssdg.com

Job Title:

EGGS CANNA  
115 EAST 1ST ST  
NORTH VANCOUVER, BC  
V7L 1B2, CANADA

Drawing Title:

EXTERIOR STOREFRONT  
ELEVATION

Project Date: 20.06.10

Drawn by: SM Checked by: RB

Project No: 2010 180 Scale: 1/4\"/>

Drawing No:

ID5.1



CITY OF NORTH VANCOUVER

MUNICIPAL CONSIDERATION & BUSINESS PLAN

- MAY 2020 -

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*\*This section is outlined in the complete security  
guide provided as an addendum to this BP*

# 1 | ABOUT EGGS CANNA®

EC was founded in 2014; we opened our doors as part of the liberal movement in Vancouver driving the legalization of cannabis. EC was amongst the first retailers in Vancouver to obtain a Medical Marijuana Retail-Use License (MMRU) to operate a cannabis store. We have been offering evidence-based stakeholder input and guidance for many municipalities during local government discovery phase for drafting their cannabis bylaws. In 2015 we were the first retailer to negotiate benefit packages for employees in the cannabis sector—we believe in not only what we do but in the people, who have helped drive legalization.

EC has been very passionate and outspoken about the importance of community buy-in and support and as such, dedicates resources to hosting open houses and educational gatherings. Through these public forums and dialogue sessions we better understand the needs and concerns of the communities we operate in and establish ways to work together in ensuring that those who are legally allowed to purchase cannabis can do so in a safe and legal environment, while protecting and educating our youth.

**With many years of hands-on cannabis retail experience, we are well positioned to bringing a controlled and safe distribution channel to our cities.**

EC understands the complexity and social impact of legalization, and we are committed to continue being a trusted partner for our local government in conjunction with becoming a respected and trusted retailer for our neighbourhoods.

**EC is proud to partner our industry expertise with local entrepreneurs in a partnership business model, keeping the responsibility and profits local thus ensuring we drive local economies and help better the communities we work in.**

## RESPONSIBLE REGULATED DISTRIBUTION

We are one of the few operators who have hands-on cannabis sales under a licensed Municipal framework; this has been instrumental in developing some of the most comprehensive SOP's we still use today, all of which are in-line with Provincially mandated standards. We will confidently say that by allowing us to operate in your municipality, we can ensure complete compliance in all regulatory processes.

As part of our operations we fostered long-lasting relationships with our communities, and local businesses. EC has been involved in, and worked with many local charities, local BIA's, community programs such as "car free days" and many other social gatherings. As regulated distributors we had the task of introducing cannabis to our communities maintaining the most refined, socially responsible and least negatively impactful approach.





Eggs Canna® understands that building strong community rapport, trust and buy-in is a crucial factor in a successful transition to cannabis retail. Canada, the Province of BC and the city of North Vancouver are making history in the legalization of cannabis retail; EC is a trusted partner for all levels of government to help facilitate a successful transition.

We understand the importance of shifting old stigmas, and complimenting the neighbourhoods we operate in. EC achieves this through a timeless exterior design; wainscoting and mullions give a warm Victorian je ne sais quoi--a timeless design that fits well in both old and new communities.

**EC understands mandated window coverings are not an ideal feature; we have worked with our design team to offer a solution that is both desirable and beautiful. The covering will be a 3D image of the interior of the store. EC will seize the opportunity to highlight the interior elements that make our stores beautifully unique. Our storefronts feature antique brick walls, cast iron sconces and a preserved moss wall that brings much needed greenery and colour into the space. Our new black and white high-gloss cabinetry and Porcelona floor tiles will wow any passer-by while fitting perfectly in this heritage building.**

## KEY DESIGN ELELEMENTS







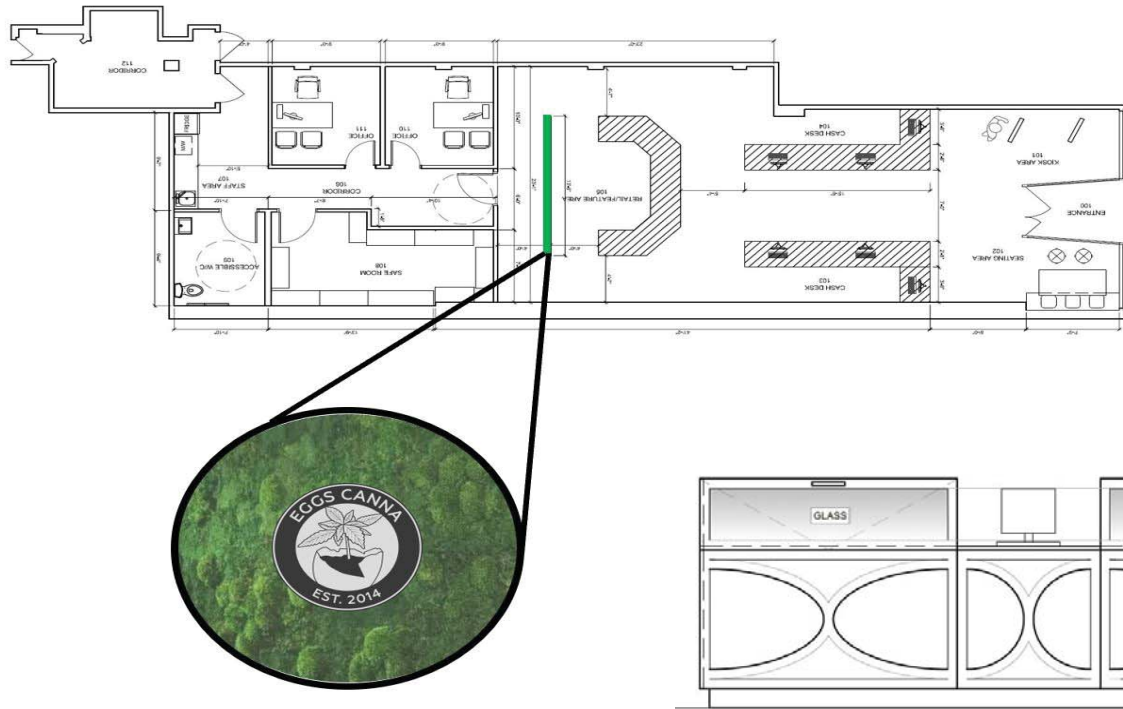
Eggs Canna beautifully marries geometric black and white shapes with soft greys and greens to give EC spaces a luxurious boutique feel. Our Victorian inspired Retail Cannabis stores evoke feelings of warmth and elegance.

Our current retail operations have given us valuable insights as to what the 'new age Cannaseur' wishes to see on the shelves and the experience they desire.

EC has opted to depart from what has become a common conceptual design amongst the new legal retailers: the wood and sterile contemporary feel was not captivating the cannabis consumer. Many consumers felt as though they were either in a "Saje" or "iPhone" store and thus not resonating as a cannabis retailer. EC has also moved away from the digital experience - instead our focus is on guiding and shaping our consumers' experiences with personal one-on-one assistance.

**EC prides itself on curating a retail experience that is both unique and memorable. Our knowledgeable Eggies (Sales Ambassadors) shift old stigmas by re-framing them - our customers embark on a journey exploring cannabis history and products- creating a true retail cannabis experience.**

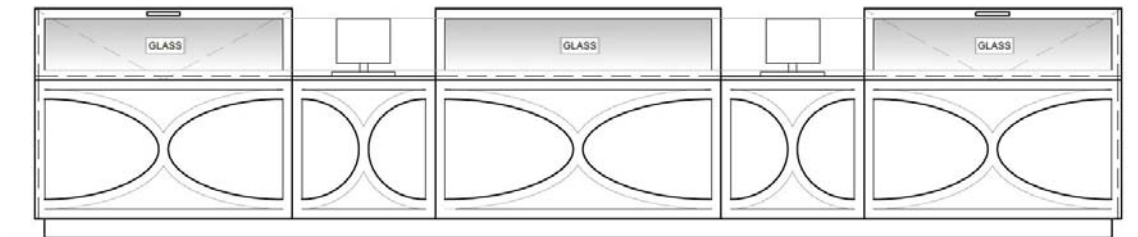
Our Eggies have a strict dress code that both compliments the design of our stores and helps to re-frame old perceptions of cannabis. Eggies are here to serve our communities in a white bottom up dress shirt, EC monogram tie and suspenders with clean dark blue jeans, and lastly, a pair of converse in any of our approved 6 colours. Our intention was to create an atmosphere of elegance and fun.



The beautiful moss-feature wall will draw the eyes when you first walk in. The neon writing in and around the logo will illuminate the space and help create a feeling of warmth and brightness.

**Our storefront will feature (6) six tills & (3) three portable tills, ensuring that our guests are served in a timely manner.**

**We anticipate that the two stores located in Lower Lonsdale will be high volume retail outlets that must be adequately equipped to ensure that customers do not experience long wait times.**



White high-gloss cabinets with black half-circle details make our store fronts feel luxurious and posh. Our play on geometric shapes and patterns, coupled with bold greenery create a truly unique shopping experience.

EC will continue to work hard and shift stigmas regarding Cannabis Retail, we are very excited and confident in our Victorian inspired design; We hope to become North Vancouver's most sought-after boutique retailer.

## 2 | OUR EXECUTIVE TEAM

EC has some of the most dedicated and experienced industry professionals helping develop industry first SOP's, ensuring every aspect of the new regulatory framework is a seamless and successful transition. Our focus is just as much on compliance as it is on achieving the best possible consumer experience. We understand that the success of cannabis legalisation is hinged upon our individual success as retailers and brand ambassadors. With the world watching Canada, and all levels of government we want to ensure everyone's success as we navigate these uncharted waters together.

Our team has 50+ years of cumulative retail, legal and cannabis experience, ranging from Human Resources, cultivation and plant genetics, large scale project management to decades of hands on franchisor and franchisee know-how in one of the most competitive industries; restaurant management. This multi-faceted team has the skill set required in maneuvering the complex parameters around licensing, social responsibility and community impact, all the while safeguarding against improper handling and distribution of Cannabis.

### OUR CORPORATE PARTNERSHIPS

As with any industry, strategic partnerships are pivotal to a company's continued success and growth. And as such, we have expanded our network to ensure that we are well positioned to execute from site selection to compliance and everything in-between.

#### i. STRATEGIC REALESTATE (SRE)

Our partners at SRE have been an integral part of our site selections, working to ensure that we meet all needed distancing requirements and in securing leases in a timely manner.

#### ii. SSDG DESIGN

The team at SSDG Design produce all Provincial Site and Retail Space renderings, provide complete Permit Set Drawings and act as the Project Managers for all future Canada-Wide store build-outs. Their keen eye for design ensures that our storefronts are elegant and unique spaces embodying warmth with a grand Victorian feel. SSDG is instrumental in guaranteeing that all Municipal and Provincial design specifications are met, and that projects are completed in the quoted time.



### iii. TECH POS

EC has worked with TechPos in developing a comprehensive and industry specific Point of Sale (POS). This allows for seamless conversion with our accounting software (Big Chip Accounting) to meet stringent reporting requirements for the governing Provincial body. In addition to this we have developed a comprehensive encyclopedia and product log easily accessible for our team ensuring extensive product knowledge and training.

### iv. MONERIS & AMEX

As cannabis retail moves into the legal landscape, we are very happy to announce that we have signed on with Moneris and Amex for our card processing needs and will be ready to offer card purchases as soon as we are ready to open. This is a huge milestone for cannabis retailers as many card processing companies are just now entering this market.

### v. BENEFITS BY DESIGN

We believe that all **employees should receive full medical and dental** regardless of the industry you work in, and we are very excited to have partnered with Benefits by Design who have given us and our employees a wonderful comprehensive benefits package.

### vi. ALTHING CONSULTING

As part of our continued commitment to the jurisdictions we work and live in, we have partnered with Althing Consulting to assist both the municipalities with any cannabis related questions or concerns they may have, along with providing EC with valuable direction and guidance on all legislative regulations. Jaclyn Pehota and Ian Dawkins have over 10 years of community and municipal engagement experience, having assisted over a dozen municipalities craft bylaws.

### vii. BIG CHIP ACCOUNTING

We are very excited to have partnered with Big Chip for all our Corporate and Partnership stores; their user friendly and remote interface ensures that compliance is made easy. **Big Chip has years of experience is providing auditable accounting systems to serve the strict requirements needed for the private liquor industry, and their cannabis reporting systems exceed the strictest of Provincial and Federal requirements.** In addition to their regulatory platform they offer a centralized company portal where all our Provincial training modules, and EC specific training materials can be uploaded and monitored. This ensures that prior to employees working the sales floor they have completed;

- All company training and test modules (ongoing throughout term of employment);
- Provincial Worker Application Qualification Form;
- Attestation Form, and
- Witness Attestation Form.



This training and HR component guarantee EC the upmost control over all regulatory process needed to be completed for staff—it is a failsafe ensuring no employee slips through the cracks and begins working prior to meeting all qualifying factors.

### viii. WESTLAND INSURANCE

Having comprehensive business insurance is important for the cannabis sector, and we are pleased to have partnered with Westland who brings experienced and recognized underwriters to this previously uninsured industry.

## CO. FOOTPRINT

As a new and emerging industry, we at EC believe that we have a once in generation opportunity to do something great, we therefore strive to bring unique business practices; and have vowed to do things a little different wherever we can! Our promise is to be socially responsible and forward-thinking.



### Wages

We budget for higher than normal compensation packages ensuring that all staff receive a great living wage. Our sales team wage is currently around \$18/hour, growing up to \$23/hour for Shift Lead Roles; growing exponentially higher for Management positions. Legalisation **must** drive our local economy, offering good wages is a great way to give back to the people who will pioneer this industry.



### Benefits

We have negotiated and offer some of the most comprehensive medical and dental packages for our staff. We are proud to say that we are one of the few retail companies who are not union to offer full benefit packages. We expect great things from our staff, so we too need to do great things for them!



### Renewable hemp products

We are always excited about anything cannabis related and as such, we cannot contain our excitement for all the new developments in renewable materials such as hemp, and its many applications. As part of our promise we will go the extra mile to ditch the plastics and add hemp to our day to day uses in and effort to reduce our carbon footprint.



### Community and charitable projects

EC strives to be community leaders and is involved with many local charities and events. We all have a social responsibility to give back! We opt to work with small local charities in our continued efforts to have a positive impact directly on the communities we live and work in.





# 3 | OPERATIONS

## EC SOP's

EC has spent the last six years working with local municipalities, and other levels of government to better understand required Standard Operating Procedures for dispensing cannabis. We inherited many of the current SOP's from industries such as privatized and government-run liquor distributors who have similar protocols and needs as cannabis distribution. We can confidentially say that we have created concise and comprehensive manuals to capture this new industry and ensure safe handling and dispensing of cannabis and its derivatives.

With four years of hands-on cannabis retail we have gained unprecedented industry insight with SOP's that have been tried, tested and true. We can easily conform to, and surpass, the strictest of regulatory processes, ensuring compliance at every level.

## HOURS OF OPERATION

As per the BC Cannabis Retail Store Terms and Conditions, storefronts may operate between the hours of 9:00 am to 11:00 pm. We have taken into consideration several factors and have concluded our "standard hours of operation" in new markets, would run with the allocated maximum giving us case by case flexibility to adjust accordingly. **In the City of North Vancouver, we are purposing our hours be Sunday – Monday 9:00 am to 11:00 pm, with limited hours of 11:00 am – 7:00 pm on all Statutory Holidays except New Years Day and Christmas Day when we will be closed.**

## HIRING

Hiring is completed by the Manager at each location, with Human Resources support from our partners at Big Chip Accounting and Corporate Head Office where needed. As per the Hiring Contract that all employees must sign, all offers of employment will be made void if the employee fails any of the mandatory screening and/or requirements necessary by both the Company and the Province of British Columbia to be an employee under the Cannabis Retail Store Terms and Conditions for the entire tenure of their employment with EC.



## TRAINING

Initial training of all employees is conducted by the Corporate Training Team, both in store, at our licensed flagship location utilizing Big Chip's training and testing platform. Continued and subsequent training will be conducted by the Manager at each location utilizing only Corporate approved training materials on the Big Chip training and testing platform. EC has developed a proprietary training program for which all staff must pass all sets of modules, in conjunction with the Provincial training requirements for ongoing employment.

## STAFFING ROLES AND RESPONSIBILITIES

**Sales Ambassador (SA) aka EGGIES:** Our Eggies are instrumental to our success, not only as a company but as an entire industry. Our SA's are gatekeepers, they are extensively trained for compliant cannabis distribution, coupled with risk management and mitigation giving them the needed tools to help protect the public at large from any unlawful cannabis distribution or nuisance activities. In addition to this, Eggies are expected to have extensive product knowledge and undergo regular testing as new products are added to our shelves and the Provincial regulated cannabis products' list.

**Cash Out Assistant:** This role is reserved for a senior SA and comprises of arriving early to open the store and complete the cashout SA's previous day/night shifts. This is a cash-handling role in the mornings, that will role over into a SA position for the remainder of their shift. We have strict cash-handling protocols that closely resemble controls set by the gaming industry, and all our systems are set up to pass both internal and external audits.

**Guest Experience Team Lead (GE Team Lead):** GE Team Leaders work the sales floors with the SA's and offer support and guidance and can act as intermediate supervisors when a Manager is not available or deemed unnecessary for that specific issue/instance. These are senior staff members who often will move into Managerial positions. It is imperative that we have senior staff on shift to assist with the flow of the business and to address any concerns or issues that should arise during day to day operations to maintain a controlled and compliant service environment.

**Assistant General Manager (AGM):** AGM's are instrumental in their roles by assisting the General Manager with the day to day operations, handling any compliance issues, ensuring standardized practices of all regulatory processes, addressing customer complaints, and managing the ongoing hiring, training, and management of employees. Not all stores may have an AGM, this additional level of management is reserved for large busy locations. *\*At this time, we have not included this layer of extra management in the North Vancouver Monetary and Labour Forecast.*

**General Manager (GM):** The General Manager is responsible for all staffing and scheduling requirements, they oversee everything from compliance, accounting, sales, training, hiring, people development, Human Resources, labour and sales forecasting and working closely with the different Executive Roles. Any operations within the four walls, and outside the storefront that can impact the individual business or the corporation, is the sole responsibility of the General Manager, therefore, this role must be approved by the Executive Team prior to making a formal offer of employment.

**Staffing levels:** We anticipate having a total of 15 (fifteen) employees staffing this location, with 10 full-time staff and 5 part-time staff.



- 10 Sales Associates
- 2 Cash Out Assistants / Sales Associates
- 2 Team Leads
- 1 General Manager

## MONETARY AND LABOUR FORECASTING

Please see addendum.<sup>1</sup>

## POS | TECHPOS

As previously touched on, EC partnered with TechPos and has been working closely with their team in developing the most comprehensive and industry specific point of sales systems. We are very proud to have created this detailed platform that will assist our staff in providing the safest and most effective service possible.

Our custom industry specific POS includes features like;

- Automated tracking and totaling of maximum purchase allowances in one transaction;
- Auto prompt asking if patron has shown ID prior to purchase;
- Easy record keeping and automated tracking of waste products, significantly reducing staff responsibilities and opportunity for errors;
- Security feature will not allow employees to clock out for a break if it will leave the store understaffed and with less then two employees;
- Automated nightly inventory checks;
- Auditable sales records synced with Big Chip Accounting and,
- Easy two-step cash deposit verifications significantly mitigating counting errors.

<sup>1</sup> See Monetary and Labour Forecasting - Addendum pg 10



## PRODUCTS SOLD

As per the Retail Cannabis Store Terms and Conditions, a retailer as of October 17, 2018 may sell the following and in one transaction, they may NOT surpass the total equivalent of 30g of dried cannabis or as stated below;

PRODUCT	MAXIMUM ALLOWED IN ONE TRANSACTION
i. Dried cannabis	(30g)
ii. Fresh cannabis	(150g)
iii. Solids containing cannabis	(450g)
iv. Non-solids containing cannabis (cannabis oil)	(2,100g)
v. Cannabis oil concentrates	(7.5g)
vi. Cannabis non-solid concentrates	(7.5g)
vii. Cannabis plant seeds	(30 seeds)

To ensure strict compliance with these guidelines our POS will automatically add up any variation of these maximum allowable purchases at time of purchase and if one purchase has been rung in over the limits as stated above, that transaction will automatically be flagged and a manager code will need to be entered, any item(s) over the allowable limit are to be removed prior to the sale being made. This will guarantee that no sales over the limit as shown above could be processed at any of our establishments. These thresholds will be modified in the POS as new limits are established and new items are added.

In addition to cannabis and its derivatives, all EC locations will also sell cannabis accessories such as rolling papers, wraps, holders, pipes water pipes, bongs and vaporizers.

***EC locations will NOT sell, e-juice, e-liquid, snacks, tobacco or any products containing nicotine, or any other products or apparel.***



## SAFE DISPOSAL OF CANNABIS PRODUCT

In accordance with the BC Cannabis Retail Store Terms and Conditions disposing of non-medical cannabis, EC has created compliant protocols for tracking and reporting any discarded product. Our custom-built POS software allows us to;

- i. Scan the sku for the “waste” product to ensure there are no errors in inputting the exact item that is spoiled;
- ii. Prompts Management to state why it is a waste product, i.e. “smell jars”, or “opened package”;
- iii. When in “waste” mode TechPos will prompt the Manager to weigh the spoiled product in the built-in POS scale;
- iv. TechPos will then generate a report for any wasted product, this data is then collected by Big Chip Accounting and remitted to the BC LCDB for reporting purposes and ensure compliance with provincial regulations for the disposal of any cannabis product.

This streamlined system creates error proof inputting by automating the entire process and eradicating human error. Automatic reporting also ensures that records are kept up to date and easily accessible.

In order to be rendered unfit for human consumption, the wasted product is then shredded and mixed with vinegar in a compost bin. The vinegar will completely degrade the THC and render it unsuitable for human consumption, vinegar also destroys the smell of the product in a eco-friendly and biodegradable process.

## INSURANCE

As we navigate into a legal landscape it is becoming increasingly important we establish and maintain processes that will ensure the safety and well-being of our patrons, staff and neighbours.

### i. **Course of Construction (Builder’s Risk)**

Though this policy is generally provided by your contractor, for an extra layer of security it is also built into our general policy. This means that if major structural changes are made during construction or renovation, the municipality can rest assured that any errors can be immediately and effectually dealt with, without concern about funding.

### ii. **Property**

Alongside standard property insurance, all EC establishments carry additional insurance for wind, hail and flood to cover any instances of inclement weather damage.





**iii. Comprehensive General Liability**

Our comprehensive general liability covers products, personal and advertising injury, contractual (with independent contractor) coverage and motor vehicle liability. This policy protects the store, its staff and the community in general.

**iv. Business Interruption**

We understand that circumstances outside of our control do sometimes happen, and to ensure that all EC locations are able to reopen as well preserve the jobs of all staff we have comprehensive business interruption built into our coverage.

**v. Cyber Fraud and Security**

In this modern time, the safekeeping of virtual assets is just as important as the protection of physical ones, for the guarantee of privacy for all of those who are a part of our establishment and organization as a whole we carry cyber and fraud insurance.



## 4 | BUILD AND OPENING SCHEDULES

EC and SSDG Design have been working tirelessly on a concise and well executed build schedule, and we are very happy with not only the beautifully designed stores but the time in which we complete our builds.

### CONTRACTORS

SSDG uses only trusted and nationally recognized contractors for its locations; ensuring not only the quality of work but also that projects are executed on time, on budget, without any unmitigated delays.

### STORE BUILDS + WORKBACK SCHEDULES

Our corporate team works very hard in gearing up for successfully and craftly executed grand openings. We offer full store opening workback schedules<sup>2</sup> and unprecedented experience and support during all aspects of build, training and of course grand opening. Our Franchisees can count on our many years experience and hands on assistance, in ensuring their grand opening is a huge success. And likewise, the municipalities that we partner with can rest assured knowing we are a trusted, experienced and capable retailer who will open in the timeframes we have set fourth. We can appreciate the urgency in opening and offering our citizens safe and legalised cannabis access without exorbitant and lengthy delays.

### BOUTIQUE INSPIRED DESIGN

Our design phase was a year in the making, and that is because we wanted to ensure we got it right! As Canada's leading cannabis retailer, we have created the ultimate guest experience through our brand and our spaces. Eggs Canna® retailers capture that wonderful nostalgia moment; inspired by our most familiar gathering spaces – the kitchen island or our favourite boutique restaurant.

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2 See Store Opening Workback Schedule - Addendum pg 12



# 5 | CANNABIS MARKETS

One of the primary motivations behind the legalization of cannabis was better control for keeping cannabis out of the hands of Canadian youth. We understand and appreciate that this can be a challenge, but rest assured that EC is committed to enforcing age restricting policies in our stores, and on a broader scale in our marketing and advertising campaigns.

## i. Legal Age Verification

EC staff are trained in proper forms of ID (in accordance to BC LCDB), employees are trained to ask for TWO pieces of valid identification for any person(s) who look(s) under the age of 30 years old. TechPos also has an age verification failsafe that does not allow for the transaction to proceed without manually hitting yes to the check ID prompt. All staff are thoroughly trained in what forms of primary and secondary identification are acceptable and can act on the authenticity of the identification provided. Associates understand how to mitigate the risk of having the illegal purchase of cannabis by underage person(s), but should an incident of that nature occur we have extensive protocols properly documenting details around what happened in an effort to both prevent that person(s) from entering the premises in the future, as well as training for the staff member to ensure this does not occur again. EC corporate conducts regular secret shopper programs ensuring that these protocols are working as intended and all employees are strictly adhering to them for the tenure of their employment with us.

## ii. Advertising

We understand that cannabis can be a polarizing product and pledge to advertise in such a way as to be non-offensive and unappealing to underage consumers. Our approach targets legal consumption age spaces and encourages safe and responsible use of cannabis.

## iii. Target Market

In this new era the face of the modern cannabis consumer is changing. We want to appeal to every consumer, from the millennial to the baby boomer, from the connoisseur to the new customer, and we feel confident that our knowledgeable and friendly staff will be able to guide them through their shopping experience in the most exciting and memorable way.



# 6 | SAFE VENDING OF PRODUCT

## BC CANNABIS RETAIL STORE | TERMS AND CONDITIONS

BC has created a comprehensive guide for the safe and responsible vending of cannabis. EC has the SOP's that allow for us to effectively enforce and abide by the regulations around the sale of cannabis; in addition to the Cannabis Retail Worker certification, we have developed a proprietary training program spearheaded by our Director of Staff and Training which best prepares employees for the control they will have to maintain over their space. This training program covers in further detail provincial guidelines, local municipal requirements and compliance with regulations to ensure only a positive impact is left on the community by the operating of the store.

## MUNICIPAL LAWS

Each municipality has set its own rules around cannabis in accordance to what works best for its citizens. With our real time training program, we can stay on top of changes and ensure that the store always obeys the directive of its city. As pioneers in this industry, we will set the standard for what is expected from future stores in cooperating with the city to everyone's mutual benefit. EC is committed to establishing harmony between the business and the municipality.

## ONGOING REGULATORY TRAINING

We have developed, using the Big Chip platform, an extensive proprietary training program for all staff. This program evolves as time goes on and further regulations or products are added to cannabis offerings. At its start this program covers:

- i. Age verifying and responsible sale of product (quantity limitations, not serving intoxicated patrons)
- ii. Extensive product knowledge (covering basic cannabis principles including the entourage effect, interactions, and potency)
- iii. Enforcement of municipal and provincial rules (including where to consume cannabis and proper storage and transportation)
- iv. Operating in a safe and responsible manner (staff on site always preserving the space around the store against nuisance, litter and security)



**Our staff are prompted with their required training when they log on to view their schedule and are locked from accessing the schedule if they do not complete the training. The store manager and EC corporate also supervises the completion of this training with quizzes after each learning module and statistics on time spent completing the module.**

As further regulations are added further training modules can be added without delay, ensuring all staff are always in compliance with new rules.





# 7 | SOCIAL RESPONSIBILITIES & IMPACT

## GOOD NEIGHBOUR PRACTICES

We at EC recognize the importance of neighbourhood buy-in, and understands that this begins with us, prior to opening during operations and even after we have closed. To ensure that our neighbours know who we are, we conduct our know neighbourhood canvas and meet and greets. We have found this to be incredibly effective in building rapport and trust and offering our community<sup>4</sup> an opportunity to meet us and voice any questions or concerns they may have. During business hours we also have numerous programs to help enforce non-smoking compliance, prevent loitering and littering and mitigate any nuisance behaviour.

### i. **Non-Smoking Compliance and Enforcement**

Our stores and the area around them are strict non-smoking zones. We understand the nuisance that can be caused by patrons that are not properly informed of the spaces that they are not allowed to consume cannabis in. As well as educating our customers as to where they may smoke their purchases, our staff is also responsible for enforcing the smoking ban around the store. This is done through proper signage, and regular walk through rounds done around the building and within a one block radius in each direction.

### ii. **Litter and Waste Pick Up**

No business ever wants to see their garbage around the neighbourhood. Though we cannot always control where people choose to throw their garbage, we do have a robust community cleanup program where staff do routine garbage checks and cleanup in their community (including not only the space around their store, but local parks and other places where people congregate). We work together to keep our cities spotless and beautiful, and free from any cannabis packaging and paraphernalia.

### iii. **Nuisance and Noise Mitigation**

Spaces centered around consumption of any kind can easily become hubs attracting revelers and merry makers. And while this might be energizing for the store, we know that our neighbours don not always appreciate the noise. Music in the stores is controlled by a central hub ensuring that the volume level is always consistent with local requirements and with the smoking ban patrons are encouraged to dissipate from the space quickly if they are no longer making purchases.

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<sup>3</sup> See Good Neighbour Agreement: City of North Vancouver - Addendum pg 3

<sup>4</sup> See Community Impact Statement - Addendum pg 4



**iv. Odour and Esthetics**

EC has always prided itself on modern, bright, welcoming stores as fit to be a jewellery shop as they are for being a retail cannabis store. Our Victorian inspired spaces and beautiful layout is a perfect addition to any neighbourhood. We understand that some might wonder about the odour from retail cannabis stores - rest assured that all products are sealed in airtight containers and product is never opened on site.

**v. Community Programs and Open Houses**

Being a good fit across the board is important for us, and it strengthens the bonds of a community when it's neighbours can come together to participate in events, raise donations for charity and just in general have fun with each other! We are happy to host regular open houses and welcome the locals to ask questions, voice concerns and make suggestions for what they would like to see from us. EC has also been and will continue to be an initiator of community programs like safe spaces, rubbish cleanup and food and toy drives, and charitable contributions to locally driven charities. Together we can make a difference through education, compassion and passion for the places we live and work.



# 8 | RISK ANALYSIS & MITIGATION PROTOCOLS

EC has worked with the experts at 3si in creating protocols that ensures the safety of our patrons, staff and the community at large. Detailed in the security plan<sup>8</sup> we have completed a comprehensive and concise SOP for risk analysis and risk prevention and mitigation.

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<sup>8</sup> See Full Property Security Plan

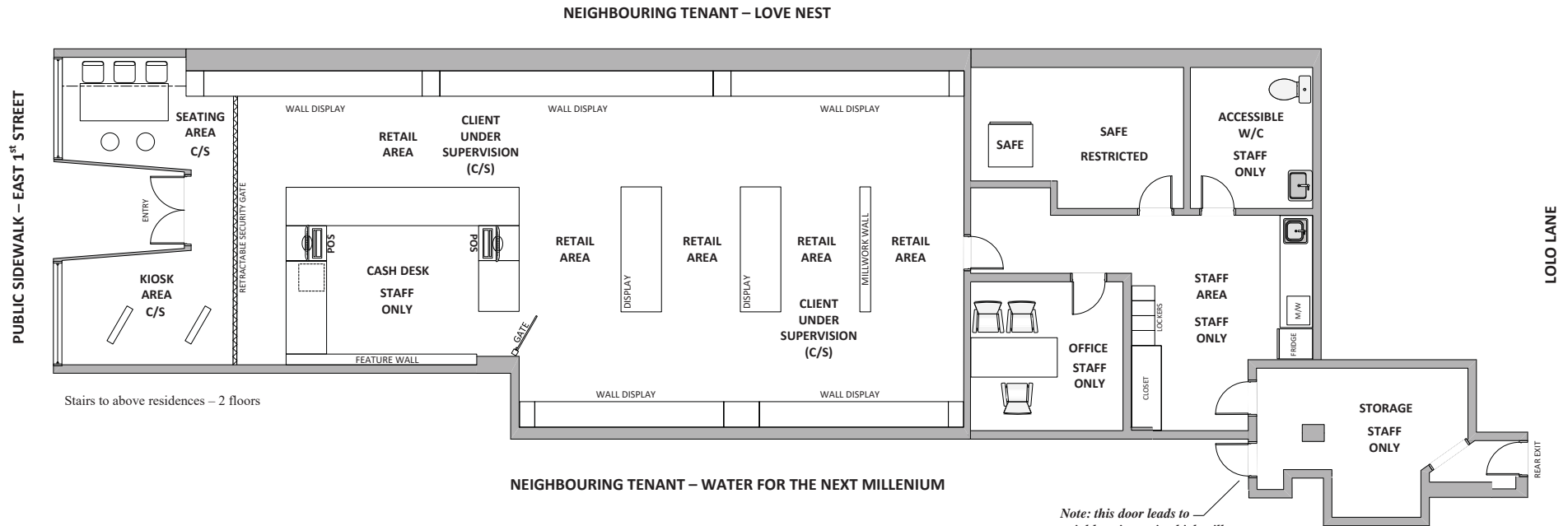


# ADDENDUM

Please see the accompanying addendum to follow the Municipal Consideration and Business Plan below:

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NOV 15, 2018

jm/ct

Ver 1.0

**Eggs Canna Inc.**  
115 East 1st Street, North Vancouver

0 ft. 9 ft. 15 ft. 30 ft.  
Approximate Scale  
See architectural for precise scale

**3Si Risk Strategies**





#### LEGEND

- Public
- Neighbor Tenanted Space
- Clients under Supervision (C/S)
- Admin/Staff Only
- Restricted

0 ft. 9 ft. 15 ft. 30 ft.  
Approximate Scale  
See architectural for precise scale



NOV 15, 2018

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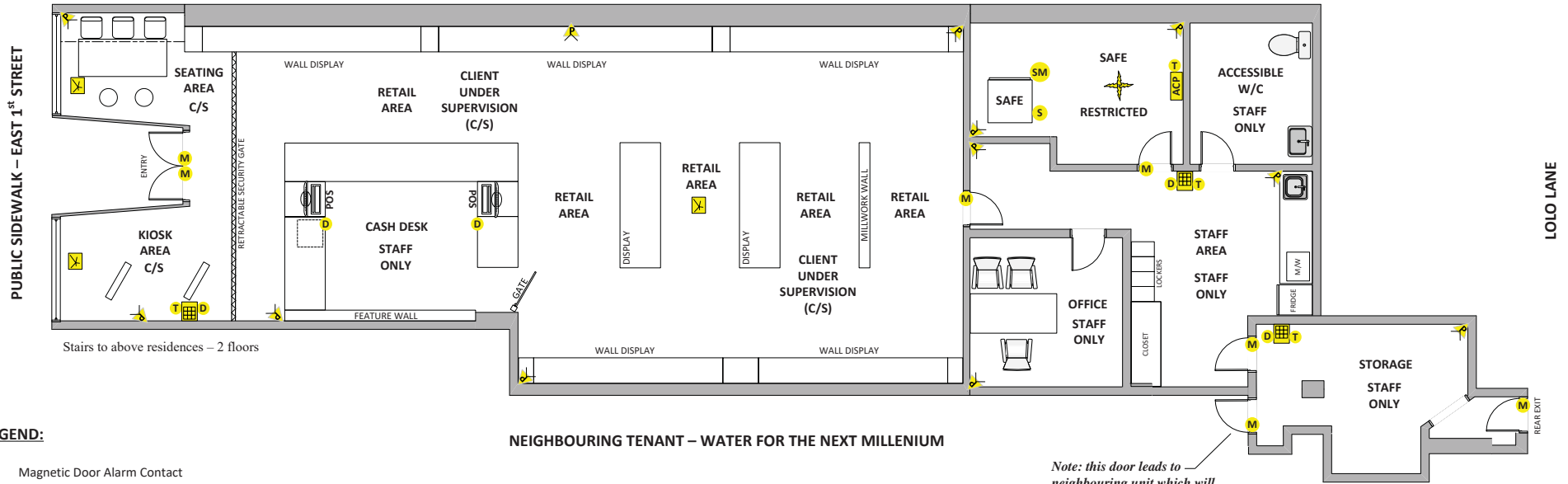
## Eggs Canna Inc. SECURITY LEVELS

115 East 1st Street, North Vancouver

**3Si Risk Strategies**



# NEIGHBOURING TENANT – LOVE NEST



## LEGEND:

- Magnetic Door Alarm Contact
- PIR Motion Detector
- Duress Button
- Glass Break Sensor
- Alarm Siren
- Smoke Detector
- Seismic Sensor
- Tamper Detection
- Alarm Control Panel
- Card Reader
- Alarm Keypad
- Push button door release

## NOTES: Intrusion Detection System

Alarm Contacts. Magnetic contacts N.O. specified to be compatible with alarm panel and door frame and installed as per manufacture recommendations.

All alarm zones to be home run.

Wide Angle PIR. Minimum 90 degree FOV with min 40' range on x and y axis or better.

Glass Break min. effective range of 10' by 10 ft. and compatible with alarm panel.

30 Watt outdoor rated siren. Dual Tone. Compatible with Alarm Panel.

Panel configured with duress codes at each keypad.

Alarm monitoring continuously by ULC listed monitoring company

All Users to have independent codes

Master Code only used to add and remove user codes

Codes to be changed yearly

Codes to be removed when no longer required

Full programming print-out including event buffer to be supplied by integrator (less the installer code)

System to operate on 2 independent partitions. One for the back area (south) and the other for the front area (north)

Back up battery for 4 hours operation

All troubles and tampers to be reported to Central Station

0 ft. 9 ft. 15 ft. 30 ft.  
Approximate Scale  
See architectural for precise scale



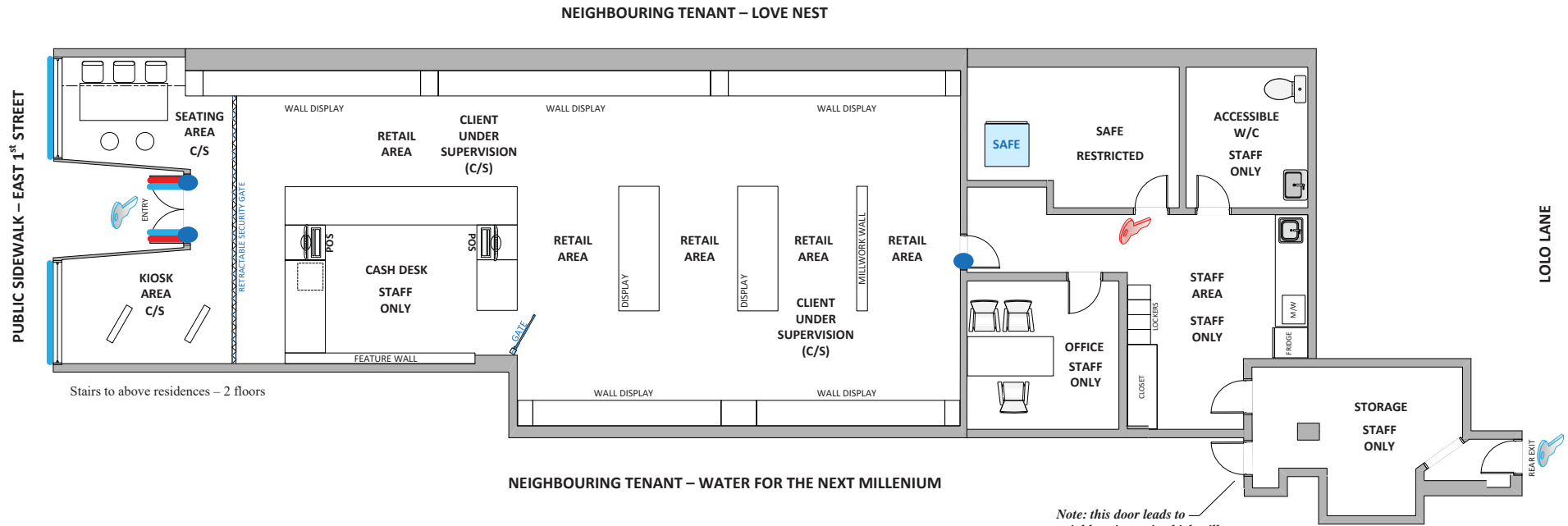
NOV 15, 2018

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Ver 1.0

**Eggs Canna Inc.**  
**INTRUSION DETECTION**  
115 East 1st Street, North Vancouver

**3Si Risk Strategies**



**LEGEND:**

-  Non-Removable Pins
-  Security Film
-  Full length Astragal (FLA)
-  Security bars
-  Restricted Keyway - Restricted
-  Restricted Keyway - Admin

**NOTES: Mechanical**

- Security Film on front windows. Film rated and installed in frame. 3M Ultra600 or equivalent.
- Add full length Astragal and Security film to front entry doors.
- Unique keyway for Safe Room door. Unique keyways will not be on a master key system.
- Add non-removeable pins to front entry doors and Staff Area door.

*Note: this door leads to neighbouring unit which will be occupied by Eggs Canna for non-dispensary business use*



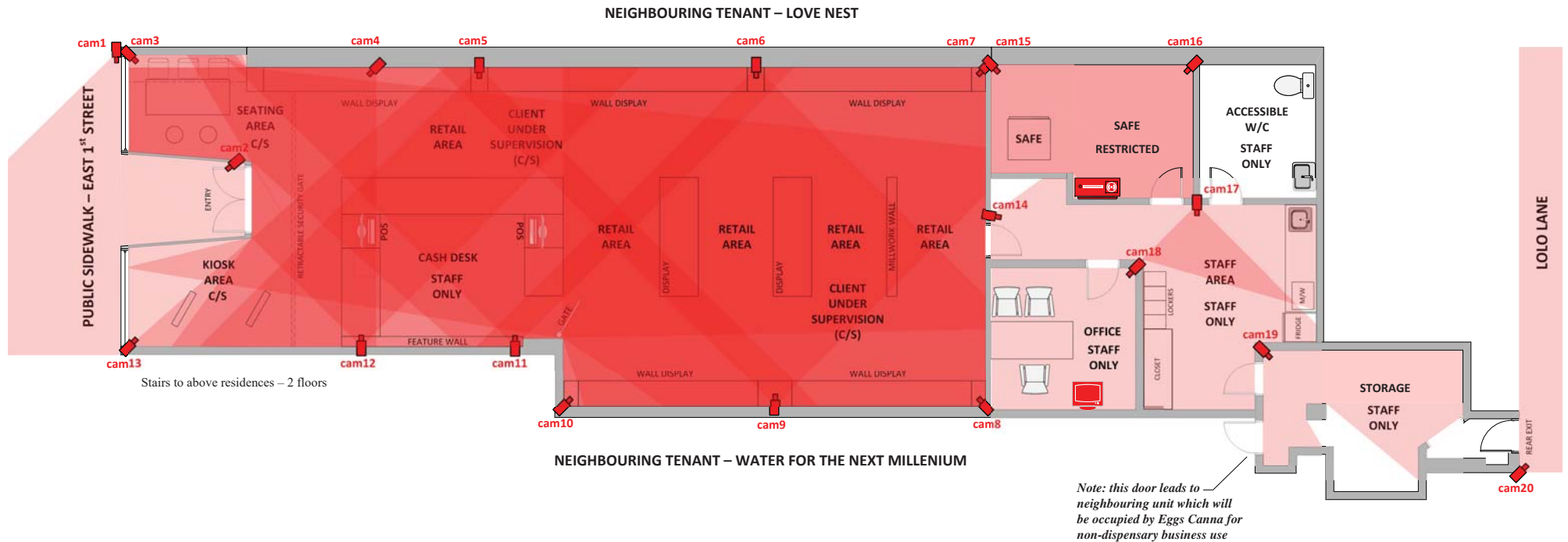
NOV 15, 2018

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Ver 1.0

**Eggs Canna Inc.**  
**MECHANICAL SECURITY**  
115 East 1st Street, North Vancouver





#### LEGEND:

-  Review and Download Station
-  IR Camera
-  Network Video Recorder

#### NOTES: Video System

220 ppm resolution at entrance door.  
110 ppm minimum resolution for all other areas indicated.  
Based on 4MP. FOV as shown.  
Camera IR assist to operate in all light conditions (30m minimum).  
Single Camera FOV  
Dual Camera FOV  
Triple Camera FOV  
Recording at 1fps min. 7.5 fps min on motion with 5 second pre and post recording

0 ft. 9 ft. 15 ft. 30 ft.  
Approximate Scale  
See architectural for precise scale



NOV 15, 2018

jm/ct

Ver 1.0

**Eggs Canna Inc.**  
**VIDEO SECURITY**

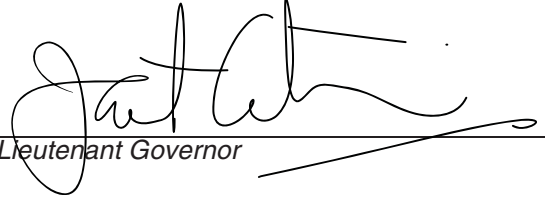
115 East 1st Street, North Vancouver

**3Si Risk Strategies**

**ORDER OF THE LIEUTENANT GOVERNOR IN COUNCIL**

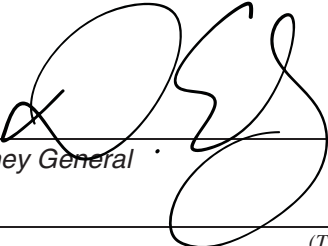
Order in Council No. 316

, Approved and Ordered June 18, 2020

  
 Lieutenant Governor

**Executive Council Chambers, Victoria**

On the recommendation of the undersigned, the Lieutenant Governor, by and with the advice and consent of the Executive Council, orders that the Cannabis Licensing Regulation, B.C. Reg. 202/2018, is amended as set out in the attached Schedule.

  
 Attorney General

  
 Presiding Member of the Executive Council

*(This part is for administrative purposes only and is not part of the Order.)*

**Authority under which Order is made:**

Act and section: *Cannabis Control and Licensing Act*, S.B.C. 2018, c. 29, s. 133

Other: O.C. 528/2018

R10406443



## **SCHEDULE**

***1 Section 5 (1) of the Cannabis Licensing Regulation, B.C. Reg. 202/2018, is amended by repealing paragraph (p) and substituting the following:***

- (p) the retail store must be located in a permanent building or structure;
- (p.1) the following must not be visible from outside the retail store:
  - (i) cannabis;
  - (ii) cannabis accessories;
  - (iii) packaging and labelling of cannabis and cannabis accessories; .

Date: June 18, 2020

To: All LCRB staff  
All Licensees  
All Industry Associations  
All Local Government, First Nations, and police agencies

**Re: Cannabis Licensing Regulation amendment – non-transparent walls**

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**Previous Regulatory Requirement**

A cannabis retail store must be located in a permanent building or structure and be enclosed by floor-to-ceiling walls that are not transparent.

**New Regulatory Requirement**

A cannabis retail store must be located in a permanent building or structure. Cannabis, cannabis accessories, and packaging and labelling of cannabis and cannabis accessories must not be visible from outside the cannabis retail store.

**Explanation**

The amended regulation supports the Province's commitment to protecting minors from exposure to non-medical cannabis.

**Further Information**

This communication contains general information about requirements under the *Cannabis Control and Licensing Act* and is not a replacement for the statute or regulations. It does not contain or constitute legal advice.

Further information regarding liquor and cannabis control and licensing in British Columbia is available on the Liquor and Cannabis Regulation Branch website at <http://www.gov.bc.ca/liquorregulationandlicensing>

If you have any questions regarding these changes, please contact the Liquor and Cannabis Regulation Branch toll free in Canada at 1-866-209-2111 or 250 952-5787 if calling from the Victoria area.

*Original signed by*

Mary Sue Maloughney,  
Assistant Deputy Minister and General Manager

City of North Vancouver

## COUNCIL POLICY

Policy Name: Recreational Cannabis Retail Policy

Policy Number: 7

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### POLICY

Recreational Cannabis Retail Policy

### REASON FOR POLICY

The Government of Canada has announced the recreational use of cannabis will become legal in Canada on October 17, 2018. The federal Cannabis Act is the legal framework under which the production, distribution, sale and possession of cannabis, for both medical and non-medical (recreational) purposes, is regulated in Canada. Through legislation including the Cannabis Control and Licensing Act, the Province of British Columbia has created a legislative framework to supplement federal legislation and facilitate legal and controlled access to recreational cannabis in British Columbia following federal legalization.

In coordination with federal and provincial regulations, this Policy creates a framework under which recreational cannabis retail businesses will be established in the City, with a focus on the following:

1. Defining **locational criteria** for where businesses may be situated, based on land use requirements, separation from sensitive uses and geographical distribution;
2. Implementing the **application procedure** under which proposals for new cannabis retail businesses are to be submitted, assessed and approved to operate within the City.

### Applicability

This policy is applicable to all rezoning applications to operate a recreational cannabis retail business in the City.

### Authority to Act

The legislative framework of the Province of British Columbia, including the Community Charter, Local Government Act, and the Cannabis Control and Licensing Act, provides the basis upon which the City may regulate certain locational aspects of recreational cannabis retail businesses, as well as procedures for assessing and approving business proposals.

Policy Name: Recreational Cannabis Retail Policy

Policy Number: 7

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Administration of this policy is delegated to the Planning Department.

## **PROVISIONS AND PROCEDURES**

The following describes locational criteria for all recreational cannabis retail businesses in the City and outlines the procedure under which applications will be accepted, assessed and approved.

### **Locational Criteria**

1. Recreational cannabis retail businesses may only be located on properties assigned with the following land use designations under the 2014 Official Community Plan (OCP) – Schedule A Land Use Map (see Schedule 1):
  - Mixed-Use Level 2 (Medium Density);
  - Mixed-Use Level 3 (Medium Density);
  - Mixed-Use Level 4A (High Density);
  - Mixed-Use Level 4B (High Density);
  - Harbourside Waterfront (Mixed-Use); and,
  - Commercial.
2. Recreational cannabis retail businesses may not be located within a 100-metre radii of the following sensitive uses (see Schedule 2):
  - Community and Recreational Centres;
  - North Shore Neighbourhood House;
  - North Shore Shelter;
  - North Vancouver School District Office; and,
  - Public elementary and secondary schools.
3. A maximum of six (6) retail businesses will be considered. Business locations are to be distributed throughout four areas in the City, in accordance with Schedule 3.

### **Application Procedure**

1. Resources for application submission, including detailed instructions and links to the application form, submission requirements and other relevant information, will be posted on the City website at [www.cnv.org/cannabis](http://www.cnv.org/cannabis) on October 1, 2018.

Policy Name: Recreational Cannabis Retail Policy

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2. The City will accept applications between November 19, 2018 at 10:00 am (PST) and November 30, 2018 at 5:00 pm (PST). All applications must include the information identified in Schedule 4 to be considered complete. Initial evaluation will be based on whether required documentation has been submitted. Through the rezoning process, a more in-depth analysis will be completed, at which point additional documents may be required.

Applications will only be accepted online through the City's file transfer service. Submissions will be deemed successfully received once displayed as a new e-mail in the inbox of the City's e-mail address. The order of which applications are received in the City's inbox will be considered the official register of applications received by the City. The City will not be liable for any application submission delay for any reason, including technological delays, or issues with either party's network or e-mail program. The City will also not be liable for any damages associated with submissions not received. The link to the file transfer service will be posted at [www.cnv.org/cannabis](http://www.cnv.org/cannabis).

The following rules apply to submissions:

- Only one submission per business/operator per area will be accepted;
  - Should the City receive multiple submissions from the same business/operator for the same location, only the first received submission will be considered;
  - A submission containing more than one application will not be considered and will be disqualified; and,
  - A submission containing more than one proposed location will not be considered and will be disqualified;
3. After the intake period, staff will review applications on a "first-come, first-serve" basis for application completeness. Applications that are deemed incomplete will not be further considered and disqualified.
  4. The City will consider a total of up to six (6) business locations, distributed throughout areas of the City in accordance with Schedule 3. The first two (2) complete applications received in Areas 1 and 2 and the first complete applications received in Areas 3 and 4 will be eligible to submit a rezoning application.
  5. All applications that proceed to the rezoning stage must submit an application fee of \$4,026.25.



Policy Name: Recreational Cannabis Retail Policy

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6. Staff will process the first set of rezoning applications as a single batch if possible. All rezoning applicants must follow standard procedures for the rezoning process, including the following:
  - a. Responding to feedback and comments from staff, applicable advisory bodies, and the public;
  - b. Organizing an open house session and conducting other applicable public notification and consultation measures; and,
  - c. Attending standard Council proceedings, including a Public Hearing, when scheduled.

Should an applicant withdraw from the rezoning process during this stage, the applicant(s) who had submitted the next complete application in the same area, as defined in Schedule 3, will be eligible to submit a rezoning application.

7. All applications will be held at Third Reading pending confirmation of approval for a Provincial Non-Medical Cannabis Retail License. Should an application at Third Reading not receive Provincial approval, the next complete application in the same area, as defined in Schedule 3, will be eligible to submit a rezoning application.
8. Upon rezoning approval, applicants may submit a business license application and, if applicable, a building permit application to the City.
9. Once operational, staff will monitor businesses to keep Council informed on the state of recreational cannabis retail in the City. After a period of two years, staff will reassess the Policy to determine whether amendments are warranted and/or if additional stores should be considered in the City, and return to Council with a recommendation for next steps. Council may request an alternative timeline for staff reassessment of the Policy at their discretion.
10. Should the City not receive the appropriate number of complete applications for each area, as defined in Schedule 3, during the timeframe outlined above in the Policy, future applications will be accepted on a 'first come, first serve' basis that are consistent with the requirements of this Policy.

Approval date:	September 24, 2018	Approved by:	Council
Effective date:		Revision date:	

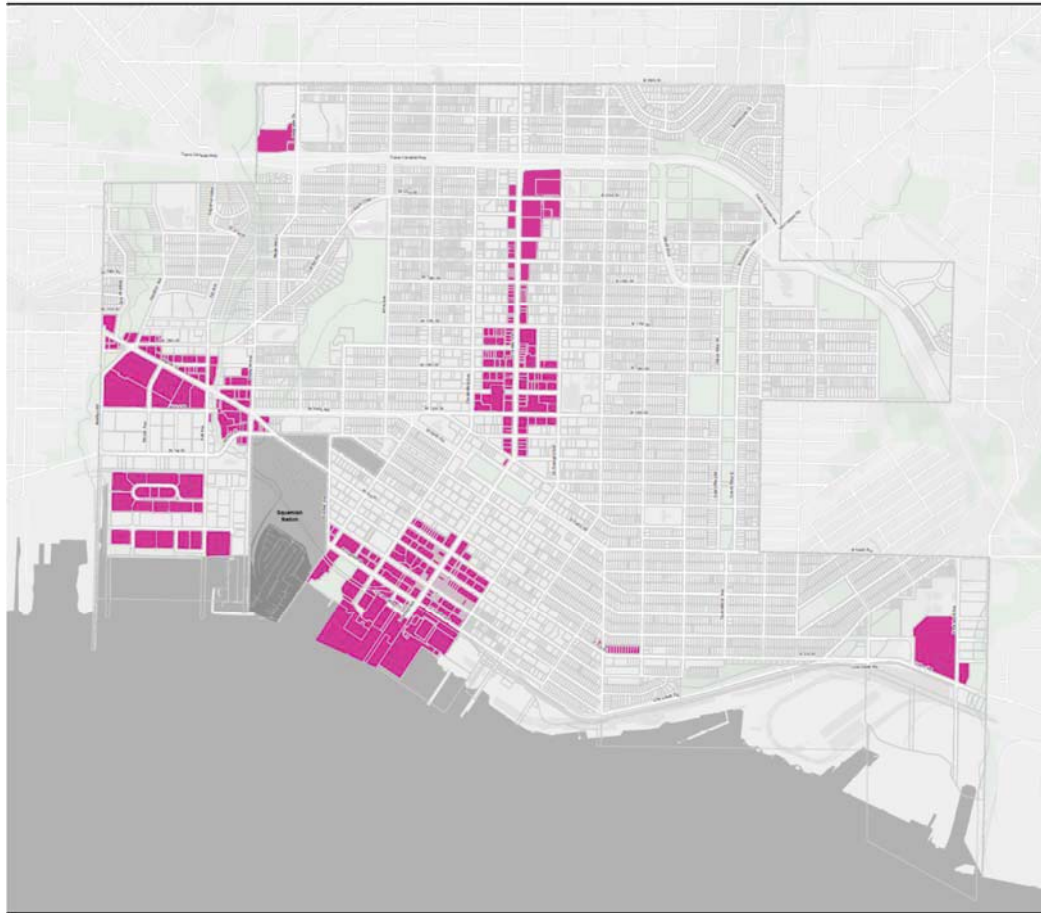
Policy Name: Recreational Cannabis Retail Policy

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### **Schedule 1**

#### **Permitted OCP Land Use Designations for Recreational Cannabis Retail Business Locations**



#### **Legend**

-  Permitted OCP Land Use Designations
-  Legal Parcels
-  City Boundary









Policy Name: Recreational Cannabis Retail Policy

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**Schedule 2**  
**Recreational Cannabis Retail Businesses**  
**100-metre Radius Separation Requirement from Sensitive Uses**



**Legend**

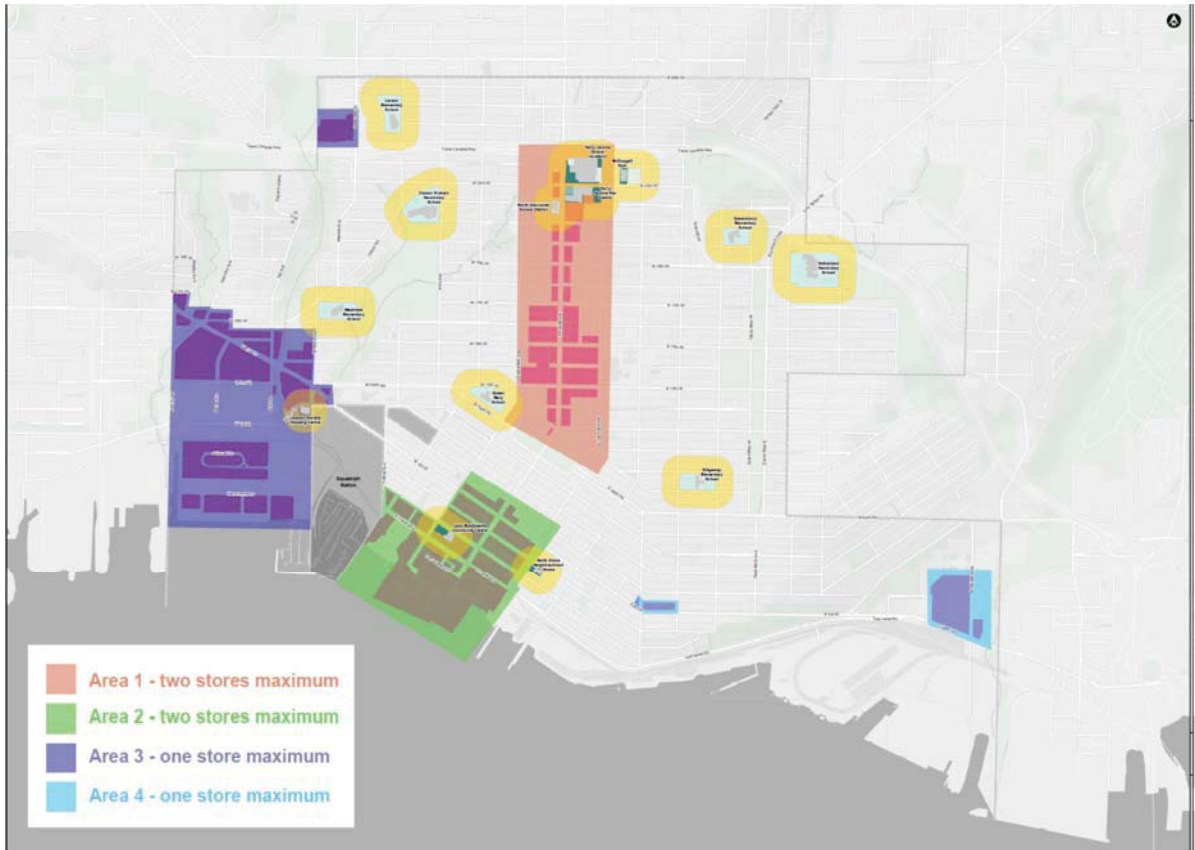
-  Sensitive Use Buildings
-  School/ School District
-  Lookout Society
-  Community/ Recreation Centres
-  100m exclusion buffer \*
-  OCP Land Use Designation
-  Legal Parcels
-  City Boundary

\* buffers have been measured from legal parcel boundaries

Policy Name: Recreational Cannabis Retail Policy

Policy Number: 7

**Schedule 3**  
**Recreational Cannabis Retail Businesses**  
**Areas of Consideration**



Policy Name: Recreational Cannabis Retail Policy

Policy Number: 7

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**Schedule 4**  
**Recreational Cannabis Retail Businesses - Submission Requirements**

<b>REQUIRED INFORMATION / DOCUMENTATION</b>	<b>YES</b>	<b>NO</b>
Name and contact information of applicant(s)		
Civic address and legal description of property where the proposed business is to be located		
Letter of consent signed by the subject property strata corporation or registered owner(s) authorizing application submission and proof of an option for lease or purchase of the subject property; or a State of Title Certificate confirming the ownership of the subject property		
Confirmation that the proposed location complies with all locational requirements as per this policy		
Full description of the proposed business operation, including, at minimum, the following information: <ul style="list-style-type: none"><li>• past business experience</li><li>• corporate structure</li><li>• number of staff, products sold, target market, and hours of operation</li><li>• other general business information</li></ul>		
Letter confirming that all individuals/corporate entities associated with the proposed business are <u>not</u> currently operating any illegal recreational cannabis operations in the City of North Vancouver		
Description of the expected time frame for commencing business activities within the City, if approved		
A Community Impact Statement outlining the following: <ul style="list-style-type: none"><li>• Potential positive and negative economic, social and environmental impacts the business may have on the immediate neighbourhood and wider community</li><li>• Strategies for mitigating potential negative impacts</li></ul>		
A Security Plan demonstrating security features that comply or exceed Provincial requirements		
Provincial licensing referral from Liquor and Cannabis Regulation Branch (required to be received from Province)		





**115 NORTH VANCOUVER –VIRTUAL OPEN HOUSE  
OCTOBER 1, 2020  
HOSTED BY: EGGS CANNA**

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**PARTICIPANTS:**

There were no participants for this meeting.

**COMMENTS:**

There were no comments on this proposed development application.

**NOTIFICATION MATERIALS:**

- a. Mailout letter was drafted & delivered via IDRS
- b. Newspaper advertisement was taken out in the North Shore News
  - i. One was posted on September 23<sup>rd</sup>, 2020
  - ii. Second ad was posted on September 30<sup>th</sup>, 2020
- c. Sign was posted in the window of site per City requirements

**\*\*copies & photos of above noted notifications have been included in this report\*\***

**COMMUNITY CONCERNS:**

There were no community concerns with this application during the Virtual Open House.

**SUMMARY:**

Eggs Canna has done two rounds of neighbourhood notifications prior to the above noted "Virtual Open House," and prior to Covid-19. At that time Eggs Canna had gone to local business in the surrounding area on foot and introduced us and what we wanted to do with the proposed site. The second round was a similar door-to-door introduction, but we focused on the residents in and around our proposed area.

We were met with enthusiasm for the proposed development and received letters of support and endorsement that were included in the original application package.

We had comments regarding parking that we were able to satisfy by outlining that there is a parking lot across the street and additional street parking in front of the store. We also conducted an internal survey at our existing stores to understand how many of our customers either drive, walk, bus, or use other methods of transportation. We were able to conclude that two parking stalls with a maximum stay of 30-minutes would be sufficient to service our existing locations and we could confidently apply those statistics to this location.

The community was satisfied with our application and we received approval from the vast majority of businesses and residents we canvassed.

Respectfully,

---

Andrew Cappellano  
Eggs Canna

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# THE CORPORATION OF THE CITY OF NORTH VANCOUVER

## BYLAW NO. 8808

### A Bylaw to amend “Zoning Bylaw, 1995, No. 6700”

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as “**Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8808**” (Eggs Cana / Oana Nicoara, 115 East 1<sup>st</sup> Street, CD-731).
2. Division VI: Zoning Map of Document “A” of “Zoning Bylaw, 1995, No. 6700” is hereby amended by reclassifying the following lots as henceforth being transferred, added to and forming part of CD-731 (Comprehensive Development 731 Zone):

Lot	Block	D.L.	Plan	
5	166	274	878	from LL-2

3. Part 11 of Division V: Comprehensive Development Regulations of Document “A” of “Zoning Bylaw, 1995, No. 6700” is hereby amended by:
  - A. Adding the following section to Section 1100, thereof, after the designation “CD-730 Comprehensive Development 730 Zone”:  
  
“CD-731 Comprehensive Development 731 Zone”
  - B. Adding the following to Section 1101, thereof, after the “CD-730 Comprehensive Development 730 Zone”:  
  
“CD-731 Comprehensive Development 731 Zone”

In the CD-731 Zone, permitted Uses, regulations for permitted Uses, regulations for the size, shape and siting of Buildings and Structures and required Off-Street Parking shall be as in the LL-2 Zone, except that:

- (1) In addition to the Principal Uses permitted in the LL-2 Zone, one Cannabis Sales retail store may be permitted.

READ a first time on the <> day of <>, 2020.

READ a second time on the <> day of <>, 2020.

READ a third time on the <> day of <>, 2020.

ADOPTED on the <> day of <>, 2020.




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MAYOR

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CORPORATE OFFICER



 Department Manager	 Director	 CAO
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The Corporation of **THE CITY OF NORTH VANCOUVER**  
**PLANNING & DEVELOPMENT DEPARTMENT**

**REPORT**

To: Mayor Linda Buchanan and Members of Council

From: Yan Zeng, Manager, Development Planning

Subject: REZONING AND OFFICIAL COMMUNITY PLAN AMENDMENT  
APPLICATION: 402-438 EAST 3<sup>RD</sup> STREET AND 341-343 ST. DAVIDS  
AVENUE

Date: November 4, 2020 File No: 08-3400-20-0005/1

*The following is a suggested recommendation only. Refer to Council Minutes for adopted resolution.*

**RECOMMENDATION**

PURSUANT to the report of the Manager, Development Planning, dated November 4, 2020, entitled "Rezoning and Official Community Plan Amendment Application: 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue":

THAT "Official Community Plan Bylaw, 2014, No. 8400, Amendment Bylaw, 2020, No. 8806" (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue, Land Use Designation and Permitted Height Change) be considered and referred to a Public Hearing;

THAT "Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8807" (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street, and 341-343 St. Davids Avenue, CD-730 and "Moodyville Development Permit Area Guidelines" amendment) be considered and referred to a Public Hearing;

THAT the community benefits listed in the report section "Density Bonus and Community Benefits" be secured, including a 16-space childcare facility, through agreements at the applicant's expense and to the satisfaction of staff;

THAT the statutory requirements for "Official Community Plan Bylaw, 2014, No. 8400, Amendment Bylaw, 2020, No. 8806", as described in the Statutory Review section of this report, be considered;

AND THAT notification be circulated in accordance with the *Local Government Act*.



## ATTACHMENTS

1. Context Map (CityDoc [#1828789](#))
2. Existing and Proposed Official Community Plan Designations (CityDoc [#1982848](#))
3. Architectural and Landscape Plans, dated October 15, 2020 (CityDoc [#1980626](#))
4. Transportation Study (CityDoc [#1940752](#))
5. Applicant's Proposed Affordable Homeownership and Rent-to-Own Program (CityDoc [#1982699](#))
6. Off-Site Servicing Requirements (CityDoc [#1982929](#))
7. Required Legal Agreements (CityDoc [#1983011](#))
8. Developer Information Session Summary (CityDoc [#1983032](#))
9. Virtual Town Hall Report (CityDoc [#1983047](#))
10. Summary of Proposed OCP and Zoning Bylaw Amendments (CityDoc [#1989403](#))
11. Policy Review (CityDoc [#1989413](#))
12. Advisory Body Input (CityDoc [#1989418](#))
13. Official Community Plan Amendment Bylaw No. 8806 (CityDoc [#1989281](#))
14. Zoning Bylaw Amendment Bylaw No. 8807 (CityDoc [#1989179](#))

## PURPOSE

This report presents an application to amend the Official Community Plan (OCP) and Zoning Bylaw to allow for the redevelopment of properties at 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue. The proposed development is a residential strata building with townhouses and commercial units at grade.

## BACKGROUND

On October 7, 2019, a report was presented to Council that sought preliminary direction on the proposed OCP amendment and rezoning. At that time Council directed staff to receive and review the application, and to include a fulsome public consultation as part of that process. The application has been processed in accordance with Council's direction and the resulting evaluation and recommendations are provided in this report.

## DISCUSSION

### *Site Context and Surrounding Use*

This 5,516.5 sq. m. (59,379 sq. ft.) site is located at 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue, in the Moodyville area. It is currently made up of 10 lots with detached dwellings, duplexes, and an unoccupied commercial building. Two houses located on 424-426 East 3<sup>rd</sup> Street and 428 East 3<sup>rd</sup> Street are identified as "B" listed heritage buildings.

Attachment #1 provides an aerial view of the existing lots. Existing zoning for these properties is listed in Table 1 below.

**Table 1. Existing Zoning**

Address	Description	Zoning
341-343 St. Davids Avenue	Two-Unit Residential 1	RT-1
438 East 3rd Street	Local Commercial	C-3
402-418, 428, 432 East 3rd Street	Medium Density Apartment Residential 2	RM-2
424-426 East 3rd Street	Comprehensive Development 421	CD-421

The buildings and uses immediately surrounding the subject site are described in Table 2 below.

**Table 2. Surrounding Uses**

Direction	Address	Description	Zoning
North	400-Block of East 4 <sup>th</sup> Street	A mixture of detached and semi-detached dwellings consistent with the Residential Level 2 designation.	RT-1; CD-130
South	400-Block of East 3 <sup>rd</sup> Street	A mixture of detached, semi-detached, and multi-family homes.	RM-2
East	502 East 3 <sup>rd</sup> Street	BC Hydro Transfer Station; TransLink former bus depot	M-1
West	372 East 3 <sup>rd</sup> Street	3 storey multi-family rental residential apartment building	RM-1
West	423 East 4 <sup>th</sup> Street	Residential semi-detached dwelling	RT-1

This centrally located site is adjacent to high-frequency transit along East 3<sup>rd</sup> Street as well as existing active transportation infrastructure along East 4<sup>th</sup> Street and future active transportation routes along both St. Davids Avenue and East 3<sup>rd</sup> Street. The site is also located within a secondary pedestrian generator area as identified in the City's Long Term Transportation Plan, and is expected to receive a higher than average amount of pedestrian traffic.

## Project Description

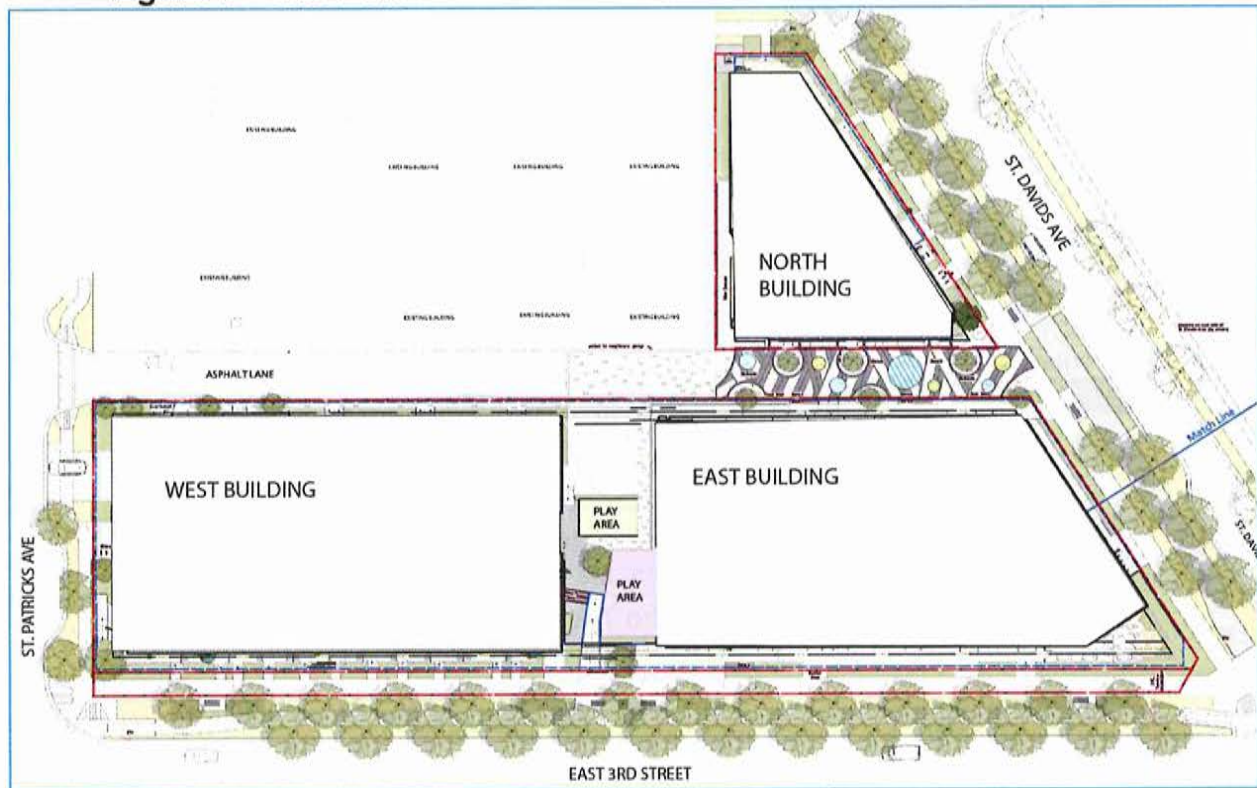
The mixed-use development proposal consists of three separate buildings identified in this report as the East, West and North buildings (see Figure 1):

- West Building: 4-storey building along East 3<sup>rd</sup> Street consisting of 82 market strata residential units, including ground-floor live-work townhouse units facing East 3<sup>rd</sup> Street;
- East Building: 5-storey mixed-use (commercial/residential) building consisting of 71 market strata residential units, 14 commercial retail units (CRUs) at grade



- facing East 3<sup>rd</sup> Street and the lane, office spaces on Level 1 facing East 3<sup>rd</sup> Street, and one childcare facility on Level 1; and
- North Building: 4-storey mixed-use (commercial/residential) building consisting of 16 market strata residential units and 3 CRUs facing the lane.

**Figure 1 – Site Plan**



In total, 169 market strata residential units are being proposed. The breakdown of the unit types is as follows:

- 1-Bedroom – 79 (47%)
- 2-Bedroom – 59 (35%)
- Greater than 2-Bedroom (2BR+Den, 3BR, 3BR+Den) – 31 (18%)

The total proposed floor area for the entire site is 13,680.5 sq. m. (147,255 sq. ft.), with a total density of 2.48 FSR.

CRUs are oriented along the easterly portion of East 3<sup>rd</sup> Street as well as St. Davids Avenue. There are also CRUs facing the lane between the east and north buildings. The commercial activation of the lane provides a weather-protected outdoor amenity for use by residents, employees, customers and the general public.

The proposal includes two storeys of underground vehicle parking, accessed off of St. Patricks Avenue. A commercial loading space is proposed off the lane in the breezeway between the west and east buildings. Bicycle parking spaces are provided at P1 of the West Building and at the ground floor of the North Building.



## Policy Framework

The subject site falls under three designations within the Official Community Plan (see Figure 2):

- Residential Level 5 along most of East 3<sup>rd</sup> Street (402-432 E 3<sup>rd</sup>);
- Mixed-Use Level 2 at corner of East 3<sup>rd</sup> and St. Davids (438 E 3<sup>rd</sup>); and
- Residential Level 2 on the lot north of the lane (341-343 St. Davids)

**Figure 2 – OCP Designation Map**



The Residential Level 5 designation is intended to provide multi-family housing with a mix of unit sizes, with a focus on creating attractive and active streets. The Mixed-Use Level 2 designation is intended to allow mid-rise multi-family and commercial uses and activities contributing to a pedestrian-scale village-feel, with an emphasis on street-fronting retail activities including shops, cafés and services. The Residential Level 2 designation is intended to provide a range of ground-oriented housing in areas located between detached residential and more intensive residential or mixed-use areas.

The site is within the Moodyville Development Permit Area, and is partly within three separate sub-areas, including the “Neighbourhood Centre” (438 East 3rd Street), the “East 3rd Street Corridor” (402-432 East 3rd Street), and the “St. Patricks Transition” (341-343 St. Davids Avenue). Of these three sub-areas, the Development Permit Guidelines apply to the “East 3rd Street Corridor” only. For these properties, a Development Permit would typically be required, however, because a thorough review of the proposed form and character of the development has been completed through the OCP and Zoning Bylaw amendment application review, a Development Permit



application is not recommended. Within the proposed Zoning Bylaw amendment, a condition is proposed to be added to the Moodyville Development Permit Guidelines that would allow for this and similar projects in the future to not require a Development Permit.

The proposed development would require an OCP amendment, including re-designation of a portion of the site and an amendment to maximum heights. Rezoning to a Comprehensive Development Zone would also be required. The proposed changes to the OCP and Zoning Bylaw are summarized in Attachment 10.

Attachment 11 provides a list of how this proposal is responding to higher level goals of Metro 2040 and the OCP as well as other relevant City objectives.

### **Use and Intensity**

Compared to the current OCP designations, the proposal represents a slight decrease in allowable residential floor area, and a significant increase in commercial floor area:

- The existing OCP designations permit a maximum density of 12,486.9 m<sup>2</sup> or 2.26 FSR, which would likely result in a development with approximately 12,200 m<sup>2</sup> of residential floor area, and approximately 280 m<sup>2</sup> of commercial floor area.
- The proposed rezoning and OCP amendment would permit a maximum density of 13,680 m<sup>2</sup> or 2.48 FSR with approximately 12,130 m<sup>2</sup> of residential floor area and approximately 1,548 m<sup>2</sup> of commercial floor area.

At present, Moodyville has very limited active commercial retail businesses operating to serve the neighbourhood. The nearest commercial centres are Queensbury (~800m away) and Lonsdale Avenue at East 3<sup>rd</sup> Street (~950m away). The proposed change to land use designation will support the emergence of a neighbourhood commercial hub for the developing Moodyville area, which, under the OCP, is envisioned to have more than 4,000 residents at build-out.

While the greatest increase in commercial floor area comes from re-designating a portion of the site along East 3<sup>rd</sup> Street, staff also support the re-designation of 341-343 St. Davids Avenue (northerly portion) in order to create this neighbourhood commercial hub. It is important to note that commercial entrances would be mainly from the pedestrian-only lane, away from residential entrances along East 4<sup>th</sup> Street.

Overall, staff are of the view that this large site assembly presents a good opportunity to expand the neighbourhood-serving commercial capacity on site, while a slight reduction in residential capacity can be supported. The development concept for the site is consistent with the City's over-arching policy framework that prioritizes complete communities where residents/workers can walk to local commercial and retail services.



## **Form**

As outlined in the last section, the proposed overall density is marginally higher than what would otherwise be permitted under the OCP. How the overall density is integrated onto the site and the surrounding context is the focus of staff evaluation.

The site slopes significantly from north to south, with an approximately 7 m (23 ft.) grade difference between 4<sup>th</sup> and 3<sup>rd</sup> streets. The proposal is broken down into three separate buildings – the West Building, the East Building and the North Building.

While the two buildings facing East 3<sup>rd</sup> Street are generally of four to five-storeys in height at the lane, the North Building, which borders lower density residential development, is significantly sculpted to integrate into the surrounding built form – it presents a four-storey form at the lane side, terracing down to a two-storey form along East 4<sup>th</sup> Street.

A breezeway is proposed between the west and east buildings to bring more pedestrian permeability through the site. The West Building activates the street by lining it with live/work units, while the east building has multiple CRUs to engage and serve pedestrians. A large size patio is also proposed at the corner of East 3<sup>rd</sup> Street and St. Davids Avenue, creating a space for people to meet and linger.

The application proposes to close the easterly portion of the lane to traffic and create a pedestrian “mews”. Staff are supportive of this concept and see this as an opportunity to experiment with activating the City’s laneways for pedestrian activities separated from vehicle traffic and protected from the elements by a covering. Along the lane, the West Building includes townhouse units, while the East Building proposes commercial retail units as well as the childcare facility entrance.

The overall development, if approved, will help to create an amenity-rich neighbourhood hub for neighbours and residents alike. In addition, for the exclusive use of the residents, a rooftop amenity is proposed on the West Building that would help encourage social interactions. It includes a barbeque and dining area, a children’s play area, and a community garden.

## **Existing Heritage “B” Buildings**

Two heritage “B” buildings currently exist on site: 424-426 East 3<sup>rd</sup> Street and 428 East 3<sup>rd</sup> Street.

The existing house at 424 East 3<sup>rd</sup> Street was constructed in 1927, in a craftsman style. In 2001, a heritage covenant was registered on title to provide some legal protection of the building. On July 20, 2016, Council approved the discharge of the heritage covenant based on the following considerations:

- No density bonus was granted as a result of the registration of the covenant;
- A “B” rating is of lesser heritage significance and would normally be allowed to be demolished without any referral to Council;



- The OCP has a significantly higher apartment designation for this entire block.

In directing staff to discharge the covenant, Council also asked staff to consider the merits of retaining this building as part of future redevelopment applications.

The existing house at 428 East 3<sup>rd</sup> Street is also a “B” listed building. Built in 1908, it was of the Gabled Vernacular style, however, there is no heritage covenant on title.

As part of this application, both houses were presented to the Heritage Advisory Committee (see Attachment 12). The committee recommended where possible, attempts should be made to relocate these buildings to the satisfaction of staff and the applicant consider a contribution to the cost of relocation, in scale with saving gained from the demolition cost.

Committee members further recommend that public art for this project should reflect the historic context of the Moodyville neighbourhood.

### **Building Sustainability**

The proposed residential component would achieve minimum Step 3 of the BC Building Code Step Code and the proposed commercial portion would achieve minimum Step 2 of the BC Building Code Step Code. Outlets capable of supporting Level 2 electric vehicle charging capacity will be provided for all required residential parking spaces, with the exception of visitor stalls. Stormwater will also be addressed through on-site mitigation, including retention tanks to support stormwater management during significant storm events.

### **Parking and Transportation**

Vehicle Parking and Loading - The project includes 162 residential parking spaces, 51 commercial parking spaces, and 10 shared commercial/visitor parking spaces for a combined total of 223 parking spaces. Additionally, one parking space will be reserved for car share, and a car share vehicle will be provided for use by residents, tenants and the general public.

The proposal requests a parking variance of 31 spaces. Review of similar projects in Metro Vancouver (TransLink and Metro Vancouver, March 2019) has shown that developments adjacent to the Frequent Transit Network generate a lower parking need. This site is 200m from a transit stop for the R2 RapidBus which provides connections to Lonsdale and Marine Drive to the west and Phibbs Exchange in the east. In addition to a lower number of residential parking spaces, commercial and residential visitor parking will be shared to make better use of the overlapping parking demands generated by the commercial uses, daycare and residential visitors. Because of the expected reduced demand for parking, the proposed variance is supported.

Prior to COVID-19, on-street parking in the surrounding area had an occupancy of approximately 41% in the peak period, recent review suggests that the occupancy has increased to approximately 60%. Available spaces are likely to reduce in the future with



the removal of parking on East 3<sup>rd</sup> Street for transit priority, and the removal of parking on St. Davids Avenue for Mobility Network infrastructure. Assuming that the parking demand remains the same, the parking occupancy with the reduced on-street parking is expected to increase to 70% or higher if current trends continue. Staff will closely monitor the on-street parking situation in the area.

*Bicycle Parking* - Requirements for short-term and secure bike parking as well as End Destination Facilities are met or exceeded, with a total of 302 secured residential bicycle spaces and 20 secure commercial bicycle spaces, 31 short-term bicycle parking spaces, and end of trip cycling facilities.

*Commercial Loading* - The proposed development includes a loading bay to serve the commercial units on site, located in the breezeway between the west and east buildings. A loading management plan will be required in order not to disrupt traffic flow in the area and mitigate impacts on neighbours.

*Transportation Study* - A transportation study was completed for the proposed development. The study projected that trips generated would be 115 per hour or 2 cars per minute in the busiest period (PM peak), with access to the site being through the East 3<sup>rd</sup> Street and St. Patricks Avenue intersection. These trips can be accommodated by the surrounding network with minimal delay, particularly with the proposed frontage and street network improvements listed below.

*Street Network Improvements* – The application is proposing significant on-site and off-site improvements to the public realm and street network.

Frontage improvements include:

- Provision of a west-bound separated bicycle lane on East 3<sup>rd</sup> Street;
- Improved streetscape including additional trees and a traffic calmed design on St. Davids Avenue;
- Provision of a sidewalk on St. Patricks Avenue (3<sup>rd</sup> Street to the lane).

The development proposes a partial closure of the east/west lane north of 3rd Street between St. Patricks Avenue and St. Davids Ave. This closure will further reduce the volume of traffic on St. Davids Avenue, improving the safety and comfort for active transportation uses on St. Davids Avenue.

Street network improvements include:

- A traffic signal at East 3<sup>rd</sup> Street and St. Patricks Avenue to facilitate access to the development and surrounding neighbourhood.
- Modification of the East 3<sup>rd</sup> Street and St. Davids Avenue intersection to right-in right-out for both legs of St. Davids Avenue, thereby reducing the volume of traffic on St. Davids Avenue. This intersection will be signalised using CNV capital funding.
- Provision of a new intersection at East 4<sup>th</sup> Street and St. Davids Avenue to: promote and improve the 4<sup>th</sup> Street and St. Davids AAA Bicycle routes, reduce

traffic speeds and volumes on both streets, and provide safer and more comfortable streets for all road users (design yet to be finalized).

- A cash contribution of \$20,000 towards pedestrian improvement in the vicinity of the project.

### Density Bonus and Community Benefits

The City's *Density Bonus and Community Benefits Policy*, in conjunction with the OCP, allows for density bonuses beyond 1.83 FSR in the Residential Level 5 and Mixed-Use Level 2 land use designations, up to a maximum of 2.48 FSR.

The proposed project would include community benefits valued at approximately \$7.67 million dollars, as outlined in Table 3 below.

**Table 3. Estimated Value of Community Benefits through Density Bonusing**

Density Value Calculation	Value
Density Bonus to 1.83 FSR / OCP Density (40,237.8 sq.ft. @ \$25 / sq. ft.)	\$1,005,945
Density Bonus to 2.48 FSR Max Bonus (38,093.05 @ \$175 / sq. ft.)	\$6,666,284
<b>Total Value of Community Amenity Contribution (CAC)</b>	<b>\$7,672,229</b>

The policy provides a number of community benefit options for projects seeking additional density and seeks to ensure the City receives value for additional density granted. Benefits to the City could be provided in-kind or as a cash contribution.

In response to this policy, the applicant is proposing two in-kind contributions: nine units of Affordable Home Ownership (AHO), in accordance with the criteria set out by BC Housing; and a childcare facility to be constructed turn-key and transferred to the City's ownership.

AHO Units – BC Housing's AHO Program aims to provide an opportunity for households earning approximately \$78,000-\$96,000 annually to afford a home. The applicant is proposing to make nine units in the building available for this program. Details of the proposed units and affordability are presented in Tables 4 and 5 below. The applicant is requesting the City to direct approximately \$2.5 million of the CAC towards securing a second mortgage on the nine units, which would reduce the cost of a unit by approximately \$123,000-\$470,000, depending on the size of the unit.

**Table 4. Summary of AHO Units**

Unit Type	Average Unit Area	Number of Units
1-bedroom (AHOP)	540	3
2-bedroom (AHOP)	794	4
3-bedroom (AHOP)	1059	2
<b>Total Number of Units</b>		<b>9</b>



**Table 5. Summary of AHO Affordability**

Type of Units	Market Sale Price	\$ / sq.ft	AHOP Sale Price	\$ / sq.ft	% AHOP 2 <sup>nd</sup> Mortgage	AHOP Mortgage Amount	Qualifying Income
1 Bedroom	\$492,052	\$912	\$369,039	\$684	25%	\$123,013	\$78,491
2 Bedroom	\$718,893	\$907	\$431,336	\$544	40%	\$287,557	\$90,103
3 Bedroom	\$940,262	\$888	\$470,131	\$444	50%	\$470,131	\$96,421
<b>Market Value (Sale price)</b>	<b>\$6,232,251</b>						
<b>Total AHOP Revenue</b>			<b>\$3,772,722</b>				
<b>AHOP 2<sup>nd</sup> Mortgage</b>					<b>\$2,459,529</b>		

As outlined in Table 5, the City's contribution to the AHO program on this site is forgoing a portion of the community benefits in an amount that is equivalent to the second mortgage on title, which is to \$2,459,529.

BC Housing will administer the program. When an AHO unit is sold in the future, the City has the ability to either provide the second mortgage amount to another qualified buyer, continuing the discount, or, if an unqualified buyer purchases the unit, the City can have its contribution returned which would allow the City to direct those funds to another community benefit.

An over-arching MOU was signed between the City and BC Housing to pilot this AHO program in the City of North Vancouver in order to advance housing affordability in the city for mid-income and first responder families. For this particular application, legal agreements will be in place to secure commitment to the program and the community benefits.

Childcare – The applicant has been in negotiations with staff for a City-owned childcare facility on Level 1. This is a 16-space childcare centre with programs for ages three to five. Given the high need for quality childcare spaces in the city, staff are prepared to work with the applicant to secure this space to the City's satisfaction. Details of the childcare facility are currently being resolved and will be brought forward to Council at the public hearing, should Council refer this application to a public hearing.



**Table 6 – Community Benefits Allocation**

<b>Amenity</b>	<b>Monetary Value</b>
Nine Affordable Home Ownership Units	\$2,459,529
In-kind Childcare – Recommended 16 Space Upper Floor (Level 1)	Estimated at \$2,914,000 (subject to third party valuation)
Cash Contribution to Civic Amenity Reserve Fund	Estimated \$2,298,700 (subject to confirmation of childcare value)
<b>Total</b>	<b>\$7,672,229</b>

In addition to the items above, the following items will be secured as conditions of this development:

- Public art incorporated into the project with a value of \$300,000;
- A public access right-of-way through the project breezeway to provide a pedestrian connection from East 3<sup>rd</sup> Street to the lane;
- One car share vehicle and dedicated car share parking space;
- Dedication of 3.048m for road widening;
- Improved offsite works, including expanded cycling and pedestrian facilities, intersection improvements and signalization, undergrounding of hydro infrastructure in the rear lane, and a \$20,000 contribution to local area pedestrian network improvements (see Attachment 6 – Off-Site Servicing Requirements).

In order to secure the items listed above, the City will require legal agreements to be entered into and registered at the applicant's expense. A list of required legal agreements is attached to this report (Attachment 7). The agreements will be settled and executed by the owner prior to final adoption of the bylaws.

Other Non-monetary Contribution – The applicant is proposing a Rent-to-Own component in the development (Attachment 5). Staff support this initiative and applaud the applicant for proposing it. Staff will monitor the success of this program for future replication.

## **STATUTORY REVIEW**

When an amendment to the OCP is being considered, Sections 475, 476 and 477 of the Local Government Act require municipalities to consult with persons, organizations and authorities it considers will be affected, including school districts, and consider whether the change would have any impact on the City's Financial Plan or Waste Management Plan. The proposed change to the OCP do not present a significant impact on the City's infrastructure; therefore, no significant impact to the City's Financial Plan or Waste Management Plan are anticipated. Following introduction of the Bylaws, they will be formally referred to interested agencies (School District, Metro Vancouver) for comment.

## **ADVISORY BODY INPUT**

The application was reviewed and supported unanimously by the Advisory Planning Commission, Advisory Design Panel, Integrated Transportation Committee and the Heritage Advisory Commission.

See Attachment 12 for details on commentary from these committees.

## **COMMUNITY CONSULTATION**

In accordance with the City's best practices on public consultation as well as Council's earlier direction to fully engage with the public, the applicant hosted a town hall meeting, as is required for any OCP amendment application, in addition to a Developer Information Session (DIS).

A DIS was held November 19<sup>th</sup>, 2019. Ninety-two members of the public signed into the event, 85 comment sheets/emails were collected concerning the proposal. The applicant has prepared a summary of the DIS (Attachment 8). Attendees included local residents, and a number of individuals who live outside of the neighbourhood, either elsewhere on the North Shore or in Metro Vancouver generally.

A virtual town hall was hosted on July 14<sup>th</sup>, 2020. The virtual town hall provided an opportunity for the applicant to share with interested parties the changes that had been made in the project since the DIS, as well as to receive additional feedback concerning their proposal. Two-hundred individuals registered for the virtual town hall, and 142 participants attended the meeting. The meeting resulted in 316 comments. A third-party facilitator prepared a report concerning the virtual town hall (Attachment 9).

Overall, support for the application referred to the AHO and Rent-to-Own units as well as provision of commercial spaces in the development. The proposed live/work units also have been mentioned as reasons for support.

Key concerns were raised regarding:

- Height, massing, and shadow impacts;
- Change of use and character on East 4<sup>th</sup> Street in particular;
- Impacts of childcare (parking, pick-up/drop-off, noise) on East 4<sup>th</sup> Street;
- Traffic impacts (on-street parking, volume on residential streets and the lane); and
- Change from existing OCP land uses and heights.

Public feedback has assisted staff in the evaluation of this application. In particular, the North Building has been redesigned in order to respond to the neighbouring houses along East 4<sup>th</sup> Street. Site circulation has been improved to significantly calm traffic surrounding the site. Childcare space is now located at the breezeway, away from East 4<sup>th</sup> Street.

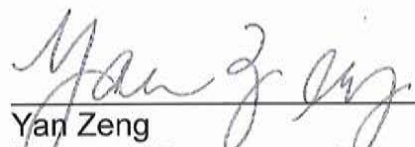


## CONCLUSION

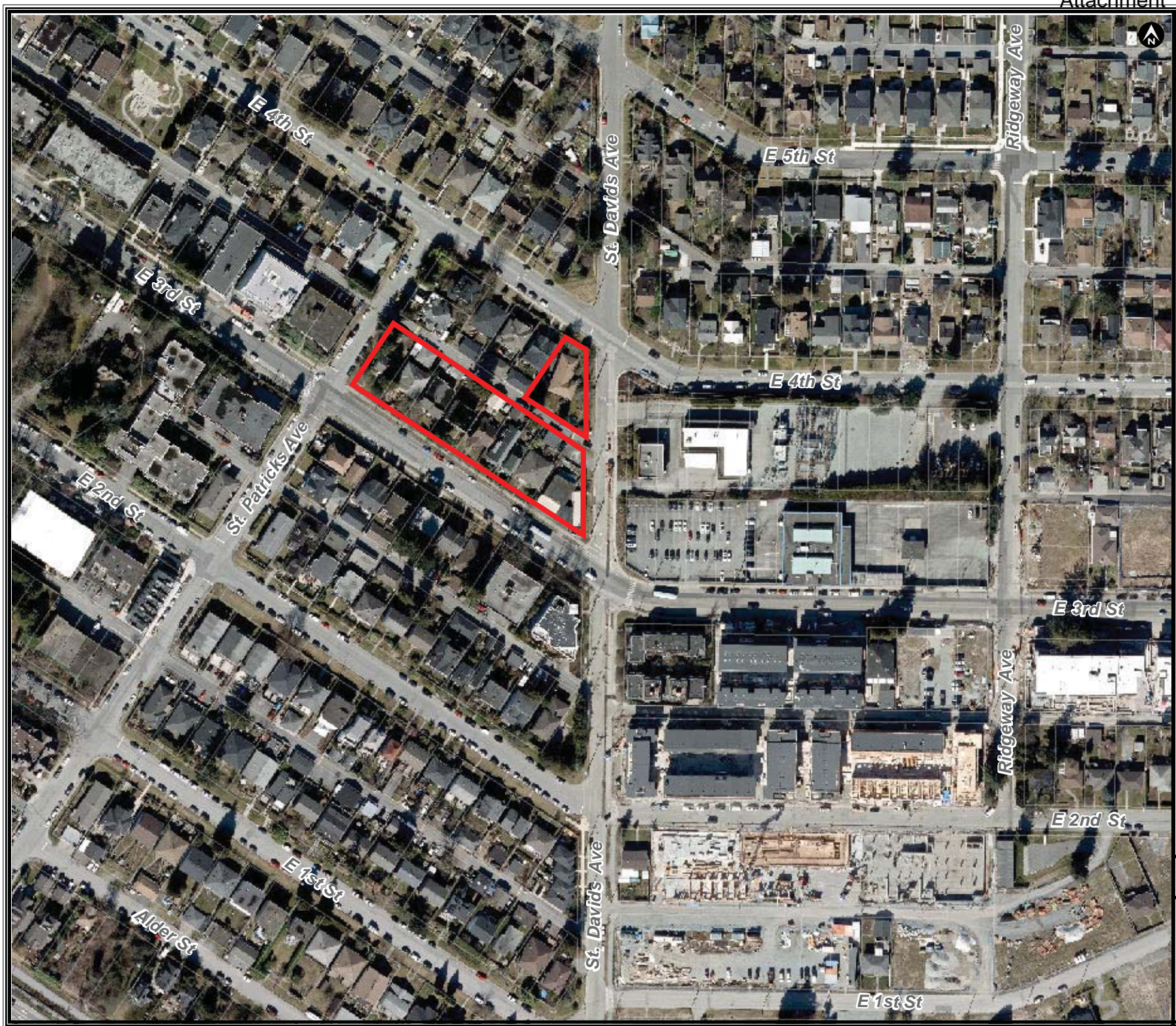
This application has been assessed and staff support the OCP amendment to increase the amount of commercial component in the development to provide significant amenities to the Moodyville area. Further, the inclusion of childcare, improvements to active transportation infrastructure and intersections, and housing pilot programs are consistent with the City's policy framework. The form of development has also been evaluated and considered appropriate in the site context.

On balance, the proposed application will support the continued growth of Moodyville into a more sustainable neighbourhood – environmentally, socially, and economically.


RESPECTFULLY SUBMITTED:

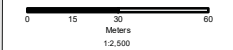
  
\_\_\_\_\_  
Yan Zeng  
Manager, Development Planning





City of North Vancouver  
Context Map

**Legend**  
 Subject Site



**DISCLAIMER**  
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GIS Division, Information Technology,  
City of North Vancouver  
PLOTTED: 8/15/2018  
 SOURCE: Various  
 COORDINATE SYSTEM: NAD 83 UTM Zone 18







# City of North Vancouver Existing Land Use Designations

- Legend**
- 2014 OCP Maximum Height Limits (m)
  - 2014 OCP Special Study Areas
  - Residential Level 1
  - Residential Level 2
  - Residential Level 3
  - Residential Level 4A
  - Residential Level 4B
  - Residential Level 5
  - Residential Level 6
  - Mixed Use Level 1
  - Mixed Use Level 2
  - Mixed Use Level 3
  - Mixed Use Level 4A
  - Mixed Use Level 4B
  - Harbourside Waterfront (Mixed Use)
  - Parks, Recreation & Open Space
  - School & Institutional
  - Commercial
  - Mixed Employment
  - Industrial
  - Legal\_Parcel
  - Subject Site



## DISCLAIMER

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GIS Division, Information Technology,  
City of North Vancouver

**city**  
of north  
vancouver




City of North Vancouver  
Proposed Land  
Use Designations

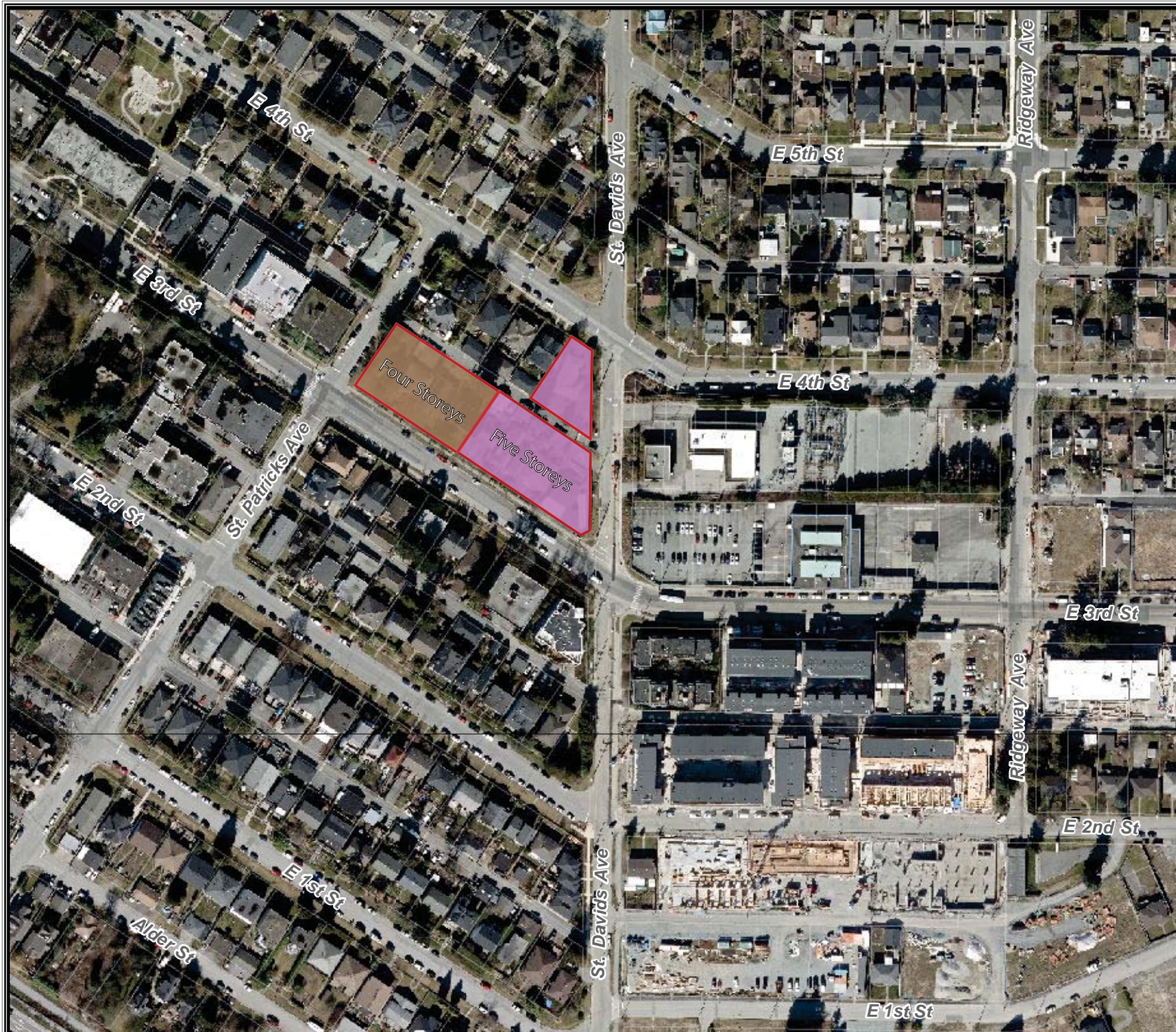
Legend

 Subject Site

Designations

 Mixed-Use Level 2

 Residential Level 5



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GIS Division, Information Technology,  
City of North Vancouver

PLOTTED: 8/18/2014  
SOURCE: SURVEY  
COORDINATE SYSTEM: NAD 83 UTM Zone 10

**city**  
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vancouver





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402-438 E 3rd St & 341-343 St Davids Ave

North Vancouver BC

DRAWING LIST

<b>Cover</b>	
A-0.000	COVER SHEET
A-0.050	DATA SHEET
A-0.100	"ZONING & OCP"
A-0.110	"SITE CONTEXT"
A-0.130	"SITE CONTEXT MAP"
A-0.140	"SUN PATH DIAGRAM"
A-0.150	"PRECEDENT IMAGES"
A-0.200	"PERSPECTIVES - EAST BUILDING"
A-0.210	"PERSPECTIVES - WEST BUILDING"
A-0.220	"PERSPECTIVES - NORTH BUILDING"
A-0.230	"PERSPECTIVES - NORTH BUILDING ADJACENCY"
A-0.240	"PERSPECTIVES - VIGNETTES"
A-0.250	"PERSPECTIVES - LANDWAY BUILDING"
A-0.300	"SURVEY (PROPOSED) 1:200"
<b>Site</b>	
A-1.000	"SITE PLAN 1/16" = 1'-0"
<b>116' Overall Plans</b>	
A-2.000	"P1 & P2 PARKING PLAN - OVERALL 1/16" = 1'-0"
A-2.010	"GROUND FLOOR PLAN - OVERALL 1/16" = 1'-0"
A-2.015	"LEVEL 1 PLAN - OVERALL 1/16" = 1'-0"
A-2.020	"LEVEL 2 PLAN - OVERALL 1/16" = 1'-0"
A-2.030	"LEVEL 3 PLAN - OVERALL 1/16" = 1'-0"
A-2.040	"LEVEL 4 PLAN - OVERALL 1/16" = 1'-0"
A-2.050	"LEVEL 5 PLAN - OVERALL 1/16" = 1'-0"
A-2.060	"ROOF PLAN - OVERALL 1/16" = 1'-0"
<b>18' Building Plans</b>	
A-2.100	"WEST BUILDING - GROUND FLOOR PLAN 1/16" = 1'-0"
A-2.110	"WEST BUILDING - LEVEL 1 PLAN 1/16" = 1'-0"
A-2.120	"WEST BUILDING - LEVEL 2 PLAN 1/16" = 1'-0"
A-2.130	"WEST BUILDING - LEVEL 3 PLAN 1/16" = 1'-0"
A-2.140	"WEST BUILDING - LEVEL 4 PLAN 1/16" = 1'-0"
A-2.150	"WEST BUILDING - LEVEL 5 ROOF PLAN 1/16" = 1'-0"
A-2.200	"EAST BUILDING - GROUND FLOOR PLAN 1/16" = 1'-0"
A-2.210	"EAST BUILDING - LEVEL 1 PLAN 1/16" = 1'-0"
A-2.220	"EAST BUILDING - LEVEL 2 PLAN 1/16" = 1'-0"
A-2.230	"EAST BUILDING - LEVEL 3 PLAN 1/16" = 1'-0"
A-2.240	"EAST BUILDING - LEVEL 4 PLAN 1/16" = 1'-0"
A-2.250	"EAST BUILDING - LEVEL 5 PLAN 1/16" = 1'-0"
A-2.260	"EAST BUILDING - LEVEL 6 ROOF PLAN 1/16" = 1'-0"
A-2.300	"NORTH BUILDING - GROUND FLOOR PLAN 1/16" = 1'-0"
A-2.310	"NORTH BUILDING - LEVEL 1 PLAN 1/16" = 1'-0"
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A-2.340	"NORTH BUILDING - LEVEL 4 PLAN 1/16" = 1'-0"
A-2.350	"NORTH BUILDING - LEVEL 5 PLAN 1/16" = 1'-0"
<b>Enlarged Plans</b>	
A-3.000	"ADAPTABLE UNITS DESIGN GUIDELINES"
A-3.001	"ADAPTABLE UNIT PLANS"
A-3.002	"ADAPTABLE UNIT PLANS"
A-3.003	"ADAPTABLE UNIT PLANS"
A-3.004	"ADAPTABLE UNIT PLANS"
<b>Elevations</b>	
A-4.000	"SITE ELEVATIONS 1/16" = 1'-0"
A-4.001	"SITE ELEVATIONS 1/16" = 1'-0"
A-4.100	"WEST BUILDING ELEVATIONS 1/16" = 1'-0"
A-4.110	"WEST BUILDING ELEVATIONS 1/16" = 1'-0"
A-4.200	"EAST BUILDING ELEVATIONS 1/16" = 1'-0"
A-4.210	"EAST BUILDING ELEVATIONS 1/16" = 1'-0"
A-4.300	"NORTH BUILDING ELEVATIONS 1/16" = 1'-0"
<b>Sections</b>	
A-5.000	"SITE SECTIONS 1/16" = 1'-0", 3/32"
A-5.001	"SITE SECTIONS 1/16" = 1'-0", 3/32"
<b>Supplemental</b>	
A-8.010	"MATERIALS FINISHES"
A-8.050	"SHADOW STUDY"
A-8.051	"SHADOW STUDY"
A-8.052	"OCP WASH SHADOW STUDY"
A-8.053	"OCP WASH SHADOW STUDY"
A-8.054	"OCP WASH SHADOW STUDY"
<b>Area Overlays</b>	
A-9.010	"LEVEL 1 AREA OVERLAY 1/16" = 1'-0"
A-9.015	"LEVEL 1 AREA OVERLAY 1/16" = 1'-0"
A-9.020	"LEVEL 2 AREA OVERLAY 1/16" = 1'-0"
A-9.030	"LEVEL 3 AREA OVERLAY 1/16" = 1'-0"
A-9.040	"LEVEL 4 AREA OVERLAY 1/16" = 1'-0"
A-9.050	"LEVEL 5 AREA OVERLAY 1/16" = 1'-0"



Cascade Green Development

402-438 E 3rd St & 341-343 St Davids Ave

North Vancouver, BC

COVER SHEET

471	(PROJECT)
Not To Scale	(SCALE)
2026-10-15	(DATE)
Issue 06 - RZ /DP Resubmission	(ISSUE)
	(DRAWING)

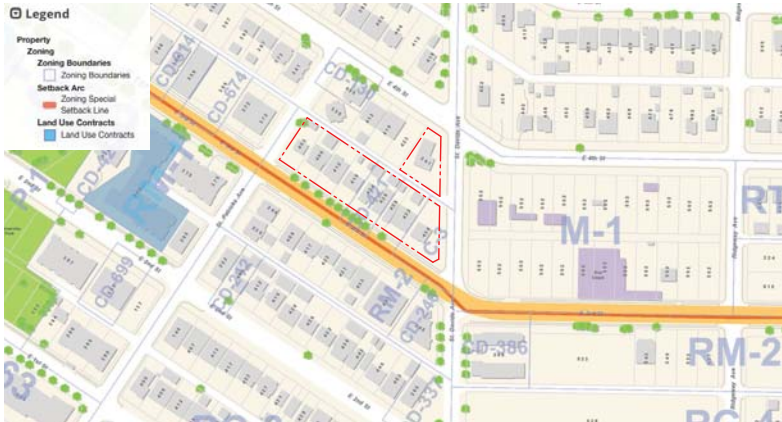
A-0.000

Issue 06 - RZ/DP RESUBMISSION

Drawings Not to Scale Unless Printed on 30" x 42" Paper







#### OCF - RESIDENTIAL LEVEL 5 + MIXED USE LEVEL 2 (MEDIUM DENSITY)

- RESIDENTIAL L5: 1.6 FSR (MAX BONUS OF 1.0 FSR)
- MIXED USE L2: 2.0 FSR (MAX BONUS OF 0.5 FSR)
- FSR BONUS WITH PUBLIC BENEFITS:
  - SECURE MARKET RENTAL HOUSING FOR NON-MARKET RENTAL
  - COMMUNITY AMENITY SPACE
  - EMPLOYMENT GENERATION
  - HERITAGE CONSERVATION
- MAX HEIGHT 4 STOREYS (12-13 METRES)

#### APPLICABLE GUIDELINES:

- 2018 DENSITY BONUS AND COMMUNITY BENEFITS POLICY
- AAA BICYCLE NETWORK FOR CITY OF NORTH VANCOUVER (ALL AGES AND ABILITIES)
- ACTIVE DESIGN GUIDELINES
- ADAPTABLE DESIGN GUIDELINES
- SUSTAINABLE DESIGN GUIDELINES
- CPTD PRINCIPLES





VIEW 1 - ST PATRICKS AVE



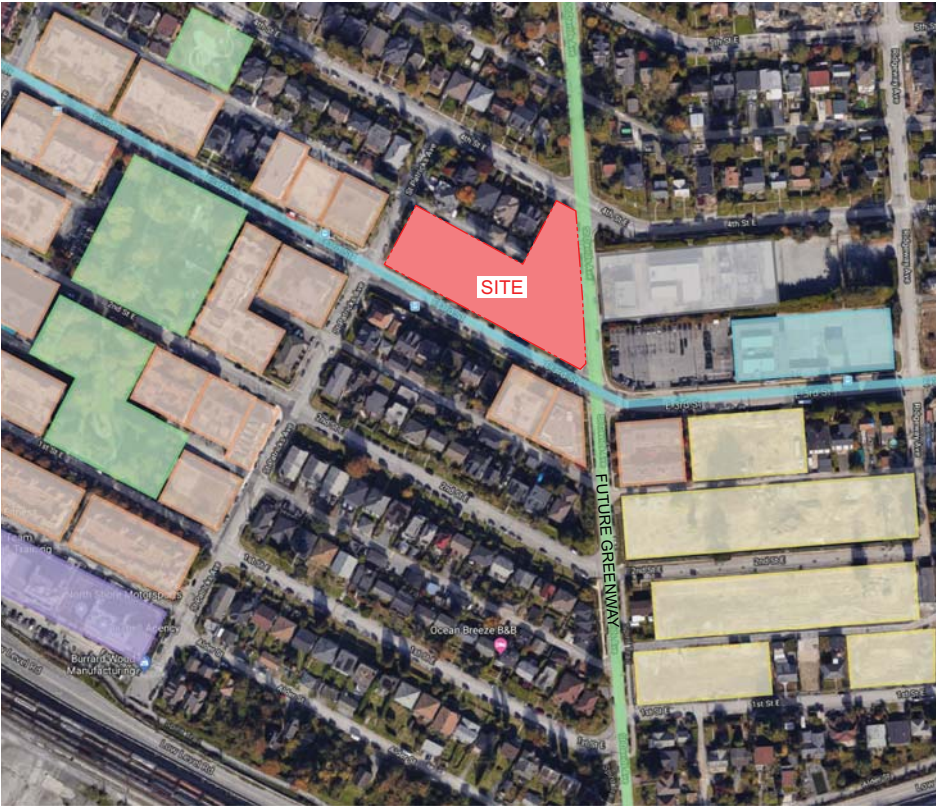
VIEW 2 - NORTH WEST CORNER










VIEW 3 - EAST LANE



VIEW 4 - SOUTH EAST CORNER



CONTEXT MAP

-  NORTH VANCOUVER TRANSIT CENTRE
-  TRANSLINK BUS ROUTE
-  DEVELOPMENT SITES
-  EXISTING MULTI-FAMILY BUILDINGS
-  SUBSTATION
-  PARKS
-  COMMERCIAL





VIEW 5 - ELEVATION ALONG EAST 4TH ST



VIEW 6 - NORTH EAST CORNER



VIEW 7 - NORTH SITE



VIEW 8 - LANE LOOKING EAST







- PARKS
- TRANSIT ROUTE
- REZONING APPLICATION
- COMMUNITY BUILDINGS
- COMMERCIAL
- MIXED-USE
- MULTI-FAMILY RESIDENTIAL
- SINGLE-FAMILY & DUPLEX RESIDENTIAL
- GREENWAY



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Vancouver, BC, V6C 1S4  
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Telephone: 604 688 4220



(PROJECT TEAM)



Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC

(TITLE)

**SITE CONTEXT  
MAP**

471 (PROJECT)

Not To Scale (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (ISSUE)

(DRAWING)

**A-0.130**





**Integra**

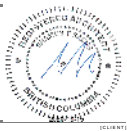
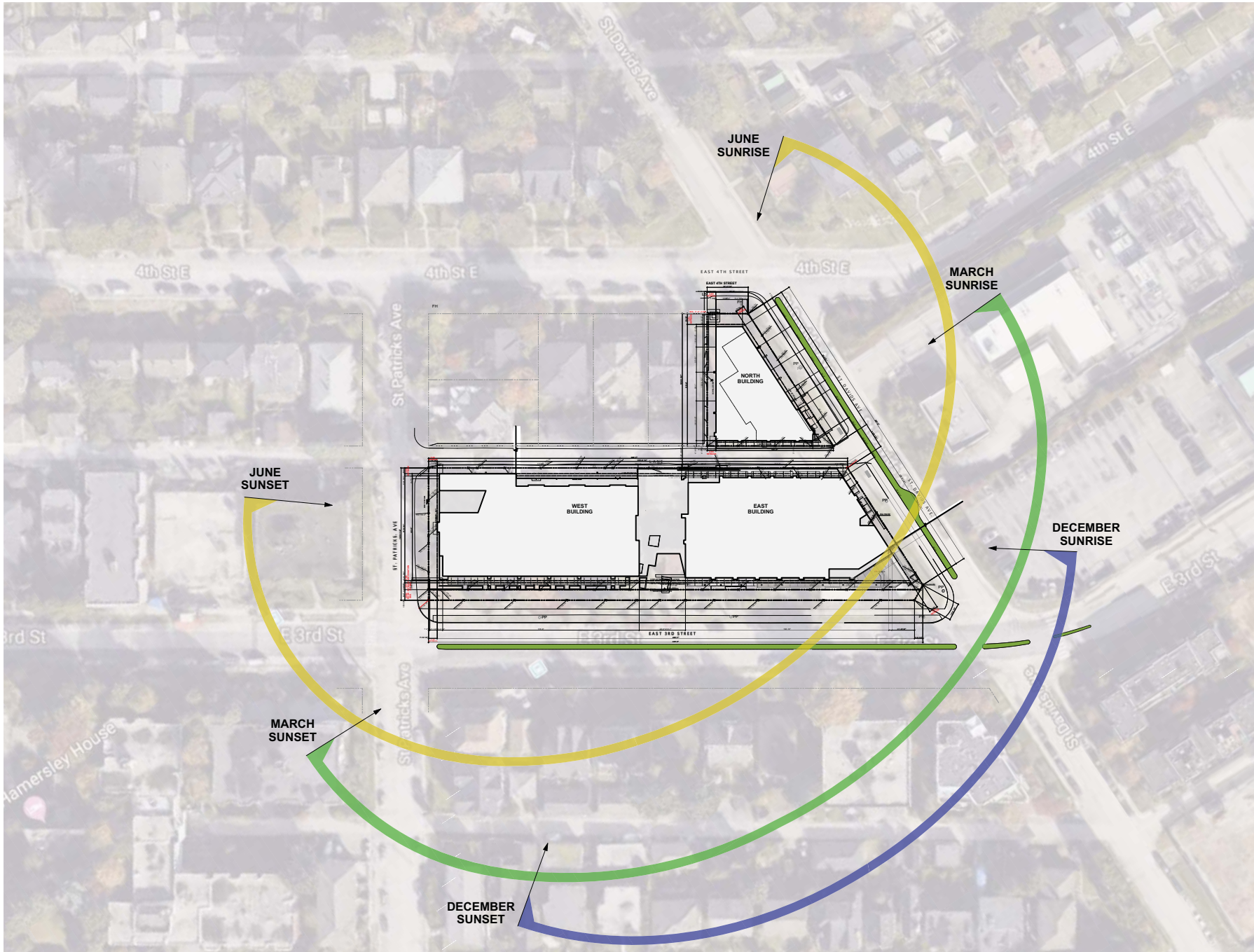
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(PROJECT TEAM)



Cascadia Green Development

(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC

(TITLE)

**SUN PATH  
DIAGRAM**

471 (PROJECT)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)





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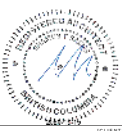
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(PROJECT TEAM)



Cascadia Green Development

(PROJECT)

402-438 E 3rd St & 341-343 St Davids Ave

North Vancouver, BC

(TITLE)

**PRECEDENT IMAGES**

471 (PROJECT)

Not To Scale (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (ISSUE)

(DRAWING)

**A-0.150**



# 1 EAST BUILDING SE CORNER



## 2 EAST/WEST BUILDING RESIDENTIAL ENTRY



## 3 EAST BUILDING COMMERCIAL FRONTAGE



## 4 EAST & NORTH BUILDING LANEWAY PAVILION

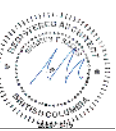
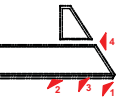


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Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
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North Vancouver, BC

(TITLE)

**PERSPECTIVES -  
EAST BUILDING**

471 (PROJECT)

Not To Scale (SCALE)

2026-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (DRAWING)

**A-0.200**



# 1 WEST BUILDING SOUTH ELEVATION



## 2 WEST BUILDING SE CORNER



## 3 WEST BUILDING SOUTH ELEVATION



## 4 WEST BUILDING LANE TOWNHOMES



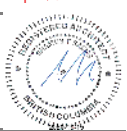
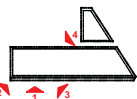
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(CLIENT)

Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave

North Vancouver, BC

(TITLE)

**PERSPECTIVES -  
WEST BUILDING**

(DRAWING)

471

Not To Scale

2026-10-15

Issue 06 - RZ /DP Resubmission

(DRAWING)

**A-0.210**



# 1 NORTH BUILDING



## 2 NORTH BUILDING



## 3 NORTH BUILDING



## 4 NORTH BUILDING



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(CLIENT)

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Development

(PROJECT)

402-438 E 3rd St &  
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North Vancouver, BC

(TITLE)

**PERSPECTIVES -  
NORTH BUILDING**

(PROJECT)

471

Not To Scale

2020-10-15

Issue 06 - RZ /DP Resubmission

(DRAWING)

**A-0.220**



# 1 NORTH BUILDING



# 2 NORTH BUILDING



# 3 NORTH BUILDING



# 4 NORTH BUILDING



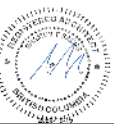
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(TITLE)

**PERSPECTIVES -  
NORTH BUILDING  
ADJACENCY**

(PROJECT)

471

Not To Scale (SCALE)

2026-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (ISSUE)

(DRAWING)

**A-0.230**





1 WEST BUILDING  
BALCONY DETAIL



2 EAST BUILDING  
LIVE/WORK FRONTAGE



3 NORTH BUILDING  
FRONT ENTRANCE



4 EAST/WEST BUILDING  
DAYCARE



5 EAST / WEST BUILDING  
ENTRY / BREEZEWAY



6 EAST BUILDING  
RESTAURANT PATIO



7 NORTH BUILDING  
ADJACENCY



8 NORTH BUILDING  
ADJACENCY



9 WEST BUILDING  
TOWNHOUSE FRONTAGE



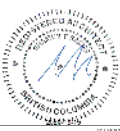
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Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
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North Vancouver, BC

(TITLE)

**PERSPECTIVES -  
VIGNETTES**

471 (PROJECT)

Not To Scale (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (ISSUE)

(DRAWING)

**A-0.240**





1 LANEWAY PAVILION



2 LANEWAY PAVILION



3 LANEWAY PAVILION



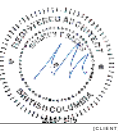
4 LANEWAY PAVILION



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Cascadia Green  
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402-438 E 3rd St &  
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North Vancouver, BC

(LOCATION)

**PERSPECTIVES -  
LANEWAY  
PAVILION**

(TITLE)

471

(PROJECT)

Not To Scale

(SCALE)

2026-10-15

(DATE)

Issue 06 - RZ /DP Resubmission

(DRAWING)

**A-0.260**





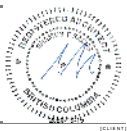
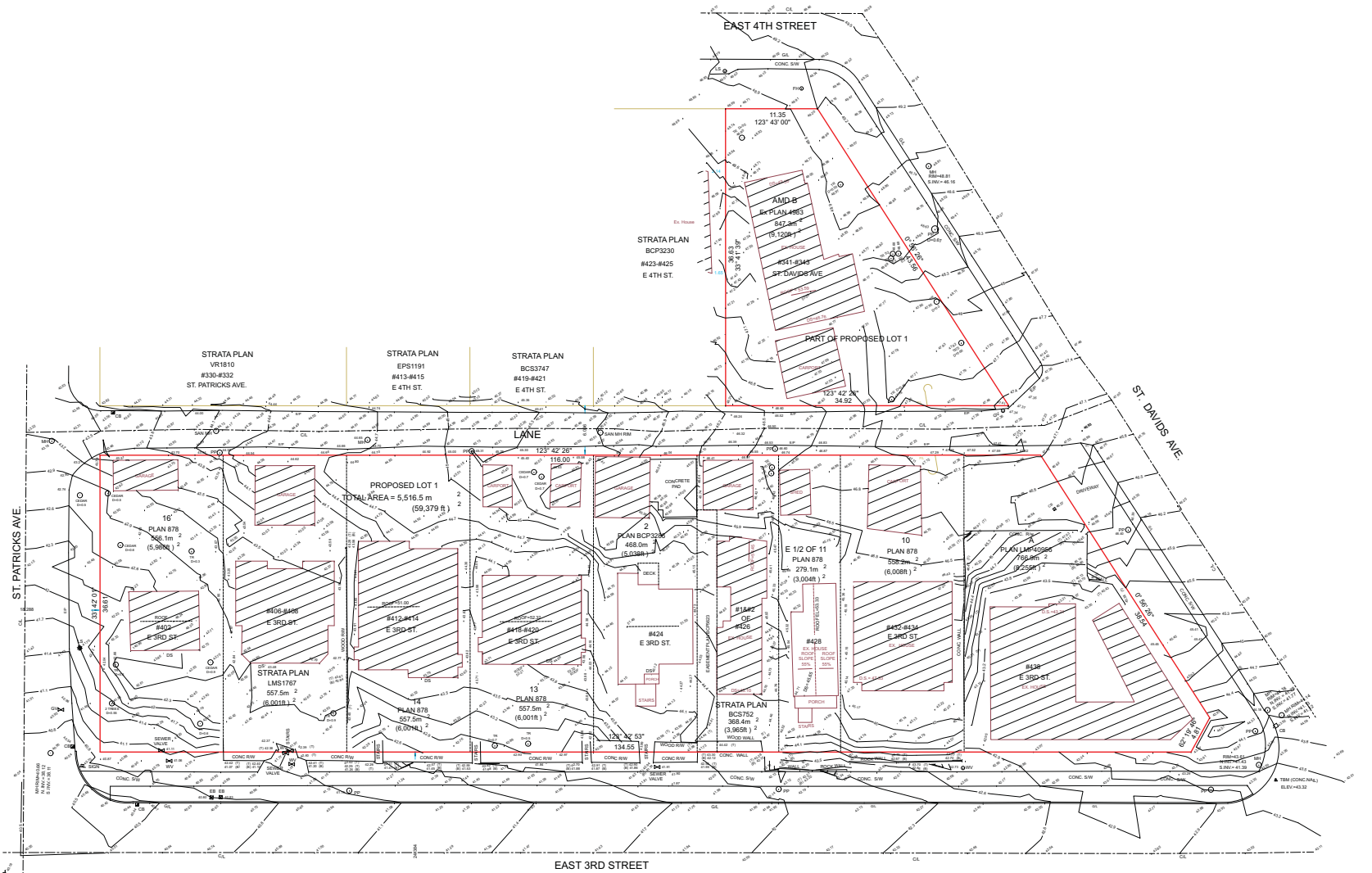
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(PROJECT)



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**SURVEY  
(REFERENCE)**

471 (PROJECT)

1:200 (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /OP Resubmission (REVISION)

A-0.300 (DRAWING)

**A-0.300**



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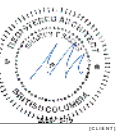
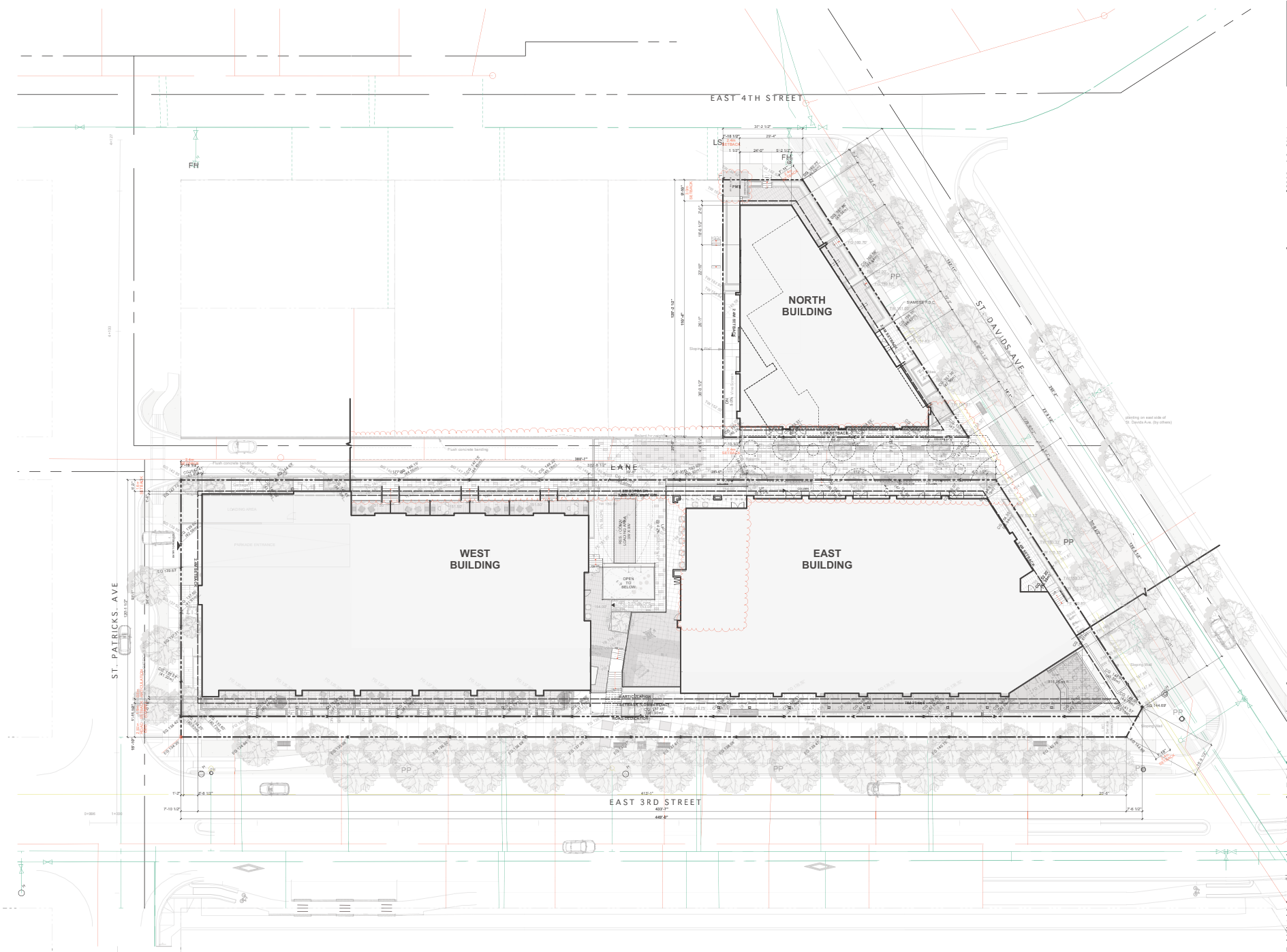
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**Cascadia Green Development**

(PROJECT)

**402-438 E 3rd St &  
341-343 St Davids Ave**

North Vancouver, BC

(TITLE)

**SITE PLAN**

471 (PROJECT)

1/16" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-1.000**

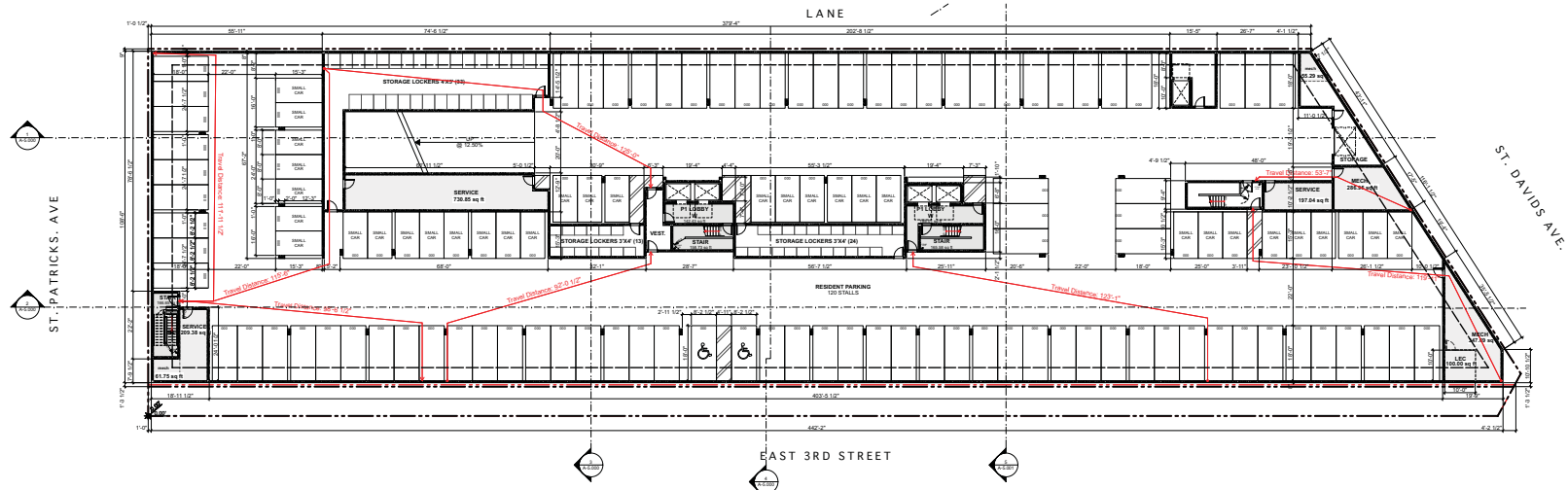


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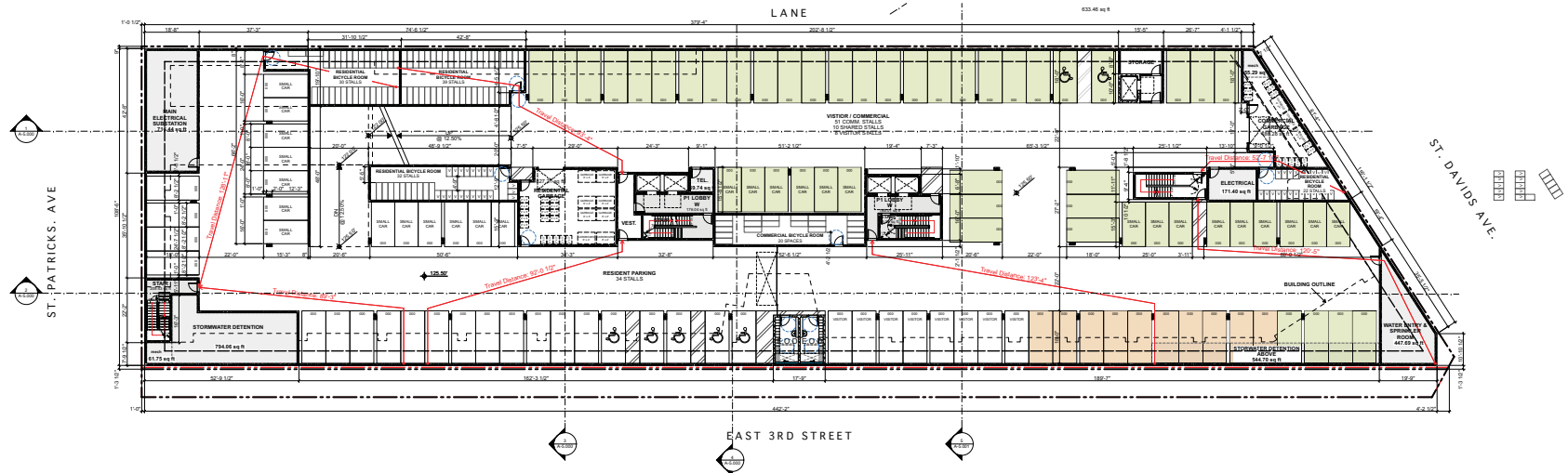
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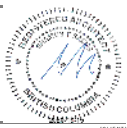
**P2 Parking Plan**  
SCALE: 1/16" = 1'-0"



**P1 Parking Plan**  
SCALE: 1/16" = 1'-0"



**LEGEND**  
SCALE: 1/16" = 1'-0"



(COLLATOR)

**Cascadia Green Development**  
(PROJECT)

**402-438 E 3rd St &  
341-343 St Davids Ave**  
North Vancouver, BC

(TITLE)

**P1 & P2 PARKING PLAN - OVERALL**

**471** (PROJECT)

**1/16" = 1'-0"** (SCALE)

**2028-10-15** (DATE)

**Issue 06 - RZ /DP Resubmission** (REVISION)

(DRAWING)

**A-2.000**



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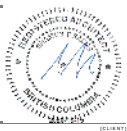
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(PROJECT TEAM)

GFA		
LEVEL	BLDG	AREA
Ground Floor		
	WEST	33,755.83
Level 1		
	EAST	15,380.44
	NORTH	6,025.03
	WEST	17,135.29
Level 2		
	EAST	17,387.90
	NORTH	6,625.14
	WEST	18,284.51
Level 3		
	EAST	17,321.75
	NORTH	4,985.44
	WEST	18,048.22
Level 4		
	EAST	16,982.60
	NORTH	4,162.75
	WEST	15,991.47
Level 5		
	EAST	15,766.52
	WEST	164.25
	WEST	456.87
		208,468.11 sq ft



Cascadia Green Development

(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave

North Vancouver, BC

(TITLE)

## GROUND FLOOR PLAN - OVERALL

471 (PROJECT)

1/16" = 1'-0" (SCALE)

2028-10-15 (DATE)

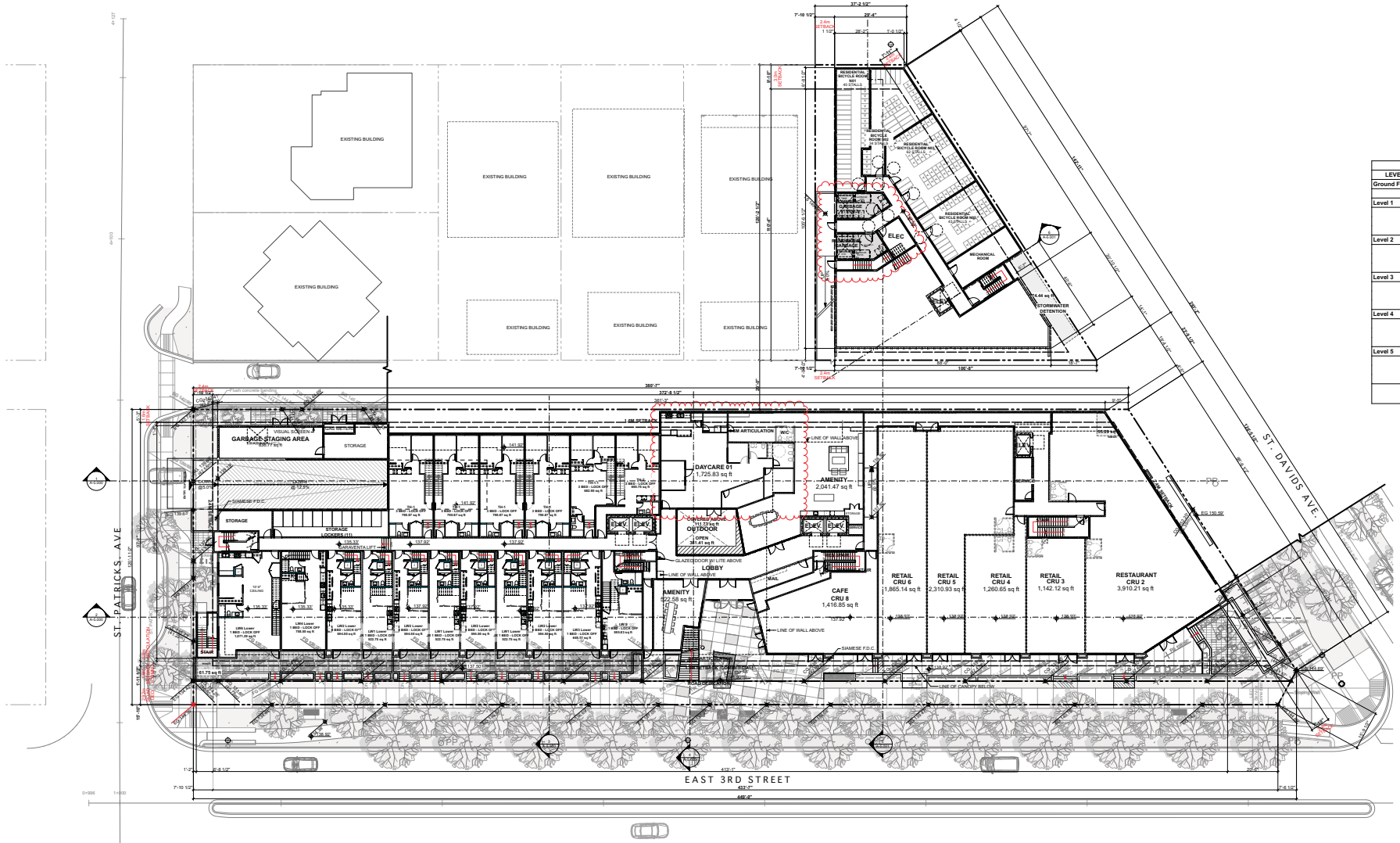
Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

A-2.010

## Ground Floor Plan - Overall

SCALE: 1/16" = 1'-0"







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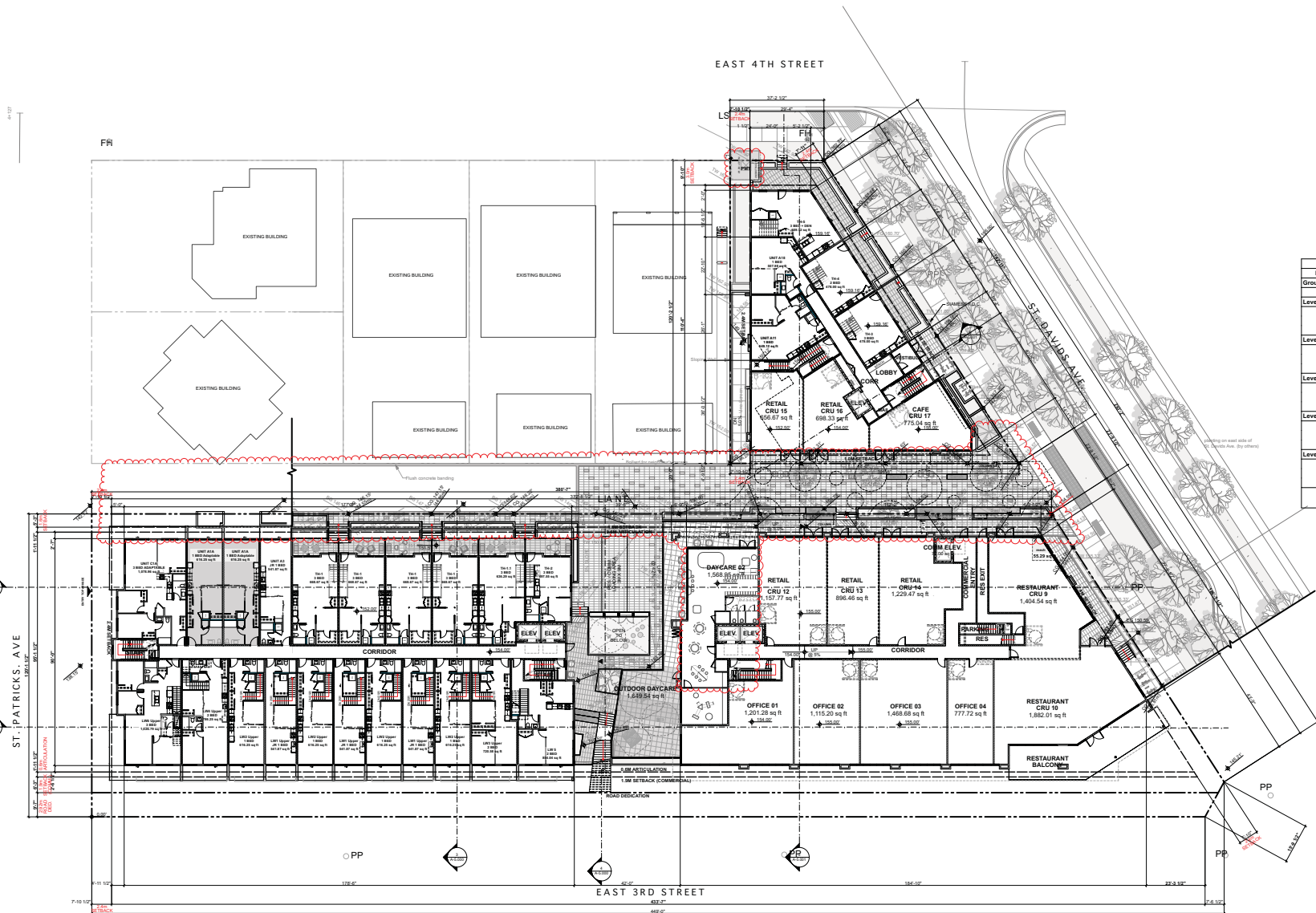
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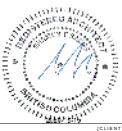
(PROJECT TEAM)

GFA		
LEVEL	BLDG	AREA
Ground Floor		
	WEST	33,755.83
Level 1		
	EAST	15,380.44
	NORTH	6,025.93
	WEST	17,138.29
Level 2		
	EAST	17,387.80
	NORTH	6,625.14
	WEST	18,284.51
Level 3		
	EAST	17,321.75
	NORTH	4,985.44
	WEST	18,048.22
Level 4		
	EAST	16,982.60
	NORTH	4,162.75
	WEST	15,991.47
Level 5		
	EAST	15,768.52
	WEST	164.25
	WEST	486.87
		208,468.11 sq ft



Level 1 Plan - Overall

SCALE: 1/16" = 1'-0"



Cascadia Green Development

402-438 E 3rd St & 341-343 St Davids Ave

North Vancouver, BC

**LEVEL 1 PLAN - OVERALL**

471 (PROJECT)

1/16" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.015**



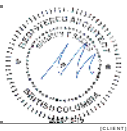
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(PROJECT TEAM)

GFA		
LEVEL	BLDG	AREA
Ground Floor		
	WEST	33,755.83
Level 1		
	EAST	15,380.44
	NORTH	6,025.03
	WEST	17,138.29
Level 2		
	EAST	17,387.90
	NORTH	6,625.14
	WEST	18,284.51
Level 3		
	EAST	17,321.75
	NORTH	4,985.44
	WEST	18,048.22
Level 4		
	EAST	16,982.60
	NORTH	4,162.75
	WEST	15,991.47
Level 5		
	EAST	15,766.52
	WEST	164.25
	WEST	456.87
		208,468.11 sq ft



Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
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North Vancouver, BC

(TITLE)

**LEVEL 2 PLAN -  
OVERALL**

471 (PROJECT)

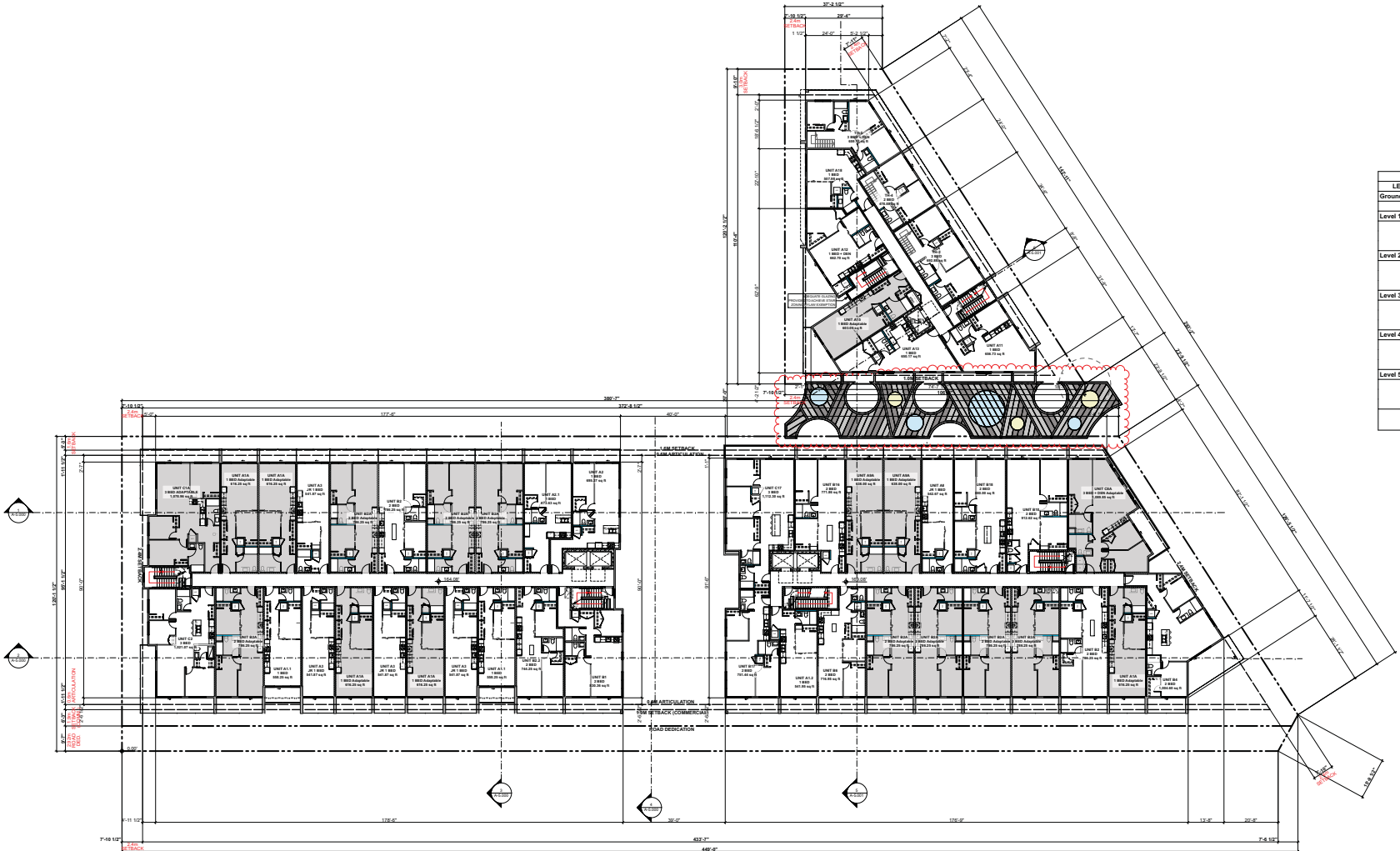
1/16" = 1'-0" (SCALE)

2028-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.020**



Level 2 Plan - Overall

SCALE: 1/16" = 1'-0"



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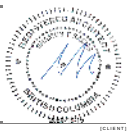
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(PROJECT TEAM)

GFA		
LEVEL	BLDG	AREA
Ground Floor		
	WEST	33,755.83
Level 1		
	EAST	15,580.44
	NORTH	6,025.03
	WEST	17,135.29
Level 2		
	EAST	17,587.00
	NORTH	6,625.14
	WEST	18,284.51
Level 3		
	EAST	17,521.75
	NORTH	4,985.44
	WEST	18,048.22
Level 4		
	EAST	16,982.60
	NORTH	4,162.75
	WEST	15,991.47
Level 5		
	EAST	15,766.52
	WEST	164.25
	WEST	456.87
		208,468.11 sq ft



(COLLECT)

Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave

North Vancouver, BC

(TITLE)

LEVEL 3 PLAN -  
OVERALL

(SCALE)

1/16" = 1'-0"

(DATE)

2022-10-15

(ISSUE)

Issue 06 - RZ /DP Resubmission

(DRAWING)

A-2.030

Level 3 Plan - Overall

SCALE: 1/16" = 1'-0"



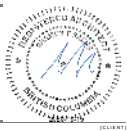
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(PROJECT TEAM)

GFA		
LEVEL	BLDG	AREA
Ground Floor		
	WEST	33,755.83
Level 1		
	EAST	15,380.44
	NORTH	6,025.03
	WEST	17,138.29
Level 2		
	EAST	17,387.90
	NORTH	6,625.14
	WEST	18,284.51
Level 3		
	EAST	17,321.75
	NORTH	4,985.44
	WEST	18,048.22
Level 4		
	EAST	16,982.60
	NORTH	4,162.75
	WEST	15,991.47
Level 5		
	EAST	15,766.52
	WEST	164.25
	WEST	456.87
		208,468.11 sq ft



Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC

(TITLE)

**LEVEL 4 PLAN - OVERALL**

471 (PROJECT)

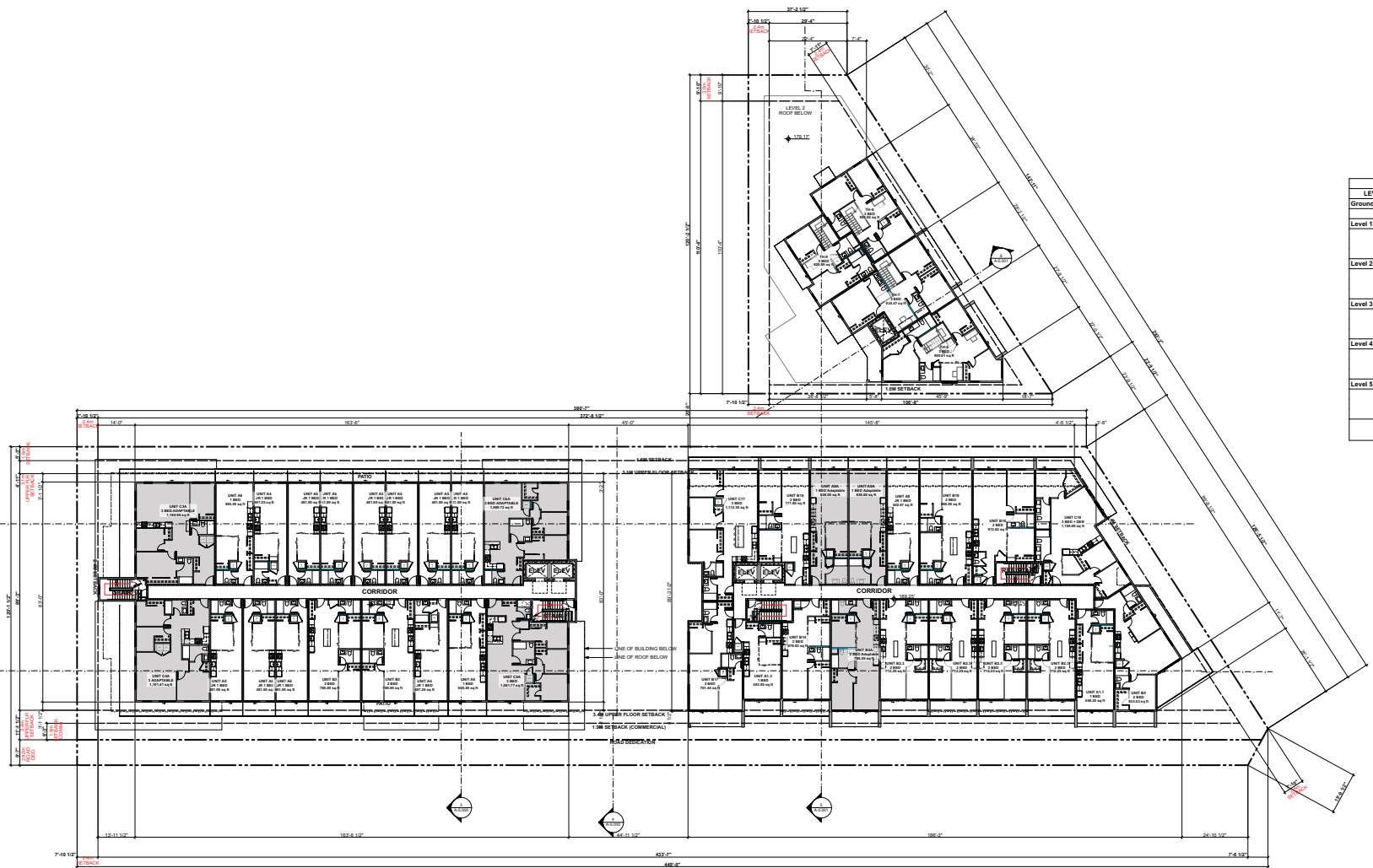
1/16" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.040**



Level 4 Plan - Overall  
SCALE: 1/16" = 1'-0"





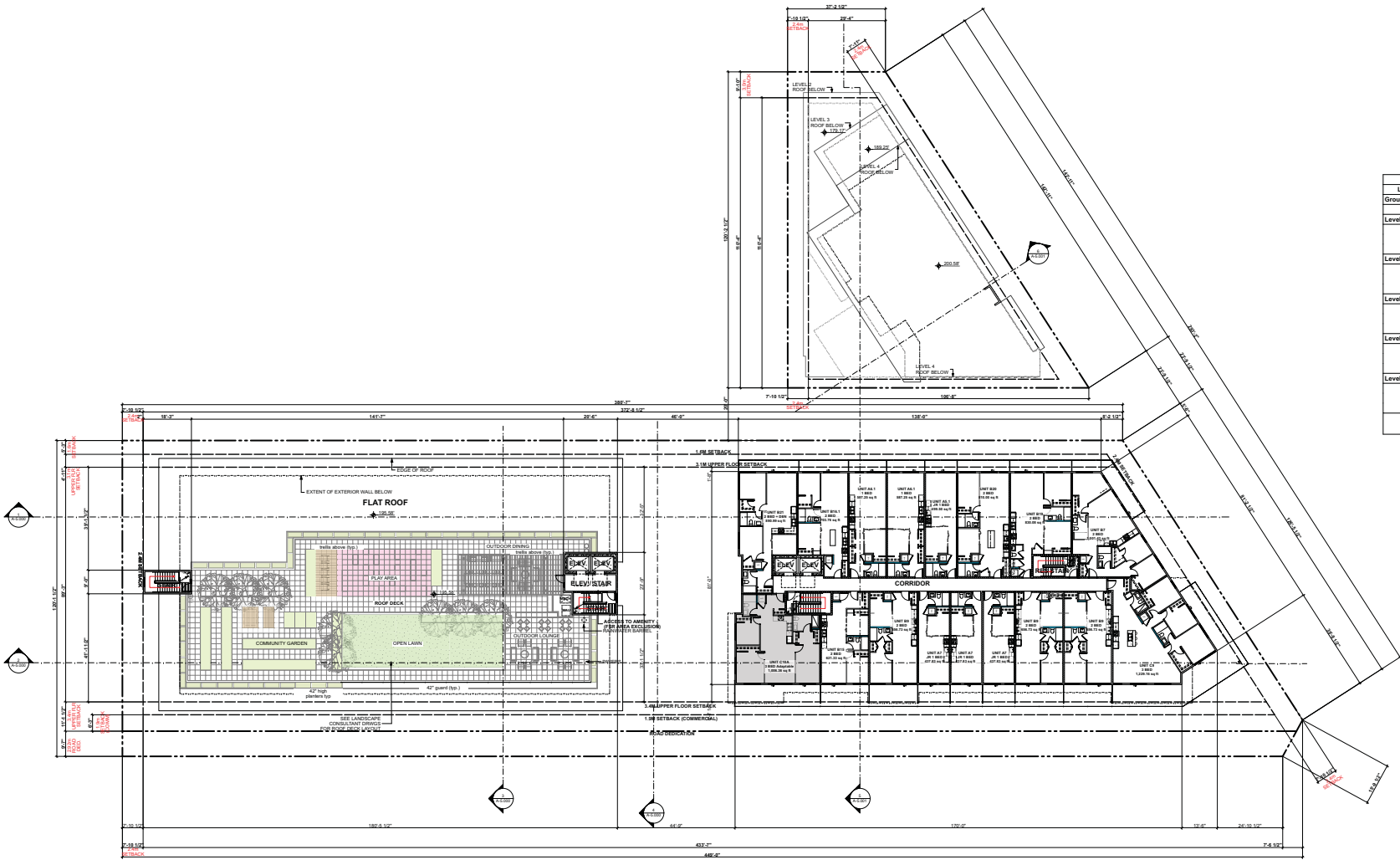
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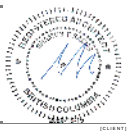


(PROJECT TEAM)

GFA		
LEVEL	BLDG	AREA
Ground Floor		
	WEST	33,755.83
Level 1		
	EAST	15,580.44
	NORTH	6,025.03
	WEST	17,135.29
Level 2		
	EAST	17,387.90
	NORTH	6,625.14
	WEST	18,284.51
Level 3		
	EAST	17,321.75
	NORTH	4,985.44
	WEST	18,048.22
Level 4		
	EAST	16,982.60
	NORTH	4,162.75
	WEST	15,991.47
Level 5		
	EAST	15,766.52
	WEST	164.25
	WEST	456.87
		208,468.11 sq ft



Level 5 Plan - Overall  
SCALE: 1/16" = 1'-0"



Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave

North Vancouver, BC

(TITLE)

LEVEL 5 PLAN -  
OVERALL

471 (PROJECT)

1/16" = 1'-0" (SCALE)

2022-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

A-2.050



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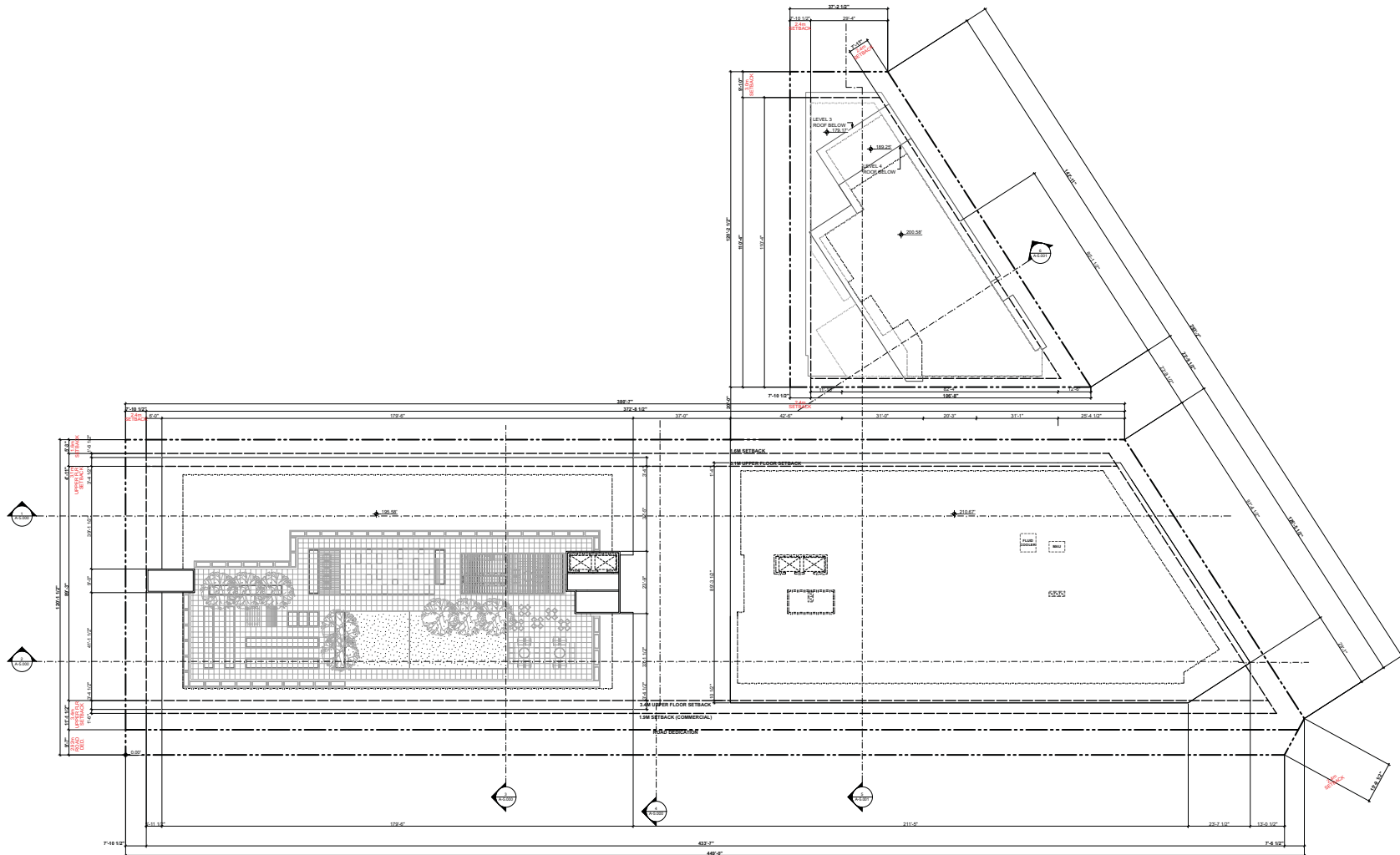
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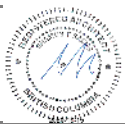


(PROJECT TEAM)



Roof Plan - Overall

SCALE: 1/16" = 1'-0"



(COLLATERAL)

Cascadia Green  
Development

(PROJECT)

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North Vancouver, BC

(TITLE)

**ROOF PLAN -  
OVERALL**

471 (PROJECT)

1/16" = 1'-0" (SCALE)

2020-10-15 (DATE)

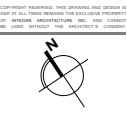
Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

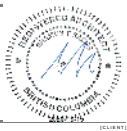
**A-2.060**



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Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
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North Vancouver, BC

(PROJECT)

**WEST BUILDING -  
GROUND FLOOR  
PLAN**

471 (PROJECT)

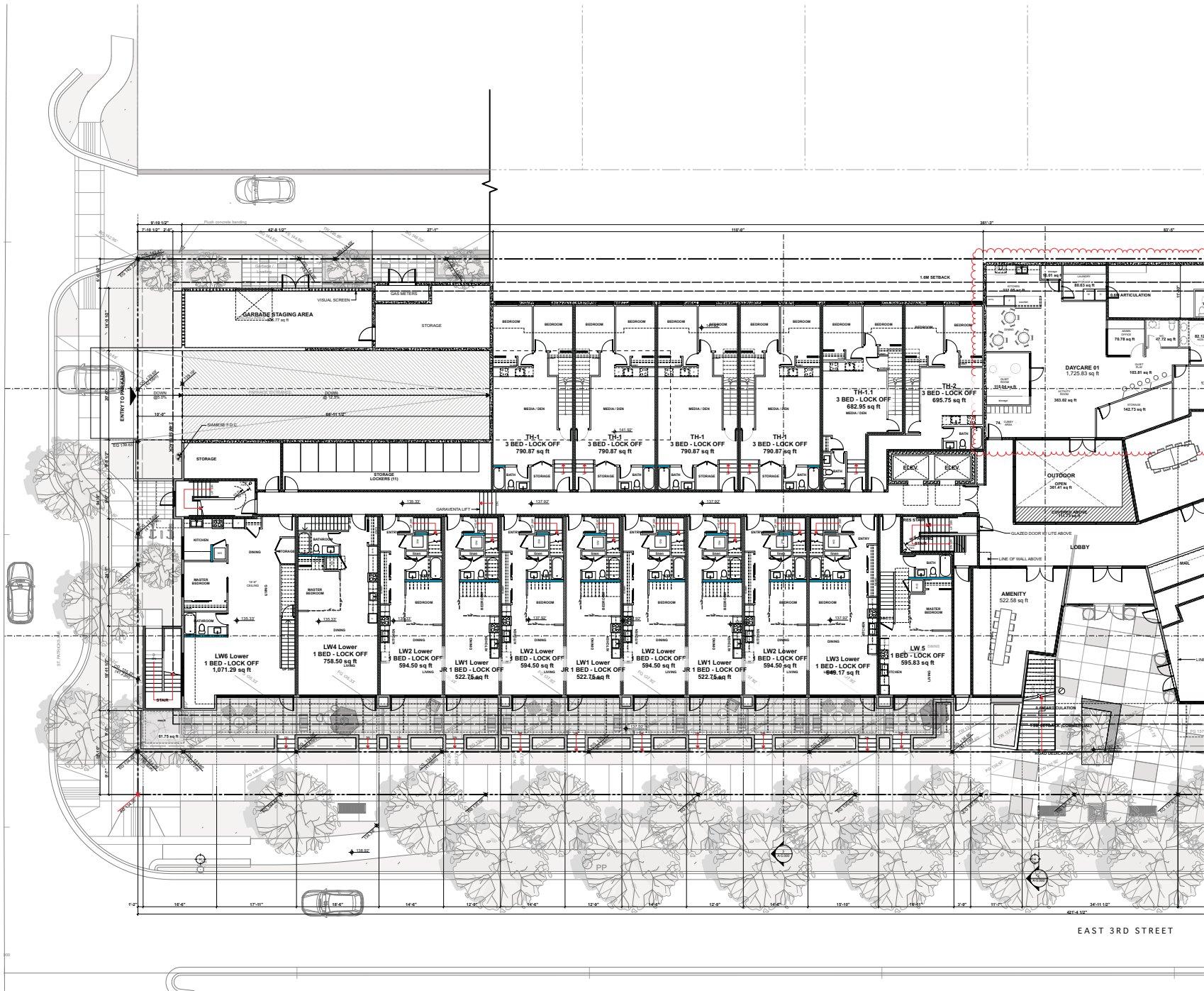
1/8" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.100**



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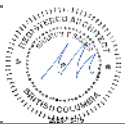
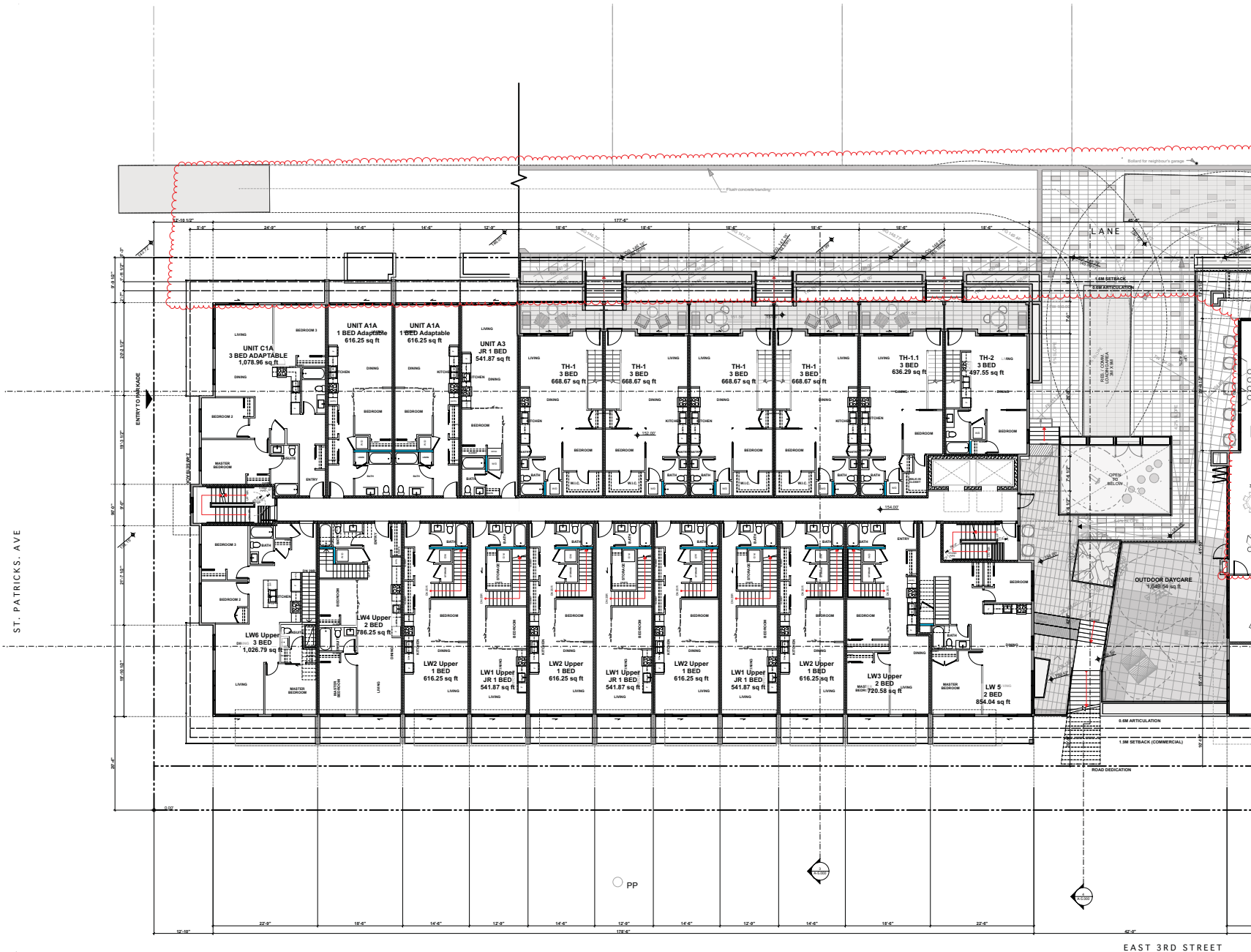
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Development

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North Vancouver, BC

(TITLE)

**WEST BUILDING -  
LEVEL 1 PLAN**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.110**





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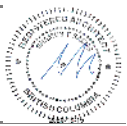
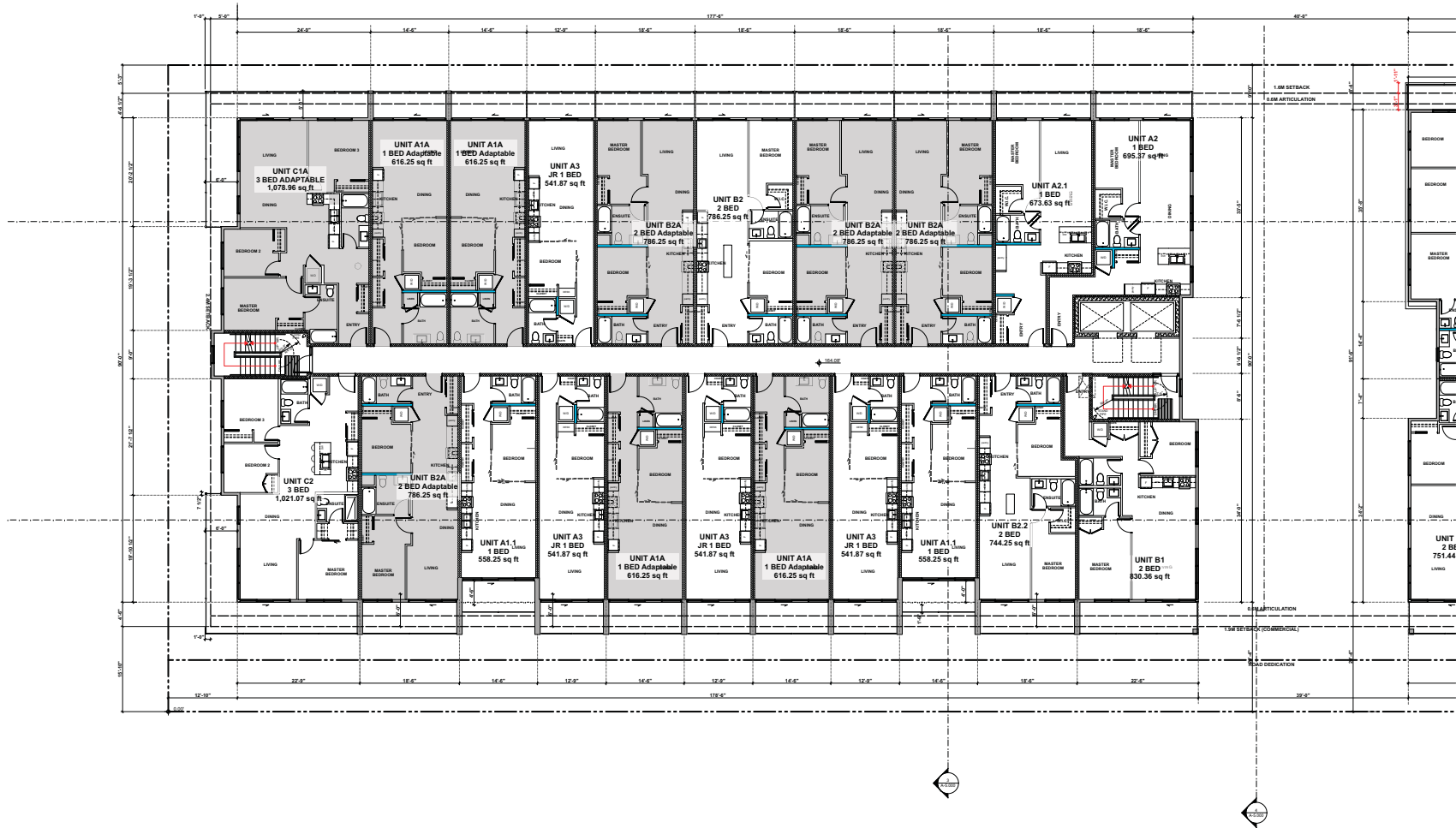
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Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave

North Vancouver, BC

(TITLE)

**WEST BUILDING -  
LEVEL 2 PLAN**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.120**



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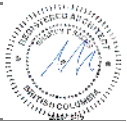
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402-438 E 3rd St &  
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North Vancouver, BC

(TITLE)

**WEST BUILDING -  
LEVEL 3 PLAN**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.130**



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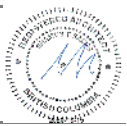
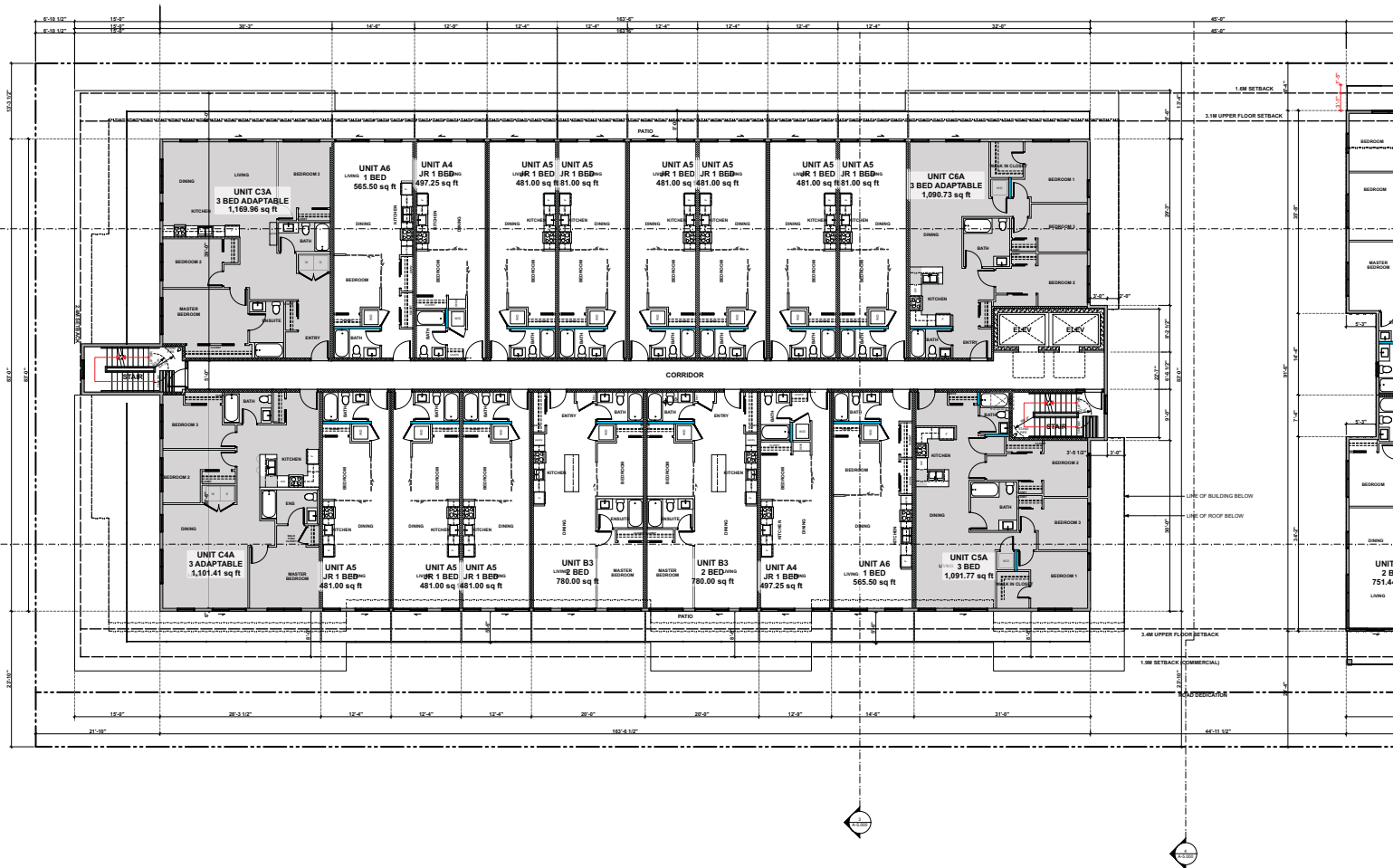
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Cascadia Green  
Development

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North Vancouver, BC

**WEST BUILDING -  
LEVEL 4 PLAN**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2022-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.140**



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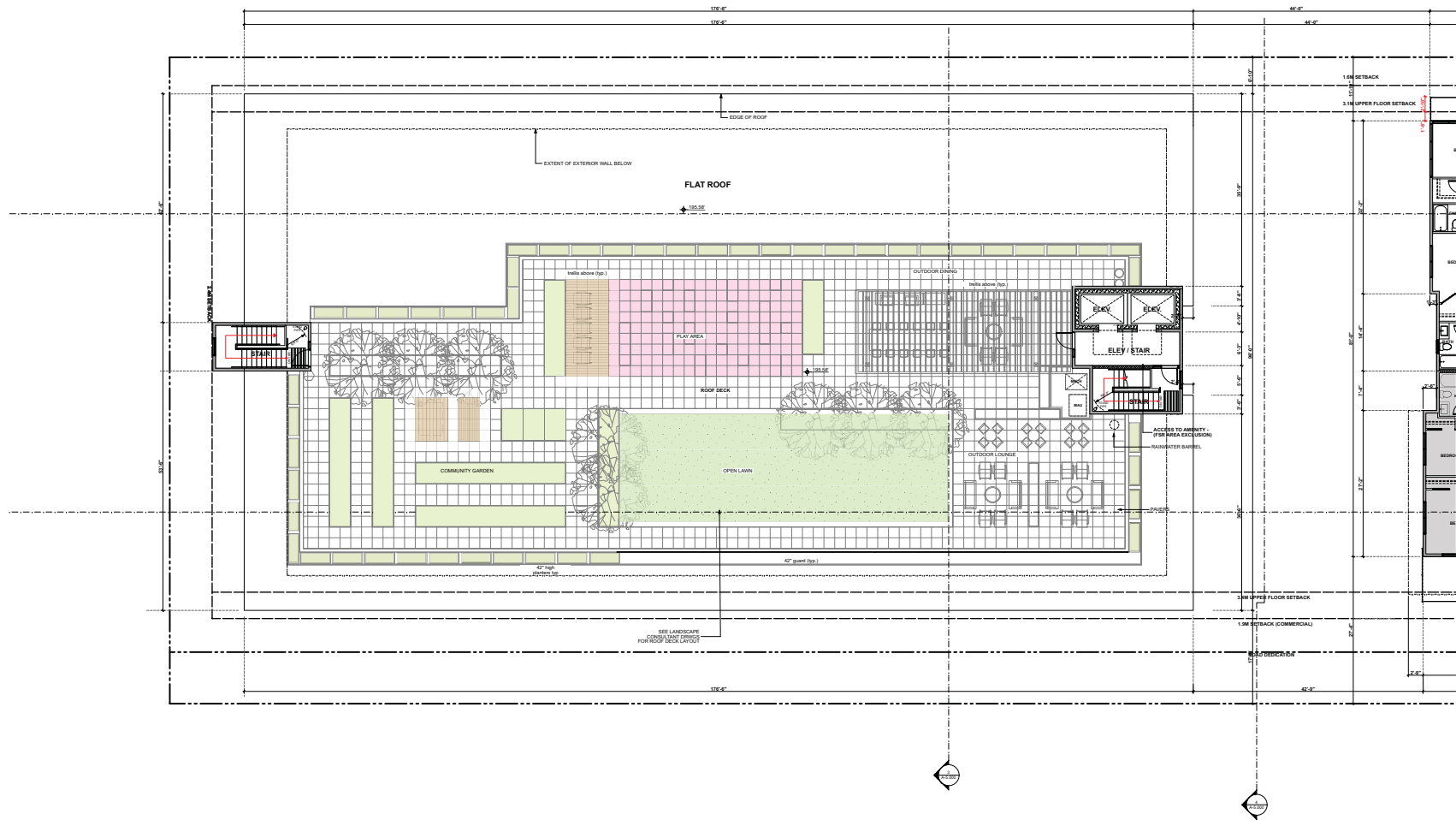
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(CLIENT)

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Development

(PROJECT)

402-438 E 3rd St &  
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North Vancouver, BC

(TITLE)

**WEST BUILDING -  
LEVEL 5 ROOF  
PLAN**

(PROJECT)

471

(SCALE)

1/8" = 1'-0"

(DATE)

2020-10-15

(REVISION)

Issue 06 - RZ /DP Resubmission

(DRAWING)

**A-2.150**





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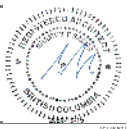
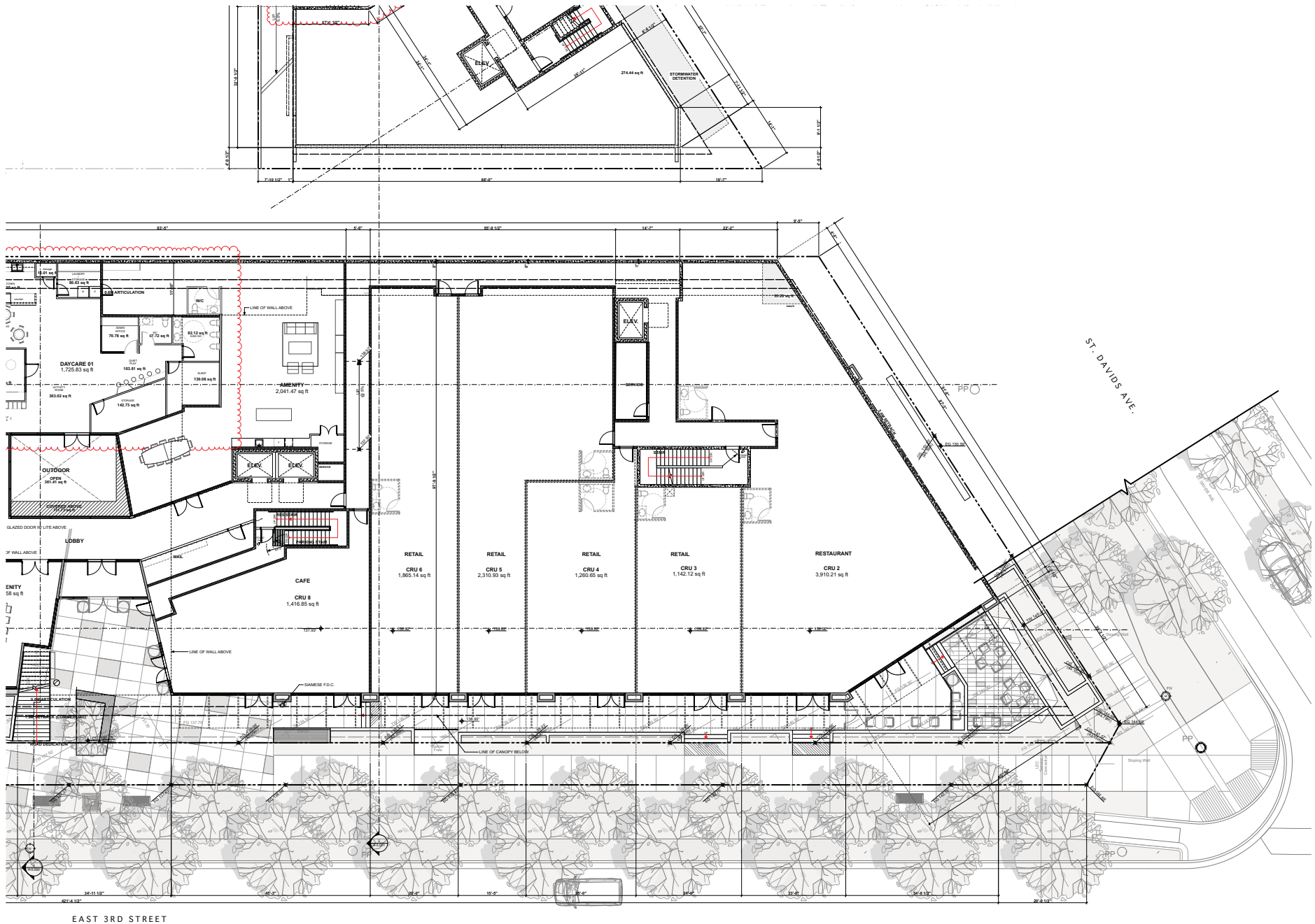
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**EAST BUILDING -  
GROUND FLOOR  
PLAN**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.200**



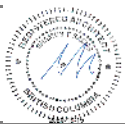
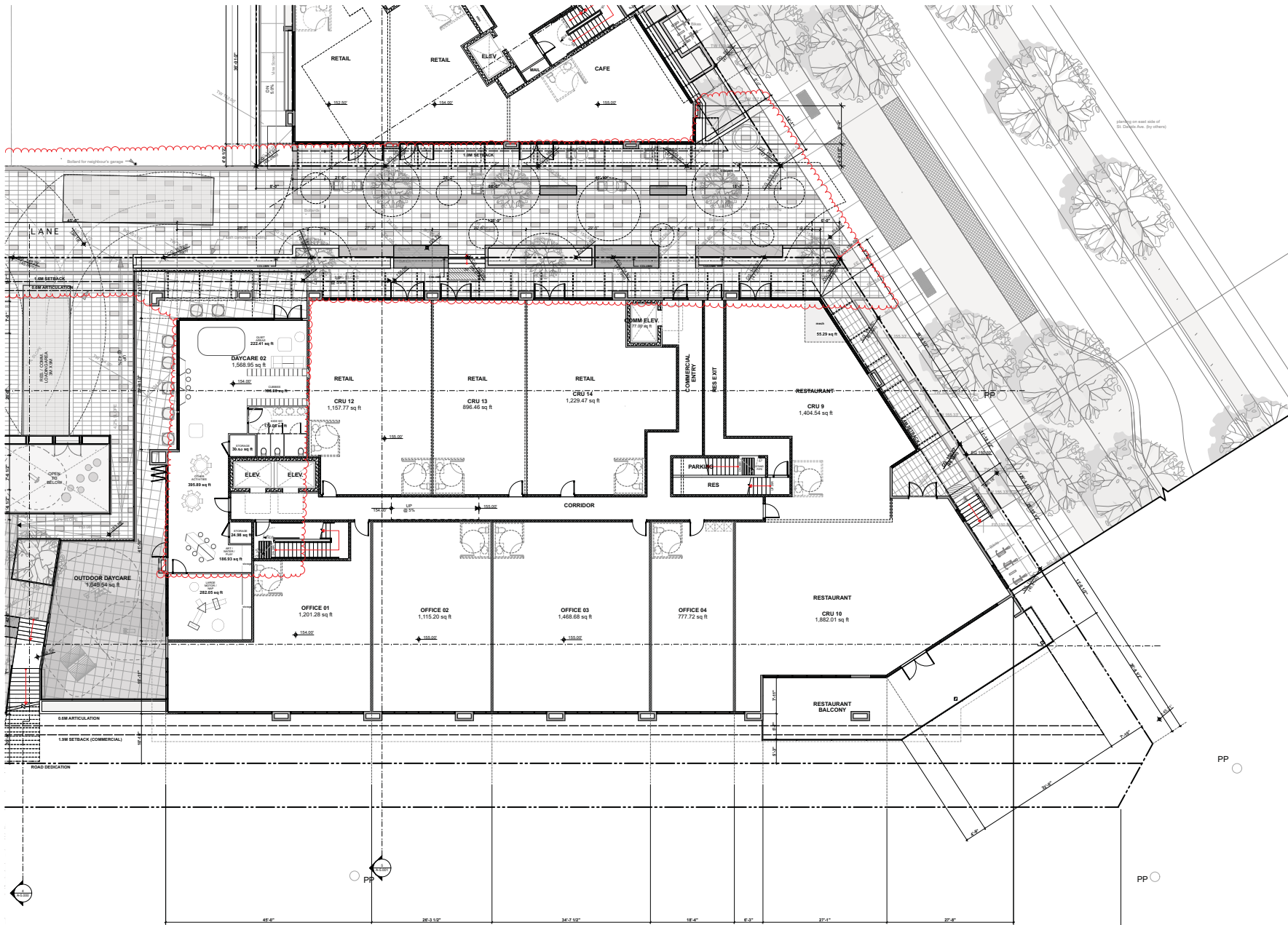
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(PROJECT)

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(TITLE)

**EAST BUILDING -  
LEVEL 1 PLAN**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2028-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.210**



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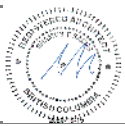
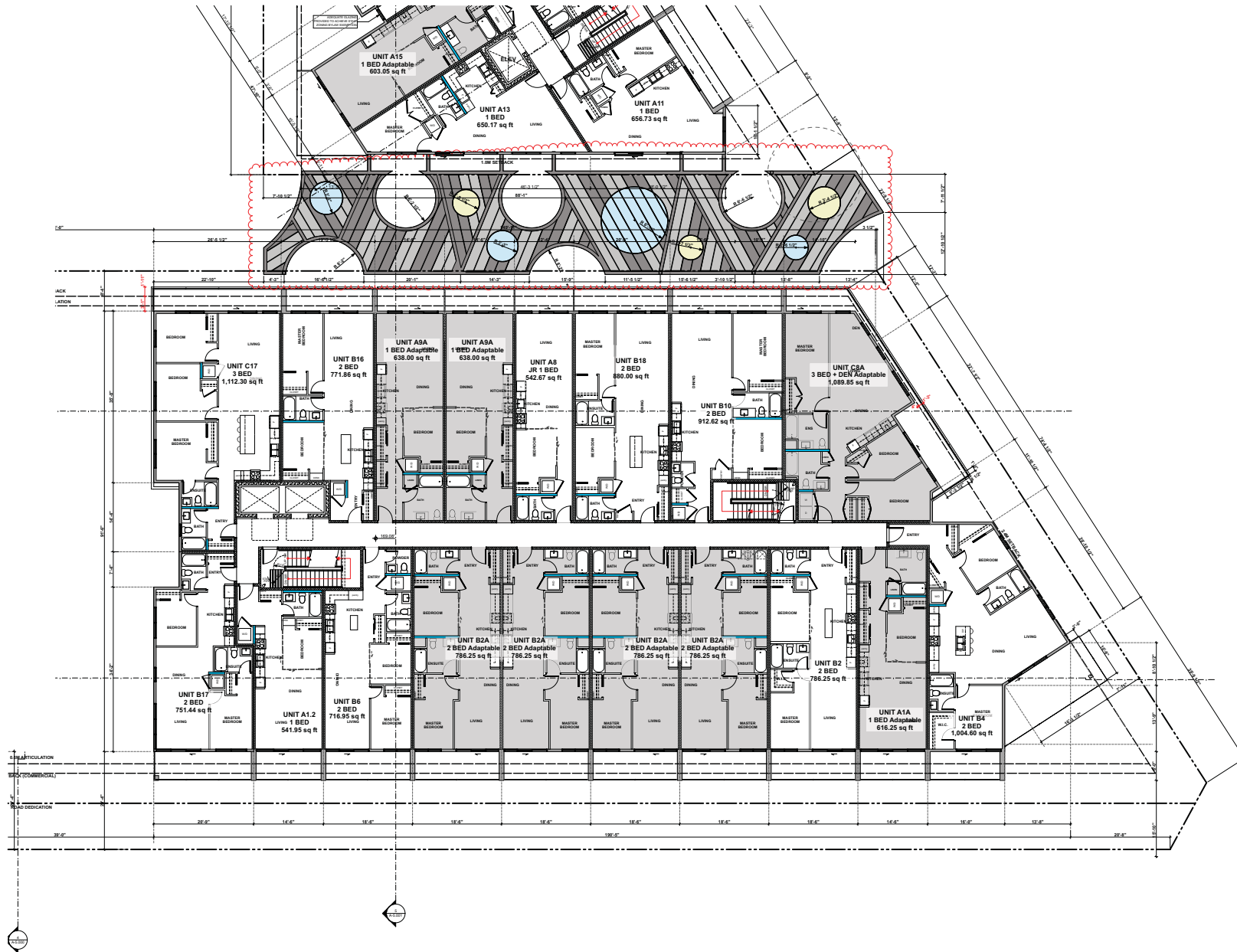
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(COLLATOR)

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(PROJECT)

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(TITLE)

**EAST BUILDING -  
LEVEL 2 PLAN**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

A-2.220 (DRAWING)

**A-2.220**



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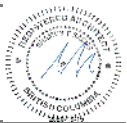
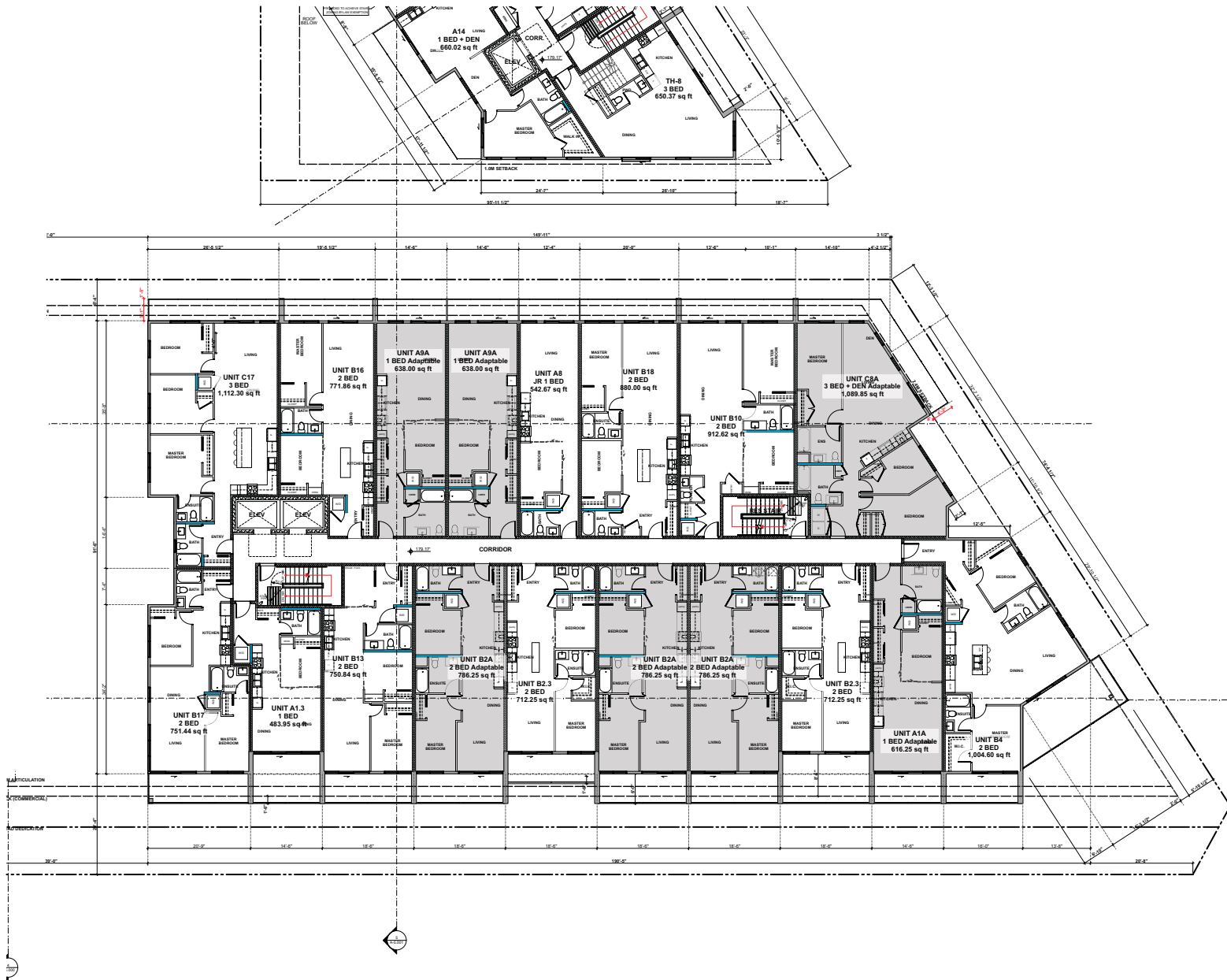
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Development

(PROJECT)

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North Vancouver, BC

(TITLE)

**EAST BUILDING -  
LEVEL 3 PLAN**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.230**





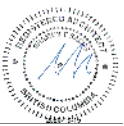
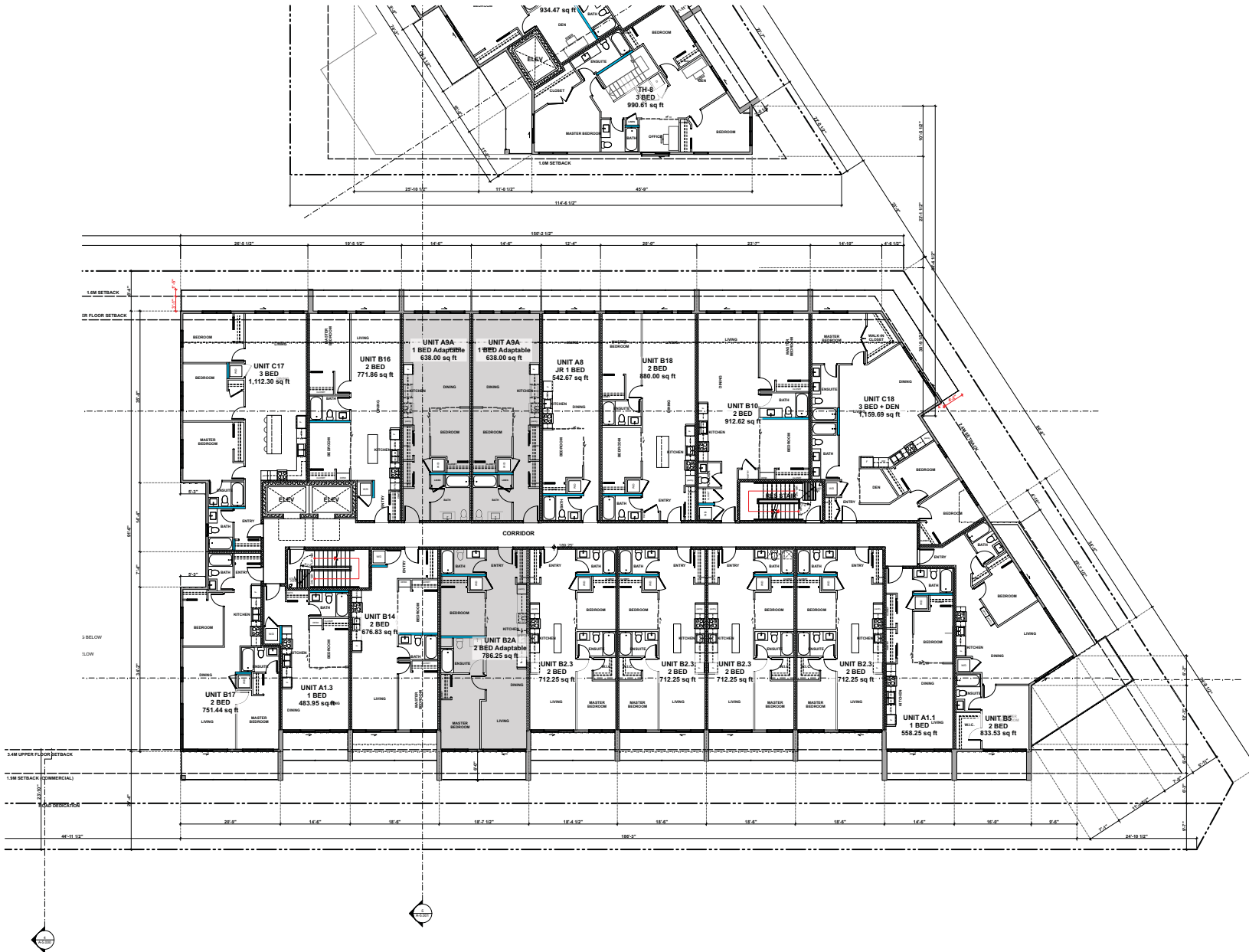
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Development

(PROJECT)

402-438 E 3rd St &  
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North Vancouver, BC

(TITLE)

**EAST BUILDING -  
LEVEL 4 PLAN**

471 (PROJECT)

Not To Scale (SCALE)

2022-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-2.240**



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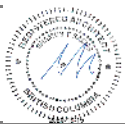
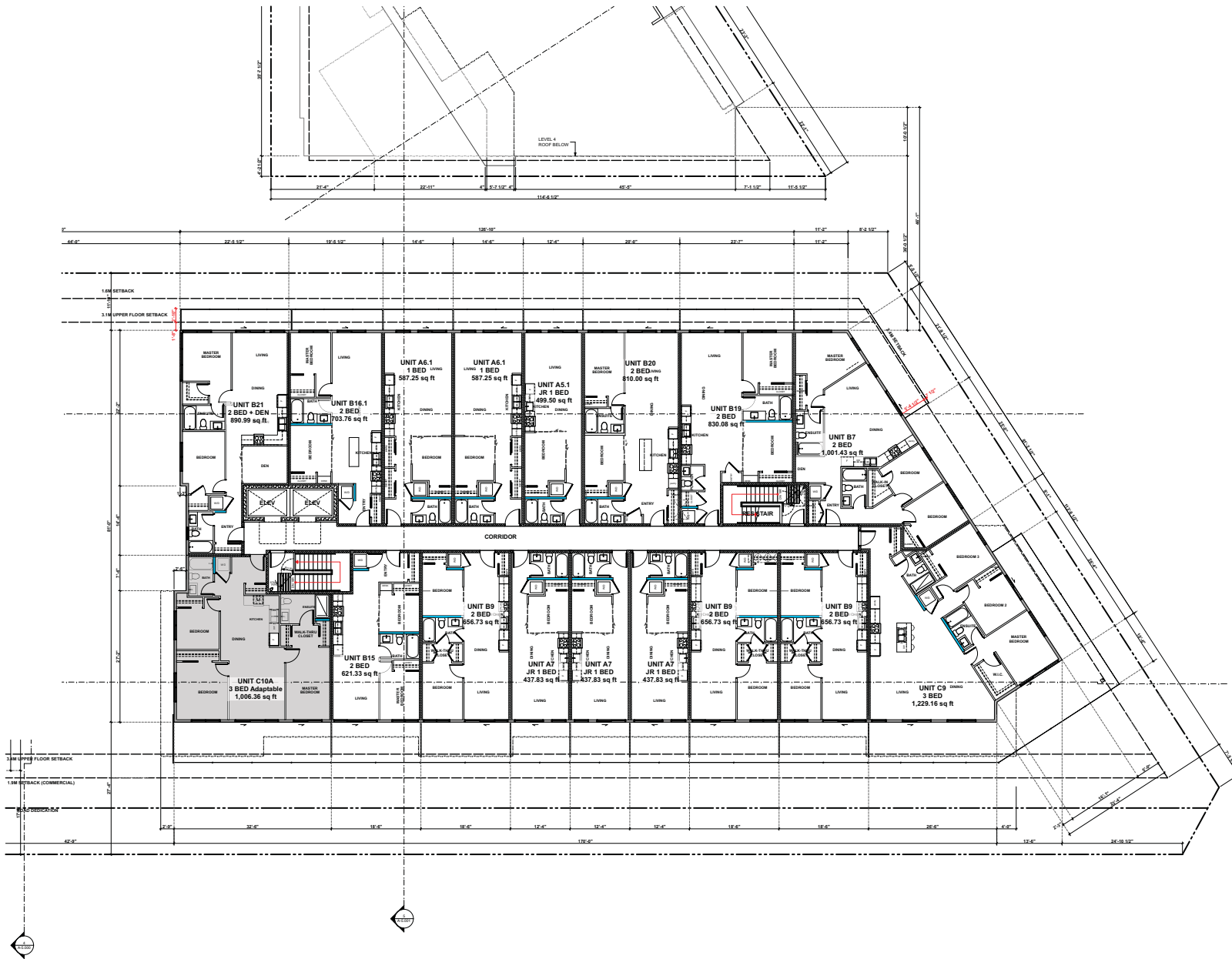
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(COLLATE)

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(TITLE)

**EAST BUILDING -  
LEVEL 5 PLAN**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2020-10-15 (DATE)

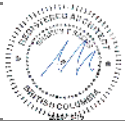
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(DRAWING)

**A-2.250**



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**Cascadia Green  
Development**

[PROJECT]

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North Vancouver, BC

EAST BUILDING -

**LEVEL 6 ROOF  
PLAN**

471 [PROJECT]

1/8" = 1'-0" [SCALE]

2020-10-15 [DATE]

Issue 06 - RZ /DP Resubmission

**A-2.260**

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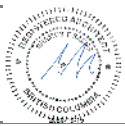
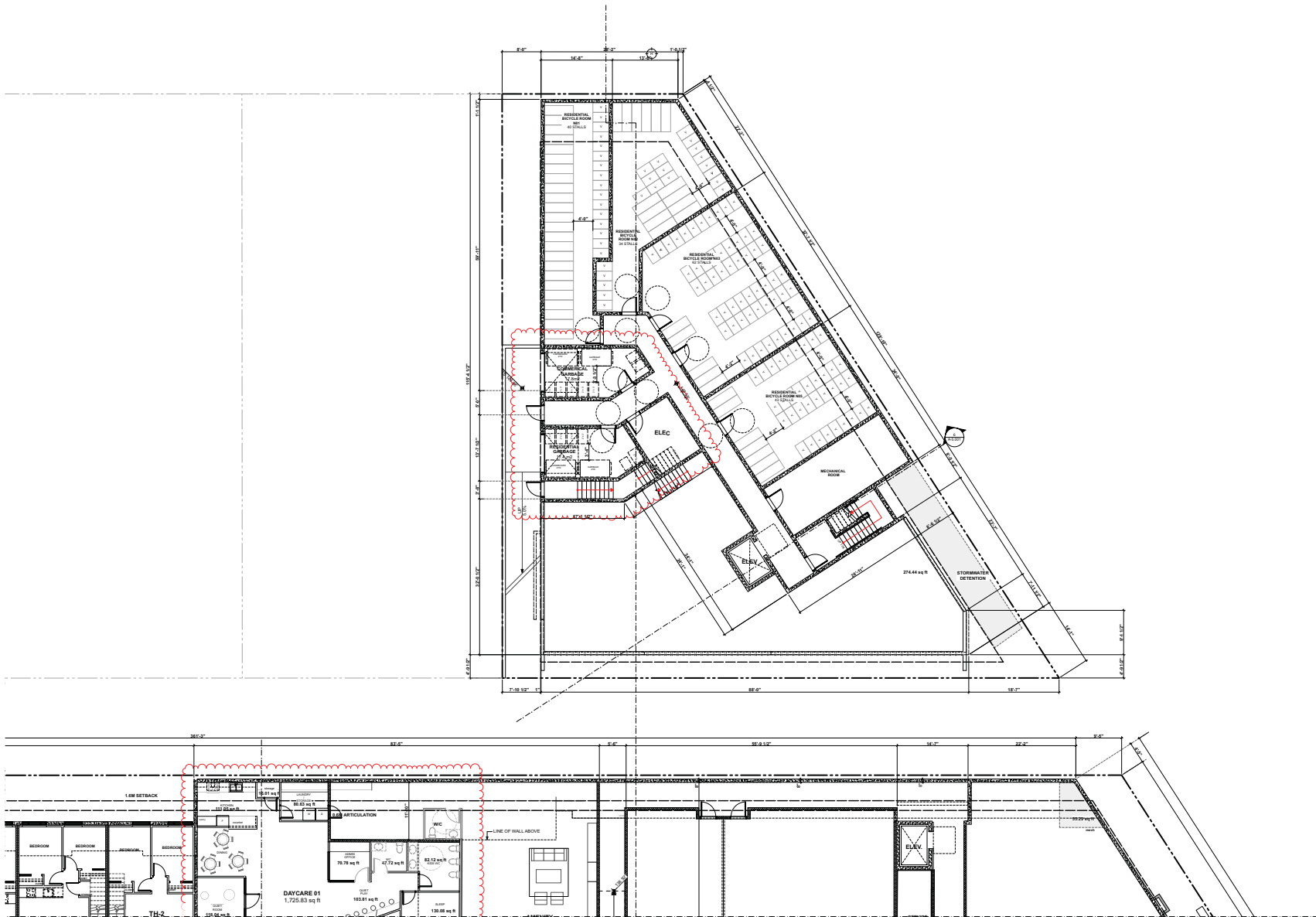
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PROJECT TEAM



PROJECT TEAM



STEPHEN COULSON

ARCHITECT

PROJECT TEAM

PROJECT TEAM

PROJECT TEAM

PROJECT TEAM

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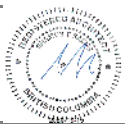
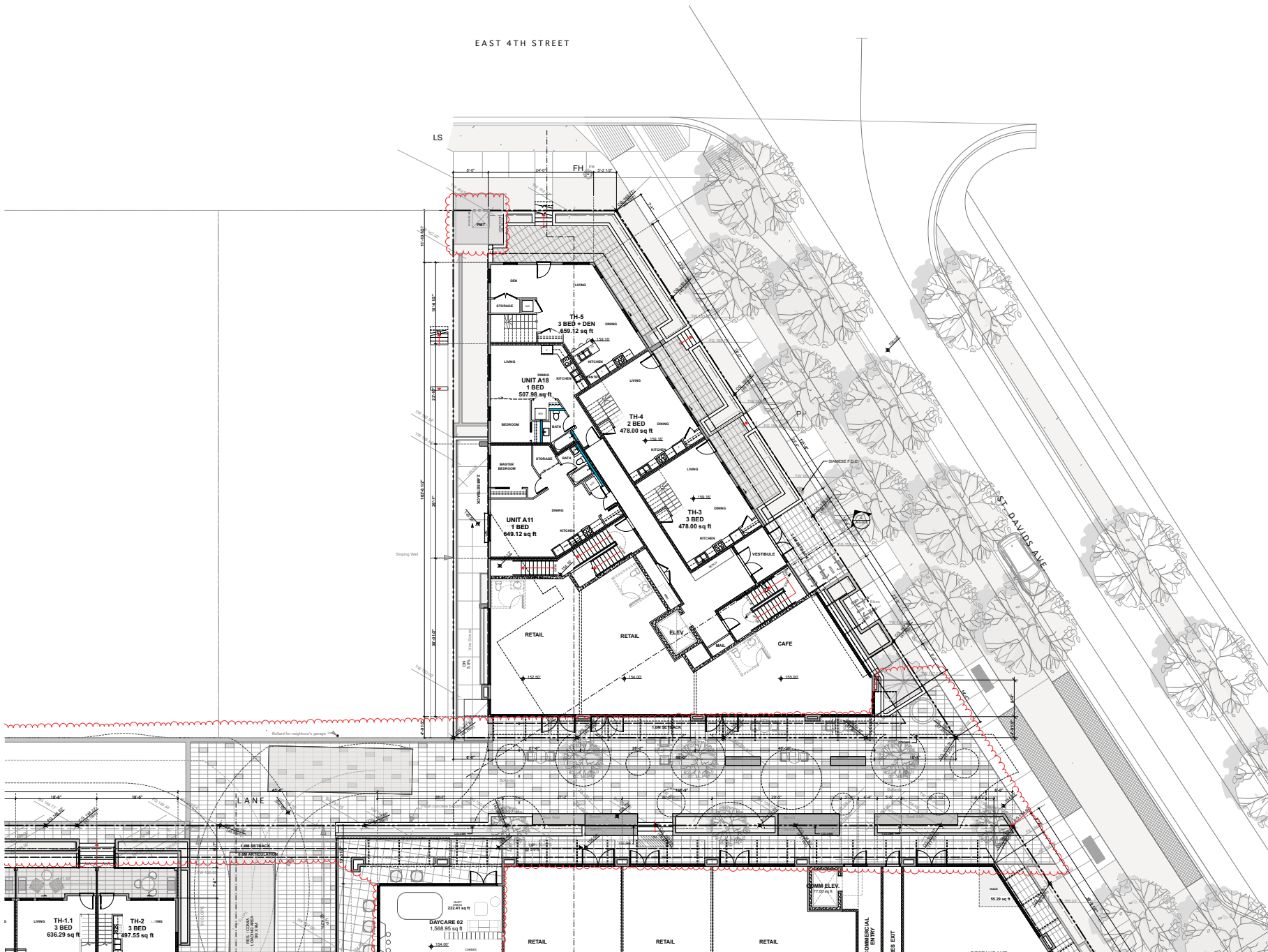
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(CLIENT)

Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
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North Vancouver, BC

(TITLE)

**NORTH BUILDING  
- LEVEL 1 PLAN**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2022-10-15 (DATE)

COORDINATION (DRAWING)

**A-2.310**



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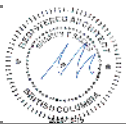
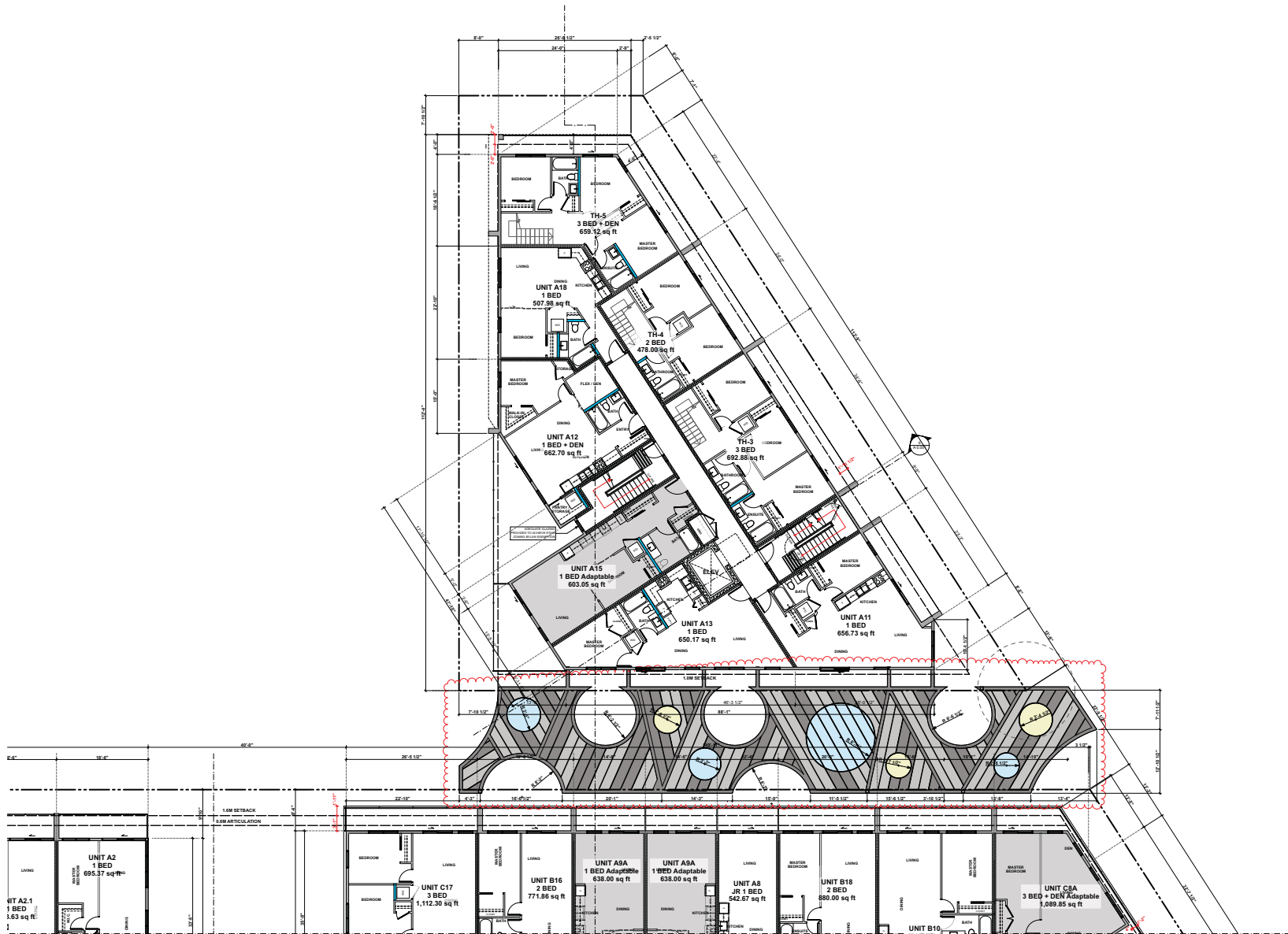
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DATE: 2020-10-15

PROJECT TEAM



(PROJECT TEAM)



(COLLATOR)

Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave

North Vancouver, BC

(TITLE)

**NORTH BUILDING  
- LEVEL 2 PLAN**

(SCALE)

471

1/8" = 1'-0"

2020-10-15

Issue 06 - RZ /DP Resubmission

(DRAWING)

A-2.320



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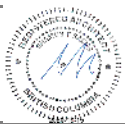
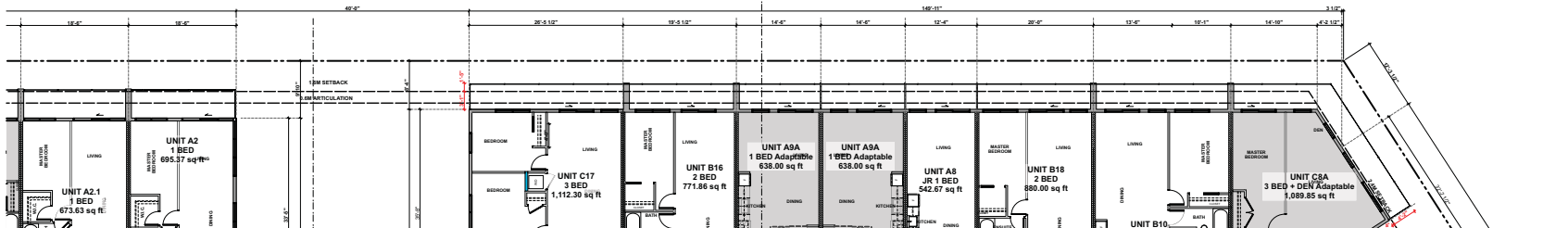
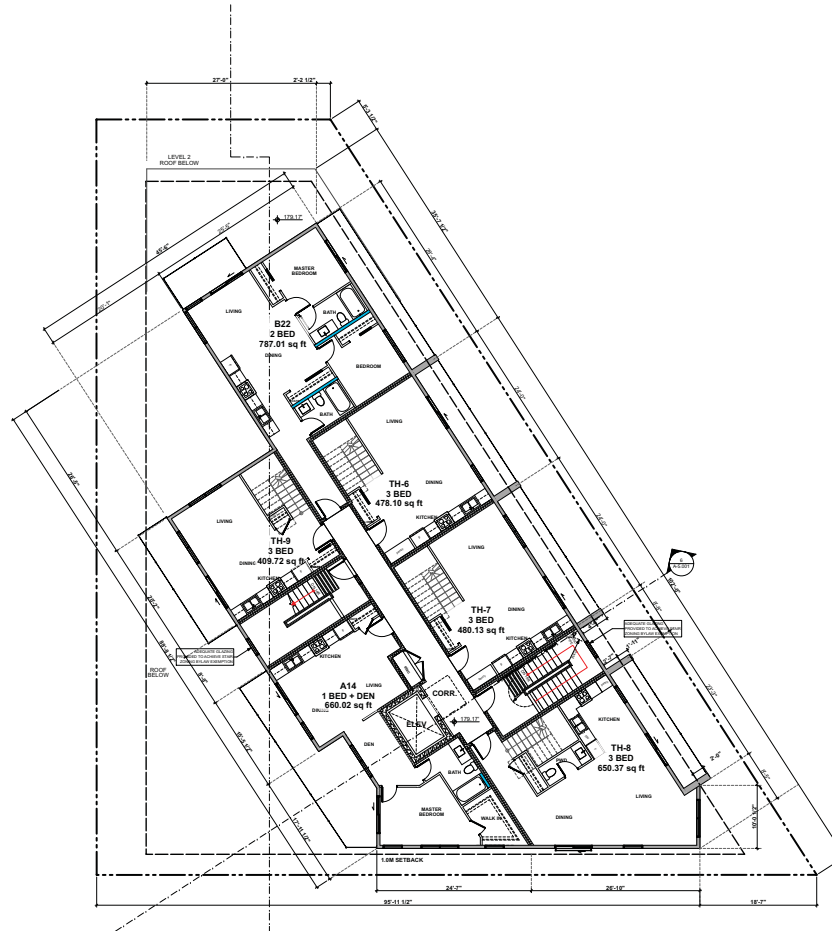
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Cascadia Green  
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North Vancouver, BC

**NORTH BUILDING  
- LEVEL 3 PLAN**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

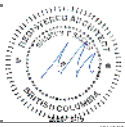
(DRAWING)

**A-2.330**



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**Cascadia Green  
Development**

**402-438 E 3rd St &  
341-343 St Davids Ave**  
North Vancouver, BC

**NORTH BUILDING  
- LEVEL 4 PLAN**

471 [PROJECT]

Not To Scale [SCALE]

2020-10-15 [DATE]

Issue 06 - RZ /DP Resubmission

(DRAWING)

**A-2.340**

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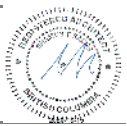
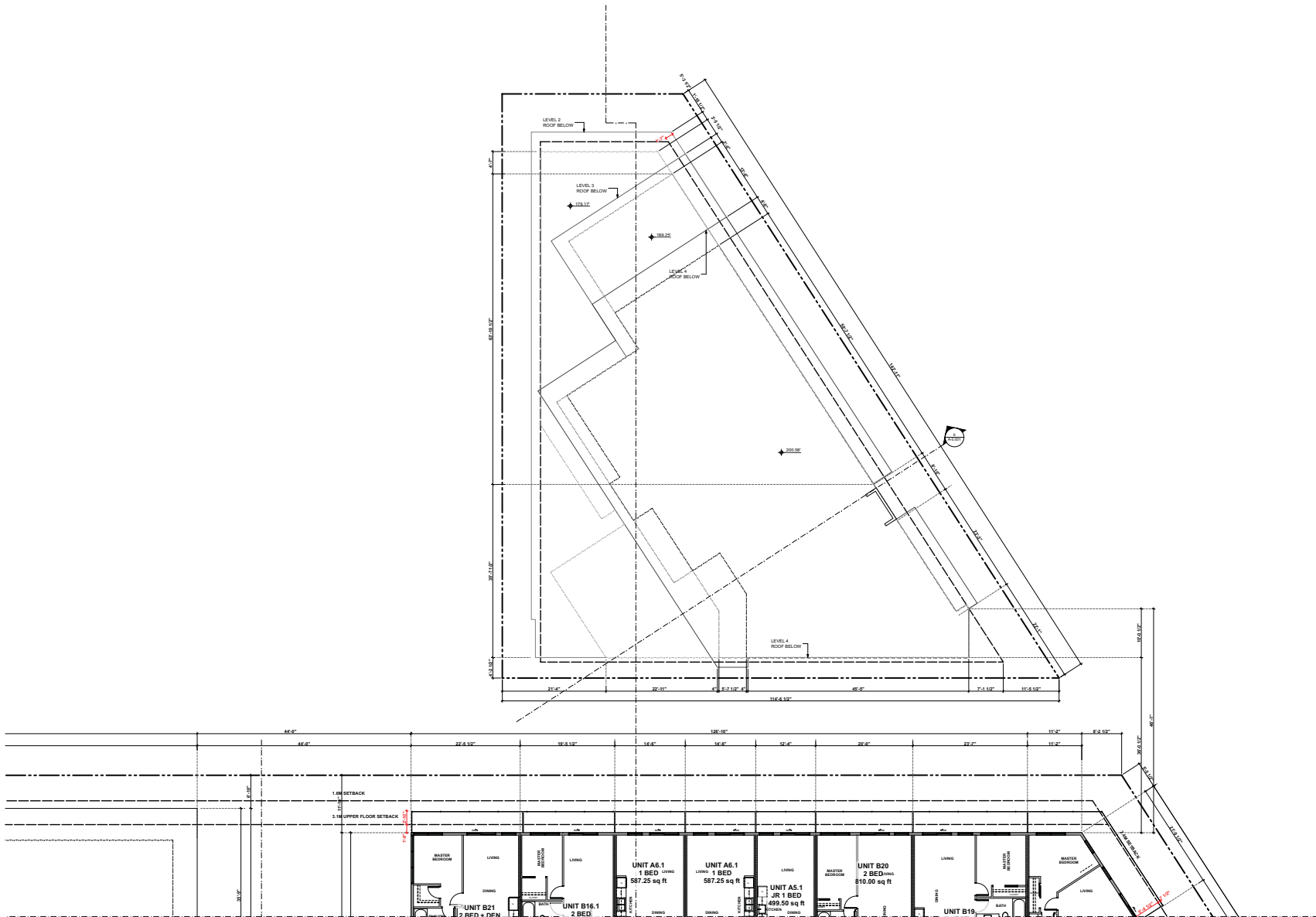
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PROJECT TEAM



(PROJECT TEAM)



(CLIENT)

**Cascadia Green  
Development**

(PROJECT)

**402-438 E 3rd St &  
341-343 St Davids Ave**

(TITLE)

North Vancouver, BC

(DATE)

**NORTH BUILDING  
- LEVEL 5 PLAN**

(SCALE)

**471**

(DATE)

**1/8" = 1'-0"**

(DATE)

**2028-10-15**

(DATE)

**Issue 06 - RZ /DP Resubmission**

(DATE)

**A-2.350**



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### ADAPTABLE DESIGN GUIDELINES

#### DESIGN ELEMENTS

City of North Vancouver Zoning Bylaw, 1995, No. 6700 Amendment Bylaw No. 2005, No. 7721 - Figure 5 - 1

	LEVEL ONE	LEVEL TWO	LEVEL THREE
<b>BUILDING ACCESS</b>	Outside stairs - maximum degree of colour contrast on nosing of each step.	Outside stairs - maximum degree of colour contrast on nosing of each step.	Outside stairs - maximum degree of colour contrast on nosing of each step.
<b>BUILDING ACCESS</b>	Curt cuts have tactile and visual cues.	Curt cuts have tactile and visual cues.	Curt cuts have tactile and visual cues.
<b>BUILDING ACCESS</b>	Unobstructed access to main building entrances from streetside/sidewalks.	Unobstructed access to main building entrances from streetside/sidewalks.	Unobstructed access to main building entrances from streetside/sidewalks.
<b>BUILDING ACCESS</b>	Unobstructed internal access: <ul style="list-style-type: none"><li>from parking levels containing accessible parking (5' or 1520mm corridors, 2' or 610mm clear walk space adjacent to door lobbies)</li><li>garage and recycling receptacles and storage lockers</li><li>no stairs within building circulation including corridors on residential levels</li><li>accessible storage lockers for each unit.</li></ul>	Unobstructed internal access: <ul style="list-style-type: none"><li>from parking levels containing accessible parking (5' or 1520mm corridors, 2' or 610mm clear walk space adjacent to door lobbies)</li><li>garage and recycling receptacles and storage lockers</li><li>no stairs within building circulation including corridors on residential levels</li><li>accessible storage lockers for each Level 3 unit.</li></ul>	Unobstructed internal access: <ul style="list-style-type: none"><li>from parking levels containing accessible parking (5' or 1520mm corridors, 2' or 610mm clear walk space adjacent to door lobbies)</li><li>garage and recycling receptacles and storage lockers</li><li>no stairs within building circulation including corridors on residential levels</li><li>accessible storage lockers for each Level 3 unit.</li></ul>
<b>BUILDING ACCESS</b>	Canopy over main building entrances (3' or 915mm) and entrance.	Canopy over main building entrances (3' or 915mm) and entrance.	Canopy over main building entrances (3' or 915mm) and entrance.
<b>BUILDING ACCESS</b>	Provide automatic door opener for at least one building entry door at ground level as well as doors leading into the building on each underground parking level where disability parking is provided.	Provide automatic door opener for at least one building entry door at ground level as well as doors leading into the building on each underground parking level where disability parking is provided.	Provide automatic door opener for at least one building entry door at ground level as well as doors leading into the building on each underground parking level where disability parking is provided.
<b>BUILDING ACCESS</b>	Disability Parking provided in accordance with Zoning Bylaw Figure 9-4 as attached.	Disability Parking provided in accordance with Zoning Bylaw Figure 9-4 as attached.	Disability Parking provided in accordance with Zoning Bylaw Figure 9-4 as attached.
<b>BUILDING ACCESS</b>	Flush thresholds throughout the building maximum 12" or 30mm height.	Flush thresholds throughout the building maximum 12" or 30mm height.	Flush thresholds throughout the building maximum 12" or 30mm height.
<b>BUILDING ACCESS</b>	Accessible building entrance, call buttons and, where provided, suite door bells.	Accessible building entrance, call buttons and, where provided, suite door bells.	Accessible building entrance, call buttons and, where provided, suite door bells.

\* Illustrations available  
\*\* Options considered

- 1 of 3 -

Design Elements  
July 2005

### ADAPTABLE DESIGN GUIDELINES

#### FIXTURES AND FINISHES

	LEVEL ONE	LEVEL TWO	LEVEL THREE
<b>BASIC</b>	Easy to read building address numbers (min. 4" or 100mm high in contrasting colours).	Easy to read building address numbers (min. 4" or 100mm high in contrasting colours).	Easy to read building address numbers (min. 4" or 100mm high in contrasting colours).
<b>BASIC</b>	Lighting levels to a minimum of 100 lux outside and inside main building entries and suite entries.	Lighting levels to a minimum of 100 lux outside and inside main building entries and suite entries.	Lighting levels to a minimum of 100 lux outside and inside main building entries and suite entries.
<b>BASIC</b>	No painted finish on building entry flooring (provide flooring samples).	No painted finish on building entry flooring (provide flooring samples).	No painted finish on building entry flooring (provide flooring samples).
<b>BASIC</b>	Except for pocket doors, sliding doors, or doors equipped with operators, lever door handles are required on all doors (provide notation on door schedule).	Except for pocket doors, sliding doors, or doors equipped with operators, lever door handles are required on all doors (provide notation on door schedule).	Except for pocket doors, sliding doors, or doors equipped with operators, lever door handles are required on all doors (provide notation on door schedule).
<b>BASIC</b>	Storage throughout common areas has well contrasted colours.	Storage throughout common areas has well contrasted colours.	Storage throughout common areas has well contrasted colours.
<b>BASIC</b>	Elevators have well contrasted control buttons.	Elevators have well contrasted control buttons.	Elevators have well contrasted control buttons.
<b>CIRCULATION</b>	Lockers on residential levels.	Lockers on residential levels.	Lockers on residential levels.
<b>BUILDING MEETING / MEETING ROOMS</b>	Provide carpet and drapes to absorb sound and decrease echoes.	Provide carpet and drapes to absorb sound and decrease echoes.	Provide carpet and drapes to absorb sound and decrease echoes.
<b>UNIT ENTRIES</b>	Adjustable door closers to reduce force to open door to maximum 22N or 5 lbs.	Adjustable door closers to reduce force to open door to maximum 22N or 5 lbs.	Adjustable door closers to reduce force to open door to maximum 22N or 5 lbs.
<b>UNIT ENTRIES</b>	Door handles at 48" or 1200mm above the floor, with deadbolts placed immediately above or below.	Door handles at 48" or 1200mm above the floor, with deadbolts placed immediately above or below.	Door handles at 48" or 1200mm above the floor, with deadbolts placed immediately above or below.
<b>UNIT ENTRIES</b>	Non-slip flooring in kitchen and minimum one bathroom (provide flooring samples).	Non-slip flooring in kitchen and minimum one bathroom (provide flooring samples).	Non-slip flooring in kitchen and minimum one bathroom (provide flooring samples).
<b>UNIT FLOORING</b>	High density, low level loop carpet and underlay (maximum 12" or 30mm height).	High density, low level loop carpet and underlay (maximum 12" or 30mm height).	High density, low level loop carpet and underlay (maximum 12" or 30mm height).
<b>PATIOS AND BALCONIES</b>	Outdoor light fixture provided.	Outdoor light fixture provided.	Outdoor light fixture provided.
<b>PATIOS AND BALCONIES</b>	Electrical outlet provided.	Electrical outlet provided.	Electrical outlet provided.

\* Illustrations available

- 1 of 3 -

Fixtures & Finishes  
July 2005

2 of 11

6 of 11

DESIGN ELEMENTS

FIXTURES & FINISHES

3 of 11

7 of 11

DESIGN ELEMENTS

FIXTURES & FINISHES

	LEVEL ONE	LEVEL TWO	LEVEL THREE
<b>COMMON AREAS</b>	Accessible mailboxes for all AD Level 2 units, and 5' or 1520mm turning radius in front *	Accessible mailboxes for all AD Level 3 units, and 5' or 1520mm turning radius in front *	Accessible mailboxes for all AD Level 3 units, and 5' or 1520mm turning radius in front *
<b>CIRCULATION</b>	Corridors minimum 4' or 1220mm wide (except for service access areas) *	Corridors minimum 4' or 1220mm wide (except for service access areas) *	Corridors minimum 4' or 1220mm wide (except for service access areas) *
<b>CIRCULATION</b>	Provide 5' or 1520mm turning radius inside and outside the entry corridor of each dwelling unit *	Provide 5' or 1520mm turning radius inside and outside the entry corridor of each dwelling unit *	Provide 5' or 1520mm turning radius inside and outside the entry corridor of each dwelling unit *
<b>SUITE CIRCULATION</b>	Provide wiring for an automatic door opener for the suite entry door.	Provide wiring for an automatic door opener for the suite entry door.	Provide wiring for an automatic door opener for the suite entry door.
<b>SUITE CIRCULATION</b>	Provide 2' or 610mm clear walk space adjacent to door lobbies where door swings toward user (pocket doors acceptable for bathrooms and bedrooms) *	Provide 2' or 610mm clear walk space adjacent to door lobbies where door swings toward user (pocket doors acceptable for bathrooms and bedrooms) *	Provide 2' or 610mm clear walk space adjacent to door lobbies where door swings toward user (pocket doors acceptable for bathrooms and bedrooms) *
<b>DOORS</b>	Minimum one bathroom, minimum one bedroom and storage room doors 2'-10" or 860mm clear opening.	Minimum one bathroom, minimum one bedroom and storage room doors 2'-10" or 860mm clear opening.	Minimum one bathroom, minimum one bedroom and storage room doors 2'-10" or 860mm clear opening.
<b>PATIOS &amp; BALCONIES</b>	Minimum one patio or balcony door/sill with minimum 12" or 30mm height.	Minimum one patio or balcony door/sill with minimum 12" or 30mm height.	Minimum one patio or balcony door/sill with minimum 12" or 30mm height.
<b>PATIOS &amp; BALCONIES</b>	Minimum 5' or 1520mm turning radius on patio / balcony.	Minimum 5' or 1520mm turning radius on patio / balcony.	Minimum 5' or 1520mm turning radius on patio / balcony.
<b>WINDOWS</b>	Opening mechanism maximum 48" or 1180mm above floor (provide notation on window schedule).	Opening mechanism maximum 48" or 1180mm above floor (provide notation on window schedule).	Opening mechanism maximum 48" or 1180mm above floor (provide notation on window schedule).
<b>WINDOWS</b>	Provide clear minimum 6' or 1800mm horizontal windows in living room, dining room and minimum one bedroom where sills are not more than 2'-6" or 760mm above the floor.	Provide clear minimum 6' or 1800mm horizontal windows in living room, dining room and minimum one bedroom where sills are not more than 2'-6" or 760mm above the floor.	Provide clear minimum 6' or 1800mm horizontal windows in living room, dining room and minimum one bedroom where sills are not more than 2'-6" or 760mm above the floor.
<b>KITCHENS</b>	Continuous counter between sink and stove.	Continuous counter between sink and stove.	Continuous counter between sink and stove.
<b>KITCHENS</b>	Sink cabinet minimum 24" or 610mm wide.	Sink cabinet minimum 24" or 610mm wide.	Sink cabinet minimum 24" or 610mm wide.
<b>KITCHENS</b>	Provide sufficient space for future installation of cooking and mail room.	Provide sufficient space for future installation of cooking and mail room.	Provide sufficient space for future installation of cooking and mail room.
<b>KITCHENS</b>	Provide for pot/sink 2' or 610mm wide undercabinet appliance.	Provide for pot/sink 2' or 610mm wide undercabinet appliance.	Provide for pot/sink 2' or 610mm wide undercabinet appliance.
<b>KITCHENS</b>	Lower edge of upper cupboards 4'8" or 1300mm above floor.	Lower edge of upper cupboards 4'8" or 1300mm above floor.	Lower edge of upper cupboards 4'8" or 1300mm above floor.

\* Illustrations available  
\*\* Options considered

- 2 of 3 -

Design Elements  
July 2005

4 of 11

8 of 11

DESIGN ELEMENTS

FIXTURES & FINISHES

	LEVEL ONE	LEVEL TWO	LEVEL THREE
<b>KITCHEN</b>			
<b>MIN. ONE BATHROOM</b>	toilet located adjacent to wall (min 3' or 915mm)	toilet located adjacent to wall (min 3' or 915mm)	toilet located adjacent to wall (min 3' or 915mm)
<b>MIN. ONE BATHROOM</b>	Provide turning radius within bathroom (may result in partial clearance along full length of tub.)	Provide turning radius within bathroom (may result in partial clearance along full length of tub.)	Provide turning radius within bathroom (may result in partial clearance along full length of tub.)
<b>MIN. ONE BATHROOM</b>	3' or 915mm clearance along full length of tub *	3' or 915mm clearance along full length of tub *	3' or 915mm clearance along full length of tub *
<b>MIN. ONE BATHROOM</b>	Tub control valve placed at outer edge of tub, with tub space remaining in central position *	Tub control valve placed at outer edge of tub, with tub space remaining in central position *	Tub control valve placed at outer edge of tub, with tub space remaining in central position *
<b>MIN. ONE BATHROOM</b>	Accessible storage.	Accessible storage.	Accessible storage.
<b>MIN. ONE BATHROOM</b>	Provide for the possible future installation of an accessible shower stall, sized at least 3'-0" x 6'-0" or 910mm x 1800mm, refer to the 1991 ICC Building Access Handbook for details.	Provide for the possible future installation of an accessible shower stall, sized at least 3'-0" x 6'-0" or 910mm x 1800mm, refer to the 1991 ICC Building Access Handbook for details.	Provide for the possible future installation of an accessible shower stall, sized at least 3'-0" x 6'-0" or 910mm x 1800mm, refer to the 1991 ICC Building Access Handbook for details.
<b>MIN. ONE BEDROOM</b>	Sufficient maneuvering room between closet and window seat *	Sufficient maneuvering room between closet and window seat *	Sufficient maneuvering room between closet and window seat *
<b>MIN. ONE BEDROOM</b>	Provide 3' or 915mm access to window seat *	Provide 3' or 915mm access to window seat *	Provide 3' or 915mm access to window seat *
<b>MIN. ONE BEDROOM</b>	Provide foot loading side-by-side washer / dryer in-suite or in common area.	Provide foot loading side-by-side washer / dryer in-suite or in common area.	Provide foot loading side-by-side washer / dryer in-suite or in common area.
<b>LAUNDRY FACILITIES</b>	4' or 1220mm maneuvering space in front of washer / dryer.	4' or 1220mm maneuvering space in front of washer / dryer.	4' or 1220mm maneuvering space in front of washer / dryer.

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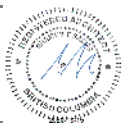
\* Illustrations available  
\*\* Options considered

- 3 of 3 -

Design Elements  
July 2005

LEVEL 1 ALL UNITS  
LEVEL 2 ADAPTABLE UNITS: A1A, A16A (1 BEDROOM), B2A, B7A, B12A, (2 BEDROOM)  
C1A, C5A, C6A, C7A, C8A, C10A (3 BEDROOM).  
LEVEL 3 ADAPTABLE UNITS: C3A, C4A (3 BEDROOM)

(PROJECT TYPE)



Cascadia Green Development

(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave

North Vancouver, BC

ADAPTABLE UNITS DESIGN GUIDELINES

471 (PROJECT)

As Noted (SCALE)

2026-10-15 (DATE)

Issue 06 - RZ /OP Resubmission (VERSION)

(DRAWING)

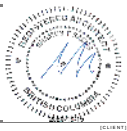
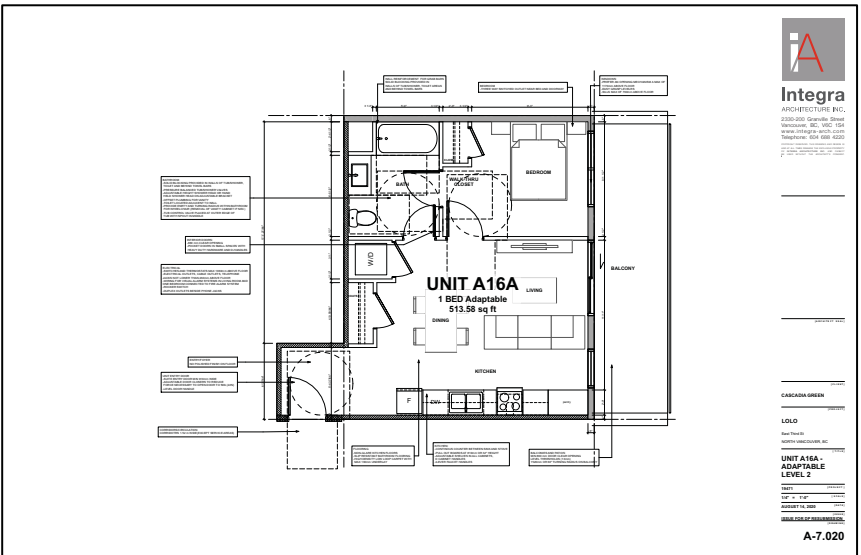
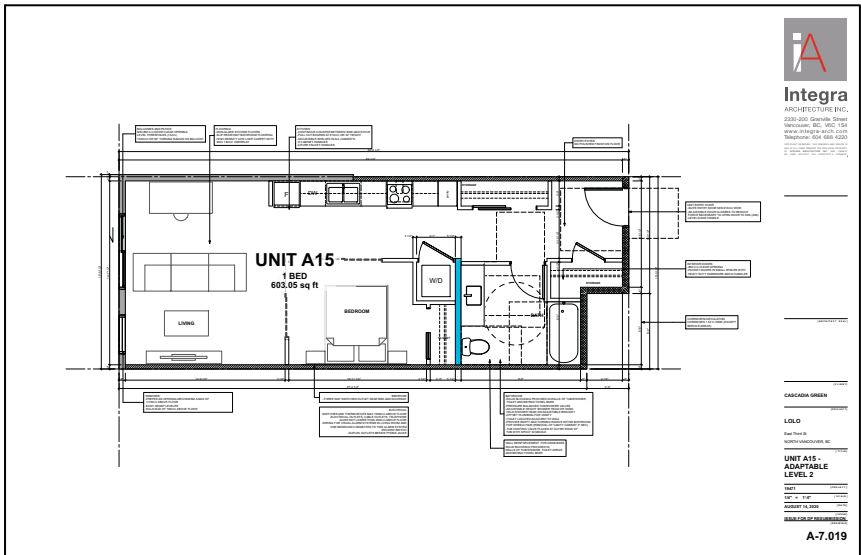
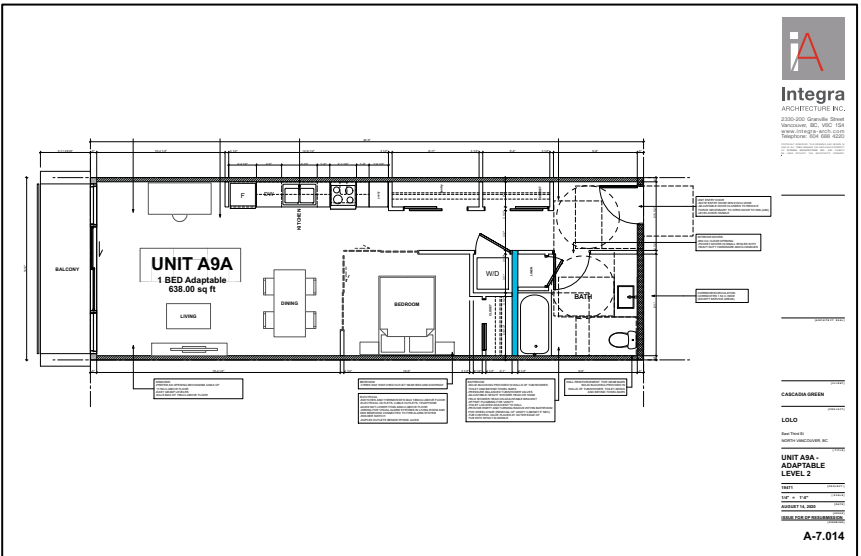
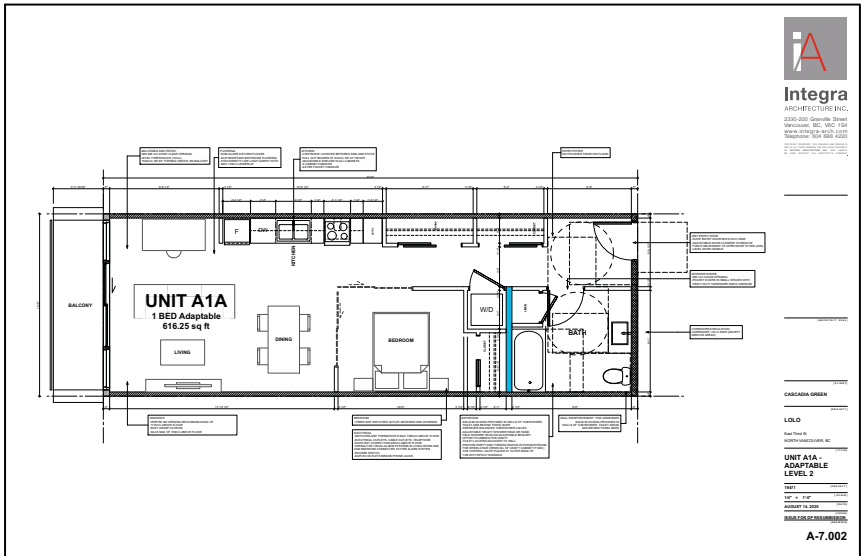
A-3.000



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(PROJECT TEAM)



Cascadia Green Development

(PROJECT)

402-438 E 3rd St & 341-343 St Davids Ave

North Vancouver, BC

(TITLE)

**ADAPTABLE UNIT PLANS**

(PROJECT)

471

As Noted

2022-10-15

(DATE)

Issue 06 - RZ /DP Resubmission

(REVISION)

(DRAWING)

**A-3.001**



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(PROJECT TEAM)

CASCADIA GREEN

LOLO

UNIT B2A - ADAPTABLE LEVEL 2

DATE: 10/15/2020

BY: [Signature]

PROJECT NO. 2020-10-15

SCALE: 1/8" = 1'-0"

REVISION: 01 - RZ (DP Resubmission)

A-7.116



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CASCADIA GREEN

LOLO

UNIT C3A - ADAPTABLE LEVEL 3

DATE: 10/15/2020

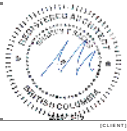
BY: [Signature]

PROJECT NO. 2020-10-15

SCALE: 1/8" = 1'-0"

REVISION: 01 - RZ (DP Resubmission)

A-7.203



Cascadia Green Development

(PROJECT TEAM)

402-438 E 3rd St & 341-343 St Davids Ave

North Vancouver, BC

(TITLE BLOCK)

ADAPTABLE UNIT PLANS

(PROJECT TEAM)

471

As Noted

2020-10-15

(DATE)

Issue 06 - RZ (DP Resubmission)

(REVISION)

(DRAWING)

A-3.002



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CASCADIA GREEN

LOLO

UNIT B2A - ADAPTABLE LEVEL 2

DATE: 10/15/2020

BY: [Signature]

PROJECT NO. 2020-10-15

SCALE: 1/8" = 1'-0"

REVISION: 01 - RZ (DP Resubmission)

A-7.103



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CASCADIA GREEN

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UNIT C1A - ADAPTABLE L2

DATE: 10/15/2020

BY: [Signature]

PROJECT NO. 2020-10-15

SCALE: 1/8" = 1'-0"

REVISION: 01 - RZ (DP Resubmission)

A-7.201



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CASCADIA GREEN

LOLO

UNIT C3A - ADAPTABLE LEVEL 3

DATE: 10/15/2020

BY: [Signature]

PROJECT NO. 2020-10-15

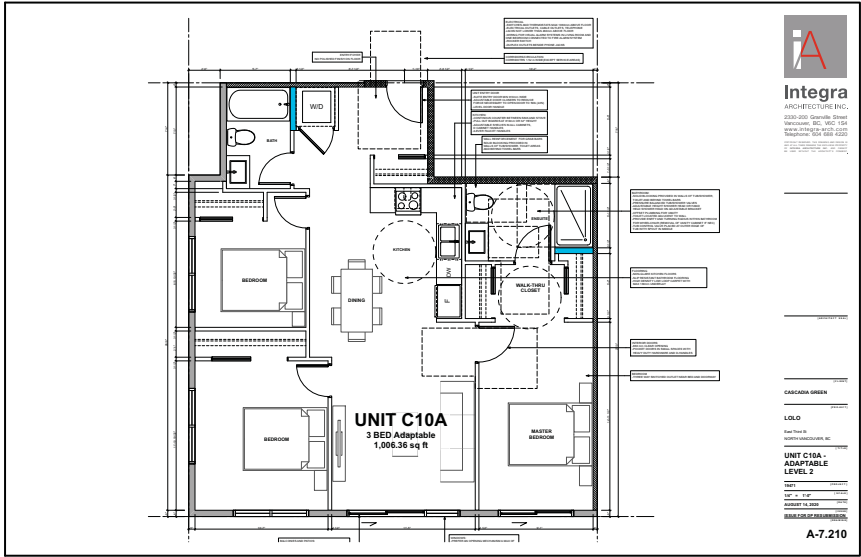
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REVISION: 01 - RZ (DP Resubmission)

A-7.203



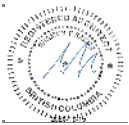




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**Cascadia Green Development**

**402-438 E 3rd St &  
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North Vancouver, BC

**ADAPTABLE UNIT PLANS**

**471** (PROJECT)

**As Noted** (SCALE)

**2020-10-15** (DATE)

**Issue 06 - RZ /DP Resubmission** (REVISION)

**A-3.004** (DRAWING)



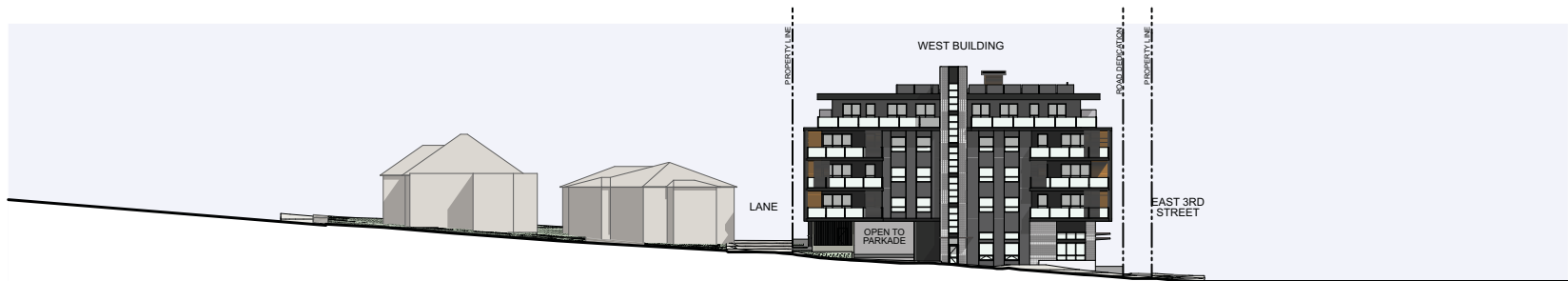
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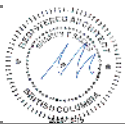
① WEST & EAST BUILDING - SOUTH ELEVATION (EAST 3RD STREET)  
SCALE: 1/16" = 1'-0"



② WEST BUILDING - WEST ELEVATION (ST. PATRICKS AVE)  
SCALE: 1/16" = 1'-0"



③ EAST & WEST BUILDING - NORTH ELEVATION (LANE)  
SCALE: 1/16" = 1'-0"



Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
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North Vancouver, BC

(TITLE)

#### SITE ELEVATIONS

471 (PROJECT)

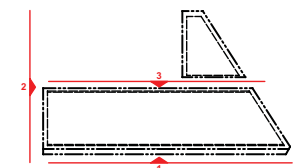
1/16" = 1'-0" (SCALE)

2020-10-15 (DATE)

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(DRAWING)

**A-4.000**

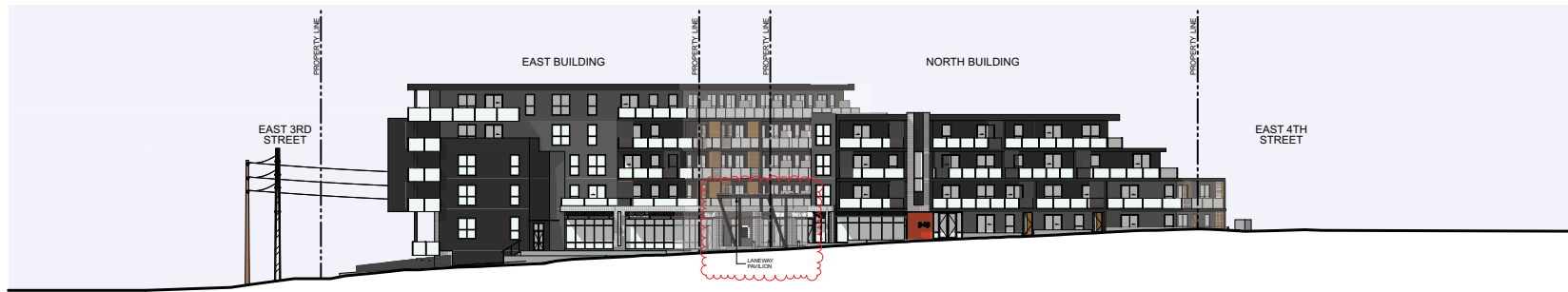




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(PROJECT TEAM)



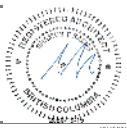
④ EAST & NORTH BUILDING - EAST ELEVATION (ST. DAVIDS AVE)  
SCALE: 1/16" = 1'-0"



⑤ NORTH BUILDING - SOUTH ELEVATION (LANE)  
SCALE: 1/16" = 1'-0"



⑥ NORTH & EAST BUILDING - WEST ELEVATION (COURTYARD)  
SCALE: 1/16" = 1'-0"



Cascadia Green  
Development

(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC

(TITLE)

#### SITE ELEVATIONS

471 (PROJECT)

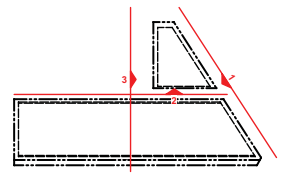
1/16" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

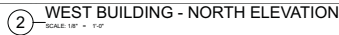
**A-4.001**







## PROJECT TEAM



Material and Colour Legend				
Code	Finish/Description	Material	Colour	Notes
<b>CLADDING</b>				
1	White	Brick	White	Exterior Walls (Glass Block)
1.1	Grey	Flux Cement Panel	BM - Deep Silver 2124-30	Exterior Walls
1.3	Charcoal	Flux Cement Panel	BM - Grey 2121-10	Exterior Walls
1.7	Charcoal	Flux Cement Panels (Wood Slats)	Summer Walnut	Exterior Walls
<b>SOFFIT</b>				
2	Charcoal	Flux Cement Boards (Wood Slats)	Summer Walnut	Underside of balcony roof
2.1	Charcoal	Flux Cement Boards (Wood Slats)	Summer Walnut	Underside of upper apartment roof
3	Light Cherry	Charcoal	Light Cherry	Underside of bridge over walk with integrated lights
<b>ROOFING / CLADDING</b>				
3.1	Charcoal	Corrugated Fibre Sheet / Flashing	BM - Grey 2121-10	Roofs / Overhangs / Flashings
3.1.1	Grey	Corrugated Fibre Sheet / Flashing	BM - Deep Silver 2124-30	Roofs / Overhangs / Flashings
<b>ROOF DECKS</b>				
4	Charcoal	2 Ply GSB w/ joists	TBC	Flat Roofs / Roofs over bridge decks
4.1	Light Grey	2 Ply GSB w/ joists	TBC	2 Ply GSB roofing membrane on flat roofs
<b>WINDOWS / GLAZING</b>				
5	Charcoal	Vertical Windows	Charcoal	Windows with aluminium frames
5.1	Charcoal	Slanted	Aluminium	Aluminium slanted windows
5.3	Clear	Ridgels	Clear	Clear Glazing w/ aluminium edge clips
<b>DOORS</b>				
6	Charcoal	Doors	TBD	Low Work Entry Doors
6.1	Black	Wood Doors with Lids	TBD	Tri-Entry Doors
<b>SCREENS/CANOPY/STAIRS</b>				
7	Light Cherry	Patio Screen	TBD	Face work / CANOPY/Bed screens
7.1	Charcoal	Slanted	TBD	Face work / CANOPY/Bed screens
7.2	Charcoal	Live work & Commercial Canopies	BM Porangapua 47-255	Canopies
7.3	Charcoal	Exterior Metal Stairs	BM Porangapua 47-255	Faded Metal stair w/ perforated metal guard
7.4	Charcoal	Metal Screen	Painted to match 1-3	Metal Screen on Landing Bay
<b>SITE WORK</b>				
8	Concrete	Architectural Concrete	Finished Concrete	Patio walls / In-gate pillars
8.1	Grey	Planters	TBD	Roof Deck Screens



[PROJECT]

**402-438 E 3rd St &  
341-343 St Davids Ave**  
North Vancouver, BC

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## WEST BUILDING ELEVATIONS

471 [PROJECT]

1/8" = 1'-0" [SCALE]

2020-10-15 [DATE]

[18328]

**Issue 06 - RZ /DP Resubmission**

(DRAWING)

**A-4.100**

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(PROJECT TEAM)

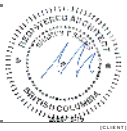


① WEST BUILDING - WEST ELEVATION  
SCALE: 1/8" = 1'-0"



② WEST BUILDING - EAST ELEVATION  
SCALE: 1/8" = 1'-0"

Material and Colour Legend			
Code	Description	Material/Finish	Notes
CLADDING			
1.1	White	Black	Exterior Walls (Dark Bond)
1.2	Gray	File Cement Panel	BM - Deep Silver 2124-30
1.3	Charcoal	File Cement Panel	BM - Gray 2121-10
1.4	Light Cherry	File Cement Board (Wood Grains)	Summer Wheat
SOFFIT			
2.1	Charcoal	File Cement Board (Wood Grains)	Summer Wheat
2.2	Charcoal	File Cement Board (Wood Grains)	Summer Wheat
2.3	Light Cherry	File Cement Board (Wood Grains)	Light Cherry
TIMBER FRAMING			
3.1	Charcoal	Combined Face Wood / Flanking	BM - Gray 2121-10
3.2	Gray	Combined Face Wood / Flanking	BM - Deep Silver 2124-30
ROOF DECKS			
4.1	Gray	2 Ply SBS w/ joists	TBD
4.2	Light Gray	2 Ply SBS	TBD
WINDOWS / GLAZING			
5.1	Charcoal	W/ Wood Frames	Charcoal
5.2	Charcoal	W/ Wood Frames	Charcoal
5.3	Clear	W/ Wood Frames	Clear
DOORS			
6.1	Charcoal	Doors	TBD
6.2	Black	Wood Doors with Lin	TBD
SCREENS/CANOPIES/STAIRS			
7.1	Light Cherry	Patio Screen	TBD
7.2	Charcoal	Live work & Commercial Canopies	BM Pergamola AP - 205
7.3	Charcoal	Exterior Metal Stairs	BM Pergamola AP - 205
7.4	Charcoal	Metal Screen	Painted to match 1.1
SITE WORK			
8.1	Concrete	Architectural Concrete	Fresh Concrete
8.2	Gray	Plaster	TBD



Cascadia Green  
Development

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC

**WEST BUILDING  
ELEVATIONS**

471  
1/8" = 1'-0"

2028-10-15

Issue 06 - RZ /DP Resubmission

A-4.110



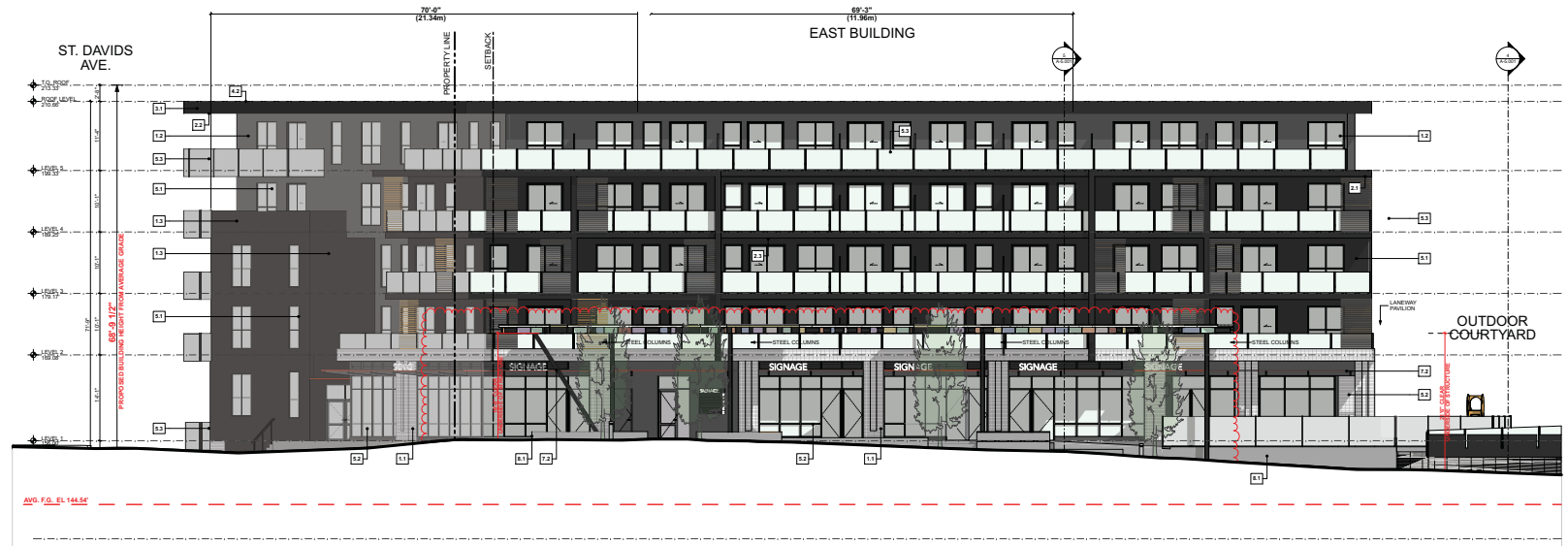
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(PROJECT TEAM)

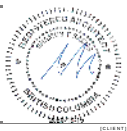


① EAST BUILDING - SOUTH ELEVATION  
SCALE: 1/8" = 1'-0"



② EAST BUILDING - NORTH ELEVATION  
SCALE: 1/8" = 1'-0"

Material and Colour Legend									
Color	Finish/Texture	Material	Finish/Texture	Material	Finish/Texture	Material	Finish/Texture	Material	Finish/Texture
CLADDING									
1.1	White	Black	White	Exterior Walls (Black Bond)	1.2	Gray	Flare Cement Panel	BM - Deep Silver 2134-30	Exterior Walls
1.3	Charcoal	Flare Cement Panel	BM - Gray 2121-10	Exterior Walls	1.4	Charcoal	Flare Cement Panel	BM - Gray 2121-10	Exterior Walls
1.5	Charcoal	Flare Cement Panel	BM - Gray 2121-10	Exterior Walls	1.6	Charcoal	Flare Cement Panel	BM - Gray 2121-10	Exterior Walls
1.7	Charcoal	Flare Cement Panel	BM - Gray 2121-10	Exterior Walls	1.8	Charcoal	Flare Cement Panel	BM - Gray 2121-10	Exterior Walls
SOFFIT									
2.1	Charcoal	Flare Cement Panel	BM - Gray 2121-10	Underneath of balcony walls	2.2	Charcoal	Flare Cement Panel	BM - Gray 2121-10	Underneath of upper level walls
2.3	Charcoal	Flare Cement Panel	BM - Gray 2121-10	Underneath of bridge over area with integral walls	2.4	Charcoal	Flare Cement Panel	BM - Gray 2121-10	Underneath of bridge over area with integral walls
FRONT FLASHINGS									
3.1	Charcoal	Combined Face Wood / Flashing	BM - Gray 2121-10	Roofs / Canopies / Flashings	3.2	Charcoal	Combined Face Wood / Flashing	BM - Gray 2121-10	Roofs / Canopies / Flashings
3.3	Charcoal	Combined Face Wood / Flashing	BM - Gray 2121-10	Roofs / Canopies / Flashings	3.4	Charcoal	Combined Face Wood / Flashing	BM - Gray 2121-10	Roofs / Canopies / Flashings
ROOFS / DECKS									
4.1	Gray	2 Ply SBS w/ Joints	TBC	Flat Roofs / Canopies / Flashings	4.2	Gray	2 Ply SBS w/ Joints	TBC	Flat Roofs / Canopies / Flashings
4.3	Gray	2 Ply SBS w/ Joints	TBC	Flat Roofs / Canopies / Flashings	4.4	Gray	2 Ply SBS w/ Joints	TBC	Flat Roofs / Canopies / Flashings
WINDOWS / GLAZING									
5.1	Charcoal	Very Widest	Charcoal	Predefined vinyl windows	5.2	Charcoal	Very Widest	Charcoal	Predefined vinyl windows
5.3	Charcoal	Very Widest	Charcoal	Predefined vinyl windows	5.4	Charcoal	Very Widest	Charcoal	Predefined vinyl windows
5.5	Charcoal	Very Widest	Charcoal	Predefined vinyl windows	5.6	Charcoal	Very Widest	Charcoal	Predefined vinyl windows
DOORS									
6.1	Charcoal	Doors	TBC	Low Black Entry Doors	6.2	Charcoal	Doors	TBC	Low Black Entry Doors
6.3	Charcoal	Doors	TBC	Low Black Entry Doors	6.4	Charcoal	Doors	TBC	Low Black Entry Doors
SCREENS / CANOPIES / STAIRS									
7.1	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.2	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.3	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.4	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.5	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.6	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.7	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.8	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.9	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.10	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.11	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.12	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.13	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.14	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.15	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.16	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.17	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.18	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.19	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.20	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.21	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.22	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.23	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.24	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.25	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.26	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.27	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.28	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.29	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.30	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.31	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.32	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.33	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.34	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.35	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.36	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.37	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.38	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.39	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.40	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.41	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.42	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.43	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.44	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.45	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.46	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.47	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.48	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.49	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.50	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.51	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.52	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.53	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.54	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.55	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.56	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.57	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.58	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.59	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.60	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.61	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.62	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.63	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.64	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.65	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.66	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
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7.69	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.70	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.71	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.72	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
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7.75	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.76	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.77	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.78	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.79	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.80	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.81	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.82	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.83	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.84	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.85	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.86	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.87	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.88	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
7.89	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.90	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
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7.93	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.94	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens
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7.99	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens	7.100	Charcoal	Flare Cement Panel	TBC	Flare Cement / Charcoal Metal Screens



Cascadia Green  
Development  
402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC

EAST BUILDING ELEVATIONS

471  
1/8" = 1'-0"  
2028-10-15  
Issue 06 - RZ /OP Resubmission



1 NORTH/EAST BUILDING - WEST ELEVATION  
SCALE: 1/8" = 1'-0"



② NORTH/EAST BUILDING - EAST ELEVATION  
SCALE: 1/8" = 1'-0"

Color

Finish

Material

Location

CLADDING

1.1

White

Back

Exterior Walls (Back Bero)

1.2

Gray

Face Cement Board

BR - Deep Gray 2124-20

2.1

White

Face Cement Board

BR - White 2124-10

2.2

Charcoal

Face Cement Board (Black Glass)

BR - Black 2124-10

2.3

Charcoal

Face Cement Board (Black Glass)

BR - Black 2124-10

SUFFIT

3.1

Color

Face Cement Board (Black Glass)

Summer Wind

3.2

Color

Face Cement Board (Black Glass)

Summer Wind

3.3

Color

Face Cement Board (Black Glass)

Summer Wind

3.4

Light Charcoal

Face Cement Board (Black Glass)

Light Charcoal

5.1

Charcoal

Context Face Wood / Flamingo

BR - Gray 2121-10

Roofs / Chandel / Flamingo

5.2

Charcoal

Context Face Wood / Flamingo

BR - Gray 2124-20

Roofs / Chandel / Flamingo

6.1

Gray

2.5% Melts or glass

TBD

Roofs / Deck or Air-ling system

6.2

Charcoal

2.5% Melts or glass

TBD

Roofs / Deck or Air-ling system

6.3

Charcoal

2.5% Melts or glass

TBD

Roofs / Deck or Air-ling system

WINDOWS/LAZING

8.1

Charcoal

White/Mineral

Charcoal

Architectural Concrete

8.2

Charcoal

Standard

Aluminum oxidized & Dunes

Plaster

8.3

Charcoal

Flamingo

Clear Shading or Anodized glass

Plaster

7.1

Light Gray (Charcoal)

Patio Screen

TBD

Canister / Metal Mesh

7.2

Charcoal

Light Glass

TBD

Canister / Metal Mesh

7.3

Light Gray (Charcoal)

Light Glass

TBD

Canister / Metal Mesh

7.4

Charcoal

Screen

TBD

Canister / Metal Mesh

7.5

Charcoal

Stair

TBD

Canister / Metal Mesh

DETAIL WORK

8.1

Concrete

Architectural Concrete

Finished Concrete

Patio with / A-grade plaster

8.2

Gray

Plaster

Plaster

Roof Deck Plaster

471

PROGRESS

100%

100%

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① NORTH BUILDING - SOUTH ELEVATION  
SCALE: 1/8" = 1'-0"

Material and Colour Legend					
Code	Material	Finish	Colour	Notes	
CLADDING					
1.1	White	Black	White	Exterior Walls (Black Bond)	
1.2	Gray	Flint Cement Panel	BM - Deep Silver 2124-30	Exterior Walls	
1.3	Charcoal	Flint Cement Panel	BM - Gray 2121-10	Exterior Walls	
1.4	Center	Flint Cement Boards (Wood Finish)	Summer Wheat	Exterior Walls	
SOFFIT					
2.1	Center	Flint Cement Boards (Wood Finish)	Summer Wheat	Underside of balcony soffits	
2.2	Center	Flint Cement Boards (Wood Finish)	Summer Wheat	Underside of upper eyeshot roof	
2.3	Light Cherry	Meat (Wood Grain)	Light Cherry	Underside of bridge over ramp with integral balustrade	
TIMBER FRAMING					
3.1	Charcoal	Combined Face Wood / Flanking	BM - Gray 2121-10	Rails / Overhangs / Flanking	
3.2	Gray	Combined Face Wood / Flanking	BM - Deep Silver 2124-30	Rails / Overhangs / Flanking	
ROOF / DECKS					
4.1	Gray	2 Ply SBS w/ joists	TBD	Flat Roofs / Roofs over ramp stairs	
4.2	Light Gray	2 Ply SBS	TBD	2 Ply SBS roofing membrane at flat roofs	
WINDOWS / GLAZING					
5.1	Charcoal	Wip Windows	Charcoal	Painted steel windows	
5.2	Charcoal	Slatfront	Charcoal	Aluminum-slatfront & doors	
5.3	Clear	Railings	-	Clear Glazing w/ woodwork edge bars	
DOORS					
6.1	Center	Doors	TBD	Live Work Entry Doors	
6.2	Black	Wood Doors with Live	TBD	Tri Entry Doors	
SCREENS / CANOPIES / STAIRS					
7.1	Light Cherry	Patio Screen	TBD	Frame wood / Charcoal Metal screens	
7.2	Charcoal	Live work & Commercial Canopies	BM Pergamende AF - 205	Canopies	
7.3	Charcoal	Exterior Metal Stairs	BM Pergamende AF - 205	Frosted Metal stair w/ perforated metal guard	
7.4	Charcoal	Meat Screen	Painted to match 1.2	Meat Screen at Loading Bay	
SITE WORK					
8.1	Concrete	Architectural Concrete	Fresh Concrete	Patio walls / All grade planters	
8.2	Gray	Plankers	TBD	Roof Deck Plankers	



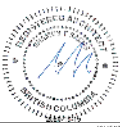
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② NORTH BUILDING - NORTH ELEVATION  
SCALE: 1/8" = 1'-0"



Cascadia Green  
Development

(PROJECT TEAM)

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC

**NORTH BUILDING  
ELEVATIONS**

471 (PROJECT)

1/8" = 1'-0" (SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

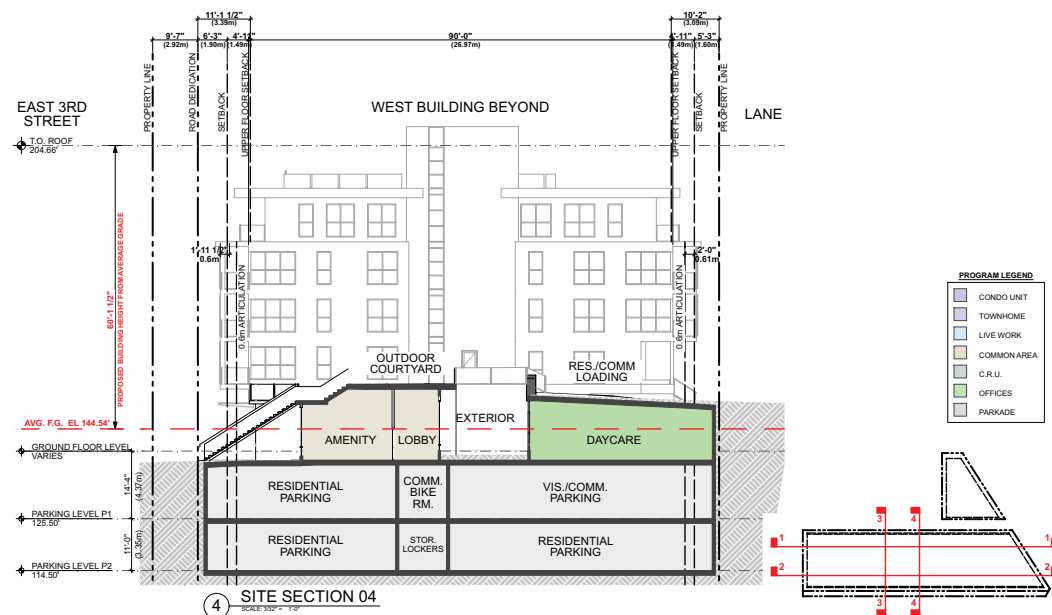
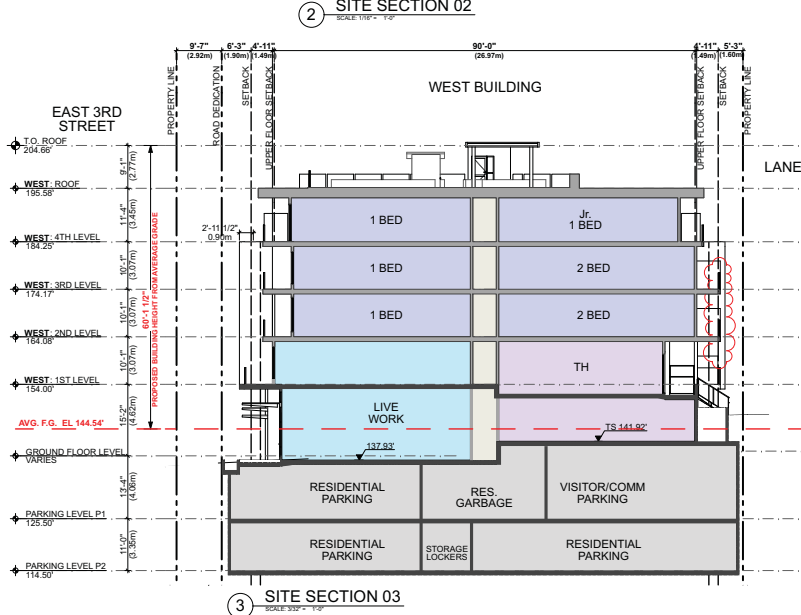
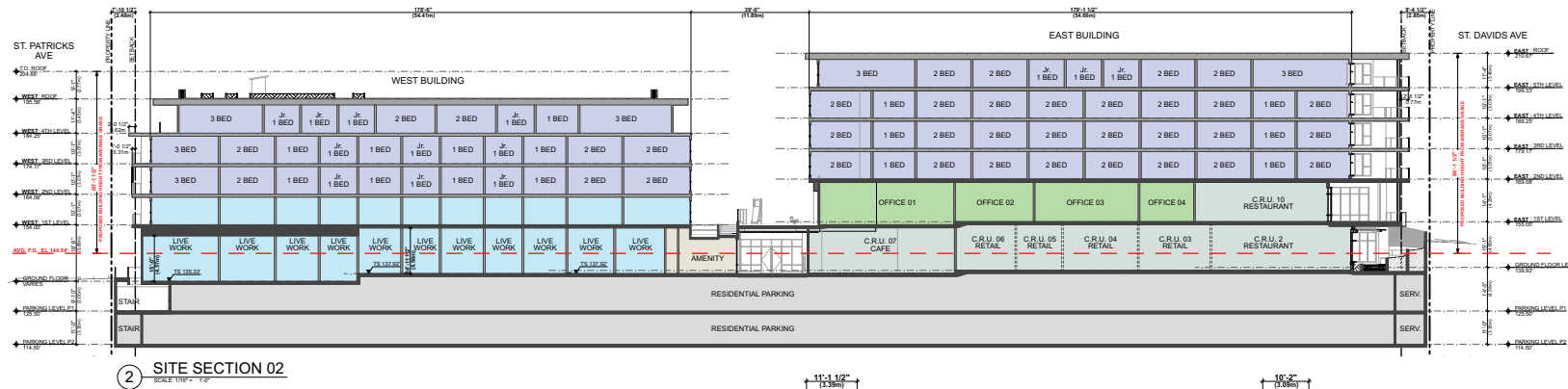
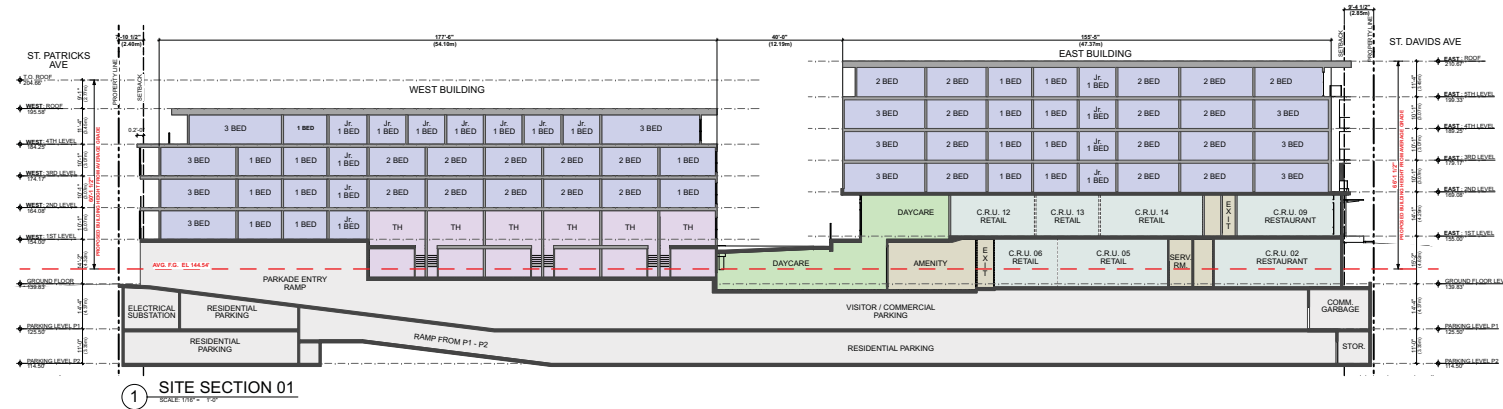
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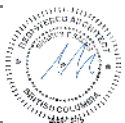
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(PROJECT TEAM)



- PROGRAM LEGEND**
- CONDO UNIT
  - TOWNHOME
  - LIVE WORK
  - COMMON AREA
  - C.R.U.
  - OFFICES
  - PARKADE



Cascadia Green  
Development  
402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC  
(TITLE)

**SITE SECTIONS**

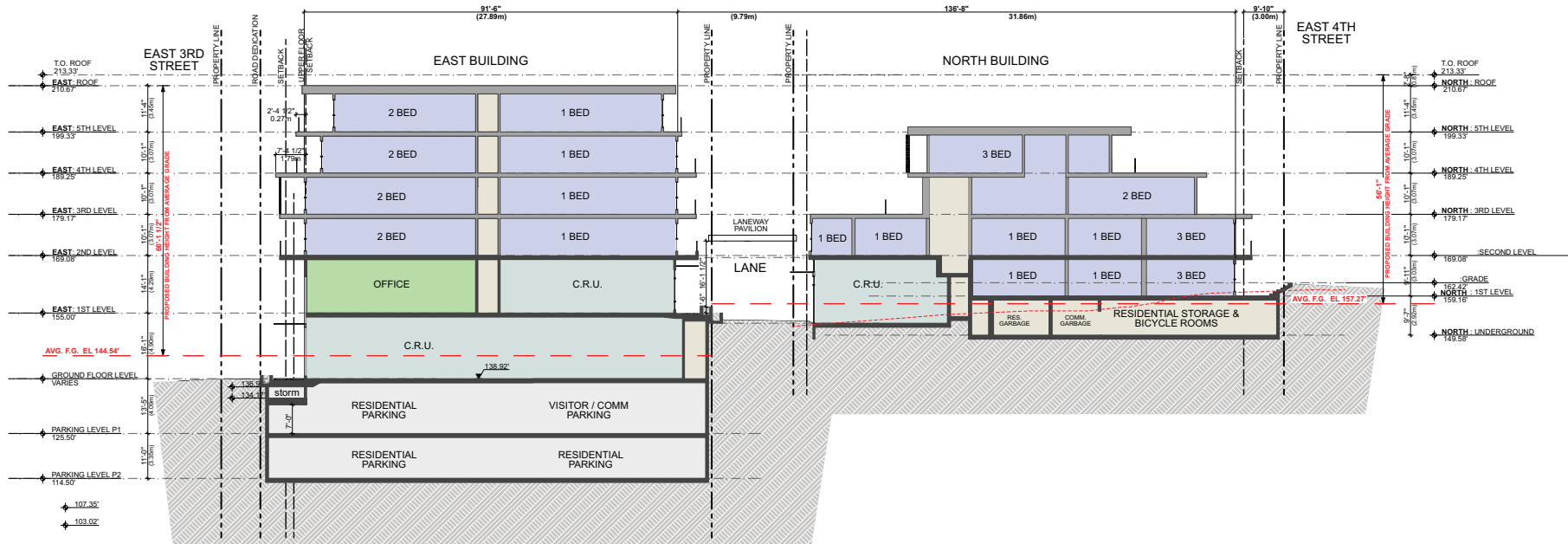
471 (PROJECT)  
AS NOTED (DATE)  
2028-10-15 (DATE)  
Issue 06 - RZ /OP Resubmission (DATE)

**A-5.000**

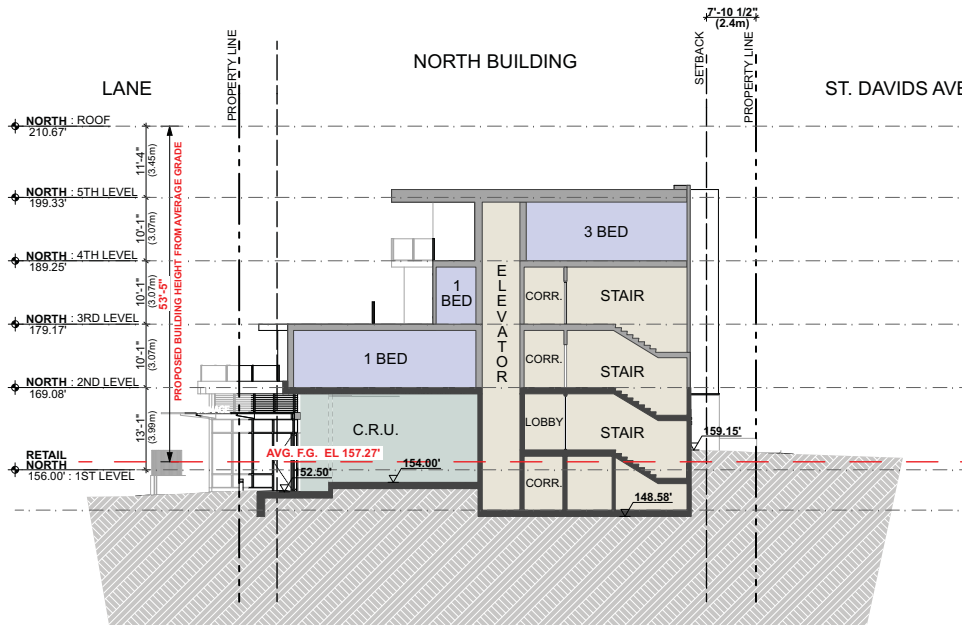


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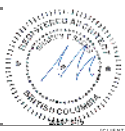
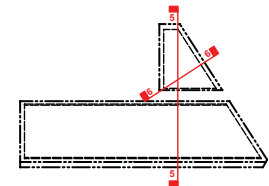


5 SITE SECTION 05  
SCALE: 3/32" = 1'-0"



6 SITE SECTION 06  
SCALE: 1/8" = 1'-0"

PROGRAM LEGEND	
[Blue Box]	CONDO UNIT
[Light Blue Box]	TOWNHOME
[Light Green Box]	LIVE WORK
[Light Yellow Box]	COMMON AREA
[Light Green Box]	C.R.U.
[Light Green Box]	OFFICES
[Light Green Box]	PARKADE



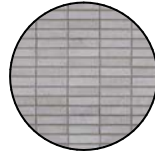
Cascadia Green  
Development

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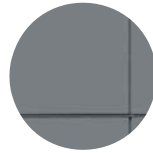
#### SITE SECTIONS

471 (PROJECT)  
AS NOTED (DATE)  
2020-10-15 (DATE)  
Issue 06 - RZ /DP Resubmission (DRAWING)

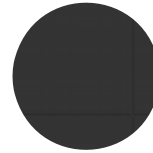
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1.1 | Stack Bond Brick - White Smooth



1.2 | Grey Fibre Cement Panel w/ Reveal



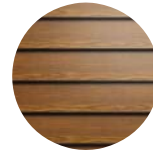
1.3 | Charcoal Fibre Cement Panel



1.7 | Fibre Cement Boards - Summer Wheat

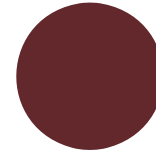
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2.2



2.3 | Metal Panels - Light Cherry

7.1



7.2 | Steel - Deep Red

7.3



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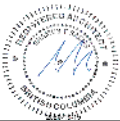
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Material and Colour Legend			
Color	Product (Finish)	Product (to match)	Location
<b>1.0 CLADDING</b>			
1.1	White Brick	White	Exterior Walls (Stack Bond)
1.2	Grey Fibre Cement Panel	BM - Deep Silver 2124-30	Exterior Walls
1.3	Charcoal Fibre Cement Panel	BM - Gray 2121-10	Exterior Walls
1.7	Cedar Fibre Cement Boards (Wood finish)	Summer Wheat	Exterior Walls
<b>2.0 SOFFIT</b>			
2.1	Cedar Fibre Cement Boards (Wood finish)	Summer Wheat	Underside of balcony soffit
2.2	Cedar Fibre Cement Boards (Wood finish)	Summer Wheat	Underside of upper eyebrow roof
2.3	Light Cherry Metal (Wood finish)	Light Cherry	Underside of bridge over lane with integral trellis
<b>3.0 TRIMS / FLASHINGS</b>			
3.1	Charcoal Combed Face Wood / Flashing	BM - Gray 2121-10	Roofs / Overhangs / Flashings
3.1	Grey Combed Face Wood / Flashing	BM - Deep Silver 2124-30	Roofs / Overhangs / Flashings
<b>4.0 ROOFS / DECKS</b>			
4.1	Grey 2 Ply SBS w/ pavers	TBC	Flat Roofs / Decks over living spaces
4.2	Light Grey 2 Ply SBS	TBC	2 Ply SBS roofing membrane at flat roofs
<b>5.0 WINDOWS / GLAZING</b>			
5.1	Charcoal Vinyl Windows	Charcoal	Prefinished vinyl windows
5.2	Charcoal Storefront	Charcoal	Aluminum storefront & Doors
5.3	Clear Railings	-	Clear Glazing w/ anodized edge trim
<b>6.0 DOORS</b>			
6.1	Cedar Doors	TBD	Live Work Entry Doors
6.2	Black Wood Doors with Lite	TBD	TH Entry Doors
<b>7.0 SCREENS / CANOPIES / STAIRS</b>			
7.1	Light Cherry / Charcoal Patio Screen	TBD	Faux wood / Charcoal Metal screens
7.2	Red / Charcoal Live work & Commercial Canopies	BM Pomegranate AF -295	Canopies
7.3	Red / Charcoal Exterior Metal Stairs	BM Pomegranate AF -295	Folded Metal stair w/ Perforated metal guard
7.4	Charcoal Metal Screen	Painted to match 1.3	Metal Screen at Loading Bay



**Cascadia Green Development**

(PROJECT)

**402-438 E 3rd St & 341-343 St Davids Ave**

North Vancouver, BC

(TITLE)

**MATERIALS FINISHES**

(PROJECT)

**Not To Scale**

(SCALE)

**2024-10-15**

(DATE)

**Issue 06 - RZ /DP Resubmission**

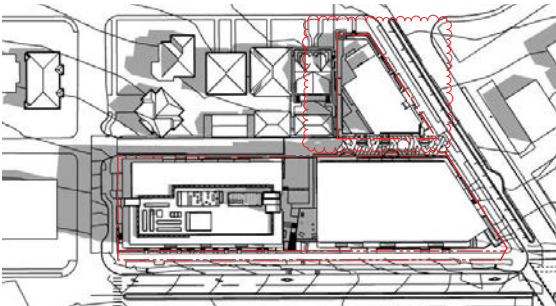
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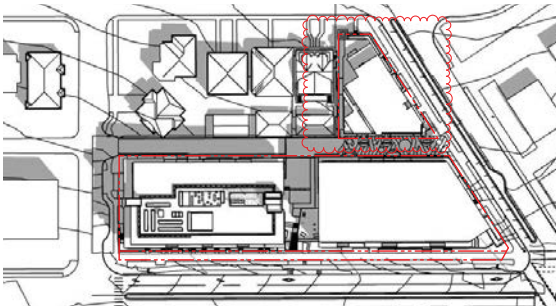
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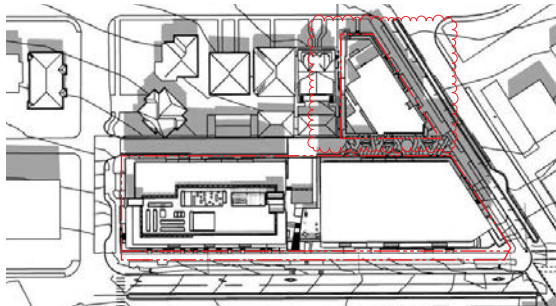
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MARCH 20



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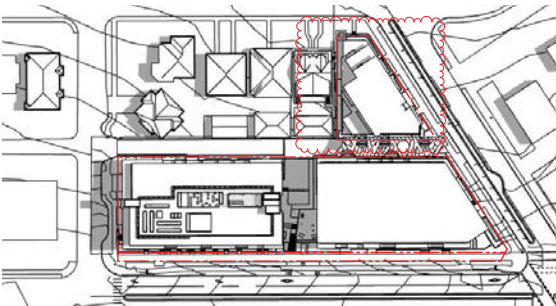


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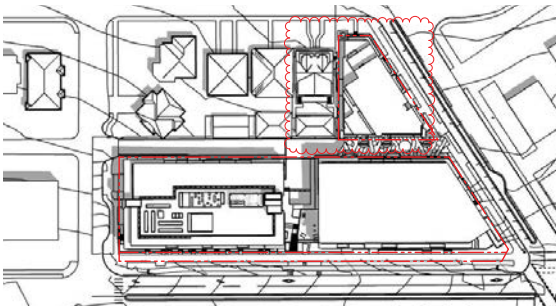


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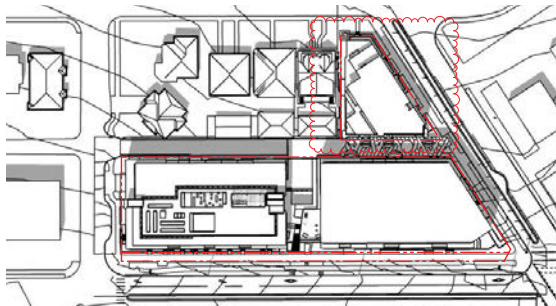
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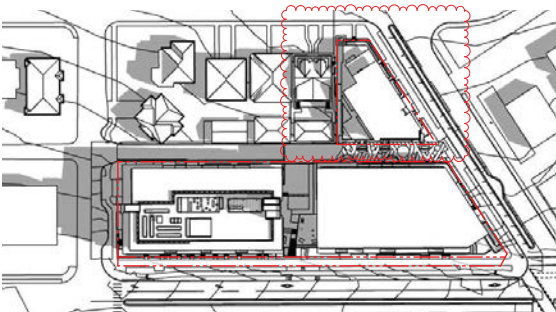


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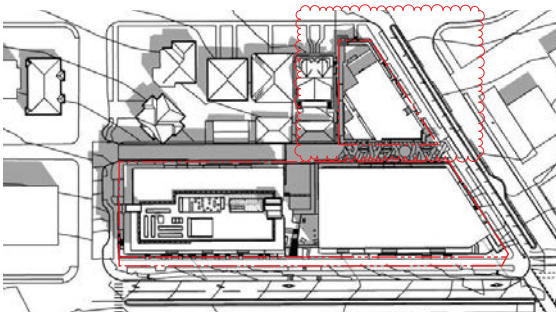


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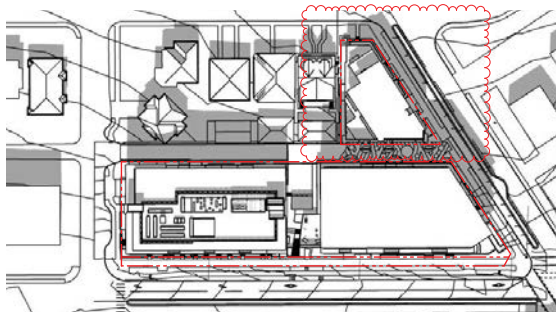
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10 AM

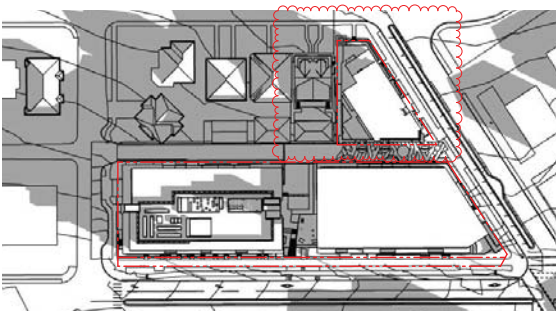


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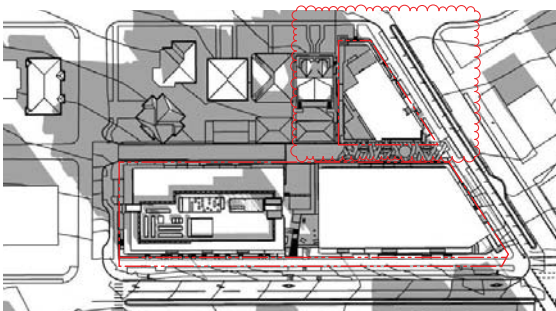


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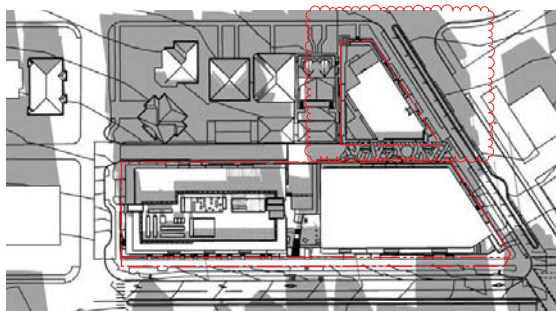
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10 AM



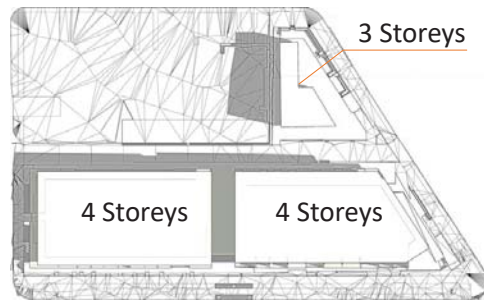
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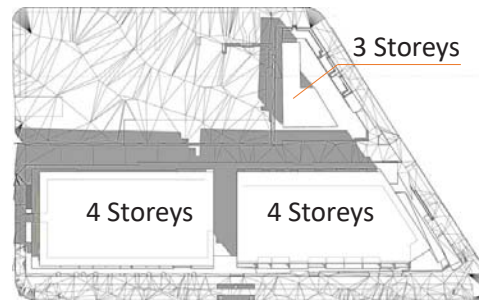
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# SHADOW STUDY

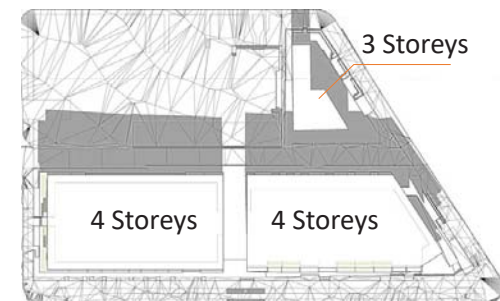
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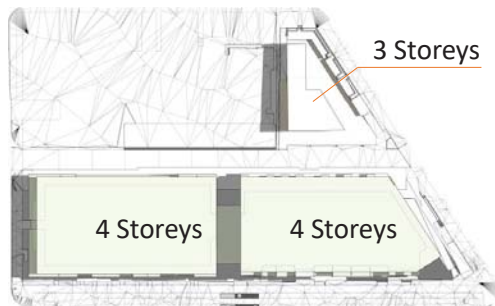
March 20<sup>th</sup> - 10 am



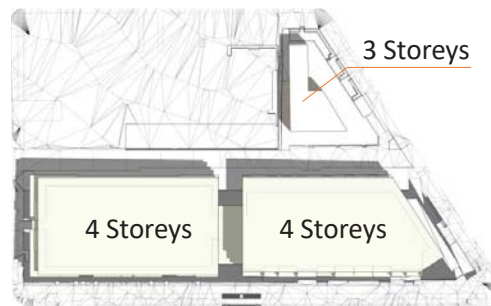
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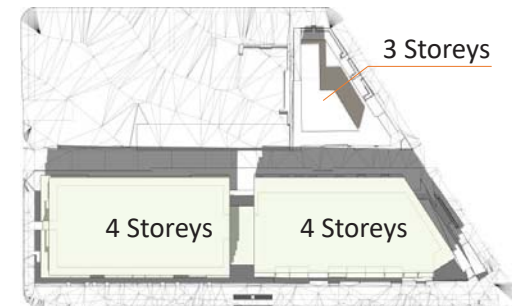
March 20<sup>th</sup> - 2 pm



June 21<sup>st</sup> - 10 am



June 21<sup>st</sup> - 12 pm



June 21<sup>st</sup> - 2 pm



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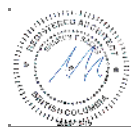
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(PROJECT)

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North Vancouver, BC

(TITLE)

**OCP MASS  
SHADOW STUDY**

471 (PROJECT)

(SCALE)

2020-10-15 (DATE)

Issue 06 - RZ /DP Resubmission (REVISION)

(DRAWING)

**A-8.052**

# SHADOW STUDY

O C P M A S S



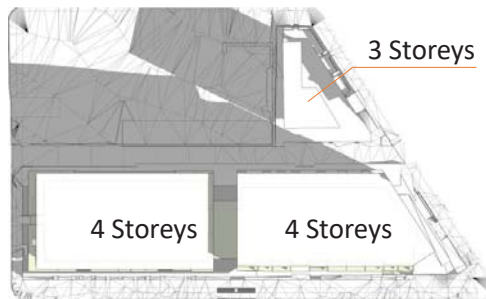
September 23<sup>rd</sup> - 10 am



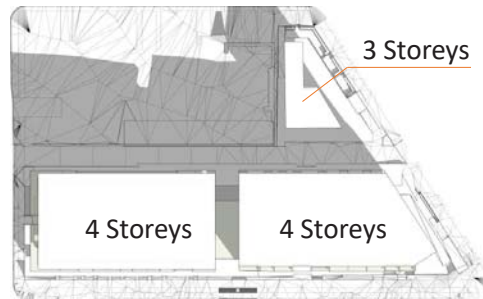
September 23<sup>rd</sup> - 12 pm



September 23<sup>rd</sup> - 2 pm



December 21<sup>st</sup> - 10 am



December 21<sup>st</sup> - 12 pm



December 21<sup>st</sup> - 2 pm



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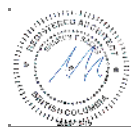
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CONSENT OF INTEGRITY ARCHITECTURE INC. AND/OR  
THE CLIENT'S PROJECT TEAM.



(PROJECT TEAM)



Cascadia Green  
Development

(CLIENT)

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC

(TITLE)

**OCP MASS  
SHADOW STUDY**

471 (PROJECT)

(SCALE)

2020-10-15 (DATE)

(ISSUE)

Issue 06 - RZ /DP Resubmission

(DRAWING)

**A-8.053**

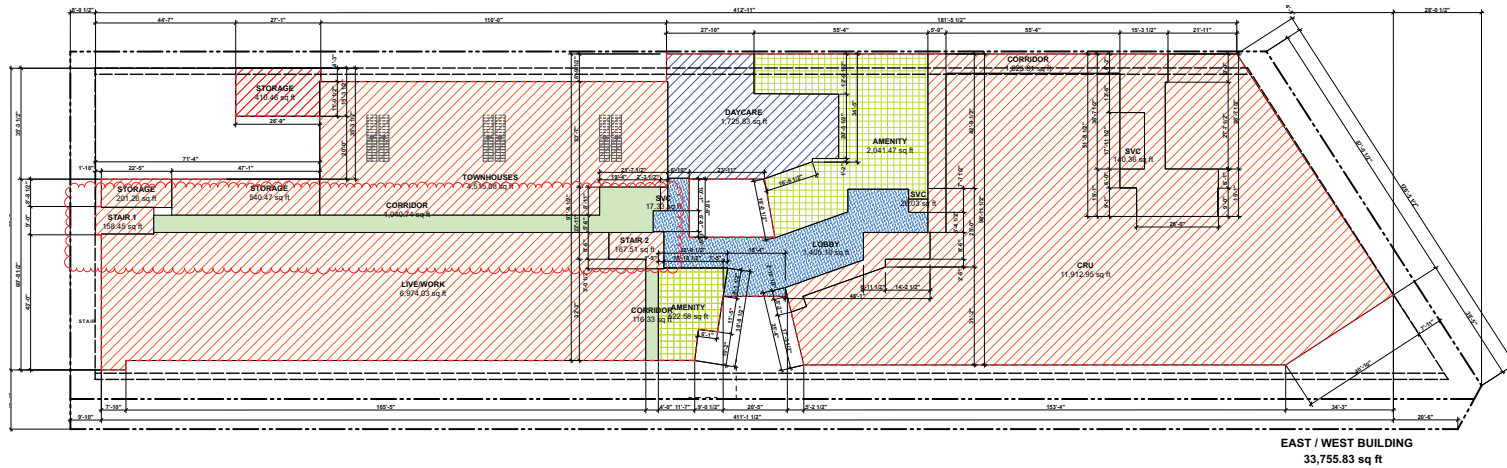
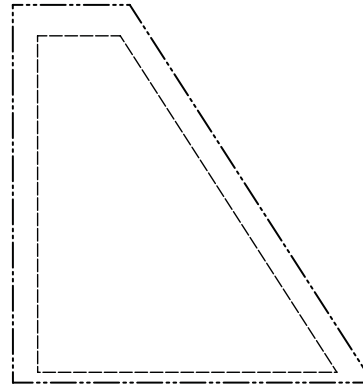


GFA EXCLUSIONS - STAIRS			
LEVEL	BLDG	Zone Name	AREA
Ground Floor			
	WEST	STAIR 1	158.45
	WEST	STAIR 2	167.51
Level 1			
	NORTH	STAIR 1	171.70
	NORTH	STAIR 2	231.25
	WEST	STAIR 1	161.13
	WEST	STAIR 2	144.83
Level 2			
	NORTH	STAIR 1	171.71
	NORTH	STAIR 2	172.08
	WEST	STAIR 1	160.94
	WEST	STAIR 2	144.83
Level 3			
	NORTH	STAIR 1	171.74
	NORTH	STAIR 2	174.78
	WEST	STAIR 1	161.12
	WEST	STAIR 2	144.83
Level 4			
	WEST	STAIR 1	160.65
	WEST	STAIR 2	145.53
Level 5			
	WEST	STAIR 1	164.26
	WEST	STAIR 2	150.94

NOTE: 105% FLOOR TRANSPARENT GLAZING PROVIDED TO ACHIEVE STAIR ZONING BYLAW EXEMPTION

GFA EXCLUSIONS - BALCONIES			
LEVEL	BLDG	Zone Name	AREA
Level 1			
	EAST	BALCONIES	862.85
	WEST	BALCONIES	485.46
	WEST	BALCONIES	1,228.13
Level 2			
	EAST	BALCONIES	100.11
	EAST	BALCONIES	227.34
	EAST	BALCONIES	651.99
	EAST	BALCONIES	1,054.50
	NORTH	BALCONIES	97.07
	NORTH	BALCONIES	415.85
	NORTH	BALCONIES	471.18
	WEST	BALCONIES	1,039.19
	WEST	BALCONIES	1,223.24
Level 3			
	EAST	BALCONIES	80.44
	EAST	BALCONIES	101.68
	EAST	BALCONIES	119.43
	EAST	BALCONIES	177.79
	EAST	BALCONIES	227.99
	EAST	BALCONIES	271.50
	EAST	BALCONIES	1,184.16
	NORTH	BALCONIES	73.50
	NORTH	BALCONIES	96.36
	NORTH	BALCONIES	103.48
	NORTH	BALCONIES	104.16
	NORTH	BALCONIES	107.87
	NORTH	BALCONIES	125.33
	NORTH	BALCONIES	225.26
	WEST	BALCONIES	1,034.49
	WEST	BALCONIES	1,223.24
Level 4			
	EAST	BALCONIES	80.44
	EAST	BALCONIES	101.68
	EAST	BALCONIES	119.43
	EAST	BALCONIES	177.79
	EAST	BALCONIES	227.50
	EAST	BALCONIES	387.74
	EAST	BALCONIES	1,060.50
	NORTH	BALCONIES	35.40
	NORTH	BALCONIES	89.90
	NORTH	BALCONIES	97.13
	NORTH	BALCONIES	100.42
	NORTH	BALCONIES	104.25
	NORTH	BALCONIES	130.15
	NORTH	BALCONIES	154.48
	WEST	BALCONIES	1,063.00
	WEST	BALCONIES	1,160.48
Level 5			
	EAST	BALCONIES	755.02
	EAST	BALCONIES	1,862.81

GFA EXCLUSIONS			
LEVEL	BLDG	Zone Name	AREA
Ground Floor			
	EAST / WEST	AMENITY	522.58
	EAST / WEST	AMENITY	2,941.47
	EAST / WEST	CORRIDOR	1,825.81
	EAST / WEST	CRU	11,912.85
	EAST / WEST	DAYCARE	1,725.83
	EAST / WEST	LIVWORK	8,514.03
	EAST / WEST	LOBBY	1,405.10
	EAST / WEST	STORAGE	201.26
	EAST / WEST	STORAGE	410.46
	EAST / WEST	STORAGE	640.47
	EAST / WEST	SVC	17.53
	EAST / WEST	SVC	26.03
	EAST / WEST	SVC	140.36
	EAST / WEST	TOWNHOUSES	4,515.08
	WEST	STAIR 1	158.45
	WEST	STAIR 2	167.51

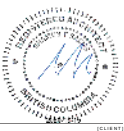


EAST / WEST BUILDING  
33,755.83 sq ft

Ground Floor Overlay  
SCALE: 1/16" = 1'-0"



GFA		
LEVEL	BLDG	AREA
Ground Floor		
	WEST	33,755.83
Level 1		
	EAST	15,380.44
	NORTH	6,025.03
	WEST	17,139.29
Level 2		
	EAST	17,387.60
	NORTH	6,625.14
	WEST	18,284.51
Level 3		
	EAST	17,321.75
	NORTH	4,985.44
	WEST	18,048.22
Level 4		
	EAST	16,982.60
	NORTH	4,162.75
	WEST	15,991.47
Level 5		
	EAST	15,766.52
	WEST	164.25
	WEST	486.87
		208,468.11 sq ft



Cascadia Green  
Development

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC

**GROUND FLOOR  
AREA OVERLAY**

471  
1/16" = 1'-0"  
2020-10-15  
Issue 06 - RZ /DP Resubmission

**A-9.010**



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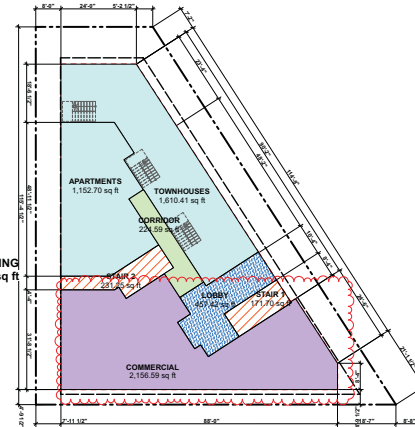
(PROJECT TEAM)

FSR EAST				
LEVEL	BLDG	Zone Category	Name	AREA
Level 1	EAST	Circulation	CORRIDOR	1,829.53
	EAST	Commercial	COMMERCIAL	3,258.50
	EAST	Commercial	COMMERCIAL	7,840.08
	EAST	Commercial	DAYCARE	1,869.20
Level 2	EAST	Circulation	CORRIDOR	1,130.33
	EAST	Residential	APARTMENTS	14,222.08
Level 3	EAST	Circulation	CORRIDOR	1,281.19
	EAST	Residential	APARTMENTS	13,877.53
Level 4	EAST	Circulation	CORRIDOR	1,234.63
	EAST	Residential	APARTMENTS	13,568.90
Level 5	EAST	Circulation	CORRIDOR	1,174.20
	EAST	Residential	APARTMENTS	11,873.33
				72,959.50 sq ft

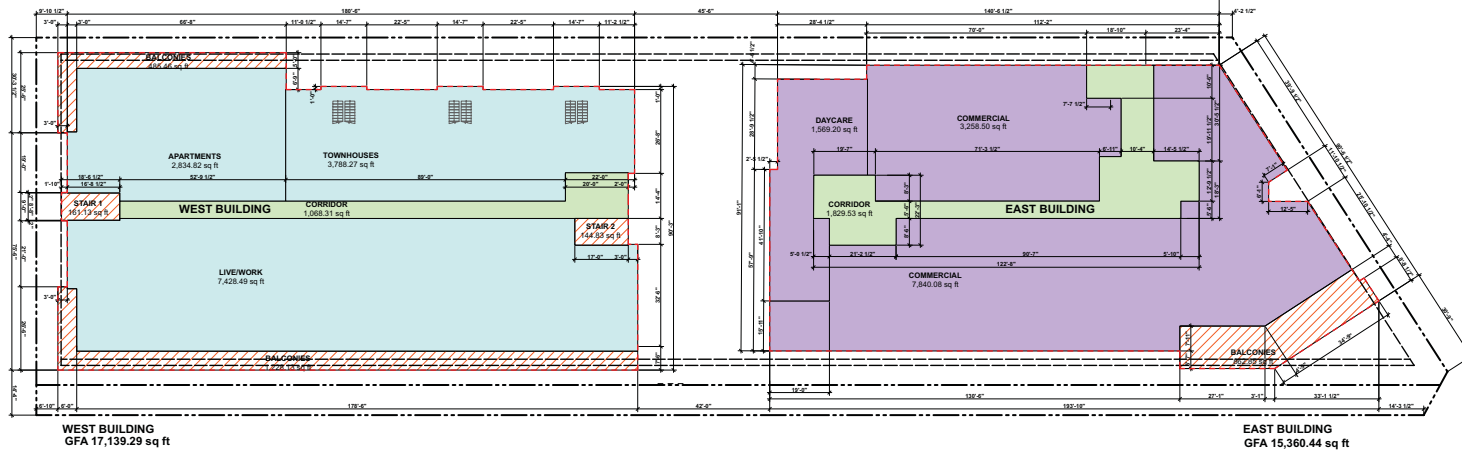
FSR NORTH				
LEVEL	BLDG	Zone Category	Name	AREA
Level 1	NORTH	Circulation	CORRIDOR	224.59
	NORTH	Commercial	COMMERCIAL	2,156.59
	NORTH	Residential	APARTMENTS	1,152.70
	NORTH	Residential	TOWNHOUSES	1,610.41
Level 2	NORTH	Circulation	CORRIDOR	421.54
	NORTH	Residential	APARTMENTS	1,166.24
	NORTH	Residential	APARTMENTS	1,892.62
	NORTH	Residential	TOWNHOUSES	1,620.31
Level 3	NORTH	Circulation	CORRIDOR	338.18
	NORTH	Residential	APARTMENTS	650.27
	NORTH	Residential	APARTMENTS	786.79
	NORTH	Residential	TOWNHOUSES	408.19
Level 4	NORTH	Residential	APARTMENTS	649.39
	NORTH	Residential	TOWNHOUSES	500.95
				3,355.96
				17,584.72 sq ft

FSR WEST				
LEVEL	BLDG	Zone Category	Name	AREA
Ground Floor	WEST	Circulation	CORRIDOR	116.33
	WEST	Circulation	CORRIDOR	1,040.74
Level 1	WEST	Circulation	CORRIDOR	1,868.31
	WEST	Residential	APARTMENTS	2,834.82
	WEST	Residential	LIVE/WORK	7,428.49
	WEST	Residential	TOWNHOUSES	3,788.27
Level 2	WEST	Circulation	CORRIDOR	1,070.08
	WEST	Residential	APARTMENTS	7,321.52
Level 3	WEST	Circulation	CORRIDOR	1,069.96
	WEST	Residential	APARTMENTS	7,087.51
Level 4	WEST	Circulation	CORRIDOR	1,072.82
	WEST	Residential	APARTMENTS	6,173.31
Level 5	WEST	Circulation	CORRIDOR	308.30
	WEST	Circulation	CORRIDOR	61,244.44 sq ft

NORTH BUILDING  
GFA 6,005.03 sq ft



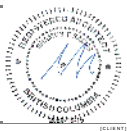
GFA		
LEVEL	BLDG	AREA
Ground Floor		
	WEST	33,755.83
Level 1	EAST	15,360.44
	NORTH	6,005.03
Level 2	EAST	17,387.60
	NORTH	6,628.14
Level 3	EAST	17,321.75
	NORTH	4,985.44
Level 4	EAST	16,982.60
	NORTH	4,162.75
Level 5	EAST	15,766.52
	WEST	164.25
	WEST	486.87
		208,468.11 sq ft



WEST BUILDING  
GFA 17,139.29 sq ft

EAST BUILDING  
GFA 15,360.44 sq ft

Level 1 Overlay  
SCALE: 1/16" = 1'-0"



Cascadia Green  
Development  
(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC  
(TITLE)

LEVEL 1 AREA  
OVERLAY

471 (PROJECT)  
1/16" = 1'-0" (SCALE)  
2022-10-15 (DATE)  
Issue 06 - RZ /DP Resubmission (REVISION)  
(DRAWING)

A-9.015



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(PROJECT TEAM)

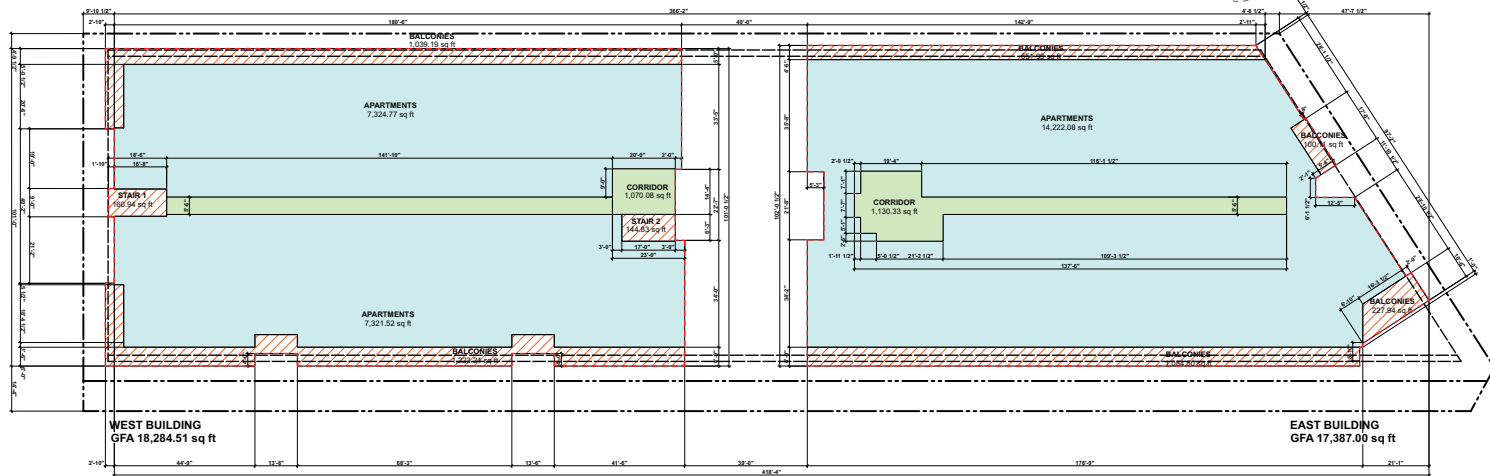
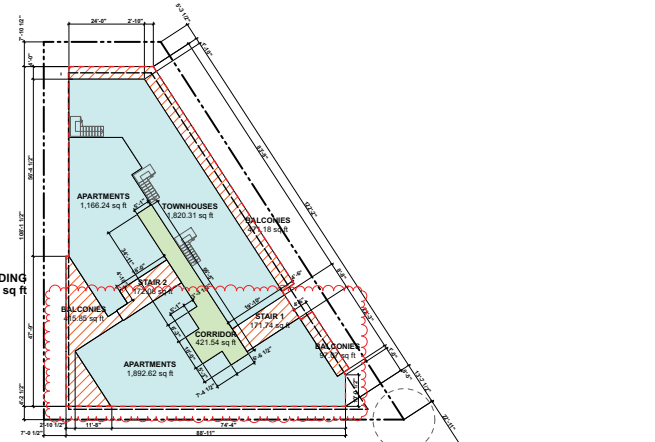
GFA		
LEVEL	BLDG	AREA
Ground Floor		
	WEST	33,755.83
Level 1		
	EAST	15,380.44
	NORTH	6,025.03
	WEST	17,135.29
Level 2		
	EAST	17,387.00
	NORTH	6,625.14
	WEST	18,284.51
Level 3		
	EAST	17,321.75
	NORTH	4,985.44
	WEST	18,048.22
Level 4		
	EAST	16,982.60
	NORTH	4,162.75
	WEST	15,991.47
Level 5		
	EAST	15,766.52
	WEST	164.25
	WEST	456.87
		208,468.11 sq ft

FSR EAST				
LEVEL	BLDG	Zone Category	Name	AREA
Level 1				
	EAST	Circulation	CORRIDOR	1,829.53
	EAST	Commercial	COMMERCIAL	3,258.50
	EAST	Commercial	COMMERCIAL	7,840.08
	EAST	Commercial	DAYCARE	1,869.20
Level 2				
	EAST	Circulation	CORRIDOR	1,130.33
	EAST	Residential	APARTMENTS	14,222.08
Level 3				
	EAST	Circulation	CORRIDOR	1,281.19
	EAST	Residential	APARTMENTS	13,877.53
Level 4				
	EAST	Circulation	CORRIDOR	1,234.63
	EAST	Residential	APARTMENTS	13,568.90
Level 5				
	EAST	Circulation	CORRIDOR	1,174.20
	EAST	Residential	APARTMENTS	11,873.33
				72,959.50 sq ft

FSR WEST				
LEVEL	BLDG	Zone Category	Name	AREA
Ground Floor				
	WEST	Circulation	CORRIDOR	116.53
	WEST	Circulation	CORRIDOR	1,040.74
Level 1				
	WEST	Circulation	CORRIDOR	1,868.31
	WEST	Residential	APARTMENTS	2,834.82
	WEST	Residential	LIVE/WORK	7,428.49
	WEST	Residential	TOWNHOUSES	3,788.27
Level 2				
	WEST	Circulation	CORRIDOR	1,070.08
	WEST	Residential	APARTMENTS	7,321.52
	WEST	Residential	APARTMENTS	7,324.77
Level 3				
	WEST	Circulation	CORRIDOR	1,069.96
	WEST	Residential	APARTMENTS	7,087.51
	WEST	Residential	APARTMENTS	7,324.72
Level 4				
	WEST	Circulation	CORRIDOR	1,072.82
	WEST	Residential	APARTMENTS	6,173.31
	WEST	Residential	APARTMENTS	6,214.49
Level 5				
	WEST	Circulation	CORRIDOR	308.30
				61,244.44 sq ft

FSR NORTH				
LEVEL	BLDG	Zone Category	Name	AREA
Level 1				
	NORTH	Circulation	CORRIDOR	224.59
	NORTH	Commercial	COMMERCIAL	2,156.59
	NORTH	Residential	APARTMENTS	1,152.70
	NORTH	Residential	TOWNHOUSES	1,610.41
Level 2				
	NORTH	Circulation	CORRIDOR	421.54
	NORTH	Residential	APARTMENTS	1,166.24
	NORTH	Residential	APARTMENTS	1,892.62
	NORTH	Residential	TOWNHOUSES	1,620.31
Level 3				
	NORTH	Circulation	CORRIDOR	338.18
	NORTH	Residential	APARTMENTS	650.27
	NORTH	Residential	APARTMENTS	786.79
	NORTH	Residential	TOWNHOUSES	408.19
	NORTH	Residential	TOWNHOUSES	649.39
	NORTH	Residential	TOWNHOUSES	500.95
Level 4				
	NORTH	Residential	TOWNHOUSES	3,355.96
				17,584.72 sq ft

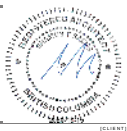
NORTH BUILDING  
GFA 6,628.14 sq ft



WEST BUILDING  
GFA 18,284.51 sq ft

EAST BUILDING  
GFA 17,387.00 sq ft

Level 2 Overlay  
SCALE: 1/16" = 1'-0"



Cascadia Green  
Development  
(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC  
(TITLE)

LEVEL 2 AREA  
OVERLAY

471 (PROJECT)  
1/16" = 1'-0" (SCALE)  
2028-10-15 (DATE)  
Issue 06 - RZ /DP Resubmission (REVISION)  
(DRAWING)

A-9.020



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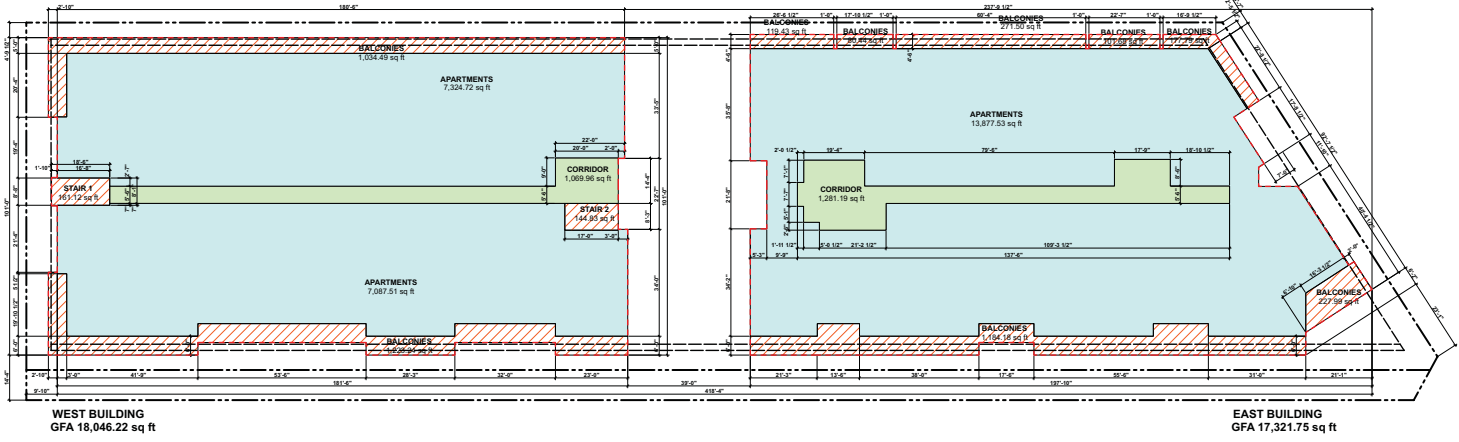
(PROJECT TEAM)

FSR EAST				
LEVEL	BLDG	Zone Category	Name	AREA
Level 1	EAST	Circulation	CORRIDOR	1,829.53
	EAST	Commercial	COMMERCIAL	3,258.50
	EAST	Commercial	COMMERCIAL	7,840.08
	EAST	Commercial	DAYCARE	1,869.20
Level 2	EAST	Circulation	CORRIDOR	1,130.33
	EAST	Residential	APARTMENTS	14,222.08
Level 3	EAST	Circulation	CORRIDOR	1,281.19
	EAST	Residential	APARTMENTS	13,877.53
Level 4	EAST	Circulation	CORRIDOR	1,234.63
	EAST	Residential	APARTMENTS	13,568.90
Level 5	EAST	Circulation	CORRIDOR	1,174.20
	EAST	Residential	APARTMENTS	11,873.33
				<b>72,959.50 sq ft</b>

FSR WEST				
LEVEL	BLDG	Zone Category	Name	AREA
Ground Floor	WEST	Circulation	CORRIDOR	116.33
	WEST	Circulation	CORRIDOR	1,040.74
Level 1	WEST	Circulation	CORRIDOR	1,868.31
	WEST	Residential	APARTMENTS	2,834.82
	WEST	Residential	LIVE/WORK	7,428.49
	WEST	Residential	TOWNHOUSES	3,788.27
Level 2	WEST	Circulation	CORRIDOR	1,070.08
	WEST	Residential	APARTMENTS	7,321.52
	WEST	Residential	APARTMENTS	7,324.77
Level 3	WEST	Circulation	CORRIDOR	1,069.96
	WEST	Residential	APARTMENTS	7,087.51
	WEST	Residential	APARTMENTS	7,324.72
Level 4	WEST	Circulation	CORRIDOR	1,072.82
	WEST	Residential	APARTMENTS	6,173.31
	WEST	Residential	APARTMENTS	6,214.49
Level 5	WEST	Circulation	CORRIDOR	308.30
	WEST	Circulation	CORRIDOR	61,244.44 sq ft

FSR NORTH				
LEVEL	BLDG	Zone Category	Name	AREA
Level 1	NORTH	Circulation	CORRIDOR	224.59
	NORTH	Commercial	COMMERCIAL	2,156.59
	NORTH	Residential	APARTMENTS	1,152.70
	NORTH	Residential	TOWNHOUSES	1,610.41
Level 2	NORTH	Circulation	CORRIDOR	421.54
	NORTH	Residential	APARTMENTS	1,166.24
	NORTH	Residential	APARTMENTS	1,892.62
	NORTH	Residential	TOWNHOUSES	1,620.31
Level 3	NORTH	Circulation	CORRIDOR	338.18
	NORTH	Residential	APARTMENTS	650.27
	NORTH	Residential	APARTMENTS	786.79
	NORTH	Residential	TOWNHOUSES	408.19
Level 4	NORTH	Residential	TOWNHOUSES	649.39
	NORTH	Residential	TOWNHOUSES	500.95
	NORTH	Residential	TOWNHOUSES	3,355.96
	NORTH	Residential	TOWNHOUSES	<b>17,584.72 sq ft</b>

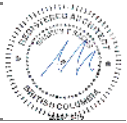
NORTH BUILDING  
GFA 4,985.44 sq ft



WEST BUILDING  
GFA 18,046.22 sq ft

EAST BUILDING  
GFA 17,321.75 sq ft

GFA		
LEVEL	BLDG	AREA
Ground Floor	WEST	33,755.83
	EAST	15,380.44
Level 1	EAST	6,025.03
	WEST	17,135.29
Level 2	EAST	17,387.60
	NORTH	6,628.14
Level 3	WEST	18,284.51
	EAST	17,321.75
Level 4	NORTH	4,985.44
	WEST	18,046.22
Level 5	EAST	16,982.60
	NORTH	4,162.75
Level 6	WEST	15,991.47
	EAST	15,766.52
Level 7	WEST	164.25
	WEST	486.87
		<b>208,468.11 sq ft</b>



Cascadia Green  
Development  
(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC  
(TITLES)

**LEVEL 3 AREA  
OVERLAY**

471 (PROJECT)  
1/16" = 1'-0" (SCALE)  
2026-10-15 (DATE)  
Issue 06 - RZ /DP Resubmission (REVISION)  
(DRAWING)

**A-9.030**

Level 3 Overlay  
SCALE: 1/16" = 1'-0"





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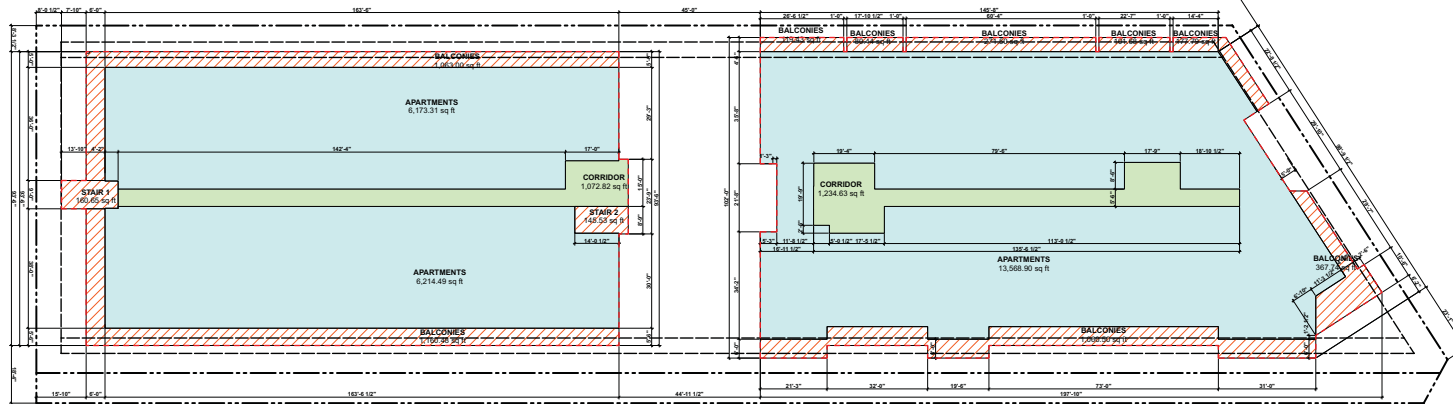
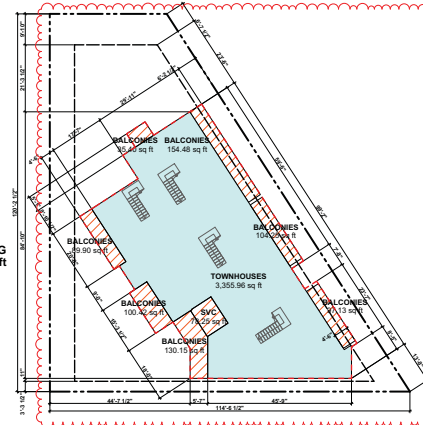
(PROJECT TEAM)

FSR EAST				
LEVEL	BLDG	Zone Category	Name	AREA
Level 1	EAST	Circulation	CORRIDOR	1,829.53
	EAST	Commercial	COMMERCIAL	3,258.50
	EAST	Commercial	COMMERCIAL	7,840.08
	EAST	Commercial	DAYCARE	1,869.20
Level 2	EAST	Circulation	CORRIDOR	1,130.33
	EAST	Residential	APARTMENTS	14,222.08
Level 3	EAST	Circulation	CORRIDOR	1,281.19
	EAST	Residential	APARTMENTS	13,877.53
Level 4	EAST	Circulation	CORRIDOR	1,234.63
	EAST	Residential	APARTMENTS	13,568.90
Level 5	EAST	Circulation	CORRIDOR	1,174.20
	EAST	Residential	APARTMENTS	11,893.33
				<b>72,959.50 sq ft</b>

FSR WEST				
LEVEL	BLDG	Zone Category	Name	AREA
Ground Floor	WEST	Circulation	CORRIDOR	116.33
	WEST	Circulation	CORRIDOR	1,040.74
Level 1	WEST	Circulation	CORRIDOR	1,868.31
	WEST	Residential	APARTMENTS	2,834.82
	WEST	Residential	LIVE/WORK	7,428.49
	WEST	Residential	TOWNHOUSES	3,788.27
Level 2	WEST	Circulation	CORRIDOR	1,070.08
	WEST	Residential	APARTMENTS	7,321.52
Level 3	WEST	Circulation	CORRIDOR	1,069.96
	WEST	Residential	APARTMENTS	7,087.51
Level 4	WEST	Circulation	CORRIDOR	1,072.82
	WEST	Residential	APARTMENTS	6,173.31
Level 5	WEST	Circulation	CORRIDOR	308.30
	WEST	Circulation	CORRIDOR	61,244.44 sq ft

FSR NORTH				
LEVEL	BLDG	Zone Category	Name	AREA
Level 1	NORTH	Circulation	CORRIDOR	224.59
	NORTH	Commercial	COMMERCIAL	2,156.59
	NORTH	Residential	APARTMENTS	1,152.70
	NORTH	Residential	TOWNHOUSES	1,810.41
Level 2	NORTH	Circulation	CORRIDOR	421.54
	NORTH	Residential	APARTMENTS	1,186.24
	NORTH	Residential	APARTMENTS	1,892.82
	NORTH	Residential	TOWNHOUSES	1,820.31
Level 3	NORTH	Circulation	CORRIDOR	338.18
	NORTH	Residential	APARTMENTS	850.27
	NORTH	Residential	APARTMENTS	786.79
	NORTH	Residential	TOWNHOUSES	408.19
Level 4	NORTH	Residential	APARTMENTS	649.39
	NORTH	Residential	TOWNHOUSES	500.95
Level 5	NORTH	Residential	TOWNHOUSES	3,355.96
	NORTH	Residential	TOWNHOUSES	<b>17,584.72 sq ft</b>

NORTH BUILDING  
GFA 4,162.75 sq ft

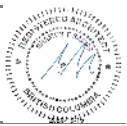


WEST BUILDING  
GFA 15,991.47 sq ft

EAST BUILDING  
GFA 16,982.60 sq ft

Level 4 Overlay  
SCALE: 1/16" = 1'-0"

GFA		
LEVEL	BLDG	AREA
Ground Floor		
	WEST	33,755.83
Level 1		
	EAST	15,580.44
	NORTH	6,025.03
Level 2		
	EAST	17,387.90
	NORTH	6,628.14
Level 3		
	EAST	17,321.75
	NORTH	4,885.44
Level 4		
	EAST	16,982.60
	NORTH	4,162.75
Level 5		
	EAST	15,786.52
	WEST	164.25
	WEST	486.87
		<b>208,468.11 sq ft</b>



Cascadia Green  
Development  
(PROJECT)

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC  
(PROJECT)

LEVEL 4 AREA  
OVERLAY  
(PROJECT)

471  
1/16" = 1'-0"  
2028-10-15  
Issue 06 - RZ /DP Resubmission  
(DRAWING)

**A-9.040**



**Integra**  
ARCHITECTURE INC.  
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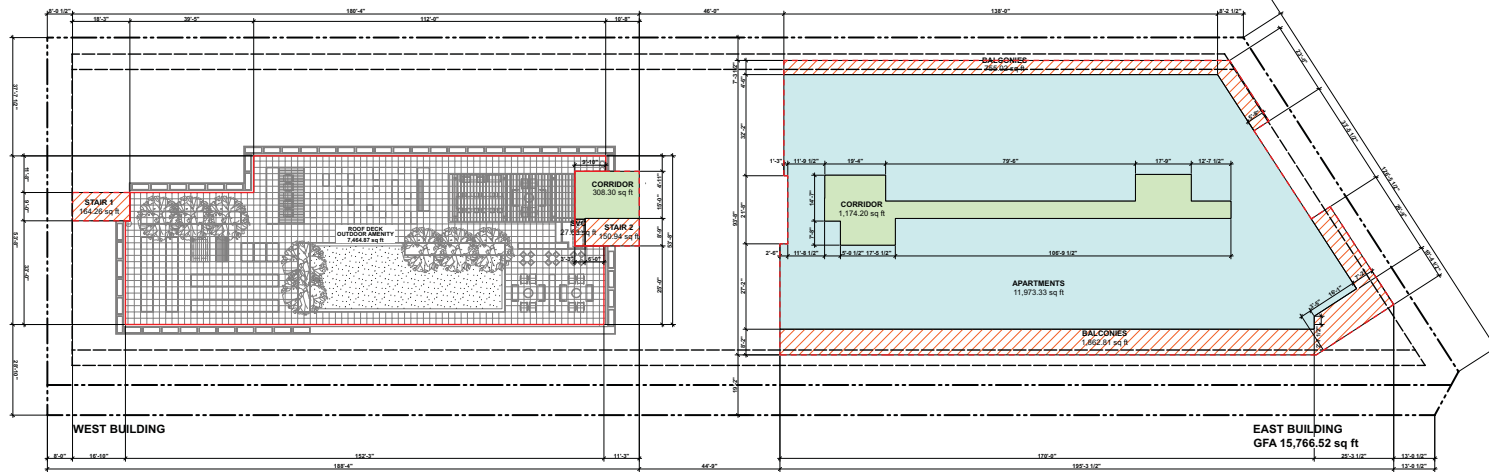
(PROJECT TEAM)

FSR EAST				
LEVEL	BLDG	Zone Category	Name	AREA
Level 1	EAST	Circulation	CORRIDOR	1,829.53
	EAST	Commercial	COMMERCIAL	3,258.50
	EAST	Commercial	COMMERCIAL	7,840.08
	EAST	Commercial	DAYCARE	1,869.20
Level 2	EAST	Circulation	CORRIDOR	1,130.33
	EAST	Residential	APARTMENTS	14,222.08
Level 3	EAST	Circulation	CORRIDOR	1,281.19
	EAST	Residential	APARTMENTS	13,877.53
Level 4	EAST	Circulation	CORRIDOR	1,234.63
	EAST	Residential	APARTMENTS	13,568.90
Level 5	EAST	Circulation	CORRIDOR	1,174.20
	EAST	Residential	APARTMENTS	11,973.33
				72,959.50 sq ft

FSR WEST				
LEVEL	BLDG	Zone Category	Name	AREA
Ground Floor	WEST	Circulation	CORRIDOR	116.33
	WEST	Circulation	CORRIDOR	1,040.74
Level 1	WEST	Circulation	CORRIDOR	1,968.31
	WEST	Residential	APARTMENTS	2,834.82
	WEST	Residential	LIVE/WORK	7,428.49
	WEST	Residential	TOWNHOUSES	3,788.27
Level 2	WEST	Circulation	CORRIDOR	1,070.08
	WEST	Residential	APARTMENTS	7,321.52
Level 3	WEST	Circulation	CORRIDOR	1,069.96
	WEST	Residential	APARTMENTS	7,087.51
Level 4	WEST	Circulation	CORRIDOR	1,072.82
	WEST	Residential	APARTMENTS	6,173.31
Level 5	WEST	Circulation	CORRIDOR	6,214.49
	WEST	Circulation	CORRIDOR	308.30
				38,344.44 sq ft

FSR NORTH				
LEVEL	BLDG	Zone Category	Name	AREA
Level 1	NORTH	Circulation	CORRIDOR	224.59
	NORTH	Commercial	COMMERCIAL	2,156.59
	NORTH	Residential	APARTMENTS	1,152.70
	NORTH	Residential	TOWNHOUSES	1,610.41
Level 2	NORTH	Circulation	CORRIDOR	421.54
	NORTH	Residential	APARTMENTS	1,166.24
	NORTH	Residential	APARTMENTS	1,892.62
	NORTH	Residential	TOWNHOUSES	1,620.31
Level 3	NORTH	Circulation	CORRIDOR	338.18
	NORTH	Residential	APARTMENTS	650.27
	NORTH	Residential	APARTMENTS	786.79
	NORTH	Residential	TOWNHOUSES	408.19
	NORTH	Residential	TOWNHOUSES	649.39
	NORTH	Residential	TOWNHOUSES	500.95
Level 4	NORTH	Residential	TOWNHOUSES	3,355.96
	NORTH	Residential	TOWNHOUSES	17,584.72 sq ft

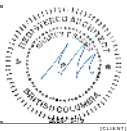
NORTH BUILDING



Level 5 Overlay

SCALE: 1/16" = 1'-0"

GFA		
LEVEL	BLDG	AREA
Ground Floor		
	WEST	33,755.83
Level 1	EAST	15,580.44
	NORTH	6,025.03
	WEST	17,135.29
Level 2	EAST	17,587.60
	NORTH	6,625.14
	WEST	18,284.51
Level 3	EAST	17,521.75
	NORTH	4,985.44
	WEST	18,048.22
Level 4	EAST	16,982.60
	NORTH	4,162.75
	WEST	15,991.47
Level 5	EAST	15,766.52
	WEST	164.25
	WEST	486.87
		208,468.11 sq ft



Cascadia Green  
Development  
(PROJECT TEAM)

402-438 E 3rd St &  
341-343 St Davids Ave  
North Vancouver, BC  
(PROJECT TEAM)

LEVEL 5 AREA  
OVERLAY

471 (PROJECT)  
1/16" = 1'-0" (SCALE)  
2026-10-15 (DATE)  
Issue 06 - RZ /DP Resubmission (REVISION)  
(DRAWING)

A-9.050



402-438 EAST 3<sup>RD</sup> STREET & 341-343 ST.  
DAVIDS AVENUE

Transportation Study (Final)

A handwritten signature in black ink, appearing to read 'Victor Ngo', is positioned above a horizontal line.

Author: Victor Ngo, RPP

Reviewer: Nathan Carswell, P.Eng

Prepared for: **Cascadia Green Development**

Our File: **2572.B01**

Date: **August 10, 2020**



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- Appendix B** Traffic Signal Warrant Analysis
- Appendix C** Trip Generation Internal Capture Estimation
- Appendix D** Swept Path Analysis and Loading Review



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## 1.0 INTRODUCTION

### 1.1 Study Purpose

WATT Consulting Group was retained by Cascadia Green Development to undertake a Level 2 Transportation Study for a proposed mixed-use development application at 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue in North Vancouver, BC for the City of North Vancouver. The proposed development is planned to consist of three buildings with multi-family residential strata and live/work, retail, restaurant, office, and child care uses.

This report was prepared in accordance with the scope of work as defined by the City of North Vancouver in the study terms of reference (May 13, 2019). The report incorporates revisions in response to City staff comments (January 16, 2020; February 26, 2020; and June 30, 2020) and the City's Integrated Transportation Committee meeting (March 4, 2020). The information presented in this report is based on the proposed development program and drawings as of August 7, 2020, unless otherwise noted.

### 1.2 Study Objectives

The objectives of the Transportation Study are to:

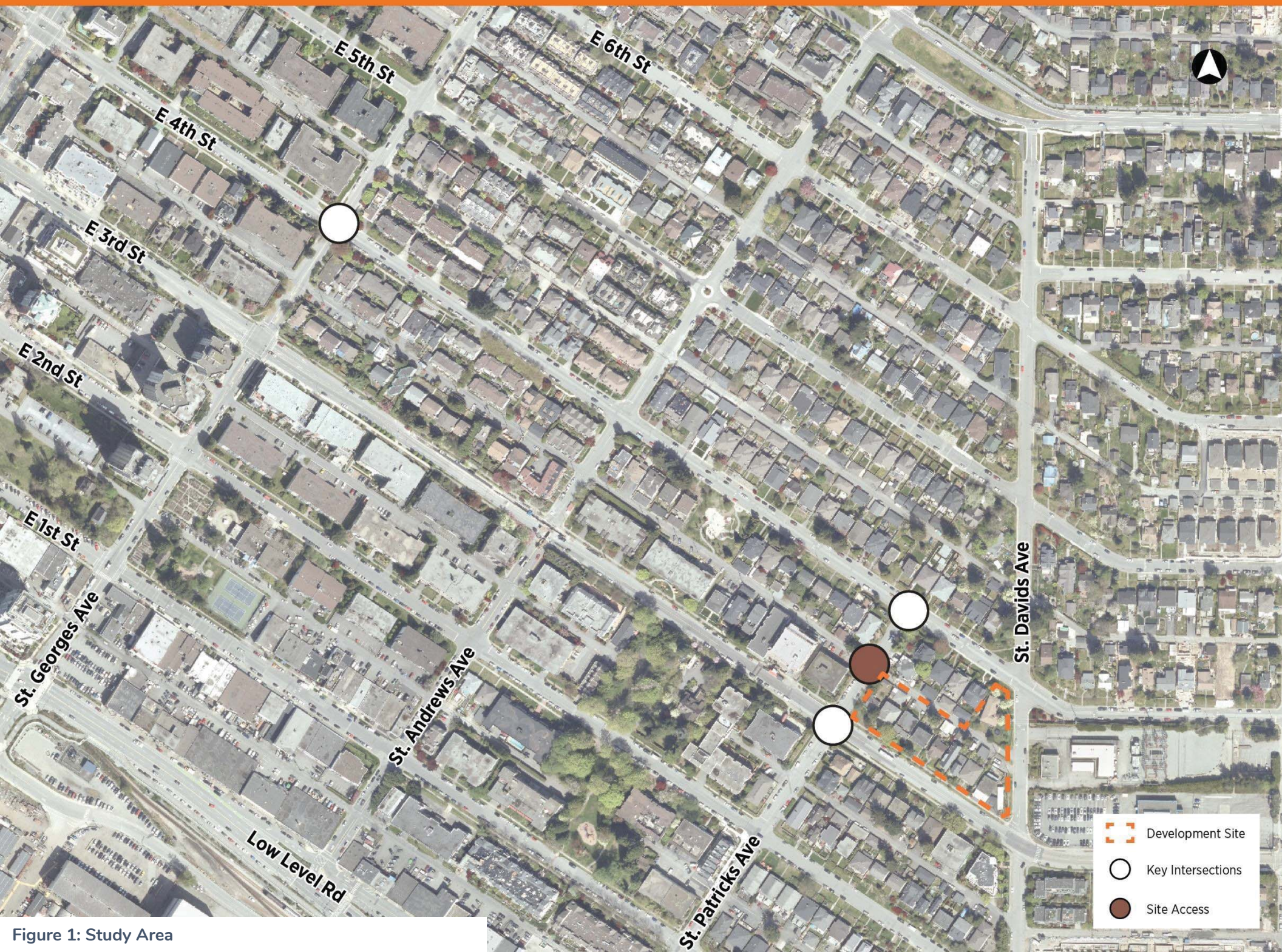
1. Estimate future site traffic generation, distribution, and assignment on the adjacent road network for the weekday morning (AM), weekday afternoon (PM), and Saturday peak periods.
2. Evaluate traffic operations of the adjacent road network and identify potential operational issues and transportation impacts due to the development.
3. Recommend mitigation measures to address off-site transportation impacts due to the development on the adjacent road network if required.
4. Evaluate the proposed site access and on-site circulation and design.
5. Review the off-street parking requirements and potential transportation demand management measures.



### 1.3 Study Area

The subject site is located at 402-438 East 3<sup>rd</sup> Street and 341-343 St Davids Avenue, North Vancouver in the Moodyville area. Site access is proposed to be located off of St. Patricks Avenue. The surrounding area is currently characterized by single- and multi-family residential with limited commercial and industrial land uses. The study area is bounded by East 4<sup>th</sup> Street to the north, St. Davids Avenue to the east, East 3<sup>rd</sup> Street to the south, and St. Georges Avenue to the west (see **Figure 1**).









## 2.0 EXISTING CONDITIONS

### 2.1 Land Use

The subject site is currently located on 10 properties that are occupied by single and multi-family residential and commercial uses. The existing properties are zoned RM-2 (Medium Density Apartment Residential 2), CD-421 (Comprehensive Development 421), C-3 (Local Commercial) and RT-1 (Two-Unit Residential 1) under the City of North Vancouver's Zoning Bylaw (No. 6700).

### 2.2 Transportation Network

#### 2.2.1 Road Network

There are five roadways bordering the site and within the study area.

1. **East 3<sup>rd</sup> Street** is a two-lane minor arterial road and transit route that runs east-west. It provides a key route for commuters travelling east-west through the city. It is designated as a rapid bus transit route.
2. **East 4<sup>th</sup> Street** is a two-lane local road that runs east-west parallel to East 3<sup>rd</sup> Street.
3. **St. Patricks Avenue** is a two-lane local road that runs north-south and connects East 3<sup>rd</sup> Avenue to Low Level Road (via Esplanade Avenue), a major east-west arterial road.
4. **St. Davids Avenue** is a two-lane local road that runs north-south. It is designated as a future greenway that will connect the Green Necklace to the Spirit Trail together.
5. **St. Georges Avenue** is a two-lane minor arterial road that runs north-south and provides a connection to the Trans-Canada Highway/Highway 1.

The posted speed limit on all the roads in the study area is 50 km/h. On-street parking at the vicinity of the subject site is currently available on both sides of East 4<sup>th</sup> Street and St. David Avenue. Parking on East 3<sup>rd</sup> Street was removed with the introduction of the





RapidBus (R2 Marine Drive). Some parking on St. Davids Avenue will be removed in the future with the proposed St. Davids Greenway. On-street parking is available on some segments of St. Georges Avenue, although drivers associated with the site will unlikely park there as there are closer options available. All other characteristics of the study area are described in the *Moodyville Transportation Study (2016)*.

### 2.2.2 Study Intersections

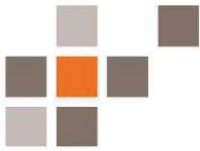
There are three study intersections within the study area as defined by the City:

1. **St. Patricks Avenue/East 3<sup>rd</sup> Street** is an unsignalized four-leg intersection with free movement on East 3<sup>rd</sup> Street (east-west) and stop control on St. Patricks Avenue (north-south).
2. **St. Patricks Avenue/East 4<sup>th</sup> Street** is an unsignalized T-intersection with stop control on St. Patricks Avenue (north-south).
3. **St. Georges Avenue/East 4<sup>th</sup> Street** is an unsignalized four-leg intersection with free movement on St. Georges Avenue (north-south) and stop control on East 4<sup>th</sup> Street (east-west).

### 2.2.3 Existing Pedestrian and Cycling Facilities

There are a number of pedestrian and cycling facilities within proximity of the site.

- There are sidewalks present on both sides of East 3<sup>rd</sup> Street and St. Davids Avenue. There are currently no sidewalks on St. Patricks Avenue between East 4<sup>th</sup> Street and East 3<sup>rd</sup> Street. There is a marked pedestrian crossing on the west leg at the intersection of East 3<sup>rd</sup> Street/St. Patricks Avenue.
- The North Shore Spirit Trail is located within 200 metres of the site at East 2<sup>nd</sup> Street. The Spirit Trail is a 35-kilometre greenway connecting the City of North Vancouver to the rest of the North Shore in both directions.
- There is a Greenway Connector along St. Davids Avenue south of East 3<sup>rd</sup> Street that connects to the Spirit Trail.



- The Green Necklace Trail is located within close proximity to the site (within 600 metres) along East Keith Road. The Green Necklace Trail is a greenway that provides a loop around the city centre.
- There are also a number of designated neighbourhood bicycle routes in the area. These routes include East 4<sup>th</sup> Street and East 2<sup>nd</sup> Street (east of St. Davids Avenue) and St. Davids Avenue (north of East 2<sup>nd</sup> Street).

#### 2.2.4 Existing Transit Facilities

There are two transit routes in close proximity to the site.

- **R2 Marine Drive:** This frequent route runs along the North Shore and connects West Vancouver and North Vancouver. It is part of the Frequent Transit Network with 15-minute service or better until 9 p.m. every day of the week.
- **228 Lynn Valley / Lonsdale Quay:** This local route connects Lonsdale Quay to Lynn Valley and has a service frequency of 15 minutes during the peak hours, and 30 to 60 minutes during off-peak service hours.

The closest local bus stops are located at East 3<sup>rd</sup> Street/St. Patricks Avenue on the northwest corner (eastbound direction) and on the southwest corner (westbound direction). The closest frequent bus stop is located at East 3<sup>rd</sup> Street/Ridgeway Avenue.

#### 2.2.5 Transportation Policy Context

A review of existing planning documents and policy was conducted to inform the work of the Transportation Study for the proposed development.

**Official Community Plan (2008):** The Official Community Plan is a guiding document to achieving a “vibrant, diverse, and highly livable community” that is “resilient to climate or other changes, and sustainable in its ability to prosper” without negatively impacting future generations. The proposed development directly responds to the second goal of the OCP, “Integrate Land Use and Transportation Planning”. The mix of proposed uses will allow residents of Moodyville to access services and amenities within walking



distance. The is located along the future rapid transit corridor which will make active transportation and transit trips more attractive compared to vehicle trips.

**Long-Term Transportation Plan (2008):** The Long-Term Transportation Plan (LTTP) provides a road map to meeting long-term transportation goals and objectives outlined in the previous OCP. This document has a comprehensive analysis of all transportation modes, and provides a vision for each mode within the guiding principals of the OCP.

**Bicycle Master Plan (2012):** The Bicycle Master Plan (BMP) provides a guide to assist the City, in partnership with the District of North Vancouver, to develop a bicycle network that is able to “strengthen community connections, and supports a sustainable transportation system”.

**North Shore Area Transit Plan (2012):** The North Shore Area Transit Plan (NSATP) is a transit plan developed by TransLink to “align with the existing and future needs of the North Shore”. The NSATP is a document that was key in the establishment of the future North Shore Rapid Transit Corridor.

**Moodyville Area Transportation Study (2016):** The Moodyville Area Transportation Study is a document that provides recommendations for future transportation improvements that will support future development in the area. This document was used to determine and inform the following:

- The development buildout that would impact the trip generation for the study’s horizon years (2022 and 2027).
- The modal split for the area to adjust trip generation for the subject site and development traffic in the background.
- Potential road network improvements in the area to support the area.

## 2.3 Traffic Data Collection

To document the existing traffic conditions in the study area as of 2019, turning movement volumes were collected for motor vehicles, bicycle, and pedestrians for three time periods: weekday morning (AM), weekday afternoon (PM), and Saturday mid-day. The traffic counts were scheduled for the estimated peak hour based on a review of previous traffic count data. Weekday counts were conducted between 7:15 am to 8:15



am in the morning, and 4:30 pm to 5:30 pm in the afternoon. Saturday counts were conducted between 12:00 pm to 1:00 pm. The traffic counts were conducted on the following dates and (location):

- Saturday, June 15, 2019 (St. Georges Avenue/East 4<sup>th</sup> Street).
- Tuesday, June 18, 2019 (St. Patricks Avenue/East 3rd Street).
- Wednesday, June 19, 2019 (St. Georges Avenue/East 4<sup>th</sup> Street).
- Thursday, June 20, 2019 (St. Georges Avenue/East 4<sup>th</sup> Street).
- Saturday, June 22, 2019 (St. Patricks Avenue/East 4th Street).
- Saturday, June 29, 2019 (St. Patricks Avenue/East 3<sup>rd</sup> Street).

## 2.4 Traffic Model

Traffic analysis at the operational level was conducted using Synchro 9 following the Highway Capacity Manual (HCM) 2010 methodology. Four measures of effectiveness were used to characterize and evaluate the traffic operations of the study intersections:

- **Level of Service (LOS)** is a qualitative measure used to describe a roadway's operational condition based on factors such as speed, travel time, delay, and type of traffic control. It is a stratification based on six letter grades, ranging from the LOS A (excellent conditions with minimal or no delay) to LOS F (poor conditions with extensive delay). **Table 1** provides an overview of the LOS thresholds.
- **v/c ratio** is the ratio between the demand volume and the capacity of the roadway. A v/c ratio that exceeds 1.00 indicates that more vehicles are using the roadway than can be accommodated, resulting in a congested intersection with delays. A ratio of less than 0.90 is desirable in urban settings.
- **Total delay** (measured in seconds per vehicle) is the total additional travel time for a vehicle due to all delay components, including traffic control, queuing, etc.
- **95<sup>th</sup> percentile queue length** (measured in meters) is the queue length that has a 5.0% probability of being exceeded during the analysis time period.





**Table 1: Motor Vehicle Level of Service (LOS) Thresholds.**

Level of Service (LOS)	Average Vehicle Delay (seconds per vehicle)	
	Signalized	Unsignalized
A	Less than or equal to 10	Less than or equal to 10
B	>10 to 20	>10 to 15
C	>20 to 35	>15 to 25
D	>35 to 55	>25 to 35
E	>55 to 80	>35 to 50
F	More than 80	More than 50

The simulation settings for the Synchro model used the following parameters:

- Saturation flow rate of 1,900 vehicles per hour per lane.
- Passenger vehicle length of 7.5 meters.
- Heavy vehicle length of 12.2 meters.
- Peak Hour Factors (PHF) estimated from count data.
- Heavy vehicle % estimated from count data.

The 95<sup>th</sup> percentile queues are modelled in Synchro, unless otherwise noted. The observed and modelled traffic volumes were unbalanced (i.e., vehicles leaving one intersection do not all show up at the other intersection). **Appendix A** provides a copy of the Synchro reports.

## 2.5 Traffic Performance Thresholds

LOS D is the minimum accepted level of service for both signalized and unsignalized intersections in the City of North Vancouver. The minimum acceptable v/c ratio is 0.9 overall for signalized intersections, and 0.95 for individual movements.



## 2.6 Existing (2019) Traffic Conditions

The 2019 existing traffic conditions are summarized in **Table 2** and **Table 3** for the weekday morning/afternoon and Saturday periods respectively. The peak hour traffic volumes are shown in **Figure 2**. All intersection movements operate at LOS D or better during the peak period, and there are no major delays or queuing issues.

**Table 2: Existing (2019) Weekday Traffic Conditions**

Intersection	Movement	Weekday AM Peak Hour					Weekday PM Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)	Vol	v/c	LOS	Delay (s/veh)	Queue (m)
St. Patricks Avenue/ East 4th Street	NBLR	8	0.01	A	9	0	13	0.03	A	9	1
	WBL	8	0.01	A	7	0	3	0.01	A	7	0
	WBT	10	-	A	0	0	11	-	A	0	0
	EBT	10	-	A	0	0	34	-	A	0	0
	EBR	7	-	A	0	0	4	-	A	0	0
	Overall	LOS A / DELAY 3s					LOS A / DELAY 3s				
St. Patricks Avenue/ East 3rd Street	NBLTR	36	0.16	C	15	5	85	0.4	D	25	14
	SBLTR	27	0.10	C	15	2	8	0.06	C	20	2
	WBL	19	0.02	A	8	1	22	0.03	A	9	1
	WBT	302	-	A	0	0	457	-	A	0	0
	WBR	4	-	A	0	0	6	-	A	0	0
	EBL	7	0.02	A	8	0	15	0.02	A	9	1
	EBT	269	-	A	0	0	530	-	A	0	0
	EBR	7	-	A	0	0	13	-	A	0	0
	Overall	LOS A / DELAY 2s					LOS A / DELAY 3s				
St. Georges Avenue/ East 4th Street	EBLTR	35	0.10	B	12	2	74	0.35	C	21	11
	WBLTR	25	0.07	B	13	2	29	0.18	C	19	5
	NBL	13	0.02	A	8	1	23	0.02	A	8	1
	NBT	113	-	A	0	0	319	-	A	0	0
	NBR	7	-	A	0	0	20	-	A	0	0
	SBL	1	0.07	A	8	0	10	0.01	A	8	0
	SBT	198	-	A	0	0	263	-	A	0	0
	SBR	12	-	A	0	0	12	-	A	0	0
	Overall	LOS A / DELAY 3s					LOS A / DELAY 4s				



**Table 3: Existing (2019) Saturday Traffic Conditions**

Intersection	Movement	Saturday Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)
St. Patricks Avenue/ East 4th Street	NBLR	10	0.10	A	9	1
	WBL	3	0.00	A	7	0
	WBT	14	-	A	0	0
	EBT	13	-	A	0	0
	EBR	4	-	A	0	0
	Overall	LOS A / DELAY 3s				
St. Patricks Avenue/ East 3rd Street	NBLTR	29	0.09	B	15	2
	SBLTR	9	0.06	C	16	2
	WBL	11	0.02	A	8	1
	WBT	415	-	A	0	0
	WBR	4	-	A	0	0
	EBL	4	0.01	A	9	0
	EBT	345	-	A	0	0
	EBR	11	-	A	0	0
	Overall	LOS A / DELAY 1s				
St. Georges Avenue/ East 4th Street	EBLTR	39	0.17	C	16	5
	WBLTR	27	0.10	C	15	2
	NBL	15	0.02	A	8	1
	NBT	232	-	A	0	0
	NBR	14	-	A	0	0
	SBL	5	0.01	A	8	0
	SBT	233	-	A	0	0
	SBR	19	-	A	0	0
	Overall	LOS A / DELAY 2s				



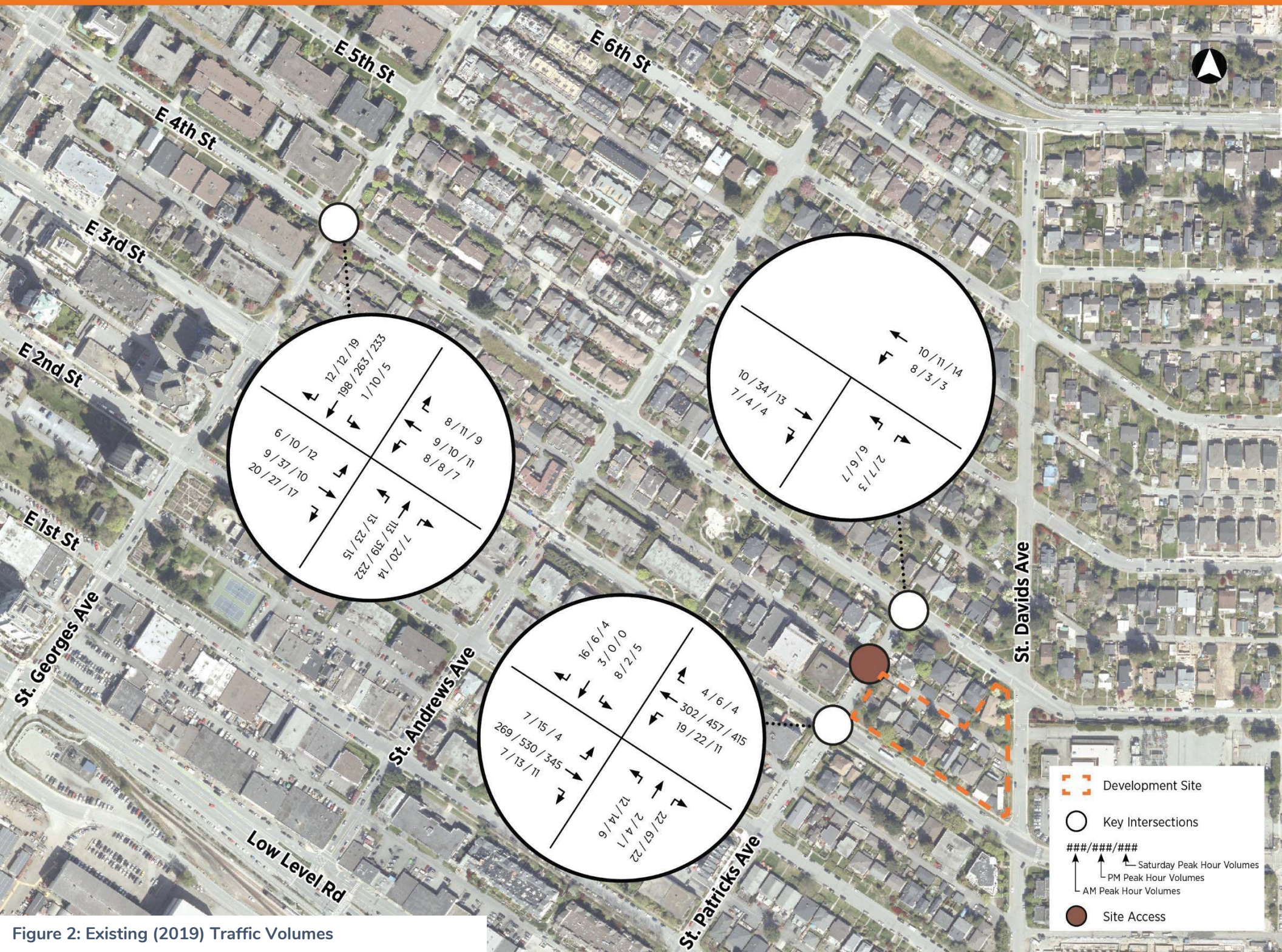


Figure 2: Existing (2019) Traffic Volumes





## 3.0 FUTURE BACKGROUND CONDITIONS

### 3.1 Trip Generation

Two horizon years for the operational analysis were defined based on the proposed development timeline: opening day of the development (2022) and five-year post-development horizon year (2027).

Two components of the background (or base) traffic volumes were estimated to determine future conditions. First, city-wide background traffic volumes were forecast using a 1.0% linear growth rate applied to the existing 2019 traffic volumes. Second, area-specific traffic volumes from anticipated redevelopment of the Moodyville area were added to background traffic as per the travel demand forecast methodology described in the *Moodyville Area Transportation Study*. These two components were summed together to estimate the total future background volumes.

The following list outlines the assumptions used as part of the trip generation component of the area-specific forecast, based on direction provided by City staff:

1. By 2045, the Moodyville area plan proposes a maximum buildout of up to 1,900 dwelling units in the area based on zoned capacity. The travel demand forecast in the *Moodyville Area Transportation Study* uses a full buildout of 1,334 dwelling units to estimate trip generation (70% of the maximum buildout).
2. According to the City, development growth in the area has occurred sooner than expected. For the purposes of the traffic analysis, 40% of the full buildout (439 of 1,334 dwelling units) was assumed to occur by 2022 (opening day horizon year) and 90% of the full buildout (1,106 out of 1,334 units) by 2027.
3. The area-specific traffic volumes excluded the 95 dwelling units identified in the *Moodyville study* for the subject site to avoid double counting.
4. Trip generation for the area-specific traffic volumes used the following parameters: 2.40 persons per dwelling unit; 3.03 trips per day; weekday AM share of daily traffic of 8.1% (30% inbound, 70% outbound); and weekday PM share of daily traffic of 9.0% (57% inbound, 43% outbound).



5. The mode share assignment used the moderate scenario (base year of 2015) of 60% auto and 40% non-auto (19% transit, 17% walk, 3% bicycle, and 1% other) for the 2045 horizon year. Mode share was adjusted for the 2022 and 2027 horizon years assuming a linear growth rate (see **Table 4**).

**Table 4: Traffic Forecast Mode Share Assumptions**

Year	Mode Share		
	Auto	Transit	Walk, Bike, and Other
2015 (Base)	69%	15%	17%
2022	67%	15%	18%
2027	65%	16%	19%
2045	60%	19%	21%

## 3.2 Trip Distribution and Assignment

The following list outlines the assumptions used as part of the trip distribution and assignment component of the city-wide and area-specific forecast.

1. Trip distribution and assignment for the city-wide traffic was based on observed directional splits in the adjacent road network from the existing 2019 count data.
2. Trip distribution and assignment for the area-specific traffic assumed 70% of trips would travel to/from the west (Lonsdale Corridor), and 30% of trips would travel to/from the east (District of North Vancouver) via East 3<sup>rd</sup> Street as per the *Moodyville Transportation Area Study*.
3. All area-specific traffic (from the 400, 500, 600, 700, and 800 block of Moodyville, representing approximately 70% of dwelling units in the full buildout for the area) travelling to/from the west for access and egress to Moodyville were assumed to use East 3<sup>rd</sup> Street due to the subject site's location on the western edge of Moodyville (see **Figure 3**). This specifically impacts the St. Patricks Avenue/East 3<sup>rd</sup> Avenue study intersection. This is a conservative assumption and potentially overestimates the amount of area-specific traffic travelling on East 3<sup>rd</sup> Street.



4. Area-specific traffic originating from the 400 block (representing approximately 30% of dwelling units in the full buildout for the area) travelling to the east are assumed to use the St. Patricks Avenue/East 3<sup>rd</sup> Avenue intersection for egress from Moodyville (see **Figure 3**). Traffic travelling from the east for access into Moodyville are assumed to use an intersection upstream of the St. Patricks Avenue/East 3<sup>rd</sup> Avenue where a full traffic signal is available for left-turning movements.
5. The City is proposing neighbourhood traffic calming measures as part of the proposed St. Davids Avenue Greenway. Specifically, within the study area, east-west traffic at St. Davids Avenue/East 4<sup>th</sup> Street will be restricted by use of a diverter. As the greenway configuration and the impact to neighbourhood circulation outside of the study area are unknown at the time of writing, all through east-west movements (i.e., the highest volumes) at St. Patricks Avenue Avenue/East 4<sup>th</sup> Street were rerouted to East 3<sup>rd</sup> Street. All other minor movement volumes remained the same. This is a conservative assumption and potentially overestimates the amount of area-specific traffic using the St. Patricks Avenue/East 3<sup>rd</sup> Avenue intersection.

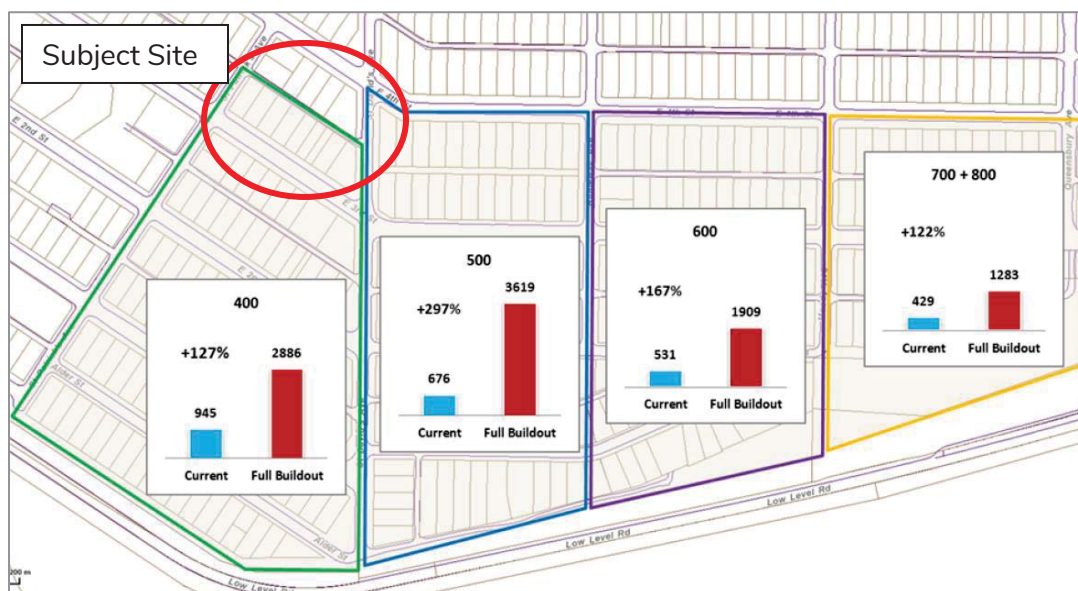


Figure 3: Moodyville Area Blocks



### 3.3 Future Background (2022) Traffic Conditions

The 2022 future background traffic conditions are summarized in **Table 5** and **Table 6** for the weekday morning/afternoon and Saturday periods respectively. The peak hour traffic volumes are shown in **Figure 4**.

During the PM peak hour, the northbound movement at St. Patricks Avenue/East 3<sup>rd</sup> Street is forecast to fail and operate at LOS E (v/c of 0.60; delay of 41 seconds per vehicle; and queue length of 23 metres). Volumes on both the minor north and southbound approach are less than 100 vehicles. All other movements operate at LOS D or better during the peak period, and there are no major delays or queuing issues.

**Table 5: Future Background (2022) Weekday Traffic Conditions**

Intersection	Movement	Weekday AM Peak Hour					Weekday PM Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)	Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)
St. Patricks Avenue/ East 4th Street	NBLR	8	0.01	A	9	0	13	0.03	A	9	1
	WBL	8	0.01	A	7	0	3	0.01	A	7	0
	WBT	0	-	A	0	0	0	-	A	0	0
	EBT	0	-	A	0	0	0	-	A	0	0
	EBR	7	-	A	0	0	4	-	A	0	0
	Overall	LOS A / DELAY 6s					LOS A / DELAY 7s				
St. Patricks Avenue/ East 3rd Street	NBLTR	37	0.20	C	18	5	87	0.60	E	41	23
	SBLTR	27	0.13	C	18	3	8	0.09	D	27	2
	WBL	20	0.03	A	8	1	23	0.03	A	9	1
	WBT	389	-	A	0	0	553	-	A	0	0
	WBR	4	-	A	0	0	6	-	A	0	0
	EBL	7	0.02	A	9	0	15	0.03	A	9	1
	EBT	313	-	A	0	0	659	-	A	0	0
	EBR	7	-	A	0	0	13	-	A	0	0
	Overall	LOS A / DELAY 2s					LOS A / DELAY 4s				





**Table 5 (continued): Future Background (2022) Weekday Traffic Conditions**

Intersection	Movement	Weekday AM Peak Hour					Weekday PM Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)	Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)
St. Georges Avenue/ East 4th Street	EBLTR	36	0.10	B	12	2	76	0.37	C	22	12
	WBLTR	25	0.07	B	13	2	29	0.18	C	20	5
	NBL	13	0.02	A	8	1	24	0.03	A	8	1
	NBT	116	-	A	0	0	329	-	A	0	0
	NBR	7	-	A	0	0	21	-	A	0	0
	SBL	1	0.07	A	8	0	10	0.01	A	8	0
	SBT	204	-	A	0	0	271	-	A	0	0
	SBR	12	-	A	0	0	12	-	A	0	0
	Overall	LOS A / DELAY 3s					LOS A / DELAY 4s				



**Table 6: Future Background (2022) Saturday Traffic Conditions**

Intersection	Movement	Saturday Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)
St. Patricks Avenue/ East 4th Street	NBLR	10	0.02	A	9	0
	WBL	3	0.01	A	7	0
	WBT	0	-	A	0	0
	EBT	0	-	A	0	0
	EBR	4	-	A	0	0
	Overall	LOS A / DELAY 7s				
St. Patricks Avenue/ East 3rd Street	NBLTR	30	0.11	C	15	3
	SBLTR	9	0.07	C	16	2
	WBL	11	0.02	A	8	1
	WBT	488	-	A	0	0
	WBR	4	-	A	0	0
	EBL	4	0.01	A	9	0
	EBT	424	-	A	0	0
	EBR	11	-	A	0	0
	Overall	LOS A / DELAY 1s				
St. Georges Avenue/ East 4th Street	EBLTR	40	0.17	C	16	5
	WBLTR	27	0.10	C	16	2
	NBL	15	0.02	A	8	1
	NBT	239	-	A	0	0
	NBR	14	-	A	0	0
	SBL	5	0.01	A	8	0
	SBT	240	-	A	0	0
	SBR	20	-	A	0	0
	Overall	LOS A / DELAY 2s				



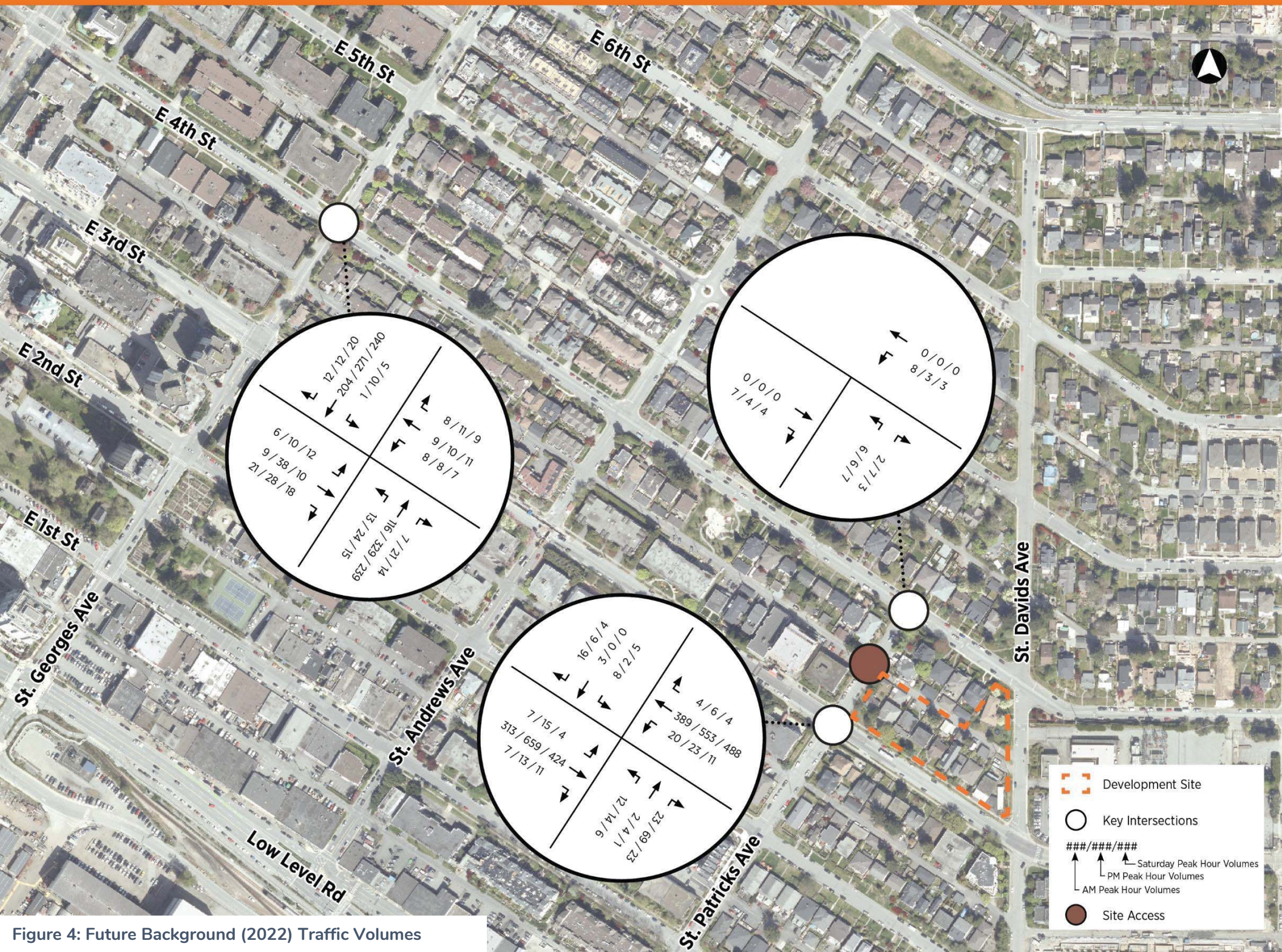


Figure 4: Future Background (2022) Traffic Volumes





### 3.4 Future Background (2027) Traffic Conditions

The 2027 future background traffic conditions are summarized in **Table 7** and **Table 8** for the weekday morning/afternoon and Saturday periods respectively. The peak hour traffic volumes are shown in **Figure 5**.

During the PM peak hour, the northbound movement at St. Patricks Avenue/East 3<sup>rd</sup> Street continues to fail and is forecast to operate at LOS F (v/c of 0.90; delay of 115 seconds per vehicle; and queue length of 46 metres). The southbound movement begins to fail and is forecast to operate at LOS E (v/c of 0.16; delay of 49 seconds; and queue length of 5 metres). Volumes on both the north and southbound minor approach are less than 100 vehicles. All other intersection movements operate at LOS D or better during the peak period, and there are no major delays or queuing issues.

**Table 7: Future Background (2027) Weekday Traffic Conditions**

Intersection	Movement	Weekday AM Peak Hour					Weekday PM Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)	Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)
St. Patricks Avenue/ East 4th Street	NBLR	8	0.01	A	9	0	14	0.03	A	9	1
	WBL	9	0.01	A	7	0	3	0.01	A	7	0
	WBT	0	-	A	0	0	0	-	A	0	0
	EBT	0	-	A	0	0	0	-	A	0	0
	EBR	8	-	A	0	0	4	-	A	0	0
	Overall	LOS A / DELAY 6s					LOS A / DELAY 7s				
St. Patricks Avenue/ East 3rd Street	NBLTR	39	0.29	C	25	9	92	0.90	F	115	46
	SBLTR	29	0.19	C	24	5	8	0.16	E	49	5
	WBL	21	0.03	A	8	1	24	0.04	A	10	1
	WBT	511	-	A	0	0	687	-	A	10	0
	WBR	4	-	A	0	0	6	-	A	0	0
	EBL	8	0.02	A	9	1	16	0.03	A	9	1
	EBT	367	-	A	0	0	808	-	A	0	0
	EBR	8	-	A	0	0	14	-	A	0	0
	Overall	LOS A / DELAY 3s					LOS A / DELAY 8s				





**Table 7 (continued): Future Background (2027) Weekday Traffic Conditions**

Intersection	Movement	Weekday AM Peak Hour					Weekday PM Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)	Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)
St. Georges Avenue/ East 4th Street	EBLTR	38	0.11	B	13	3	80	0.41	D	25	14
	WBLTR	28	0.08	B	13	2	32	0.22	C	21	6
	NBL	14	0.02	A	8	1	25	0.03	A	8	1
	NBT	122	-	A	0	0	345	-	A	0	0
	NBR	8	-	A	0	0	22	-	A	0	0
	SBL	1	0.01	A	8	0	11	0.02	A	8	0
	SBT	214	-	A	0	0	285	-	A	0	0
	SBR	13	-	A	0	0	13	-	A	0	0
	Overall	LOS A / DELAY 3s					LOS A / DELAY 5s				



**Table 8: Future Background (2027) Saturday Traffic Conditions**

Intersection	Movement	Saturday Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)
St. Patricks Avenue/ East 4th Street	NBLR	11	0.02	A	9	1
	WBL	3	0.01	A	7	0
	WBT	0	-	A	0	0
	EBT	0	-	A	0	0
	EBR	4	-	A	0	0
	Overall	LOS A / DELAY 7s				
St. Patricks Avenue/ East 3rd Street	NBLTR	31	0.15	C	21	4
	SBLTR	9	0.10	C	25	2
	WBL	12	0.02	A	9	1
	WBT	583	-	A	0	0
	WBR	4	-	A	0	0
	EBL	4	0.01	A	9	0
	EBT	526	-	A	0	0
	EBR	12	-	A	0	0
	Overall	LOS A / DELAY 1s				
St. Georges Avenue/ East 4th Street	EBLTR	42	0.19	C	17	5
	WBLTR	30	0.11	C	17	3
	NBL	16	0.02	A	8	1
	NBT	251	-	A	0	0
	NBR	15	-	A	0	0
	SBL	5	0.01	A	8	0
	SBT	252	-	A	0	0
	SBR	21	-	A	0	0
	Overall	LOS A / DELAY 3s				



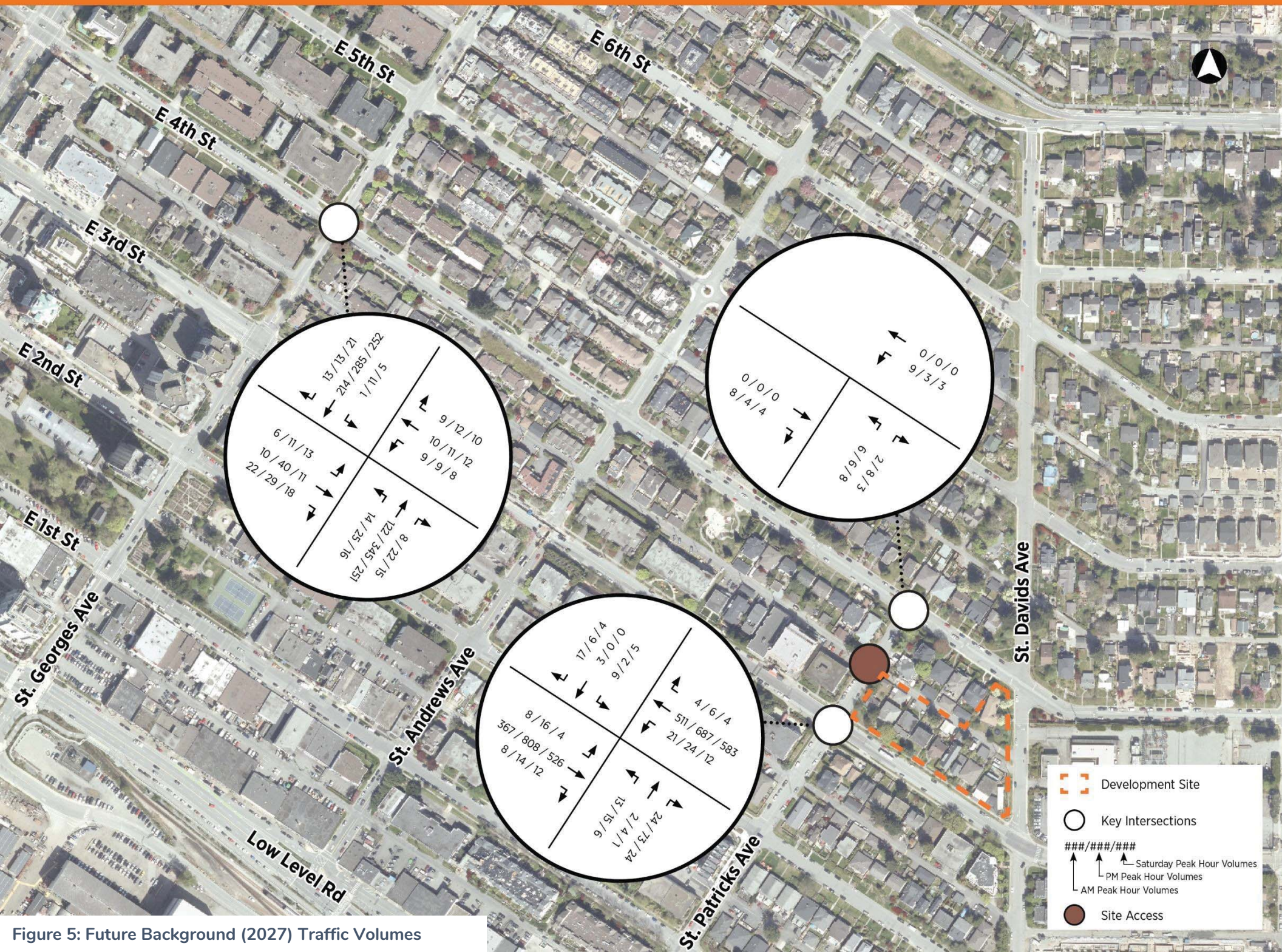


Figure 5: Future Background (2027) Traffic Volumes





## 3.6 Future Background Improvement Measures

By 2027, traffic operations for the north and southbound movements at the intersection of St. Patricks Avenue/East 3<sup>rd</sup> Street are forecast to fail and operate at LOS F and E respectively during the busiest analysis hour (weekday PM period). While traffic volumes on the minor approaches are less than 100 vehicles per hour during peak time, the intersection delays are a result of the heavy through volumes on East 3<sup>rd</sup> Street. This makes it difficult for north and southbound through and left-turning traffic to find a gap.

### 3.6.1 Traffic Signal Warrant

A Transportation Association of Canada (TAC) signal warrant was conducted for the 2027 background scenario for the St. Patricks Avenue/East 3<sup>rd</sup> Street intersection (see **Appendix B**). Only two hours of traffic volume data was used to estimate the warrant score (six hours of volume data are recommended). For that reason, the warrant score will be overestimated as it does not take into account mid-day volumes, which are lower than the morning and afternoon peak hour volumes.

- The warrant score was estimated to be 50 (29 vehicle score and 21 pedestrian score) and did not meet the warrant threshold of 100 points.
- The warrant criteria of 75 vehicles on the side street was not satisfied.

Based on the TAC signal warrant, a signal at the St. Patricks Avenue/East 3<sup>rd</sup> Street intersection for the 2027 background horizon year is not recommended at this time. It is noted that meeting or not meeting the warrant calculation is not sufficient grounds by itself to recommend or not recommend a traffic signal.

### 3.6.2 Transportation Impacts

A traffic signal was found to not be warranted for the intersection of St. Patricks Avenue/East 3<sup>rd</sup> Street based on the TAC signal warrant. Due to the expected congestion on East 3<sup>rd</sup> Street, drivers will likely take alternative routes.

- Southbound right-turning traffic travelling to/from the west (Lonsdale Corridor) may re-route from using St. Patricks Avenue/East 3<sup>rd</sup> Street to using St. Patricks





- Avenue/East 4<sup>th</sup> Street. However, due to the low volume of vehicles travelling in this direction, this is not anticipated to be an issue with consideration to East 4<sup>th</sup> Street's classification as a shared neighbourhood bikeway.
- Southbound left-turning traffic using St. Patricks Avenue/East 3<sup>rd</sup> Street travelling to/from the east will have limited options, as no through movement in the eastbound and westbound direction will be permitted at St. Davids Avenue/East 4<sup>th</sup> Street as a result of the proposed diverter. However, less traffic is expected to go to/from this direction to the east compared to the west based on the expected trip distribution.
  - The adjacent signalized intersections on East 3<sup>rd</sup> Street at Ridgeway Avenue (to the east) and St. Andrews Avenue (to the west) are in close proximity to the St. Patricks Avenue/East 3<sup>rd</sup> Street intersection (less than 400 metres) and may provide a platooning effect that will provide sufficient gaps for traffic to turn out of the intersection onto East 3<sup>rd</sup> Street. Microsimulation modelling would be required to confirm this.

There are a number of pedestrians crossing on all four legs at the St. Patricks Avenue/East 3<sup>rd</sup> Street intersection based on existing count data (AM peak hour: 32 pedestrians; PM peak hour: 35 pedestrians; and Saturday peak hour: 33 pedestrians). As a local bus stop is located at this intersection (northwest and southeast corner), additional marked pedestrian crossings should be provided at the intersection, particularly on the east leg. Sensitivity testing using additional pedestrian volumes did not result in the warrant being met as the second warrant criteria of 75 vehicles on the side street was unchanged.

Traffic volumes at the intersection of St. Patricks Avenue/East 3<sup>rd</sup> Street should be monitored and a review of the existing crossing should be completed in the future to determine if upgrades are needed.



## 4.0 FUTURE DEVELOPMENT CONDITIONS

### 4.1 Proposed Land Use

The mixed-use development is planned to consist of approximately 146,638 ft<sup>2</sup> of gross floor area with the following proposed uses as of August 2020:

- Multi-family residential and live/work (166 dwelling units).
- Retail (11,071 ft<sup>2</sup> GFA).
- Restaurant (7,205 ft<sup>2</sup> GFA) and café (2,323 ft<sup>2</sup> GFA).
- Office (3,448 ft<sup>2</sup> GFA) and medical office (1,115 ft<sup>2</sup> GFA).
- Child care (3,354 ft<sup>2</sup> GFA; 30 to 35 spaces).

Site access is proposed to be located off of St. Patricks Avenue with access to structured underground parking. Access via the laneway to/from St. Davids Avenue will be restricted to support the proposed St. Davids Avenue Greenway. The development is planned to occur in one phase. The opening day of the development is anticipated to be 2022. **The traffic analysis in Section 4 are based on land use quantities from February 2020, which are larger in size compared to the current August 2020 program.**

### 4.2 Trip Generation

The number of external vehicle trips forecast to be generated from the proposed development was estimated using the methodology described in the Institute of Transportation Engineers (ITE)'s *Trip Generation Handbook*, 3<sup>rd</sup> Edition. Baseline vehicle trips were estimated using trip generation data from the *Trip Generation Manual*, 10<sup>th</sup> Edition, supplemented with additional data where possible (see **Table 9** for trip generation rates, and **Table 10 & 11** for trips based on the February 2020 program).

As the site is a mixed-use and infill development, internal capture and mode share adjustments were made following the methodology and procedures outlined in the NCHRP Report 684: *Enhancing Internal Trip Capture Estimation for Mixed-Use Development*. Mode share adjustments were consistent with the assumptions in the background scenario (see **Section 3.1**). See **Appendix B** for the internal trip calculations.



**Table 9: Site Vehicle Trip Generation Rates**

Land Use	Trip Generation Source	Land Use Unit	Weekday AM			Weekday PM			Saturday		
			Rate	In	Out	Rate	In	Out	Rate	In	Out
Residential	ITE 221: Multifamily Housing (Mid-Rise)	units	0.36	26%	74%	0.44	61%	39%	0.44	49%	51%
Retail	ITE 820: Shopping Center <sup>1</sup>	sq. ft. GLA	0.94	62%	38%	3.81	48%	52%	4.50	52%	48%
Restaurant	ITE 932: High-Turnover (Sit Down) Restaurant	sq. ft. GFA	9.94	55%	45%	9.77	62%	38%	11.19	51%	49%
Café	Caltrans Bakery & Café <sup>2</sup>	sq. ft. GFA	5.21	47%	53%	8.46	50%	50%	8.46	50%	50%
Office	ITE 710: General Office Building	sq. ft. GFA	1.16	86%	14%	1.15	16%	84%	0.53	54%	46%
Medical Office	ITE 720: Medical-Dental Office Building	sq. ft. GFA	2.78	78%	22%	3.46	28%	72%	3.10	57%	43%
Child Care	ITE 565: Day Care Center	sq. ft. GFA	11.00	53%	47%	11.12	47%	53%	1.70	63%	37%

<sup>1</sup> ITE land use code 820 (Shopping Center) uses gross leasable area as the independent variable to estimate trip generation. The floor area used to estimate trip generation in this report used gross floor area instead gross leasable area. As a result, the number of forecast vehicle trips for the proposed retail use will be overestimated.

<sup>2</sup> All baseline vehicle trip generation rates used in this report are based on data from ITE's *Trip Generation Manual*, 10<sup>th</sup> Edition except for the proposed "Café" use. Data from Caltran's *Trip-Generation Rates for Urban Infill Land Uses in California* report was used as it is a better reflection of the proposed use (i.e., neighbourhood-oriented bakery and coffee shop) and site context (i.e., urban infill) than the baseline ITE rate (ITE land use code 939). The baseline ITE rate overestimated peak hour traffic volumes by 93% and 70% respectively for the weekday morning and afternoon periods according to the Caltran report.



**Table 10: Site Vehicle Trips, Baseline**

Land Use	Trip Generation Source	Land Use Quantity	Land Use Unit	Weekday AM			Weekday PM			Saturday		
				In	Out	Total	In	Out	Total	In	Out	Total
Residential	ITE 221: Multifamily Housing (Mid-Rise)	171	units	16	46	62	46	29	75	37	38	75
Retail	ITE 820: Shopping Center	12,242	sq. ft. GFA	7	5	12	23	24	47	29	26	55
Restaurant	ITE 932: High-Turnover (Sit Down) Restaurant	7,222	sq. ft. GFA	40	32	72	44	27	71	41	40	81
Café	Caltrans Bakery & Café	2,025	sq. ft. GFA	5	6	11	9	8	17	9	8	17
Office	ITE 710: General Office Building	3,100	sq. ft. GFA	3	1	4	1	3	4	1	1	2
Medical Office	ITE 720: Medical-Dental Office Building	1,469	sq. ft. GFA	3	1	4	1	4	5	3	2	5
Child Care	ITE 565: Day Care Center	3,200	sq. ft. GFA	19	16	35	17	19	36	3	2	5
<b>Total (Baseline)</b>				<b>93</b>	<b>107</b>	<b>200</b>	<b>141</b>	<b>114</b>	<b>255</b>	<b>123</b>	<b>117</b>	<b>240</b>

Note: Land use quantities presented in Table 10 used in the traffic analysis reflect an earlier development program from February 2020. The latest quantities are presented on page 31 and reduced in size compared to March 2020—the difference is negligible. August 2020 baseline trip generation estimates are 198 trips for the weekday AM peak hour and 253 trips for the weekday PM peak hour.





**Table 11: Site Vehicle Trips, Adjusted for Mode Share and Internal Capture**

Land Use	Weekday AM			Weekday PM			Saturday		
	In	Out	Total	In	Out	Total	In	Out	Total
Residential	16	46	62	46	29	75	37	38	75
Retail	7	5	12	23	24	47	29	26	55
Restaurant and Café	45	38	83	53	35	88	50	48	98
Office and Medical Office	6	2	8	2	7	9	4	3	7
Child Care	19	16	35	17	19	36	3	2	5
<b>Total (Baseline)</b>	<b>93</b>	<b>107</b>	<b>200</b>	<b>141</b>	<b>114</b>	<b>255</b>	<b>123</b>	<b>117</b>	<b>240</b>
<b>Total (Adjusted for Mode Share and Internal Capture)</b>	<b>54</b>	<b>60</b>	<b>114</b>	<b>67</b>	<b>48</b>	<b>115</b>	<b>49</b>	<b>47</b>	<b>96</b>

Note: Internal capture rates for the Saturday peak period use the weekday PM peak hour due to the lack of available national data from ITE and lack of available local data specific to the Vancouver region. Average vehicle occupancy numbers used to estimate person trips are based on the baseline ITE occupancy for available land uses; all other vehicle occupancy numbers are based on a local average for all trips as reported in TransLink's 2011 Metro Vancouver Regional Screenline Survey.



The forecast number of external site vehicle trips based on the estimated trip generation for the proposed development are as follows (see **Figure 5**):

- **Weekday morning (AM) peak hour:** 114 total vehicle trips (54 inbound trips and 60 outbound trips);
- **Weekday afternoon (PM) peak hour:** 115 total vehicle trips (67 inbound trips and 48 outbound trips); and
- **Saturday mid-day peak hour:** 96 total vehicle trips (49 inbound trips and 47 outbound trips).

Vehicle trips from the existing subject site consisting of single detached and duplex residential uses were not removed from the background traffic. As a result, volumes on the southbound movement for St. Patricks Avenue/East 3<sup>rd</sup> Street and northbound movement for St. Patricks Avenue/East 4<sup>th</sup> Street are likely to be overestimated for the analysis time periods.

Further reductions to the number of net external vehicle trip are feasible by accounting for pass-by trips and transportation demand management measures. However, they are not considered in the analysis. Specific to trip reductions associated with TDM, there are no reliable data to estimate trip reductions in the literature (except for parking reduction) and are avoided here as a conservative assumption. Potential reductions in vehicle trips attributed to the planned RapidBus service could also be considered, but are assumed to be already included within the Moodyville mode share target as a conservative assumption (see **Section 3.1**).



### 4.3 Trip Distribution and Assignment

Trip distribution and assignment was estimated by a combination of the observed directional splits on the adjacent road network from the existing 2019 count data, and TransLink's trip diary origin and destination data, as described in the *Moodyville Area Transportation Study*. Trip distribution for the weekday AM and PM peak hours were assumed to be the same, while the Saturday distribution differed slightly.

The weekday AM and PM peak hour distribution are as follows:

1. 60% of trips to/from the west (Lonsdale Corridor and north of Highway 1) via East 3<sup>rd</sup> Street.
  - a. 70% of trips to/from the west (Lonsdale Corridor) via East 3<sup>rd</sup> Street.
  - b. 30% of trips to/from the north of Highway 1 via East 3<sup>rd</sup> Street and St. Georges Avenue.
2. 30% to/from the east (District of North Vancouver) via East 3<sup>rd</sup> Street.
3. 10% to/from the south via St. Patricks Avenue.

The Saturday mid-day peak hour distribution are as follows:

1. 40% of trips to/from the west (Lonsdale Corridor and north of Highway 1) via East 3<sup>rd</sup> Street.
  - a. 70% of trips to/from the west (Lonsdale Corridor) via East 3<sup>rd</sup> Street.
  - b. 30% of trips to/from the north of Highway 1 via East 3<sup>rd</sup> Street and St. Georges Avenue.
2. 60% to/from the east (District of North Vancouver) via East 3<sup>rd</sup> Street.



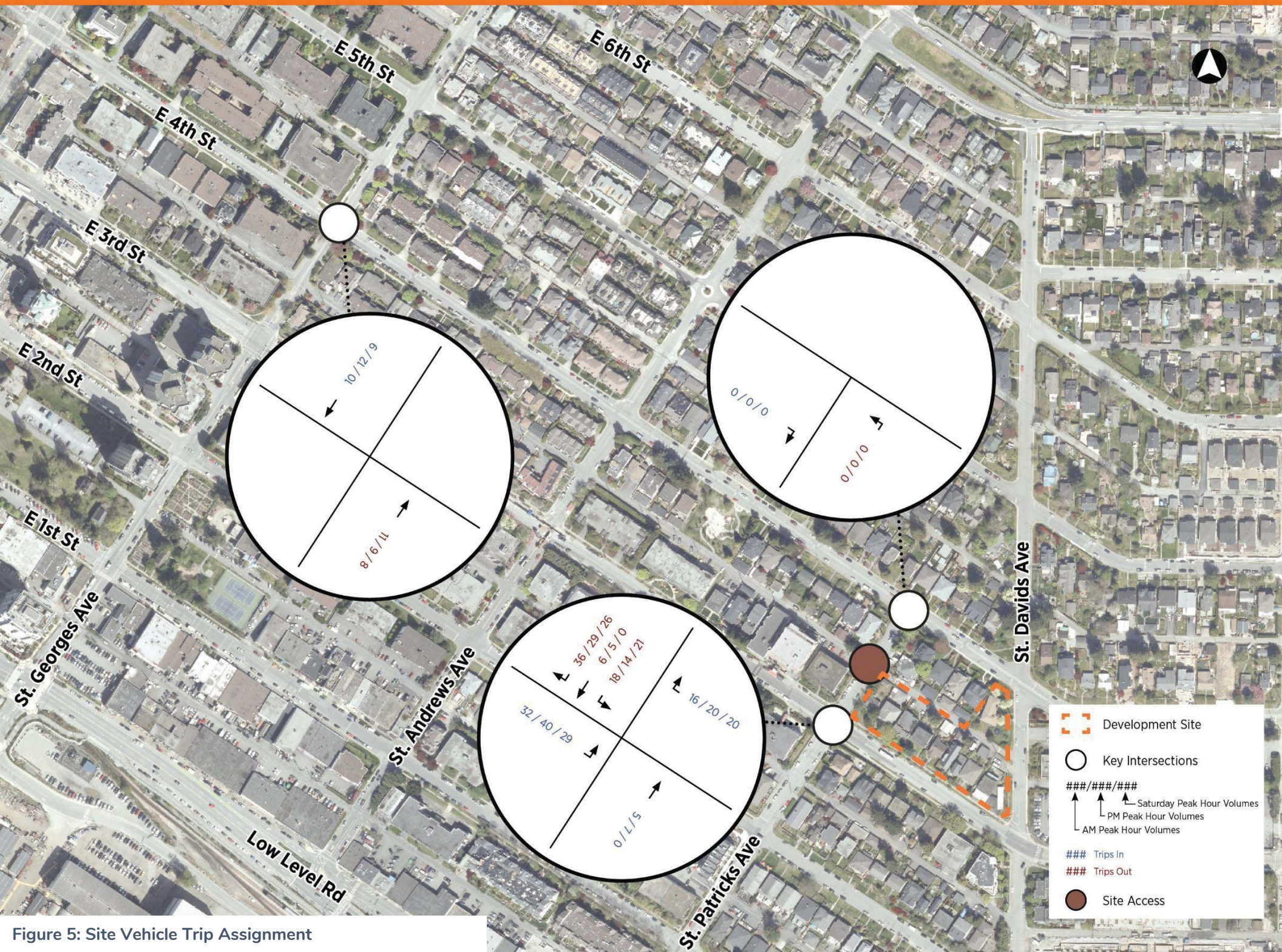


Figure 5: Site Vehicle Trip Assignment





#### 4.4 Future Post-Development (2022) Traffic Conditions

The 2022 future post-development traffic conditions are summarized in **Table 12** and **Table 13** for the weekday morning/afternoon and Saturday periods respectively. The peak hour traffic volumes are shown in **Figure 7**.

Traffic operations are comparable to the 2022 background scenario. During the PM peak hour at the intersection of St. Patricks Avenue/East 3<sup>rd</sup> Street:

- The overall intersection is forecast to operate at LOS D with an average delay of 32 seconds per vehicle.
- The northbound movement fails and is forecast to operate at LOS F (v/c of 1.13; delay of 187 seconds per vehicle; and queue length of 62 metres). The modelled queue length extends past mid-block towards East 2<sup>nd</sup> Street.
- The southbound movement fails is forecast to operate at LOS F (v/c of 1.26, delay of 273 seconds per vehicle; and queue length of 59 metres). The modelled queue length extends past mid-block and the proposed site access towards East 4<sup>th</sup> Street.
- Volumes on both the north and southbound minor approach are less than 100 vehicles.

All other intersection movements operate at LOS D or better during the peak period, and there are no major delays or queuing issues.



**Table 12: Future Post-Development (2022) Weekday Traffic Conditions**

Intersection	Movement	Weekday AM Peak Hour					Weekday PM Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)	Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)
St. Patricks Avenue/ East 4th Street	NBLR	8	0.01	A	9	0	13	0.03	A	9	1
	WBL	8	0.01	A	7	0	3	0.01	A	7	0
	WBT	0	-	A	0	0	0	-	A	0	0
	EBT	0	-	A	0	0	0	-	A	0	0
	EBR	7	-	A	0	0	4	-	A	0	0
	Overall	LOS A / DELAY 6s					LOS A / DELAY 7s				
St. Patricks Avenue/ East 3rd Street	NBLTR	42	0.36	D	30	11.3	94	1.13	F	187	62
	SBLTR	87	0.52	D	35	21.0	56	1.26	F	273	59
	WBL	20	0.03	A	8	0.8	23	0.03	A	9	1
	WBT	389	-	A	0	0.0	553	-	A	0	0
	WBR	20	-	A	0	0.0	26	-	A	0	0
	EBL	39	0.09	A	9	2.3	55	0.1	A	10	2
	EBT	313	-	A	0	0.0	659	-	A	0	0
	EBR	7	-	A	0	0.0	13	-	A	0	0
	Overall	LOS A / DELAY 6s					LOS D / DELAY 32s				
St. Georges Avenue/ East 4th Street	EBLTR	36	0.10	B	13	2	76	0.38	C	23	13
	WBLTR	25	0.07	B	13	2	29	0.19	C	20	5
	NBL	13	0.02	A	8	1	24	0.03	A	8	1
	NBT	127	-	A	0	0	338	-	A	0	0
	NBR	7	-	A	0	0	21	-	A	0	0
	SBL	1	0.07	A	8	0	10	0.01	A	8	0
	SBT	214	-	A	0	0	283	-	A	0	0
	SBR	12	-	A	0	0	12	-	A	0	0
	Overall	LOS A / DELAY 2s					LOS A / DELAY 4s				



**Table 13: Future Post-Development (2022) Saturday Traffic Conditions**

Intersection	Movement	Saturday Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)
St. Patricks Avenue/ East 4th Street	NBLR	10	0.02	A	9	0
	WBL	3	0.01	A	7	0
	WBT	0	-	A	0	0
	EBT	0	-	A	0	0
	EBR	4	-	A	0	0
	Overall	LOS A / DELAY 7s				
St. Patricks Avenue/ East 3rd Street	NBLTR	30	0.15	C	22	4
	SBLTR	56	0.53	D	35	21
	WBL	11	0.02	A	8	1
	WBT	488	-	A	0	0
	WBR	24	-	A	0	0
	EBL	33	0.07	A	9	2
	EBT	424	-	A	0	0
	EBR	11	-	A	0	0
	Overall	LOS A / DELAY 5s				
St. Georges Avenue/ East 4th Street	EBLTR	40	0.18	C	16	5
	WBLTR	27	0.10	C	16	3
	NBL	15	0.02	A	8	1
	NBT	247	-	A	0	0
	NBR	14	-	A	0	0
	SBL	5	0.01	A	8	0
	SBT	249	-	A	0	0
	SBR	20	-	A	0	0
	Overall	LOS A / DELAY 2s				



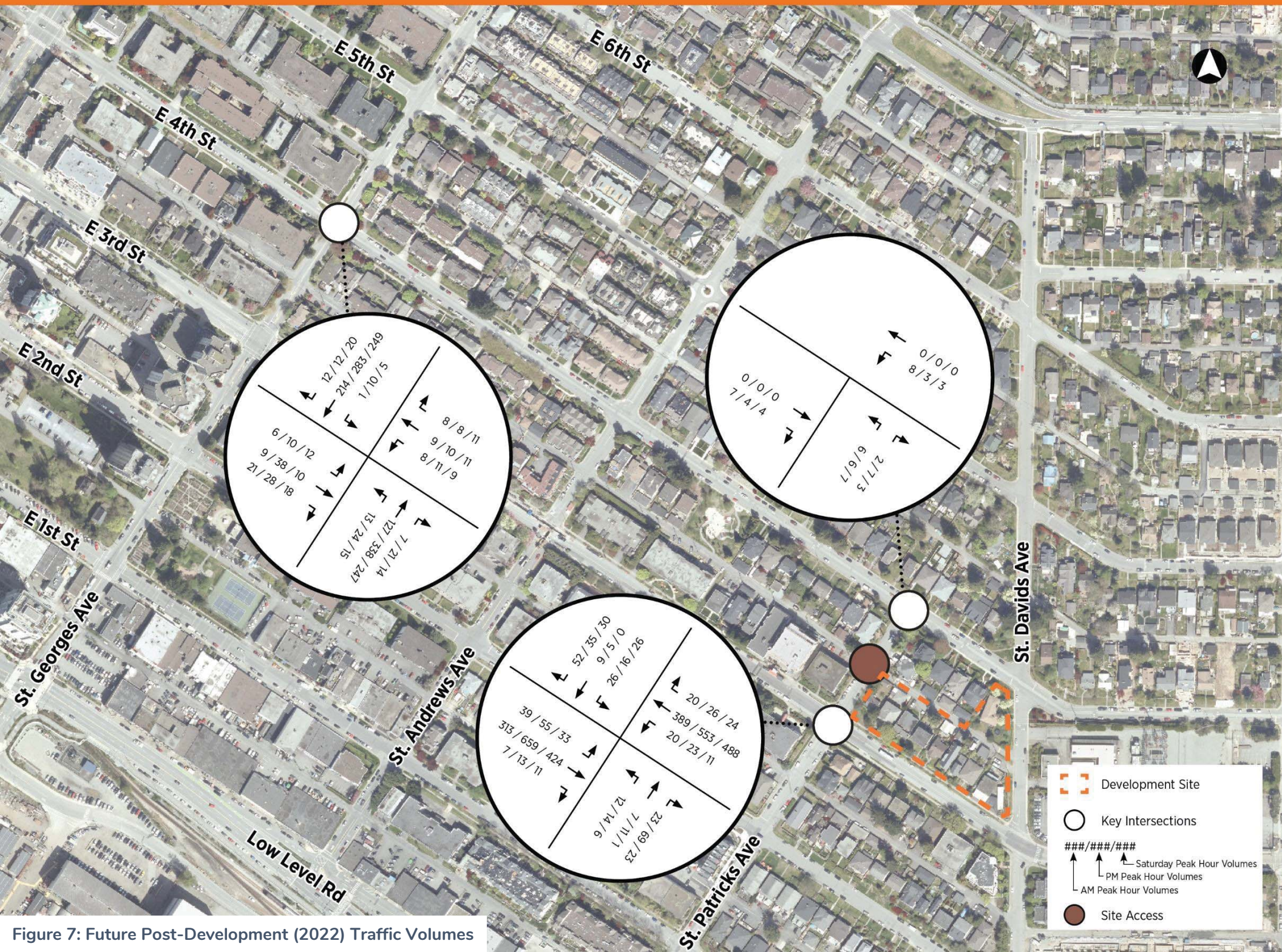


Figure 7: Future Post-Development (2022) Traffic Volumes





## 4.5 Future Post-Development (2027) Traffic Conditions

The 2027 future post-development traffic conditions are summarized in **Table 14** and **Table 15** for the weekday morning/afternoon and Saturday periods respectively. The peak hour traffic volumes are shown in **Figure 8**.

Traffic operations are comparable to the 2027 background scenario. During the PM peak hour at the intersection of St. Patricks Avenue/East 3<sup>rd</sup> Street:

- The overall intersection is forecast to operate at LOS F with an average delay of 170 seconds per vehicle.
- The northbound movement fails and is forecast to operate at LOS F (v/c of 2.06; delay of 615 seconds per vehicle; and queue length of 101 metres). The modelled queue length extends to the upstream intersection at East 2<sup>nd</sup> Street.
- The southbound movement fails is forecast to operate at LOS F (v/c of 5.65, delay of 2,499 seconds per vehicle; and queue length of 104 metres). The modelled queue length extends to the upstream intersection at East 4<sup>th</sup> Street.
- Volumes on both the north and southbound minor approach are less than 100 vehicles.

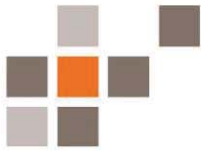
Traffic operations at St. Patricks Avenue/East 3<sup>rd</sup> Street similarly fail during the AM peak hour (both north and southbound) and during the Saturday peak hour (northbound only), although the forecast delay and queue lengths are less than the PM period.

All other intersection movements operate at LOS D or better during the peak period, and there are no major delays or queuing issues.



**Table 14: Future Post-Development (2027) Weekday Traffic Conditions**

Intersection	Movement	Weekday AM Peak Hour					Weekday PM Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)	Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)
St. Patricks Avenue/ East 4th Street	NBLR	15	0.01	A	9	0	14	0.03	A	9	1
	WBL	9	0.01	A	7	0	3	0.01	A	7	0
	WBT	11	-	A	0	0	0	-	A	0	0
	EBT	11	-	A	0	0	0	-	A	0	0
	EBR	14	-	A	0	0	4	-	A	0	0
	Overall	LOS A / DELAY 6s					LOS A / DELAY 7s				
St. Patricks Avenue/ East 3rd Street	NBLTR	52	0.55	F	54	20	99	2.06	F	615	101
	SBLTR	155	0.78	F	76	38	56	5.65	F	2499	104
	WBL	21	0.03	A	8	1	24	0.04	A	10	1
	WBT	548	-	A	0	0	687	-	A	10	0
	WBR	42	-	A	0	0	26	-	A	0	0
	EBL	78	0.11	A	10	3	56	0.12	B	11	3
	EBT	386	-	A	0	0	808	-	A	0	0
	EBR	8	-	A	0	0	14	-	A	0	0
	Overall	LOS B / DELAY 10s					LOS F / DELAY 170s				
St. Georges Avenue/ East 4th Street	EBLTR	38	0.11	B	13	3	80	0.43	D	26	15
	WBLTR	28	0.09	B	13	2	32	0.23	C	22	7
	NBL	14	0.02	A	8	1	25	0.03	A	8	1
	NBT	133	-	A	0	0	354	-	A	0	0
	NBR	8	-	A	0	0	22	-	A	0	0
	SBL	1	0.01	A	8	0	11	0.02	A	8	0
	SBT	224	-	A	0	0	297	-	A	0	0
	SBR	13	-	A	0	0	13	-	A	0	0
	Overall	LOS A / DELAY 3s					LOS A / DELAY 5s				



**Table 15: Future Post-Development (2027) Saturday Traffic Conditions**

Intersection	Movement	Saturday Peak Hour				
		Vol (veh)	v/c	LOS	Delay (s/veh)	Queue (m)
St. Patricks Avenue/ East 4th Street	NBLR	11	0.02	A	9	1
	WBL	3	0.01	A	7	0
	WBT	0	-	A	0	0
	EBT	0	-	A	0	0
	EBR	4	-	A	0	0
	Overall	LOS A / DELAY 7s				
St. Patricks Avenue/ East 3rd Street	NBLTR	31	0.22	D	31	6
	SBLTR	56	0.72	F	63	34
	WBL	12	0.02	A	9	1
	WBT	583	-	A	0	0
	WBR	24	-	A	0	0
	EBL	33	0.08	A	10	2
	EBT	526	-	A	0	0
	EBR	12	-	A	0	0
	Overall	LOS A / DELAY 7s				
St. Georges Avenue/ East 4th Street	EBLTR	42	0.20	C	17	5
	WBLTR	30	0.12	C	17	3
	NBL	16	0.02	A	8	1
	NBT	259	-	A	0	0
	NBR	15	-	A	0	0
	SBL	5	0.01	A	8	0
	SBT	261	-	A	0	0
	SBR	21	-	A	0	0
	Overall	LOS A / DELAY 3s				



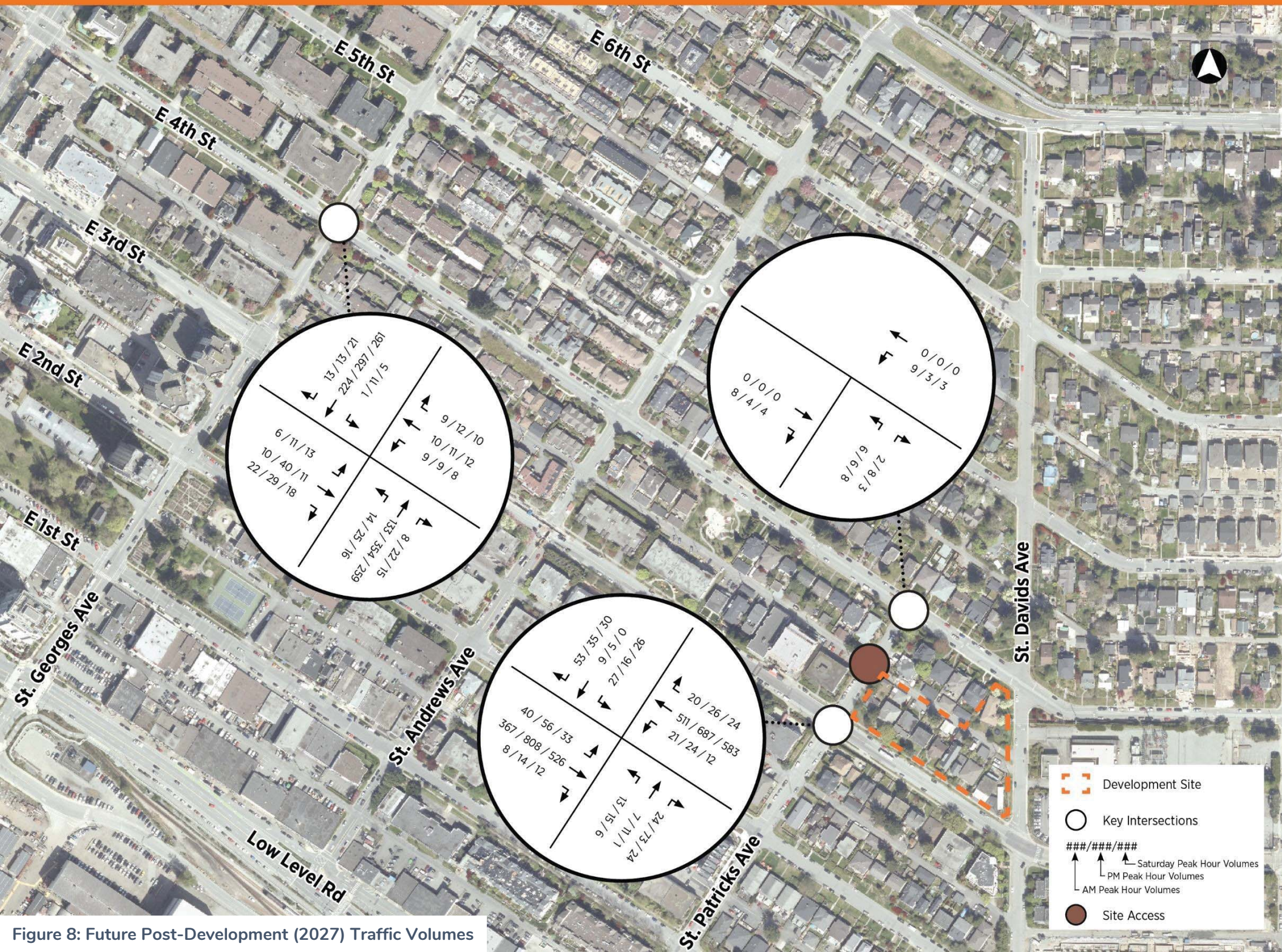


Figure 8: Future Post-Development (2027) Traffic Volumes





## 4.6 Future Post-Development Mitigation Measures

By 2027, traffic operations for the north and southbound movements at the intersection of St. Patricks Avenue/East 3<sup>rd</sup> Street are forecast to fail and operate at LOS F during the busiest analysis hour (weekday PM period). The movements are forecast to fail during the weekday AM period (both north and southbound) and the Saturday period (northbound only) as well. Similar to the background scenario, traffic volumes on the minor approaches are less than 100 vehicles per hour during peak time. For this reason, the intersection delays are a result of the heavy through volumes on East 3<sup>rd</sup> Street. This makes it difficult for north and southbound through and left-turning traffic to find a gap.

### 4.6.1 TAC Traffic Signal Warrant

A Transportation Association of Canada (TAC) signal warrant was conducted for the 2027 post-development scenario for the St. Patricks Avenue/East 3<sup>rd</sup> Street intersection (see **Appendix B**). Only two hours of traffic volume data was used to estimate the warrant score (six hours of volume data are recommended). For that reason, the warrant score will be overestimated as it does not take into account mid-day volumes, which are lower than the morning and afternoon peak hour volumes.

- The warrant score was estimated to be 112 (83 vehicle score and 29 pedestrian score) and met the warrant threshold of 100 points.
- The warrant criteria of 75 vehicles on the side street was not satisfied.

Based on the TAC signal warrant, a signal at the St. Patricks Avenue/East 3<sup>rd</sup> Street intersection for the 2027 background horizon year is not recommended at this time. It is noted that meeting or not meeting the warrant calculation is not sufficient grounds by itself to recommend or not recommend a traffic signal.

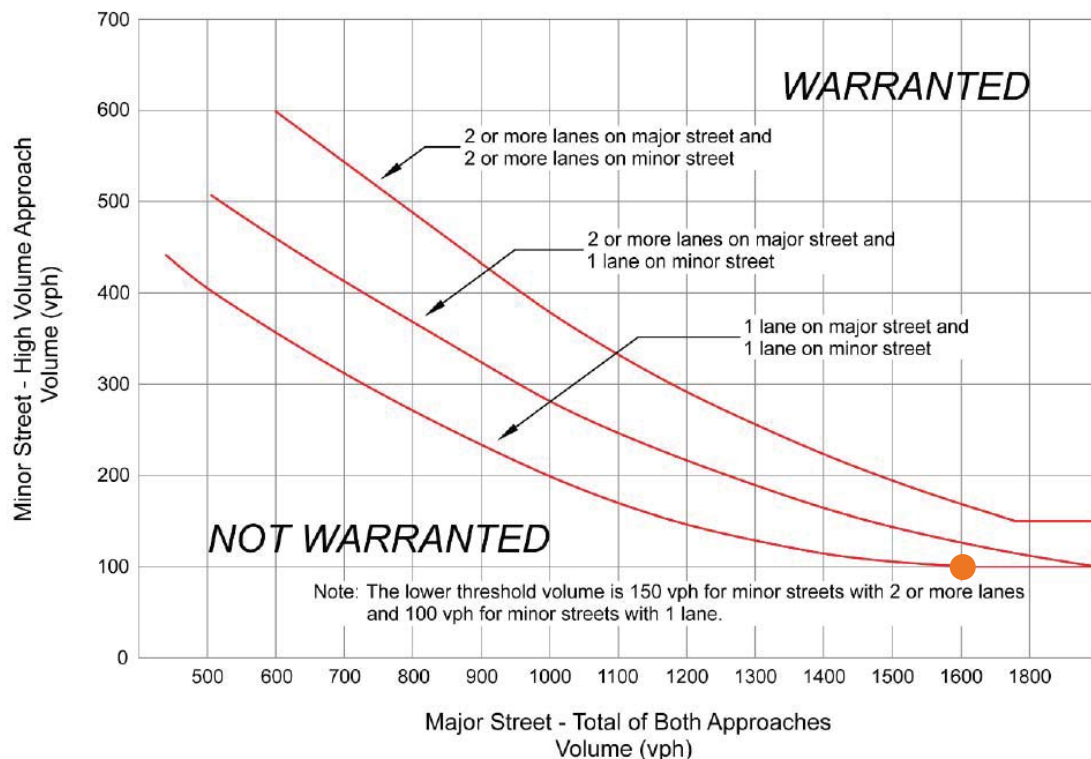


#### 4.6.2 BC MOTI Traffic Signal Warrant

A BC Ministry of Transportation and Infrastructure (MOTI) signal warrant (as described in Section 400 of the *Electrical and Traffic Engineering Manual*) was conducted for the 2027 post-development scenario for the St. Patricks Avenue/East 3<sup>rd</sup> Street intersection for the PM peak hour. The warrant for a “Large Urban” location type (population of 10,000 or more) with a major (posted or 85<sup>th</sup> percentile) road speed of 70 km/h or less was used.

Based on a major approach volume of 1,615 vehicles per hour and a minor approach volume of 99 vehicles (northbound approach based on the larger volume of the minor approaches; see orange dot in **Figure 9**), the warrant was not satisfied.

**Figure 9: BC MOTI Signal Warrant Analysis Result**





#### 4.6.3 BC MOTI Peak Hour Delay Warrant

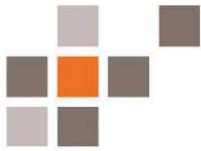
A BC Ministry of Transportation and Infrastructure (MOTI) signal warrant (as described in Section 400 of the *Electrical and Traffic Engineering Manual*) was conducted for the 2027 post-development scenario for the St. Patricks Avenue/East 3<sup>rd</sup> Street intersection for the PM peak hour.

An overview of the warrant criteria is summarized below.

1. The total delay experienced by traffic on one minor street approach in one direction only and controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach.
2. The volume of the same minor street approach in one direction only equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes.
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.

The first criteria of total delay for the minor street approach (southbound on St. Patricks Avenue) is satisfied at 38 hours (56 vehicles × 2,499 seconds / 3,600 seconds). The second criteria of volume exceeding 100 vehicles per hour on the same minor street approach is not satisfied (56 vehicles). The third criteria of total entering volume serviced for the intersection is satisfied (1,770 vehicles per hour).

Based on the warrant criteria, the warrant was not satisfied. For comparison, only the third criteria of the peak hour delay warrant is met in the background 2027 scenario.



#### 4.6.4 Storage Lane Length

According to the TAC's *Geometric Design Guide for Canadian Roads*, the length for a left-turning storage lane at an unsignalized intersection can be calculated by multiplying the design volume of turning vehicles (1.5 times the average number of vehicles) by the design vehicle length divided by 30.

- Using the eastbound left-turn volume in the 2027 post-development scenario, a minimum storage length of 20 metres would accommodate the forecast number of left-turning vehicles (56 left-turning vehicles).
- Using the westbound left-turn volumes, a minimum storage length of 15 metres would accommodate the forecast number of left-turning vehicles (24 left-turning vehicles).

Specific to the proposed development, the eastbound left-turn storage lane will facilitate vehicular access to the site. Based on TAC guidelines, an eastbound left-turn storage lane of 20 metres and westbound left-turn storage lane of 15 metres is recommended if space permits within the East 3<sup>rd</sup> Street cross-section.

TAC specifies that queuing analysis using a micro-simulation model is required to confirm the left-turn storage lengths. The 95<sup>th</sup> percentile queue lengths were modelled in SimTraffic for the 2027 post-development scenario:

- If the intersection is to remain unsignalized, an eastbound left-turn storage lane length of 85 metres and westbound storage of 30 metres is recommended.
- If the intersection is to be signalized, an eastbound left-turn storage of 20 metres and westbound left-turn storage of 15 metres is recommended.

#### 4.6.5 Transportation Impacts

A traffic signal was found to not be warranted for the intersection of St. Patricks Avenue/East 3<sup>rd</sup> Street based on the TAC and BC MOTI signal warrant, and the BC MOTI peak hour delay warrant. Based on these findings, a traffic signal is not recommended at this time. A left-turn storage lane is recommended for the intersection:





- If the intersection is to remain unsignalized, an eastbound left-turn storage lane length of 85 metres and westbound storage of 30 metres is recommended.
- If the intersection is to be signalized, an eastbound left-turn storage of 20 metres and westbound left-turn storage of 15 metres is recommended.

It should be noted that the assumptions used to estimate the background traffic volumes were conservative and likely overestimate the amount of through traffic on East 3<sup>rd</sup> Street (see **Section 3.1** and **Section 4.2**).

The addition of site traffic attributed to the development on the minor approaches at the intersection of St. Patricks Avenue/East 3<sup>rd</sup> Street is forecast to increase overall delay, attributed to the additional number of vehicles turning left or travelling through at the intersection. However, the intersection is forecast to already fail by the background 2027 scenario at LOS F for both minor approaches—not as a result of the forecast site traffic. For example, the development is forecast to add 115 vehicle trips during the PM peak hour, broken down as follows: 14 southbound left, 5 southbound through, 29 southbound right, 20 westbound right, 40 eastbound left, and 7 northbound through trips. This represents approximately 7% of total traffic for the intersection for all approaches in the 2027 post-development scenario.

While the trip assignment for the traffic operational analysis assumed all site traffic would access the network at St. Patricks Avenue/East 3<sup>rd</sup> Street, due to the expected congestion on East 3<sup>rd</sup> Street, drivers will likely take alternative routes when exiting the site (e.g., make a right-turn from the site access towards East 4<sup>th</sup> Street). Volumes on East 4<sup>th</sup> Street were reviewed to determine if volumes would exceed the threshold for a shared roadway/neighbourhood bikeway.

- The average daily traffic on East 4<sup>th</sup> Street was estimated to be 210 vehicles (10% of the PM peak hour volume of 21 vehicles PM peak hour volume).
- According to the *British Columbia Active Transportation Design Guide*, the maximum average daily traffic for a shared roadway is 1,000 vehicles per day. In



order to pass this volume threshold, more than 80% of the average daily site traffic would need to divert to East 4<sup>th</sup> Street.

- Exceeding this volume threshold is not considered to be a likely scenario at this time due to the expected trip distribution pattern (see **Section 4.3**), which estimates a minimum of 30% of site traffic would be travelling to/from east of the site (i.e., to/from District of North Vancouver). East 4<sup>th</sup> Street will not be a viable route for these trips due to the proposed diverter that will restrict east-west traffic; as a result, the amount of traffic re-routing would not exceed the 80% of site traffic required to pass the volume threshold.
- For this reason, due to the low number of vehicles, no major impacts to East 4<sup>th</sup> Street are anticipated based on the findings of the traffic operational analysis.
- The proposed diverter at St. Davids Avenue/East 4<sup>th</sup> Street will help further reduce east-west traffic volumes to be consistent with the current road classification for East 4<sup>th</sup> Street. While the proposed diverter will manage neighbourhood short-cutting and reduce east-west traffic volumes, it will simultaneously reduce the overall access routes to the subject site.

Similar to the background scenario, traffic volumes at the intersection of St. Patricks Avenue/East 3<sup>rd</sup> Street should be monitored and a review of the existing crossing should be completed in the future to determine if upgrades are needed.



## 5.0 ACCESS AND CIRCULATION REVIEW

### 5.1 Site Access

The site access is proposed to be located off of St. Patricks Avenue, immediately south of the existing laneway. The rationale for locating access here is as follows:

1. Due to the limited access points, this location is more favourable from a grade perspective (low point of the slope) and minimizes the impact to the architecture.
2. Avoiding the use of the laneway minimizes the impact to the adjacent properties north of the subject site with respect to the number of site trips. In the event that these properties were to redevelop in the future, no constraints to the building form are expected through the current proposed design of the subject site.
3. St. Patricks Avenue is a low volume local road and serves a limited number of properties, particularly with the proposed diverter at St. Davids Avenue/East 4<sup>th</sup> Street. As a result, minimal conflicts are anticipated with other road users.
4. The current grades on St. Patricks Avenue (approximately 6%) are not anticipated to be an issue with respect to circulation and access for passenger vehicles and/or waste collection vehicles.

Due to the potential southbound queue identified in the post-development scenarios for the 2022 and 2027 horizon years, vehicles turning left from the site access onto St. Patricks Avenue may experience delays due to inadequate gaps in the traffic flow. No impact to northbound traffic on St. Patricks Avenue past East 3<sup>rd</sup> Street is expected with respect to the site access and southbound queuing.

- Forecast queue lengths reported in the analysis are calculated at the 95<sup>th</sup> percentile, representing the upper range/maximum length and not the average.
- Queue lengths at the intersection are forecast to go past the site access only for the weekday PM peak period in the 2022 post-development scenario, and for both weekday AM and PM peak period in the 2027 post-development scenario. This represents only the worst hour of the day. Furthermore, due to the inherent uncertainties associated with the longer time horizon, traffic volumes would need to be monitored to determine if they materialize.



- Delays associated with the spillover from the southbound queue are expected to primarily impact vehicles exiting the site making a left. This will likely result in some drivers re-routing and making a right instead towards East 4<sup>th</sup> Street.
- Pavement marking could be considered to create a no stopping zone on St. Patricks Avenue by the site access, however, these are generally ineffective.

The laneway will continue to function as access for the adjacent properties to the north and provide loading access for commercial tenants and residents of the subject site. Access via the laneway to/from St. Davids Avenue will be restricted to support the proposed St. Davids Avenue Greenway. In addition, this will support an activated pedestrian space and public realm as part of the proposed retail uses by the east end of the laneway.

## 5.2 Sightline Review

Sightlines were reviewed for the proposed access and the major access point to the road network at the intersection of St. Patricks Avenue/East 3<sup>rd</sup> Street based on the guidelines in TAC's *Geometric Design Guide for Canadian Roads*.

- For the proposed access point, sightlines are sufficient as drivers will be able to see oncoming traffic from the adjacent intersections.
- For the intersection for St. Patricks Avenue/East 3<sup>rd</sup> Street, sight distances can be satisfied (95 metres for right-turning vehicles, and 105 metres for left-turning vehicles) if vegetation and on-street parking can be cleared or eliminated. As part of the proposed RapidBus improvements, on-street parking on East 3<sup>rd</sup> Street will be removed.





### 5.3 On-site and Off-site Circulation

A swept path analysis was conducted for passenger vehicles, waste collection vehicles, and loading vehicles to determine if the proposed site layout is functional for parking and loading, and to assess the impacts to the adjacent road network (see **Appendix D** for drawings). The following design vehicles were used for the swept path analysis:

- **Passenger vehicle:** TAC Passenger Car (P), 5.6 metre length and 2.0 metre width;
- **Residential and commercial loading vehicle:** TAC Medium Single-Unit (MSU), 10.0 metre length and 2.6 metre width; and
- **Waste collection vehicle:** Front loading garbage truck, 10.00 metre length and 2.58 metre width.

#### 5.3.1 Access to Adjacent Properties

Access to the adjacent properties to the north (duplex garage ports) and sufficient space for maneuvering is maintained for passenger vehicles with the proposed site plan and laneway design.

#### 5.3.2 Residential and Commercial Loading

There is limited space to conduct residential and commercial loading on- and off-site.

- **East 3<sup>rd</sup> Street:** The existing on-street parking lane on both sides of the road have been removed as part of the RapidBus route, so no loading zone is feasible.
- **St. Davids Avenue:** This road is designated as a future greenway with limited vehicle access. Any potential on-street loading space must consider the proposed greenway cross-section design.
- **St. Patricks Avenue:** There is limited frontage on this side of the site due to the proposed site access and parkade entry. Furthermore, the commercial units are on the east side of the site, reducing the usability of a potential access route.
- **East 4<sup>th</sup> Street:** There is limited frontage on this side of the site.



An on-site loading space is proposed to be located at the proposed breezeway at the center of the site between the west and east building. Access will occur via a hammerhead movement using the laneway. This location is centrally located to all the proposed residential and non-residential uses. Furthermore, staff have indicated support for a second, off-site informal loading space on St. Davids Avenue.<sup>1</sup> With respect to serving commercial needs, the location of the loading space at the breezeway provides direct access to the proposed non-residential uses via the laneway (see **Figure 10**).

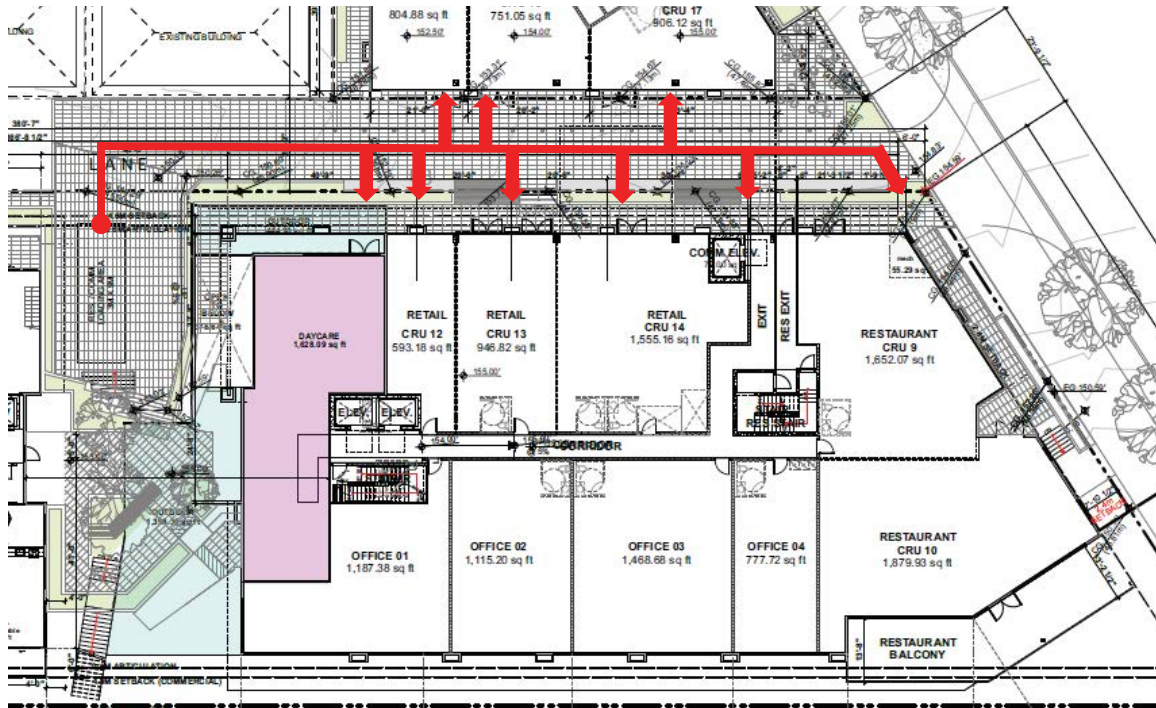
The design vehicle used for reviewing the functionality of the proposed on- and off-site loading was a Medium Single-Unit (MSU) vehicle. This vehicle is consistent with the City's loading space standard of 2.7 metres in width and 9 metres in length. As the proposed commercial uses are planned to consist of small format, locally serving retail and restaurant uses, the MSU design vehicle is considered appropriate. To mitigate potential conflicts in loading, the applicant has proposed that the frequency and timing of loading operations will be coordinated between the future commercial tenants and building residents as part of the strata council.

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<sup>1</sup> Meeting with City staff, February 26, 2020 and email correspondence on March 12, 2020.



Figure 10: Proposed Loading Access to Non-Residential Uses

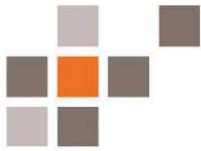


### 5.3.3 Waste Collection

A garbage staging area is provided by the entrance of the laneway on the west side of the site. A small tow truck will be used to transport waste bins from the residential and/or commercial collection points located in the parkade on level 1 or the ground level of the north building. Garbage trucks can use the breezeway hammerhead movement if required to exit the site in a forward direction.

### 5.3.4 Emergency Access

The CNV Fire Department has indicated that emergency access will not rely on the existing laneway. However, access from the lane to St. Davids Avenue should be accommodated based on direction by City staff.



## 6.0 PARKING REVIEW

### 6.1 Off-street Parking

#### 6.1.1 Off-street Parking Supply, Bylaw Requirement

The City of North Vancouver's Zoning Bylaw, Division IV: Parking and Loading Standards describes the bylaw requirements for off-street parking. A summary of the City's bylaw requirements for the proposed development is provided in **Table 16**.

A total of 257 off-street vehicle parking spaces are required as per the City's bylaw based on the latest proposal as of August 2020.

**Table 16: Bylaw Off-street Parking Requirement**

Land Use	Quantity	Bylaw Supply Rate	Bylaw Requirement
<b>Residential</b>			
Residential	170 dwelling units	0.95 per DU	158
Residential Visitor	170 dwelling units	0.10 per DU	17
<u>Sub-total</u>			174
<b>Commercial</b>			
Retail	11,071 ft <sup>2</sup> GFA	1 per 538.2 ft <sup>2</sup>	21
Office and Medical Office	4,563 ft <sup>2</sup> GFA	1 per 538.2 ft <sup>2</sup>	8
Restaurant and Café	9,528 ft <sup>2</sup> GFA	1 per 204.5 ft <sup>2</sup>	47
Child Care	3,354 ft <sup>2</sup> GFA	1 per 538.2 ft <sup>2</sup>	6
<u>Sub-total</u>			82
<b><u>Total</u></b>			<b>257 spaces</b>





### 6.1.2 Off-street Parking Demand Analysis

The City has requested the applicant propose a specific parking supply rate for the site. The *Moodyville Development Permit Area Guidelines* recommends a maximum of number of 1.5 spaces per dwelling unit, including visitor parking (see Guideline 9.5.6).

To determine an appropriate off-street parking supply, a parking demand analysis was conducted using secondary data with consideration to proximity to the Frequent Transit Network and time-of-day shared parking.

#### Frequent Transit Proximity

The City's Zoning Bylaw has no formal provision for reductions in the off-street parking supply requirement with the exception of Section 905.3.d, which allows an applicant to substitute a shared vehicle and shared vehicle space with a required parking space at a one to four ratio. In lieu of formal provisions, base parking demand reduction factors were developed based on transit proximity. These reflect transportation attributes of the site regardless of transportation demand management measures.

The site is serviced by the R2 Marine Drive RapidBus operating on East 3<sup>rd</sup> Street. The nearest stops are located at Ridgeway Avenue, approximately 200 metres from the site (two-minute walk). The *Metro Vancouver 2018 Regional Parking Study* found that parking demand is lower for residential buildings within 400 metres of rapid bus service compared to buildings outside of the Frequent Transit Network. The average parking demand reduction associated with frequent bus service was calculated for residential strata sites using demand rates by bedroom type (see **Table 17**). The findings of the *Metro Vancouver 2018 Regional Parking Study* found that typical municipal off-street parking requirement resulted in an oversupply of parking, and that there was a consistent reduction in parking demand across bedroom types for residential strata sites, particularly for 0 to 1 bedroom (22.2% reduction) and 3-bedroom units (26.9% reduction).



Based on the parking reductions described by Metro Vancouver, the parking supply rate for the City's "All other Residential Uses" of 1.05 space per dwelling unit (including 0.10 spaces per unit for visitor parking) was adjusted by transit proximity with a maximum reduction capped at 20%. This resulted in an overall adjusted parking rate of 0.84 spaces per dwelling unit for the proposed residential uses (see **Table 18**).

**Table 17: Transit Accessibility Parking Reduction for Strata Residential**

Bedroom Type	Parked Vehicles per Household (within 400 metres of frequent bus)	Parked Vehicles per Household (outside Frequent Transit Network)	Percentage Difference	Absolute Reduction
0 to 1 bedroom	0.92 vehicles	1.15 vehicles	-22.2%	-0.23
2 bedrooms	1.29 vehicles	1.30 vehicles	-0.8%	-0.01
3 bedrooms	1.32 vehicles	1.73 vehicles	-26.9%	-0.41

**Table 18: Residential Parking Demand Analysis**

Bedroom Type	Quantity	Bylaw Supply Rate	Transit-Adjusted Supply Rate	Transit-Adjusted Requirement
Residential	166 units	0.95 per DU	0.84 per DU	139 spaces
Residential Visitor	166 units	0.10 per DU	0.05 per DU	8 spaces
<b>Total</b>				<b>147 spaces</b>

A minimum residential parking supply of 139 parking spaces using a supply rate of 0.84 spaces per dwelling unit is supported based on transit accessibility (excluding residential visitor) and the proposed TDM measures (see **Section 7**). This represents an absolute reduction of 19 spaces from the bylaw requirement of 158 resident spaces. No reductions are applied to the proposed non-residential uses from frequent transit proximity for a conservative estimate.



The Metro Vancouver 2012 *Regional Parking Study* also found that peak residential visitor parking demand did not exceed the standard municipal rate of 0.10 spaces per dwelling unit. Instead, the average demand rate was approximately 0.05 spaces per dwelling unit. A minimum residential visitor parking supply of 8 parking spaces using a supply rate of 0.05 spaces per dwelling unit is supported. This represents an absolute reduction of 9 spaces from the bylaw requirement of 17 spaces (see **Table 18**).

### Time-of-Day Shared Parking

Time-of-day shared parking refers to varying periods of parking demand throughout the day and week. For example, peak parking demand for residential typically occurs overnight, while commercial typically peaks during the weekday daytime.

A shared parking analysis was conducted to identify opportunities to share parking with the proposed residential and non-residential uses. Under a conventional parking arrangement, each use would provide enough parking to satisfy its own peak parking demand. However, under a shared parking arrangement, the total parking supply for a site seeks to meet the peak parking demand of all uses combined, rather than the combined peak demands for all uses separately. To determine shared parking opportunities, base parking ratios (the distribution of demand by visitor and employee) and time-of-day factors were obtained using Urban Land Institute (ULI)'s *Shared Parking, Second Edition* report.

Based on the proposed land uses, parking utilization was found to be highest for non-residential and residential visitor parking combined during the weekday noon period (12:00 pm) at 75 vehicles. **Table 19** provides a summary of the parking supply adjusted for time-of-day shared parking. Land use quantities are categorized under shared parking uses for analysis purposes.



The time-of-day utilization factors during a weekday noontime period, averaged across both employee and visitors, are as follows:

- Residential visitor: 20%;
- Retail: 98%;
- Office: 53%;
- Medical office: 65%; and
- Restaurant and cafe: 100%.

**Table 19: Non-Residential Shared Parking Analysis**

Land Use	Shared Parking Land Use	Quantity	Transit-Adjusted Parking Spaces	Shared-Parking-Adjusted Parking Spaces	Absolute Reduction
Residential	Residential	166 dwelling units	139	139	0
Residential Visitor	Residential Visitor	166 dwelling units	8	2	6
Retail	Retail	11,071 ft <sup>2</sup> GFA	21	20	1
Office and Medical Office	Office	3,448 ft <sup>2</sup> GFA	6	5	1
	Medical Office	1,115 ft <sup>2</sup> GFA	2	1	1
Restaurant and Café	Restaurant	7,205 ft <sup>2</sup> GFA	35	35	0
	Cafe	2,323 ft <sup>2</sup> GFA	12	12	0
Child Care	Child Care	3,354 ft <sup>2</sup> GFA	6	6	0
<b>Total</b>			<b>229 spaces</b>	<b>220 spaces</b>	<b>9 spaces</b>

A parking reduction associated with time-of-day shared parking of 9 spaces for non-residential and residential visitor parking is supported.





### Child Care Parking Demand

The City's Zoning Bylaw requires the proposed child care use to provide parking at a commercial rate at 1 space per 538.2 ft<sup>2</sup>, with a minimum of 1 space to be marked as passenger loading (drop-off and pick-up) located as close as possible to the building entry.

Parking demand for child care uses are primarily generated by employees. A parking demand analysis was conducted by WATT for a daycare located at 3755 Banff Avenue (Burnaby Association for Community Inclusion) in Burnaby. The site is located in a suburban location characterized by single-detached residential uses. The analysis found a peak parking demand rate of approximately 0.28 spaces per child care space. The proposed child care use at the subject site is expected to have a minimum of 30 child care spaces. This suggests a parking demand of 8 parking spaces in a suburban context. This is in range with the City's parking requirement of 6 parking spaces with consideration to the more urban land use context.

Due to the lack of available frontage and space at-grade (see **Section 5**), the marked passenger loading space will be located in the underground parkade closest to the elevator that directly serves the daycare. Additional on-street passenger loading could be considered on St. Davids Avenue.



### 6.1.3 Off-street Parking Supply, Adjusted

**Table 20** provides a breakdown of the parking supply requirement, adjusted requirements based on transit accessibility, the proposed amount, and the variance.

Based on parking reductions associated with proximity to frequent transit and shared parking, an overall minimum residential and non-residential parking supply of 220 for the site is supported. The development currently proposes an overall total of 223 spaces, including 1 space shared between visitor and non-residential. This represents a variance of 34 spaces from the bylaw requirement of 257 spaces.



**Table 20: Adjusted Off-street Parking Requirement**

Land Use	Quantity	Bylaw Supply Rate	Bylaw	Transit- Adjusted Supply	Shared- Parking- Adjusted Supply	Proposed
<b>Residential</b>						
Residential	166 units	0.95 per DU	158	139	139	135
Residential Visitor	166 units	0.10 per DU	17	8	2	7 + 1 shared = 8 total
<u>Sub-total</u>			174	147	141	142 + 1 shared = 143 total
<b>Commercial</b>						
Retail	11,071 ft <sup>2</sup> GFA	1 per 538.2 ft <sup>2</sup>	21	21	20	33 + 1 shared = 34 total
Office and Medical Office	4,563 ft <sup>2</sup> GFA	1 per 538.2 ft <sup>2</sup>	8	8	6	
Child Care	3,354 ft <sup>2</sup> GFA	1 per 538.2 ft <sup>2</sup>	6	6	6	
Restaurant and Café	7,205 ft <sup>2</sup> GFA	1 per 204.5 ft <sup>2</sup>	47	47	47	47
<u>Sub-total</u>			82	82	79	80 + 1 shared = 81 total
<u><b>Total</b></u>			<b>257 spaces</b>	<b>229 spaces</b>	<b>220 spaces</b>	<b>222 + 1 shared = 223 total spaces</b>

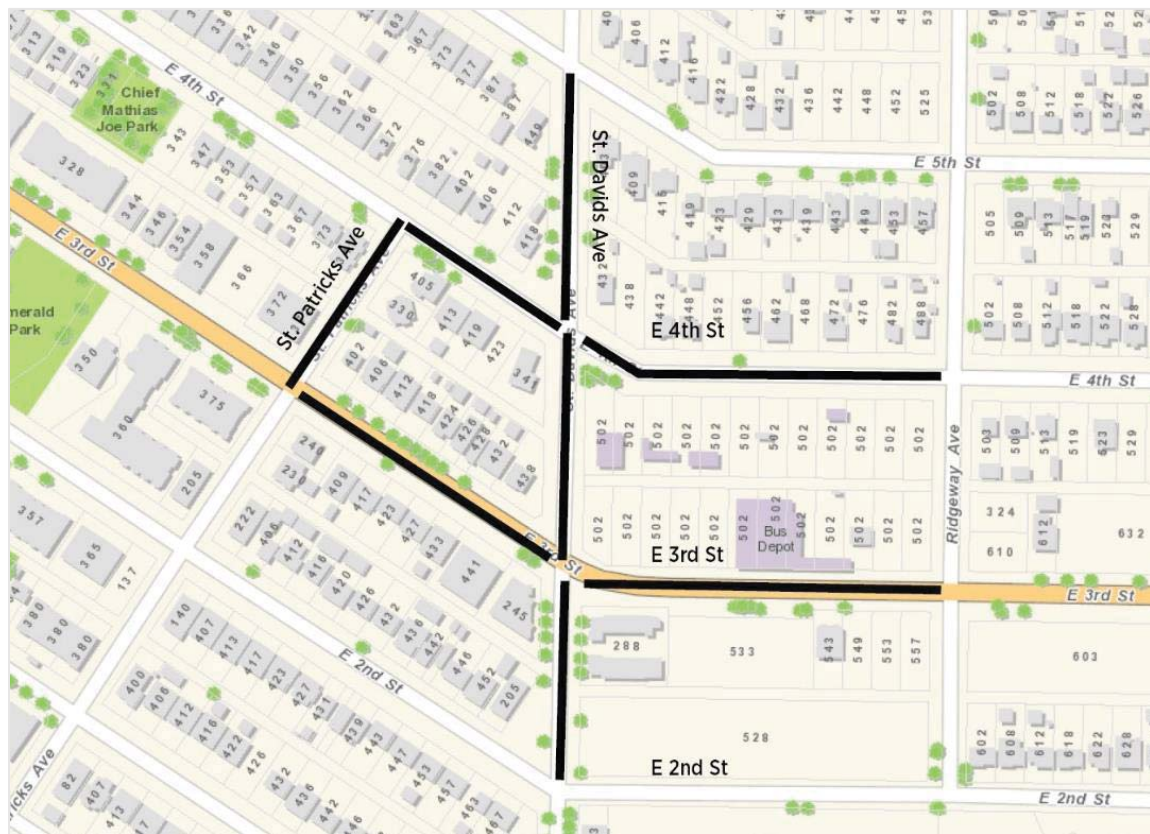


## 6.2 On-street Parking

An on-street parking occupancy survey was completed to determine the availability of on-street parking within walking distance of the subject site. The survey was conducted for the following time periods:

- **Weekday daytime:** Wednesday, December 12, 2018 (9:00 am to 11:00 am);
- **Weekday overnight:** Wednesday, December 12, 2018 (9:00 pm); and
- **Weekend daytime:** Sunday, December 9, 2018 (9:00 am to 4:00 pm).

Figure 11: On-street Parking Occupancy Survey Study Area



Within the study area, there are currently an estimated total of 235 on-street parking spaces currently and an estimated 139 spaces in the future (see **Figure 11**).

The assumptions used to estimate the future parking supply are summarized below:





- The R2 Marine Drive RapidBus resulted in the removal of approximately 62 on-street parking spaces within the study area to accommodate the dedicated bus lane.
- The proposed St. Davids Avenue Greenway will result in the removal of approximately 34 on-street parking spaces within the study area to accommodate a cycling facility.

### 6.2.1 Existing Parking Conditions

- Peak parking occupancy for the weekday occurred at 9:00 am with a total of 97 vehicles observed, resulting in a parking utilization rate of 41% (138 spaces vacant).
- Peak occupancy for the weekend occurred at 9:00 am and 2:00 pm with a total of 76 vehicles observed, resulting in a parking utilization rate of 32% (159 spaces vacant).
- In summary, peak parking demand was observed to occur during weekday mornings. Parking utilization decreased over the course of the day, suggesting many of the vehicles are likely attributed to residential uses in the area.

### 6.2.2 Future Parking Conditions

- Assuming all displaced vehicles from the loss of 96 on-street parking spaces continued to park within the study area, the peak parking utilization is forecast to be 70% (42 spaces vacant) for the weekday peak hour (9:00 am) and 55% (63 spaces vacant) for the weekend peak hour (9:00 am and 2:00 pm).

In summary, there is sufficient on-street parking supply to meet existing and future parking demand.



## 7.0 TRANSPORTATION DEMAND MANAGEMENT REVIEW

A transportation demand management review was conducted to identify appropriate measures to reduce vehicle trips to/from the site, and subsequently parking supply.

### 7.1 Pedestrian Improvements

The site is contributing to pedestrian improvements as part of the implementation of the proposed St. Davids Greenway. The City of San Francisco's *Transportation Demand Management Technical Justification Report* estimated a 2% reduction in vehicle miles travelled as a result of pedestrian improvements in the adjacent road network.

### 7.2 Bicycle Improvements

The subject site is located within proximity to a number of high-quality, all ages and abilities cycling facilities, including the Green Necklace and the Spirit Trail, and other facilities such as East 4<sup>th</sup> Street and the proposed facility on the East 3<sup>rd</sup> Street frontage of the site. The site is also contributing to cycling improvements as part of the implementation of the proposed St. Davids Greenway. This number of cycling options form a robust network for site users to reach destinations that are within comfortable biking distance, including the Lonsdale Corridor, which is a major transit hub.

To support on-site bicycle improvements, the following facilities are proposed: (1) a bicycle repair station located by the visitor bicycle parking area; and (2) additional 10% secure bicycle parking beyond the base bylaw requirement. A systematic review of the transportation literature found that bicycle parking supply and other end-of-trip



amenities is a key determinant for current and potential cyclists.<sup>2</sup> The study found that additional bicycle parking is associated with an increase of cycling of 10 to 40%.

### 7.3 Unbundled Parking

Parking supply for the junior 1-bedroom dwelling units at the subject site is planned to be “unbundled”, which means the parking space associated with the purchase of the residential unit is separated. This can be implemented through purchase agreements with potential residents.

Research has shown that younger and lower income households tend to be most interested in smaller dwelling units as the purchase price is within their household income range. Research has also shown that household income is negatively correlated with vehicle ownership; in other words, the lower your income, the less likely you will own a vehicle. According to the Victoria Transport Policy Institute, unbundled parking can reduce parking demand by 10 to 30%.

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<sup>2</sup> Hein, E. & Buehler, R. (2019). Bicycle parking: a systematic review of scientific literature on parking behaviour, parking preferences, and their influence on cycling and travel behaviour. *Transport Reviews*, 39(5).



## 8.0 CONCLUSION AND RECOMMENDATIONS

### 8.1 Findings

**Background traffic conditions** are within acceptable operating thresholds (movements are operating at LOS D or better) during the weekday AM/PM and Saturday peak hour up to background 2022.

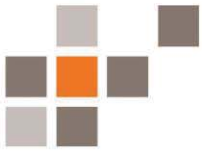
- By background 2027, the northbound and southbound movements at St. Patricks Avenue/East 3rd Street is forecast to fail and operate at LOS F and E respectively due to heavy through volumes that are expected to reduce the number of gaps for left-turning and through traffic from the side streets.
- A TAC signal warrant was completed, but the warrant was not met for the intersection. Adjacent signals in proximity to the site may result in a platooning effect, which will allow for gaps in traffic.

**Post-development traffic conditions** are within acceptable operating thresholds except for the northbound and southbound movements at St. Patricks Avenue/East 3<sup>rd</sup> Street, which are forecast to fail and operate at LOS F as of the post-development 2020 scenario. The traffic operational analysis found significant delays and queue lengths for the minor approaches.

- A traffic signal was found to not be warranted for the intersection based on the TAC and BC MOTI signal warrant, and the BC MOTI peak hour delay warrant.
- If the intersection is to remain unsignalized, an eastbound left-turn storage lane length of 85 metres and westbound storage of 30 metres is recommended.
- If the intersection is to be signalized, an eastbound left-turn storage of 20 metres and westbound left-turn storage of 15 metres is recommended.

A **parking demand analysis and TDM review** was conducted. An overall minimum residential and non-residential parking supply of 220 for the site is supported. The development currently proposes an overall total of 223 spaces, including 1 space shared between visitor and non-residential. This represents a variance of 34 spaces from the bylaw requirement of 257 spaces.

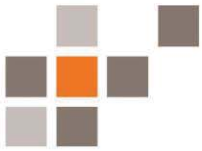






## 8.2 Recommendations

- The applicant is recommended to coordinate with the City to install a left-turn storage lane at East 3<sup>rd</sup> Street/St. Patricks Avenue.
- The City is recommended to monitor East 3rd Street/St. Patricks Avenue to determine if a signal is needed in the long-term.



## APPENDIX A

### Traffic Operational Analysis Results

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-16-2020

Intersection													
Int Delay, s/veh	2.3												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Vol, veh/h	7	269	7	19	302	4	12	2	22	8	3	16	
Future Vol, veh/h	7	269	7	19	302	4	12	2	22	8	3	16	
Conflicting Peds, #/hr	5	0	6	6	0	5	20	0	1	1	0	20	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	44	85	88	68	79	50	50	50	55	67	75	67	
Heavy Vehicles, %	14	6	0	0	9	0	0	0	0	13	0	13	
Mvmt Flow	16	316	8	28	382	8	24	4	40	12	4	24	

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	395	0	0	330	0	0	834	809	327	822	809	411
Stage 1	-	-	-	-	-	-	358	358	-	447	447	-
Stage 2	-	-	-	-	-	-	476	451	-	375	362	-
Critical Hdwy	4.24	-	-	4.1	-	-	7.1	6.5	6.2	7.23	6.5	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Follow-up Hdwy	2.326	-	-	2.2	-	-	3.5	4	3.3	3.617	4	3.417
Pot Cap-1 Maneuver	1101	-	-	1241	-	-	290	317	719	281	317	618
Stage 1	-	-	-	-	-	-	664	631	-	570	577	-
Stage 2	-	-	-	-	-	-	574	574	-	624	629	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1080	-	-	1240	-	-	260	299	714	252	299	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	260	299	-	252	299	-
Stage 1	-	-	-	-	-	-	648	616	-	557	558	-
Stage 2	-	-	-	-	-	-	522	555	-	574	614	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0.4		0.5		15.2		15.1	
HCM LOS					C		C	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	421	1080	-	-	1240	-	-	397
HCM Lane V/C Ratio	0.162	0.015	-	-	0.023	-	-	0.1
HCM Control Delay (s)	15.2	8.4	0	-	8	0	-	15.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0.3

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-16-2020

Intersection						
Int Delay, s/veh	3.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	10	7	8	10	6	2
Future Vol, veh/h	10	7	8	10	6	2
Conflicting Peds, #/hr	0	5	5	0	7	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	88	50	50	75	50
Heavy Vehicles, %	0	14	0	0	0	0
Mvmt Flow	16	8	16	20	8	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	29	0	84	28
Stage 1	-	-	-	-	25	-
Stage 2	-	-	-	-	59	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1597	-	923	1053
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1593	-	904	1045
Mov Cap-2 Maneuver	-	-	-	-	904	-
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	953	-

Approach	EB		WB		NB	
HCM Control Delay, s	0		3.2		8.9	
HCM LOS					A	

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	947	-	-	1593	-
HCM Lane V/C Ratio	0.013	-	-	0.01	-
HCM Control Delay (s)	8.9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-



# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-16-2020

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	6	9	20	8	9	8	13	113	7	1	198	12
Future Vol, veh/h	6	9	20	8	9	8	13	113	7	1	198	12
Conflicting Peds, #/hr	2	0	19	19	0	2	33	0	18	18	0	33
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	56	71	67	75	67	65	74	88	25	87	75
Heavy Vehicles, %	17	22	0	0	11	0	8	3	0	0	1	0
Mvmt Flow	8	16	28	12	12	12	20	153	8	4	228	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	488	496	288	500	500	177	277	0	0	179	0	0
Stage 1	277	277	-	215	215	-	-	-	-	-	-	-
Stage 2	211	219	-	285	285	-	-	-	-	-	-	-
Critical Hdwy	7.27	6.72	6.2	7.1	6.61	6.2	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.27	5.72	-	6.1	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.27	5.72	-	6.1	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4.198	3.3	3.5	4.099	3.3	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	466	447	756	484	460	871	1252	-	-	1409	-	-
Stage 1	698	646	-	792	708	-	-	-	-	-	-	-
Stage 2	758	686	-	727	660	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	428	417	720	429	429	855	1230	-	-	1406	-	-
Mov Cap-2 Maneuver	428	417	-	429	429	-	-	-	-	-	-	-
Stage 1	664	624	-	765	684	-	-	-	-	-	-	-
Stage 2	720	662	-	667	638	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.3		12.5		0.9		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1230	-	-	542	514	1406	-	-
HCM Lane V/C Ratio	0.016	-	-	0.096	0.07	0.003	-	-
HCM Control Delay (s)	8	0	-	12.3	12.5	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0	-	-

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-16-2020

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	15	530	13	22	457	6	14	4	67	2	0	6
Future Vol, veh/h	15	530	13	22	457	6	14	4	67	2	0	6
Conflicting Peds, #/hr	4	0	7	7	0	4	23	0	1	1	0	23
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	96	54	79	83	50	70	33	80	50	92	50
Heavy Vehicles, %	2	3	2	5	3	2	2	25	2	2	2	2
Mvmt Flow	24	552	24	28	551	12	20	12	84	4	0	12

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	567	0	0	583	0	0	1260	1241	572	1277	1247	584
Stage 1	-	-	-	-	-	-	619	619	-	616	616	-
Stage 2	-	-	-	-	-	-	641	622	-	661	631	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.12	6.75	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.75	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.75	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.518	4.225	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1005	-	-	977	-	-	147	158	520	143	173	512
Stage 1	-	-	-	-	-	-	476	446	-	478	482	-
Stage 2	-	-	-	-	-	-	463	445	-	452	474	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	983	-	-	976	-	-	131	144	516	105	158	499
Mov Cap-2 Maneuver	-	-	-	-	-	-	131	144	-	105	158	-
Stage 1	-	-	-	-	-	-	456	427	-	459	460	-
Stage 2	-	-	-	-	-	-	424	425	-	354	454	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	25.4	19.9
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	290	983	-	-	976	-	-	257
HCM Lane V/C Ratio	0.4	0.024	-	-	0.029	-	-	0.062
HCM Control Delay (s)	25.4	8.8	0	-	8.8	0	-	19.9
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0.1	-	-	0.2

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-16-2020

Intersection						
Int Delay, s/veh	2.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	34	4	3	11	6	7
Future Vol, veh/h	34	4	3	11	6	7
Conflicting Peds, #/hr	0	8	8	0	17	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	65	50	38	92	50	44
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	8	8	12	12	16

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	68	0	109	66
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1533	-	888	998
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %	-	-	-			
Mov Cap-1 Maneuver	-	-	1530	-	863	989
Mov Cap-2 Maneuver	-	-	-	-	863	-
Stage 1	-	-	-	-	952	-
Stage 2	-	-	-	-	957	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	931	-	-	1530	-
HCM Lane V/C Ratio	0.03	-	-	0.005	-
HCM Control Delay (s)	9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-16-2020

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	10	37	27	8	10	11	23	319	20	10	263	12
Future Vol, veh/h	10	37	27	8	10	11	23	319	20	10	263	12
Conflicting Peds, #/hr	11	0	18	18	0	11	18	0	15	15	0	18
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	58	75	67	42	55	82	86	71	63	87	43
Heavy Vehicles, %	2	1	2	2	1	2	2	2	2	2	10	2
Mvmt Flow	16	64	36	12	24	20	28	371	28	16	302	28

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	840	836	352	872	836	411	348	0	0	414	0	0
Stage 1	366	366	-	456	456	-	-	-	-	-	-	-
Stage 2	474	470	-	416	380	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.51	6.22	7.12	6.51	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.51	-	6.12	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.51	-	6.12	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.009	3.318	3.518	4.009	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	285	304	692	271	304	641	1211	-	-	1145	-	-
Stage 1	653	624	-	584	570	-	-	-	-	-	-	-
Stage 2	571	562	-	614	616	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	242	281	669	198	281	626	1191	-	-	1133	-	-
Mov Cap-2 Maneuver	242	281	-	198	281	-	-	-	-	-	-	-
Stage 1	623	603	-	559	545	-	-	-	-	-	-	-
Stage 2	507	538	-	502	595	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.4		18.9		0.5		0.4	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1191	-	-	334	315	1133	-	-
HCM Lane V/C Ratio	0.024	-	-	0.346	0.177	0.014	-	-
HCM Control Delay (s)	8.1	0	-	21.4	18.9	8.2	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.5	0.6	0	-	-

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-16-2020

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	345	11	11	415	4	6	1	22	5	0	4
Future Vol, veh/h	4	345	11	11	415	4	6	1	22	5	0	4
Conflicting Peds, #/hr	7	0	5	5	0	7	21	0	0	0	0	21
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	95	69	55	83	50	75	25	92	63	92	33
Heavy Vehicles, %	2	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	8	363	16	20	500	8	8	4	24	8	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	515	0	0	384	0	0	963	947	376	952	951	532
Stage 1	-	-	-	-	-	-	392	392	-	551	551	-
Stage 2	-	-	-	-	-	-	571	555	-	401	400	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1051	-	-	1174	-	-	235	261	670	239	260	547
Stage 1	-	-	-	-	-	-	633	606	-	519	515	-
Stage 2	-	-	-	-	-	-	506	513	-	626	602	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1030	-	-	1174	-	-	218	249	667	220	248	533
Mov Cap-2 Maneuver	-	-	-	-	-	-	218	249	-	220	248	-
Stage 1	-	-	-	-	-	-	624	597	-	510	499	-
Stage 2	-	-	-	-	-	-	473	497	-	594	593	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	14.8	16.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	405	1030	-	-	1174	-	-	341
HCM Lane V/C Ratio	0.089	0.008	-	-	0.017	-	-	0.059
HCM Control Delay (s)	14.8	8.5	0	-	8.1	0	-	16.2
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.2

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-16-2020

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	13	4	3	14	7	3
Future Vol, veh/h	13	4	3	14	7	3
Conflicting Peds, #/hr	0	4	4	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	100	38	88	58	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	4	8	16	12	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	24	0	54	23
Stage 1	-	-	-	-	22	-
Stage 2	-	-	-	-	32	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1591	-	954	1054
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	991	-
Platoon blocked, %	-	-	-			
Mov Cap-1 Maneuver	-	-	1590	-	946	1049
Mov Cap-2 Maneuver	-	-	-	-	946	-
Stage 1	-	-	-	-	997	-
Stage 2	-	-	-	-	986	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	970	-	-	1590	-
HCM Lane V/C Ratio	0.017	-	-	0.005	-
HCM Control Delay (s)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-



# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-16-2020

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	12	10	17	7	11	9	15	232	14	5	233	19
Future Vol, veh/h	12	10	17	7	11	9	15	232	14	5	233	19
Conflicting Peds, #/hr	11	0	18	18	0	11	18	0	15	15	0	18
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	50	61	88	69	75	63	73	58	63	87	59
Heavy Vehicles, %	2	1	2	2	2	5	2	2	2	14	2	2
Mvmt Flow	20	20	28	8	16	12	24	318	24	8	268	32

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	720	723	320	734	726	356	318	0	0	357	0	0
Stage 1	318	318	-	392	392	-	-	-	-	-	-	-
Stage 2	402	405	-	342	334	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.51	6.22	7.12	6.52	6.25	4.12	-	-	4.24	-	-
Critical Hdwy Stg 1	6.12	5.51	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.51	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.009	3.318	3.518	4.018	3.345	2.218	-	-	2.326	-	-
Pot Cap-1 Maneuver	343	354	721	336	351	681	1242	-	-	1138	-	-
Stage 1	693	655	-	633	606	-	-	-	-	-	-	-
Stage 2	625	600	-	673	643	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	308	332	697	291	329	665	1221	-	-	1126	-	-
Mov Cap-2 Maneuver	308	332	-	291	329	-	-	-	-	-	-	-
Stage 1	665	638	-	609	583	-	-	-	-	-	-	-
Stage 2	577	577	-	610	627	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.5		15.4		0.5		0.2	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1221	-	-	411	383	1126	-
HCM Lane V/C Ratio	0.02	-	-	0.165	0.094	0.007	-
HCM Control Delay (s)	8	0	-	15.5	15.4	8.2	0
HCM Lane LOS	A	A	-	C	C	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.3	0	-

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-16-2020

Intersection													
Int Delay, s/veh	2.3												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Vol, veh/h	7	313	7	20	389	4	12	2	23	8	3	16	
Future Vol, veh/h	7	313	7	20	389	4	12	2	23	8	3	16	
Conflicting Peds, #/hr	5	0	6	6	0	5	20	0	1	1	0	20	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	44	85	88	68	79	50	50	50	55	67	75	67	
Heavy Vehicles, %	14	6	0	0	9	0	0	0	0	13	0	13	
Mvmt Flow	16	368	8	29	492	8	24	4	42	12	4	24	

Major/Minor	Major1	Major2	Minor1	Minor2									
Conflicting Flow All	505	0	0	382	0	0	999	974	379	988	974	521	
Stage 1	-	-	-	-	-	-	410	410	-	560	560	-	
Stage 2	-	-	-	-	-	-	589	564	-	428	414	-	
Critical Hdwy	4.24	-	-	4.1	-	-	7.1	6.5	6.2	7.23	6.5	6.33	
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-	
Follow-up Hdwy	2.326	-	-	2.2	-	-	3.5	4	3.3	3.617	4	3.417	
Pot Cap-1 Maneuver	1001	-	-	1188	-	-	224	254	672	216	254	534	
Stage 1	-	-	-	-	-	-	623	599	-	494	514	-	
Stage 2	-	-	-	-	-	-	498	512	-	584	597	-	
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	
Mov Cap-1 Maneuver	982	-	-	1187	-	-	197	238	668	191	238	522	
Mov Cap-2 Maneuver	-	-	-	-	-	-	197	238	-	191	238	-	
Stage 1	-	-	-	-	-	-	607	583	-	481	494	-	
Stage 2	-	-	-	-	-	-	447	492	-	532	581	-	

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.5	18	17.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	347	982	-	-	1187	-	-	318
HCM Lane V/C Ratio	0.201	0.016	-	-	0.025	-	-	0.125
HCM Control Delay (s)	18	8.7	0	-	8.1	0	-	17.9
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0.4

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-16-2020

Intersection						
Int Delay, s/veh	6.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	7	8	0	6	2
Future Vol, veh/h	0	7	8	0	6	2
Conflicting Peds, #/hr	0	5	5	0	7	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	88	50	50	75	50
Heavy Vehicles, %	0	14	0	0	0	0
Mvmt Flow	0	8	16	0	8	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	13	0	48	12
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	39	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1619	-	967	1074
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1614	-	947	1066
Mov Cap-2 Maneuver	-	-	-	-	947	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	973	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	984	-	-	1614	-
HCM Lane V/C Ratio	0.012	-	-	0.01	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-16-2020

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	6	9	21	8	9	8	13	116	7	1	204	12
Future Vol, veh/h	6	9	21	8	9	8	13	116	7	1	204	12
Conflicting Peds, #/hr	2	0	19	19	0	2	33	0	18	18	0	33
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	56	71	67	75	67	65	74	88	25	87	75
Heavy Vehicles, %	17	22	0	0	11	0	8	3	0	0	1	0
Mvmt Flow	8	16	30	12	12	12	20	157	8	4	234	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	498	506	294	511	510	181	283	0	0	183	0	0
Stage 1	283	283	-	219	219	-	-	-	-	-	-	-
Stage 2	215	223	-	292	291	-	-	-	-	-	-	-
Critical Hdwy	7.27	6.72	6.2	7.1	6.61	6.2	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.27	5.72	-	6.1	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.27	5.72	-	6.1	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4.198	3.3	3.5	4.099	3.3	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	459	441	750	476	454	867	1246	-	-	1404	-	-
Stage 1	693	642	-	788	705	-	-	-	-	-	-	-
Stage 2	754	683	-	720	656	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	422	411	714	421	424	851	1224	-	-	1401	-	-
Mov Cap-2 Maneuver	422	411	-	421	424	-	-	-	-	-	-	-
Stage 1	660	620	-	761	681	-	-	-	-	-	-	-
Stage 2	716	659	-	658	634	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.4		12.6		0.9		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1224	-	-	539	508	1401	-	-
HCM Lane V/C Ratio	0.016	-	-	0.1	0.071	0.003	-	-
HCM Control Delay (s)	8	0	-	12.4	12.6	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0	-	-

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-18-2020

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	15	659	13	23	553	6	14	4	69	2	0	6
Future Vol, veh/h	15	659	13	23	553	6	14	4	69	2	0	6
Conflicting Peds, #/hr	4	0	7	7	0	4	23	0	1	1	0	23
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	96	54	79	83	50	70	33	80	50	92	50
Heavy Vehicles, %	2	3	2	5	3	2	2	25	2	2	2	2
Mvmt Flow	24	686	24	29	666	12	20	12	86	4	0	12

Major/Minor	Major1			Major2			Minor1		Minor2			
Conflicting Flow All	682	0	0	718	0	0	1512	1493	706	1530	1499	699
Stage 1	-	-	-	-	-	-	753	753	-	734	734	-
Stage 2	-	-	-	-	-	-	759	740	-	796	765	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.12	6.75	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.75	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.75	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.518	4.225	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	911	-	-	869	-	-	98	110	436	96	122	440
Stage 1	-	-	-	-	-	-	402	385	-	412	426	-
Stage 2	-	-	-	-	-	-	399	391	-	380	412	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	891	-	-	868	-	-	86	98	433	64	109	429
Mov Cap-2 Maneuver	-	-	-	-	-	-	86	98	-	64	109	-
Stage 1	-	-	-	-	-	-	381	365	-	392	401	-
Stage 2	-	-	-	-	-	-	359	369	-	281	391	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	41.2	27.4
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	213	891	-	-	868	-	-	177
HCM Lane V/C Ratio	0.556	0.027	-	-	0.034	-	-	0.09
HCM Control Delay (s)	41.2	9.2	0	-	9.3	0	-	27.4
HCM Lane LOS	E	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	3	0.1	-	-	0.1	-	-	0.3

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-18-2020

Intersection						
Int Delay, s/veh	6.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	4	3	0	6	7
Future Vol, veh/h	0	4	3	0	6	7
Conflicting Peds, #/hr	0	8	8	0	17	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	65	50	38	92	50	44
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	8	8	0	12	16

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	16	0	45 14
Stage 1	-	-	-	-	12 -
Stage 2	-	-	-	-	33 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1602	-	965 1066
Stage 1	-	-	-	-	1011 -
Stage 2	-	-	-	-	989 -
Platoon blocked, %	-	-	-		
Mov Cap-1 Maneuver	-	-	1599	-	938 1056
Mov Cap-2 Maneuver	-	-	-	-	938 -
Stage 1	-	-	-	-	1003 -
Stage 2	-	-	-	-	968 -

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1002	-	-	1599	-
HCM Lane V/C Ratio	0.028	-	-	0.005	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-



# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-18-2020

Intersection													
Int Delay, s/veh	4.2												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Vol, veh/h	10	38	28	8	10	11	24	329	21	10	271	12	
Future Vol, veh/h	10	38	28	8	10	11	24	329	21	10	271	12	
Conflicting Peds, #/hr	11	0	18	18	0	11	18	0	15	15	0	18	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	63	58	75	67	42	55	82	86	71	63	87	43	
Heavy Vehicles, %	2	1	2	2	1	2	2	2	2	2	10	2	
Mvmt Flow	16	66	37	12	24	20	29	383	30	16	311	28	

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	864	861	361	898	860	423	357	0	0	427	0	0
Stage 1	375	375	-	471	471	-	-	-	-	-	-	-
Stage 2	489	486	-	427	389	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.51	6.22	7.12	6.51	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.51	-	6.12	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.51	-	6.12	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.009	3.318	3.518	4.009	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	274	294	684	260	295	631	1202	-	-	1132	-	-
Stage 1	646	619	-	573	561	-	-	-	-	-	-	-
Stage 2	561	553	-	606	610	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	232	271	661	187	272	616	1182	-	-	1120	-	-
Mov Cap-2 Maneuver	232	271	-	187	272	-	-	-	-	-	-	-
Stage 1	615	598	-	547	535	-	-	-	-	-	-	-
Stage 2	497	528	-	492	589	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	22.4		19.5		0.5		0.4	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1182	-	-	324	303	1120	-	-
HCM Lane V/C Ratio	0.025	-	-	0.366	0.184	0.014	-	-
HCM Control Delay (s)	8.1	0	-	22.4	19.5	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.6	0.7	0	-	-

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-16-2020

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	4	424	11	11	488	4	6	1	23	5	0	4
Future Vol, veh/h	4	424	11	11	488	4	6	1	23	5	0	4
Conflicting Peds, #/hr	7	0	5	5	0	7	21	0	0	0	0	21
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	95	69	55	83	50	75	25	92	63	92	33
Heavy Vehicles, %	2	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	8	446	16	20	588	8	8	4	25	8	0	12

Major/Minor	Major1		Major2		Minor1		Minor2				
Conflicting Flow All	603	0	0	467	0	1134	1118	459	1124	1122	620
Stage 1	-	-	-	-	-	475	475	-	639	639	-
Stage 2	-	-	-	-	-	659	643	-	485	483	-
Critical Hdwy	4.12	-	-	4.12	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	975	-	-	1094	-	180	207	602	183	206	488
Stage 1	-	-	-	-	-	570	557	-	464	470	-
Stage 2	-	-	-	-	-	453	468	-	563	553	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	956	-	-	1094	-	166	197	599	167	196	475
Mov Cap-2 Maneuver	-	-	-	-	-	166	197	-	167	196	-
Stage 1	-	-	-	-	-	561	548	-	456	454	-
Stage 2	-	-	-	-	-	421	452	-	530	544	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	17	19.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	336	956	-	-	1094	-	-	275
HCM Lane V/C Ratio	0.11	0.008	-	-	0.018	-	-	0.073
HCM Control Delay (s)	17	8.8	0	-	8.4	0	-	19.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.2

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-16-2020

Intersection						
Int Delay, s/veh	7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	4	3	0	7	3
Future Vol, veh/h	0	4	3	0	7	3
Conflicting Peds, #/hr	0	4	4	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	100	38	88	58	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	8	0	12	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	8	0	22	7
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1612	-	995	1075
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1007	-
Platoon blocked, %	-	-	-			
Mov Cap-1 Maneuver	-	-	1610	-	986	1070
Mov Cap-2 Maneuver	-	-	-	-	986	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	1002	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.2	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1006	-	-	1610	-
HCM Lane V/C Ratio	0.016	-	-	0.005	-
HCM Control Delay (s)	8.6	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-16-2020

Intersection													
Int Delay, s/veh	2.4												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Vol, veh/h	12	10	18	7	11	9	15	239	14	5	240	20	
Future Vol, veh/h	12	10	18	7	11	9	15	239	14	5	240	20	
Conflicting Peds, #/hr	11	0	18	18	0	11	18	0	15	15	0	18	
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	60	50	61	88	69	75	63	73	58	63	87	59	
Heavy Vehicles, %	2	1	2	2	2	5	2	2	2	14	2	2	
Mvmt Flow	20	20	30	8	16	12	24	327	24	8	276	34	

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	739	741	329	753	746	365	328	0	0	367	0	0
Stage 1	327	327	-	402	402	-	-	-	-	-	-	-
Stage 2	412	414	-	351	344	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.51	6.22	7.12	6.52	6.25	4.12	-	-	4.24	-	-
Critical Hdwy Stg 1	6.12	5.51	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.51	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.009	3.318	3.518	4.018	3.345	2.218	-	-	2.326	-	-
Pot Cap-1 Maneuver	333	345	712	326	342	673	1232	-	-	1128	-	-
Stage 1	686	650	-	625	600	-	-	-	-	-	-	-
Stage 2	617	595	-	666	637	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	298	323	688	281	320	657	1211	-	-	1116	-	-
Mov Cap-2 Maneuver	298	323	-	281	320	-	-	-	-	-	-	-
Stage 1	658	633	-	601	577	-	-	-	-	-	-	-
Stage 2	568	572	-	601	621	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.8		15.7		0.5		0.2	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1211	-	-	404	372	1116	-	-
HCM Lane V/C Ratio	0.02	-	-	0.172	0.096	0.007	-	-
HCM Control Delay (s)	8	0	-	15.8	15.7	8.2	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.3	0	-	-

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-16-2020

Intersection													
Int Delay, s/veh	2.6												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Vol, veh/h	8	367	8	21	511	4	13	2	24	9	3	17	
Future Vol, veh/h	8	367	8	21	511	4	13	2	24	9	3	17	
Conflicting Peds, #/hr	5	0	6	6	0	5	20	0	1	1	0	20	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	44	85	88	68	79	50	50	50	55	67	75	67	
Heavy Vehicles, %	14	6	0	0	9	0	0	0	0	13	0	13	
Mvmt Flow	18	432	9	31	647	8	26	4	44	13	4	25	

Major/Minor	Major1	Major2	Minor1	Minor2									
Conflicting Flow All	660	0	0	447	0	0	1226	1201	443	1215	1201	676	
Stage 1	-	-	-	-	-	-	479	479	-	718	718	-	
Stage 2	-	-	-	-	-	-	747	722	-	497	483	-	
Critical Hdwy	4.24	-	-	4.1	-	-	7.1	6.5	6.2	7.23	6.5	6.33	
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-	
Follow-up Hdwy	2.326	-	-	2.2	-	-	3.5	4	3.3	3.617	4	3.417	
Pot Cap-1 Maneuver	874	-	-	1124	-	-	157	186	619	150	186	435	
Stage 1	-	-	-	-	-	-	571	558	-	403	436	-	
Stage 2	-	-	-	-	-	-	408	434	-	535	556	-	
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	
Mov Cap-1 Maneuver	858	-	-	1123	-	-	134	171	615	129	171	425	
Mov Cap-2 Maneuver	-	-	-	-	-	-	134	171	-	129	171	-	
Stage 1	-	-	-	-	-	-	552	539	-	390	415	-	
Stage 2	-	-	-	-	-	-	357	413	-	479	537	-	

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	24.8	24.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	255	858	-	-	1123	-	-	229
HCM Lane V/C Ratio	0.289	0.021	-	-	0.027	-	-	0.187
HCM Control Delay (s)	24.8	9.3	0	-	8.3	0	-	24.3
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0.1	-	-	0.7

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-16-2020

Intersection						
Int Delay, s/veh	6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	8	9	0	6	2
Future Vol, veh/h	0	8	9	0	6	2
Conflicting Peds, #/hr	0	5	5	0	7	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	88	50	50	75	50
Heavy Vehicles, %	0	14	0	0	0	0
Mvmt Flow	0	9	18	0	8	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	14	0	53
Stage 1	-	-	-	-	10
Stage 2	-	-	-	-	43
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1617	-	960
Stage 1	-	-	-	-	1018
Stage 2	-	-	-	-	985
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1612	-	939
Mov Cap-2 Maneuver	-	-	-	-	939
Stage 1	-	-	-	-	1013
Stage 2	-	-	-	-	968

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	978	-	-	1612	-
HCM Lane V/C Ratio	0.012	-	-	0.011	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-



# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-16-2020

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	6	10	22	9	10	9	14	122	8	1	214	13
Future Vol, veh/h	6	10	22	9	10	9	14	122	8	1	214	13
Conflicting Peds, #/hr	2	0	19	19	0	2	33	0	18	18	0	33
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	56	71	67	75	67	65	74	88	25	87	75
Heavy Vehicles, %	17	22	0	0	11	0	8	3	0	0	1	0
Mvmt Flow	8	18	31	13	13	13	22	165	9	4	246	17

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	524	531	307	536	534	189	296	0	0	192	0	0
Stage 1	296	296	-	230	230	-	-	-	-	-	-	-
Stage 2	228	235	-	306	304	-	-	-	-	-	-	-
Critical Hdwy	7.27	6.72	6.2	7.1	6.61	6.2	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.27	5.72	-	6.1	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.27	5.72	-	6.1	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4.198	3.3	3.5	4.099	3.3	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	441	427	738	459	440	858	1232	-	-	1394	-	-
Stage 1	681	634	-	777	698	-	-	-	-	-	-	-
Stage 2	742	675	-	708	647	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	402	398	703	402	410	842	1210	-	-	1391	-	-
Mov Cap-2 Maneuver	402	398	-	402	410	-	-	-	-	-	-	-
Stage 1	647	613	-	749	673	-	-	-	-	-	-	-
Stage 2	700	650	-	644	625	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.7		13		0.9		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1210	-	-	522	491	1391	-	-
HCM Lane V/C Ratio	0.018	-	-	0.109	0.082	0.003	-	-
HCM Control Delay (s)	8	0	-	12.7	13	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.3	0	-	-

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-18-2020

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	16	808	14	24	687	6	15	4	73	2	0	6
Future Vol, veh/h	16	808	14	24	687	6	15	4	73	2	0	6
Conflicting Peds, #/hr	4	0	7	7	0	4	23	0	1	1	0	23
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	96	54	79	83	50	70	33	80	50	92	50
Heavy Vehicles, %	2	3	2	5	3	2	2	25	2	2	2	2
Mvmt Flow	25	842	26	30	828	12	21	12	91	4	0	12

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	844	0	0	875	0	0	1835	1816	863	1856	1823	861
Stage 1	-	-	-	-	-	-	912	912	-	898	898	-
Stage 2	-	-	-	-	-	-	923	904	-	958	925	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.12	6.75	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.75	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.75	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.518	4.225	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	792	-	-	759	-	-	58	68	354	56	77	355
Stage 1	-	-	-	-	-	-	328	323	-	334	358	-
Stage 2	-	-	-	-	-	-	323	326	-	309	348	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	775	-	-	758	-	-	49	58	351	31	66	346
Mov Cap-2 Maneuver	-	-	-	-	-	-	49	58	-	31	66	-
Stage 1	-	-	-	-	-	-	305	301	-	312	330	-
Stage 2	-	-	-	-	-	-	283	301	-	205	324	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0.3		0.3		114.8		48.8	
HCM LOS					F		E	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	138	775	-	-	758	-	-	98
HCM Lane V/C Ratio	0.904	0.033	-	-	0.04	-	-	0.163
HCM Control Delay (s)	114.8	9.8	0	-	9.9	0	-	48.8
HCM Lane LOS	F	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	6.1	0.1	-	-	0.1	-	-	0.6

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-18-2020

Intersection						
Int Delay, s/veh	6.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	4	3	0	6	8
Future Vol, veh/h	0	4	3	0	6	8
Conflicting Peds, #/hr	0	8	8	0	17	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	65	50	38	92	50	44
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	8	8	0	12	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	16	0	45	14
Stage 1	-	-	-	-	12	-
Stage 2	-	-	-	-	33	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1602	-	965	1066
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1599	-	938	1056
Mov Cap-2 Maneuver	-	-	-	-	938	-
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	968	-

Approach	EB		WB		NB	
HCM Control Delay, s	0		7.3		8.7	
HCM LOS					A	

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1006	-	-	1599	-
HCM Lane V/C Ratio	0.03	-	-	0.005	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-18-2020

Intersection													
Int Delay, s/veh	4.7												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Vol, veh/h	11	40	29	9	11	12	25	345	22	11	285	13	
Future Vol, veh/h	11	40	29	9	11	12	25	345	22	11	285	13	
Conflicting Peds, #/hr	11	0	18	18	0	11	18	0	15	15	0	18	
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	63	58	75	67	42	55	82	86	71	63	87	43	
Heavy Vehicles, %	2	1	2	2	1	2	2	2	2	2	10	2	
Mvmt Flow	17	69	39	13	26	22	30	401	31	17	328	30	

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	909	904	379	942	904	443	376	0	0	447	0	0
Stage 1	396	396	-	493	493	-	-	-	-	-	-	-
Stage 2	513	508	-	449	411	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.51	6.22	7.12	6.51	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.51	-	6.12	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.51	-	6.12	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.009	3.318	3.518	4.009	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	256	278	668	243	278	615	1182	-	-	1113	-	-
Stage 1	629	606	-	558	549	-	-	-	-	-	-	-
Stage 2	544	540	-	589	597	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	212	255	646	169	255	600	1162	-	-	1102	-	-
Mov Cap-2 Maneuver	212	255	-	169	255	-	-	-	-	-	-	-
Stage 1	597	585	-	531	523	-	-	-	-	-	-	-
Stage 2	476	514	-	471	576	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	25		21.4		0.5		0.4	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1162	-	-	303	281	1102	-	-
HCM Lane V/C Ratio	0.026	-	-	0.413	0.219	0.016	-	-
HCM Control Delay (s)	8.2	0	-	25	21.4	8.3	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.9	0.8	0	-	-

## HCM 2010 TWSC

1: St. Patricks Avenue &amp; East 3rd Street

02-16-2020

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	4	526	12	12	583	4	6	1	24	5	0	4
Future Vol, veh/h	4	526	12	12	583	4	6	1	24	5	0	4
Conflicting Peds, #/hr	7	0	5	5	0	7	21	0	0	0	0	21
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	95	69	55	83	50	75	25	92	63	92	33
Heavy Vehicles, %	2	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	8	554	17	22	702	8	8	4	26	8	0	12

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	717	0	0	576	0	0	1360	1344	567	1350	1349	734
Stage 1	-	-	-	-	-	-	583	583	-	757	757	-
Stage 2	-	-	-	-	-	-	777	761	-	593	592	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	884	-	-	997	-	-	126	152	523	128	151	420
Stage 1	-	-	-	-	-	-	498	499	-	400	416	-
Stage 2	-	-	-	-	-	-	390	414	-	492	494	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	867	-	-	997	-	-	115	143	521	114	142	409
Mov Cap-2 Maneuver	-	-	-	-	-	-	115	143	-	114	142	-
Stage 1	-	-	-	-	-	-	489	490	-	392	398	-
Stage 2	-	-	-	-	-	-	357	396	-	457	485	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	21.4	24.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	258	867	-	-	997	-	-	202
HCM Lane V/C Ratio	0.148	0.009	-	-	0.022	-	-	0.099
HCM Control Delay (s)	21.4	9.2	0	-	8.7	0	-	24.8
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0.1	-	-	0.3

## HCM 2010 TWSC

2: St. Patricks Avenue &amp; East 4th Street

02-16-2020

Intersection						
Int Delay, s/veh	7.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	4	3	0	8	3
Future Vol, veh/h	0	4	3	0	8	3
Conflicting Peds, #/hr	0	4	4	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	100	38	88	58	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	8	0	14	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	8	0	22	7
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1612	-	995	1075
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1007	-
Platoon blocked, %	-	-	-			
Mov Cap-1 Maneuver	-	-	1610	-	986	1070
Mov Cap-2 Maneuver	-	-	-	-	986	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	1002	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.2	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1004	-	-	1610	-
HCM Lane V/C Ratio	0.018	-	-	0.005	-
HCM Control Delay (s)	8.7	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-



# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-16-2020

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	13	11	18	8	12	10	16	251	15	5	252	21
Future Vol, veh/h	13	11	18	8	12	10	16	251	15	5	252	21
Conflicting Peds, #/hr	11	0	18	18	0	11	18	0	15	15	0	18
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	50	61	88	69	75	63	73	58	63	87	59
Heavy Vehicles, %	2	1	2	2	2	5	2	2	2	14	2	2
Mvmt Flow	22	22	30	9	17	13	25	344	26	8	290	36

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	775	776	343	790	782	383	343	0	0	385	0	0
Stage 1	341	341	-	423	423	-	-	-	-	-	-	-
Stage 2	434	435	-	367	359	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.51	6.22	7.12	6.52	6.25	4.12	-	-	4.24	-	-
Critical Hdwy Stg 1	6.12	5.51	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.51	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.009	3.318	3.518	4.018	3.345	2.218	-	-	2.326	-	-
Pot Cap-1 Maneuver	315	330	700	308	326	658	1216	-	-	1111	-	-
Stage 1	674	640	-	609	588	-	-	-	-	-	-	-
Stage 2	600	582	-	653	627	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	280	309	677	263	305	642	1196	-	-	1100	-	-
Mov Cap-2 Maneuver	280	309	-	263	305	-	-	-	-	-	-	-
Stage 1	645	624	-	585	565	-	-	-	-	-	-	-
Stage 2	549	559	-	587	611	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.7		16.5		0.5		0.2	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1196	-	-	381	354	1100	-	-
HCM Lane V/C Ratio	0.021	-	-	0.192	0.112	0.007	-	-
HCM Control Delay (s)	8.1	0	-	16.7	16.5	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.4	0	-	-

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-18-2020

Intersection													
Int Delay, s/veh	6.3												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Vol, veh/h	39	313	7	20	389	20	12	7	23	26	9	52	
Future Vol, veh/h	39	313	7	20	389	20	12	7	23	26	9	52	
Conflicting Peds, #/hr	5	0	6	6	0	5	20	0	1	1	0	20	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	44	85	88	68	79	50	50	50	55	67	75	67	
Heavy Vehicles, %	14	6	0	0	9	0	0	0	0	13	0	13	
Mvmt Flow	89	368	8	29	492	40	24	14	42	39	12	78	

Major/Minor	Major1	Major2	Minor1	Minor2									
Conflicting Flow All	537	0	0	382	0	0	1191	1151	379	1154	1135	537	
Stage 1	-	-	-	-	-	-	555	555	-	576	576	-	
Stage 2	-	-	-	-	-	-	636	596	-	578	559	-	
Critical Hdwy	4.24	-	-	4.1	-	-	7.1	6.5	6.2	7.23	6.5	6.33	
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-	
Follow-up Hdwy	2.326	-	-	2.2	-	-	3.5	4	3.3	3.617	4	3.417	
Pot Cap-1 Maneuver	973	-	-	1188	-	-	166	200	672	166	204	523	
Stage 1	-	-	-	-	-	-	520	516	-	484	505	-	
Stage 2	-	-	-	-	-	-	469	495	-	483	514	-	
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	
Mov Cap-1 Maneuver	955	-	-	1187	-	-	115	168	668	129	172	511	
Mov Cap-2 Maneuver	-	-	-	-	-	-	115	168	-	129	172	-	
Stage 1	-	-	-	-	-	-	456	453	-	425	485	-	
Stage 2	-	-	-	-	-	-	367	475	-	387	451	-	

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.4	29.5	34.6
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	225	955	-	-	1187	-	-	246
HCM Lane V/C Ratio	0.355	0.093	-	-	0.025	-	-	0.522
HCM Control Delay (s)	29.5	9.2	0	-	8.1	0	-	34.6
HCM Lane LOS	D	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	1.5	0.3	-	-	0.1	-	-	2.8

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-18-2020

Intersection						
Int Delay, s/veh	6.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	7	8	0	6	2
Future Vol, veh/h	0	7	8	0	6	2
Conflicting Peds, #/hr	0	5	5	0	7	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	88	50	50	75	50
Heavy Vehicles, %	0	14	0	0	0	0
Mvmt Flow	0	8	16	0	8	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	13	0	48	12
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	39	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1619	-	967	1074
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1614	-	947	1066
Mov Cap-2 Maneuver	-	-	-	-	947	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	973	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	984	-	-	1614	-
HCM Lane V/C Ratio	0.012	-	-	0.01	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-18-2020

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	6	9	21	8	9	8	13	127	7	1	214	12
Future Vol, veh/h	6	9	21	8	9	8	13	127	7	1	214	12
Conflicting Peds, #/hr	2	0	19	19	0	2	33	0	18	18	0	33
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	56	71	67	75	67	65	74	88	25	87	75
Heavy Vehicles, %	17	22	0	0	11	0	8	3	0	0	1	0
Mvmt Flow	8	16	30	12	12	12	20	172	8	4	246	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	525	533	306	538	537	196	295	0	0	198	0	0
Stage 1	295	295	-	234	234	-	-	-	-	-	-	-
Stage 2	230	238	-	304	303	-	-	-	-	-	-	-
Critical Hdwy	7.27	6.72	6.2	7.1	6.61	6.2	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.27	5.72	-	6.1	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.27	5.72	-	6.1	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4.198	3.3	3.5	4.099	3.3	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	440	426	739	457	438	850	1233	-	-	1387	-	-
Stage 1	682	634	-	774	695	-	-	-	-	-	-	-
Stage 2	740	673	-	710	648	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	404	397	704	403	409	834	1211	-	-	1384	-	-
Mov Cap-2 Maneuver	404	397	-	403	409	-	-	-	-	-	-	-
Stage 1	649	613	-	747	671	-	-	-	-	-	-	-
Stage 2	702	650	-	649	626	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.7		12.9		0.8		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1211	-	-	524	490	1384	-	-
HCM Lane V/C Ratio	0.017	-	-	0.102	0.073	0.003	-	-
HCM Control Delay (s)	8	0	-	12.7	12.9	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0	-	-

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-18-2020

Intersection												
Int Delay, s/veh	31.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	55	659	13	23	553	26	14	11	69	16	5	35
Future Vol, veh/h	55	659	13	23	553	26	14	11	69	16	5	35
Conflicting Peds, #/hr	4	0	7	7	0	4	23	0	1	1	0	23
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	96	54	79	83	50	70	33	80	50	92	50
Heavy Vehicles, %	2	3	2	5	3	2	2	25	2	2	2	2
Mvmt Flow	87	686	24	29	666	52	20	33	86	32	5	70

Major/Minor	Major1	Major2	Minor1	Minor2		
Conflicting Flow All	722	0	0	718	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.15	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.245	-	-
Pot Cap-1 Maneuver	880	-	-	869	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	861	-	-	868	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.4	186.8	272.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	124	861	-	-	868	-	-	85
HCM Lane V/C Ratio	1.126	0.101	-	-	0.034	-	-	1.264
HCM Control Delay (s)	186.8	9.7	0	-	9.3	0	-	272.9
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	8.3	0.3	-	-	0.1	-	-	7.9

Notes			
-: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-18-2020

Intersection						
Int Delay, s/veh	6.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	4	3	0	6	7
Future Vol, veh/h	0	4	3	0	6	7
Conflicting Peds, #/hr	0	8	8	0	17	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	65	50	38	92	50	44
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	8	8	0	12	16

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	16	0	45
Stage 1	-	-	-	-	12
Stage 2	-	-	-	-	33
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1602	-	965
Stage 1	-	-	-	-	1011
Stage 2	-	-	-	-	989
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1599	-	938
Mov Cap-2 Maneuver	-	-	-	-	938
Stage 1	-	-	-	-	1003
Stage 2	-	-	-	-	968

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1002	-	-	1599	-
HCM Lane V/C Ratio	0.028	-	-	0.005	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-18-2020

Intersection													
Int Delay, s/veh	4.3												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Vol, veh/h	10	38	28	8	10	11	24	338	21	10	283	12	
Future Vol, veh/h	10	38	28	8	10	11	24	338	21	10	283	12	
Conflicting Peds, #/hr	11	0	18	18	0	11	18	0	15	15	0	18	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	63	58	75	67	42	55	82	86	71	63	87	43	
Heavy Vehicles, %	2	1	2	2	1	2	2	2	2	2	10	2	
Mvmt Flow	16	66	37	12	24	20	29	393	30	16	325	28	

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	888	885	375	921	884	434	371	0	0	438	0	0	
Stage 1	389	389	-	481	481	-	-	-	-	-	-	-	
Stage 2	499	496	-	440	403	-	-	-	-	-	-	-	
Critical Hdwy	7.12	6.51	6.22	7.12	6.51	6.22	4.12	-	-	4.12	-	-	
Critical Hdwy Stg 1	6.12	5.51	-	6.12	5.51	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	6.12	5.51	-	6.12	5.51	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.009	3.318	3.518	4.009	3.318	2.218	-	-	2.218	-	-	
Pot Cap-1 Maneuver	264	285	671	251	285	622	1188	-	-	1122	-	-	
Stage 1	635	610	-	566	555	-	-	-	-	-	-	-	
Stage 2	554	547	-	596	601	-	-	-	-	-	-	-	
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	
Mov Cap-1 Maneuver	222	262	649	178	262	607	1168	-	-	1111	-	-	
Mov Cap-2 Maneuver	222	262	-	178	262	-	-	-	-	-	-	-	
Stage 1	604	589	-	540	529	-	-	-	-	-	-	-	
Stage 2	490	522	-	482	580	-	-	-	-	-	-	-	

Approach	EB			WB			NB			SB			
HCM Control Delay, s	23.4			20.2			0.5			0.4			
HCM LOS	C			C									

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	
Capacity (veh/h)	1168	-	-	313	292	1111	-	-	
HCM Lane V/C Ratio	0.025	-	-	0.379	0.191	0.014	-	-	
HCM Control Delay (s)	8.2	0	-	23.4	20.2	8.3	0	-	
HCM Lane LOS	A	A	-	C	C	A	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	1.7	0.7	0	-	-	



# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-18-2020

Intersection													
Int Delay, s/veh	4.6												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Vol, veh/h	33	424	11	11	488	24	6	1	23	26	0	30	
Future Vol, veh/h	33	424	11	11	488	24	6	1	23	26	0	30	
Conflicting Peds, #/hr	7	0	5	5	0	7	21	0	0	0	0	21	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	50	95	69	55	83	50	75	25	92	63	92	33	
Heavy Vehicles, %	2	3	2	2	3	2	2	2	2	2	2	2	
Mvmt Flow	66	446	16	20	588	48	8	4	25	41	0	91	

Major/Minor	Major1	Major2	Minor1	Minor2									
Conflicting Flow All	643	0	0	467	0	0	1309	1274	459	1260	1258	640	
Stage 1	-	-	-	-	-	-	591	591	-	659	659	-	
Stage 2	-	-	-	-	-	-	718	683	-	601	599	-	
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-	
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318	
Pot Cap-1 Maneuver	942	-	-	1094	-	-	136	167	602	147	171	475	
Stage 1	-	-	-	-	-	-	493	494	-	453	461	-	
Stage 2	-	-	-	-	-	-	420	449	-	487	490	-	
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	
Mov Cap-1 Maneuver	924	-	-	1094	-	-	97	145	599	124	148	463	
Mov Cap-2 Maneuver	-	-	-	-	-	-	97	145	-	124	148	-	
Stage 1	-	-	-	-	-	-	444	444	-	407	445	-	
Stage 2	-	-	-	-	-	-	321	433	-	418	441	-	

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.3	22.4	34.5
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	244	924	-	-	1094	-	-	250
HCM Lane V/C Ratio	0.152	0.071	-	-	0.018	-	-	0.529
HCM Control Delay (s)	22.4	9.2	0	-	8.4	0	-	34.5
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0.1	-	-	2.8

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-18-2020

Intersection						
Int Delay, s/veh	7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	4	3	0	7	3
Future Vol, veh/h	0	4	3	0	7	3
Conflicting Peds, #/hr	0	4	4	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	100	38	88	58	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	8	0	12	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	8	0	22	7
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1612	-	995	1075
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1007	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1610	-	986	1070
Mov Cap-2 Maneuver	-	-	-	-	986	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	1002	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.2	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1006	-	-	1610	-
HCM Lane V/C Ratio	0.016	-	-	0.005	-
HCM Control Delay (s)	8.6	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-18-2020

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	12	10	18	7	11	9	15	247	14	5	249	20
Future Vol, veh/h	12	10	18	7	11	9	15	247	14	5	249	20
Conflicting Peds, #/hr	11	0	18	18	0	11	18	0	15	15	0	18
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	50	61	88	69	75	63	73	58	63	87	59
Heavy Vehicles, %	2	1	2	2	2	5	2	2	2	14	2	2
Mvmt Flow	20	20	30	8	16	12	24	338	24	8	286	34

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	760	762	339	775	767	376	338	0	0	377	0	0
Stage 1	337	337	-	413	413	-	-	-	-	-	-	-
Stage 2	423	425	-	362	354	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.51	6.22	7.12	6.52	6.25	4.12	-	-	4.24	-	-
Critical Hdwy Stg 1	6.12	5.51	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.51	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.009	3.318	3.518	4.018	3.345	2.218	-	-	2.326	-	-
Pot Cap-1 Maneuver	323	336	703	315	332	664	1221	-	-	1119	-	-
Stage 1	677	643	-	616	594	-	-	-	-	-	-	-
Stage 2	609	588	-	657	630	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	289	315	680	271	311	648	1201	-	-	1108	-	-
Mov Cap-2 Maneuver	289	315	-	271	311	-	-	-	-	-	-	-
Stage 1	649	627	-	592	571	-	-	-	-	-	-	-
Stage 2	561	565	-	593	614	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.1		16		0.5		0.2	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1201	-	-	395	362	1108	-	-
HCM Lane V/C Ratio	0.02	-	-	0.176	0.099	0.007	-	-
HCM Control Delay (s)	8.1	0	-	16.1	16	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.3	0	-	-

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-18-2020

Intersection												
Int Delay, s/veh	10.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	40	367	8	21	511	20	13	7	24	27	9	53
Future Vol, veh/h	40	367	8	21	511	20	13	7	24	27	9	53
Conflicting Peds, #/hr	5	0	6	6	0	5	20	0	1	1	0	20
Sign Control	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	44	85	88	68	79	50	50	50	55	67	75	67
Heavy Vehicles, %	14	6	0	0	9	0	0	0	0	13	0	13
Mvmt Flow	91	432	9	31	647	40	26	14	44	40	12	79

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	692	0	0	447	0	0	1418	1378	443	1382	1363	692
Stage 1	-	-	-	-	-	-	624	624	-	734	734	-
Stage 2	-	-	-	-	-	-	794	754	-	648	629	-
Critical Hdwy	4.24	-	-	4.1	-	-	7.1	6.5	6.2	7.23	6.5	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Follow-up Hdwy	2.326	-	-	2.2	-	-	3.5	4	3.3	3.617	4	3.417
Pot Cap-1 Maneuver	850	-	-	1124	-	-	116	146	619	115	149	426
Stage 1	-	-	-	-	-	-	477	481	-	395	429	-
Stage 2	-	-	-	-	-	-	384	420	-	441	478	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	834	-	-	1123	-	-	73	118	615	83	120	416
Mov Cap-2 Maneuver	-	-	-	-	-	-	73	118	-	83	120	-
Stage 1	-	-	-	-	-	-	406	409	-	336	408	-
Stage 2	-	-	-	-	-	-	283	399	-	338	406	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	1.7		0.4		53.8		76	
HCM LOS					F		F	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	153	834	-	-	1123	-	-	169
HCM Lane V/C Ratio	0.547	0.109	-	-	0.027	-	-	0.778
HCM Control Delay (s)	53.8	9.8	0	-	8.3	0	-	76
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	2.7	0.4	-	-	0.1	-	-	5.1

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-18-2020

Intersection						
Int Delay, s/veh	6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	8	9	0	6	2
Future Vol, veh/h	0	8	9	0	6	2
Conflicting Peds, #/hr	0	5	5	0	7	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	88	50	50	75	50
Heavy Vehicles, %	0	14	0	0	0	0
Mvmt Flow	0	9	18	0	8	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	14	0	53	13
Stage 1	-	-	-	-	10	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1617	-	960	1073
Stage 1	-	-	-	-	1018	-
Stage 2	-	-	-	-	985	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1612	-	939	1065
Mov Cap-2 Maneuver	-	-	-	-	939	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	968	-

Approach	EB		WB		NB	
HCM Control Delay, s	0		7.3		8.7	
HCM LOS					A	

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	978	-	-	1612	-
HCM Lane V/C Ratio	0.012	-	-	0.011	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-18-2020

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	6	10	22	9	10	9	14	133	8	1	224	13
Future Vol, veh/h	6	10	22	9	10	9	14	133	8	1	224	13
Conflicting Peds, #/hr	2	0	19	19	0	2	33	0	18	18	0	33
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	56	71	67	75	67	65	74	88	25	87	75
Heavy Vehicles, %	17	22	0	0	11	0	8	3	0	0	1	0
Mvmt Flow	8	18	31	13	13	13	22	180	9	4	257	17

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	550	557	318	563	561	204	308	0	0	207	0	0
Stage 1	307	307	-	245	245	-	-	-	-	-	-	-
Stage 2	243	250	-	318	316	-	-	-	-	-	-	-
Critical Hdwy	7.27	6.72	6.2	7.1	6.61	6.2	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.27	5.72	-	6.1	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.27	5.72	-	6.1	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4.198	3.3	3.5	4.099	3.3	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	423	412	727	440	424	842	1219	-	-	1376	-	-
Stage 1	672	626	-	763	687	-	-	-	-	-	-	-
Stage 2	728	665	-	698	639	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	385	383	692	384	394	826	1197	-	-	1373	-	-
Mov Cap-2 Maneuver	385	383	-	384	394	-	-	-	-	-	-	-
Stage 1	638	605	-	734	661	-	-	-	-	-	-	-
Stage 2	686	640	-	634	618	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13		13.3		0.8		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1197	-	-	507	472	1373	-	-
HCM Lane V/C Ratio	0.018	-	-	0.112	0.085	0.003	-	-
HCM Control Delay (s)	8.1	0	-	13	13.3	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.3	0	-	-

# HCM 2010 TWSC

1: St. Patricks Avenue & East 3rd Street

02-18-2020

Intersection												
Int Delay, s/veh	169.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	808	14	24	687	26	15	11	73	16	5	35
Future Vol, veh/h	56	808	14	24	687	26	15	11	73	16	5	35
Conflicting Peds, #/hr	4	0	7	7	0	4	23	0	1	1	0	23
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	96	54	79	83	50	70	33	80	50	92	50
Heavy Vehicles, %	2	3	2	5	3	2	2	25	2	2	2	2
Mvmt Flow	89	842	26	30	828	52	21	33	91	32	5	70

Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	884	0	0	875	0	0	2014	1983	863	2014	1970	881	
Stage 1	-	-	-	-	-	-	1039	1039	-	918	918	-	
Stage 2	-	-	-	-	-	-	975	944	-	1096	1052	-	
Critical Hdwy	4.12	-	-	4.15	-	-	7.12	6.75	6.22	7.12	6.52	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.75	-	6.12	5.52	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.75	-	6.12	5.52	-	
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.518	4.225	3.318	3.518	4.018	3.318	
Pot Cap-1 Maneuver	765	-	-	759	-	-	44	53	354	44	63	346	
Stage 1	-	-	-	-	-	-	279	281	-	326	350	-	
Stage 2	-	-	-	-	-	-	303	312	-	259	303	-	
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	
Mov Cap-1 Maneuver	749	-	-	758	-	-	24	37	351	-	6	44	337
Mov Cap-2 Maneuver	-	-	-	-	-	-	24	37	-	-	6	44	-
Stage 1	-	-	-	-	-	-	213	215	-	250	321	-	
Stage 2	-	-	-	-	-	-	213	287	-	124	231	-	

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.3	\$ 615	\$ 2498.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	71	749	-	-	758	-	-	19
HCM Lane V/C Ratio	2.057	0.119	-	-	0.04	-	-	5.654
HCM Control Delay (s)	\$ 615	10.5	0	-	9.9	0	-	\$ 2498.3
HCM Lane LOS	F	B	A	-	A	A	-	F
HCM 95th %tile Q(veh)	13.4	0.4	-	-	0.1	-	-	13.9

Notes												
-: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon												

# HCM 2010 TWSC

2: St. Patricks Avenue & East 4th Street

02-18-2020

Intersection						
Int Delay, s/veh	6.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	4	3	0	6	8
Future Vol, veh/h	0	4	3	0	6	8
Conflicting Peds, #/hr	0	8	8	0	17	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	65	50	38	92	50	44
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	8	8	0	12	18

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	16	0	45 14
Stage 1	-	-	-	-	12 -
Stage 2	-	-	-	-	33 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1602	-	965 1066
Stage 1	-	-	-	-	1011 -
Stage 2	-	-	-	-	989 -
Platoon blocked, %	-	-	-		
Mov Cap-1 Maneuver	-	-	1599	-	938 1056
Mov Cap-2 Maneuver	-	-	-	-	938 -
Stage 1	-	-	-	-	1003 -
Stage 2	-	-	-	-	968 -

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1006	-	-	1599	-
HCM Lane V/C Ratio	0.03	-	-	0.005	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-



# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-18-2020

Intersection													
Int Delay, s/veh	4.8												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Vol, veh/h	11	40	29	9	11	12	25	354	22	11	297	13	
Future Vol, veh/h	11	40	29	9	11	12	25	354	22	11	297	13	
Conflicting Peds, #/hr	11	0	18	18	0	11	18	0	15	15	0	18	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	63	58	75	67	42	55	82	86	71	63	87	43	
Heavy Vehicles, %	2	1	2	2	1	2	2	2	2	2	10	2	
Mvmt Flow	17	69	39	13	26	22	30	412	31	17	341	30	

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	932	928	392	966	928	453	390	0	0	458	0	0
Stage 1	409	409	-	503	503	-	-	-	-	-	-	-
Stage 2	523	519	-	463	425	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.51	6.22	7.12	6.51	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.51	-	6.12	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.51	-	6.12	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.009	3.318	3.518	4.009	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	247	269	657	234	269	607	1169	-	-	1103	-	-
Stage 1	619	598	-	551	543	-	-	-	-	-	-	-
Stage 2	537	534	-	579	588	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	204	247	635	160	247	592	1149	-	-	1092	-	-
Mov Cap-2 Maneuver	204	247	-	160	247	-	-	-	-	-	-	-
Stage 1	587	576	-	524	517	-	-	-	-	-	-	-
Stage 2	469	508	-	461	567	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	26		22.1		0.5		0.4	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1149	-	-	294	271	1092	-	-
HCM Lane V/C Ratio	0.027	-	-	0.425	0.227	0.016	-	-
HCM Control Delay (s)	8.2	0	-	26	22.1	8.3	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2	0.9	0	-	-

## HCM 2010 TWSC

1: St. Patricks Avenue &amp; East 3rd Street

02-18-2020

Intersection													
Int Delay, s/veh	6.5												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Vol, veh/h	33	526	12	12	583	24	6	1	24	26	0	30	
Future Vol, veh/h	33	526	12	12	583	24	6	1	24	26	0	30	
Conflicting Peds, #/hr	7	0	5	5	0	7	21	0	0	0	0	21	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	50	95	69	55	83	50	75	25	92	63	92	33	
Heavy Vehicles, %	2	3	2	2	3	2	2	2	2	2	2	2	
Mvmt Flow	66	554	17	22	702	48	8	4	26	41	0	91	

Major/Minor	Major1	Major2	Minor1	Minor2	
Conflicting Flow All	757	0	0	576	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218	-
Pot Cap-1 Maneuver	854	-	-	997	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	837	-	-	997	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.2	31	62.9
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	176	837	-	-	997	-	-	184
HCM Lane V/C Ratio	0.216	0.079	-	-	0.022	-	-	0.718
HCM Control Delay (s)	31	9.7	0	-	8.7	0	-	62.9
HCM Lane LOS	D	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.8	0.3	-	-	0.1	-	-	4.5

## HCM 2010 TWSC

2: St. Patricks Avenue &amp; East 4th Street

02-18-2020

Intersection						
Int Delay, s/veh	7.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	4	3	0	8	3
Future Vol, veh/h	0	4	3	0	8	3
Conflicting Peds, #/hr	0	4	4	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	100	38	88	58	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	8	0	14	4

Major/Minor	Major1	Major2	Minor1	
Conflicting Flow All	0	0	8	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.218	-
Pot Cap-1 Maneuver	-	-	1612	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	1610	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.2	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1004	-	-	1610	-
HCM Lane V/C Ratio	0.018	-	-	0.005	-
HCM Control Delay (s)	8.7	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

# HCM 2010 TWSC

## 3: St. Georges Avenue & East 4th Street

02-18-2020

Intersection													
Int Delay, s/veh	2.5												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Vol, veh/h	13	11	18	8	12	10	16	259	15	5	261	21	
Future Vol, veh/h	13	11	18	8	12	10	16	259	15	5	261	21	
Conflicting Peds, #/hr	11	0	18	18	0	11	18	0	15	15	0	18	
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	60	50	61	88	69	75	63	73	58	63	87	59	
Heavy Vehicles, %	2	1	2	2	2	5	2	2	2	14	2	2	
Mvmt Flow	22	22	30	9	17	13	25	355	26	8	300	36	

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	797	798	354	811	803	394	354	0	0	396	0	0
Stage 1	352	352	-	434	434	-	-	-	-	-	-	-
Stage 2	445	446	-	377	369	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.51	6.22	7.12	6.52	6.25	4.12	-	-	4.24	-	-
Critical Hdwy Stg 1	6.12	5.51	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.51	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.009	3.318	3.518	4.018	3.345	2.218	-	-	2.326	-	-
Pot Cap-1 Maneuver	305	320	690	298	317	649	1205	-	-	1100	-	-
Stage 1	665	633	-	600	581	-	-	-	-	-	-	-
Stage 2	592	576	-	644	621	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	270	299	667	254	296	633	1185	-	-	1089	-	-
Mov Cap-2 Maneuver	270	299	-	254	296	-	-	-	-	-	-	-
Stage 1	636	617	-	576	557	-	-	-	-	-	-	-
Stage 2	541	553	-	578	605	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.2		16.8		0.5		0.2	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1185	-	-	369	344	1089	-	-
HCM Lane V/C Ratio	0.021	-	-	0.198	0.116	0.007	-	-
HCM Control Delay (s)	8.1	0	-	17.2	16.8	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.4	0	-	-



## APPENDIX B

### Traffic Signal Warrant Analysis



## City of North Vancouver - Traffic Signal Warrant Analysis

Main Street (name) **East 3rd Street**  
 Side Street (name) **St. Patricks Avenue**  
 Quadrant / Int #  
 for Warrant Calculation Results, please hit 'Page Down'

Direction (EW or NS) **EW**  
 Direction (EW or NS) **NS**  
 Comments **Traffic volumes averaged for two hours - 2027 Background**

Road Authority: **City of North Vancouver**  
 City: **City of North Vancouver**  
 Analysis Date: **2020 Feb 19, Wed**  
 Count Date: **2019 Jun 18, Tue**  
 Date Entry Format: (yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
East 3rd Street WB	WB				1			260	1
East 3rd Street EB	EB				1			400	1
St. Patricks Avenue NB	NB				1				
St. Patricks Avenue SB	SB				1				

Are the St Patrick Avenue NB right turns significantly impeded by through movements? (y/n) **n**  
 Are the St Patrick Avenue SB right turns significantly impeded by through movements? (y/n) **n**

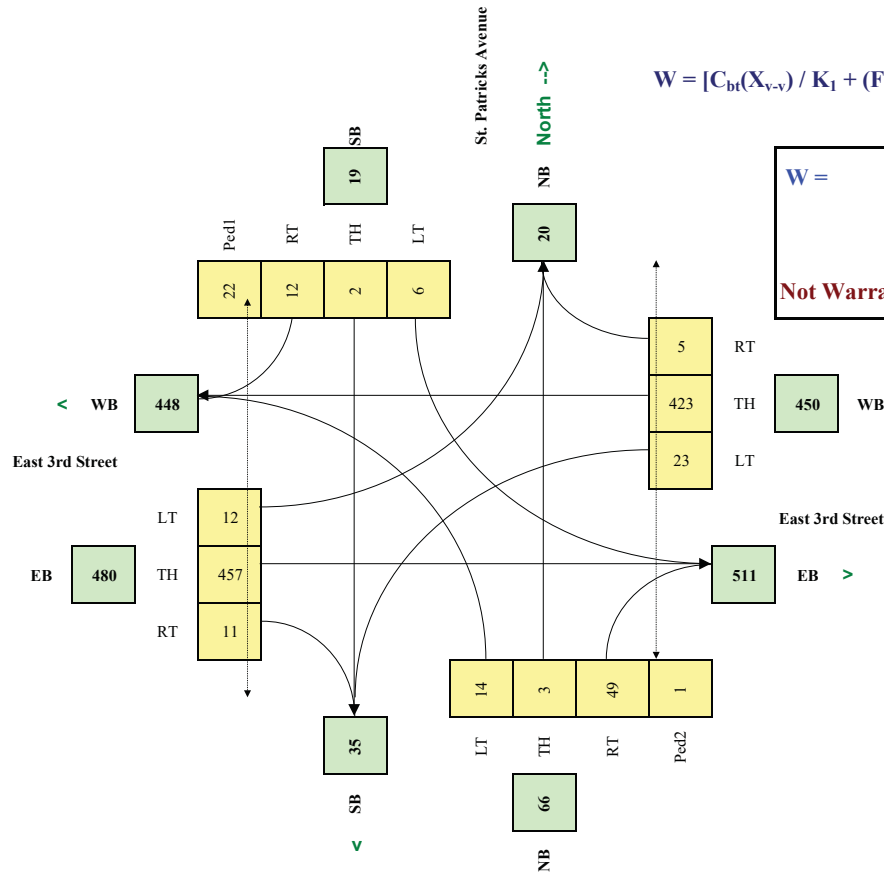
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
East 3rd Street	EW	50	2.0%	y	1.4
St. Patricks Avenue	NS	50	2.0%	y	

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	52,898
Central Business District	(y/n)	n

Set Peak Hours													Ped1	Ped2	Ped3	Ped4
Traffic Input	NB			SB			WB			EB			NS	NS	EW	EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
AM Peak Hour	13	2	24	9	3	17	21	338	4	8	302	8	20	1	5	6
PM Peak Hour	15	4	73	2	0	6	24	507	6	16	611	14	23	1	4	7
Total	28	6	97	11	3	23	45	845	10	24	913	22	43	2	9	13
Average	14	3	49	6	2	12	23	423	5	12	457	11	22	1	5	7

### Average Peak Turning Movements

$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$



**W = 50 29 21**  
**Veh Ped**  
**Not Warranted - Vs<75**

RESET SHEET





## City of North Vancouver - Traffic Signal Warrant Analysis

Main Street (name) **East 3rd Street**  
Side Street (name) **St. Patricks Avenue**  
Quadrant / Int #  
**CHECK SHEET**

Direction (EW or NS) **EW**  
Direction (EW or NS) **NS**  
Comments **Traffic volumes averaged for two hours - 2027 Post Development**

Road Authority: **City of North Vancouver**  
City: **City of North Vancouver**  
Analysis Date: **2020 Feb 19, Wed**  
Count Date: **2019 Jun 18, Tue**  
Date Entry Format: **(yyyy-mm-dd)**

for Warrant Calculation Results, please hit 'Page Down'

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
East 3rd Street WB	WB				1			260	1
East 3rd Street EB	EB				1			400	1
St. Patricks Avenue NB	NB								
St. Patricks Avenue SB	SB				1				

Are the St Patrick Avenue NB right turns significantly impeded by through movements? (y/n) **n**  
Are the St Patrick Avenue SB right turns significantly impeded by through movements? (y/n) **n**

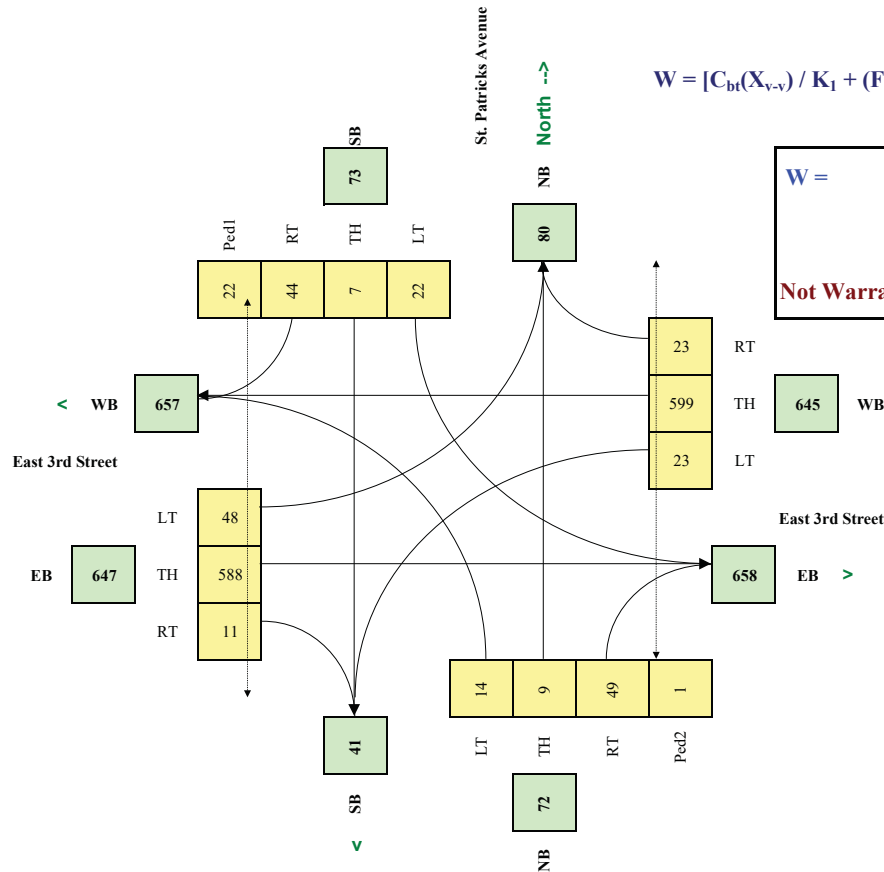
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
East 3rd Street	EW	50	2.0%	y	1.4
St. Patricks Avenue	NS	50	2.0%	y	

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	52,898
Central Business District	(y/n)	n

Set Peak Hours													Ped1	Ped2	Ped3	Ped4
Traffic Input	NB			SB			WB			EB			NS	NS	EW	EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
AM Peak Hour	13	7	24	27	9	53	21	511	20	40	367	8	20	1	5	6
PM Peak Hour	15	11	73	16	5	35	24	687	26	56	808	14	23	1	4	7
Total	28	18	97	43	14	88	45	1,198	46	96	1,175	22	43	2	9	13
Average	14	9	49	22	7	44	23	599	23	48	588	11	22	1	5	7

### Average Peak Turning Movements

$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$



**W = 112 83 29**  
**Veh Ped**  
**Not Warranted - Vs<75**

RESET SHEET



## APPENDIX C

### Trip Generation Internal Capture Estimation

NCHRP 8-51 Internal Trip Capture Estimation Tool					
<b>Project Name:</b>	402-438 East 3rd Street TIA	<b>Organization:</b>	WATT Consulting Group		
<b>Project Location:</b>	402-438 East 3rd Street, North Vancouver, BC	<b>Performed By:</b>	Victor Ngo		
<b>Scenario Description:</b>	Post-Development	<b>Date:</b>	2020-02-19		
<b>Analysis Year:</b>	2027	<b>Checked By:</b>			
<b>Analysis Period:</b>	PM Street Peak Hour	<b>Date:</b>			

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				9	2	7
Retail				47	23	24
Restaurant				88	53	35
Cinema/Entertainment				0		
Residential				75	46	29
Hotel				0		
All Other Land Uses <sup>2</sup>				36	17	19
<b>Total</b>				<b>255</b>	<b>141</b>	<b>114</b>

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.10	16%	19%	1.10	16%	19%
Retail	1.24	16%	19%	1.24	16%	19%
Restaurant	1.52	16%	19%	1.52	16%	19%
Cinema/Entertainment						
Residential	1.24	16%	19%	1.24	16%	19%
Hotel						
All Other Land Uses <sup>2</sup>	1.24	16%	19%	1.24	16%	19%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	0		9	0	8	0
Restaurant	0	15		0	9	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	8	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	341	190	151
Internal Capture Percentage	32%	28%	36%
External Vehicle-Trips <sup>3</sup>	115	67	48
External Transit-Trips <sup>4</sup>	36	20	16
External Non-Motorized Trips <sup>4</sup>	45	26	19

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	0%	25%
Retail	69%	57%
Restaurant	21%	45%
Cinema/Entertainment	N/A	N/A
Residential	30%	31%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

<sup>3</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>4</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool					
<b>Project Name:</b>	402-438 East 3rd Street TIA	<b>Organization:</b>	WATT Consulting Group		
<b>Project Location:</b>	402-438 East 3rd Street, North Vancouver, BC	<b>Performed By:</b>	Victor Ngo		
<b>Scenario Description:</b>	Post-Development	<b>Date:</b>	2020-02-19		
<b>Analysis Year:</b>	2027	<b>Checked By:</b>			
<b>Analysis Period:</b>	AM Street Peak Hour	<b>Date:</b>			

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				8	6	2
Retail				12	7	5
Restaurant				83	45	38
Cinema/Entertainment				0		
Residential				62	16	46
Hotel				0		
All Other Land Uses <sup>2</sup>				35	19	16
<b>Total</b>				<b>200</b>	<b>93</b>	<b>107</b>

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.10	16%	19%	1.10	16%	19%
Retail	1.24	16%	19%	1.24	16%	19%
Restaurant	1.52	16%	19%	1.52	16%	19%
Cinema/Entertainment						
Residential	1.24	16%	19%	1.24	16%	19%
Hotel						
All Other Land Uses <sup>2</sup>	1.24	16%	19%	1.24	16%	19%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	1	0	0	0
Retail	0		1	0	0	0
Restaurant	1	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	11	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	271	128	143
Internal Capture Percentage	13%	13%	12%
External Vehicle-Trips <sup>3</sup>	114	54	60
External Transit-Trips <sup>4</sup>	38	18	20
External Non-Motorized Trips <sup>4</sup>	45	21	24

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	14%	50%
Retail	22%	17%
Restaurant	19%	5%
Cinema/Entertainment	N/A	N/A
Residential	5%	21%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

<sup>3</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

<sup>4</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

*Estimation Tool Developed by the Texas Transportation Institute*

<b>Project Name:</b>	402-438 East 3rd Street TIA
<b>Analysis Period:</b>	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.10	6	7	1.10	2	2
Retail	1.24	7	9	1.24	5	6
Restaurant	1.52	45	68	1.52	38	58
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.24	16	20	1.24	46	57
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	1	0	0	0
Retail	2		1	0	1	0
Restaurant	18	8		0	2	2
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	11	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	16	0	0	0
Retail	0		34	0	0	0
Restaurant	1	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	2	14	0		0
Hotel	0	0	4	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	1	6	7	4	1	1
Retail	2	7	9	4	1	1
Restaurant	13	55	68	24	9	10
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	19	20	10	3	4
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	24	24	12	4	5

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	1	1	2	1	0	0
Retail	1	5	6	2	1	1
Restaurant	3	55	58	24	9	10
Cinema/Entertainment	0	0	0	0	0	0
Residential	12	45	57	23	7	9
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	20	20	10	3	4

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.



<b>Project Name:</b>	402-438 East 3rd Street TIA
<b>Analysis Period:</b>	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.10	2	2	1.10	7	8
Retail	1.24	23	29	1.24	24	30
Restaurant	1.52	53	81	1.52	35	53
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.24	46	57	1.24	29	36
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	1		9	1	8	2
Restaurant	2	22		4	10	4
Cinema/Entertainment	0	0	0		0	0
Residential	1	15	8	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	2	0	2	0
Retail	1		23	0	26	0
Restaurant	1	15		0	9	0
Cinema/Entertainment	0	1	2		2	0
Residential	1	3	11	0		0
Hotel	0	1	4	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	2	2	2	0	0
Retail	20	9	29	5	1	2
Restaurant	17	64	81	28	10	12
Cinema/Entertainment	0	0	0	0	0	0
Residential	17	40	57	21	6	8
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	21	21	11	3	4

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	2	6	8	4	1	1
Retail	17	13	30	7	2	2
Restaurant	24	29	53	12	5	6
Cinema/Entertainment	0	0	0	0	0	0
Residential	11	25	36	13	4	5
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	24	24	12	4	5

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool					
<b>Project Name:</b>	402-438 East 3rd Street TIA	<b>Organization:</b>	WATT Consulting Group		
<b>Project Location:</b>	402-438 East 3rd Street, North Vancouver, BC	<b>Performed By:</b>	Victor Ngo		
<b>Scenario Description:</b>	Post-Development	<b>Date:</b>	2020-02-19		
<b>Analysis Year:</b>	2027	<b>Checked By:</b>			
<b>Analysis Period:</b>	Saturday Street Peak Hour	<b>Date:</b>			

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				7	4	3
Retail				55	29	26
Restaurant				98	50	48
Cinema/Entertainment				0		
Residential				75	37	38
Hotel				0		
All Other Land Uses <sup>2</sup>				5	3	2
Total				240	123	117

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.10	16%	19%	1.10	16%	19%
Retail	1.24	16%	19%	1.24	16%	19%
Restaurant	1.52	16%	19%	1.52	16%	19%
Cinema/Entertainment						
Residential	1.24	16%	19%	1.24	16%	19%
Hotel						
All Other Land Uses <sup>2</sup>	1.24	16%	19%	1.24	16%	19%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		9	0	8	0
Restaurant	1	18		0	7	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	4	10	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	323	166	157
Internal Capture Percentage	38%	37%	39%
External Vehicle-Trips <sup>3</sup>	96	49	47
External Transit-Trips <sup>4</sup>	32	17	15
External Non-Motorized Trips <sup>4</sup>	38	20	18

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	100%	33%
Retail	64%	56%
Restaurant	25%	36%
Cinema/Entertainment	N/A	N/A
Residential	33%	34%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

<sup>3</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>4</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

<b>Project Name:</b>	402-438 East 3rd Street TIA
<b>Analysis Period:</b>	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.10	4	4	1.10	3	3
Retail	1.24	29	36	1.24	26	32
Restaurant	1.52	50	76	1.52	48	73
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.24	37	46	1.24	38	47
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		9	1	8	2
Restaurant	2	30		6	13	5
Cinema/Entertainment	0	0	0		0	0
Residential	2	20	10	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	2	0	2	0
Retail	1		22	0	21	0
Restaurant	1	18		0	7	0
Cinema/Entertainment	0	1	2		2	0
Residential	2	4	11	0		0
Hotel	0	1	4	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	4	0	4	0	0	0
Retail	23	13	36	7	2	2
Restaurant	19	57	76	24	9	11
Cinema/Entertainment	0	0	0	0	0	0
Residential	15	31	46	16	5	6
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	4	4	2	1	1

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	1	2	3	2	0	0
Retail	18	14	32	7	2	3
Restaurant	26	47	73	20	8	9
Cinema/Entertainment	0	0	0	0	0	0
Residential	16	31	47	16	5	6
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	2	2	2	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

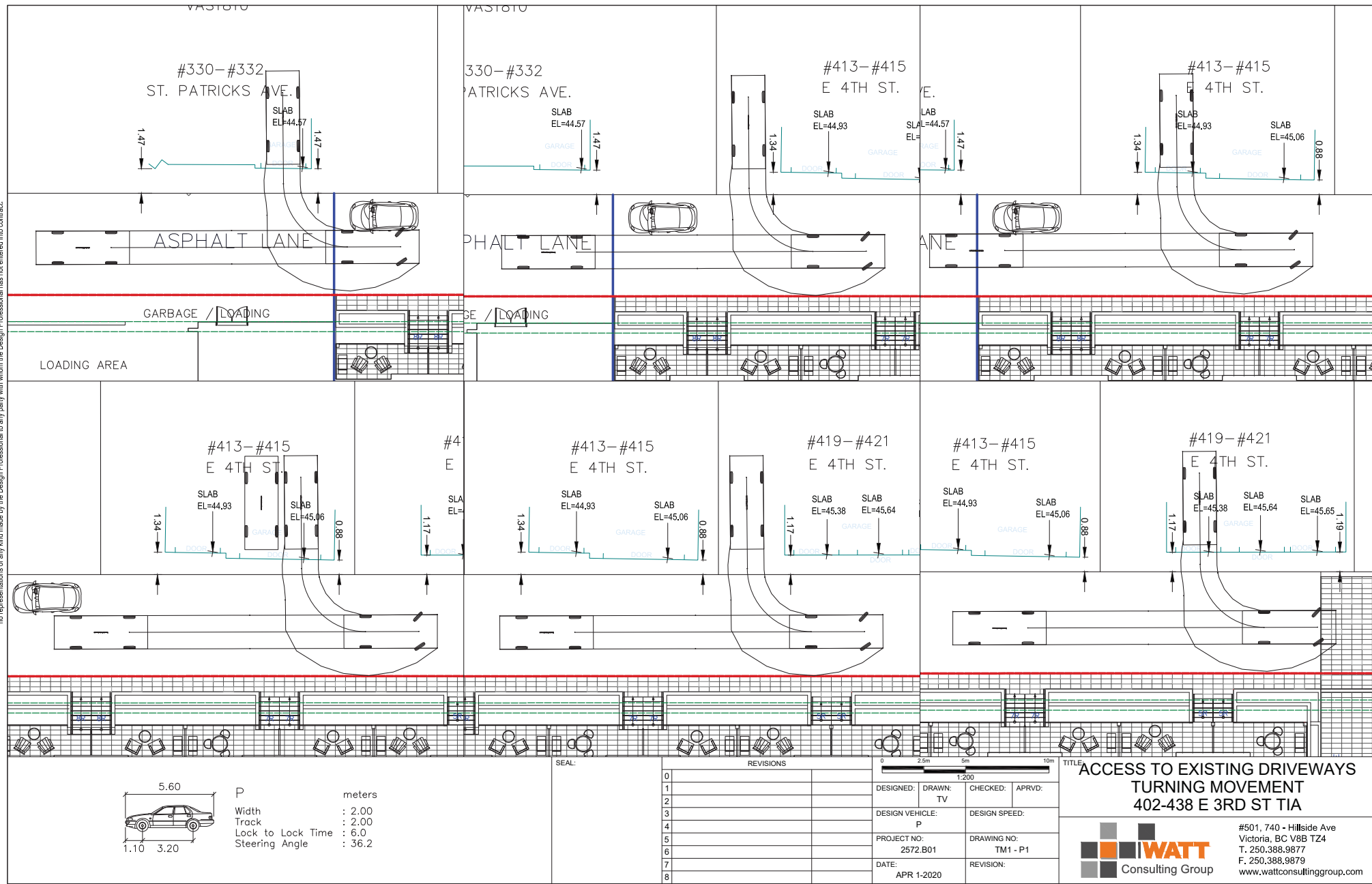
\*Indicates computation that has been rounded to the nearest whole number.



## APPENDIX D

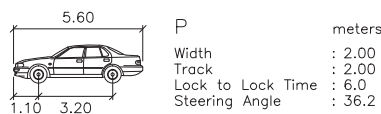
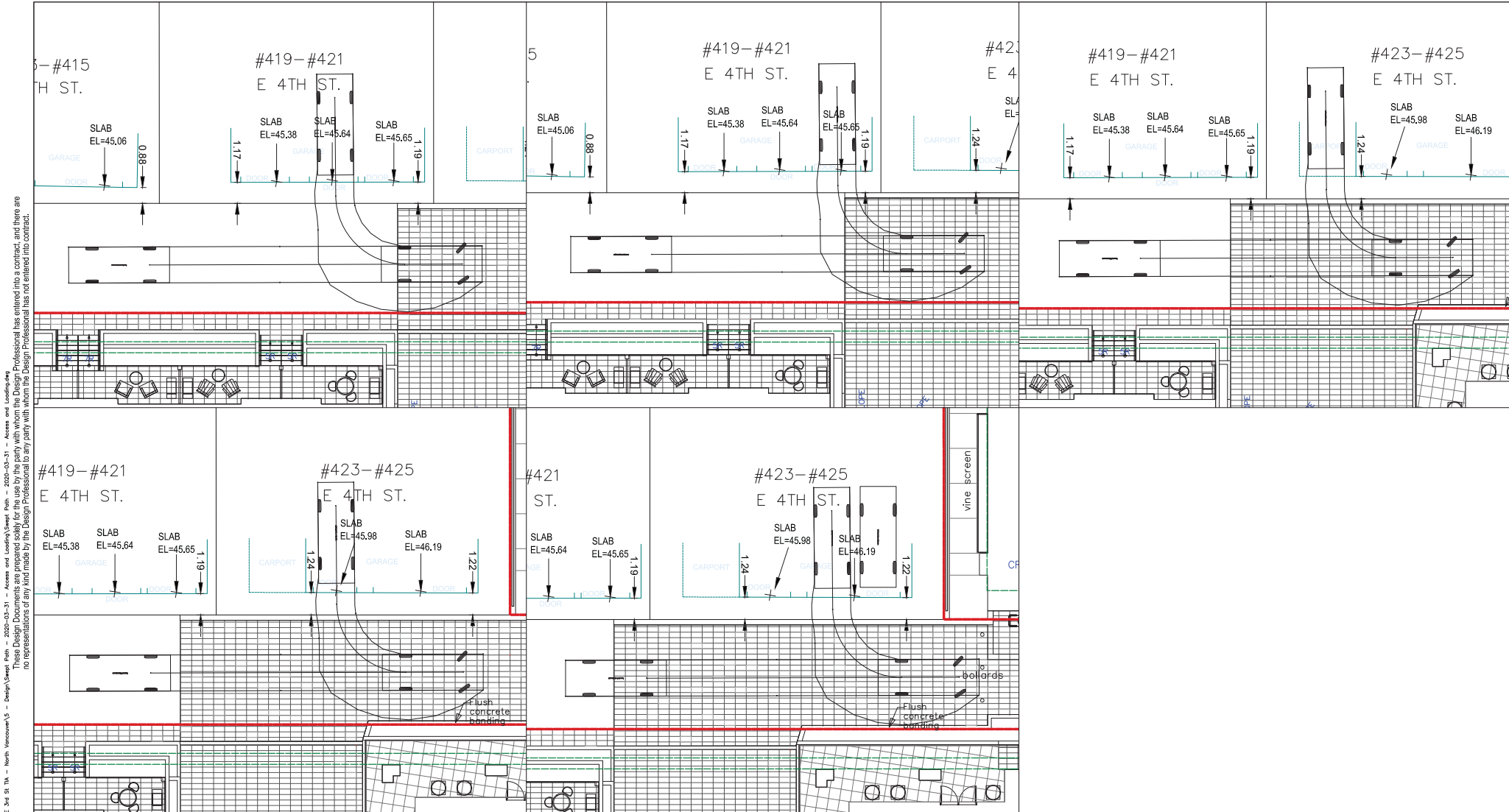
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PLOTED BY: J. B. V. V.  
These Design Documents are prepared solely for the use by the party with whom the Design Professional has entered into a contract, and there are no representations of any kind made by the Design Professional to any party with whom the Design Professional has not entered into contract.





PROJECT: V:\Project Files\2572 - 402-438 E 3rd St TIA - North Vancouver\5 - Design\Sheet Path - 2020-03-31 - Access and Loading\Access and Loading.dwg  
PLOT DATE: 4/1/2020 1:27 PM  
PLOTTER: B7i format, Velimera



SEAL:

REVISIONS	
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DESIGNED:	DRAWN:	CHECKED:	APRVD:
	TV		
DESIGN VEHICLE:		DESIGN SPEED:	
P			
PROJECT NO:		DRAWING NO:	
2572.B01		TM1 - P2	
DATE:		REVISION:	
APR 1-2020			

**ACCESS TO EXISTING DRIVEWAYS  
TURNING MOVEMENT  
402-438 E 3RD ST TIA**

**WATT**  
Consulting Group

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www.wattconsultinggroup.com



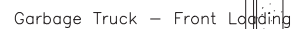
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DATE: APR 1-2020		REVISION:	

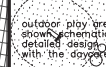
MSU LOADING VEHICLE - TURNAROUND  
TURNING MOVEMENT  
402-438 E 3RD ST TIA



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Victoria, BC V8B TZ4  
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[www.wattconsultinggroup.com](http://www.wattconsultinggroup.com)



	meters
Width	: 2.58
Track	: 2.44
Lock to Lock Time	: 6.0
Steering Angle	: 27.4



1 BED @ 135.33'
1 BED @ 135.33'
1 BED @ 135.33'
1 BED @ 137.92'
1 BED @ 137.92'
1 BED @ 137.92'
1 BED @ 137.92'
1 BED @ 137.92'
1 BED @ 137.92'

SEAL:	REVISIONS	DESIGNED: DRAWN: TV	CHECKED:	APRVD:
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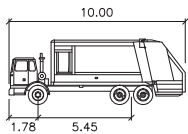
**WASTE COLLECTION**  
**TURNING MO**  
**402-438 E 3R**

WASTE COLLECTION - REVERSING OUT  
TURNING MOVEMENT  
402-438 E 3RD ST TIA

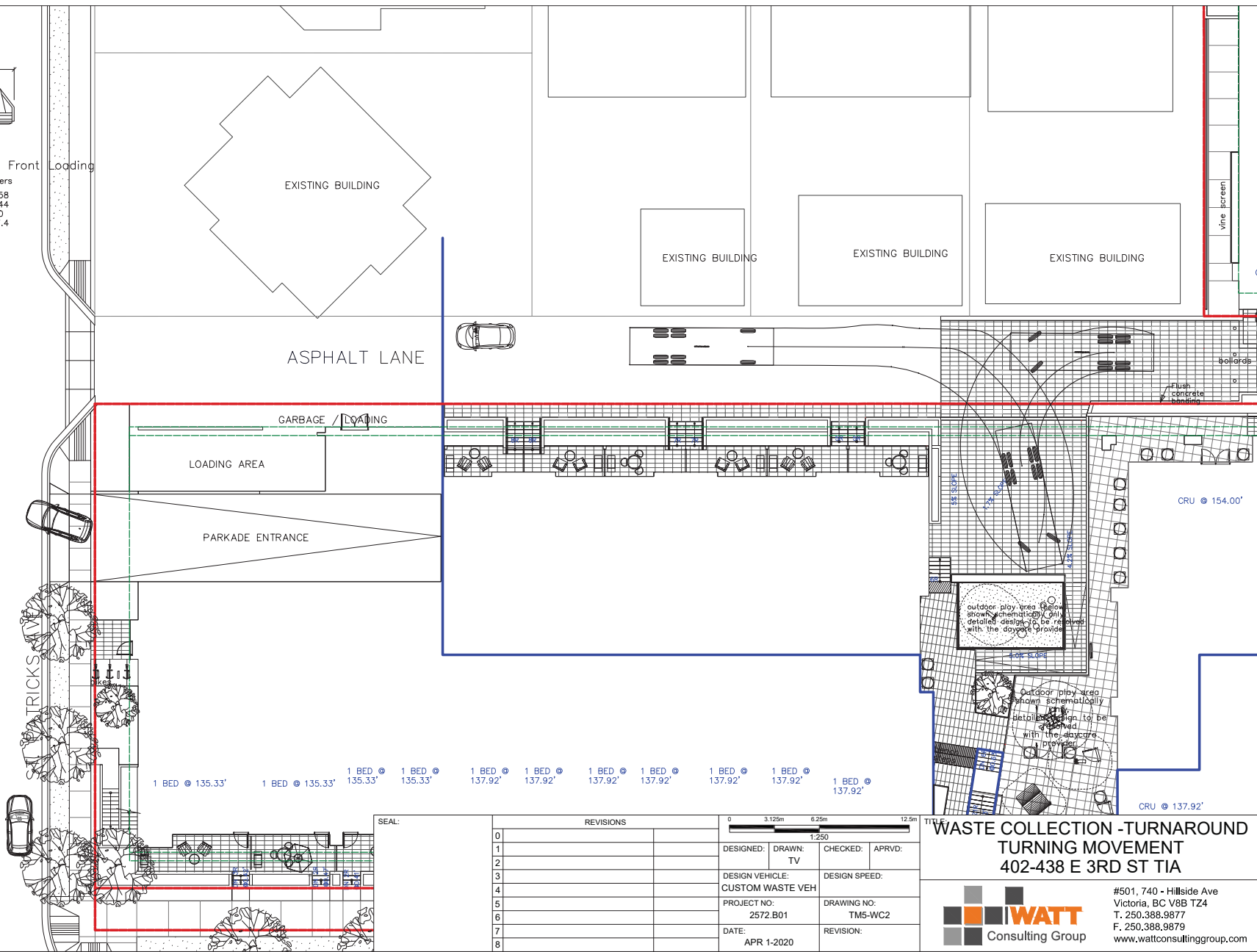


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PROJECT: V:\Project Files\2572 - 402-438 E 3rd St TIA - North Vancouver\5 - Design\Sheet Path - 2020-03-31 - Access and Loading\Sheet Path - 2020-03-31 - Access and Loading.dwg  
PLOT DATE: 4/1/2020 12:27 PM  
PLOTTER: B7i format, Velimex  
These Design Documents are prepared solely for the use by the party with whom the Design Professional has entered into a contract, and there are no representations of any kind made by the Design Professional to any party with whom the Design Professional has not entered into contract.



Garbage Truck - Front Loading  
meters  
Width : 2.58  
Track : 2.44  
Lock to Lock Time : 6.0  
Steering Angle : 27.4



SEAL:

REVISIONS	
0	
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DESIGNED:	DRAWN:	CHECKED:	APRVD:
	TV		
DESIGN VEHICLE:		DESIGN SPEED:	
CUSTOM WASTE VEH			
PROJECT NO:		DRAWING NO:	
2572.B01		TM5-WC2	
DATE:		REVISION:	
APR 1-2020			

# WASTE COLLECTION -TURNAROUND TURNING MOVEMENT 402-438 E 3RD ST TIA



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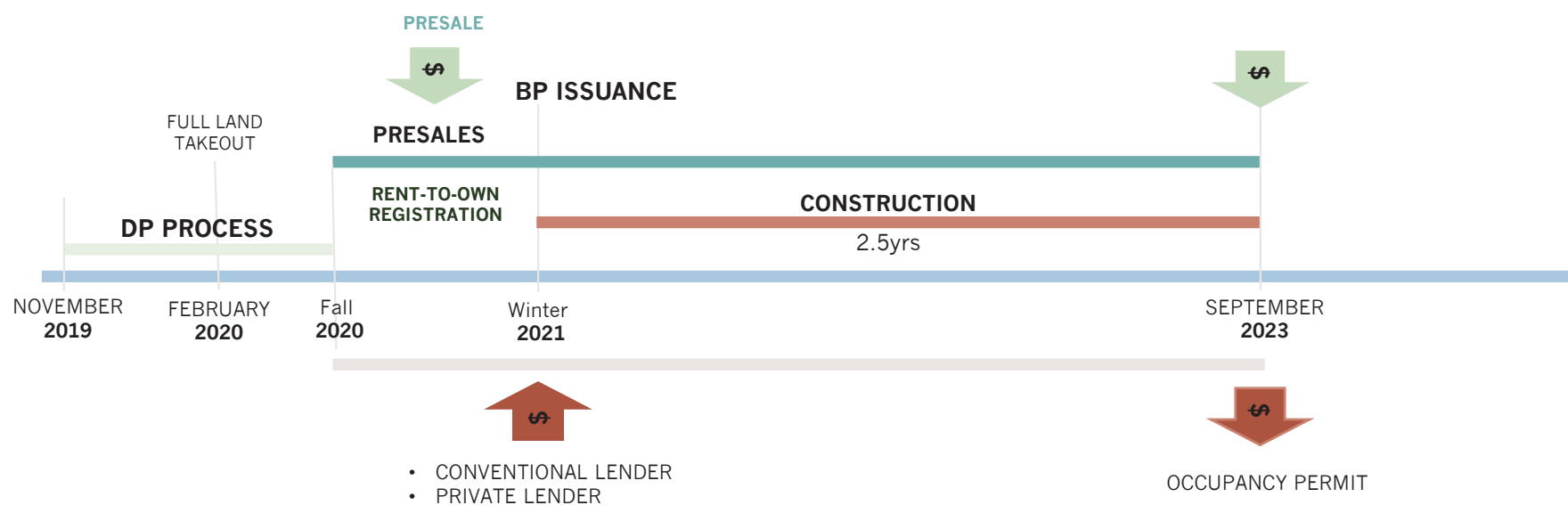
# AHOP & RENT-TO-OWN

## CASCADIA GREEN DEVELOPMENT

PILOT PROJECT

EAST 3<sup>RD</sup> NORTH  
VANCOUVER

# PROGRAM PROCESS



Total of 28 units will be allocated to RTO & AHOP

**9 Units Affordable Home Ownership Program**

**19 Units Rent to Own**



## Affordable Home Ownership Program

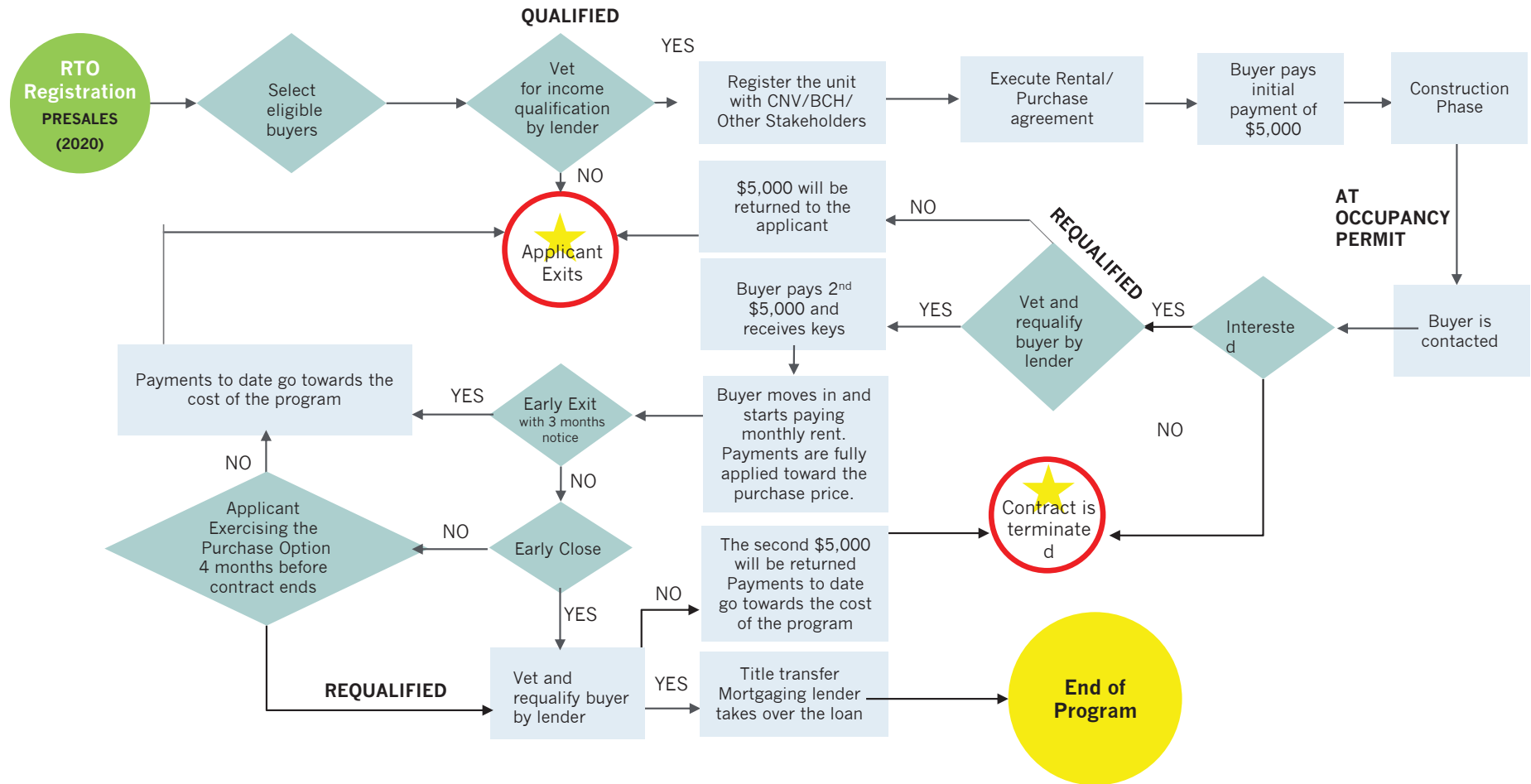
### Unit Breakdown

Unit Type	Average Unit Area	Number of Units
1-bedroom (AHOP)	540	3
2-bedroom (AHOP)	794	4
3-bedroom (AHOP)	1059	2
Total Number of Units		9

## Rent-To-Own Unit Breakdown

Unit Type	Average Unit Area	Number of Units
1-bedroom (RTO)	628	11
2-bedroom (RTO)	915	4
3-bedroom (RTO)	1,302	4
Total Number of Units		19

# RTO BUYER'S JOURNEY



## **OFF-SITE SERVICING REQUIREMENTS**

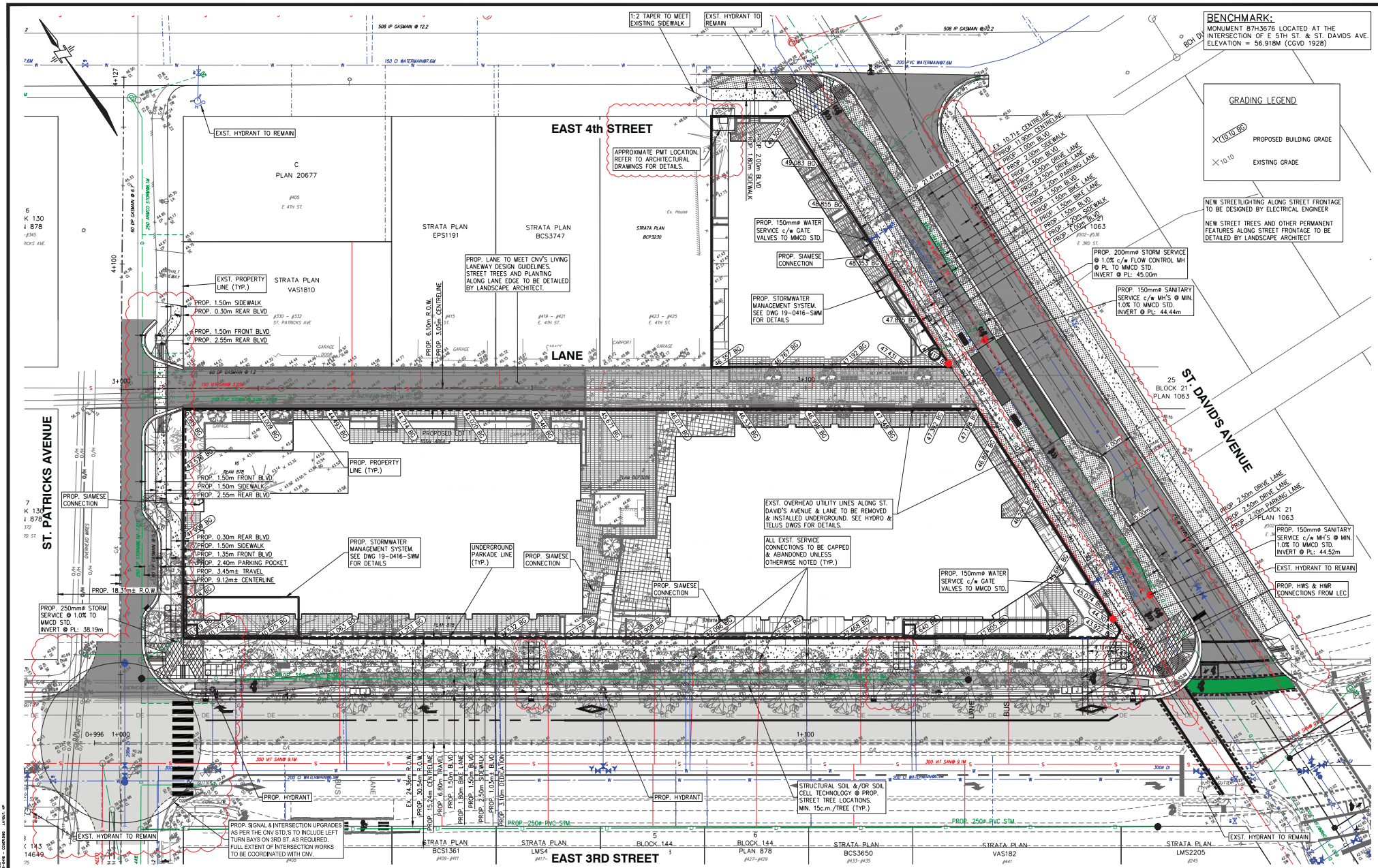
**402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue**

### **Information for Council Report**

The applicant has provided design drawings for off-site works and services as required by the Subdivision and Development Control Bylaw.

In addition to standard frontage upgrades and improvements to the public realm, the off-site works will include:

- Install sidewalk, curb and gutter, and paving to CNV Standard on east half of St. Davids Avenue.
- Full depth asphalt replacement of north half of the Lane adjacent to site complete with CNV standard lane throat and pedestrian crossing. Lane design to meet CNV Living Laneway Design Guidelines.
- Install traffic signal at the intersection of East 3<sup>rd</sup> Street and St. Patricks Avenue, including required civil works at intersection corners. Mill and pave full intersection complete with road markings.
- Install intersection improvements at East 4<sup>th</sup> Street and St. Davids Avenue including raised intersection, traffic diverter, sidewalk and curb and gutter at all corners, full depth asphalt replacement, Greenway connection, and regulatory signage and pavement markings.
- Provide \$20,000.00 contribution for local area pedestrian network and bicycle infrastructure improvements.
- Construct Greenway connection to NW corner of East 4<sup>th</sup> Street and St. Davids Avenue.
- Undergrounding of overhead hydro lines within the laneway.



<p>This drawing must not be reproduced without the written permission of R.F. Binnie &amp; Associates Ltd.</p> <p>5 2020-10-15 ISSUED FOR DP RESUBMISSION JF</p> <p>4 2020-08-13 REISSUED FOR DP SUBMISSION TRC</p> <p>3 2020-04-01 ISSUED FOR DP RESUBMISSION JW</p> <p>2 2019-11-18 ISSUED FOR REZONING JW</p>		<p><b>BINNIE</b></p> <p>The people behind your infrastructure.</p>		<p><b>R.F. BINNIE &amp; ASSOCIATES LTD.</b></p> <p>300 - 4940 Canada Way, Burnaby, BC V5G 4K6 TEL 604 420 1721 BINNIE.com</p>		<p>CLIENT</p> <p><b>CASCADIA GREEN DEVELOPMENTS</b></p> <p>106 - 252 ESPLANADE W, NORTH VANCOUVER, BC</p>		<p>SURVEYED BY ON</p> <p>DRAWN BY JW</p> <p>DESIGNED BY JW</p> <p>CHECKED BY RW</p>		<p>DATE 2019-07-11</p> <p>DRAWING No.</p> <p><b>19-0416-KP</b></p>	
<p>No. DATE REVISION BY</p>						<p>DRAWING DESCRIPTION</p> <p><b>LOWER LONSDALE DEVELOPMENT</b></p> <p><b>GENERAL</b></p> <p><b>KEY PLAN</b></p>		<p>SCALES</p> <p>0 1:250 10m</p>		<p>SHEET 02 OF 13</p> <p>REV. 5</p> <p>DESTROY ALL PRINTS BEARING PREVIOUS No.</p>	



## REQUIRED LEGAL AGREEMENTS

**402-438 East 3<sup>rd</sup> Street and 341-343 St. David's Avenue**

### Information for Council Report

In order to secure the obligations of the owner for the development as presented to Council to the satisfaction of staff, the following legal agreements shall be settled, executed and returned by the applicant to the satisfaction of the Director of Planning and the City Solicitor at the sole cost and expense of the applicant prior to final adoption of the proposed bylaws:

1. Shoring, Crane Swing, and Staging License Agreement (unregistered)
2. Flooding Covenant (unregistered)
3. Standard Good Neighbour Agreement
4. Encroachment Agreement for the structure(s) over the lane which will include an easement and a statutory right of way over those lots in favour of the City to provide access to the public and for maintenance and inspection purposes and a Section 219 Covenant.
5. Maintenance Agreement, including a Section 219 Covenant in favour of the City, to ensure regular maintenance and standards for the lane.
6. Statutory Rights-of-Way to secure public access to the breezeway, which is to improve permeability through the midblock and to secure access to private lands at the intersection of the lane and St. Davids Avenue as required.
7. Development Covenant – to secure form, character and details of the proposed development.
8. A loading management plan – to schedule deliveries and ensures functionality of on-site loading for commercial tenants and to restrict the maximum size of vehicles to the site.
9. Project partnering agreement among Cascadia Green Development, the City and BC Housing to secure the Affordable Home Ownership Program (AHOP) in collaboration with BC Housing and Cascadia Green Development.

Note to applicant: This requirement may be waived by the Director of Planning if the AHOP program is not pursued and a cash payment in lieu is made by the owner.

10. Public Art Agreement – to secure the provision and access to public art, including a Statutory Right of Way in favour of the City.
11. Community Energy Covenant – to secure the provision and standards of district energy services.
12. Childcare Build to Suit Covenant and Purchase and Sale Agreement – to secure the construction and delivery of the childcare facility and ensure the childcare facility meets that standards required of a City owned facility.

Note to applicant: This requirement may be waived by the Director of Planning if the childcare facility is not pursued and a cash payment in lieu is made by the owner.

13. If applicable, a covenant to secure cash community benefits payment deferment until BP.
14. Servicing Agreement to secure the on-site and off-site works set out in Attachment 6 necessary or incidental to the servicing of the site so that they are designed, constructed and installed at no cost to the City and all necessary rights of way for the services are provided, with security to be provided by the applicant for the services.

Promptly following adoption of the bylaws, and unless otherwise noted, the preceding agreements are to be fully registered in the Land Title Office, with priority over such other liens, charges and encumbrances affecting the subject site as is considered advisable by the City Solicitor at no cost to the City. The preceding agreements shall provide security to the City for the obligations of the owner, including indemnities, warranties, rent or equitable charges, letters of credit and withholding of permits as deemed necessary by and in a form satisfactory to the City Solicitor. The timing of all required payments and delivery of forms of security if any, shall be determined by the appropriate City official having responsibility for each particular agreement.

## 402-438 E 3<sup>rd</sup> Street & 341-343 St Davids Avenue Development Application

### Development Information Session Summary Report

**Event Date:** November 19, 2019  
**Time:** 6:30pm – 8:30pm  
**Location:** Harbourview Room, John Braithwaite Community Centre, 145 West 1<sup>st</sup> Street  
**Attendance:** 92 members of the public signed in, and approximately 100 attended.  
**Comments:** 85 comment sheets and emails: 62 in support and 23 in opposition.

**Meeting Purpose:**

- 1) To present development proposal materials to the community
- 2) To provide an opportunity for the community to ask questions about the proposal
- 3) To provide an opportunity for the community to comment on the proposal

**Notification:**

In accordance with City of North Vancouver policies:

Invitation Brochures

The City requires invitations to be sent to all households and businesses within 40m of the site. Cascadia Green delivered 364 invitations to all residents and businesses within 100m of the site, more than doubling the minimum notification radius. Appendix A includes a copy of this invitation and a map of the distribution area.

Newspaper Ad

A newspaper ad was placed in the North Shore News on Wednesday, November 13, 2019 and Friday, November 15, 2019. A copy of the ad is included in Appendix A.

Notification Signs

A notification sign was installed on the property on Wednesday, October 30, 2019 providing three weeks' notice to neighbours of the meeting. The sign was posted at the corner of 3<sup>rd</sup> Street and St Davids Avenue. A photograph of the installed sign is provided in Appendix A.

**Attendance:**

92 members of the public signed in for the meeting, and approximately 100 attended. A copy of the sign-in sheets is included in Appendix B.

The following City representatives and project team members were in attendance:

City of North Vancouver:

- Councillor Don Bell (arrived part-way through the meeting)
- Mike Friesen, Planner

**Project Team:**

- Farzad Mazarei, CEO, Cascadia Green Development
- Steven Petersson, Director of Development, Cascadia Green Development
- Shirazeh Dabiri, Project Coordinator, Cascadia Green Development
- Shamus Sachs, Architect, Integra Architecture
- Victor Ngo, Transportation Planner, Watt Consulting
- Michael Patterson, Landscape Architect, Perry & Associates
- Katrina May, Facilitator, Katrina May Consulting

**Overview:**

The meeting began with an Open House. Meeting participants browsed the display boards and engaged directly with the project team. Many participants arrived early in the evening and expressed eagerness to begin the presentation and dialogue. Consequently, the Open House ended at approximately 6:45pm to allow more time for a presentation and facilitated dialogue.

After the Open House, the applicant provided a short presentation of the proposal, followed by a question and answer period. During the applicant presentation and question and answer period, a facilitator noted questions and comments on a flip chart for all to see in order to ensure a transparent and fair documentation of the process.

The participants were invited to submit written comments to the applicant, facilitator or to the municipal planner. The comment period remained open until Friday, November 22 to allow people an opportunity to submit comments for a time after the meeting was over. 85 comment sheets were submitted: 23 expressed opposition to the proposal, and 62 expressed support. Participants are welcome to submit comments to the applicant or City after the comment period is over, but these late submissions are not summarized in this report.

There were questions and discussion regarding:

- the proposed Rent-to-Own program
- concern about height, massing and shadow impacts, particularly on 341 St Davids Avenue
- the desirability for a pedestrian and transit-oriented mixed-use neighbourhood centre
- concern about extending commercial uses and a daycare to 4<sup>th</sup> Street
- traffic impacts, the proposed parking supply, and how the proposal addresses transportation needs through providing land for a bus lane and bike lane
- green building standards and accessibility
- feasibility and land ownership.

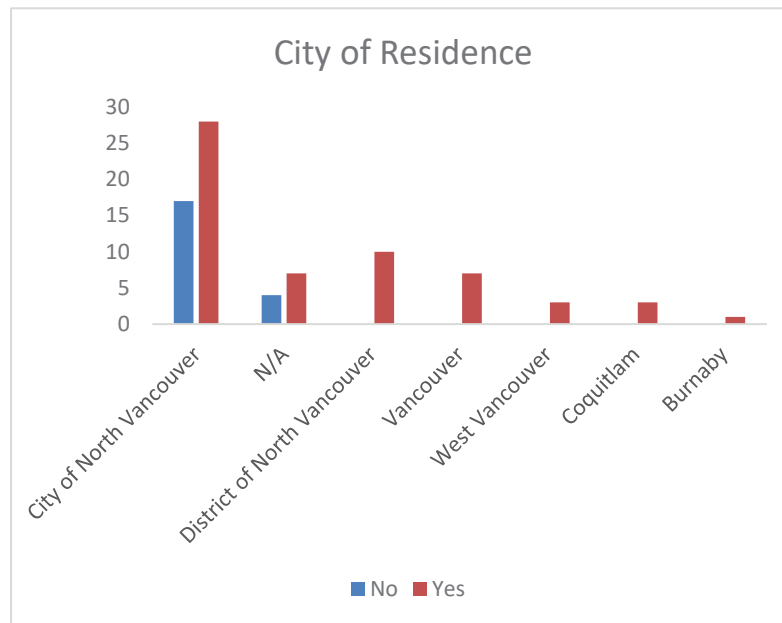
While several vocal critics attended the meeting, the comment sheets indicate that the proposal was supported by most participants.

- 43 respondents praised the project for providing relatively affordable housing.
- 19 respondents criticized the proposed height on our north building at 341 St Davids. 3 respondents supported it.
- 15 respondents criticized the proposed height of our east building on 3rd Street (proposed 5 storeys vs 4 in the OCP).
- 17 respondents praised our design with regard to neighbourhood character and design. 5 respondents were critical of the project's impact on neighbourhood character.
- 12 respondents (including 3 opponents) praised the pedestrian-oriented design.
- 18 respondents expressed a concern about traffic impacts.
- 7 respondents expressed concern for lack of capacity in local schools to accommodate new children.
- 23 respondents praised the proposed mix of neighbourhood retail and restaurants. This was opposed by two.
- 6 respondents who expressed opposition to the project supported commercial uses on E 3rd Street. 6 opponents criticized commercial uses on St Davids.



### Who Participated at the Meeting?

Approximately 100 people attended the meeting, and 85 submitted comment sheets. Based on the comment sheets, we found that the largest group of participants live in the City of North Vancouver. The majority of participants live on the North Shore. Through discussion with some of the respondents who live outside of the North Shore, we found that some were former City of North Vancouver residents who wished to return, and some work in the City of North Vancouver and would like to live closer to work. This means that most of the participants were North Shore residents or former North Shore residents or North Shore workers.



## Conclusion

The purpose of this Development Information Session was to present to the community the proposed rezoning application, and to provide them with an opportunity to ask clarifying questions and comment on the proposal.

Notification requirements were met. 364 invitations were distributed to the surrounding community, and 92 people signed in at the meeting. Two newspaper ads notified the community of the meeting the week before the event. A sign was posted on the property three weeks before the event.

85 comment forms were submitted: 23 expressed opposition, and 62 expressed support.

Supporters of the project were enthusiastic about the proposed rent-to-own program, and opportunities for a pedestrian and transit-oriented village commercial centre.

While this Development Information Session demonstrated significant community support for the proposal, the Cascadia Green team also heard concerns from neighbours. The Cascadia Green team identified several opportunities to respond to public feedback. This will be reflected in the next design iteration, after receiving technical comments from City staff. The Cascadia Green team found that:

- It was challenging to answer questions about height on a complex project on a slope with a cross-fall in a succinct manner, because measuring height at different locations yields different measures of height. In addition to evaluating the proposed building heights, Cascadia Green will work to provide drawings that more clearly express existing heights, heights encouraged under the Moodyville Design Guidelines, and heights proposed by this application.
- There is a need to reduce building massing on 341 St Davids Avenue.
- There is a need to respond to concerns about shadow impacts.
- The location of the daycare needs to be reconsidered, if it is to remain part of this application, to reduce impacts to residential neighbours.
- The proposal for live/work units north of the lane on St Davids Avenue could be reconsidered to reduce impacts of commercial uses on residential areas further north.

Participants were engaged through several methods:

- browsing boards
- talking to the project team and CNV Planner
- watching a presentation
- participating in a facilitated question and answer period
- submitting written comments.

The meeting length and format was sufficient to provide all participants an opportunity to learn more, ask questions, and make the comments they wished to provide that evening. Participants asked the development team a variety of questions, mostly related to height, shadows, density, green building, rent-to-own, parking and traffic. The community was given ample opportunity to express their views of the proposal. Cascadia Green looks forward to presenting our next design iteration at our upcoming Town Hall meeting in 2020.

## Appendix A: Notification

### Newspaper Ad

## Developer's Information Session

Cascadia Green Development is hosting an information session. Interested members of the public are invited to learn more about our application to amend the OCP and rezone 402-438 E 3rd St & 341-343 St David's Ave, which allows for the development of a mixed-use commercial/residential project featuring a daycare, 181 residential units, 16 commercial and 4 office units.

You are invited to this session to learn more about the project, and our rent-to-own program, and to provide feedback.

**Location:**

Harbourview Room,  
John Braithwaite Community Centre,  
145 West 1st Street

**Date:** Tue, November 19, 2019**Time:** 6:30pm - 8:30pm**Steven Petersson**

Director of Development  
Cascadia Green Development  
604-813-6720

[steven@cascadiagreendev.com](mailto:steven@cascadiagreendev.com)

**Community Development Contact:**

Mike Friesen, City of North Vancouver Planner 604-990-4206 [mfriesen@cnv.org](mailto:mfriesen@cnv.org)

This meeting has been required by the City of North Vancouver as part of the rezoning process.



A30 |

## REMEMBRANCES

### OBITUARIES



**VESELY, Marilyn (nee Abernethy)**

Marilyn passed away peacefully on November 5, 2019 at Lynn Valley Care Centre at age 97, after living out her final years with vascular dementia. She was born on September 4, 1922, in Vancouver and attended Maple Secondary School. After graduating from the University of British Columbia in Education with a focus on Fine Arts, Marilyn worked as an elementary school teacher in the public system for over 30 years, primarily in North Vancouver, where she settled and raised her family. She was a dedicated educator who influenced and inspired generations of students, particularly with her passion for music and art. Marilyn was an avid singer in her younger years and a talented singer, guitar player and visual artist throughout her life.

Predeceased by her brother, Robert Abernethy, Marilyn is survived and will be missed by her sister Anne Rothman; her husband of 68 years, Miro Vesely; her son, Mario Vesely; and Miro's wife Julie and daughter Gillian. She will also be missed by her friends, cousins, and members of the wider Abernethy family. The family wishes to express their sincere gratitude to all the staff at the Lynn Valley Care Centre for the excellent care they showed to Marilyn during her years there.

There will be a drop-in reception in remembrance of Marilyn's life between 2:30pm and 4:30pm on Tuesday, November 19, 2019, at First Memorial Basil Chapel, 1505 Lilac Road, North Vancouver.



### LEGAL

### LEGAL/PUBLIC NOTICES

#### Developer's Information Session

Cascadia Green Development is hosting an information session. Interested members of the public are invited to learn more about our application to amend the OCP and rezoned 402-438 E 3<sup>rd</sup> St & 341-343 St David's Ave, which allows for the development of a mixed-use commercial/residential project featuring a daycare, 181 residential units, 16 commercial and 4 office units. You are invited to this session to learn more about the project, and our rent-to-own program, and to provide feedback.

**Locations:**  
345 West 3rd Street  
Harbourview Room,  
John Braithwaite Community Centre,  
Dates: Tue, November 19, 2019  
Time: 6:30pm - 8:30pm

**Steven Peterson**  
Director of Development  
Cascadia Green Development  
604-613-6720  
steven@cascadiagreen.com



**Community Development Contact:**  
Mika Hreben, City of North Vancouver Planner 604-990-4206  
mhreben@cnv.ca  
This meeting has been required by the City of North Vancouver as part of the rezoning process.

### IN MEMORIAM



### EMPLOYMENT

#### RESTAURANT/HOTEL

**C-LOVERS**  
A FINE PT. CARRIER  
Apply with resume to:  
5550 Number 3 Ave  
class@hcds.com  
nsnews.com

#### SALES/AGENTS

**Sales Account Manager**  
Attention customer service gurus aiming to kickstart a successful sales career. Check out our posting to learn more and apply: [www.outbackbuilding.com/about-us/join-our-team/sales-account-manager](http://www.outbackbuilding.com/about-us/join-our-team/sales-account-manager)

### GENERAL EMPLOYMENT

## BC LIQUORSTORES

**2019 BC's Top Employers**  
**Sales Associates**  
Positions Available at Westview, Lynn Valley, and Park Royal!

We are dedicated to the highest quality of customer service, delivered with friendliness, individual pride, initiative, and retail passion! If you fit this description and you are prepared to work in a fast paced environment, we encourage you to apply to become a part of BC Liquor Stores.

We are accepting applications for auxiliary sales associate positions in our Liquor Stores.

To be eligible, applicants must meet the following qualification requirements:

- o Be at least 19 years of age
- o Be able to work shift work and weekends
- o Be able to perform physically demanding work, including lifting 20-25 kg boxes
- o Have a valid Serving it Right Certificate

#### Rate of Pay:

Seasonal Sales Associate - \$17.37 per hour  
Auxiliary Sales Associate - \$18.69 per hour

For exciting and challenging retail Seasonal and Auxiliary opportunities, please apply in person at the following locations:

770 - 2601 Westview Drive, North Vancouver - 604-981-0026

15 - 1189 Lynn Valley Rd, North Vancouver - 604-981-0014

785 Park Royal North, West Vancouver - 604-981-0011

#### Or online at:

<http://bcliquorstores.prevueaps.ca/pages/openings/>

nsnews.com north shore news WEDNESDAY, NOVEMBER 13, 2019

## COMMUNITY

### FOUND

**Found: Walking Crane**  
Walking crane found around noon on Thursday, October 31st, on a bench in front of Pat Simart, Park Royal North. Please contact to identify: 604-864-6536

## BUSINESS SERVICES

### BUSINESS OPPORTUNITIES

**DAVISON**  
**ATTENTION INVENTORS!**  
Ideas wanted!  
Call Davison today!  
1.800.718.2909  
or visit us at [inventing.davison.com/BC](http://inventing.davison.com/BC)  
Free inventor's guide!

**HEALTH & BEAUTY**  
GET UP TO \$50,000 from the Government of Canada. Do you or someone you know have any of these Conditions? ADHD, Anxiety, Arthritis, Asthma, Cancer, COPD, Depression, Diabetes, Difficulty Walking, Menopause, Muscle Sprains, Overweight, Trouble Dressing, and Hundreds more. ALL Ages & Medical Conditions Qualify. Have a child under 18 instantly receive more money. CALL BRITISH COLUMBIA BENEFITS 1-800-211-3050 OR Send a Text Message with Your Name and Mailing Address to (604) 739-5500 For Your FREE benefits package.

### PERSONALS

**GENTLEMEN** Attractive, discreet European lady offers companionship. 604-459-0775

### HEALTH & BEAUTY

**Waj's Relaxation Massage**  
Serving North Vancouver for 16 years!  
10am - 9pm  
604.986.8650  
1009 Marine Drive (by Klack) parking at rear

## MARKETPLACE

### FREE

**FREE PRIDGE FREEZE**  
Chest style, (Kamron) 23.5" wide 51.5" length, 64" high, call 604-690-4562 must be able to take away.

**FREE FURNITURE**, book shelves, chest of drawers, chairs, odds and ends. 604-895-8803

### WANTED

Refused instruments, weapons or books. Please CALL 604-790-2237

Old Books Wanted, direct Photos, Postcards, Letters, Paintings, no text books or encyclopedias. I pay cash. 604-737-0630

**Grow Your Business**  
Call 604-630-3300 to place your ad

## CHRISTMAS CORNER

### CRAFT FAIRS/BAZAARS

**2019 Swedish Christmas Fair**  
November 16 & 17  
11am-4pm  
**Traditional Swedish Goods & Current Desirable Items:**  
for Family, Home, Celebration & Gift Giving  
**SCANDINAVIAN COMMUNITY CENTRE**  
6540 Thomas St., Burnaby  
Over 30 local vendors, live entertainment and Swedish Gålle with open sandwiches, Swedish pastries & cookies, Christmas porridge and Glogg. No ATM onsite.  
**FREE ADMISSION—FREE PARKING**  
[www.swedishcultural.society.ca](http://www.swedishcultural.society.ca)

**Great Gifts**  
Handmade crafts & fine artwork by 39 artists  
Nov 15 to Dec 15  
Snack preview Fri, Nov 15 4 - 6pm  
Nov 16 - Dec 15  
Tues - Sat noon - 5pm  
Ferry Building Gallery - 1000 Argyle Ave, West Van  
[ferrybuildinggallery.ca](http://ferrybuildinggallery.ca)

**Annual Christmas Craft Fair**  
November 16 & 17, 2019  
10:00am - 4:00pm  
Chief Joe Mollen Centre  
1000 West 10th Ave, North Vancouver  
• RESPONDING VENDORS  
• GET YOUR CHRISTMAS SHOPPING DONE EARLY!  
• SUPPORT FOR LOCAL ARTISTS & HANDMADE

**CHRISTMAS LIGHTS & TREES**  
CUTTERS, Window Cleaning, Christmas lights, roof decorations & general repairs. Show room full. Best Prices. Drop in or call 604-271-7711



FRIDAY, NOVEMBER 15, 2019 northshorenews nsnews.com

A41

## REMEMBRANCES

### OBITUARIES

#### SCOTT, Gilbert (Gill) Oliver

Blessings for the life of Gilbert (Gill) Oliver Scott who passed peacefully on November 8, 2019. He was predeceased by his loving wife of 63 years, Margaret (Marge) Ellen Scott. He is survived by daughters Katherine Tuoman (Elkott), Carol Poykary (Tim) and Mokie Heino (Lenny); by sons Walter Scott (Elizabeth) and Vern Staples (Lois), and by 14 grandchildren and 21 great-grandchildren. He is also survived by his wife's sister, Rita, and by many spouses of his brothers and sister, and their families.

Gill worked for many years at Burrard Dry dock. After retirement, he and Marge travelled extensively in their motorhome.

The family wishes to thank Dr. Haaf and all the caring staff at Berkeley Care Centre, Burnaby Terrace East.

Celebration of life is on November 21, 2019, 2:00 p.m., at Basil Chapel, 1506 Lilac Street, North Vancouver. Reception following. Donations in lieu of flowers may be made to the Alzheimer Society of BC.

**Dignity**  
Funeral Services

### FUNERAL SERVICES

**McKenzie**  
FUNERAL SERVICES

*Our Family Serving Yours*

604-926-5121  
200-100 Park Royal South, West Vancouver  
mckenziefuneralservices.com

TAKING CARE OF EACH OTHER  
is what community is all about.

### HOLLYBURN FUNERAL HOME

1807 Marine Drive, West Vancouver  
Thank you for continuing to  
place your trust in us now and always.  
Proudly serving the North Shore for over 80 years  
604-922-1221 hollyburnfunerals.com

**Dignity**

Dignity Memorial is a division of Service Corporation International (Cranston, Vt.)

### EXECUTOR SERVICES

**Westcoast Wills & Estates**

**Probate made easy.**

Let our experienced lawyers help you.  
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\*Law corporation



Celebrate the lives of loved ones  
with your stories, photographs and tributes  
legacy.com/obituaries/nsnews

## LEGAL

### LEGAL/PUBLIC NOTICES

#### Developer's Information Session

Cascadia Green Development is hosting an information session. Interested members of the public are invited to learn more about our application to amend the OCP and rezone 402-438 E 3rd St & 341-343 St Davids Ave, which allow for the development of a mixed-use commercial/residential project featuring a daycare, 181 residential units, 16 commercial and 4 office units. You are invited to this session to learn more about the project, and our rent-to-own program, and to provide feedback.

Location:  
145 West 1st Street  
Horseshoe Plaza  
John Brinkwater Community Centre,  
Deter: Tue, November 19, 2019  
Time: 6:30pm - 8:30pm

Steven Paterson  
Director of Development  
Cascadia Green Development  
604-813-4770  
steven@cascadiagreen.com



Community Development Contact:  
Mia Fraser, City of North Vancouver Planner 604-990-4206  
mfraser@cnv.org  
This meeting has been required by the City of North Vancouver as part of the rezoning process.

By Virtue of the Warehouseman's Lien Act  
BigSteelBox Corporation  
at 880 Laughland Hwy, Port Coquitlam, BC, Canada  
claims a PPSA Warehouse Lien against  
Wendy Montgomery of Brackendale, BC  
for arrears of container rent amounting to  
\$2,821.95 plus any additional costs of storage  
that accrue. If not paid in full, the contents of  
furniture and miscellaneous items will be sold online  
auction via: bid4Storage.com on November 20, 2019.

#### WAREHOUSE LIEN ACT

Warehouseman's Lien Act whereas Hendrik  
Svensen is indebted to Seavaults Landing Inc. for  
storage on a 29' Columbia Seaboard, Registration #  
BC5382229031, named "Earl Grey". Notice is  
hereby given that on the 25th day of  
November, 2019 or thereafter, the boat will be sold  
at 6409 Bay Street, West Vancouver, BC. For more  
information call Accurate Effective Bailiffs Ltd. at  
(604) 626-3737.

#### WAREHOUSEMAN'S LIEN ACT

WAREHOUSEMAN'S LIEN: HELPS Richard Ian is  
indebted to Mitchell's Towing for storage and towing on a  
2012 Ford Focus. A lien is claimed under the  
Act. There is presently an amount due and  
owing of \$1807.22 plus any additional costs of  
storage, seizure and sale that may accrue.

Notice is hereby given that on December 4, 2019  
thereafter, the said vehicle will be sold. The vehicle is  
currently stored at Mitchell's Towing Ltd, 1255 Welsh  
Street, North Vancouver, BC, V7P1E4. The vehicle  
was placed in storage on October 9, 2019. For  
more info call Mitchell's Towing Ltd at 604-962-0115.  
www.MitchellsTowing.ca

#### WAREHOUSEMAN'S LIEN ACT

WAREHOUSEMAN'S LIEN: WANG, Luyi is indebted to  
Mitchell's Towing for storage and towing on a  
2007 Volkswagen Golf VIN: 9WML41674009682.  
A lien is claimed under the Act. There is presently an  
amount due and owing of \$4,902.03 plus any  
additional costs of storage, seizure and sale that  
may accrue.

Notice is hereby given that on December 4, 2019  
thereafter, the said vehicle will be sold. The vehicle is  
currently stored at Mitchell's Towing Ltd, 1255 Welsh  
Street, North Vancouver, BC, V7P1E4. The vehicle  
was placed in storage on August 26, 2019. For  
more info call Mitchell's Towing Ltd at 604-962-0115.  
www.MitchellsTowing.ca

Hot Spot  
For Sale  
604.630.3300



## EMPLOYMENT

### GENERAL EMPLOYMENT

**NEED EXTRA INCOME??**  
Earn extra cash to supplement your current income or pay off your bills. Now hiring delivery contractors for the day, province and nation wide. Must have reliable vehicle & be available from 6am - 6pm daily. Earn up to \$800/week. Call to find the route closest to you. 778-669-4400

### RESTAURANT/HOTEL

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Serving 100+ customers. Apply with resume at 1900 West 4th Ave.

## EDUCATION

**Education Reimagined**  
Creating the Schools Our Children Need

A FREE 8-Week Presentation For Parents and Educators

Monday, Nov 25th  
Glenogil Golf Clubhouse  
6190 Marine Drive West  
7:00-8:30 pm

Speakers:

- Neil Spence, Ph.D., Author
- Lucia Clarke, Author
- Judy Denison, Principal - Burnaby School

Registration: <https://www.burnaby.ca/parents/25th-edition-education-reimagined>

## COMMUNITY

### ANNOUNCEMENTS

**BAHAI COMMUNITY DEVOTION**  
Gathering in a friendly, new 7th at 10:30 am in the East Valley Hall at West Vancouver Memorial Library. Everyone Welcome! "So powerful is the light of unity that it can burnish the whole earth" - Baha'is

### FOUND

Found: Walking Cane  
Walking cane found around noon on Thursday, October 31st, on a bench in front of Pet Smart, Park Royal North. Please contact to identify.  
604-264-6535

**Grow Your Business**  
Call 604-630-3300

## MARKETPLACE

### FREE

**FREE PRICED PRICED**  
Great style, (6mm x 10mm) 25.5" wide 31.5" length, 34" high, call 604-420-4452 must be able to take away.

### WANTED

Mutual Investments  
Planning or business help  
Cash: 604-760-2337

## BUSINESS SERVICES

### HEALTH & BEAUTY

**Lily's Rejuvenation Massage**  
Serving North Vancouver for 16 years!  
10am - 9pm  
604.986.8650  
1050 Marine Drive  
(by McKay) parking at rear

**CLASSIFIEDS Build Results**

## RENTALS

### APARTMENTS/CONDO'S FOR RENT

**Beautiful Waterfront 1 Bedroom**  
\$2,700/month  
Spacious, high quality, newly renovated suite on the new island. Very large balcony. Quiet, well-maintained building. Full-time manager on site. Available from December 1.  
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**THE BOWENVIEW Studio Apt.**  
530 Glen Ave, Ocean View, West Vancouver. No pets, n/s. \$1200.  
604-628-8741

### SUITES FOR RENT

**1 BR+ Den, ground level, Upper Lonsdale.**  
Available. Own entry, patio, incl ut (\$750/month). No smoking, no pets  
Sub 1 or 2:  
604-665-1142  
604-615-2149

**Basement suite central Lonsdale, Grand Blvd.**  
2 bdrm, \$700 + utilities. Bright clean walk-out. Basement suite with patio, storage shed, laundry. Outside for single daytime worker. 604-977-4018 please leave message.

To advertise call  
604-630-3300

### SUITES FOR RENT

**Central Lonsdale**  
2 BDRM, 2 bathroom, second floor, incl fridge, gas stove, hot water, 2 parking, \$460/1st Lien rent. Avail Dec 1st, no pets, n/s. \$2,500/month  
604.925.3594 for appt

### HOUSES FOR RENT

**CENTRAL LONSDALE**  
3 Bedroom House, recreation room, vaulted, 4 appliances, dropce and well to well. Clean & bright, working people, n/s. \$1,225. 995-852-7372.

**FURN OCEAN HOUSE**  
2bed/2bath, N/S, n/s. \$2100 includes everything. Grand Blvd 604.612-2715

### HOUSES FOR RENT

**BRIGHT DUNDARVIS 3br**  
house, 2nd and 3rd floors. \$1800 Call 604-787-7338

**UPPER LONSDALE, 3 BR**  
Home, 2.5 Bath, Full Bath, OCEAN VIEW, Avail Nov. \$2650. • 604-985-6496

### FURNISHED RENTALS

**LONSDALE 600 - Furn Ac-**  
com. 1 bdrm, 1.2, 3 BR. Start at \$1300. 604-723-7820 or visit www.homeswayhms.com

**342 E. Glenedenq, NW 2nd**  
A beautiful view of Burrard Inlet, 370 sqft, Grand WC, \$765. Number for info. 604-325-4537

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condition, collector's item. 119,500 kms. \$12,500  
Come see and make an offer. 604-871-3779



**402-438 E 3<sup>rd</sup> Street & 341-343 St Davids Avenue Development Application  
Development Information Session Summary Report**

---

Notification Sign: Installed October 30, 2019



## 402-438 E 3<sup>rd</sup> Street & 341-343 St Davids Avenue Development Application Development Information Session Summary Report

---

### Notification Flyers



The City of North Vancouver has received an OCP amendment and rezoning application from Cascadia Green Development for 402-438 E 3rd St & 341-343 St David's Ave. which allows for the development of a mixed-use commercial/residential project featuring a daycare, 181 residential units, 16 commercial and 4 office units. Access to underground parking is proposed from St Patricks Street.

Cascadia Green Development is hosting an information session. Interested members of the public are invited to attend this session for an opportunity to review the proposal, learn about our rent-to-own program, and to offer comments.

**Applicant Contact:**

**Steven Petersson**

Director of Development  
Cascadia Green Development  
604-813-6720  
steven@cascadiagreendev.com

**Community Development Contact:**

**Mike Friesen**

Planning and Development  
City of North Vancouver  
604-990-4206  
mfriesen@cnv.org

### Development Information Session

Official Community Plan and Zoning bylaw Amendment  
for Mixed Use Commercial - Residential Building  
402-438 E 3rd St & 341-343 St. David's Ave, North  
Vancouver, BC.

**Date:** Tue, November 19, 2019

**Time:** 6:30pm - 8:30pm

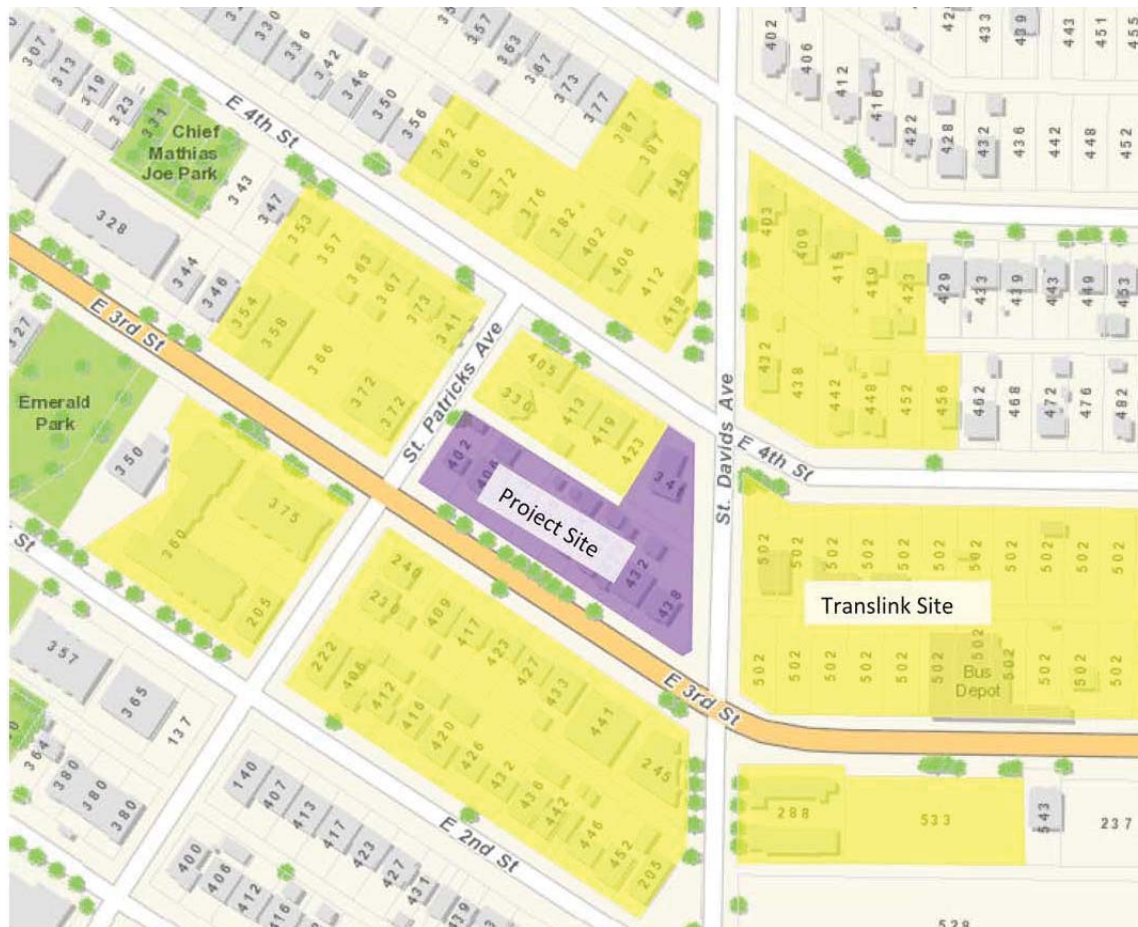
**Location:** Harbourview Room,  
John Braithwaite Community Centre,  
145 West 1st Street

### Notification Area Map

Cascadia Green exceeded the 40m notification radius required by the City, and notified all businesses and residents within 100m of the site.

**Purple** = subject site (residents and businesses were notified)

**Yellow** = notified properties, 100m radius



**ROCKANDEL&ASSOCIATES**

*Building Success Through Process Facilitation  
Organizational & Public Engagement*

**VIRTUAL TOWN HALL REPORT**

**To:** Mike Friesen, Planning and Development, City of North Vancouver  
E: mfriesen@cnv.org T: 604-990-4206

**CC:** Steven Petersson, Director of Development, Cascadia Green Development  
E: steven@cascadiagreendev.com T: 604-813-6720

**From:** Catherine Rockandel, IAF Certified Professional Facilitator  
Rockandel & Associates Tel: 1-604-898-4614 E: cat@growpartnerships.com

**Re:** 402-438 East 3rd Street and 341-343 St Davids Avenue, North Vancouver

**Date:** August 25, 2020

**Event Date:** Tuesday, July 14, 2020  
**Time:** 7:00 PM – 8:30 PM  
**Location:** Due to COVID 19 restrictions the Town Hall was held virtually  
**Attendees:** Two Hundred (200) members registered for the Virtual Town Hall  
One Hundred and Forty-Two participants attended Zoom Meeting  
providing 316 comments.

The following project team members, and City of North Vancouver staff and a Councillor were in attendance.

**City of North Vancouver**

Mike Friesen, Planning, City of North Vancouver  
Matthew Holm, Manager of Development Services (Engineering)  
Councillor, Don Bell

**Developer and Project Consultants**

Steven Petersson, Director of Development, Cascadia Green Development  
Victor Ngo, Traffic Engineering, Watt Consulting Group  
Farzad Mazarei, CEO, Cascadia Green Development  
Mania Hormozi, Senior Development Manager, BC Housing  
Jason McDougall, Landscape Architect, Perry & Associates  
Shamus Sachs, Architect, Integra Architecture

**Independent Moderator**

Catherine Rockandel, Rockandel & Associates



Virtual Town Hall  
402-438 East 3rd Street and 341-343 St Davids Avenue, North Vancouver  
July 14, 2020

## **Notification**

### Town Hall Invitation Flyers

The community was notified of the Town Hall by Invitation Flyers. These were distributed within 100m of the site. See invitation and notification map in Appendix 1 and 2.

### Site Signs

Three (3) Town Hall site signs were erected on the site notifying the community of the meeting location at 4<sup>th</sup> and St. Patricks; 3<sup>rd</sup> and St. Patricks; and East 3<sup>rd</sup> and St. Davids. The sign that was erected several days after the first two signs was located at St Patricks and East 3<sup>rd</sup>. Originally it was anticipated that the sign located at St Davids and East 3<sup>rd</sup> would provide adequate notification, but based on community feedback and subsequent review it was determined that it was challenging for eastbound drivers to reasonably perceive the sign. Photos of the site signs are located in the Appendix 5.

### Newspaper Advertisement

Ads ran in the North Shore news on Wednesday, July 1, 2020 and Wednesday, July 8. See newspaper sample in Appendix 3 and 4.

## **Public Feedback**

### Pre-Virtual Town Hall Input – Appendix 7

Cascadia Green hosted a Virtual Open House prior to the Virtual Town Hall from June 30 to July 14<sup>th</sup>, 2020 public input was received via email and website submissions. This input is summarized in 1 Pre-Meeting Feedback section of Appendix 7 attached.

### Post Virtual Town Hall Input – Appendix 7

Following the virtual Town Hall on July 14, 2020 the Open House and public comment period remained open for two weeks until July 28, 2020. This input is summarized in 2 Post Virtual Town Hall Feedback section of Appendix 7 attached.

In addition to a written submission, a sketch was provided by neighbours Jeff Keate, Architect and Leicha Bragg. This is being responded to by Cascadia Green's architect and is contained in Appendix 6.

Responses to pre and post virtual Town Hall questions will also be posted on Cascadia Green's website.

## **PRESENTATION SUMMARY**

Cascadia Green is proposing a development at 402-438 East 3rd Street and 341-343 St Davids Avenue. The proposal features 175 residential units, a daycare, neighbourhood commercial space and office units. The development also includes a Rent-To-Own and Affordable Home Ownership Program.



## Virtual Town Hall

402-438 East 3rd Street and 341-343 St Davids Avenue, North Vancouver

July 14, 2020

The purpose of the Town Hall is to communicate updated project details, listen to questions and comments provided by the public, and respond to them; and to have a third-party facilitator document the process and submit a summary report to the City.

### ***Virtual Town Hall Overview***

In a face to face Town Hall with each person provided with an approximate two (2) minute speaking opportunity, and allowing for one (1) minute developer response, usually a maximum of 30 people can have their voices heard.

A virtual Town Hall allows more comments to be captured via the Q&A response. However, the downside is that some individuals use online forums to post derogatory comments or comments that make a negative inference. The moderator asked people to focus on issues not people, to be respectful and not negatively characterize individuals or groups. However, not all people follow guidelines or requests.

In addition, the speed at which the comments are posted makes it difficult for the moderator to identify and respond to subtle hidden inferences particularly when they are reading input for authentic questions for the developer to respond to. For this reason, derogatory comments posted in the chat are not included in this summary report.

In summary, the public comments that were not supportive indicated they were concerned about:

- Height of buildings and exceedance of OCP
- Increased density ie: MAX density of the north building
- 32000 feet of commercial and concerns about not enough parking for commercial.
- Reduced parking stall ratio
- Size and design of building do not fit with neighbourhood character and design
- Daycare on a busy street and health impacts for children
- Access from the lane to garage would hinder the several townhouses facing the lane
- Commercial lane sets a precedent for every other lane in CNV there will be conflict in vehicle access
- Shadows create a triangle around existing homes which won't have any sunlight to their living space during the winter months
- Concern that some virtual public meeting participants did not live in the immediate neighbourhood

Some individuals that were opposed also said that they:

- support some commercial development in this area and a 4 storey building on third street

In summary, the majority of supportive public comments indicated support because of:

- Rent-to-Own and Affordable Home Ownership program. They indicated that these programs are opportunities for young people to start a household, transition from rental, and be able to own a home.

## Virtual Town Hall

402-438 East 3rd Street and 341-343 St Davids Avenue, North Vancouver

July 14, 2020

- Others indicated that more commercial space is necessary for lower Lonsdale compared to all the residential units
- Several people mentioned live work spaces

### Participation Analysis

In reviewing the comments submitted during the Virtual Town Hall, there were twelve (12) registrants that self-identified as neighbours (defined by them as living directly adjacent the proposed development and thus disproportionately impacted) opposed to the development.

Based on the comments submitted in the virtual Town Hall, some supporters declared that they lived directly adjacent the proposed development, while others self-identified that they lived in the City of North Vancouver. Others did not disclose their location.

During the virtual Town Hall several neighbours commented on process transparency related to previous Developer Information sessions. For this reason, the moderator asked the developer to provide all input submitted on line before and in the two-week period after the Town Hall meeting. A summary of the documentation provided by the developer is included in the Appendix.


## Virtual Town Hall

402-438 East 3rd Street and 341-343 St Davids Avenue, North Vancouver

July 14, 2020

## APPENDIX (Materials Provided by Developer)

### 1. Appendix: Invitation Flyers



Cascadia Green Development is hosting a Virtual Town Hall for its application to rezone & amend the OCP to redevelop 402-438 E 3rd St & 341-343 St David's Ave. The proposal features 175 residential units, a daycare, neighbourhood commercial space, and office units.

This Virtual Town Hall is an opportunity to review the proposal, learn about proposed Rent-to-Own and Affordable Home Ownership Programs, ask questions, and to offer comments. **Pre-registration required.** Submitting questions and comments, by phone, email or web registration, is encouraged.

For more information & registration:  
<https://e3rd.cascadiagreendev.com/>

<b>Applicant Contact:</b> <b>Steven Petersson</b> Director of Development Cascadia Green Development 604-813-6720 <a href="mailto:steven@cascadiagreendev.com">steven@cascadiagreendev.com</a>	<b>Community Development Contact:</b> <b>Mike Friesen</b> Planning and Development City of North Vancouver 604-960-4208 <a href="mailto:mfrisen@cnv.org">mfrisen@cnv.org</a>
---	---

address here

**Virtual Town Hall**

Rezoning Application for Mixed Use Commercial - Residential Building 402-438 E 3rd St & 341-343 St David's Ave, North Vancouver, BC.

**Date:** Tuesday, July 14, 2020  
**Time:** 7pm - 8:30pm

**Location:** Virtual Meeting

For more information and registration:  
<https://e3rd.cascadiagreendev.com/>

### 2. Appendix: DIS 100m Notification Map



## Virtual Town Hall

402-438 East 3rd Street and 341-343 St Davids Avenue, North Vancouver

July 14, 2020

### 3. Appendix: North Shore News July 1 Ad Proof

WEDNESDAY, JULY 1, 2020 northshorenews nsnews.com

NEIGHBOURHOODS | A47

#### CANYON HEIGHTS

## Musical performance celebrates grads

Students bid farewell to high school through song

ANDY PREST  
aprest@nsnews.com

There was no big prom dance or grad ceremony this year, but the graduating class from North Vancouver's Ecole Handsworth Secondary still came together in a truly meaningful way to say goodbye to high school.

Graduating Grade 12 student Megan Hingson, a violinist and budding filmmaker, led a team that put together a powerful performance of the song "A Million Dreams" from the musical *The Greatest Showman*.

The idea for a physically distanced musical tribute to the grad class emerged from a virtual meeting between Hingson and Handsworth band teacher David Bradshaw, who acted as the project's producer.

In late May, Hingson



Ecole Handsworth Secondary graduating student Megan Hingson performs alongside pianist Salome Zheng. Hingson served as director and violinist for a rendition of "A Million Dreams" performed by 65 students from the North Vancouver high school. SCREENGRAB DAYDREAM PICTURE/YOUTUBE

brought in two of her filmmaking friends, Felix Soong and Eamon Ma, and they got to work at picking out parts for any interested music students and bringing them in one at a time to record them performing in the school's music room.

Soloists Katrina Becker-Gedge, Aidan Chubb and Sophie St George, piano

player Salome Zheng, and Hingson on the violin were all featured along with numerous students from the school's band, strings and choir programs. Dancers Claire Bates and Makena Petrie added dramatic flair to the film.

In all, 65 students in grades 8 through 12 took part, although an emphasis

was placed on featuring the grads.

When all the video footage was recorded, the three film students went to work editing it all together.

"We filmed for five days, from early in the morning until the evening, but despite the long process it was nice to connect with the music students one last time before we graduated," Hingson said in a note to the North Shore News.

"It was an amazing experience for us as filmmakers, and also for myself as a musician. I am happy that the music students at Handsworth, especially the graduating students, had a chance to come together to create music one last time before graduating from high school."

Hingson said that although her grad year did not go as planned, she and her classmates still had a unique and memorable graduation.

"Because of the COVID-19 pandemic, we had the opportunity to create this music video, which allowed us to share our talents as a school and connect through the joy of music. I think that, despite

the circumstances, the class of 2020 has received endless encouragement and support from the community, and will

surely be remembered." Visit [nsnews.com](http://nsnews.com) and click on this story to see the video.

### Kiwanis North Shore Housing Society

*Below market, independent housing, for low income seniors. Studio, Bach & One Bedroom.*



Contact  
[info@kiwanisnorthshorehousing.org](mailto:info@kiwanisnorthshorehousing.org)

#### Virtual Town Hall

Cascadia Green Development is hosting a Virtual Town Hall for its application to rezone & amend the OCP to redevelop 402-438 E 3rd St & 341-343 St Davids Avenue. The proposal features 175 residential units, a daycare, neighbourhood commercial space, and office units.

This Virtual Town Hall is an opportunity to review the proposal, learn about proposed Rent-to-Own and Affordable Home Ownership Programs, ask questions and to offer comments. Pre-registration required. Submitting questions and comments, by phone, email or web registration, is encouraged.

##### Registration & Information:

<https://e3rd.cascadiagreendev.com/>

Date: Tuesday, July 14, 2020

Time: 7pm - 8:30pm

##### Steven Petersson

Director of Development

Cascadia Green Development

604-813-6720

[steven@cascadiagreendev.com](mailto:steven@cascadiagreendev.com)



##### Community Development Contact:

Mike Friesen,  
City of North Vancouver

604-990-4206  
[mfriesen@cnv.org](mailto:mfriesen@cnv.org)

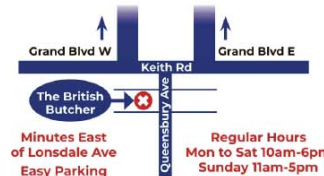
This meeting has been required by the City of North Vancouver as part of the rezoning and OCP amendment process.



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## Virtual Town Hall

402-438 East 3rd Street and 341-343 St Davids Avenue, North Vancouver

July 14, 2020

### 4. Appendix: North Shore News July 8 Ad Proof

A20 | NEWS

#### Virtual Town Hall

Cascadia Green Development is hosting a Virtual Town Hall for its application to rezone & amend the OCP to redevelop 402-438 E 3rd St & 341-343 St Davids Avenue. The proposal features 175 residential units, a daycare, neighbourhood commercial space, and office units. This Virtual Town Hall is an opportunity to review the proposal, learn about proposed Rent-to-Own and Affordable Home Ownership Programs, ask questions and to offer comments. Pre-registration required. Submitting questions and comments, by phone, email or web registration, is encouraged.

#### Registration & Information:

<https://e3rd.cascadiagreendev.com/>

Date: Tuesday, July 14, 2020

Time: 7pm - 8:30pm

Steven Petersson

Director of Development

Cascadia Green Development

604-813-6720

[steven@cascadiagreendev.com](mailto:steven@cascadiagreendev.com)



#### Community Development Contact:

Mike Friesen,  
City of North Vancouver

604-990-4206

[mfriesen@cnv.org](mailto:mfriesen@cnv.org)

This meeting has been required by the City of North Vancouver as part of the rezoning and OCP amendment process.

nsnews.com north shore news WEDNESDAY, JULY 8, 2020

## Shipping container to be used for public space

JANE SEYD  
[jseyd@nsnews.com](mailto:jseyd@nsnews.com)

The City of North Vancouver plans to turn a former shipping container into a new enclosed seating and public "patio" space, where customers of local businesses can eat their takeout food protected from the elements.

Council voted recently to put \$20,000 towards converting the 40-foot container – currently stored in the Centennial Theatre parking lot – into a covered "parklet" for use in Central Lonsdale. The idea is to convert the container into an outside seating area with lighting and a roof that will fit into curbside parking zones. The "parklet" will provide a public place to sit for customers of businesses that can't expand patios into the public realm, according to staff, who hope it will be in place this month.

The container was originally bought by the city for \$200 in August last year. The \$20,000 would be used to transport the container into place as well as come up with designs, and add lighting, a



The City of North Vancouver is going ahead with a project to turn shipping containers into outdoor public spaces. PHOTO: CNV

floor and outside furniture. Total cost of the project is \$35,000. Staff are also looking at the possibility of sponsorship to finish the job.

Council was enthused about the project, with Coun. Angela Girard describing it as a "great low budget option" for providing outside space.

But they also had questions. Girard asked who would clean the structure and whether it would be closed at night.

Staff member Larry Orr said the city will maintain the structure and won't close it at night. The sides of the structure will also be open, he added.

Girard also asked whether

there were concerns about people sleeping in the container. "It's something we'll have to monitor over time," said Orr. "This is all new for us."

Coun. Holly Back also asked whether there are concerns about people stealing the furniture. Orr said the city has other outside furniture in the public civic plaza that is not chained down and "I don't believe we've ever lost a piece of furniture."

No decisions have been made yet on the location for the first parklet.

Orr said the city hopes to expand the project to include more outside spaces created from containers.

**WE'RE IN THE NEIGHBOURHOOD FOR RECYCLING COLLECTION**

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Virtual Town Hall

402-438 East 3rd Street and 341-343 St Davids Avenue, North Vancouver

July 14, 2020

**5. Appendix: Site Signs 4<sup>th</sup> and St. Patricks; 3<sup>rd</sup> and St. Patricks; and 3<sup>rd</sup> and St. Davids**



Virtual Town Hall

402-438 East 3rd Street and 341-343 St Davids Avenue, North Vancouver

July 14, 2020



**6. Appendix: Jeff Keate canopy drawing submission – page one**

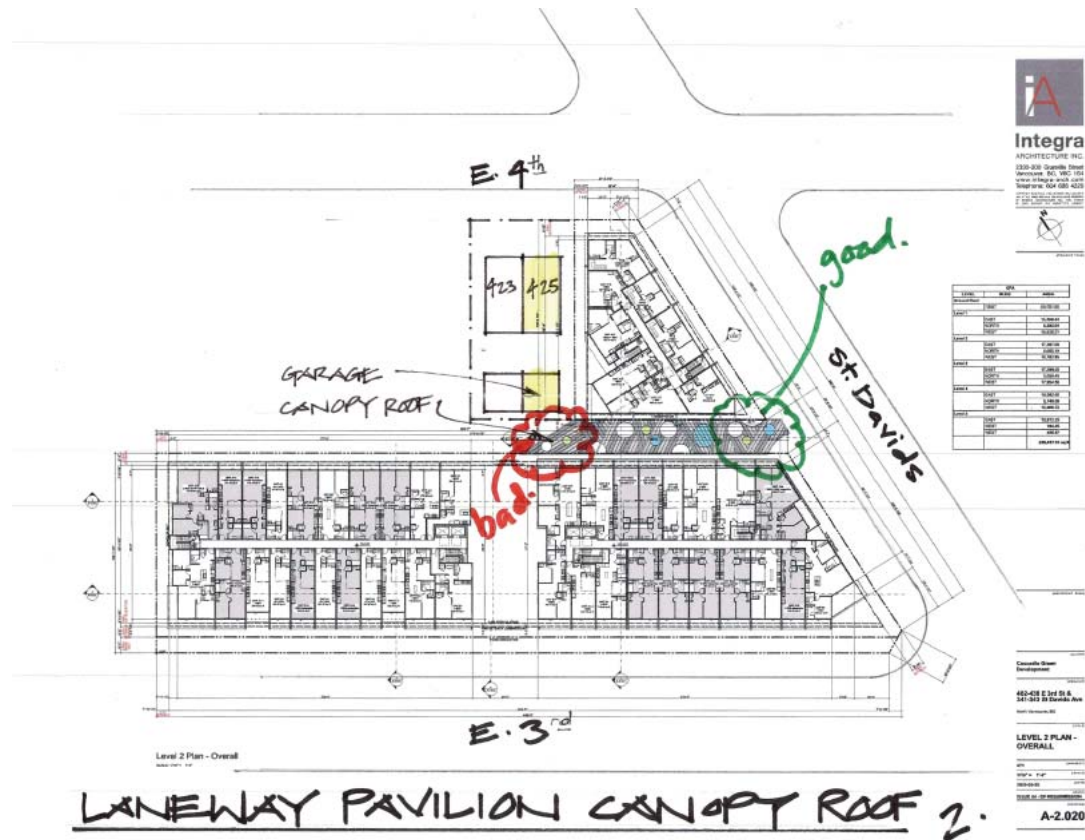


LANEWAY PAVILION CANOPY ROOF.

1.

Virtual Town Hall  
402-438 East 3rd Street and 341-343 St Davids Avenue, North Vancouver  
July 14, 2020

**Appendix: Jeff Keate canopy drawing submission – page two**



**7. Appendix: Virtual Town Hall Summary Statistics**

# Virtual Town Hall Summary Statistics

The purpose of this document is to summarize some statistics from the Virtual Town Hall. The statistics are divided into two categories:

- Pre-Town Hall Feedback
- Post Town Hall Feedback

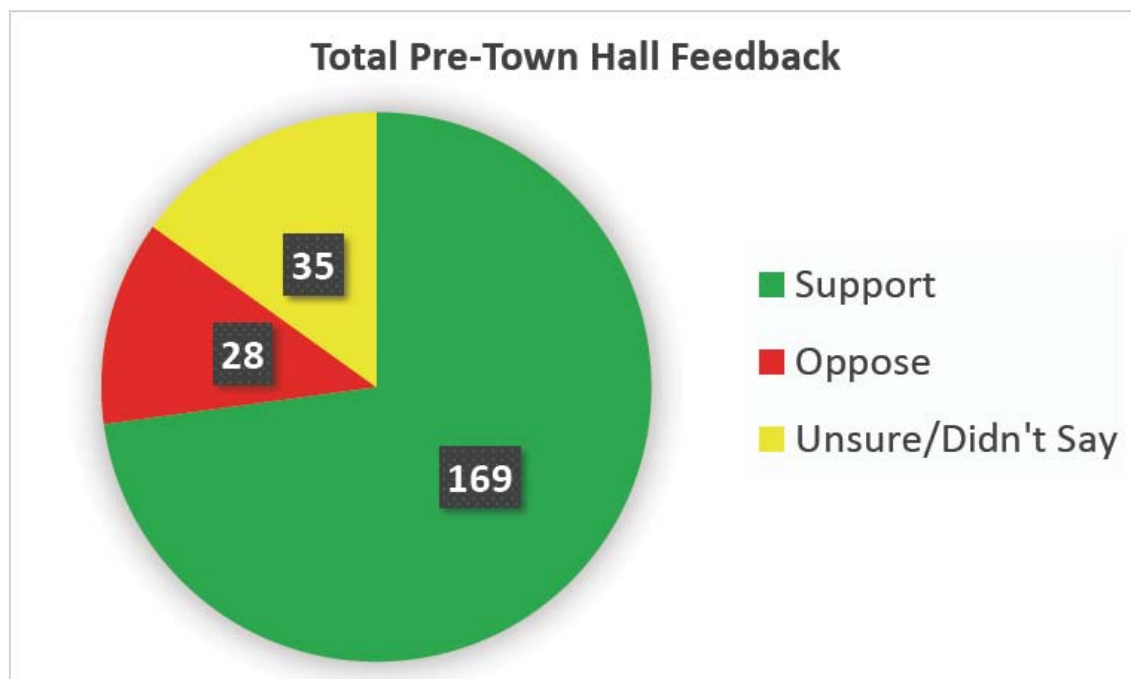
Most participants put their efforts into providing thoughtful comments and questions prior to the Town Hall. 232 submissions were made prior to the Virtual Town Hall, and 18 submissions were made after the Virtual Town Hall. More attention has been given to summarizing the pre-Town Hall submissions because there are so many of them.

## 1 Pre-Meeting Feedback

This includes feedback received two weeks prior to the Virtual Town Hall, from June 30 – July 14. Most of the feedback was received via the Virtual Town Hall registration process, and a smaller sub-set was submitted via email.

People were registered as “in favour” or “opposed” only if they checked the “in favour” or “opposed” field on the registration page of the Virtual Town Hall web site.

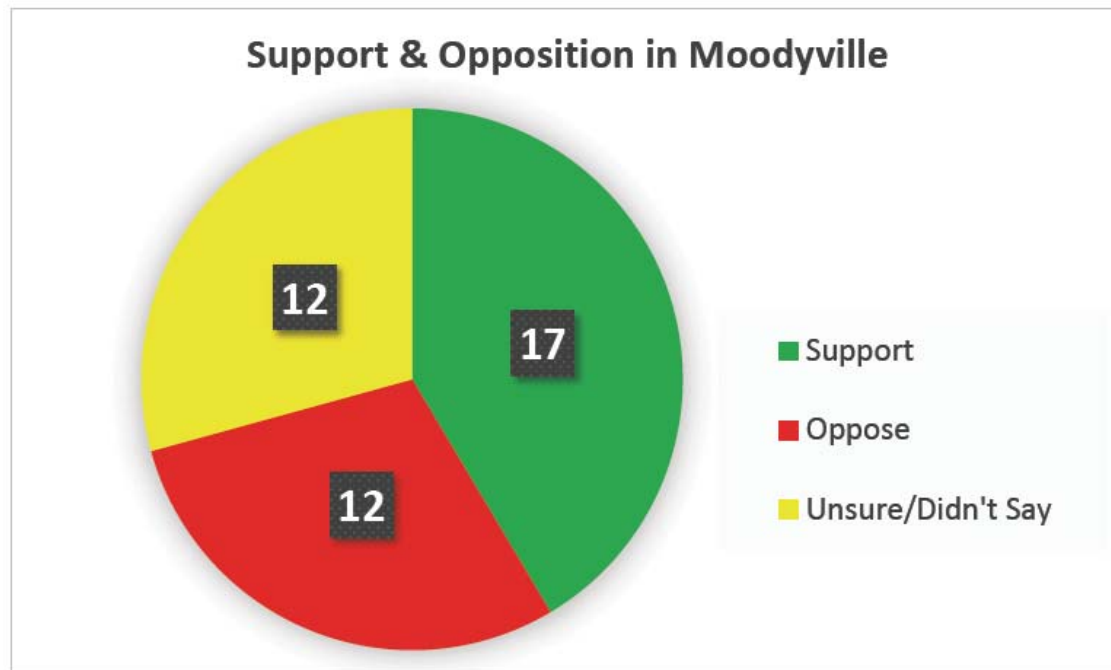
### 1.1 Support and Opposition Summary





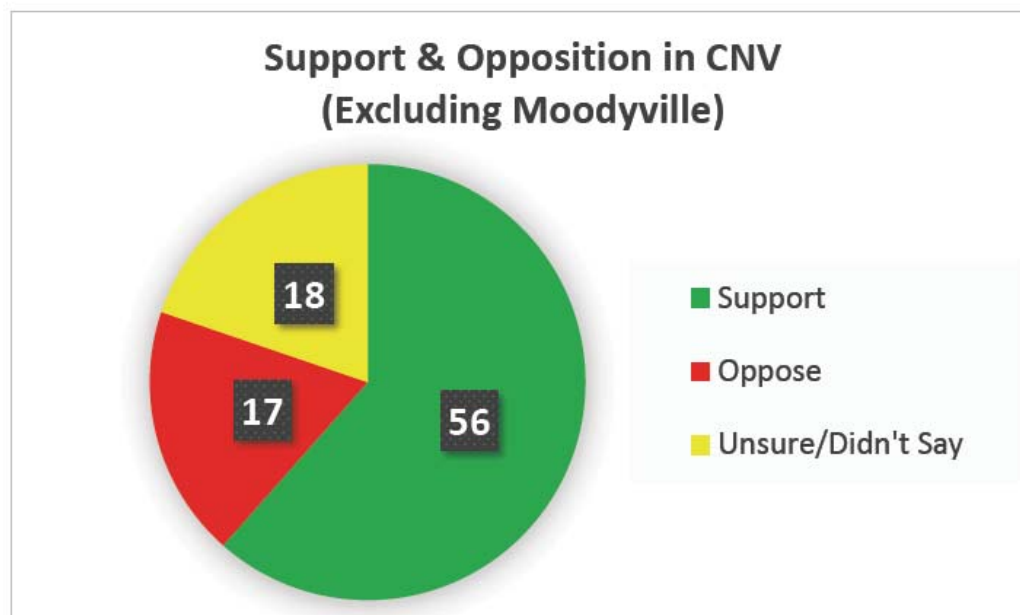
### 1.2 Support and Opposition Within Moodyville

The intent of this analysis was to identify preferences of those living nearby. For the purpose of this study, "Moodyville" is defined as: East of St Georges Ave, South of Keith Road, West of Lynn Creek.



### 1.3 Support and Opposition Within CNV (but outside of Moodyville)

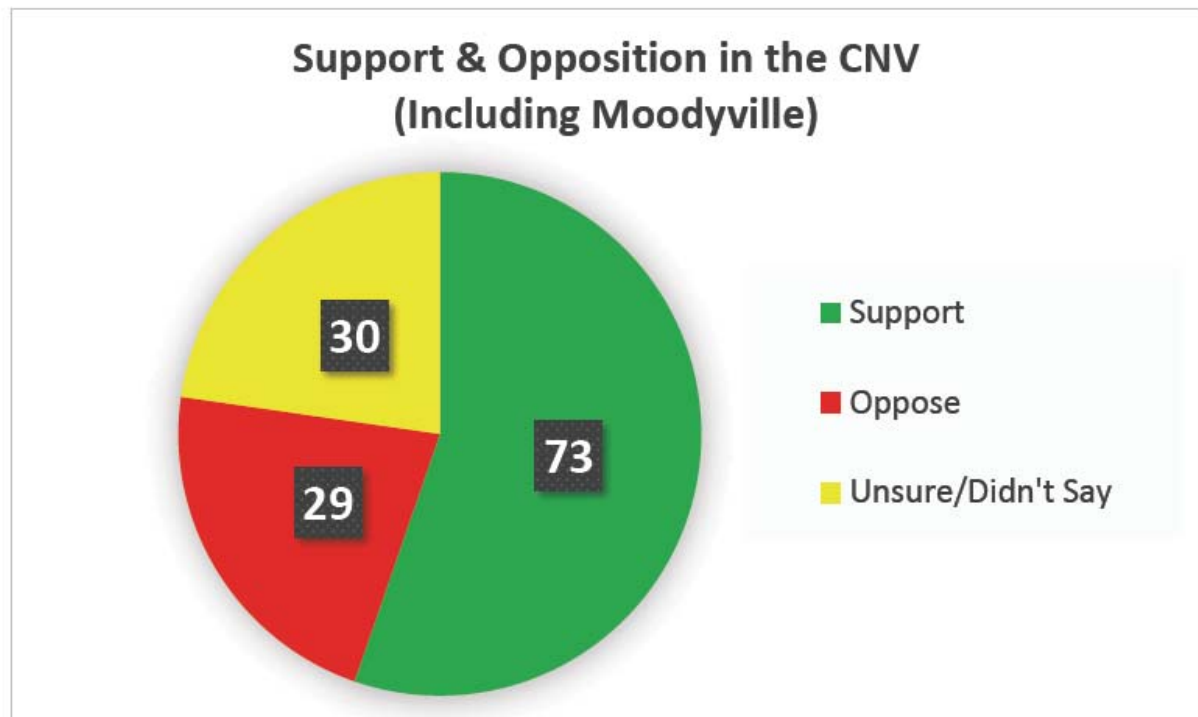
How did people from the CNV, but outside of Moodyville, respond?





#### 1.4 Support and Opposition in CNV (including Moodyville)

How did all respondents from the CNV, including Moodyville, respond?



#### 1.5 Outside of the City of North Vancouver

95 respondents live outside the City of North Vancouver. Why did they participate?

45 respondents live off the North Shore, in Greater Vancouver:

- many of these were motivated by affordable housing: 36 said they were interested in the Rent to Own and Affordable Home Ownership Program
- 14 said they worked in North Vancouver, and wanted to live closer to work and reduce their commute
- 5 said that they wanted to live closer to their family and friends, who already live in North Vancouver.

37 respondents live in the District of North Vancouver:

- Most of them (26) said they were interested in the Rent to Own and Affordable Home Ownership Program

13 respondents were from the District of West Vancouver:

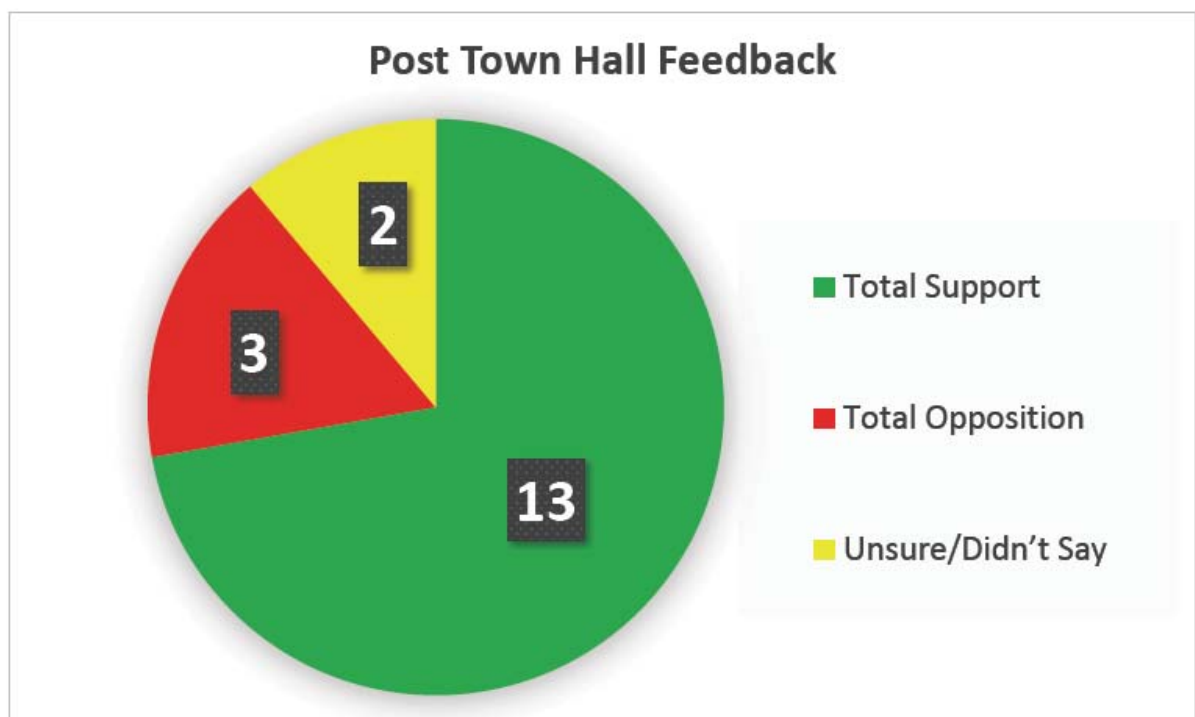
- 7 said they were interested in the Rent to Own and Affordable Home Ownership Program.

## 2 Post Virtual Town Hall Feedback

A two-week comment period was observed after the Virtual Town Hall. Any submissions received from the end of the Town Hall on July 14 until the end of day on July 28 were included in this report. 15 submissions were made via the Virtual Town Hall web site, and three were submitted via email.

### 2.1 Support and Opposition Summary

If respondents explicitly indicated support or opposition in their email, this was recorded.



## 3 Key Concerns

Key concerns raised by respondents through the Town Hall process included:

- OCP amendment application
- North and East building height
- Massing and density
- Shadow impacts
- Commercial lane/closing east part of lane
- Traffic
- Loading
- Construction impacts
- Noise

**Rezoning and Official Community Plan Amendment Application: 402-438 East 3rd Street And 341-343 St. Davids Avenue – Summary of Proposed OCP and Zoning Bylaw Amendments**

*Summary of Proposed Changes to the Official Community Plan*

Consideration	Properties	Current OCP	Proposed OCP
Land Use Designation	424, 426, 428 & 432 East 3 <sup>rd</sup> Street; 341-343 St. Davids Avenue	Residential Level 5  Residential Level 2	All properties: Mixed-Use Level 2
No Change to Land Use Designation	438 East 3 <sup>rd</sup> Street 402, 406, 412, 418 East 3 <sup>rd</sup> Street	Mixed Use 2  Residential Level 5	(no change)
OCP Maximum Height (Schedule A)	424, 426, 428, 432 & 438 East 3 <sup>rd</sup> Street	Maximum height of 4 storeys	Maximum height of 5 storeys

*Summary of Proposed Changes to the Zoning By-law*

Consideration	Base Zone Requirement	Proposed Regulation
	<b>C-2</b>	<b>CD-730</b>
Number of Buildings	One per lot	Three Buildings: North Building, East Building, West Building
Uses	Retail Service Group 1 Accessory Apartment Use Accessory Arcade Use Tourist Accommodation Off-Street Parking Off-Site Parking	Building-specific (see Proposed Bylaw)
Density	Maximum of 2.3 FSR	Up to 2.48 FSR with the provision of Adaptable Units and Amenity contributions
Height	Maximum building height of 12.192 metres (40 feet)	North Building: up to 4 storeys / 14.8 metres East Building: up to 5 storeys / 19 metres West Building: up to 4 storeys / 14.6 metres
Lot Coverage	Up to 70%	Up to 65%
Siting (Setbacks)	Minimum of 20 feet from a lane	As per Schedule 145
Special Conditions for Buildings Adjoining Residential Zones	Various height, siting, window and landscaping requirements	Sections 608 and 609 waived.
Parking	Minimum of 257 Parking Spaces	223 Parking Spaces, including 162 residential, 61 commercial, with one space being for car share
Loading Spaces	Minimum of one per Building	Minimum of 2 Loading Spaces for the site
Exterior finishes	No requirement.	All exterior finishes design, and landscaping shall be approved by the Advisory Design Panel.

<b>Consideration</b>	<b>Moodyville Development Permit Guidelines</b>
Conditions for Exemption from DP	Adding an exemption for properties that undergo a Rezoning/OCP Amendment process.

**Rezoning and Official Community Plan Amendment Application: 402-438 East 3rd Street And 341-343 St. Davids Avenue – Policy Review**

<b>Metro 2040</b>	
<p><i>Goal 1</i> Create a Compact Urban Area</p>	<p>Intensifying this site with new development that provides a variety of uses is consistent with the planned vision for the surrounding neighbourhood, and that builds upon and enhances transportation infrastructure will support the highest and best use of the land promoting a compact urban area.</p>
<p><i>Goal 2</i> Support a Sustainable Economy</p>	<p>The inclusion of commercial units will support the development of a neighbourhood commercial centre for the growing Moodyville neighbourhood and local economic development. The inclusion of a range of housing types to address a variety of household sizes and incomes on this site promotes housing that supports a diversity of income levels and ensure people live close to where they work.</p>
<p><i>Goal 4</i> Develop Complete Communities</p>	<p>The proposed development provides housing for a range of household types. The inclusion of commercial units and childcare will provide amenities for a growing Moodyville neighbourhood.</p>
<p><i>Goal 5</i> Support Sustainable Transportation Choices</p>	<p>Intensification of this site will support existing and future transit investments along East 3<sup>rd</sup> Street and will improve two all ages and abilities bike facilities along East 3<sup>rd</sup> Street and St. Davids Avenue. The proposed uses will provide commercial and social amenities within walking distance of hundreds of new homes in the Moodyville neighbourhood and is located approximately 200m from a RapidBus stop. The site is well situated to provide the occupants and visitors with a variety of transportation choices accessing destinations across the North Shore and the greater region.</p>

<b>Official Community Plan</b>	
<p><b><u>Land Use: Housing, Population and Employment</u></b></p> <p><i>Goal 1.1</i> Develop a compact, complete community that meets the needs of its diverse residents and businesses.</p> <p><i>Goal 1.2</i> Plan with a long-term perspective to address the challenges associated with climate change.</p>	<p>The proposed development:</p> <ul style="list-style-type: none"> <li>• introduces commercial uses, jobs, and childcare to the Moodyville neighbourhood;</li> <li>• Is located adjacent to the frequent transit network and enhances active transportation infrastructure;</li> <li>• Provides an energy efficient building and expands resilient and active transportation focused infrastructure;</li> <li>• Mitigates transition to adjacent lower density development through building</li> </ul>



<p><i>Goal 1.3</i> Enhance the distinctive sense of place and livability of the City through high quality design and maintenance of urban form.</p> <p><i>Goal 1.4</i> Enhance the quality of life through the provision of amenities.</p> <p><i>Goal 1.5</i> Pursue attainable housing that meets the needs of its diverse community</p>	<p>shape and reduction of height to two storeys as development approaches East 4<sup>th</sup> Street;</p> <ul style="list-style-type: none"> <li>• Locates commercial and childcare uses in a way that respects the residential character of East 4<sup>th</sup> Street;</li> <li>• Activates the City lane with a place-making opportunity to create an all-weather outdoor commercial space and community node in the City-owned lane;</li> <li>• Focuses on creating pedestrian and active transportation opportunities separated from traffic;</li> <li>• Proposes a childcare facility to support families with children;</li> <li>• Introduces active-design principles to support walking and indoor and outdoor socialization among residents and community members;</li> <li>• Presents a variety of housing types, significant accessible units and different bedroom numbers to support a range of household sizes;</li> <li>• Introduces new housing programmes – the Affordable Home Ownership Program and rent-to-own program – to make homes available to a greater range of household incomes.</li> </ul>
<p><b><u>Transportation, Mobility, and Access</u></b></p> <p><i>Goal 2.1</i> Prioritize walking, cycling, transit and goods movements over single-occupancy vehicles.</p> <p><i>Goal 2.2</i> Integrate Land Use and Transportation Planning to reduce the need for car travel.</p> <p><i>Goal 2.3</i> Support a safe, accessible, resilient, and affordable transportation system.</p>	<p>The proposed development:</p> <ul style="list-style-type: none"> <li>• Introduces improvements to the active transportation network, including new all ages and abilities cycling facilities, improved intersections, improved pedestrian connections and activation of the lane;</li> <li>• Proposes public art in prominent locations on the site;</li> <li>• Road dedication and intersection upgrades along East 3<sup>rd</sup> Street supports transit priority improvements;</li> <li>• Introduces commercial uses to support the development of a neighbourhood centre in a growing residential neighbourhood;</li> <li>• Provides employment opportunities (commercial retail, office, and live-work) in what has been a traditional residential neighbourhood;</li> </ul>

	<ul style="list-style-type: none"> <li>• Intensifies an existing RapidBus and future rapid transit corridor;</li> <li>• A car share vehicle will be secured as a part of the development;</li> <li>• Prioritizes public realm, pedestrian and cycling connections in the City's lane.</li> </ul>
<p><b><u>Community Well-Being</u></b></p> <p><i>Goal 3.3</i> Support community resilience and increase the capacity to recover from emergencies and disasters</p> <p><i>Goal 3.4</i> Increase access to nutritious, safe, healthy, local food and opportunities for residents to grow their own food</p> <p><i>Goal 3.5</i> Support the independence and well-being of older City residents</p>	<p>The proposed development:</p> <ul style="list-style-type: none"> <li>• Introduces opportunities for informal neighbourhood connections through provision of commercial amenities and childcare services;</li> <li>• Provides community gardens for the residents of the development;</li> <li>• Provides adaptable units, appropriate for down-sizing seniors or individuals of different abilities;</li> <li>• Proximity to frequent transit network and the provision of local commercial amenities will serve individuals with lower mobility.</li> </ul>
<p><b><u>Natural Environment, Energy &amp; Climate</u></b></p> <p><i>Goal 4.1</i> Develop, promote, and implement strategies to mitigate and adapt to climate change.</p> <p><i>Goal 4.2</i> Measure, maintain and improve long-term ecosystem health.</p> <p><i>Goal 4.3</i> Engage the community to promote more sustainable behaviors.</p>	<p>The proposed development:</p> <ul style="list-style-type: none"> <li>• Proposes an efficient building design, achieving BC Building Code Step Code ratings of Step 3 of 4 for the residential use, and Step 2 of 3 for the commercial use;</li> <li>• Connects to the Lonsdale Energy Corporation district energy system;</li> <li>• Removes all on-site trees, including 13 trees of 30' in height or greater, but replaces 49 trees designed to mature to significant trees;</li> <li>• Reduces ratio of permeable surfaces, mitigating impact through integration of vegetation to the building and site and provision of on-site stormwater management;</li> <li>• Balances negative impact of local environment (i.e. removal of trees, reduction of permeable surfaces) with larger strategic improvements (i.e. population in proximity to RapidBus, provision of commercial development to mitigate vehicle trips);</li> <li>• New vegetation focuses on species that are native, non-invasive and/or drought tolerant;</li> </ul>

	<ul style="list-style-type: none"> <li>Ties in to local and regional transit network and active transportation infrastructure to reduce reliance on single-occupancy vehicles.</li> </ul>
<p><b><u>Parks, Recreation &amp; Open Space and Arts, Culture &amp; Heritage</u></b></p> <p><i>Goal 5.1</i> Expand the integrated system of parks and greenways throughout the City as articulated in the Parks Master Plan</p> <p><i>Goal 5.2</i> Support, enhance and maintain recreation as a vital aspect of a healthy community</p> <p><i>Goal 5.3</i> Provide a variety of public spaces for community engagement and stewardship</p> <p><i>Goal 6.1</i> Support a wide range of arts and cultural activities</p> <p><i>Goal 6.4</i> Respect the City's history by maintaining and enhancing connections to the past</p>	<p>The proposed development:</p> <ul style="list-style-type: none"> <li>Provides the St. Davids Greenway along its eastern frontage to support connection of Moodyville Park and the Spirit Trail to the Green Necklace at Keith Road;</li> <li>Connects the proposed greenway to commercial uses on its site;</li> <li>Use public art to support activation of the public realm;</li> <li>Provide public art that will explore the heritage of the Moodyville including the area's significance to First Nation communities;</li> <li>Activate the lane to support the creation of a vibrant community node that is supported by active transportation infrastructure, RapidBus, and commercial amenities;</li> <li>Work with the City's Arts and Heritage committees to determine public art appropriate for the significance of the area;</li> <li>Remove two Heritage B designated dwellings – buildings will be advertised for relocation prior to demolition.</li> </ul>
<p><b><u>Economic Development</u></b></p> <p><i>Goal 7.1</i> Diversify the local economy to contribute to a complete community</p> <p><i>Goal 7.2</i> Create an attractive environment for economic development</p>	<p>The proposed development:</p> <ul style="list-style-type: none"> <li>Supports the provision of additional jobs in the City;</li> <li>Includes housing opportunities for middle-income earning families, potentially allowing individuals to live closer to their jobs on the North Shore;</li> <li>Includes an OCP amendment that would result in a net decrease in residential floor area and a net increase in commercial floor area;</li> <li>Balances commercial parking with transportation demand management including shared visitor (residential) and commercial parking spaces, bicycle end of trip facilities, and proximity to RapidBus stops.</li> </ul>
<b>Housing Action Plan</b>	

**Rezoning and Official Community Plan Amendment Application: 402-438 East 3rd Street And 341-343 St. Davids Avenue – Policy Review**

<p><i>Action #4 Family Friendly Housing</i> To increase the number of three or more bedroom units appropriate for larger and/or extended families within new multi-unit residential developments.</p>	<p>Eighteen percent (31 total) of the proposed development's units contain 3 bedrooms. This is nearly double the City's recommended minimum (10%).</p>
<p><i>Action #10 Partnerships</i> To foster relationship building with organizations of various sectors to collectively facilitate and implement the initiatives and actions of the Housing Action Plan.</p>	<p>The City is partnering with BC Housing to delivery Affordable Home Ownership Program units to middle-income families, and supporting a pilot program concerning a Rent-to-Own program by the project proponent.</p>
<p><b>Sustainable Development Guidelines</b></p>	
<p><i>Natural Systems</i> The ability of natural systems, both global and local, to support life. Parks and green spaces help regulate the climate, clean and filter water and air, and provide recreational and aesthetic benefits. Maintaining healthy natural systems will reduce strain on municipal infrastructure, support local wildlife and enhance quality of life for community members.</p>	<p>Stormwater is addressed on site to reduce impact of major storm events.</p> <p>The inclusion of trees and plants that support bird and insect populations.</p>
<p><i>Physical Structures/Infrastructure</i> The ability to effectively deliver basic services, shelter and physical amenities required to sustain the health and well-being of the community. This includes water supply, sanitary sewer, storm water drainage, solid waste management, roads, telecommunications, and energy efficiency and conservation including district energy. As well, this category includes attractive streetscapes, durable buildings, provision of a range of housing types and adequate community amenities.</p>	<p>The project will achieve Step 3 of 4 of the BC Building Code Step Code for the residential portion and Step 2 of 3 for the commercial portion, each one step greater than the requirements at the time of application.</p> <p>All buildings of the project will connect to the Lonsdale Energy Corporation district energy system.</p> <p>The project will upgrade required infrastructure (water, sewer, stormwater systems) as well as improve active transportation infrastructure around the site.</p> <p>Additional secured and covered bicycle parking has been integrated into the landscape design in order to support active transportation of residents.</p> <p>A car share stall and vehicle will be provided as a part of the development.</p>
<p><i>Human Potential</i> The ability of our local community to support our residents in their pursuit of individual livelihood objectives including access to education, healthy food transportation and affordable housing. Meeting these basic needs is essential for the maintenance and growth of human capacity.</p>	<p>The project includes a range of units to serve a broad spectrum of lifestyles, incomes, and abilities.</p> <p>Community gardens are included for residents of the proposed buildings on the rooftop amenity space.</p>

**Rezoning and Official Community Plan Amendment Application: 402-438 East 3rd Street And 341-343 St. Davids Avenue – Policy Review**

	<p>Access to active transportation and RapidBus transit infrastructure is an important component of this project.</p> <p>Affordable home-ownership is included as a part of the project in both the AHOP and Rent-to-Own aspects.</p> <p>The project includes numerous active transportation elements including infrastructure improvements and cycling maintenance facilities.</p>
<p><i>Social Connections</i> The ability of our community to foster communication, interaction and networks to respond effectively to community issues. These may include supporting community members with low incomes, lone-parent families, and matters specific to children, youth, seniors and people with disabilities.</p>	<p>The rooftop amenity and other social spaces are provided to support interaction between residents.</p> <p>The inclusion of commercial retail and office space will provide opportunities for social connections at a neighbourhood centre.</p>
<p><i>Cultural Diversity</i> The ability of our community to support and celebrate a diversity of cultural backgrounds. This includes recognition of the traditions of the Squamish Nation and the many cultures of residents who make the City their home. With both tangible and intangible elements, cultural capacity has economic implications and is strongly connected to social traditions. Manifestations of cultural practices can range from spiritual practices to heritage buildings</p>	<p>The project will include public art, to be located in a prominent location. The North Vancouver Public Art Advisory Committee will support the project in determining the final location and what an appropriate piece may be.</p>



**Rezoning and Official Community Plan Amendment Application: 402-438 East 3rd Street And 341-343 St. Davids Avenue – Advisory Body Input**

**Advisory Planning Commission**

The application was revised by the Advisory Planning Commission on October 9<sup>th</sup>, 2019. The Commission unanimously endorsed the following resolution:

*THAT the Advisory Planning Commission has reviewed the Rezoning Application for 402-438 East 3rd Street & 341-343 St. Davids Avenue and recommends approval subject to resolution of the following to staffs satisfaction:*

- *Strengthen EV charging provisions and sheltered, visitor bike parking,*
- *Explore in-kind community amenity contributions including affordable daycare, affordable rental, neighbourhood park amenities and community gardens,*
- *Explore a viable commercial/move-in/move-out loading area and sufficient pickup/drop off loading spaces,*
- *Explore local place making and indigenous and bee friendly landscaping;*

*THAT the Commission notably appreciates the following:*

- *The overall massing and scale,*
- *The homeownership rent-to-own (down payment) approach,*
- *Flexible, pedestrian-oriented laneway,*
- *Interest in daycare;*

*AND THAT the Commission wishes to thank the applicant for their presentation.*

The applicant has since provided required infrastructure for 100% EV charging of residential spaces (visitor spaces excluded), provided proposed amenities that include childcare and affordable home-ownership, integrated an on-site loading space, and provided a public art plan that includes local place making opportunities.

**Advisory Design Panel**

The application was revised by the Advisory Design Panel on October 16<sup>th</sup>, 2019.

The Panel unanimously endorsed the following resolution:

***THAT*** *the Advisory Design Panel has reviewed the Rezoning Application for 402-438 East 3rd Street & 341-343 St. Davids Avenue and recommends approval subject to addressing the following issues to the satisfaction of the Development Planner:*

- *Consider the use and design of the north building off of St. Davids;*
- *Further design development of the laneway use, animation and circulation;*
- *Consideration for a more generous space to the pedestrian and public realm in the breezeway;*
- *Further design development to all offsite transitional edges, not limited to: impact on neighbours to the north at lane and East 4th Street;*
- *Explore more significant moves on the south-east corner mixing architecture, landscape architecture and public art;*

**Rezoning and Official Community Plan Amendment Application: 402-438 East 3rd Street And 341-343 St. Davids Avenue – Advisory Body Input**

- *Consider the daycare design, location and outdoor amenity;*
- *Consider a tiered approach to the north building to allow more light to the street;*
- *Further develop the unit mix and use throughout the project,*
- *Encouraged to increase the rooftop amenity space; and*
- *Explore and balance appropriate lighting for CPTED concerns and for the public realm activities.*

**AND THAT** the Panel wishes to thank the applicant for their presentation.

The applicant has since removed the portion of the north and west buildings that spanned the lane thereby reducing the massing and reducing the impact on adjacent properties, terraced the north building from 4-storeys at the lane to 2-storeys at East 4<sup>th</sup> Street in order to present a more consistent residential character, refined the unit mix, revised the childcare design, and revised the lighting plan.

### **Integrated Transportation Committee**

The application was reviewed by the Integrated Transportation Committee on March 4<sup>th</sup>, 2020. The Committee unanimously endorsed the following resolution:

*THAT, the Integrated Transportation Committee, having received the presentation from Cascadia Green Development regarding the project located at 402-438 East 3<sup>rd</sup> Street/341-343 St. Davids Avenue, supports the project in principle, with the following considerations:*

1. *The traffic signal at the intersection at St. Patricks and 3<sup>rd</sup> Street be installed.*
2. *Provision of a car share vehicle in line with the zoning bylaw subject to staff and car share operator interest.*

*Further, the Committee commends the applicant for providing charging ability in each car and bicycle parking space.*

The applicant has received a letter of interest from the Modo carshare. Provision of the car share vehicle will be secured through legal agreements prior to final adoption.

### **Heritage Advisory Commission**

The application was reviewed by the Heritage Advisory Commission on March 10<sup>th</sup>, 2020. The commission unanimously endorsed the following resolution:

*THAT the Heritage Advisory Commission, having received and reviewed the presentation from Cascadia Green Development and Double Dare Design, regarding 402 – 438 East 3rd Street / 341 St. Davids Avenue, supports the*

*project subject to the resolution of the following items to the satisfaction of City staff:*

- a) Where possible, attempts are made to relocate the heritage “B” homes, located at 424 East 3rd Street and 428 East 3rd Street, to the satisfaction of staff and that the applicant consider a contribution to the cost of relocation, in scale with the saved demolition cost, to incentivize relocation occurring;*
- b) The scale of the proposed public art is appropriate to the site as it reflects the entire historical context of the Moodyville neighbourhood;*
- c) The recognition of the heritage buildings along the East 3rd Street frontage occurs, either through heritage plaques, history of ownership and/or naming opportunities within the development;*
- d) The resources of the North Vancouver Museum & Archives continue to be used;*
- e) The possibility of incorporating heritage components in the tenant improvement design guidelines be considered.*

*FURTHER, the Heritage Advisory Commission requests that the North Vancouver Public Art Advisory Committee include the Heritage Advisory Commission in its review of the public art application.*

Should Council approve the proposed application, staff will secure exploration of the relocation of the proposed Heritage “B” homes through legal agreements prior to final adoption. Similarly, the exploration of heritage into the public art will be formalized prior to final adoption through legal agreements.

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**THE CORPORATION OF THE CITY OF NORTH VANCOUVER**

**BYLAW NO. 8806**

**A Bylaw to amend “Official Community Plan Bylaw, 2014, No. 8400”**

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as **“Official Community Plan Bylaw, 2014, No. 8400, Amendment Bylaw, 2020, No. 8806” (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street and 341-343 St. Davids Avenue, Land Use Designation and Permitted Height Change)**.
2. “Schedule A Land Use” of “Official Community Plan Bylaw, 2014, No. 8400” is amended by reclassifying the following properties:

<b>Lot</b>	<b>Block</b>	<b>D.L.</b>	<b>Plan</b>
2	129	274	BCP3286
S/L 1		274	BCS752
S/L 2		274	BCS752
10	129	274	878
11	129	274	878
B	129	274	878

From Land Use Designations “Residential Level 5” and “Residential Level 2” to “Mixed-Use Level 2” as indicated in ‘Schedule A’ attached to this bylaw.



3. "Schedule A Land Use" of "Official Community Plan Bylaw, 2014, No. 8400" is amended by revising the maximum building heights applicable for the following properties:

<b>Lot</b>	<b>Block</b>	<b>D.L.</b>	<b>Plan</b>
2	129	274	BCP3286
S/L 1		274	BCS752
S/L 2		274	BCS752
10	129	274	878
11	129	274	878
A	129	274	LMP40956

From "Four Storeys" to "Five Storeys" as indicated in 'Schedule B' attached to this bylaw.

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ADOPTED on the <> day of <>, 2020.

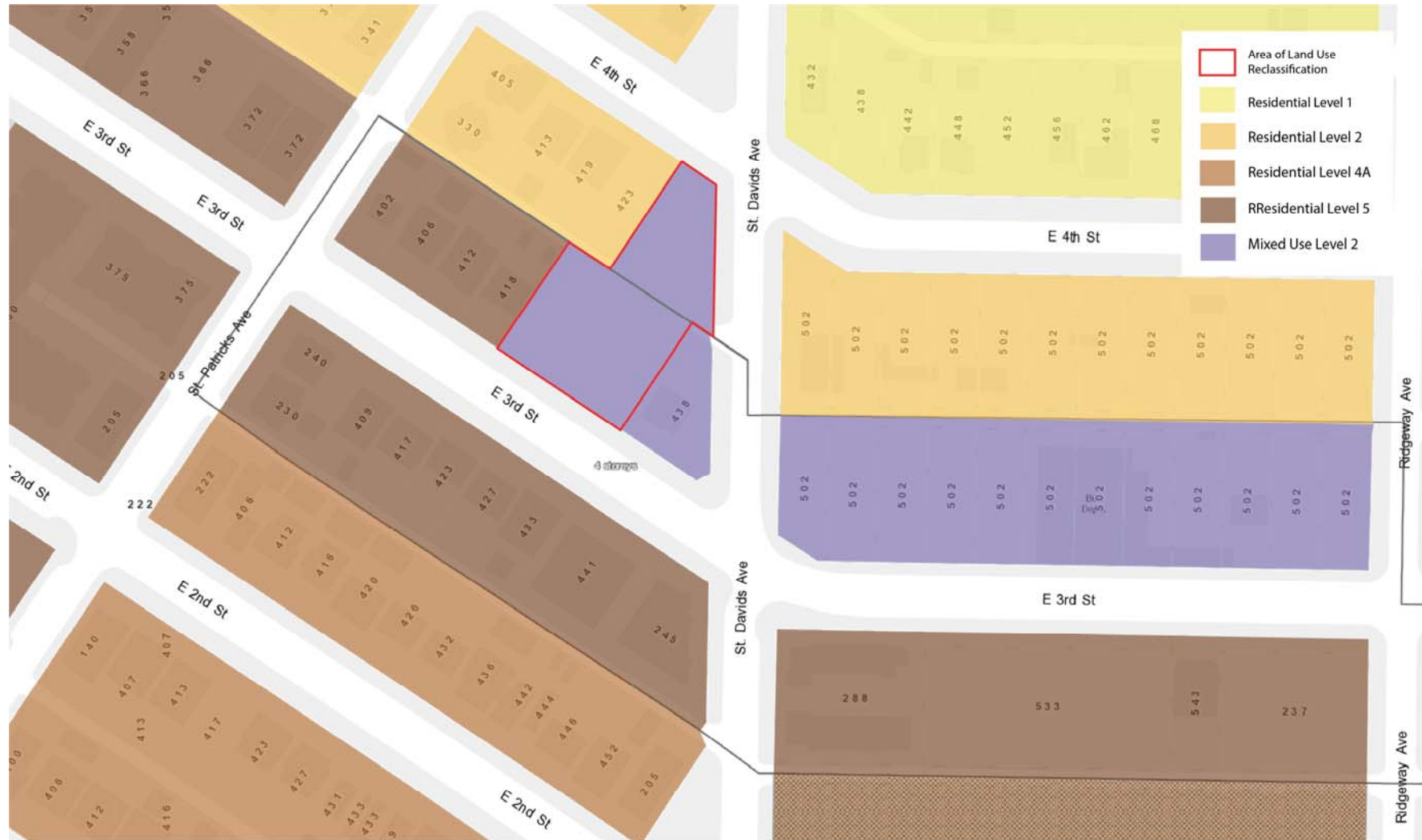
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MAYOR

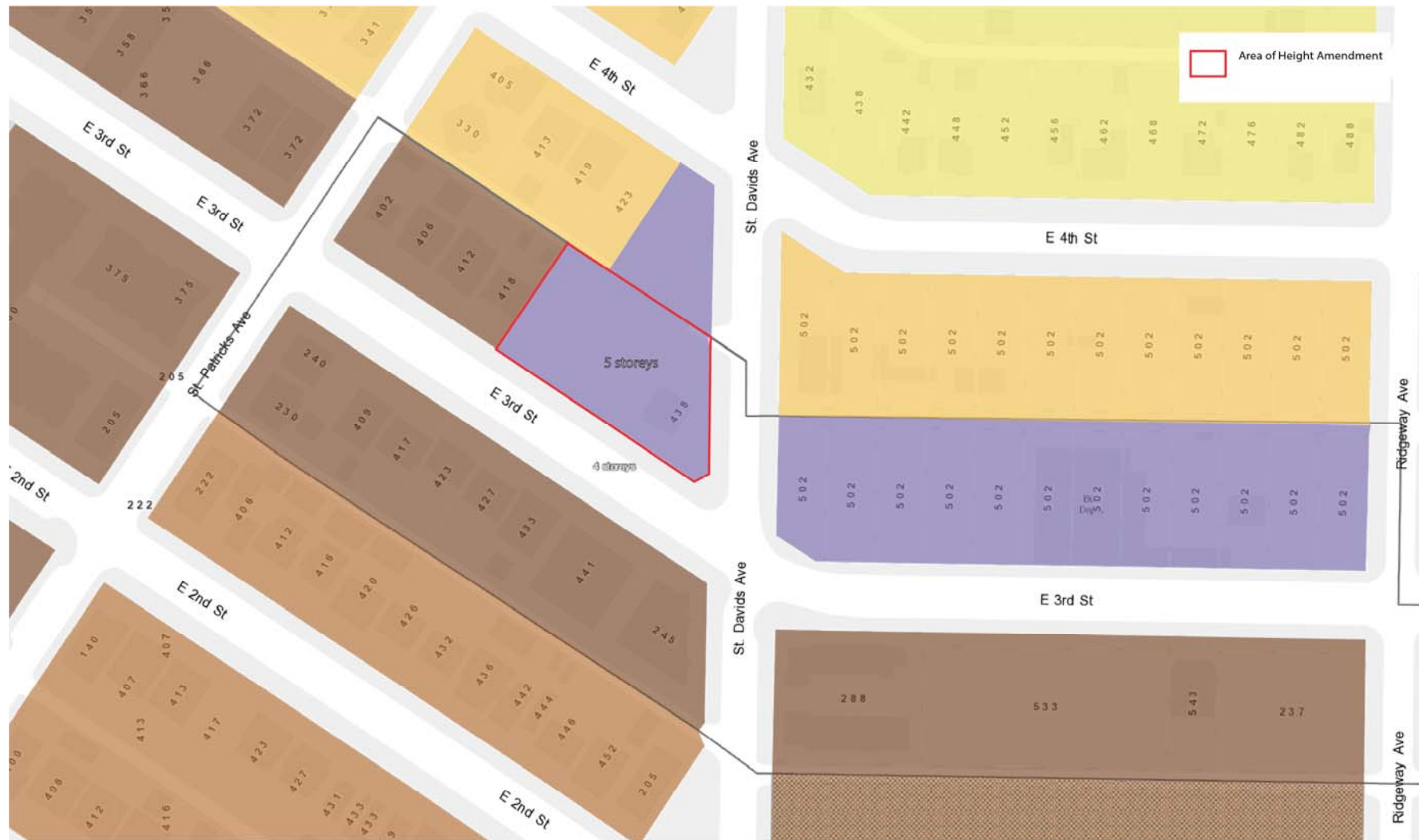
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CORPORATE OFFICER

## Schedule A Land Use Designations



## Schedule B Maximum Building Heights



# THE CORPORATION OF THE CITY OF NORTH VANCOUVER

## BYLAW NO. 8807

### A Bylaw to amend “Zoning Bylaw, 1995, No. 6700”

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as “**Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2020, No. 8807**” (Cascadia Green Development, 402-438 East 3<sup>rd</sup> Street, and 341-343 St. Davids Avenue, CD-730 and “Moodyville Development Permit Area Guidelines” amendment).
2. Division VI: Zoning Map of Document “A” of “Zoning Bylaw, 1995, No. 6700” is hereby amended by reclassifying the following lots as henceforth being transferred, added to and forming part of CD-730 (Comprehensive Development 730 Zone):

Lots	Block	D.L.	Plan	
16	129	274	878	
S/L 1		274	LMS1767	
S/L 2		274	LMS1767	
14	129	274	878	
13	129	274	878	
11	129	274	878	
10	129	274	878	from RM-2
2	129	274	BCP3286	
S/L 1		274	BCS752	
S/L 2		274	BCS752	from CD-421
A	129	274	LMP40956	from C-3
B	129	274	878	from RT-1

3. Part 11 of Division V: Comprehensive Development Regulations of Document “A” of “Zoning Bylaw, 1995, No. 6700” is hereby amended by:
  - A. Adding the following section to Section 1100, thereof, after the designation “CD-729 Comprehensive Development 729 Zone”:

“CD-730 Comprehensive Development 730 Zone”

- B. Adding the following to Section 1101, thereof, after the “CD-729 Comprehensive Development 729 Zone”:

“CD-730 Comprehensive Development 730 Zone”

In the CD-730 Zone, permitted Uses, regulations for permitted Uses, regulations for the size, shape and siting of Buildings and Structures and required Off-Street Parking shall be as in the C-2 Zone, except that:

- (1) In the CD-730 Zone, three principal buildings – West Building, East Building and North Building – shall be permitted on the subject site as shown in Schedule 145: Buildings and Setbacks;
- (2) Permitted Uses
- (a) For the West Building, Permitted Uses shall be limited to:
- i. Apartment Residential Use;
  - ii. Ground Oriented Apartment Residential Use;
  - iii. Live/Work Studios, limited to units fronting East 3<sup>rd</sup> Street;
  - iv. Accessory Non-Commercial Social and Recreational Facilities;
  - v. Accessory Home Occupation Use, subject to Sections 507(6), (7) and (8) of this Bylaw;
  - vi. Accessory Home Office Use;
  - vii. Accessory Off-Street Parking Use;
  - viii. Accessory Off-Street Loading Use;
- (b) For the East Building, Permitted Uses shall be limited to:
- i. Retail Service Group 1 Use;
  - ii. Accessory Apartment Residential Use subject to Section 607(1) of this Bylaw, except that subsection 607(1)(a) shall be waived;
  - iii. Accessory Non-Commercial Social and Recreational Facilities;
  - iv. Accessory Home Occupation Use, subject to Sections 507(6), (7) and (8) of this Bylaw;
  - v. Accessory Home Office Use;
  - vi. Accessory Off-Street Parking Use;
  - vii. Accessory Off-Street Loading Use;
- (c) For the North Building, Permitted Uses shall be limited to:
- i. Retail Service Group 1 Use, limited to commercial retail units fronting the lane;
  - ii. Accessory Apartment Residential Use subject to Section 607(1) of this Bylaw, except that subsection 607(1)(a) shall be waived;
  - iii. Ground Oriented Apartment Residential Use;
  - iv. Accessory Non-Commercial Social and Recreational Facilities;
  - v. Accessory Home Occupation Use, subject to Sections 507(6), (7) and (8) of this Bylaw;
  - vi. Accessory Home Office Use;
  - vii. Accessory Off-Street Parking Use;
  - viii. Accessory Off-Street Loading Use;
- (3) Gross Floor Area
- (a) Principal Buildings shall not exceed a combined Gross Floor Area of 1.83 times the Lot Area;
- (b) Notwithstanding 3 (a), the maximum Gross Floor Area permitted may be further increased as follows:



<b>Additional (Bonus) Density</b>			
<b>Additional Density Category</b>	<b>Description</b>	<b>Additional Density (Bonus)</b>	<b>Policy Reference</b>
In-kind amenity	16-Space Childcare Facility  Nine Affordable Home Ownership Units	Maximum 3539 square metres (38,093 square feet) or 0.65 FSR	OCP Section 2.2

Such that the total density on the site shall not exceed 2.48 FSR.

(4) Height

- (a) The West Building shall not exceed a Building Height of 4 storeys, nor 14.6 metres (47.9 feet) as measured from the average Building Grades at the north property line along the rear lane;
  - i. Notwithstanding 4 (a), parapet walls, guard rails, railings, and formwork for planting beds may project beyond the Building Height by not more than 1.1 metres (3.5 feet);
  - ii. Notwithstanding 4 (a), trellises, outdoor amenity storage structures, and staircase and elevator structures to permit access to the roof may project beyond the Building Height by not more than 3.05 metres (10 feet);
  - iii. Notwithstanding 4 (a), elevator shafts and mechanical equipment are exempt from Building Height restrictions;
- (b) The East Building shall not exceed a Building Height of 5 storeys, nor 19 metres (62.4 feet) as measured from the average Building Grades at the north property line along the rear lane;
  - i. Notwithstanding 4 (b), parapet walls may project beyond the Building Height by not more than 0.3 metres (1 foot);
  - ii. Notwithstanding 4 (b), elevator shafts and mechanical equipment are exempt from Building Height restrictions;
- (c) The North Building shall not exceed a Building Height of 4 storeys, nor 14.8 metres (48.6 feet) as measured from the average Building Grades at the south property line along the lane;
  - i. Notwithstanding 4 (c), parapet walls may project beyond the Building Height by not more than 0.3 metres (1 foot);
  - ii. Notwithstanding 4 (c), elevator shafts and mechanical equipment are exempt from Building Height restrictions;
- (5) The Lot Coverage of the subject site, together with accessory buildings, shall not exceed 65%;
- (6) Setbacks from lot lines for Principal Buildings on Site B and C shall conform to the minimum distances identified in Schedule 145: Buildings and Setbacks;
- (7) Section 608 shall not apply;

- (8) Section 609 shall not apply;
  - (9) For the purposes of the CD-730 Zone, all required vehicle and bicycle parking may be provided on any property within the CD-730 Zone;
  - (10) Off-Street Parking, Short-Term and Secure Bicycle Parking, and Accessory Off-Street Loading Spaces shall be provided in conformity with the requirements of Division IV, Parts 9, 10, and 10A, except that:
    - (a) A minimum of 162 residential vehicle Parking Spaces shall be provided;
    - (b) A minimum of 61 commercial vehicle Parking Spaces shall be provided, of which, 10 shall be identified as shared residential visitor and commercial parking;
    - (c) One Shared Vehicle shall be provided on site and of the parking to be provided, one space shall be reserved for a Shared Vehicle. The Shared Vehicle and Shared Vehicle Parking Space shall be subject to Section 905(3) except that subsection 905(3)(d) shall be waived;
    - (d) Two Loading Spaces shall be provided;
  - (11) All exterior finishes, design and landscaping shall be approved by the Advisory Design Panel.
4. Document F “Moodyville Development Permit Area Guidelines” of Division VII: Development Permit Guidelines of “Zoning Bylaw, 1995, No. 6700” is hereby amended by:
- A. Adding the following condition to Section 2.2 Exemption:
- Where lands have been the subject of a successful rezoning and Official Community Plan amendment since the adoption of the Development Permit Guidelines, and a comprehensive review of the proposed development has been completed as part of that process.

READ a first time on the <> day of <>, 2020.

READ a second time on the <> day of <>, 2020.

READ a third time on the <> day of <>, 2020.

ADOPTED on the <> day of <>, 2020.

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MAYOR

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CORPORATE OFFICER

## Buildings and Setbacks



## Legend



Subject Site

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 Department Manager	 Director	 CAO
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The Corporation of **THE CITY OF NORTH VANCOUVER**  
**FINANCE DEPARTMENT**

**REPORT**

To: Mayor Linda Buchanan and Members of Council

From: Ben Themens, Director of Finance

Subject: 2020 - 2029 REVISED FINANCIAL PLAN

Date: November 4, 2020 File No: 05-1715-20-0020/2020

*The following is a suggested recommendation only. Refer to Council Minutes for adopted resolution.*

**RECOMMENDATION**

PURSUANT to the report of the Director of Finance, dated November 4, 2020, entitled "2020 - 2029 Revised Financial Plan":

THAT an increase of 0.4 Full-Time Equivalent position to the approved Community and Partner Engagement Department authorized complement be approved;

AND THAT "Financial Plan for the Years 2020 to 2029 Bylaw, 2020, No. 8771, Amendment Bylaw, 2020, No. 8797" (Revised Financial Plan) be brought forward for consideration.

**ATTACHMENTS**

1. "Financial Plan for the Years 2020 to 2029 Bylaw, 2020, No. 8771, Amendment Bylaw, 2020, No. 8797" ([CityDoc#1950679](#))

**SUMMARY**

This report provides high level commentary on activities that have transpired within the program budget since the preparation of the 2020 - 2029 Financial Plan and proposes funding reallocations.



## **BACKGROUND**

The Community Charter requires the preparation and adoption of a Financial Plan covering at least five years relative to the operating funds of the municipality. On April 20, 2020, Council considered and adopted the City's 2020 - 2029 Financial Plan, which combines ten years of operational program funding and project funding. Expenditures for items not included in the plan are unlawful, but amendments to the Financial Plan are allowed, by bylaw, at any time.

## **DISCUSSION**

There are two parts to this discussion. The first part provides a review of program operations. The second is a summary of the changes in revenues and expenditures which staff has identified, and which staff is recommending be re-allocated in the proposed Revised Financial Plan.

### **1. Review of Program Operations**

A review of operations and the production of a Revised Financial Plan (commonly called the "Revised Budget") has been a standard procedure for the City for many years. As a management tool, the Revised Financial Plan allows the City to make maximum use of available funds. By budgeting conservatively, particularly for Year One of the Financial Plan, the City ensures that funds will be allocated efficiently to meet normal operational requirements. If revenues are greater (or expenses are less) than conservative expectations, or if unexpected or unpredicted new revenues become available, the Revised Financial Plan has then been used to re-allocate these funds, so that this extra funding is put to use rather than simply building up a financial surplus. This forms a key part of the City's financial strategy of keeping taxes at a minimum level, and funding programs and projects on a priority basis only when funds are available to do so.

All Financial Plans are based on estimates, or predictions, of revenues and expenditures including budgeted departmental savings due to vacancies and other found efficiencies. New information is constantly emerging and it is common for unforeseen or unpredicted events to manifest themselves. Staff has reviewed the City's program revenues and expenditures and is recommending a few reallocations of the operational budget. The analysis included a review of the major non-tax revenue sources such as parking revenue, investment income, permits and fees, business licenses and by-law enforcement.

On March 17, 2020, a Public Health Emergency was declared in British Columbia following the outbreak of the COVID-19 pandemic. As part of the measures implemented to control the outbreak, businesses, schools, event venues, recreation and community centres were temporarily closed. The pandemic has had a significant impact on City revenues, mainly from reductions in fines and fees (including parking); facility rents and fees (including shipyard); and senior government grants. As a result, spending reductions were identified to reduce the potential annual deficit.

The following items are unrelated to the COVID-19 pandemic budget adjustments.

## 2. 2020 Revised Financial Plan

### 2020 Revised Budget items

<sup>1</sup> Temporary Staffing – Engineering Development	\$145,800
<sup>2</sup> Human Resources Program Funding	50,000
<sup>3</sup> Building Permit Process Mapping	50,000
<sup>4</sup> Annual Municipal Report Production	20,000
<sup>5</sup> Digital Communications Coordinator 0.4 FTE	-
	<hr/> \$265,800

### Funding Sources

<sup>6</sup> 2019 Surpluses Returned to the City	142,400
<sup>7</sup> 2020 Staff Savings	123,400
Total	<hr/> \$265,800

#### <sup>1</sup>Temporary Staffing – Engineering Development - \$145,800

Development Services has two expiring temporary positions, a Technical Assistant and a Development Technician 2. These positions support planning, subdivision, and building applications as well as oversee the street use and asset delivery related to developments.

Temporary funding for these positions has been in place for a number of years and has been funded by extraordinary permit revenue. The positions were created to alleviate pressure on regular full-time staff resources as the City experienced increased development activity. The funding allocated to the positions will be depleted by December 31, 2020, and the \$145,800 will extend this date to December 31, 2021.

Since the positions were created, development applications have remained higher in volume and complexity than historical levels, and there has been a demonstrated ongoing need for the positions. Therefore, it is anticipated that both of these positions will be requested as New Items in the 2021 Financial Plan.

#### <sup>2</sup>Human Resources Program Funding - \$50,000

The ongoing Public Health Emergency has created unforeseen challenges for the Human Resources department, which have required the use of external consultants.

#### <sup>3</sup>Building Permit Process Mapping - \$50,000

An amount of \$50,000 is being requested to provide funding to facilitate the mapping of the building permit process with the goal of understanding the timing of tasks completed by City staff during the permit lifecycle. This information will be valuable in developing/improving permit revenue recognition practices to more appropriately match revenues with the associated expenses.



#### **<sup>4</sup>Annual Municipal Report Production - \$20,000**

An amount of \$20,000 is being requested to engage an outside consultant to produce the City's Annual Municipal Report (AMR). Since 2004, under the Community Charter, municipalities are required to annually produce and make available for public inspection an AMR. This task was under the responsibility of the Corporate Services Department from 2004 to 2010. Following the retirement of the Director of the Corporate Services Department, Finance took over this responsibility assigning it to its staff. The staff member that has been preparing the AMR for the past four years is currently filling two roles since the retirement of one of her direct reports in April. Complications have arisen with the filling of the position. This makes it challenging for Finance to undertake this work this year.

Finance suggests that the preparation of the AMR be assigned to a consultant this year. In addition to addressing workload issues, this would provide an opportunity to better align the AMR with the City Strategic Plan.

#### **<sup>5</sup>Digital Communications Coordinator - \$0**

The Community and Partner Engagement Department is requesting that the approved complement for the position of Digital Communications Coordinator be increased from 0.6 Full-Time Equivalent (FTE) to 1.0 FTE. The change has no dollar impact to funding requirements as funding for the work is currently included in the department's program budget and tasks are performed by various auxiliary staff. Funding of the additional 0.4 regular FTE position will be provided from existing budget and specifically allocated to fund the increase in authorized complement. Approval of the requested change will allow for the position to be posted without delay and filled as a regular full-time position.

For information, 0.4 FTE of the position translates to \$35,200 in annual wage and fringe benefit costs.

#### **<sup>6</sup>2019 Surpluses Returned to City - \$142,400**

Earlier this year, the North Vancouver Recreation & Culture Commission and Library have returned funding to the City.

North Vancouver Recreation & Culture Commission	\$105,500
North Vancouver City Library	36,900
Total	<u>\$142,400</u>

The surplus related to the NVRC was mainly due to greater than budgeted revenues due to newly added programs as a result of increased demand. Various other revenues, such as investment income and insurance proceeds also had favourable variances in the year. The Library Surplus primarily occurred due to staff vacancies. Staff is recommending that the returned surpluses be used to fund the Revised Financial Plan.

## **2020 Staff Savings - \$123,400**

In efforts to be conservative, the City has gradually moved towards budgeting for positions at the highest step of the applicable pay band. As natural turnover occurs, and positions are replaced with new staff at lower steps, positive variances are expected to occur. An amount is budgeted within each department for these anticipated step savings, these savings are those over and above the citywide target.

## **FINANCIAL IMPLICATIONS**

The bylaw recommended for adoption in this report incorporates the adjustments discussed in this report.

## **INTER-DEPARTMENTAL IMPLICATIONS**

This report has been reviewed by the City's Leadership Team.

## **STRATEGIC PLAN, OCP OR POLICY IMPLICATIONS**

The 10-year Financial Plan is an integral piece of the planning framework included in the Council Strategic Plan.

RESPECTFULLY SUBMITTED:



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Ben Themens  
Director of Finance

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**THE CORPORATION OF THE CITY OF NORTH VANCOUVER**

**BYLAW NO. 8797**

**Financial Plan for the Years 2020 to 2029**

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as **“Financial Plan for the Years 2020 to 2029 Bylaw, 2020, No. 8771, Amendment Bylaw, 2020, No. 8797” (Revised Financial Plan)**.
2. Schedule “A” attached hereto is the Financial Plan of The Corporation of the City of North Vancouver for the period commencing January 1, 2020, and ending December 31, 2029.

READ a first time on the <> day of <>, 20<>.

READ a second time on the <> day of <>, 20<>.

READ a third time on the <> day of <>, 20<>.

ADOPTED on the <> day of <>, 20<>.

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MAYOR

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CORPORATE OFFICER

**SCHEDULE "A" TO BYLAW NO. 8797  
CITY OF NORTH VANCOUVER FINANCIAL PLAN  
FOR THE YEARS 2020 – 2029**

**(1) 2019 – 2028 Financial Plan (000's)**

<b>For the year ended December 31</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025-2029</b>
<b>Revenue</b>						
Property Value Tax						
General Property Tax	65,700	67,695	69,746	71,851	74,015	381,185
Levies (Storm and Eco)	3,530	3,994	4,147	4,305	4,470	24,753
Revenue from Fees and Services	36,616	38,177	40,290	42,785	45,608	263,910
Revenue from Other Sources	3,751	3,496	3,531	3,566	3,602	18,190
	<u>109,597</u>	<u>113,362</u>	<u>117,714</u>	<u>122,507</u>	<u>127,695</u>	<u>688,038</u>
Transfers						
Collections for Other Governments	56,071	57,192	58,336	59,503	60,693	309,535
Transfer from Reserves	72,751	112,587	55,951	52,158	124,417	155,558
Proceeds from Debt	0	90,000	0	0	0	0
External Contributions	19,148	6,892	4,921	17,200	2,855	7,618
Transfer from Capital Assets	15,700	16,014	16,334	16,661	16,994	86,670
	<u>163,670</u>	<u>282,685</u>	<u>135,542</u>	<u>145,522</u>	<u>204,959</u>	<u>559,381</u>
<b>Total Revenues</b>	<b>273,267</b>	<b>396,047</b>	<b>253,256</b>	<b>268,029</b>	<b>332,654</b>	<b>1,247,419</b>
<b>Expenditures</b>						
Operating Expenses						
General Government	20,742	21,335	21,868	22,415	22,975	117,745
Transportation and Transit	6,874	7,046	7,222	7,403	7,588	38,890
Health, Social Services, Housing	3,057	3,133	3,211	3,291	3,373	17,285
Development Services	6,143	6,297	6,454	6,615	6,780	34,750
Protective Services	28,519	29,232	29,963	30,712	31,480	161,335
Parks, Recreation and Culture	21,573	22,112	22,665	23,232	23,813	122,040
Water	10,516	14,712	15,904	17,501	18,402	104,057
Sewer	10,177	14,580	16,546	18,071	20,135	114,941
Solid Waste	3,856	3,354	3,448	3,545	3,645	19,827
	<u>111,457</u>	<u>121,801</u>	<u>127,281</u>	<u>132,785</u>	<u>138,191</u>	<u>730,870</u>
Capital Expenditures	83,934	202,134	53,393	61,705	25,861	126,641
Transfers						
Collections for Other Governments	56,071	57,192	58,336	59,503	60,693	309,535
Equity	9,191	9,085	9,312	9,545	9,784	50,145
Reserves	12,614	5,835	4,934	4,491	8,125	30,228
Repayment of Debt					90,000	
	<u>77,876</u>	<u>72,112</u>	<u>72,582</u>	<u>73,539</u>	<u>168,602</u>	<u>389,908</u>
<b>Total Expenses</b>	<b>273,267</b>	<b>396,047</b>	<b>253,256</b>	<b>268,029</b>	<b>332,654</b>	<b>1,247,419</b>

**SCHEDULE "A" TO BYLAW NO. 8797  
CITY OF NORTH VANCOUVER FINANCIAL PLAN  
FOR THE YEARS 2020 – 2029**

**(2) Revenue Proportions by Funding Source**

(Excluding Transfers from Reserves and Collections for Other Agencies)

	(000's)									
	2020	%	2021	%	2022	%	2023	%	2024	%
Property Value Tax										
General Property Tax	65,700	60	67,695	60	69,746	59	71,851	59	74,015	58
Levies (Storm and Eco)	3,530	3	3,994	3	4,147	4	4,305	3	4,470	3
Revenue from Fees	36,616	34	38,177	34	40,290	34	42,785	35	45,608	36
Revenue from other Sources	3,751	3	3,496	3	3,531	3	3,566	3	3,602	3
Total Revenues	109,597	100	113,362	100	117,714	100	122,507	100	127,695	100

**Background:** Property Taxes are the City's major source of revenue. The City's reliance on property tax as a source of revenue has increased gradually over the past several years. This is partially due to the lack of access to other types of revenues. Where feasible, the City charges user fees for services, however this is not possible for many services. In preparing the 2018 Financial Plan, the City's goal has been to maintain the current percentage of revenue coming from property taxes; however the City continues to rely heavily on this source of revenue to fund a large portion of City services and infrastructure.

**Policy:** Under Council's direction, the City will continue to look for ways to reduce the overall percentage of revenue that comes from property tax, by pursuing alternate revenue sources, and remains committed to charging user fees for services where feasible.

**(3) Distribution of Property Taxes among the Property Classes**

Property Class and Description		Tax Allocation %	
		2017	2018
1	Residential	56.32%	56.60%
2	Utilities	0.95%	1.07%
4	Major Industry - Capped	6.97%	6.95%
4	Major Industry - Non capped	0.68%	0.67%
5	Light Industry	0.81%	0.89%
6	Business	34.24%	33.78%
8	Recreation/Non-Profit	0.03%	0.04%

**Background:** In 2008 City Council adopted a Long Term Property Tax Strategy which will shift taxes from the business and light industrial tax classes, to the residential tax class. The goal of this policy was to move the City's tax rates and tax rate multiples to a competitive position within the Metro Vancouver Region, while maintaining principles of fairness and equity.

Adjusting down the ratio of the business tax rate to the residential rate (i.e. the tax multiple) continues to be a challenge based on the continued extraordinary growth in the residential sector.

**Policy:** The City will continue to review the distribution of property tax among the various property classes and consider other measures as a gauge of success.

**SCHEDULE “A” TO BYLAW NO. 8797  
CITY OF NORTH VANCOUVER FINANCIAL PLAN  
FOR THE YEARS 2020 – 2029**

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**(4) Use of Permissive Tax Exemptions**

**Background:** Council currently allows permissive tax exemptions to organizations within the City, based on eligibility criteria as defined under the Community Charter. This includes religious institutions, not for profit societies, service organizations and providers of social housing whose services and programs align with the City’s goals and objectives.

**Policy:** The City has adopted a policy along with a set of criteria which are based on linking taxation exemptions to desired community outcomes for the services provided. All existing permissive tax exemptions are reviewed each year and staff will continue to work with all organizations who receive a Permissive Tax Exemption to ensure that their services align with the goals and objectives of the City.

Council will continue to carefully consider the total amount of permissive exemptions granted each year, when reviewing the annual Property Tax Exemption bylaw, giving consideration to the equity of shifting the exempted tax burden to other property owners in the City.