

AGENDA

REGULAR MEETING OF COUNCIL

Monday, May 29, 2017

7:00 p.m.

Council Chamber, Municipal Hall

355 West Queens Road,

North Vancouver, BC

Council Members:

Mayor Richard Walton

Councillor Roger Bassam

Councillor Mathew Bond

Councillor Jim Hanson

Councillor Robin Hicks

Councillor Doug MacKay-Dunn

Councillor Lisa Muri



NORTH VANCOUVER
DISTRICT

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REGULAR MEETING OF COUNCIL

7:00 p.m.
Monday, May 29, 2017
Council Chamber, Municipal Hall,
355 West Queens Road, North Vancouver

AGENDA

BROADCAST OF MEETING

- Live broadcast on Shaw channel 4
- Re-broadcast on Shaw channel 4 at 9:00 a.m. Saturday
- Online at www.dnv.org

CLOSED PUBLIC HEARING ITEMS NOT AVAILABLE FOR DISCUSSION

- Bylaw 8142 – Rezoning Employment Zone – Lynn Creek Light Industrial
- Bylaw 8197 – Rezoning 854, 858 & Lot 5 Orwell Street and 855 Premier Street
- Bylaw 8217 – Zoning Bylaw Amendment re: Temporary Use Permits
- Bylaw 8219 – OCP Amendment 1946-1998 Glenaire Drive
- Bylaw 8220 – Rezoning 1946-1998 Glenaire Drive
- Bylaw 8211 – Keeping of Domestic Hens
- Bylaw 8230 – OCP Amendment 1886-1956 Belle Isle Place & 2046 Curling Road
- Bylaw 8231 – Rezoning 1886-1956 Belle Isle Place & 2046 Curling Road

1. ADOPTION OF THE AGENDA

1.1. May 29, 2017 Regular Meeting Agenda

Recommendation:

THAT the agenda for the May 29, 2017 Regular Meeting of Council for the District of North Vancouver is adopted as circulated, including the addition of any items listed in the agenda addendum.

2. PUBLIC INPUT

(limit of three minutes per speaker to a maximum of thirty minutes total)

3. PROCLAMATIONS

3.1. Access Awareness Day – June 3, 2017

p. 11

4. RECOGNITIONS

5. DELEGATIONS

6. ADOPTION OF MINUTES

6.1. May 8, 2017 Regular Council Meeting **p. 15-20**

Recommendation:

THAT the minutes of the May 8, 2017 Regular Council meeting are adopted.

6.2. May 16, 2017 Public Hearing **p. 21-25**

Recommendation:

THAT the minutes of the May 16, 2017 Public Hearing are received.

7. RELEASE OF CLOSED MEETING DECISIONS

8. COUNCIL WORKSHOP REPORT

9. REPORTS FROM COUNCIL OR STAFF

With the consent of Council, any member may request an item be added to the Consent Agenda to be approved without debate.

If a member of the public signs up to speak to an item, it shall be excluded from the Consent Agenda.

Recommendation:

THAT items _____ are included in the Consent Agenda and be approved without debate.

9.1. Application to Amend a Child Care License for Jelly Bean Academy **p. 29-39**
Located at 1356 Frederick Road
File No. 10.4750.30/001.000

Recommendation:

THAT the May 15, 2017 report of the Social Planner entitled Application to Amend a Child Care License for Jelly Bean Academy located at 1356 Frederick Road be received for information;

AND THAT the application to amend a Group Child Care (School Age) license for Jelly Bean Academy located at 1356 Frederick Road be referred to a Public Hearing.

9.2. Bylaws 8240 and 8241: OCP Amendment and Rezoning Bylaws for **p. 41-63**
1502-1564 Oxford Street – 180 Bed Residential Care Centre
File No. 08.3060.20/003.17

Recommendation:

THAT "District of North Vancouver Official Community Plan Bylaw 7900, 2011, Amendment Bylaw 8240, 2017 (Amendment 25)" is given FIRST Reading;

AND THAT "District of North Vancouver Rezoning Bylaw 1355 (Bylaw 8241)" is given FIRST Reading;

AND THAT pursuant to Section 475 and Section 476 of the *Local Government Act*, additional consultation is not required beyond that already undertaken with respect to Bylaw 8240;

AND THAT in accordance with Section 477 of the *Local Government Act*, Council has considered Bylaw 8240 in conjunction with its Financial Plan and applicable Waste Management Plans;

AND THAT Bylaw 8240 and Bylaw 8241 be referred to a Public Hearing.

**9.3. Bylaws 8236 and 8237: Rezoning and Housing Agreement for a 17 Unit p. 65-97
Townhouse Project: 905-959 Premier Street**
File No. 08.3060.20/062.000

Recommendation:

THAT "District of North Vancouver Rezoning Bylaw 1353 (Bylaw 8236)" is given FIRST Reading;

AND THAT "Housing Agreement Bylaw 8237, 2017 (905-959 Premier Street)" is given FIRST Reading;

AND THAT Bylaw 8236 be referred to a Public Hearing.

**9.4. Bylaws 8225 and 8226: Rezoning and Housing Agreement for an p. 99-137
8 Unit Townhouse Project: 756-778 Forsman Avenue**
File No. 08.3060.20/061.16

Recommendation:

THAT "District of North Vancouver Rezoning Bylaw 1351 (Bylaw 8225)" is given FIRST Reading;

AND THAT "Housing Agreement Bylaw 8226, 2017 (756 and 778 Forsman Avenue)" is given FIRST Reading;

AND THAT Bylaw 8225 be referred to a Public Hearing.

9.5. Development Permit 66.16 – 518 Alpine Court p. 139-318
File No. 08.3060.20/066.16

Recommendation:

THAT Development Permit 66.16, to allow for the construction of a new house and detached garage at 518 Alpine Court, is ISSUED.

9.6. Council Remuneration and Expenses Paid During 2016 p. 319-320
File No. 05.1960

Recommendation:

THAT Council Remuneration and Expenses Paid During 2016 be approved.

- 9.7. 2017-2021 Consolidated Financial Plan Amendment #1** **p. 321-330**
File No. 05.1780/Financial Plan 2017

Recommendation:

THAT “2017-2021 Consolidated Financial Plan Approval Bylaw 8214, 2017, Amendment Bylaw 8234, 2017 (Amendment 1)” is given FIRST, SECOND and THIRD Readings.

- 9.8. Terms of Reference, 2017 OCP Implementation Monitoring Committee** **p. 331-336**
File No. 13.6480.30/001.001

Recommendation:

THAT the May 19, 2017 report of the Manager of Community Planning entitled Terms of Reference, 2017 OCP Implementation Monitoring Committee be received for information;

AND THAT the Terms of Reference for the OCP Implementation Monitoring Committee be approved.

- 9.9. Maplewood Village Centre Implementation Planning and Community Engagement – Phase 3 Update** **p. 337-343**
File No. 13.6480.30/000.003

Recommendation:

THAT the May 23, 2017 report of the Policy Planner entitled Maplewood Village Centre Implementation Planning and Community Engagement – Phase 3 Update be received for information.

10. REPORTS

10.1. Mayor

10.2. Chief Administrative Officer

10.3. Councillors

10.4. Metro Vancouver Committee Appointees

10.4.1. Aboriginal Relations Committee – Councillor Hanson

10.4.2. Housing Committee – Councillor MacKay-Dunn

10.4.3. Regional Parks Committee – Councillor Muri

10.4.4. Utilities Committee – Councillor Hicks

10.4.5. Zero Waste Committee – Councillor Bassam

10.4.6. Mayors Council – TransLink – Mayor Walton

11. ANY OTHER BUSINESS

12. ADJOURNMENT

Recommendation:

THAT the May 29, 2017 Regular Meeting of Council for the District of North Vancouver is adjourned.

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PROCLAMATIONS

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PROCLAMATION

“Access Awareness Day” (June 3, 2017)

- WHEREAS:** Accessibility and inclusion is essential for ensuring that all community members have equity in opportunities, and the ability to fully participate in community life; and
- WHEREAS:** Accessibility affects all aspects of community life – physical, social and economic including employment, transportation, recreation, housing, and other opportunities; and
- WHEREAS:** We all have a role to play in ensuring that our communities are as accessible and inclusive as possible.
- NOW THEREFORE I,** Richard Walton, Mayor of the District of North Vancouver, do hereby proclaim that June 3, 2017 shall be known as **“Access Awareness Day”** in the District of North Vancouver.

Richard Walton
MAYOR

Dated at North Vancouver, BC
This 29th day of May 2017

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MINUTES

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**DISTRICT OF NORTH VANCOUVER
REGULAR MEETING OF COUNCIL**

Minutes of the Regular Meeting of the Council for the District of North Vancouver held at 7:01 pm on Monday, May 8, 2017 in the Council Chambers of the District Hall, 355 West Queens Road, North Vancouver, British Columbia.

Present: Mayor R. Walton
Councillor R. Bassam
Councillor M. Bond
Councillor J. Hanson
Councillor R. Hicks
Councillor D. MacKay-Dunn
Councillor L. Muri

Staff: Mr. D. Stuart, Chief Administrative Officer
Ms. C. Grant, General Manager – Corporate Services
Mr. D. Milburn, General Manager – Planning, Properties & Permits
Mr. A. Wardell, Acting General Manager – Finance & Technology
Mr. J. Gordon, Manager – Administrative Services
Ms. J. Ryder, Acting Manager – Real Estate & Properties
Ms. C. Archer, Confidential Council Clerk

1. ADOPTION OF THE AGENDA

1.1. May 8, 2017 Regular Meeting Agenda

MOVED by Councillor MACKAY-DUNN

SECONDED by Councillor BOND

THAT the agenda for the May 8, 2017 Regular Meeting of Council for the District of North Vancouver is adopted as circulated.

CARRIED

2. PUBLIC INPUT

2.1. Mr. Bruce Lindsay, 4100 Block St. Paul's Street:

- Spoke regarding the keeping of backyard hens; and,
- Commented on the risk of attracting predators to residential areas.

2.2. Mr. Hazen Colbert, 1100 Block East 27th Street:

- Spoke regarding item 9.1 regarding Belle Isle Place Highway Closure; and,
- Commented on the valuation of the property.

3. PROCLAMATIONS

**3.1. National Missing Children's Month – May 2017; and,
Missing Children's Day – May 25, 2017**

3.2. NAOSH Week – May 6-13, 2017

4. RECOGNITIONS

Nil

5. DELEGATIONS

5.1. Don Peters, Chair, Community Housing Action Committee and David Hutniak, Chief Executive Officer, Landlord BC

Re: Membership in the Landlord Registry

Mr. Don Peters, Chair, Community Housing Action Committee and David Hutniak, Chief Executive Officer, Landlord BC provided information on the Landlord Registry and requested that Council consider mandatory membership for all landlords in the District. The program includes education to improve professional standards, landlord competencies in legal rights and responsibilities and provides an opportunity for prospective tenants to assess landlords.

MOVED by Councillor BASSAM

SECONDED by Councillor HANSON

THAT the delegation of Community Housing Action Committee and Landlord BC is received.

CARRIED

6. ADOPTION OF MINUTES

6.1. April 24, 2017 Regular Council Meeting

MOVED by Councillor MURI

SECONDED by Councillor MACKAY-DUNN

THAT the minutes of the April 24, 2017 Regular Council meeting are adopted.

CARRIED

6.2. May 1, 2017 Regular Council Meeting

MOVED by Councillor MURI

SECONDED by Councillor MACKAY-DUNN

THAT the minutes of the May 1, 2017 Regular Council meeting are adopted.

CARRIED

7. RELEASE OF CLOSED MEETING DECISIONS

Nil

8. COUNCIL WORKSHOP REPORT

Nil

9. REPORTS FROM COUNCIL OR STAFF

MOVED by Councillor MURI

SECONDED by Councillor MACKAY-DUNN

THAT item 9.3 be included in the Consent Agenda and be approved without debate.

CARRIED

With the consent of Council, Mayor Walton varied the agenda as follows:

9.2. Bylaws 8217, 8144 and 8218: Temporary Use Permits Amendment, Development Procedures Bylaw and Fees & Charges Amendment

File No. 09.3900.01/000.000

MOVED by Councillor HANSON

SECONDED by Councillor BASSAM

THAT "The District of North Vancouver Rezoning Bylaw 1349 (Bylaw 8217)" is given SECOND and THIRD Readings;

AND THAT "Development Procedures Bylaw 8144, 2017" is given SECOND and THIRD Readings;

AND THAT "The District of North Vancouver Fees and Charges Bylaw 6481, 1992, Amendment Bylaw 8218, 2017 (Amendment 51)" is given SECOND and THIRD Readings.

CARRIED

Opposed: Councillors BASSAM, BOND and MURI

9.6. Public Art – Three Artworks for Deaccessioning

File No.

MOVED by Mayor WALTON

SECONDED by Councillor MURI

THAT the community art project entitled Drifters be deaccessioned from the District of North Vancouver's Public Art Collection;

AND THAT the artwork entitled Delbrook Arches be deaccessioned from the District of North Vancouver's Public Art Collection;

AND THAT the community public artwork entitled Mosquito Creek, which functioned as the sign for William Griffin Park, be deaccessioned from the District of North Vancouver's Public Art Collection.

CARRIED

9.3. Tax Rates Bylaw 8235, 2017

File No. 09.3900.01/000.000

MOVED by Councillor MURI

SECONDED by Councillor MACKAY-DUNN

THAT "Tax Rates Bylaw 8235, 2017" is ADOPTED.

CARRIED

9.4. 2016 Audited Financial Statements

File No.

MOVED by Councillor HICKS

SECONDED by Councillor BASSAM

THAT the 2016 Audited Consolidated Statements of the District of North Vancouver are considered and approved.

THAT the 2016 Audited Financial Statements of the North Vancouver Recreation & Culture Commission are considered and approved.

CARRIED

9.5. Filing Under the *Financial Information Act* – 2016 Statement of Financial Information

File No.05.1760

MOVED by Councillor HICKS

SECONDED by Councillor BASSAM

THAT the 2016 Statement of Financial Information (SOFI) of the District of North Vancouver is approved.

CARRIED

9.1. Bylaw 8229, 2017: Belle Isle Place Highway Closure

File No.08.3166.20/036

Public Input:

Mr. Corrie Kost, 2800 Block Colwood Drive:

- Queried the valuation of the property.

MOVED by Councillor BOND

SECONDED by Councillor BASSAM

THAT "Belle Isle Place Highway Closure Bylaw 8229, 2017" is given SECOND Reading.

CARRIED

10. REPORTS

10.1. Mayor

Nil

10.2. Chief Administrative Officer

Nil

10.3. Councillors

10.3.1. Councillor Muri reported on her attendance at the 7th Annual Mount Seymour Parkway – Seymour Valley Cleanup.

10.3.2. Councillor Bassam reported on his attendance at the Provincial Volleyball Championships for Under-15 Girls and congratulated the winning team from North Vancouver as well as the other teams participating from the North Shore.

10.4. Metro Vancouver Committee Appointees

10.4.1. Aboriginal Relations Committee – Councillor Hanson

Councillor Hanson reported on the presentation by Indigenous and Northern Affairs Canada at the May 4, 2017 Aboriginal Relations Committee meeting.

10.4.2. Housing Committee – Councillor MacKay-Dunn

Nil

10.4.3. Regional Parks Committee – Councillor Muri

Nil

10.4.4. Utilities Committee – Councillor Hicks

Nil

10.4.5. Zero Waste Committee – Councillor Bassam

Nil

10.4.6. Mayors Council – TransLink – Mayor Walton

Nil

11. ANY OTHER BUSINESS

Nil

12. ADJOURNMENT

MOVED by Councillor MURI

SECONDED by Councillor BOND

THAT the May 8, 2017 Regular Meeting of Council for the District of North Vancouver is adjourned.

CARRIED
(8:32pm)

Mayor

Municipal Clerk

DISTRICT OF NORTH VANCOUVER PUBLIC HEARING

REPORT of the Public Hearing held in the Council Chambers of the Municipal Hall, 355 West Queens Road, North Vancouver, B.C. on Tuesday, May 16, 2017 commencing at 7:00 p.m.

Present: Mayor R. Walton
Councillor M. Bond
Councillor J. Hanson
Councillor R. Hicks

Absent: Councillor R. Bassam
Councillor D. MacKay-Dunn
Councillor L. Muri

Staff: Mr. D. Milburn, General Manager – Planning, Properties & Permits
Mr. J. Gordon, Manager – Administrative Services
Mr. T. Lancaster, Manager – Community Planning
Ms. S. Dale, Confidential Council Clerk
Mr. C. Rucci, Social Planner

Keeping of Domestic Hens Bylaw 8211, 2016

Purpose of Bylaw:

Bylaw 8211 proposes to regulate and allow for the keeping of backyard hens in a safe, humane, and sanitary manner that is sensitive to the needs of neighbouring properties and the environment. The bylaw will permit from two up to six hens in the District of North Vancouver in any of the Single-Family Residential Zones (RS), subject to compliance with the bylaw.

1. OPENING BY THE MAYOR

Mayor Walton welcomed everyone and advised that the purpose of the Public Hearing was to receive input from the community and staff on the proposed bylaw as outlined in the Notice of Public Hearing.

In Mayor Walton's preamble he addressed the following:

- All persons who believe that their interest in property is affected by the proposed bylaw will be afforded a reasonable opportunity to be heard and to present written submissions;
- Use of the established speakers list. At the end of the speakers list, the Chair may call on speakers from the audience;
- Each speaker will have five minutes to address Council for a first time and should begin remarks to Council by stating their name and address;
- All members of the audience are asked to be respectful of one another as diverse opinions are expressed. Council wishes to hear everyone's views in an open and impartial forum;
- Council is here to listen to the public, not to debate the merits of the bylaw;

- At the conclusion of the public input Council may request further information from staff which may or may not require an extension of the hearing, or Council may close the hearing after which Council should not receive further new information from the public;
- Everyone at the Hearing will be provided an opportunity to speak. If necessary, the Hearing will continue on a second night;
- After everyone who wishes to speak has spoken once, speakers will then be allowed one additional five minute presentation;
- Any additional presentations will only be allowed at the discretion of the Chair;
- The binder containing documents and submissions related to this bylaw is available on the side table to be viewed; and,
- The Public Hearing is being streamed live over the internet and recorded in accordance with the Freedom of Information and Protection of Privacy Act.

2. INTRODUCTION OF BYLAWS BY THE CLERK

Mr. James Gordon, Manager – Administrative Services, introduced the proposed Bylaw, stating that Bylaw 8211 proposes to regulate and allow for the keeping of backyard hens in a safe, humane, and sanitary manner that is sensitive to the needs of neighbouring properties and the environment. The bylaw will permit from two up to six hens in the District of North Vancouver in any of the Single-Family Residential Zones (RS), subject to compliance with the bylaw.

3. PRESENTATION BY STAFF

Mr. Dan Milburn, General Manager – Planning, Properties & Permits, provided an overview of the proposal elaborating on the introduction by the Manager – Administrative Services.

Mr. Milburn advised that:

- Staff have consulted with a number of stakeholders in preparation of the bylaw including the Canadian Liberated Chicken Klub (CLUCK), the North Shore Black Bear Society (NSBBS), other local government who have adopted similar bylaws, Vancouver Coastal Health and the SPCA;
- Staff have completed community consultation;
- Noted that at first reading, Council expressed interest in considering amended provisions that include registration fees, site inspections and the requirement of electric fences; and,
- Advised that staff are available to answer questions.

4. REPRESENTATIONS FROM THE PUBLIC

4.1. Mr. Bruce R. Lindsay, 4100 Block St. Paul's Avenue: OPPOSED

- Provided a slide presentation in opposition to the keeping of backyard hens, noting large predators including bears, cougars and coyotes are attracted by chicken coops; and,
- Provided examples of wildlife interactions resulting from the keeping of hens.

- 4.2. Ms. Barb Purdy, 1000 Block Chamberlain Drive: IN FAVOUR**
- Spoke in support of the proposed bylaw regarding the keeping of backyard hens;
 - Opined that guidelines will provide safety for hens, residents and bears; and,
 - Commented on the environmental impact and educational opportunities.
- 4.3. Mr. Mick Webb, 1200 Block Harris Avenue: OPPOSED**
- Spoke in opposition to the proposed bylaw; and,
 - Expressed concern that chickens may be a wildlife attractant for cougars, bears and coyotes.
- 4.4. Ms. Judith Brook, 2400 Block Lauralynn Drive: IN FAVOUR**
- Spoke in support of the proposed bylaw regarding the keeping of backyard hens;
 - Commented on other municipalities with similar green belts where residents are allowed to keep hens; and,
 - Suggested that chicken coops be inspected.
- 4.5. Mr. Hazen Colbert, 1100 Block East 27th Street: OPPOSED**
- Noted that chickens have a short egg bearing life;
 - Opined that electric fences will not keep predators out of the coop; and,
 - Spoke to the nuisances of chickens.
- 4.6. Mr. James Gill, 500 Block West King George Highway: IN FAVOUR**
- Spoke in support of the proposed bylaw;
 - Commented on other municipalities that have successfully permitted the keeping of backyard chickens;
 - Commented that garbage and fruit trees will continue to be the main bear attractants; and,
 - Spoke to the environmental impact and educational opportunities that allowing backyard chickens may provide.
- 4.7. Ms. Christine Miller, 1400 Block Emerson Way: IN FAVOUR**
- Noted she is a representative of the North Shore Black Bear Society (NSBBS); and,
 - Reported that NSBBS recommends electric fencing, mandatory inspection and a registration fee for backyard chicken coops.
- 4.8. Ms. Erin Marbry, 2800 Block Wembley Drive: IN FAVOUR**
- Spoke as a representative of CLUCK;
 - Spoke in support of the proposed bylaw; and,
 - Advised that CLUCK can provide educational support to address issues regarding neighbourhood concerns.
- 4.9. Ms. Betty Forbes, 2300 Block Kirkstone Road: OPPOSED**
- Requested that Council review the Keeping of Pigeon Bylaw as it is dated;
 - Spoke in opposition to the proposed bylaw;
 - Expressed concern that chickens have a short egg bearing life;

- Requested the proposed bylaw state that only one coop of any kind be allowed per residence; and,
- Urged Council to consider the financial impact this bylaw may have on neighbouring properties.

4.10. Ms. Heidi DeLazzer, 400 Block West Queens Road: IN FAVOUR

- Spoke to ways of disposing or donating chickens after they stop producing eggs;
- Noted that people take pride in their chicken coops; and,
- Suggested that chicken coops be inspected.

4.11. Mr. John Hunter, 300 Block Roche Point Drive: OPPOSED

- Spoke to the nuisances of hens including noise and smell;
- Expressed concern that hens have a short egg bearing life; and,
- Expressed concern that chickens may be a wildlife attractant for cougars, bears and coyotes and may be a risk to young children.

4.12. Ms. Jennifer Meilleur, 1800 Block Purcell Way: IN FAVOUR

- Advised she is the Coordinator of the North Shore Table Matters Network;
- Spoke in support of the proposed bylaw regarding the keeping of backyard hens;
- Commented on food systems and sustainability; and,
- Spoke to the educational opportunities to help residents understand and care for their chickens.

4.13. Mr. Frank Barazzuol, 2100 Block Riverside Drive: IN FAVOUR

- Commented that it is important for the community to know where their food comes from;
- Commented on positive past experiences of his neighbours keeping chickens; and,
- Noted the importance of educating residents on bear attractants.

Council recessed at 8:00 pm and reconvened at 8:04 pm.

4.14. Ms. Lana Dymont, 400 Block Norwood Avenue: IN FAVOUR

- Spoke in support of the proposed bylaw;
- Commented on the opportunity to educate children on understanding how to care for their chickens; and,
- Noted that most residents are responsible.

4.15. Mr. Benjamin Dymont, 400 Block Norwood Avenue: IN FAVOUR

- Commented that farming skills and animal upkeep can be learned by caring for backyard chickens;
- Spoke regarding the health benefits of eating home laid eggs;
- Noted that manure can be used to grow vegetables in gardens; and,
- Commented on other municipalities that have successfully permitted the keeping of backyard chickens.

4.16. Ms. Sharon Porter, 600 Block Riverside Drive: IN FAVOUR

- Commented on her family's past experience with raising animals;

- Spoke to ways of disposing or donating chickens after they stop producing eggs;
- Spoke to the benefits of raising animals; and,
- Urged Council to support the proposed bylaw.

4.17. Mr. Corrie Kost, 2800 Block Colwood Drive: OPPOSED

- Spoke to the nuisances of raising hens; and,
- Expressed concern that hens may be a wildlife attractant.

4.18. Ms. Karen Savage, 700 Block East 10th Street: IN FAVOUR

- Commented that when chickens stop producing eggs they will continue to be pets.

4.19. Mr. Bruce Lindsay, 4100 Block St. Paul's Avenue: SPEAKING A SECOND TIME

- Stated that the keeping of backyard chickens is a safety concern; and,
- Reiterated that chickens are a wildlife attractant.

4.20. Mr. John Hunter, 300 Block Roche Point Drive: SPEAKING A SECOND TIME

- Expressed concern regarding the risk of salmonella; and,
- Opined that food security is not a benefit of the keeping of backyard chickens.

4.21. Mr. Corrie Kost, 2800 Block Colwood Drive: SPEAKING A SECOND TIME

- Suggested that a temporary use permit be required for the keeping of backyard hens in the District.

4.22. Mr. Lucas Highway, 300 Block Sunnycrest Drive: IN FAVOUR

- Commented that chickens can be pets and do not need to be disposed of after they stop producing eggs; and,
- Opined that garbage is the main bear attractant.

In response to a question from Council, staff advised that the City of North Vancouver, although registration is voluntary has received 233 registrations for coops. Staff also noted that the District of West Vancouver has recently amended its Zoning Bylaw and Animal Control Bylaw in order to allow hens and have three registered coops.

5. COUNCIL RESOLUTION

MOVED by Councillor HANSON


SECONDED by Councillor BOND

THAT the May 16, 2017 Public Hearing be closed;

AND THAT "Keeping of Domestic Hens Bylaw 8211, 2016" be returned to Council for further consideration.

CARRIED
(8:35 p.m.)

CERTIFIED CORRECT:



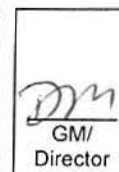
Confidential Council Clerk

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REPORTS

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AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: <u>May 29, 2017</u>
<input type="checkbox"/> Other:	Date: _____



The District of North Vancouver REPORT TO COUNCIL

May 15, 2017
File: 10.4750.30/001.000

AUTHOR: Cristina Rucci, Social Planner

SUBJECT: Application to Amend a Child Care License for Jelly Bean Academy
located at 1356 Frederick Road

RECOMMENDATION:

THAT Council receive this report as background information for an application to amend the business license for Jelly Bean Academy,

AND THAT Council refer this item to a Public Hearing to be held on June 20, 2017.

REASON FOR REPORT:

To provide Council with background information on the Group Child Care license application from Jelly Bean Academy in preparation for the Public Hearing on June 20, 2017. Approval of this license for a Group Child Care (School Age) would mean an increase in capacity from 10 children to 17 children at 1356 Frederick Road. The applicant also holds a license for 10 preschool children at the same location. An increase in capacity beyond 20 children triggers the requirement for a Public Hearing.

SUMMARY:

Ms. Nasrin Rahmatian has recently made an application to Vancouver Coastal Health (VCH) to increase the capacity of her school age program from 10 to 17 children, bringing the total potential number of children in her care over the course of a day to 27. Ms. Rahmatian, the owner/operator of Jellybean Academy currently operates a child care for up to 20 children from her home located at 1356 Frederick Road. She is currently licensed for 2 programs, a preschool program for up to 10 children and a school age program for up to 10 children, for a total of 20. The two programs never run concurrently. An open house for the neighbours took place on April 25, 2017 which provided an opportunity for the applicant to informally discuss the application and to address any concerns the neighbours may have. District staff attended this meeting; however, none of her neighbours were present. As per the Childcare Facilities Business Regulation Bylaw, a Public Hearing is being held on June 20, 2017 to give interested residents an opportunity to express their views on the proposed application. Prior to this hearing, the District will mail out a notice to residents within the notification radius

**SUBJECT: Application to Amend a Child Care License for Jelly Bean Academy
located at 1356 Frederick Road**

May 15, 2017

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informing them of the proposal, a sign will be placed on the applicant's property notifying the public about the hearing, and a notice will appear in two consecutive issues of the North Shore News advertising the Public Hearing. After the Public Hearing, the application will be considered by Council at a regular Council meeting in July. As this is an application to amend a business license Bylaw readings are not required.

BACKGROUND:

Ms. Nasrin Rahmatian, the owner/operator of Jelly Bean Academy first opened her child care for up to 7 children in 1990 from her home located at 1356 Frederick Road (see Attachment A for site map). In the late 1990's she applied to amend her license to 20 children, which included a license for 10 preschool children and 10 school age children. This license was approved in 1999. The applicant's recent request to increase her school age program to 17 children comes mainly in response to the increasing requests from her current clients who are in need of before and after school care for the siblings of the children that are enrolled in the program. All 7 spots are tentatively filled.

The preschool and school age programs do not run at the same time. The preschool operates three days a week from 9:00am to 2:30pm on Tuesday, Wednesday, and Thursday, while the school age program runs five days a week from 7:30am to 8:30am and from 3:30pm to 5:30pm. Ms. Rahmatian has not received any complaints over the last 18 years and has maintained positive relationships with her neighbours.

The BC Building Code and provincial requirements for child care operations in single family zones have changed since the late 1990's. Bylaw 6724 now requires facilities that provide child care for more than 10 children at one time to comply with the BC Building Code's assembly occupancy requirements. As such, the operator has obtained a building code specialist to evaluate her home and he has provided her a number of suggestions that she will pursue pending Council's decision regarding her business license. The applicant will not be able to get her business license until these improvements are made to the satisfaction of the District's building staff.

EXISTING POLICY:

The District's Child Care Policy supports the facilitation of quality child care services that afford opportunities for children to develop socially, emotionally, and intellectually. The investment in quality child care is far-reaching and can have positive social and economic benefits for all residents living in the District. Further, District policy encourages a continuum of child care services at one location and supports the provision of child care spaces in residential areas.

The North Shore Congress's Child and Family Friendly Community Charter was endorsed by Council in 2011. The Charter recognizes that early child development is critical and that members of the Congress need to work together to create broad, equitable access to the conditions that help children and families thrive.

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The Child Care Facilities Business Regulation Bylaw 6724 requires that child care business license applications for more than twenty children in any one day or at any one time must be referred to Council for approval and that a Public Hearing must be held for the purpose of allowing the public to make representations to Council on matters respecting the application. In accordance with the requirements for Public Hearings, all residents within 75-metres of Jelly Bean Academy will receive notice of the Public Hearing.

ANALYSIS:

The Planning Guidelines for Home Occupied Child Care Facilities were updated in January, 2014. These enhanced Guidelines take into consideration the following criteria in the assessment of proposed child care businesses in single family homes:

- located in under-served neighbourhoods
- located close to community amenities
- located on easily accessible streets
- addresses arrival/departure and parking needs
- maintains neighbourhood characteristics (compatible neighbourhood fit)

The enhanced guidelines also require that applicants provide additional information around design of the facility, parking, and access. They also recommend that applicants hold an open house with their neighbours to discuss their proposal before the application goes to a Public Meeting or Public Hearing.

Proposal

- Jellybean Academy is located in a family oriented neighbourhood in Lynn Valley.
- Frederick Road is a collector and offers good accessibility to major arterial routes (Mountain Hwy and Lynn Valley Road).
- The facility is located across the street from a number of community amenities including the Lynn Valley Community Recreation Centre and Lynn Valley field, as well as Lynn Valley School.
- A number of child care facilities are also located in close proximity to the subject site, including:
 - Rainbow Corner, located adjacent to the Lynn Valley Community/ Recreation Centre (44 multi-age and 12 children under 36 months);
 - Sandpiper Preschool, located in the Community/Recreation Centre (20 children);
 - Lynn Valley Parent Participation Preschool, adjacent to Lynn Valley School (20 children);
 - Bee Haven located at St. Clements Church on Institute Road (30 school age), and;
 - Lynn Valley Kids Club and Preschool operated by North Shore Neighbourhood House on Mountain Hwy (30 out of school care kids and 20 preschool).
- All of the before and after school programs in the area are at capacity and are located on public assembly land and therefore have associated on-site parking.

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- The applicant also notes that many of the children that attend her facility are from the neighbourhood and are encouraged to walk to the facility. Of the 10 preschool children that are currently enrolled, 5 walk or bike and of the 10 school age children 4 walk to the child care regardless of the weather.
- The applicant's only assistant is her husband, Abdulreza Rahmatian. As per the Provincial Child Care License Regulation, the number of responsible adults needed for school age care for 13-24 children is 2. Ms. Rahmatian is a qualified educator and has received her ECE diploma and her husband is qualified as a "responsible adult".
- The operator does maintain a waitlist. One of the children that has been waiting to get into her care has been on the list for 1.5 years.
- The applicant and her husband live on the second floor of the home and the child care is located on the main floor, which is above ground.

Childcare – school age program

- The hours of operation for the school age program are from Monday to Friday 7:30am to 8:30am and in the afternoon from 3:30pm-5:30pm.
- The child care is also open full days on professional development days and during the spring and summer break (the preschool is closed during these times). The facility is closed on weekends, statutory holidays, two weeks during Christmas break and the last week of August.
- It should be noted that, as with all childcare centres, parents generally drop their children off at varying times during drop off and pick up times. The applicant has indicated that during the entire time they have been operating that they haven't received any complaints from their neighbours regarding parking.

Childcare – preschool program

- The hours for the preschool are 9:00am to 2:30pm, Tuesday, Wednesday and Thursday.
- The preschool program is closed during the summer months or other breaks, including professional development days, during the school year.

Design

- The home is two storeys and the child care will be located on the main floor and has a strong connection to the outside. There are no stairs or other encumbrances leading from the outside to the childcare which makes the site very accessible. The outside play space is secured for privacy and safety with a 6' high fence, hedges, and trees surrounding the property. There is a gate at the back of the property leading to the lane for emergency use.
- The childcare space will be expanded to meet the childcare licensing requirements, which are 3.7 square metres per child.
- Large windows provide natural light and fresh air into the space and provide an convenient exit for the children.

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Noise

- In order to minimize the noise from the school age children, the applicant will divide the children into two groups and each group plays outside at separate times between 4:00 and 5:00pm.
- The children are often taken to Lynn Valley Park and field for games and recreation. The applicant also often brings the children swimming during the spring and summer and skating during the winter months at Karen Magnussen. Parents will pick up their children from the recreation centre on these days which decreases the amount of time the children are playing the backyard and potentially impacting the neighbours.

Public Consultation

- The applicant hand delivered a letter of introduction (Attachment B) to all of her neighbours located within 75 metres of her home in early April. This letter followed a template provided by staff to the applicant and outlined the proposed amendment, the reason for the amendment, as well as a summary of the proposed staff, hours of operation, parking, and outdoor play.
- When delivering the letters, the applicant did have conversations with most of her neighbours about their proposal (approximately 30 households in total). These neighbours expressed their support for the proposal and signed a petition to show their support for her application.
- As per the enhanced guidelines, the applicants held an open house on Tuesday, April 25, 2017. The purpose of the open house is to give the applicant an opportunity to informally discuss their application with their neighbours and to discuss any concerns they might have. Staff attended the open house, to answer any regulatory questions that may arise. Although the applicant notified her neighbours of the meeting, none of them were in attendance.

Parking and Access

- The District of North Vancouver Zoning Bylaw 1965 requires 1.25 parking spaces per classroom. The operator is applying for a license for 2 classrooms, one for preschool children and one for school age children (not to run concurrently). Additionally, the applicant requires 2 spaces for the single family dwelling, for a total of 4.5 (rounded to 5).
- Although 5 parking stalls is the requirement, two parking stalls would likely meet the requirement of both classrooms because the preschool program and school age program never run concurrently. Transportation supports the provision of 2 parking spots for the classrooms and 2 parking spots for the single family dwelling, for a total of 4.
- The business license will outline the hours of operation for the preschool and school age care programs and will specify that the 2 programs will not overlap. If the applicant comes forward in the future with a change in her business license, the parking must be reviewed to ensure that it meets the bylaw requirements.
- The applicant does have a carport that fits both her van and family car and the driveway dimensions are sufficient to accommodate two vehicles.

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- The home is located on Frederick Road, a collector road providing access to both Mountain Hwy and Lynn Valley Road.
- There is available off-site parking on Frederick Road for families to temporarily park their cars for pick up and drop off. Lynn Valley Community/Recreation Centre, across the street from the applicant's home, has a large parking lot, which could be accessed for pick up and drop off.
- The applicant transports the school age children to the schools that they serve (Lynn Valley, Ross Road and Upper Lynn) with a 15 passenger van as well as their family vehicle. Both her and her husband drop off and pick up the children to and from the various schools.
- Business Licensing staff has indicated there have been no complaints regarding Jelly Bean Academy over the last 18 years.

Timing/Approval Process:

Following the Public Hearing, the application will be considered by Council at the Regular meeting on July 10, 2017.

Social Policy Implications:

The District's Child Care Policy supports the provision of quality child care services, the provision of a continuum of child care services, and the provision of child care services close to elementary schools.

Conclusion:

The applicant has been operating a successful child care business from her family home located at 1356 Frederick Road for the last 18 years. By amending her current child care license with VCH (and subsequently her business license with the District, for her school age program) from 10 to 17, the operator will be able to accommodate the siblings of the children that attend her facility. This helps address the needs expressed by her clients who are requesting expanded programming. The location of this facility meets the location District's criteria, as it is situated close to a school, parks, and a community/recreation centre. Accessibility to the site is good and the site offers on-site and off-site parking options and good connections to both Mountain Hwy and Lynn Valley Road. The applicant held an open house for the neighbours on April 25, 2017, though no neighbours attended the meeting.

Options:

A Public Hearing will be held on June 20, 2017 to allow residents an opportunity to express their views on the application. Prior to this hearing, the District will mail out a notice to residents within the notification radius (75 metres) informing them of the proposal, a sign will be placed on the applicant's property notifying the public about the hearing and a notice will appear in two consecutive issues of the North Shore News advertising the Public Hearing. After completion of the Public Hearing, and with evidence of compliance with all building

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code requirements and other District bylaws, Council may consider this application on July 10, 2017 and either:

1. Approve issuance of a business license to Ms. Nasrin Rahmatian, which would allow her to provide care for 7 additional school age children up to a maximum of 17 children, or
2. Decline the application maintaining the current permitted capacity of 10 school age children.

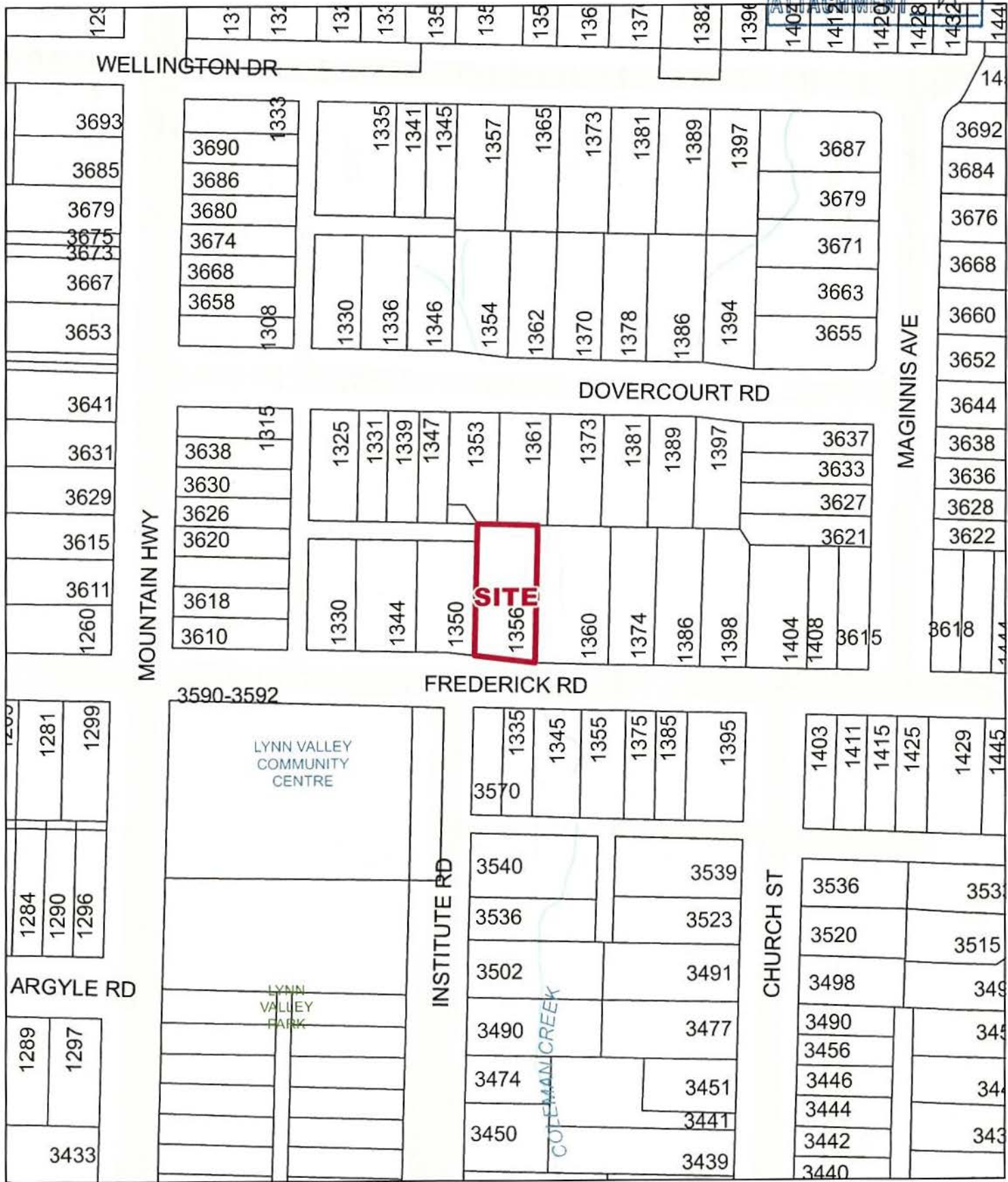
Respectfully submitted,



Cristina Rucci, RPP, MCIP
Social Planner

Attachment A: Site Map
Attachment B: Letter of Introduction

REVIEWED WITH:		
<input type="checkbox"/> Sustainable Community Dev. _____	<input type="checkbox"/> Clerk's Office _____	External Agencies:
<input type="checkbox"/> Development Services _____	<input type="checkbox"/> Communications _____	<input type="checkbox"/> Library Board _____
<input type="checkbox"/> Utilities _____	<input type="checkbox"/> Finance _____	<input type="checkbox"/> NS Health _____
<input type="checkbox"/> Engineering Operations _____	<input type="checkbox"/> Fire Services _____	<input type="checkbox"/> RCMP _____
<input type="checkbox"/> Parks _____	<input type="checkbox"/> ITS _____	<input type="checkbox"/> NVRC _____
<input type="checkbox"/> Environment _____	<input type="checkbox"/> Solicitor _____	<input type="checkbox"/> Museum & Arch. _____
<input type="checkbox"/> Facilities _____	<input type="checkbox"/> GIS _____	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Human Resources _____	<input type="checkbox"/> Real Estate _____	



1356 Frederick Road (Jelly Bean Academy) **SITE MAP**



April,7, 2017

Dear neighbour,

My name is Nasrin Rahmatian and I live at 1356 Frederick Road, North Vancouver. I've been running Jelly Bean Academy Montessori out of my home since 1989. I want to inform you that I have applied to Vancouver Coastal Health to increase the license capacity for our before and after school program from 10 to 17 children.

District staff suggest that I consult with my neighbours before my Business License application is considered by District Council. Prior to submitting our application to District Council, we are providing this information package to our neighbors to explain our proposal. In addition, I would like to invite you to an open house at my home at 1356 Frederick Road on April 25, 2017 to review our proposal. District planning staff will be in attendance at the open house to answer any questions regarding the business license application process.

Our Programs:

My daycare, which is located on the main floor of my home, is currently licensed for a preschool program and a before and after school program. My preschool program, which is licensed for 10 children, operates three days a week (Tuesday, Wednesday and Thursday) from 9:00 am to 2:30 pm. The program runs from September until June. My before and after school program is also currently licensed for 10 children. This program runs from Monday to Friday from 7:30 am to 8:30 am and from 3:30 pm to 5:30 pm. The two programs do not run at the same time, meaning that at present there are never more than 10 children in the daycare at a time.

We are closed for weekends, statutory holidays, the two weeks of Christmas break, and the last week of August. In July and August our preschool program is closed. Each year during the months of July and August we take the before /after children on daily field trips and spend little time at the daycare.

Proposed Change:

Recently I made an application to Vancouver Coastal Health to increase the license capacity of our before and after school program from 10 children to 17 children. The change I am applying for is only for our before and after school care program – the preschool number will stay the same. The reason for this request is mainly to accommodate the siblings of the children that already are part of the program. Families in this neighbourhood struggle with finding childcare, and unless I increase my capacity I will not be able to accommodate the younger siblings of the children already in my program.



As always we respect and understand our neighbors' privacy and peace of mind, value their opinions and we will continue to do our best to make a quiet and safe environment for our neighbors and the children under our care.

Thank you, and best regards,

Nasrin Rahmatian

Applicant information:

Contact Name: Nasrin Rahmatian,
Jelly Bean Academy
Address: 1356 Frederick Road,
North Vancouver, B.C
V7K 1J4
Phone: 604-727-9445
Email: nasrin.rahmatian@gmail.com

Proposal Summery:

We are proposing to increase the license capacity for our before and after school care program from 10 to 17 children, ages between 5 – 10 years old. The reason for this request is mainly to accommodate the siblings of the children that already are part of the program.

We are using the first floor for Jelly Bean Academy and our family resides on the second floor of the home.

Proposal Details:

Staff: Jelly Bean will have maximum of 2 staff including myself.

Lot size: 9600sq ft

Parking: The property can easily accommodate 3 Parking spots for parents. The Jelly Bean Academy Van and the family car both have their parking spot in the carport. There is also ample public parking across the street for families to temporarily park their cars for pick-up/drop-off if needed.

Many of our children live in the neighbourhood and regularly walk to and from Jelly Bean, regardless of the weather. When the weather starts warming up, many of our parents bike with their children to/ from our place, and of course we expect siblings who attend, or hopefully will be attending, our before and after school program will drive in one car only.

If you have any questions please contact Nasrin at: 604-727-9445

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AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: <u>May 29, 2017</u>
<input type="checkbox"/> Other:	Date: _____

[Signature]
Dept.
Manager

[Signature]
GM/
Director

[Signature]
CAO

The District of North Vancouver REPORT TO COUNCIL

May 16, 2017
File: 08.3060.20/003.17

AUTHOR: Casey Peters, Development Planner

SUBJECT: Bylaws 8240 and 8241: OCP Amendment and Rezoning Bylaws for 1502-1546 Oxford St - 180 bed Residential Care Centre

RECOMMENDATION:

THAT the "District of North Vancouver Official Community Plan Bylaw 7900, 2011, Amendment Bylaw 8240, 2017 (Amendment 25)" to amend the Official Community Plan (OCP) from Residential Level 5 to Institutional be given FIRST reading; and

AND THAT the "District of North Vancouver Rezoning Bylaw 1355 (Bylaw 8241)" to rezone the subject site from Single Family Residential 6000 Zone (RS4) to Comprehensive Development Zone 105 (CD105) and Neighbourhood Park (NP) be given FIRST reading;

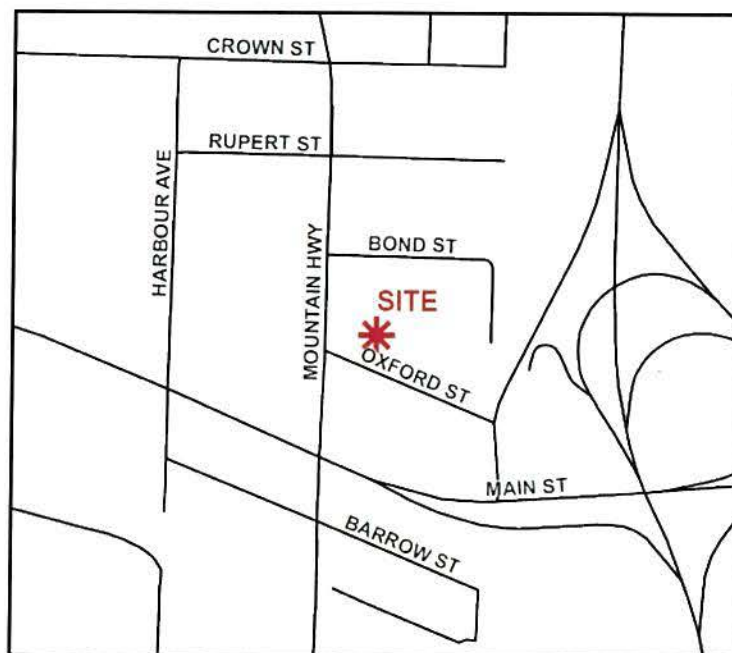
AND THAT pursuant to Section 475 and Section 476 of the Local Government Act, additional consultation is not required beyond that already undertaken with respect to Bylaw 8240;

AND THAT in accordance with Section 477 of the Local Government Act, Council has considered Bylaw 8240 in conjunction with its Financial Plan and applicable Waste Management Plans;

AND THAT Bylaw 8240 and Bylaw 8241 be referred to a Public Hearing.

SUMMARY

The applicant proposes to redevelop eight single family lots located at 1502-1546 Oxford Street to create a six storey 180 bed seniors residential care centre. Implementation of the project requires an OCP amendment (Bylaw 8240) and a rezoning (Bylaw 8241).



THE PROPOSAL

The project ("Creekstone Care Centre") will provide 180 seniors with daily care and nursing services. The building will be a licensed residential care facility (i.e. residence + care) and will be operated under a contract with Vancouver Coastal Health (VCH). Initially 150 beds will be operated under a VCH contract with the remaining 30 beds available at market rents. The contract allows VCH to acquire the remaining 30 beds at any time and it is expected they will be required in the short to medium term.

The project is comprised of 12 secure sets of living units called "houses" (two on each floor) and these "houses" are linked through a central core. Each "house" includes 15 bedrooms, a servery-kitchen, laundry room, housekeeping closet, and a lounge/ recreation area. The central core includes community gathering areas and an administration space.



Creekstone Care Centre provides housing for residents who require a full level of care due to their frailty and aging health needs. Creekstone will be typically their homes through end of life. Residents have access to onsite medical treatment with nursing staff but they do not normally have acute or emergency care needs which require hospitalization. Chronic conditions include dementia and/or complex physical conditions. It is not anticipated that emergency vehicles will be attending the site with any frequency.

The project is designed to include onsite multi-purpose rooms which allow residents to gather and socialize. Community organizations will be permitted to use these spaces as a way to bring the community to the residents.

1. Site and Surrounding Areas

The development site is located at the corner of Mountain Hwy and Oxford Street in the Lynn Creek Town Centre. Surrounding properties include single family uses to the north, east, and south and commercial uses to the west. Phibbs Exchange and a newly constructed rental building are located to the east of the site.

2. Official Community Plan

The Official Community Plan (OCP) designates the site as Residential Level 5: Low Density Apartment (RES5) with an FSR of up to approximately 1.75. OCP Amendment Bylaw 8240 will designate the site as Institutional. 5m on the east of the site will be dedicated to the District for the creation of the Green Spine linear park envisioned in the OCP and Lynn Creek Public Realm Guidelines (this portion will remain RES5).

The District of North Vancouver has been working with the City of North Vancouver, the District of West Vancouver, and Lionsview Seniors Planning to support the development of an age-friendly community. One of the focuses of the work has been on securing appropriate housing for seniors – the Trellis project provides an important part of the continuum of housing and support for seniors in the District. In addition, Vancouver Coastal Health has identified that the current residential care capacity for seniors on the North Shore is insufficient to meet the needs.

The project aligns with the District's OCP Goals of creating a vibrant, mixed use centre and enabling a diverse mix of housing types, tenures and affordability at all stages of life. An additional goal of fostering a safe inclusive and supportive housing to enhance the health and well-being of residents is also met. The project supports the goal of supporting a diverse and resilient local economy as it will result in over 200 jobs. The OCP sets a goal of providing a safe, efficient and accessible network of pedestrian, bike and roadways and enabling viable alternatives to the car and this project will create pedestrian and bicycle improvements on Mountain Hwy and Oxford Street. The project is well served by transit with Phibbs Exchange located a block east and Mountain Highway fronting the site on the west.



The District's Rental and Affordable Housing Strategy encourages the expansion of affordable rental housing inventory. This project supports this objective by providing supportive housing as 83% of the beds have some level of publicly funded support (subsidy determined by VCH based on income levels). All of the beds are rental. Another goal of the Strategy is to "seek to address the need of lower income seniors" which is supported by this project.

The project has been reviewed against the Lower Lynn Implementation Plan and the Lynn Creek Public Realm Guidelines. The project achieves the public realm objectives and provides a 5m dedication towards the future Green Spine linear park which is an important connecting feature within the Lynn Creek Town Centre.

3. Zoning

The subject properties are currently zoned Single Family 6000 Zone (RS4). A new Comprehensive Development Zone 105 (CD105) is required to accommodate the project. The 5m portion for the Green Spine will be zoned Neighbourhood Park (NP). The CD zoning will regulate density, height, setbacks, and parking requirements.

4. Community Amenity Contribution

The District's Community Amenity Contribution (CAC) Policy requires an amenity contribution for projects which result in an increase in residential density. The policy allows staff to negotiate CACs for other types of projects which result in an increase in land value. This project is an institutional building providing a community need. The CAC Policy lists "seniors care" in section 3.8 as a specific amenity which may be acceptable in lieu of CACs. The applicant has identified the following contribution from this project including:

- Provision of long term, publicly funded, care services for 180 residents. Of these beds, 150 are committed to Vancouver Coastal Health (VCH) with the remaining 30 beds to be private pay (which can be assumed by VCH as required).
- Inclusion of multi-purpose rooms that can be available for use by community groups.
- Contribution of \$5,000 towards public art at the entrance to the Green Spine Linear Park.

5. Site Plan/Building Description

The project is a six storey building with one level of underground parking. The units are single occupancy and a number of accessory uses are proposed within the project. These accessory uses are required for the operation of the building, for the use of the residents, employees and visitors. Accessory uses include storage, laundry, kitchen, dining spaces, administrative spaces, multi-purpose rooms, and activity rooms.

6. Development Permits

The lots are designated in the following Development Permit Areas:

- Form and Character of Commercial, Industrial, and Multifamily Development (not applicable due to institutional use)
- Energy and Water Conservation and Greenhouse Gas Emission Reductions
- Creek Hazard

a) Form and Character

Despite this DP designation not being applicable, the proposal has been reviewed against the Official Community Design Guidelines for Multi-Family Housing to ensure that the project has a residential feel.



Advisory Design Panel

The application was considered by the Advisory Design Panel (ADP) on March 9, 2017 and overall, the panel was supportive of the project. The Panel recommends approval of the project subject to resolution of the Panel comments including a review of courtyard materials and screening the emergency generator and the pad mounted transformer (PMT). These items will be resolved prior to final zoning adoption.

b) Energy and Water Conservation and Greenhouse Gas Emission Reduction

Compliance with the Green Building Strategy is mandatory given the need for rezoning. The apartment building will achieve a building performance of LEED™ Gold equivalent and an energy performance at least 33% better than Model National Energy Code. Details of green building features will be provided for Council review should the application proceed.

c) Protection of Development From Hazardous Conditions – Creek Hazard

As the site is within the Development Permit area for Creek Hazard DPA a geotechnical report was completed and concludes that the proposed development is safe for the use intended. The living space will be located above the Flood Construction Level (FCL) and flood mitigation measures will be in place to address the uses proposed below the FCL (storage, food preparation, laundry). An emergency plan has been submitted to address how the needs of the residents will be met in the event of an emergency.

The project has been reviewed by the District's Section Manager, Natural Hazards and the District's Chief Building Official.



7. Parking

Parking is provided on one level of underground with access from Oxford Street. A total of 35 parking stalls are proposed (2 spaces at grade and 33 spaces in the underground parkade). The District's parking requirements for homes for the aged is one parking space per six beds which results in 30 required spaces. The project exceeds the District's requirements by five spaces.

There are six Class 2 (short term) bicycle spaces at the entrance to the building and a secure bicycle storage room in the underground for employees. The site is located within one block of Phibbs Exchange which will allow visitors and employees to use alternative transportation options.

8. Landscaping

The landscape design is focussed around the exterior of the site including a 2m landscaped setback adjacent to the Green Spine linear park. The proposal also includes three ground level courtyards for use of the residents with two located on the south side of the building and one on the north side. An additional covered outdoor deck is proposed on the fifth floor on the south side of the building.

The outdoor courtyards include spaces for sitting, walking and activities such as gardening. Accessibility measures have been considered to ensure the residents can use the space.

Reduced copies of architectural and landscaping plans are included as Attachment A for Council's reference.



Mountain Hwy Perspective

9. Off-site improvements

The application will dedicate 2.3m (7.5 ft) of land and provide an additional 1.0m (3.3 ft) right of way along Mountain Hwy to allow for the future cross-section that will include a separated bicycle path, pedestrian sidewalk, and boulevard.

The project will create a sidewalk, separated two-way cycle track, and boulevard on Oxford Street. In addition, both Mountain Hwy and Oxford Street will include street trees, curb, gutter and lighting.

The east 5m of the site will be dedicated for the Green Spine linear park and it is anticipated that the land will be hydro-seeded for the short term and the final park design will be implemented when the full 10m dedication is achieved through the redevelopment of the site to the east.

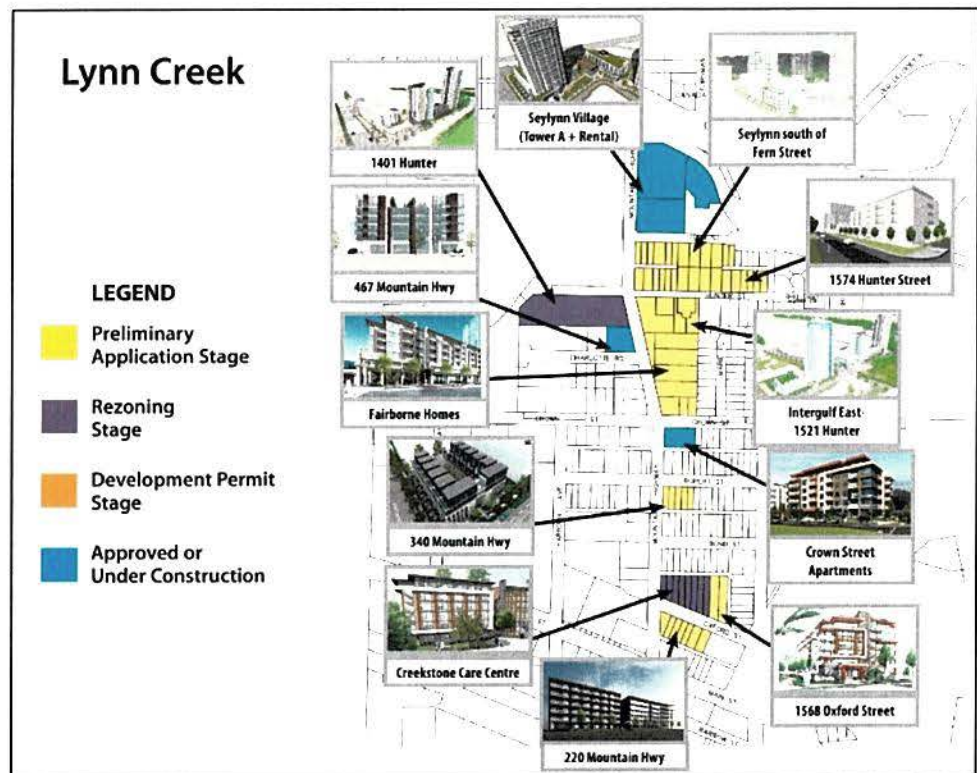
10. Accessibility

The proposal will be required to meet Vancouver Coastal Health requirements for accessibility which exceed the District's Accessible Design Policy for Multifamily Housing. Accessibility measures address residents with physical, visual, or cognitive impairments and facilitate easy access to common and personal areas. The design also works to assist with clarity of location and to provide circulation patterns and corridor lengths to encourage independent travel.

11. Construction Management Plan

The site is shown in relation to other construction projects and potential development projects in the image to the right.

In order to reduce development's impact on pedestrian and vehicular movements, the applicant is required to provide a Construction Traffic Management Plan as a condition of a Building Permit. The Plan must outline how the applicant will coordinate with other projects in the area to minimize construction impacts on pedestrian and vehicle movement along Mountain Hwy and Oxford St with particular attention to ensuring transit vehicles can access Phibbs Exchange. The plan is required to be approved by the District prior to issuance of a building permit.



In particular, the construction traffic management plan must:

1. Provide safe passage for pedestrians, cyclists, and vehicle traffic;

2. Construct a temporary sidewalk on the south side of Oxford to allow safe pedestrian movement during any sidewalk closures;
3. Outline roadway efficiencies (i.e. location of traffic management signs and flaggers);
4. Make provisions for trade vehicle parking which is acceptable to the District and minimizes impacts to neighbourhoods;
5. Provide a point of contact for all calls and concerns;
6. Provide a sequence and schedule of construction activities;
7. Identify methods of sharing construction schedule with other developments in the area;
8. Ascertain a location for truck marshalling;
9. Address silt/dust control and cleaning up from adjacent streets;
10. Provide a plan for litter clean-up and street sweeping adjacent to site; and,
11. Include a communication plan to notify surrounding businesses and residents.

12. Public Input:

The applicant held a facilitated Public Information Meeting (PIM) on May 3, 2017. The meeting was attended by approximately 11 members of the public. Comments made at the meeting included support for the proposed use and questions regarding transportation improvements and bus movements during construction. One written response was received following the meeting expressing support for the project.

13. Concurrence:

The project has been reviewed by staff from the Environment, Building and Permits, Legal, Parks, Engineering, Community Planning, Urban Design, Transportation, the Fire Department, Public Safety, Finance and the Arts Office.

14. Financial Impacts:

The project will contribute District Development Cost Charges (DCCs) of \$614,200 and will be required to pay normal fees through the building permit process. Should the application proceed the project in its current form will be required to pay property taxes.

As discussed in the CAC section, the CAC Policy lists "seniors care" as one type of amenity and VCH will be providing subsidized care for 150 of the beds. The site was originally envisioned in the OCP as a residential project with CAC's. This revenue is now anticipated to be realized on other sites in the area.

The project will also contribute \$5,000 towards public art.

15. Implementation

Implementation of this project will require an OCP amendment bylaw and a rezoning, as well as issuance of a development permit and registration of legal agreements.

Bylaw 8241 (Attachment C) rezones the subject site from Single Family Residential 6000 Zone (RS4) to a new Comprehensive Development Zone 105 (CD105) which:

- Establishes the seniors residential care use;
- Establishes a maximum floor space of 11,130m² (119,806 sq ft); and
- Establishes parking and building regulations specific to this project.

In addition, the following legal agreements are required and will be secured via a development covenant prior to zoning bylaw adoption:

- Green building covenant;
- Stormwater management covenant;
- Housing agreement covenant;
- Covenant to secure community use of multi-purpose rooms;
- Engineering servicing agreement covenant (requiring construction management plan);
- Flood hazard covenant including emergency plan;
- A statutory right of way for pedestrian movement on Mountain Hwy;
- A statutory right of way for the 2m adjacent to the Green Spine linear park; and,
- A consolidation and dedication plan.

Conclusion

This project is providing a needed form of housing for the community and addresses a number of housing goals from the District's OCP and Rental and Affordable Housing Strategy. In addition the proposal addresses OCP goals related to employment opportunities.

Options

The following options are available for Council's consideration:

1. Introduce Bylaws 8240 and 8241 and refer Bylaw 8240 and 8241 to a Public Hearing (staff recommendation); or,
2. Defeat the bylaws at First Reading.



Casey Peters
Development Planner

Attachments:

- A. Architectural and Landscape Plans
- B. Bylaw 8240 – OCP Amendment Bylaw
- C. Bylaw 8241 – Rezoning Bylaw

SUBJECT: Bylaws 8240 and 8241: OCP Amendment and Rezoning Bylaws for 1502-1546 Oxford St - 180 bed Residential Care Centre

May 16, 2017

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REVIEWED WITH: <input type="checkbox"/> Sustainable Community Development <input type="checkbox"/> Development Services <input type="checkbox"/> Utilities <input type="checkbox"/> Engineering Operations <input type="checkbox"/> Parks & Environment <input type="checkbox"/> Economic Development	REVIEWED WITH: <input type="checkbox"/> Clerk's Office <input type="checkbox"/> Corporate Services <input checked="" type="checkbox"/> Communications <input checked="" type="checkbox"/> Finance <input type="checkbox"/> Fire Services <input type="checkbox"/> Human resources <input type="checkbox"/> ITS <input type="checkbox"/> Solicitor <input type="checkbox"/> GIS	REVIEWED WITH: External Agencies: <input type="checkbox"/> Library Board <input type="checkbox"/> NS Health <input type="checkbox"/> RCMP <input type="checkbox"/> Recreation Commission <input type="checkbox"/> Other: _____	REVIEWED WITH: Advisory Committees: <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
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CREEKSTONE RESIDENTIAL CARE CENTRE

1502-1546 OXFORD ST, DISTRICT OF NORTH VANCOUVER, BC

SUBMITTED FOR REZONING / OCP AMENDMENT / DEVELOPEMENT PERMIT OCTOBER 31, 2016



DEVELOPMENT TEAM

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LEED CONSULTANT
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AL CARMEL

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VANCOUVER BC V6P 6G8
T: 804-439-0022
CONTACT: MATT KOKAN

DRAWING INDEX

ARCHITECTURAL

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A1 CONTEXT PLAN
A2 CONTEXT PHOTOS
A3 SITE PLAN / PROJECT DATA
A4 FLOOR PLAN - PARKING LEVEL
A5 FLOOR PLAN - LEVEL 1
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NOTES:
DRAWINGS AND SPECIFICATIONS, AS INSTRUMENTS OF SERVICE, ARE THE PROPERTY OF CREEKSTONE RESIDENTIAL CARE CENTRE. THEY ARE TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED. ANY REUSE OR MODIFICATION OF THESE DRAWINGS WITHOUT THE WRITTEN PERMISSION OF CREEKSTONE ARCHITECTS IS PROHIBITED. ANY REUSE OR MODIFICATION OF THESE DRAWINGS WITHOUT THE WRITTEN PERMISSION OF CREEKSTONE ARCHITECTS IS PROHIBITED. ANY REUSE OR MODIFICATION OF THESE DRAWINGS WITHOUT THE WRITTEN PERMISSION OF CREEKSTONE ARCHITECTS IS PROHIBITED.

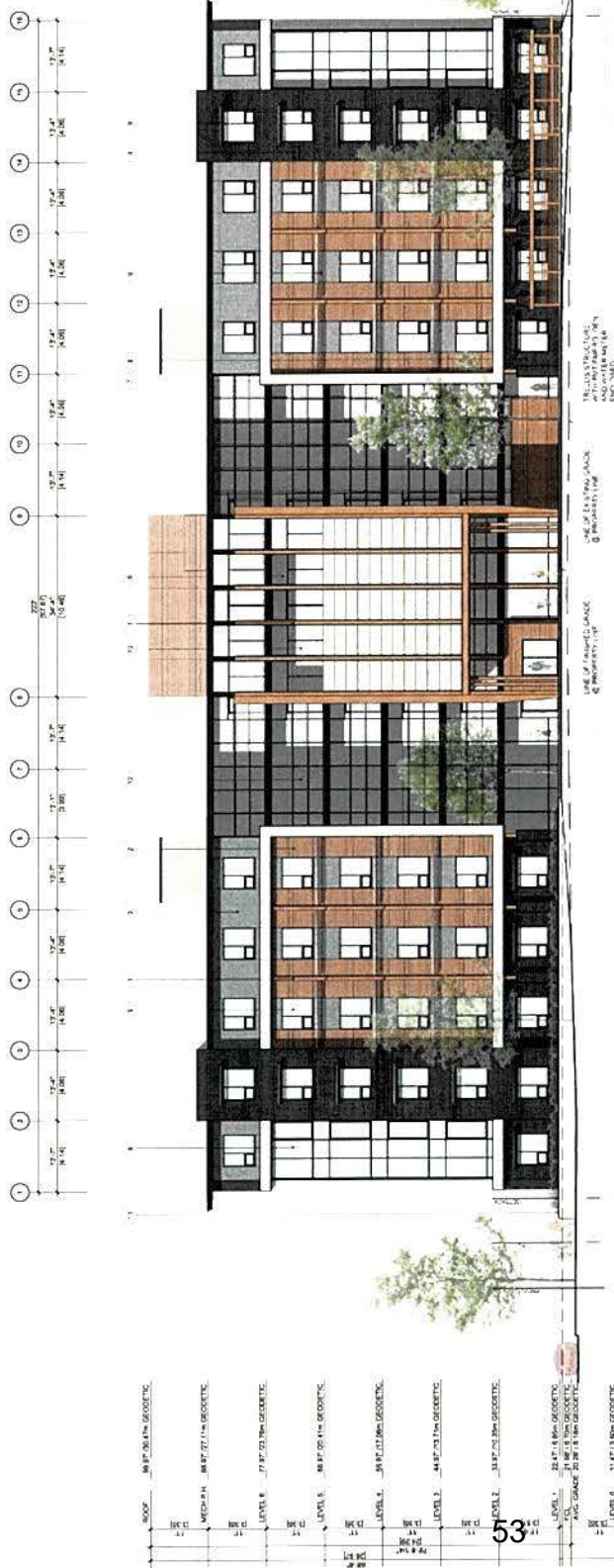
NO.	DATE	REVISION
1	2016.10.31	REZONING/OCP AMENDMENT FOR

PROJECT:
Creekstone - Residential Care Centre
Scale: N.T.S.

CLIENT:
TRELLIS
SENIOR SERVICES

DRAWING TITLE:
Cover and Drawing Index

CONSULTANT
DEREK CRAWFORD ARCHITECT INC.
227 Rainbow Road, Salt Spring Island BC, V8K 2V5
Tel: 804-686-8370 & 250-762-6993 dca@dcad.ca



SOUTH ELEVATION

- 1) PAINTED STEEL
- 2) METAL PANEL - WHITE
- 3) METAL PICKET FENCE - FOREGROUND
- 4) METAL LOUVERS
- 5) MARBLE PANEL - GREY
- 6) BRICK - DARK GREY
- 7) BLACK VINYL WINDOWS
- 8) BLACK ALUM CURTAIN WALL
- 9) METAL PANEL - LIGHT GREY
- 10) ARCHITECTURAL CONCRETE PLANTER
- 11) MARBLE PANEL - LIGHT GREY

MATERIALS

NOTE: THE DRAWING IS FOR INFORMATION ONLY. THE CLIENT IS RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION. THE DRAWING IS NOT TO BE USED FOR CONSTRUCTION WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECT. THE ARCHITECT IS NOT RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION. THE DRAWING IS NOT TO BE USED FOR CONSTRUCTION WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECT.

NO.	DATE	REVISION
1	2016-10-17	REVISION

PROJECT: Creekstone - Residential Care Centre
Scale: 1/8" = 1'

DRAWING TITLE: ELEVATIONS

CLIENT: TRELLIS SENIOR SERVICES

A14

dcd
DEREK CRAWFORD ARCHITECT INC.
127 Rainbow Road, Salt Spring Island BC, V8K 2V5
T: 604.686.8272 F: 604.686.8277 E: info@dcd.ca W: www.dcd.ca

CONSULTANT

The Corporation of the District of North Vancouver

Bylaw 8240

A bylaw to amend District of North Vancouver Official Community Plan Bylaw 7900,
2011

The Council for The Corporation of the District of North Vancouver enacts as follows:

1. Citation

This bylaw may be cited as "District of North Vancouver Official Community Plan Bylaw 7900, 2011, Amendment Bylaw 8240, 2017 (Amendment 25)".

2. Amendments

2.1 District of North Vancouver Official Community Plan Bylaw 7900, 2011 is amended as follows:

- a) Map 2 Land Use: as illustrated on Schedule A, by changing the land use designation of the properties on Map 2 from "Residential Level 5: Low Density Apartment" (RES5) to "Institutional".

READ a first time by a majority of all Council members.

PUBLIC HEARING held

READ a second time by a majority of all Council members.

READ a third time by a majority of all Council members.

ADOPTED by a majority of all Council members.

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk

Schedule A to Bylaw 8240

The District of North Vancouver Official Community Plan Amendment (Bylaw 8240)



The Corporation of the District of North Vancouver

Bylaw 8241

A bylaw to amend District of North Vancouver Zoning Bylaw 3210, 1965

The Council for The Corporation of the District of North Vancouver enacts as follows:

1. Citation

This bylaw may be cited as "District of North Vancouver Rezoning Bylaw 1355 (Bylaw 8241)".

2. Amendments

2.1 District of North Vancouver Zoning Bylaw 3210, 1965 is amended as follows:

- (a) Section 301(2) by inserting the following zoning designation:

Comprehensive Development Zone 105 CD105

- (b) Part 4B Comprehensive Development Zone Regulations by inserting the following:

"4B105 Comprehensive Development Zone 105 CD105

The CD105 Zone is applied to:

- i) Lot 36 Block 42 District Lot 204 Plan 1340 (PID: 005-866-197);
- ii) Lot 35 Block 42 District Lot 204 Plan 1340 (PID: 014-742-390);
- iii) Lot 30 Block 42 District Lot 204 Plan 1340 (PID: 014-742-373);
- iv) Lot 34 Block 42 District Lot 204 Plan 1340 (PID: 014-742-381);
- v) Lot B Block 42 District Lot 204 Plan 18808 (PID: 007-074-964);
- vi) Lot 31 Block 42 District Lot 204 Plan 1340 (PID: 010-511-954);
- vii) Lot 29 Block 42 District Lot 204 Plan 1340 (PID: 014-742-357); and
- vii) Lot A Block 42 District Lot 204 Plan 18808 (PID: 007-074-956).

4B105 - 1 Intent:

The purpose of the CD105 Zone is to establish specific land use and development regulations for a residential care facility.

4B105 - 2 Uses:

The following *principal uses* shall be permitted in the Comprehensive Development 105 Zone:

- a) Uses permitted without conditions:
 - i. Multi-level care facility;
- b) Conditional uses:
 - i. Not applicable

4B105 - 3 Accessory Uses:

- a) *Accessory uses* are permitted and include, but not necessarily limited to:
 - Storage;
 - Laundry;
 - Kitchen;
 - Dining;
 - Administration spaces;
 - Therapy treatment rooms;
 - Hair salon, spa, and other personal services;
 - Multi-purpose rooms;
 - Activity rooms; and,
 - Other uses customarily incidental to the principal use.

4B105 - 4 Density:

Buildings and structures shall be sited and constructed in accordance with the following regulations:

- a) The maximum permitted floor space in the CD105 Zone is 11,130m² (119,806 sq ft) inclusive of any density bonus for energy performance;
- b) For the purposes of calculating floor space ratio, the following areas are excluded:
 - i. All spaces underground including but not limited to parking, storage, and kitchen uses
 - ii. Mechanical and Electrical equipment spaces up to 140m² (1507 sq ft)
 - iii. Balconies, decks, canopies, overhangs, architectural elements and awnings.
- c) For the purposes of calculating FSR the lot area is deemed to be 4,157.3m² (44,748.8 sq ft) being the site size at the time of rezoning.
- d) Balcony and deck enclosures are not permitted

4B105 – 5 Height:

- a) The maximum permitted height measured to the top of the sixth floor of the building is 21.0m (68.9 ft)
- b) The maximum permitted height measured to the top of the mechanical penthouse of the building is 24.5m (80.4 ft)

4B105 - 6 Setbacks:

- a) Buildings shall be set back from property lines to the closest building face as established by development permit and in accordance with the following regulations:

Setback	Minimum Required Setback
North	2.9m (9.5 ft)
East	7.0m (23.0 ft)
South (Oxford St)	2.3m (7.5 ft)
West (Mountain Hwy)	2.3m (7.5 ft)

- b) For the purpose of measuring setbacks, measurements exclude:
 - i. Balconies, canopies, overhangs, architectural elements and awnings.

4B105 - 7 Coverage:

- a) Building Coverage: The maximum building coverage is 60%.
- b) Site Coverage: The maximum site coverage is 70%.

4B 105 - 8 Landscaping and Storm Water Management:

- a) All land areas not occupied by buildings, and patios shall be landscaped in accordance with a landscape plan approved by the District of North Vancouver.
- b) All electrical kiosks and garbage and recycling container facilities not located underground or within a building must be screened.

4B 105 – 9 Parking, Loading and Servicing Regulations:

- a) A minimum of 35 parking spaces are required, inclusive of designated visitor parking and parking for persons with disabilities;
- b) A maximum of 10 parking spaces may be small car spaces;
- c) All parking spaces shall meet the minimum width and length standards established in Part 10 of the Zoning Bylaw, exclusive of building support columns;
- d) A minimum of 6 class 2 visitor bicycle parking spaces must be provided."

(c) The Zoning Map is amended in the case of the lands illustrated on the attached map (Schedule A) by rezoning the land from the Single Family 6000 Zone (RS4) to Comprehensive Development Zone CD 105 and Neighbourhood Park (NP).

READ a first time

PUBLIC HEARING held

READ a second time

READ a third time

Certified a true copy of "Rezoning Bylaw 1355 (Bylaw 8241)" as at Third Reading

Municipal Clerk

APPROVED by the Ministry of Transportation and Infrastructure on

ADOPTED

Mayor

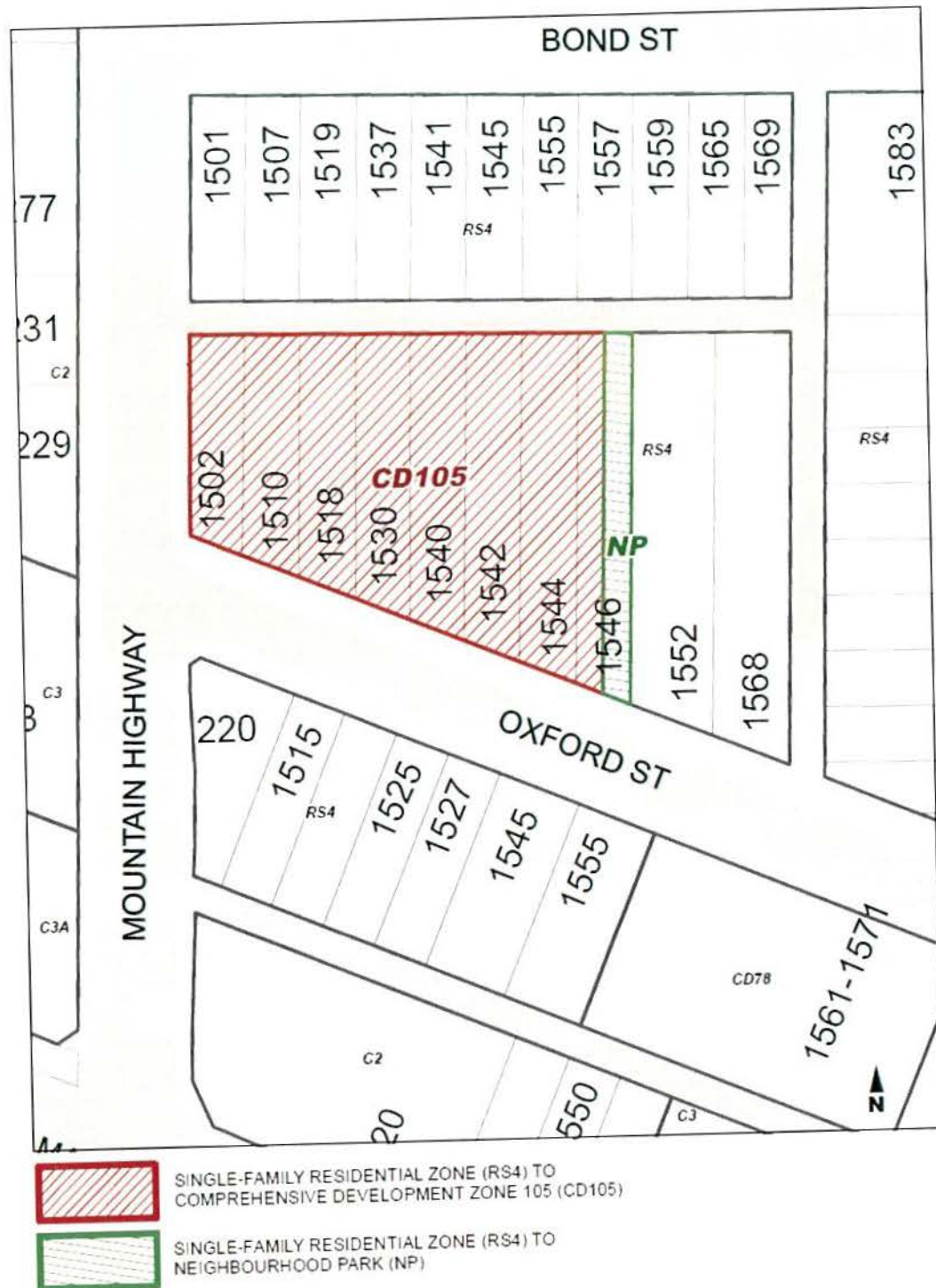
Municipal Clerk

Certified a true copy

Municipal Clerk

Schedule A to Bylaw 8241

The District of North Vancouver
Rezoning Bylaw 8241



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AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: <u>May 29, 2017</u>
<input type="checkbox"/> Workshop (open to public)	Date: _____

[Signature]
Dept.
Manager

[Signature]
GM/
Director

[Signature]
CAO

The District of North Vancouver REPORT TO COUNCIL

May 17, 2017

File: 08.3060.20/062. 16

AUTHOR: Darren Veres, Development Planner

**SUBJECT: BYLAWS 8236 AND 8237: REZONING AND HOUSING AGREEMENT FOR A
17 UNIT TOWNHOUSE PROJECT: 905 - 959 PREMIER STREET**

RECOMMENDATIONS:

THAT "District of North Vancouver Rezoning Bylaw 1353 (Bylaw 8236)" is given
FIRST Reading;

AND THAT "Housing Agreement Bylaw 8237, 2017 (905-959 Premier Street)" is given
FIRST Reading;

AND THAT Bylaw 8236 be referred to a public hearing.

REASON FOR REPORT:

The proposed project requires Council's consideration of:

- Bylaw 8236 to rezone the subject properties; and
- Bylaw 8237 to authorize entry into a Housing Agreement to ensure that owners are not prevented from renting their units.

SUMMARY:

The applicant proposes to redevelop four single-family lots located at 905 – 959 Premier Street for a 17-unit townhouse project. The proposal requires rezoning and issuance of a development permit. The Rezoning Bylaw and Housing Agreement Bylaw are recommended for Introduction and the Rezoning Bylaw is recommended for referral to a Public Hearing.

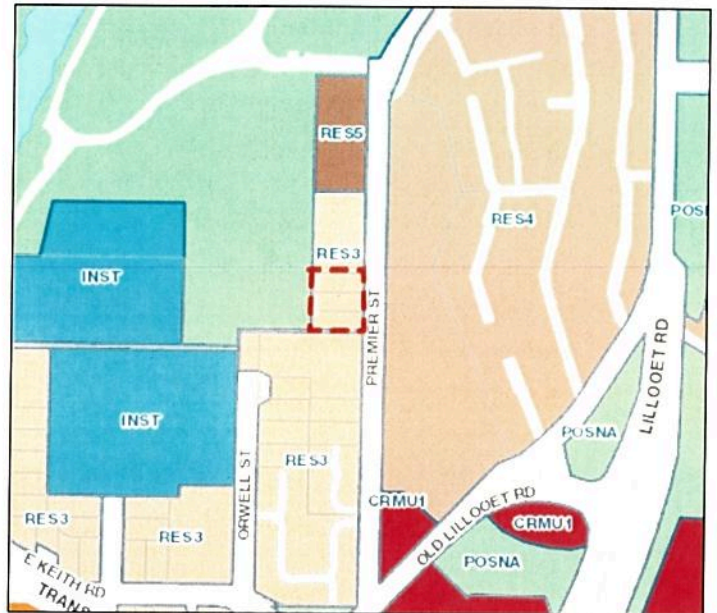


BACKGROUND:

Official Community Plan

The subject properties are designated as *Residential Level 3: Attached Residential* in the District Official Community Plan (OCP), which envisions ground-oriented multifamily housing up to approximately 0.8 FSR.

The proposed townhouse units are all three bedroom units, which will be attractive to families, and as such, the proposal responds to Goal #2 of the OCP to “encourage and enable a diverse mix of housing types...to accommodate the lifestyles and needs of people at all stages of life.” It also addresses the intent of the housing diversity policies in Section 7.1 of the OCP by providing units suitable for families (Policy 7.1.4).



The Lynn timer Inter-River Local Plan reference policy document designated this site as “Low Density Multi-Family Housing” up to 0.7 FSR. A plan goal of the Lynn timer Inter-River Local Plan reference policy document was “to support the primarily family orientation of the residential area, while ensuring any new development contributes directly to the overall improvement of the community”.

The density of the proposal is 0.7 FSR with exclusions for parking, storage and balconies and therefore compliant with the Official Community Plan and the Lynn timer Inter-River Local Plan reference policy document. The Lynn timer Inter-River design guidelines support the proposed exemptions for storage areas and garages.

Zoning:

The subject properties are zoned Residential Single-Family 7200 Zone (RS3) and therefore require rezoning to permit this multi-family project. Bylaw 8236 proposes the establishment of a new Comprehensive Development Zone 102 (CD102) tailored specifically to this project.

Development Permit

The subject properties are located within Development Permit Areas for the following purposes:

- Form and Character of Multi-Family Development (Ground-Oriented Housing);
- Energy and Water Conservation and Greenhouse Gas Emission Reductions; and
- Protection from Natural Hazards (Creek Hazard).

A detailed development permit report, outlining the projects' compliance with the applicable DPA guidelines, will be provided for Council's consideration at the Development Permit stage should the rezoning advance.

Strata Rental Protection Policy

Corporate Policy 8-3300-2 "Strata Rental Protection Policy" applies to this project as the rezoning application would permit development of more than five units. The policy requires a Housing Agreement to ensure that future strata bylaws do not prevent owners from renting their units and Bylaw 8237 is provided to implement that Policy.

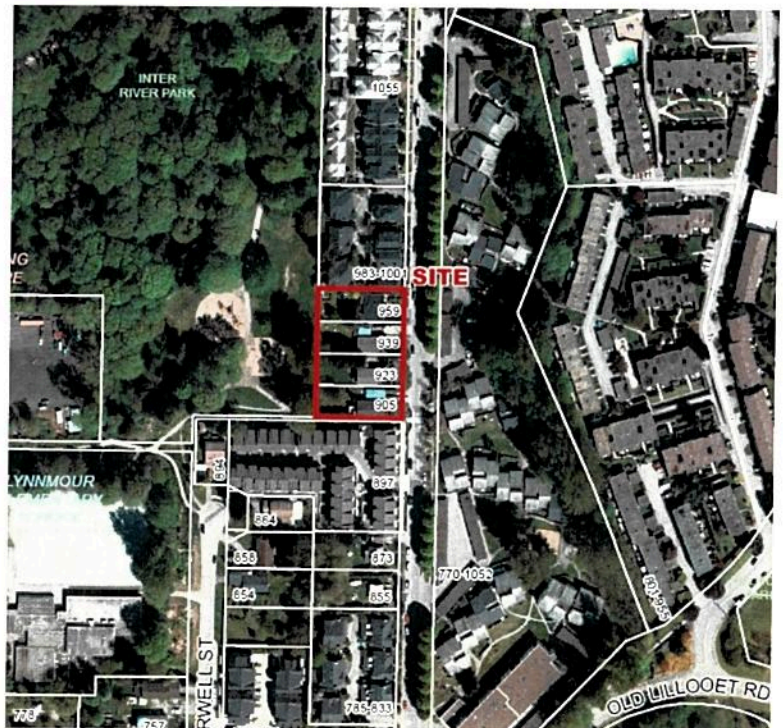
Housing Affordability and Diversity

In accordance with the Rental and Affordable Housing Strategy, this application is meeting goal number one of expanding the supply and diversity of housing through the provision of family oriented townhouse units which are in high demand and short supply in the District. These town homes offer ground oriented family alternatives to single detached home ownership and will be attractive to young couples who are part of the District's "missing generation." The Strata Rental Protection Policy will be applied through a Housing Agreement to ensure that no restrictions are placed on strata rentals. Community amenity contributions from the site can be used toward the District's affordable housing goals.

ANALYSIS

The Site and Surrounding Area:

The site consists of four single-family lots on the west side of Premier Street. Adjacent properties consist of townhouses to the north, east and south, and Inter River Park to the west. The OCP designates the surrounding multifamily properties as Residential Level 3: Attached Residential and Residential Level 4: Transitional Residential.



**SUBJECT: BYLAWS 8236 AND 8237: REZONING AND HOUSING AGREEMENT FOR
A 17 UNIT TOWNHOUSE PROJECT: 905 – 959 PREMIER STREET**

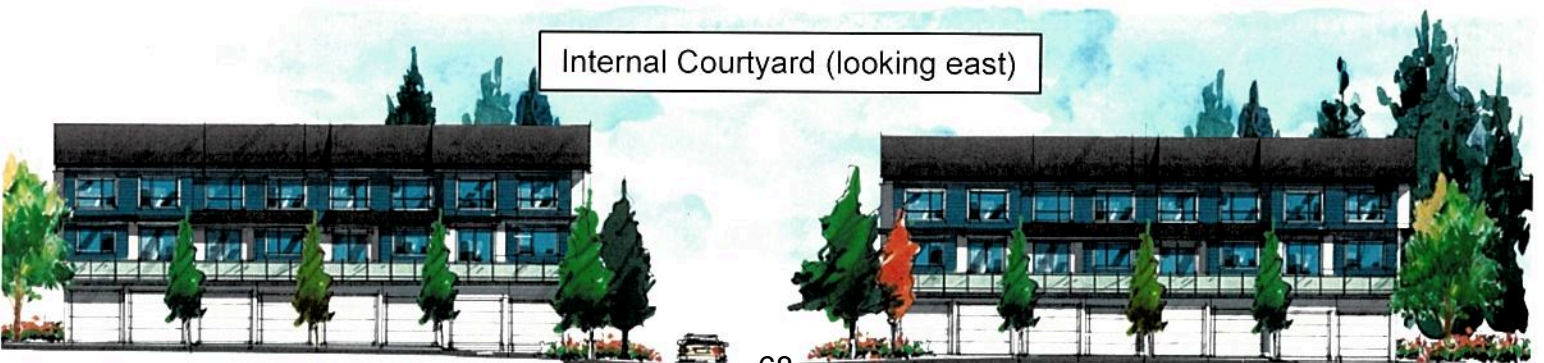
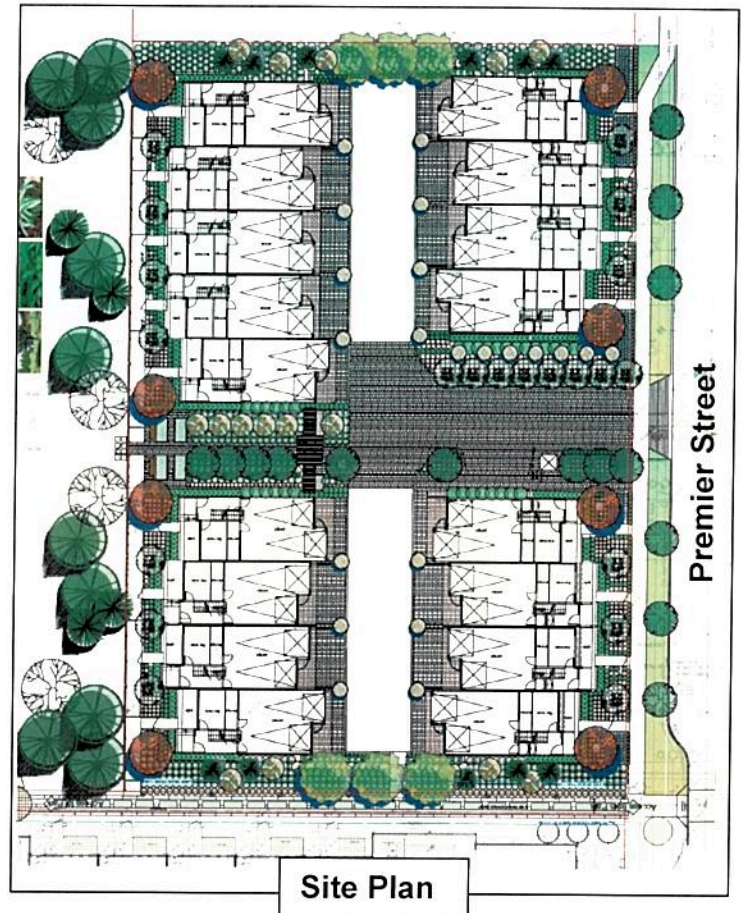
May 17, 2017

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Project Description:

Site Plan/Building Description:

The project consists of 17 townhouses in four buildings. Two buildings front Premier Street while the other two face Inter River Park. A landscaped walkway connecting Premier St with Inter River Park is located at the south end of the site. The townhouses are each three storeys with their own ground level parking garage. The garages are accessed off a driveway from Premier Street. All the units have 3 bedrooms on the upper level and range in size from 104m² (1,129 sq ft) to 114m² (1,232 sq ft), excluding the garages and 9 m² (100 sq. ft) of storage. The individual buildings are approximately 10.7m (35 ft) in height. Renderings of the project are below.





Inter-River Park Frontage (looking east from park)

Inter-River Sub-Area Transportation Study

This application was reviewed in context with Transportation Planning's Inter-River Sub-Area Transportation Study, provided to Council in September, 2016. This study, which involved local stakeholders and residents, determined locations for future road circulation improvements and pedestrian connections. This project is dedicating 1.1 m at the south portion of the site to achieve the enhanced pedestrian connection to Inter River Park (Digger Park) which is envisioned in the study.

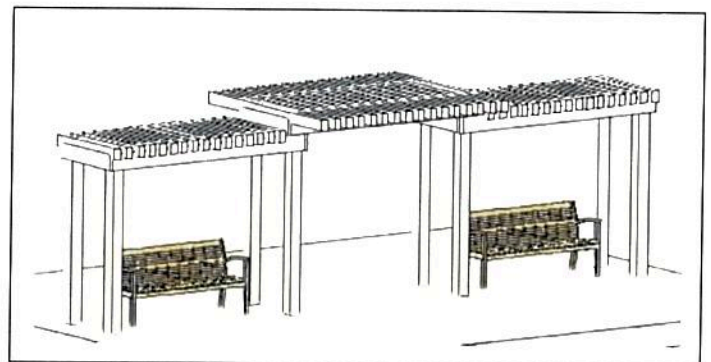
Parking

Vehicle access to the site is off Premier Street between the two front buildings and the proposal includes 35 parking stalls. Each of the units has a two-car garage and some driveways will accommodate visitor parking. One dedicated visitor space is provided along the south side of the driveway. All of the parking spaces including the visitor space are standard car spaces.

Landscaping

The landscaping is included at the perimeter of the site along the Premier Street frontage and on the interior drive aisles. Landscaping is also proposed along the pedestrian path at the south end of the property. This path provides public access to Inter River Park (Digger Park) from Premier Street.

A central feature of the landscape plan is a sitting and gathering area located between the two buildings on the west side of the property. This area includes benches, raised planters, an arbour, and a variety of trees and plantings creating a space for the residents to sit while overlooking the Inter River Park. A 1.3 m (4 ft) high wood fence is proposed along the western property line with a central gateway opening on to the park.



Trees

Twenty-nine onsite trees have been identified for removal to accommodate the proposed development. In addition, two hazardous District-owned Black Cottonwoods located in Inter River Park just outside the western boundary of the property have also been proposed for removal. In place of these trees, the applicant is planting 18 trees (including 10 Western Red Cedars) in the park just outside the western property line and 81 onsite trees. The onsite trees are a combination of deciduous and coniferous.

Engineering

The off-site engineering works include the installation of a new side walk, street lighting, a speed hump, and improvements to the sanitary network. The works also propose to install lighting bollards along the existing pedestrian pathway to the south of the site to improve visibility at night time.

The site is located within a Development Permit area for Creek Hazard and the applicant has submitted a report from Northwest Hydraulic Consultants that states that all habitable areas are set above the required flood construction level.

Acoustic Regulations

Bylaw 8138 includes the District's residential acoustic regulations for maximum noise levels in the bedrooms, living areas and other areas of the units. The applicant will be required to submit a report from a qualified noise consultant confirming the building design will enable these standards to be met. The Section Manager of Public Safety has reviewed and accepted the report.

Accessible Design

The applicant is proposing to provide basic design features to facilitate building access and usability for people of all ages and abilities, and enhanced features, where appropriate to facilitate ageing in place and support people with mobility and sensory impairments.

Reduced copies of site, architectural and landscaping plans are included as Attachment A for Council's reference.

IMPLEMENTATION:

Implementation of this project will require consideration of a rezoning bylaw, Bylaw 8236, and Housing Agreement Bylaw 8237, as well as issuance of a development permit and registration of legal agreements.

Bylaw 8236 (Attachment B) rezones the subject properties from Single Family Residential 7200 Zone (RS3) to a new Comprehensive Development 102 Zone (CD102) which:

- establishes the multi-family residential use;
- allows home occupations as an accessory use;
- establishes a base density FSR (Floor Space Ratio) of 0.45;
- establishes a density bonus to an FSR of 0.7 subject to payment of a \$257,281 CAC and entering into a housing agreement to restrict future strata rental restrictions;
- establishes setback, height, building coverage and site coverage regulations;
- incorporates acoustic requirements; and
- establishes parking regulations specific to this project.

Bylaw 8237, (Attachment C) authorizes the District to enter into a Housing Agreement to ensure that the proposed units remain available as rental units.

A contribution of \$48,732.42 will be required to the dyke infrastructure fund for future maintenance of the flood works installed in the Inter-River area. This contribution will be collected prior to adoption of Bylaw 8236. DNV DCCs are estimated at \$284,589.

In addition, the following legal agreements will be required prior to zoning bylaw adoption to secure:

- a housing agreement to ensure that owners are not prevented from renting their units;
- a green building, accessible and acoustical covenant;
- a stormwater management covenant;
- a covenant to ensure that the project is built in accordance with the flood report;
- an engineering servicing agreement (including construction management plan); and
- a consolidation plan with road dedication.

COMMUNITY AMENITY CONTRIBUTION:

The District's Community Amenity Contribution (CAC) Policy requires an amenity contribution for projects including an increase in residential density. In this case, a CAC of \$257,281 has been calculated and this amount is included in the proposed CD102 Zone. It is anticipated that the CACs from this development will include contributions toward public art; park, trail, environmental, pedestrian or other public realm, infrastructure improvements; municipal, recreation or social service facility or service / facility improvements; and/or the affordable housing fund.

GREEN BUILDING MEASURES:

Compliance with the Green Building Strategy is mandatory given the need for rezoning and the project is targeting an energy performance rating of Energuide 80 and will be required to meet a target equivalent to the "Gold" standard.

CONCURRENCE:

Staff

The project has been reviewed by staff from Environment, Permits, Parks, Engineering, Policy Planning, Urban Design, Transportation Planning, the Fire Department and the Arts Office.

Advisory Design Panel

The application was considered by the Advisory Design Panel (ADP) on February 9, 2017 and the panel recommended approval of the project subject to the review of the following items:

- further develop gathering area to provide more flexibility and better social interaction;
- Provide an internal connection between the courtyard and the pedestrian pathway;
- Provide wayfinding and unit identification; and
- Consider variation to garage door design to avoid repetition.

The applicant has provided the following revisions in response to the ADP's comments:

- Hardscaping around the arbour and entry/exit to the park, has been increased to accommodate additional space for gathering and improved social interaction;
- Exterior personnel doors in the garages have been revised to swing outwards to ensure their continuous functional use;
- New pedestrian connection to the southern pathway has been developed;
- Wayfinding sign with map has been added; and
- Garage door design has been refined to differentiate the units.

PUBLIC INPUT:

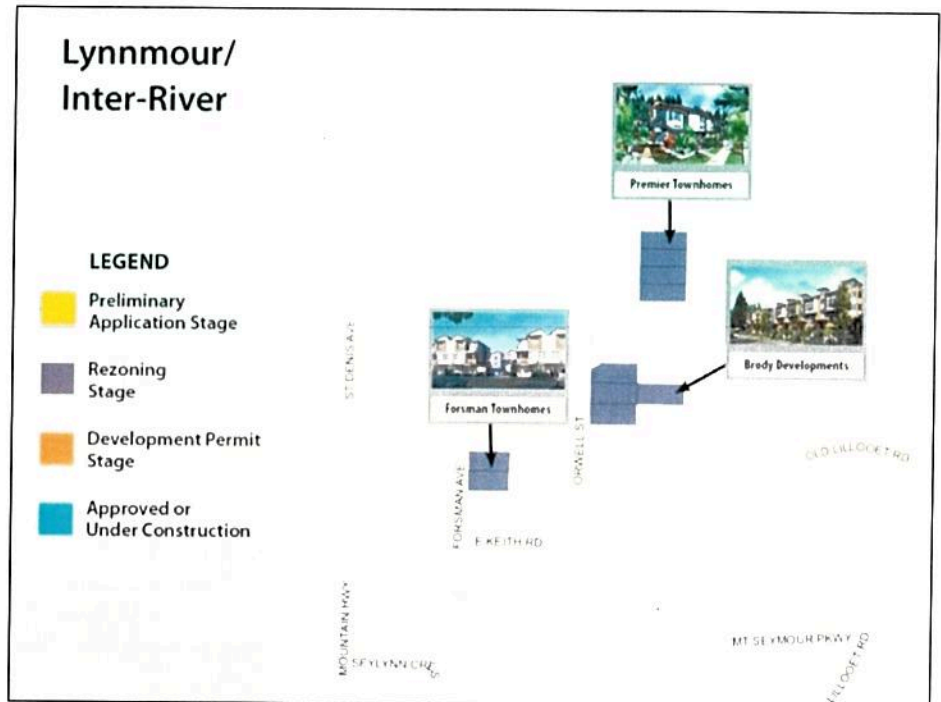
Public Information Meeting

The applicant held a facilitated Public Information Meeting on March 1, 2017. The meeting was attended by 10 residents. Written input has been provided by three neighbours. Input includes managing construction traffic, on-street parking and the need for visitor parking in this project. In addition lighting along the pedestrian pathway and onsite storage for garbage/recycling was noted.

The proposal has been revised to include lighting bollards along the pedestrian pathway to the south and garbage / recycling storage space inside the garages of each unit. Onsite parking complies with Part 10 of the zoning bylaw and the addition of an onsite visitor parking stall has been secured in the CD102 bylaw. The development covenant will require the construction traffic management plan in accordance with the direction of the District's construction traffic management office.

CONSTRUCTION MANAGEMENT PLAN:

This neighbourhood currently has three townhouse applications being processed. In order to reduce the development's impact on pedestrian and vehicular movements, the developer will be required to provide a construction traffic management plan as a condition of the development covenant and Development Permit. The Construction Management plan must minimize construction impacts on pedestrian and vehicle movement. The plan is required to be approved by the District prior to issuance of a building permit.



In particular, the 'construction traffic management' must:

1. Coordinate with other construction projects in the area;
2. Provide safe passage for pedestrians, cyclists, and vehicle traffic;
3. Outline roadway efficiencies (i.e. location of traffic management signs and flaggers);
4. Provide a point of contact for all calls and concerns;
5. Provide a sequence and schedule of construction activities;
6. Ascertain a location for truck marshalling and trade vehicle parking which is acceptable to the District and minimizes impacts to neighbourhoods;
7. Develop a plan for trade vehicle parking which is acceptable to the District and minimizes impacts to neighbourhoods;
8. Address silt/dust control and clean-up;
9. Provide a plan for litter clean-up and street sweeping adjacent to the site; and
10. Include a communication plan to notify surrounding school and residents.

Particular attention will be paid to maintaining vehicle access to properties located north of this site along Premier Street considering this road does not provide through access.

**SUBJECT: BYLAWS 8236 AND 8237: REZONING AND HOUSING AGREEMENT FOR
A 17 UNIT TOWNHOUSE PROJECT: 905 – 959 PREMIER STREET**

May 17, 2017

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CONCLUSION:

This project is consistent with the directions established in the OCP and the Lynnmour Inter-River Local Plan. It addresses OCP housing policies related to the provision of a range of housing options, in this case, family housing in a townhouse format.

The project is now ready for Council's consideration.

Options:

The following options are available Council's consideration:

- 1) Introduce Bylaws 8236 and 8237 and refer Bylaw 8236 to a Public Hearing (staff recommendation); or
- 2) Defeat Bylaw 8236 and 8237 at First Reading.



Darren Veres
Development Planner

A – Reduced project plans

B – Bylaw 8236

C – Bylaw 8237

REVIEWED WITH:

<input type="checkbox"/> Sustainable Community Dev.	_____
<input type="checkbox"/> Development Services	_____
<input type="checkbox"/> Utilities	_____
<input type="checkbox"/> Engineering Operations	_____
<input type="checkbox"/> Parks & Environment	_____
<input type="checkbox"/> Economic Development	_____
<input type="checkbox"/> Human resources	_____

<input type="checkbox"/> Clerk's Office	_____
<input type="checkbox"/> Communications	_____
<input type="checkbox"/> Finance	_____
<input type="checkbox"/> Fire Services	_____
<input type="checkbox"/> ITS	_____
<input type="checkbox"/> Solicitor	_____
<input type="checkbox"/> GIS	_____

External Agencies:

<input type="checkbox"/> Library Board	_____
<input type="checkbox"/> NS Health	_____
<input type="checkbox"/> RCMP	_____
<input type="checkbox"/> Recreation Com.	_____
<input type="checkbox"/> Museum & Arch.	_____
<input type="checkbox"/> Other:	_____



REZONING & DETAILED DP Update - April 26, 2017



DRAWING LIST

ARCHITECTURAL

- | | |
|-------|-----------------------------|
| 0.000 | COVER SHEET |
| 0.001 | CONTEXT MAPS: PHOTOS |
| 0.002 | CONTEXT MAPS: PHOTOS |
| 0.003 | PROJECT DATA: DESIGN |
| 0.004 | COLOR ELEVATION & S |
| 0.005 | COLOR ELEVATION & S |
| 0.006 | COLOR ELEVATION & S |
| 0.007 | RESPECTIVE RENDERINGS |
| 0.008 | RESPECTIVE RENDERINGS |
| 0.009 | DIGITAL CONTEXT VEST. IMAGE |
| 0.010 | PHYSICAL RENDERING |
| 0.011 | 3D PLAN |
| 0.012 | 2ND FLOOR PLAN |
| 0.013 | 3RD FLOOR PLAN |
| 0.014 | 400 PLAN |
| 0.015 | 8 TYPE UNIT PLANS |
| 0.016 | 8 TYPE UNIT PLANS |
| 0.017 | SITE ELEVATIONS: BUILDINGS |
| 0.018 | SITE ELEVATIONS: BUILDINGS |
| 0.019 | SITE ELEVATIONS: BUILDINGS |
| 0.020 | SITE ELEVATIONS: BUILDINGS |
| 0.021 | SITE SECTIONS |
| 0.022 | SITE SECTIONS |

LANDSCAPE

- | | |
|----|------------------------------|
| 1 | SITE CONCEPT PLAN |
| 2 | TREE REMOVAL, RETENTION PLAN |
| 3 | HARDSCAPE PLAN |
| 4 | OVERALL PLANTING PLAN |
| 5 | PLANTING PLAN |
| 6 | PLANTING PLAN |
| 7 | PLANTING PLAN |
| 8 | SECTIONS, ELEVATIONS |
| 9 | SECTIONS, ELEVATIONS |
| 10 | PERCOLA DETAILS |

CIVIL

- | | |
|----------|---------------------------------|
| KEY PLAN | EROSION & SEDIMENT CONTROL |
| SC | ROADWAYS - CONCRETE ST. |
| 1 | ROADWAYS - ASPHALT |
| 2 | ROADWAYS - GRAVEL |
| 3 | ROADWAYS - GRAVEL |
| 4 | SIGNAGE & LINE PAINTING |
| 5 | GRADING & ASPHALT |
| 6 | SERVICING - OFF-SITE |
| 7 | SERVICING - ON-SITE SAN / WATER |
| 8 | SERVICING - ON-SITE STORM |
| 9 | SERVICING - ON-SITE STORM |
| 10 | STANDARD DETAILS |
| 11 | STANDARD DETAILS |
| 12 | STREET LIGHTING |
| 13 | STREET LIGHTING |

STRUCTURE DEVELOPMENT

17-Unit Townhouse Development

905 - 909 PREMIER STREET
NORTH VANCOUVER, BC

COVER PAGE

52225 CH

ST

April 26, 2017

PROPOSED RESIDENTIAL DEVELOPMENT - STRUCTURE DEVELOPMENT

A-0.00



PREMIER STREET EAST ELEVATION (BUILDINGS 1 & 3)

ia
 INTEGRA ARCHITECTURE INC.
 416 WEST PENDER STREET
 VANCOUVER, BC V6B 1T5
 T 604 688 4220 F 604 688 4270
 info@intgra-arch.com
 www.intgra-arch.com



899 PREMIER STREET (DEVELOPMENT TO SOUTH)
 VIGNETTE ELEVATION
 PATHWAY TO PARK



PREMIER STREET ENTRY PERSPECTIVE (BLDGs. 1 & 3)



INTERNAL COURTYARD PERSPECTIVE (BUILDING 4)

STRUCTURE DEVELOPMENT
 17-Unit Townhouse
 Development
 402-408 PENDER STREET
 VANCOUVER, BC
 Coloured
 Elevations &
 Perspectives
 03/25
 NTS
 April 24, 2017
 (REVISED)
 (REVISED)
 (REVISED)

A-0.11



INTERNAL (WEST) ELEVATION (BUILDINGS 1 & 3)



PUBLIC PATH (SOUTH) ELEVATION (BUILDINGS 1 & 2)



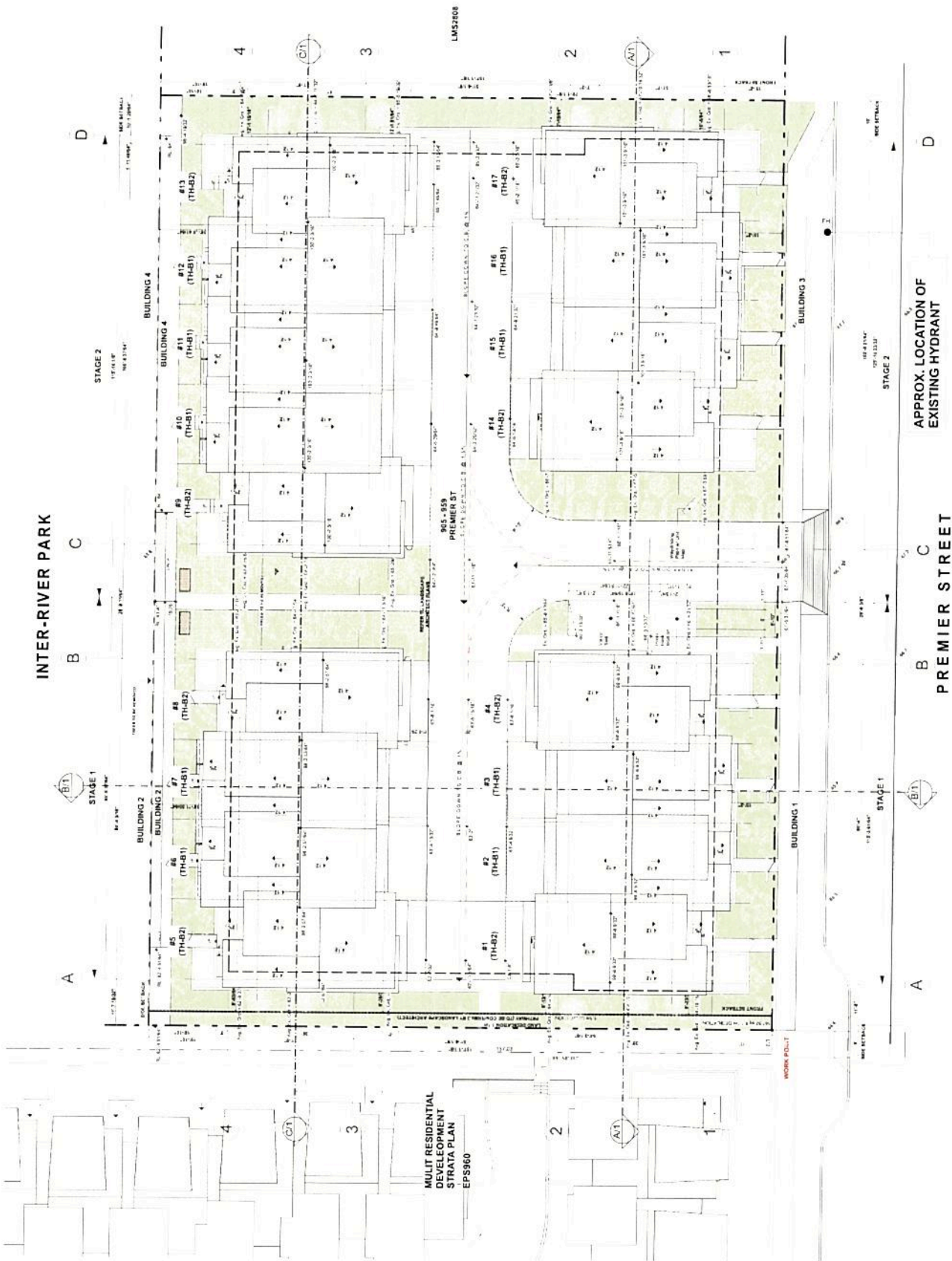
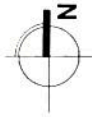
INTER RIVER PARK PERSPECTIVE FROM S.W. CORNER



INTER RIVER PARK (WEST) ELEVATION (BUILDINGS 2 & 4)



INTERIA ARCHITECTURE INC.
415 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.684.4270 F 604.684.4270
info@interiaarch.com
www.interiaarch.com



17-Unit Townhouse Development
905-959 PENDER STREET
VANCOUVER, BC

Site Plan

13245
532' x 140'
April 28, 2017
1

A-1.00



The Corporation of the District of North Vancouver

Bylaw 8236

A bylaw to amend District of North Vancouver Zoning Bylaw 3210, 1965

The Council for The Corporation of the District of North Vancouver enacts as follows:

1. Citation

This bylaw may be cited as the "District of North Vancouver Rezoning Bylaw 1353 (Bylaw 8236)".

2. Amendments

2.1 District of North Vancouver Zoning Bylaw 3210, 1965 is amended as follows:

a) Section 301 (2) by inserting the following zoning designation:

"Comprehensive Development Zone 102 CD102"

b) Part 4B Comprehensive Development Zone Regulations by inserting the following, inclusive of Schedule B.

"4B102 Comprehensive Development Zone 102 CD 102

The CD 102 zone is applied to:

905 Premier Street, LOT A BL 2 DL 612 PLAN 15462, PID: 007-637-781
 923 Premier Street, LOT B BL 2 DL 612 PLAN 15462, PID: 007-637-811
 939 Premier Street, LOT C BL 2 DL 612 PLAN 15462, PID: 007-637-837
 959 Premier Street, LOT D BL 2 DL 612 PLAN 15642, PID: 007-637-861

4B 102-1 Intent

The purpose of the CD 102 Zone is to establish specific land use and development regulations for a seventeen-unit townhouse project.

4B 102- 2 Permitted Uses:

The following *principal* uses shall be permitted in the CD 102 Zone:

(a) Uses Permitted Without Conditions:

Not Applicable

(b) Conditional Uses:

- (i) Residential building, multiple-family townhouse

4B 102-3 Conditions of Use

- (a) Balcony enclosures not permitted

4B 102-4 Accessory Use

- (a) *Accessory uses* are permitted and may include but are not necessarily limited to:

- (i) Home occupations in accordance with the regulations in Section 405 of the Zoning Bylaw, 1965

4B 102-5 Density

- (a) The maximum permitted density in the CD102 Zone is limited to a floor space ratio (FSR) of 0.45, inclusive of any density bonus for energy performance, and a maximum of 4 units;
- (b) For the purposes of calculating floor space ratio, a maximum of 804.91 m² of individual parking garages (8,664.25 sq ft) in total on the lot and a maximum of 74.3 m² of individual unit storage (a maximum of 100 sq ft per unit) in total on the lot as well as balconies and landscape trellis are excluded.
- (c) Balcony enclosures are not permitted.

4B 102-6 Amenities

- (a) Despite subsection 4B102-5, density in the CD102 Zone is increased to a maximum floor space of 2,363.15m² (25,437 sq ft), inclusive of any density bonus for energy performance and a maximum of 17 units, if the owner:
 - 1. Enters into a Housing Agreement prohibiting any restrictions preventing the owners in the project from renting their units; and

2. Contributes \$257,281 to the municipality to be used for any or all of the following amenities (with allocation to be determined by the municipality in its sole discretion): public art; park, trail, environmental, pedestrian or other public realm, infrastructure improvements; municipal, recreation or social service facility or service / facility improvements; and/or the affordable housing fund.

4B 102-7 Maximum Principal Building Size:

Not applicable

4B 102-8 Setbacks:

- a) Buildings shall be set back from property lines to the closest building face as established by development permit and in accordance with the following regulations:

Setback	Buildings (Min Setback)
Front (east property line)	4.57m (15 ft) to the building face
Rear (west property line)	5.11m (16.75 ft) to the building face
Side (north)	2.44m (8 ft) to the building face
Side (south)	1.83m (6 ft) to the building face

- b) Balconies and trellises are excluded from any setback requirements.

4B 102-9 Building Orientation:

Not applicable

4B 102-10 Building Depth and Width:

Not applicable

4B 102-11 Coverage:

- (a) Building Coverage shall not exceed 40%.
- (b) Site Coverage shall not exceed 82%.

4B 102-12 Height:

The maximum permitted height for each building is 10.7m (35 ft);

4B 102-13 Acoustic Requirements:

In the case of residential purposes, a development permit application shall require evidence in the form of a report and recommendations prepared by persons trained in acoustics and current techniques of noise measurements, demonstrating that the noise levels in those portions of the dwelling listed below shall not exceed the noise levels expressed in decibels set opposite such portions of the dwelling units:

Portion of Dwelling Unit	Noise Level (Decibels)
Bedrooms	35
Living and Dining rooms	40
Kitchen, Bathrooms and Hallways	45

4B 102-14 Flood Construction Requirements:

No basement, or habitable floor space, other than garage and storage space, shall be constructed below the established flood construction levels as identified in a flood hazard report prepared by a qualified registered professional engineer.

4B 102-15 Landscaping:

- (a) All land areas not occupied by buildings, structures, parking spaces, loading spaces, driveways, manoeuvring aisles and sidewalks shall be landscaped or finished in accordance with an approved landscape plan; and
- (b) All electrical kiosks and garbage and recycling container pads not located underground or within a building shall be screened with landscaping.

4B 102-16 Subdivision Requirements:

Not applicable

4B 102-17 Additional Accessory Structure Regulations:

Not applicable.

4B 102-18 Parking and Loading Regulations:

- (a) Parking spaces shall be provided on the basis of 2 spaces/unit plus 1 visitor space; and

(b) All parking spaces shall meet the minimum length and width standards established in Part 10 of the District of North Vancouver Zoning Bylaw.”

2.2 The Zoning Map is amended in the case of the lands illustrated on the attached map (Schedule A) by rezoning the land from the Residential Single Family 7200 Zone (RS3) to Comprehensive Development Zone 102 (CD 102).

READ a first time May 29, 2017

PUBLIC HEARING held

READ a second time

READ a third time

Certified a true copy of “Rezoning Bylaw 1353 (Bylaw 8236)” as at Third Reading

Municipal Clerk

APPROVED by the Ministry of Transportation and Infrastructure on

ADOPTED

Mayor

Municipal Clerk

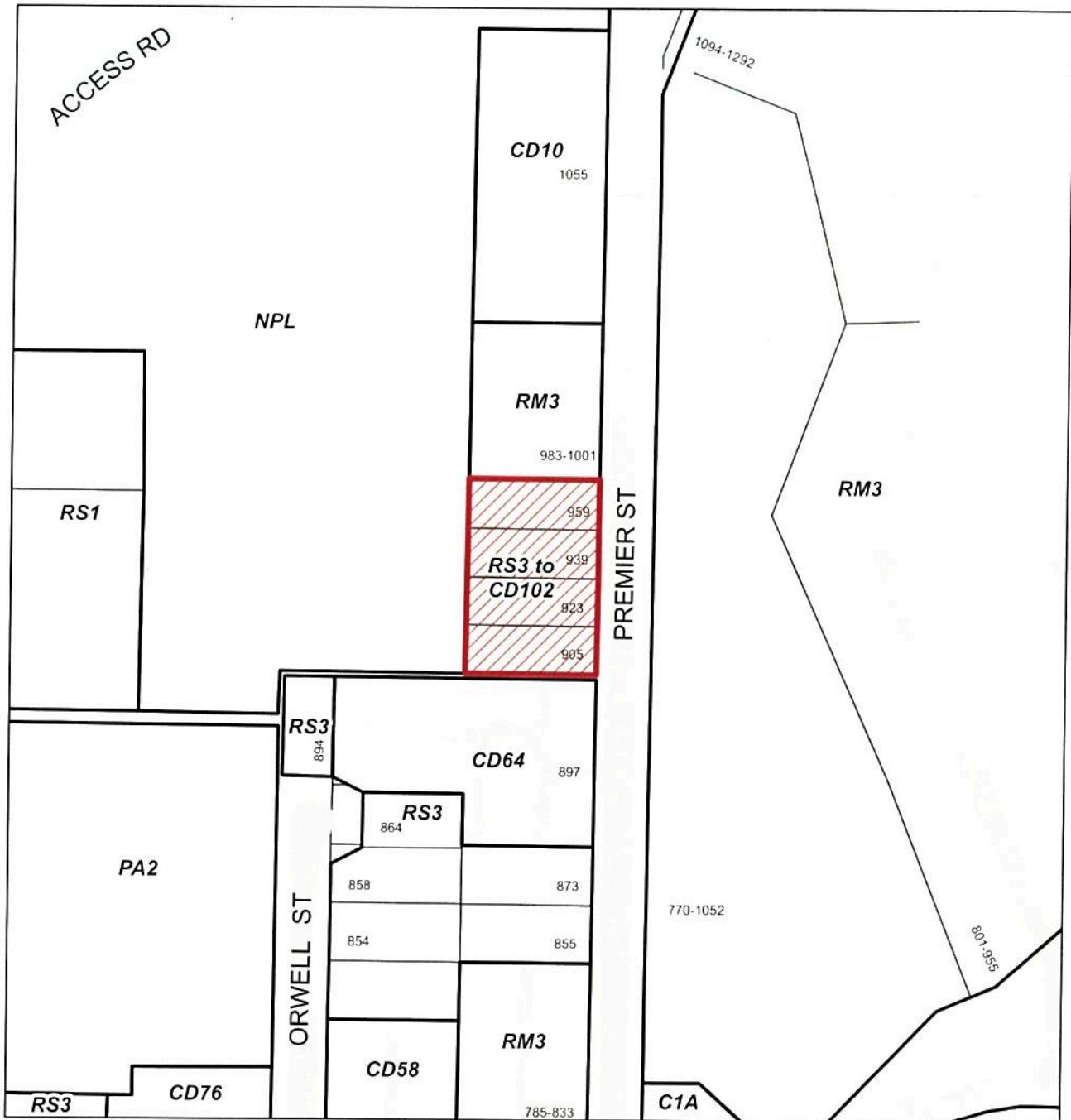
Certified a true copy

Municipal Clerk

Schedule A to Bylaw 8236

BYLAW 8236

The District of North Vancouver Rezoning Bylaw 1353 (Bylaw 8236)



RESIDENTIAL SINGLE FAMILY 7200 ZONE 3 (RS3) TO
COMPREHENSIVE DEVELOPMENT ZONE 102 (CD102)



The Corporation of the District of North Vancouver**Bylaw 8237****A bylaw to enter into a Housing Agreement**

The Council for The Corporation of the District of North Vancouver enacts as follows:

1. Citation

This bylaw may be cited as "Housing Agreement Bylaw 8237, 2017 (905-959 Premier Street)".

2. Authorization to Enter into Agreement

2.1 The Council hereby authorizes a housing agreement between The Corporation of the District of North Vancouver and Park Side Edge Developments Ltd., Inc. No. BC0999688 substantially in the form attached to this Bylaw as Schedule "A" with respect to the following lands:

- a) PID: 007-637-781 LOT A BL 2 DL 612 PLAN 15462
- b) PID: 007-637-811 LOT B BL 2 DL 612 PLAN 15462
- c) PID: 007-637-837 LOT C BL 2 DL 612 PLAN 15462
- d) PID: 007-637-861 LOT D BL 2 DL 612 PLAN 15642

3. Execution of Documents

The Mayor and Municipal Clerk are authorized to execute any documents required to give effect to the Housing Agreement.

READ a first time May 29, 2017

READ a second time

READ a third time

ADOPTED

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk

Schedule A to Bylaw 8237

SECTION 219 COVENANT – HOUSING AGREEMENT

This agreement is dated for reference the ____ day of _____, 20____

BETWEEN:

PARK SIDE EDGE DEVELOPMENTS LTD. (Inc. No. BC0999688), a company incorporated under the laws of the Province of British Columbia having an office at 1015 15th Avenue East, Vancouver, BC V5T 2S4

(the “Developer”)

AND:

THE CORPORATION OF THE DISTRICT OF NORTH VANCOUVER, a municipality incorporated under the *Local Government Act*, RSBC 2015, c.1 and having its office at 355 West Queens Road, North Vancouver, BC V7N 4N5

(the “District”)

WHEREAS:

1. The Developer is the registered owner of the Lands (as hereinafter defined);
2. The Developer wishes to obtain development permissions with respect to the Lands and wishes to create a condominium development which will contain residential strata units on the Lands;
3. Section 483 of the *Local Government Act* authorises the District, by bylaw, to enter into a housing agreement to provide for the prevention of rental restrictions on housing, and provides for the contents of the agreement; and
4. Section 219 of the *Land Title Act* (British Columbia) permits the registration in favour of the District of a covenant of a negative or positive nature relating to the use of land or a building thereon, or providing that land is to be built on in accordance with the covenant, or providing that land is not to be built on except in accordance with the covenant, or providing that land is not to be subdivided except in accordance with the covenant;

NOW THEREFORE in consideration of the mutual promises contained in it, and in consideration of the payment of \$1.00 by the District to the Developer (the receipt and sufficiency of which are hereby acknowledged by the Developer), the parties covenant and agree with each other as follows, as a housing agreement under Section 483 of the *Local Government Act*, as a contract and a deed under seal between the parties, and as a covenant under Section 219 of the *Land Title Act*, and the Developer hereby further covenants and agrees that neither the Lands nor any building constructed thereon shall be used or built on except in accordance with this Agreement:

1. DEFINITIONS

1.01 Definitions

In this agreement:

- (a) *"Development Permit"* means development permit No. _____ issued by the District;
- (b) *"Lands"* means land described in Item 2 of the *Land Title Act* Form C to which this agreement is attached;
- (c) *"Owner"* means the Developer and any other person or persons registered in the Lower Mainland Land Title Office as owner of the Lands from time to time, or of any parcel into which the Lands are consolidated or subdivided, whether in that person's own right or in a representative capacity or otherwise;
- (d) *"Proposed Development"* means the proposed development containing not more than 17 units to be constructed on the Lands in accordance with the Development Permit;
- (e) *"Short Term Rentals"* means any rental of a Unit for any period less than 30 days;
- (f) *"Strata Corporation"* means the strata corporation formed upon the deposit of a plan to strata subdivide the Proposed Development pursuant to the *Strata Property Act*;
- (g) *"Unit"* means a residential dwelling strata unit in the Proposed Development; and
- (h) *"Unit Owner"* means the registered owner of a Dwelling Unit in the Proposed Development.

2. TERM

This Agreement will commence upon adoption by District Council of Bylaw 8237 and remain in effect until terminated by the District as set out in this Agreement.

3. RENTAL ACCOMODATION

3.01 Rental Disclosure Statement

No Unit in the Proposed Development may be occupied unless the Owner has:

- (a) before the first Unit is offered for sale, or conveyed to a purchaser without being offered for sale, filed with the Superintendent of Real Estate a rental disclosure statement in the prescribed form (the "Rental Disclosure Statement") designating all of the Units as rental strata lots and imposing at least a 99 year rental period in relation to all of the Units pursuant to the *Strata Property Act* (or any successor or replacement legislation), except in relation to Short Term Rentals and, for greater certainty, stipulating specifically that the 99 year rental restriction does not apply to a Strata Corporation bylaw prohibiting or restricting Short Term Rentals; and

- (b) given a copy of the Rental Disclosure Statement to each prospective purchaser of any Unit before the prospective purchaser enters into an agreement to purchase in respect of the Unit. For the purposes of this paragraph 3.01(b), the Owner is deemed to have given a copy of the Rental Disclosure Statement to each prospective purchaser of any Unit in the building if the Owner has included the Rental Disclosure Statement as an exhibit to the disclosure statement for the Proposed Development prepared by the Owner pursuant to the *Real Estate Development Marketing Act*.

3.02 Rental Accommodation

The Units constructed on the Lands from time to time may always be used to provide rental accommodation as the Owner or a Unit Owner may choose from time to time, except that this section 3.02 does not apply to Short Term Rentals which may be restricted by the Strata Corporation to the full extent permitted by law.

3.03 Binding on Strata Corporation

This agreement shall be binding upon all Strata Corporations created by the subdivision of the Lands or any part thereof (including the Units) pursuant to the *Strata Property Act*, and upon all Unit Owners.

3.04 Strata Bylaw Invalid

Any Strata Corporation bylaw which prevents, restricts or abridges the right to use any of the Units as rental accommodations (other than Short Term Rentals) shall have no force or effect.

3.05 No Bylaw

The Strata Corporation shall not pass any bylaws preventing, restricting or abridging the use of the Lands, the Proposed Development or the Units contained therein from time to time as rental accommodation (other than Short Term Rentals).

3.06 Vote

No Unit Owner, nor any tenant or mortgagee thereof, shall vote for any Strata Corporation bylaw purporting to prevent, restrict or abridge the use of the Lands, the Proposed Development or the Units contained therein from time to time as rental accommodation (other than Short Term Rentals).

3.07 Notice

The Owner will provide notice of this Agreement to any person or persons intending to purchase a Unit prior to any such person entering into an agreement of purchase and sale, agreement for sale, or option or similar right to purchase as part of the disclosure statement for any part of the Proposed Development prepared by the Owner pursuant to the *Real Estate Development Marketing Act*.

3.08 Release of Covenant [optional clause]

The District agrees that if the District of North Vancouver Rezoning Bylaw 3210 (Bylaw 8197), is not adopted by the District's Council before [date], the Owner is entitled to require the District to execute and deliver to the Owner a discharge, in registrable form, of this Agreement from title to the Land. The Owner is responsible for the preparation of the discharge under this section and for the cost of registration at the Land Title Office.

4. DEFAULT AND REMEDIES

4.01 Notice of Default

The District may, acting reasonably, give to the Owner written notice to cure a default under this Agreement within 30 days of delivery 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.

4.02 Costs

The Owner will pay to the District upon demand all the District's costs of exercising its rights or remedies under this Agreement, on a full indemnity basis.

4.03 Damages an Inadequate Remedy

The Owner acknowledges and agrees that in the 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 District and to the public interest will be irreparable and not susceptible of adequate monetary compensation.

4.04 Equitable Remedies

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.

4.05 No Penalty or Forfeiture

The Owner acknowledges and agrees that it is entering into this Agreement to benefit the public interest in providing rental accommodation, and that the District's rights and remedies under this Agreement are necessary to ensure that this purpose is carried out, and the District's rights and remedies under this Agreement are fair and reasonable and ought not to be construed as a penalty or forfeiture.

4.06 Cumulative Remedies

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 to 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 for a default by the Owner under this Agreement.

5. LIABILITY

5.01 Indemnity

Except if arising directly from the negligence of the District or its employees, agents or contractors, the Owner will indemnify and save harmless each of the District and its board members, officers, directors, employees, agents, and elected or appointed officials,, and their heirs, executors, administrators, personal representatives, successors and assigns, from and against all claims, demands, actions, loss, damage, costs and liabilities that all or any of them will or may be liable for or suffer or incur or be put to any act or omission by the Owner or its officers, directors, employees, agents, contractors, or other persons for whom the Owner is at law responsible, or by reason of or arising out of the Owner's ownership, operation, management or financing of the Proposed Development or any part thereof.

5.02 Release

The Owner hereby releases and forever discharges the District, 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 Proposed Development or any part thereof which has been or hereafter may be given to the Owner by all or any of them.

5.03 Survival

The covenants of the Owner set out in Sections 5.01 and 5.02 will survive termination of this Agreement and continue to apply to any breach of the Agreement or claim arising under this Agreement during the ownership by the Owner of the Lands or any Unit therein, as applicable.

6. GENERAL PROVISIONS

6.01 District's Power Unaffected

Nothing in this Agreement:

- (a) affects or limits any discretion, rights, powers, duties or obligations of the District 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 District's bylaws in relation to the use of the Lands.

6.02 Agreement for Benefit of District Only

The Owner and District agree that:

- (a) this Agreement is entered into only for the benefit of the District:
- (b) this Agreement is not intended to protect the interests of the Owner, any Unit Owner, any occupant of any Unit or any future owner, occupier or user of any part of the Proposed Development, including any Unit, or the interests of any third party, and the District has no obligation to anyone to enforce the terms of this Agreement; and
- (c) The District may at any time terminate this Agreement, in whole or in part, and execute a release and discharge of this Agreement in respect of the Proposed Development or any Unit therein, without liability to anyone for doing so.

6.03 Agreement Runs With the Lands

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 or in any Unit after the date of this Agreement.

6.04 Release

The covenants and agreements on the part of the Owner and any Unit Owner and herein set forth in this Agreement have been made by the Owner and any Unit Owner as contractual obligations as well as being made pursuant to Section 483 of the *Local Government Act* (British Columbia) and as such will be binding on the Owner and any Unit Owner, except that neither the Owner nor any Unit Owner shall be liable for any default in the performance or observance of this Agreement occurring after such party ceases to own the Lands or a Unit as the case may be.

6.05 Priority of This Agreement

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 each Unit in the Proposed Development, including any amendments to this Agreement as may be required by the Land Title Office or the District to effect such registration.

6.06 Agreement to Have Effect as Deed

The District and the Owner each intend by execution and delivery of this Agreement to create both a contract and a deed under seal.

6.07 Waiver

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.

6.08 Time

Time is of the essence in this Agreement. If any party waives this requirement, that party may reinstate it by delivering notice to another party.

6.09 Validity of Provisions

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.

6.10 Extent of Obligations and Costs

Every obligation of a party which is set out in this Agreement will extend throughout the Term and, to the extent that any obligation ought to have been observed or performed prior to or upon the expiry or earlier termination of the Term, such obligation will survive the expiry or earlier termination of the Term until it has been observed or performed.

6.11 Notices

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 or by personal service, to the following address for each party:

If to the District:

District Municipal Hall
355 West Queens Road
North Vancouver, BC V7N 4N5

Attention: Planning Department

If to the Owner:

Park Side Edge Developments Ltd.
1015 15th Avenue East
Vancouver, BC V5T 2S4

If to the Unit Owner:

The address of the registered owner which appears on title to the Unit at the time of notice.

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 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.

6.12 Further Assurances

Upon request by the District, the Owner will promptly do such acts and execute such documents as may be reasonably necessary, in the opinion of the District, to give effect to this Agreement.

6.13 Enuring Effect

This Agreement will enure to the benefit of and be binding upon each of the parties and their successors and permitted assigns.

7. INTERPRETATION

7.01 References

Gender specific terms include both genders and include corporations. Words in the singular include the plural, and words in the plural include the singular.

7.02 Construction

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.

7.03 No Limitation

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 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.

7.04 Terms Mandatory

The words "must" and "will" and "shall" are to be construed as imperative.

7.05 Statutes

Any reference in this Agreement to any statute or bylaw includes any subsequent amendment, re-enactment, or replacement of that statute or bylaw.

7.06 Entire Agreement

- (d) This is the entire agreement between the District and the Owner concerning its subject, and there are no warranties, representations, conditions or collateral agreements relating to this Agreement, except as included in this Agreement.
- (e) 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 District Council of a bylaw to amend Bylaw 8237.

7.07 Governing Law

This Agreement is to be governed by and construed and enforced in accordance with the laws of British Columbia.

As evidence of their agreement to be bound by the terms of this instrument, the parties hereto have executed the *Land Title Act* Form C that is attached hereto and forms part of this Agreement.

GRANT OF PRIORITY

WHEREAS CANADIAN WESTERN BANK (the "**Chargeholder**") is the holder of the following charges which are registered in the Land Title Office:

- (a) Mortgage CA4957792; and
- (b) Assignment of Rents CA4957793 (together, the "**Charge**");

AND WHEREAS the Chargeholder agrees to allow the Section 219 Covenant herein to have priority over the Charge;

THIS PRIORITY AGREEMENT is evidence that in consideration of the sum of \$1.00 paid by THE CORPORATION OF THE DISTRICT OF NORTH VANCOUVER (the "**District**") to the Chargeholder, the receipt and sufficiency of which are hereby acknowledged, the Chargeholder covenants and agrees to subordinate and postpone all its rights, title and interest in and to the lands described in the Form C to which this Agreement is attached (the "**Lands**") with the intent and with the effect that the interests of the District rank ahead of the Charge as though the Section 219 Covenant herein had been executed, delivered and registered against title to the Lands before registration of the Charge.

As evidence of its Agreement to be bound by the above terms, as a contract and as a deed executed and delivered under seal, the Chargeholder has executed the Form C to which this Agreement is attached and which forms part of this Agreement.

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AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: <u>May 29, 2017</u>
<input type="checkbox"/> Workshop (open to public)	Date: _____

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Dept.
Manager

[Signature]
GM/
Director

[Signature]
CAO

The District of North Vancouver REPORT TO COUNCIL

May 17, 2017
File: 08.3060.20/061. 16

AUTHOR: Darren Veres, Development Planner

SUBJECT: BYLAWS 8225 AND 8226: REZONING AND HOUSING AGREEMENT FOR AN 8 UNIT TOWNHOUSE PROJECT: 756-778 FORSMAN AVENUE

RECOMMENDATIONS:

THAT "District of North Vancouver Rezoning Bylaw 1351 (Bylaw 8225) is given FIRST Reading;

AND THAT "Housing Agreement Bylaw 8226, 2017 (756 and 778 Forsman Avenue) is given FIRST reading;

AND THAT Bylaw 8225 be referred to a public hearing.

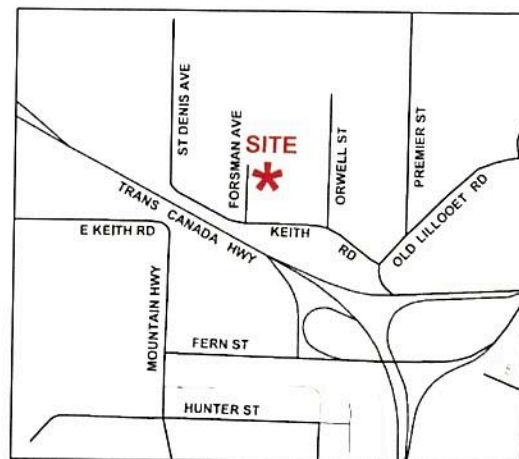
REASON FOR REPORT:

The proposed project requires Council's consideration of:

- Bylaw 8225 to rezone the subject properties; and
- Bylaw 8226 to authorize entry into a Housing Agreement to ensure that owners are not prevented from renting their units.

SUMMARY:

The applicant proposes to redevelop two single-family lots located at 756-778 Forsman Avenue for an eight-unit townhouse project which requires rezoning and issuance of a development permit. The Rezoning Bylaw and Housing Agreement Bylaw are recommended for Introduction and the Rezoning Bylaw is recommended for referral to a Public Hearing.

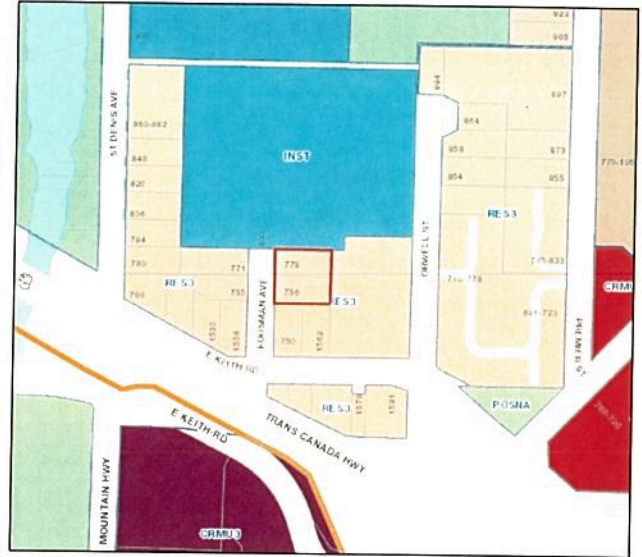


BACKGROUND:

Official Community Plan

The subject properties are designated as *Residential Level 3: Attached Residential* in the District Official Community Plan (OCP), which envisions ground-oriented multifamily housing up to approximately 0.8 FSR.

The proposed townhouse units are all three-bedroom units and one four-bedroom unit, which will be attractive to families, and as such, the proposal responds to Goal #2 of the OCP to “encourage and enable a diverse mix of housing types...to accommodate the lifestyles and needs of people at all stages of life.” It also addresses the intent of the housing diversity policies in Section 7.1 of the OCP by providing units suitable for families (Policy 7.1.4).



The Lynnmour Inter-River Local Plan reference policy document designates this site as “Low Density Multi-Family Housing” up to 0.7 FSR. A goal of the Lynnmour Inter-River Local Plan reference policy document is “to support the primarily family orientation of the residential area, while ensuring any new development contributes directly to the overall improvement of the community”.

The density of the proposal is 0.69 FSR with exclusions for parking, storage and balconies and therefore compliant with the Official Community Plan and the Lynnmour Inter-River Local Plan reference policy document. The Lynnmour Inter-River design guidelines support the proposed exemptions for storage areas and garages.

Zoning:

The subject properties are zoned Residential Single-Family 7200 Zone (RS3) and therefore require rezoning to permit this multi-family project. Bylaw 8225 proposes the establishment of a new Comprehensive Development Zone (CD101) which is tailored specifically to this project.

Development Permit

The subject properties are located within Development Permit Areas for the following purposes:

- Form and Character of Multi-Family Development (Ground-Oriented Housing);
- Energy and Water Conservation and Greenhouse Gas Emission Reductions; and
- Protection from Natural Hazards (Creek Hazard).

A detailed development permit report, outlining the projects' compliance with the applicable DPA guidelines, will be provided for Council's consideration at the Development Permit stage should the rezoning advance.

Strata Rental Protection Policy

Corporate Policy 8-3300-2 "Strata Rental Protection Policy" applies to this project as the rezoning application would permit development of more than five units. This policy requires a Housing Agreement to ensure that future strata bylaws do not prevent owners from renting their units and Bylaw 8226 is provided to implement that Policy.

Housing Affordability and Diversity

In accordance with the Rental and Affordable Housing Strategy, this application is meeting goal number one of expanding the supply and diversity of housing through the provision of family-oriented townhouse units which are in high demand and short supply in the District. These town homes offer ground-oriented family alternatives to single-detached home ownership and will be attractive to young couples who are part of the District's "missing generation." The Strata Rental Protection Policy will be applied through a Housing Agreement to ensure that no restrictions are placed on strata rentals. Community amenity contributions from the site can be used toward the District's affordable housing goals.

Previous Application

In early 2016 Council considered and defeated a 9 unit townhouse proposal for this site. At that time, concerns expressed by council included:

- the need for an area transportation review;
- too many units;
- the need for an onsite play area;
- tandem parking was not supported; and,
- some building changes were desired (windows onto the school).

In response, staff have concluded an area transportation review and assessed this application against that review. The applicant has reduced the number of units from 9 to 8, they have removed all tandem parking, they have added a children's play area onsite and they have added windows and balconies to address a better interface with the school.

ANALYSIS

The Site and Surrounding Area:

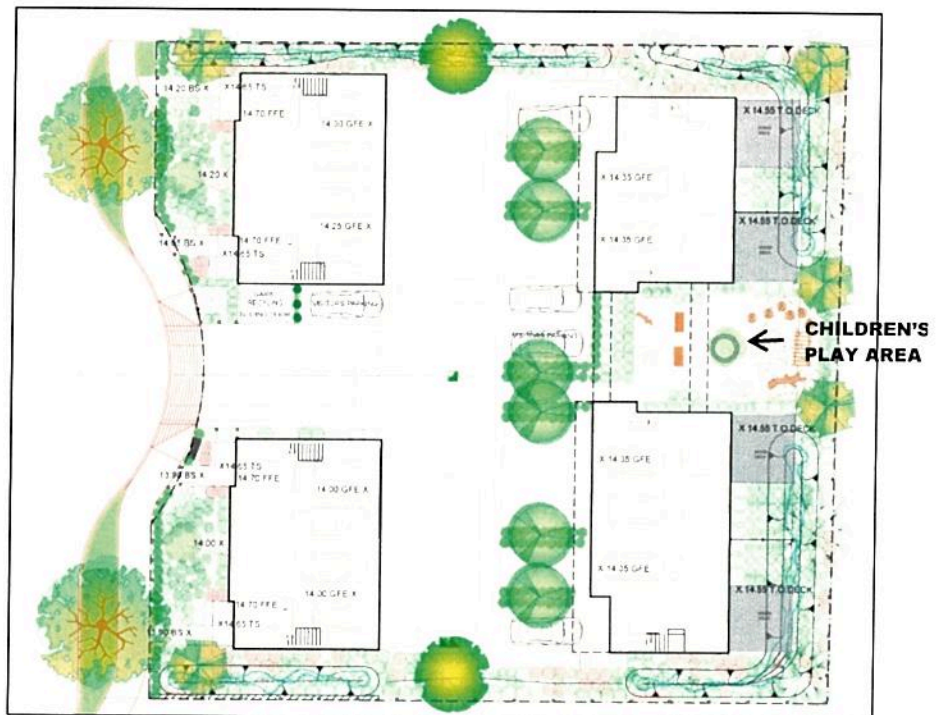
The site consists of two single-family lots on the east side of Forsman Avenue. Adjacent properties consist of single-family lots (zoned RS3) to the west and south, Lynnmour Elementary School to the north, and townhouses (under construction) to the east. The OCP designates the surrounding single-family properties as Residential Level 3: Attached Residential.

Project Description:

The project is eight townhouses with an onsite children's play area.

Site Plan/Building Description:

As seen in the site plan to the right, the project includes three buildings configured as follows: two duplexes are located at the front of the lot facing Forsman and a four-unit building is located at the rear of the lot. The four-unit building is connected at the second floor but open to the outside at the ground floor. A child's play area and gathering space is located under the second floor connection and this play space extends to the east portion of the property.



The townhouses are three storeys and each has their own at-grade parking garage. The garages are accessed off one central driveway from Forsman Avenue. Seven of the units have three bedrooms on the upper floor and range in size from 125m² (1,348 sq ft) to 140.9 m² (1,517 sq ft), excluding the garages. One of the units has four bedrooms on the upper level and is 206m² (2,221 sq ft) in size, excluding the garage. The individual buildings are approximately 11.3m (37 ft) in height.



Inter-River Sub-Area Transportation Study

This application was reviewed in context with Transportation Planning's Inter-River Sub-Area Transportation Study, provided to Council in September, 2016. This study, which involved local stakeholders and residents, determined locations for future road circulation improvements, and demonstrated that no changes were required to this application to improve connectivity in the area.

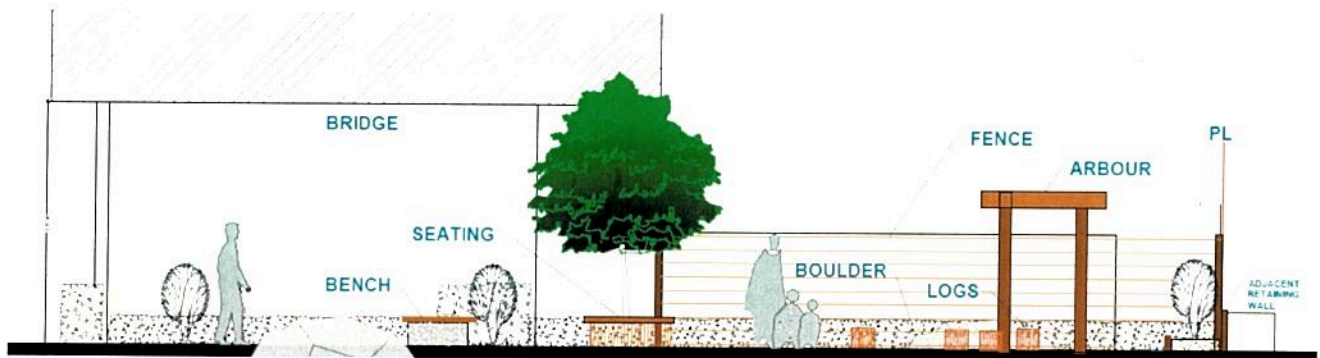
Parking

Vehicle access to the site is off Forsman Avenue and located between the two duplex buildings. The project includes 18 parking stalls each with direct drive aisle access. Each unit is provided two private parking spaces in a side-by-side arrangement. No tandem parking is included in this proposal. Two additional onsite visitor spaces are provided.

Landscaping

The landscaping is included at the perimeter of the site and along the interior drive aisles. A swale is proposed around the exterior of the site to aid in storm water management for the project (in addition to the required connections).

A children's play space and gathering area is proposed for the east side of the property. The design for this space includes logs, boulders, and an arbour, and is proposed to be planted with native plantings. Benches are included in the weather-protected space under the second floor connection of the fourplex building to create an all-weather area for residents to sit, socialize and supervise their children (see elevation on the next page).



The landscaping will also provide an improvement to Forsman Avenue and the entrance to the Lynnmour Elementary school. School staff has verbally expressed support for this better looking Forsman Avenue environment.

Engineering

The off-site engineering works include the creation of half of a cul de sac in front of the site. The west side of Forsman will finish the cul de sac when it redevelops in future. The proposal will also install sidewalk, street lighting, and improvements to the storm network.

The site is located within a Development Permit area for Creek Hazard with regard to flooding. The applicant has submitted a report from GeoCan Engineering that states that the design conforms to the flood construction level requirements established by the Lynnmour Inter-River Flood Protection Assessment prepared by Kerr Wood Leidal Consulting Engineers (2006). The project and the GeoCan report have been reviewed and accepted by the Section Manager of Public Safety.

Acoustic Regulations

Bylaw 8225 includes the District's residential acoustic regulations for maximum noise levels in the bedrooms, living areas and other areas of the units. The applicant will be required to submit a report from a qualified noise consultant confirming the building design will enable these standards to be met.

Accessible Design

The applicant is proposing to provide basic design features to facilitate building access and usability for people of all ages and abilities, and enhanced features, where appropriate to facilitate ageing in place and support people with mobility and sensory impairments.

Reduced copies of site, architectural and landscaping plans are included as Attachment A for Council's reference.

**SUBJECT: BYLAWS 8225 AND 8226: REZONING AND HOUSING AGREEMENT FOR
AN 8 UNIT TOWNHOUSE PROJECT: 756-778 FORSMAN AVENUE**

May 17, 2017

Page 7

IMPLEMENTATION:

Implementation of this project will require consideration of a rezoning bylaw, Bylaw 8225, and a Housing Agreement Bylaw, Bylaw 8226, as well as issuance of a development permit and registration of legal agreements.

Bylaw 8225 (Attachment B) rezones the subject properties from Single Family Residential 7200 Zone (RS3) to a new Comprehensive Development 101 Zone (CD101) which:

- establishes the multi-family residential use;
- allows home occupations as an accessory use;
- establishes a base density FSR (Floor Space Ratio) of 0.45;
- establishes a density bonus to an FSR of 0.69 subject to payment of a \$105,817 community amenity contribution (CAC) and entering into a housing agreement to restrict future strata rental restrictions;
- establishes setback, height, building coverage and site coverage regulations;
- incorporates acoustic requirements; and
- establishes parking regulations specific to this project.

Bylaw 8226, (Attachment C) authorizes the District to enter into a Housing Agreement to ensure that the proposed units remain available as rental units.

A contribution of \$24,135.96 will be required to the dyke infrastructure fund for future maintenance of the flood works installed in the Inter-River area. This contribution will be collected prior to adoption of Bylaw 8225. Development Cost Charges for this project have been estimated at \$72,205.

In addition, the following legal agreements will be required prior to zoning bylaw adoption to secure:

- a housing agreement to ensure that owners are not prevented from renting their units;
- a green building, accessible and acoustical covenant;
- a stormwater management covenant;
- a covenant to ensure that the project is built in accordance with the flood report;
- an engineering servicing agreement (including construction management); and
- a consolidation plan with road dedication.

COMMUNITY AMENITY CONTRIBUTION:

The District's Community Amenity Contribution (CAC) Policy requires an amenity contribution for projects including an increase in residential density. In this case, a CAC of \$105,817 has been calculated and this amount is included in the proposed CD101 Zone. It is anticipated that the CACs from this development will include contributions toward public art; park, trail, environmental, pedestrian or other public realm, infrastructure improvements; municipal, recreation or social service facility or service / facility improvements; and/or the affordable housing fund.

GREEN BUILDING MEASURES:

Compliance with the Green Building Strategy is mandatory given the need for rezoning and the project is targeting an energy performance rating of Energuide 80 and will be required to meet a target equivalent to the "Gold" standard.

CONCURRENCE:

Staff

The project has been reviewed by staff from Environment, Permits, Parks, Engineering, Community Planning, Urban Design, Transportation Planning, the Fire Department, School District 44 and the Arts Office.

Advisory Design Panel

The application was considered by the Advisory Design Panel on January 17, 2013 and the panel recommended approval of the project subject to a review of enhanced weather protection; the drive court / play area; the material palette; and opportunities for additional glazing on the north and south elevations. In response, the applicant has added weather protection over unit entrances, revised the drive court and added windows / balconies to the north and south elevations.

The District Urban Design Planner has reviewed the most recent proposal and is satisfied that the design meets the previous recommendations of the ADP. He is also satisfied with the design of the child's play area.

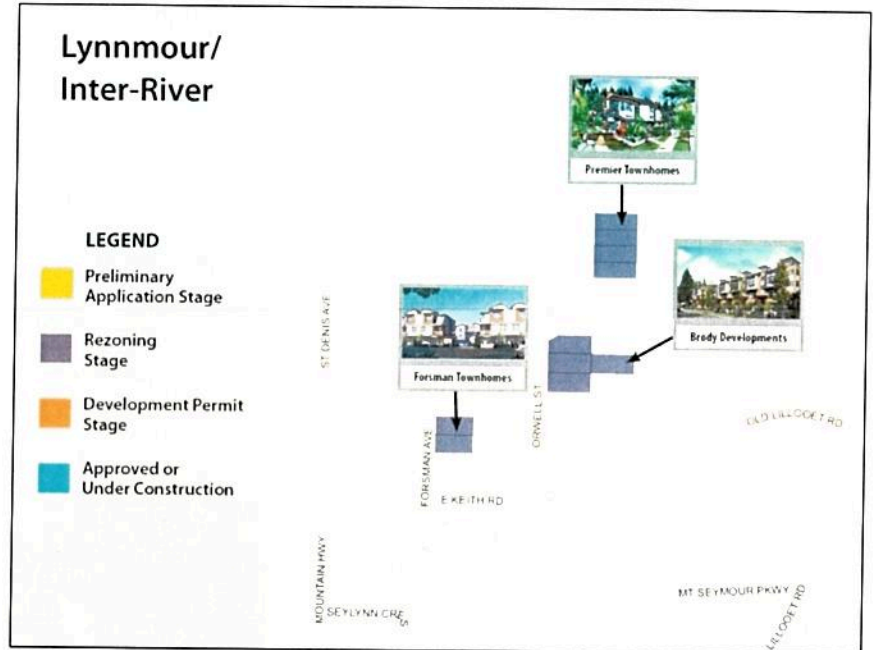
PUBLIC INPUT:

Public Information Meeting

The applicant held a facilitated Public Information Meeting on January 18, 2017. The meeting was attended by six members of the public and two comment sheets were submitted. Both comment sheets expressed support for the project but concern with onsite and visitor parking. The proposal includes two on-site visitor parking stalls as well as a combination of garage and outdoor parking to encourage use of onsite parking.

CONSTRUCTION MANAGEMENT PLAN:

This neighbourhood currently has three townhouse applications being processed. This is the only application located on Forsman Avenue. In order to reduce the development's impact on pedestrian and vehicular movements, the developer will be required to provide a construction traffic management plan as a condition of the development covenant and Development Permit. The Construction Management Plan must minimize construction impacts on pedestrian and vehicle movement. The plan is required to be approved by the District prior to issuance of a building permit.



In particular, the 'construction traffic management' must:

1. Coordinate with other construction projects in the area;
2. Provide safe passage for pedestrians, cyclists, and vehicle traffic;
3. Outline roadway efficiencies (i.e. location of traffic management signs and flaggers);
4. Provide a point of contact for all calls and concerns;
5. Provide a sequence and schedule of construction activities;
6. Ascertain a location for truck marshalling and trade vehicle parking which is acceptable to the District and minimizes impacts to neighbourhoods;
7. Develop a plan for trade vehicle parking which is acceptable to the District and minimizes impacts to neighbourhoods;
8. Address silt/dust control and clean-up;
9. Provide a plan for litter clean-up and street sweeping adjacent to the site; and
10. Include a communication plan to notify surrounding school and residents.

Particular attention will be paid to the impact on the adjacent Lynn timer School regarding pedestrian movement and student drop-off and pick-up.

CONCLUSION:

This project is consistent with the directions established in the OCP and the Lynnmour Inter-River Local Plan. It addresses OCP housing policies related to the provision of a range of housing options, in this case, family housing in a townhouse format. The project also addresses Council's previous input for this site. The project is now ready for Council's consideration.

Options:

The following options are available Council's consideration:

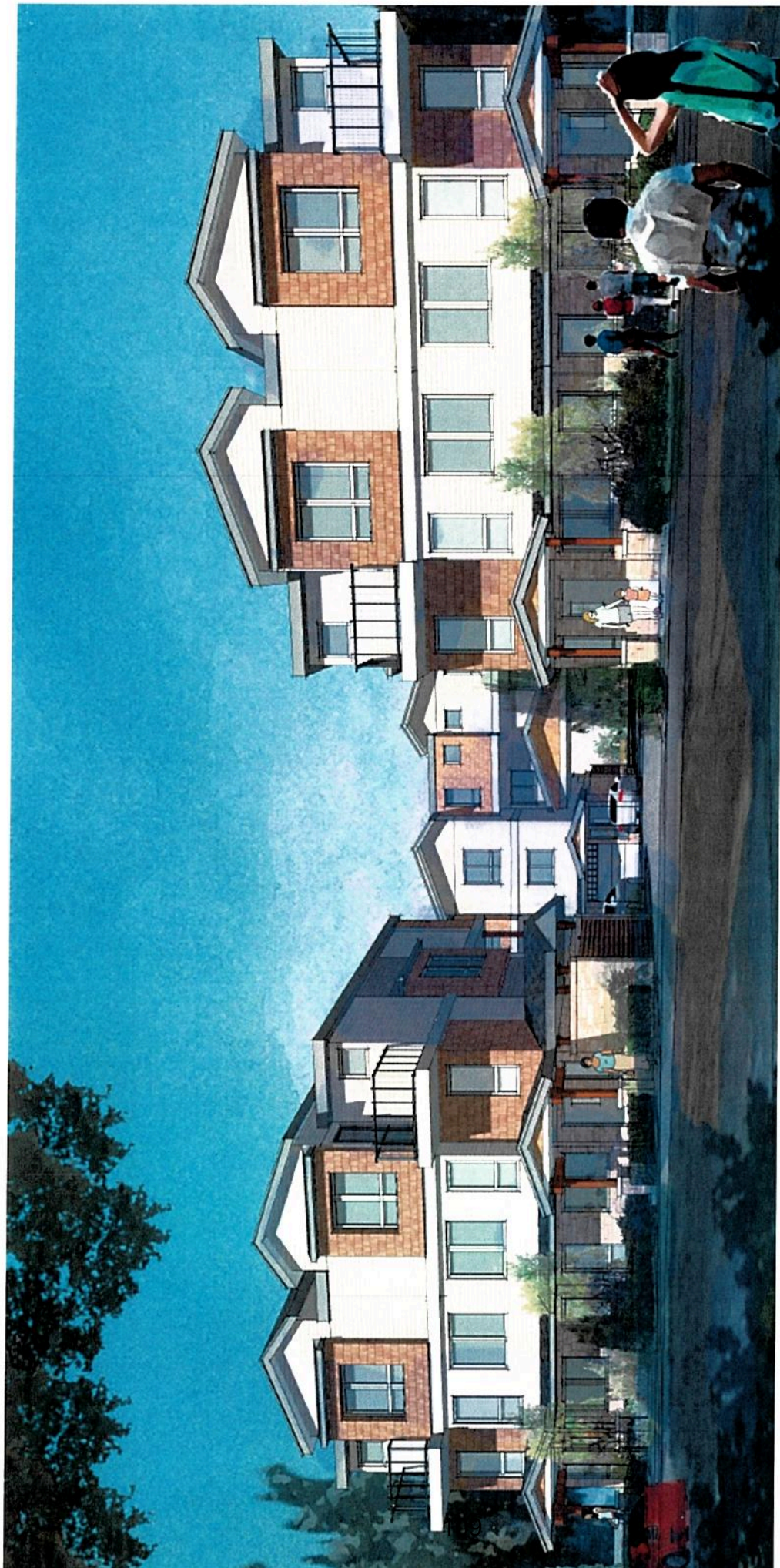
- 1) Introduce Bylaws 8225 and 8226 and refer Bylaw 8225 to a Public Hearing (staff recommendation); or
- 2) Defeat Bylaw 8225 and 8226 at First Reading.



Darren Veres
Development Planner

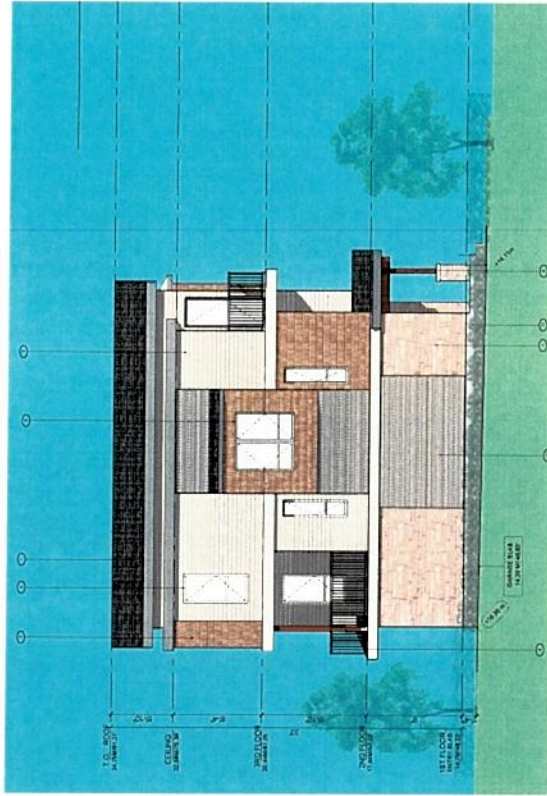
- A – Reduced project plans
 B – Bylaw 8225
 C – Bylaw 8226

REVIEWED WITH:		
<input type="checkbox"/> Sustainable Community Dev. _____ <input type="checkbox"/> Development Services _____ <input type="checkbox"/> Utilities _____ <input type="checkbox"/> Engineering Operations _____ <input type="checkbox"/> Parks & Environment _____ <input type="checkbox"/> Economic Development _____ <input type="checkbox"/> Human resources _____	<input type="checkbox"/> Clerk's Office _____ <input type="checkbox"/> Communications _____ <input type="checkbox"/> Finance _____ <input type="checkbox"/> Fire Services _____ <input type="checkbox"/> ITS _____ <input type="checkbox"/> Solicitor _____ <input type="checkbox"/> GIS _____	External Agencies: <input type="checkbox"/> Library Board _____ <input type="checkbox"/> NS Health _____ <input type="checkbox"/> RCMP _____ <input type="checkbox"/> Recreation Com. _____ <input type="checkbox"/> Museum & Arch. _____ <input type="checkbox"/> Other: _____

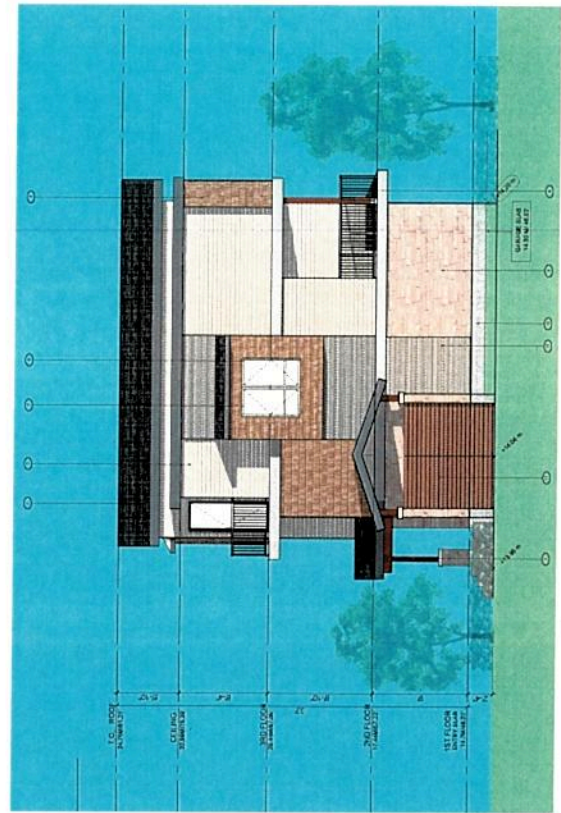


EXTERIOR MATERIAL LEGEND

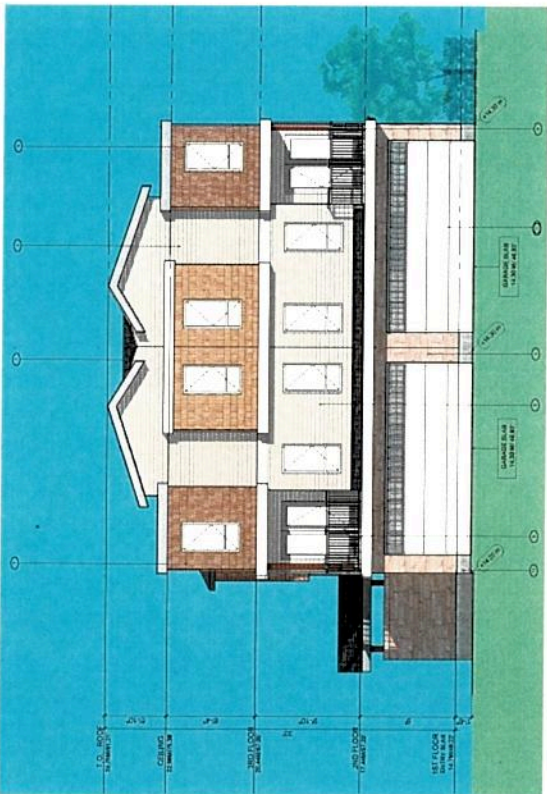
- Asphalt/Tile
- Asphalt/Asph. Shingles
- Cedar Siding
- Cedar Shakes
- Double Glazed Vinyl Window
- Aluminum Siding
- Metal Garage Door
- Wood Siding
- Wood Trim
- Wood Shakes
- Wood Slat
- Concrete



2 BUILDING 1 NORTH ELEVATION
Scale 3/8" = 1'-0"



4 BUILDING 1 SOUTH ELEVATION
Scale 3/8" = 1'-0"



1 BUILDING 1 EAST ELEVATION
Scale 3/8" = 1'-0"

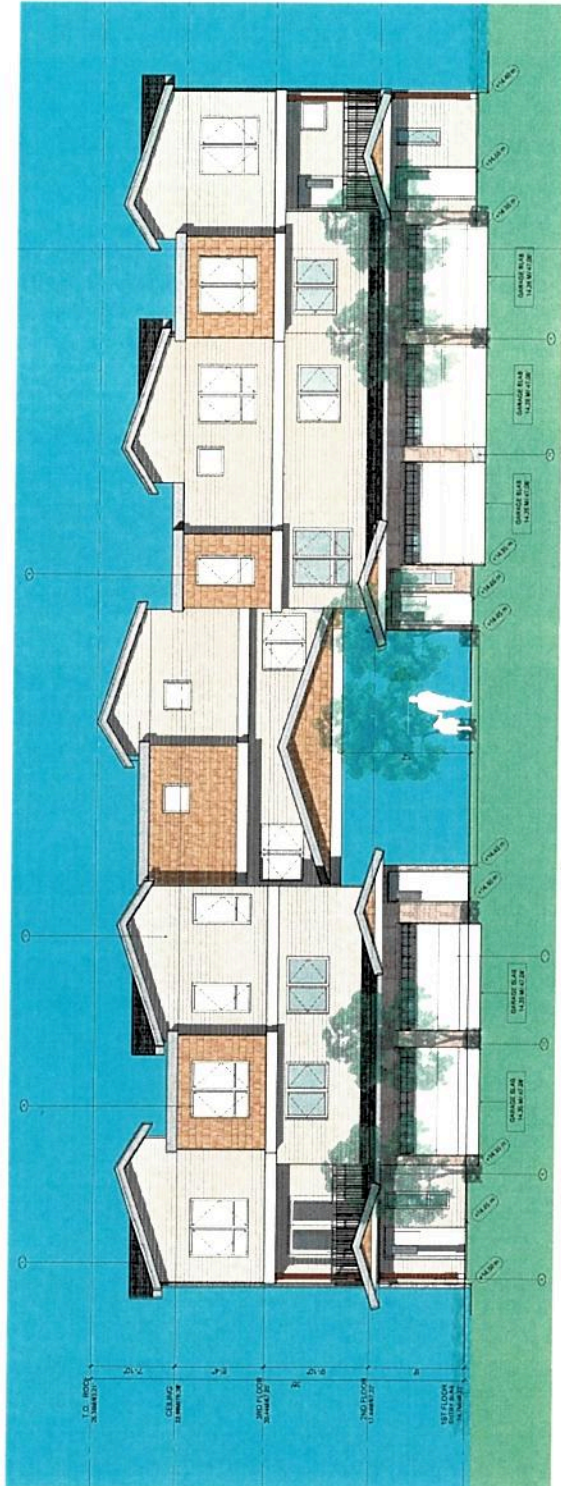


3 BUILDING 1 WEST ELEVATION
Scale 3/8" = 1'-0"

PROJECT	FORSMAN GARDEN
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DATE	2014.07.11
PROJECT NO.	14-001
PROJECT NAME	FORSMAN GARDEN
CLIENT	FORSMAN GARDEN
ARCHITECT	PACIFIC WEST ARCHITECTURE
ARCHITECT NO.	14-001
ARCHITECT NAME	PACIFIC WEST ARCHITECTURE
ARCHITECT ADDRESS	120 WEST 7TH AVE (AIRPORT SQUARE) VANCOUVER, B.C. V6P 6Z5
ARCHITECT PHONE	604.271.2727
ARCHITECT FAX	604.271.7098
ARCHITECT EMAIL	info@pacificwestarch.com
ARCHITECT WEBSITE	www.pacificwestarch.com

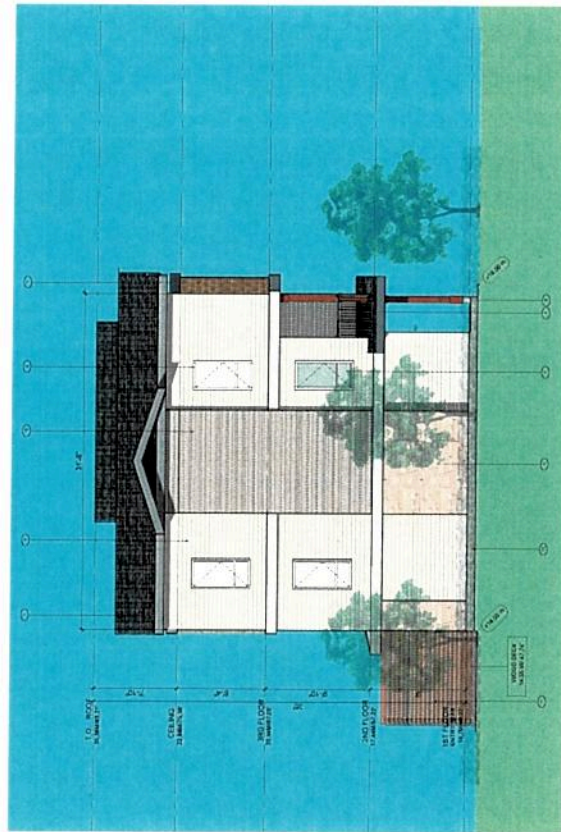
ELEVATIONS

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BUILDING 3 WEST ELEVATION
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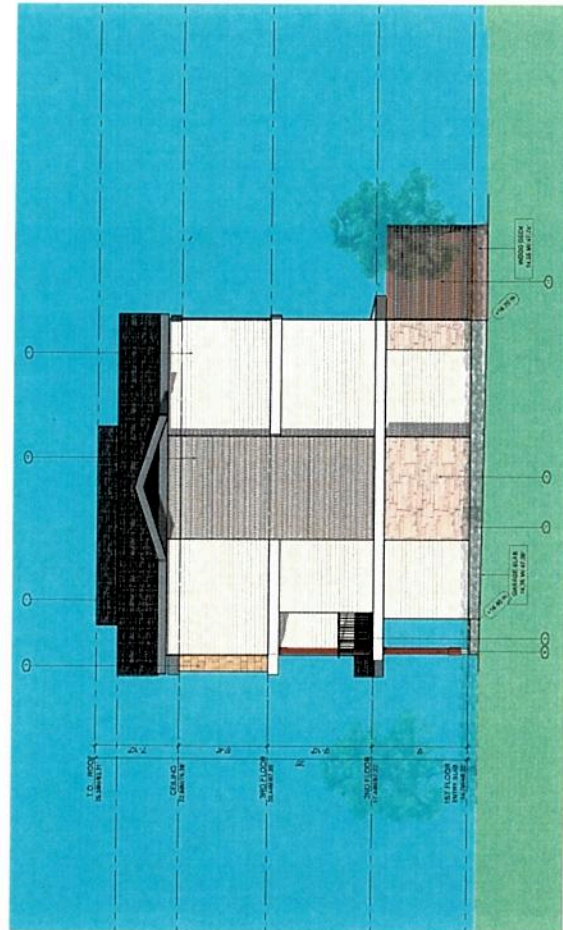
- EXTERIOR MATERIAL LEGEND**
- ASPHALT ROOF
 - METAL ROOF
 - CEDAR SHINGLES
 - STONE VENEER
 - DOUBLE GLAZED OWEN WINDOW
 - ALUMINUM SIDING
 - METAL GARAGE DOOR
 - WOOD POLE
 - WOOD TRIM
 - WOOD SIDING
 - WOOD SHUTTER
 - GRAY BRICK



BUILDING 3 NORTH ELEVATION
 Scale: 3/8" = 1'-0"



1 BUILDING 3 EAST ELEVATION
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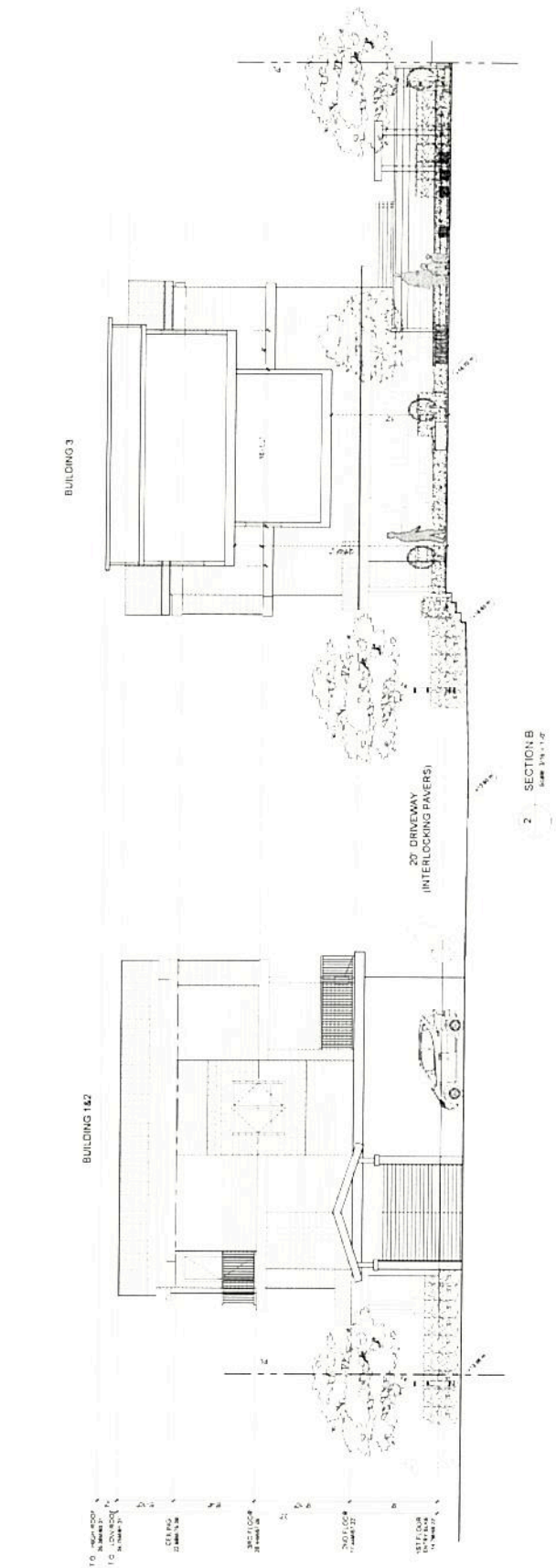
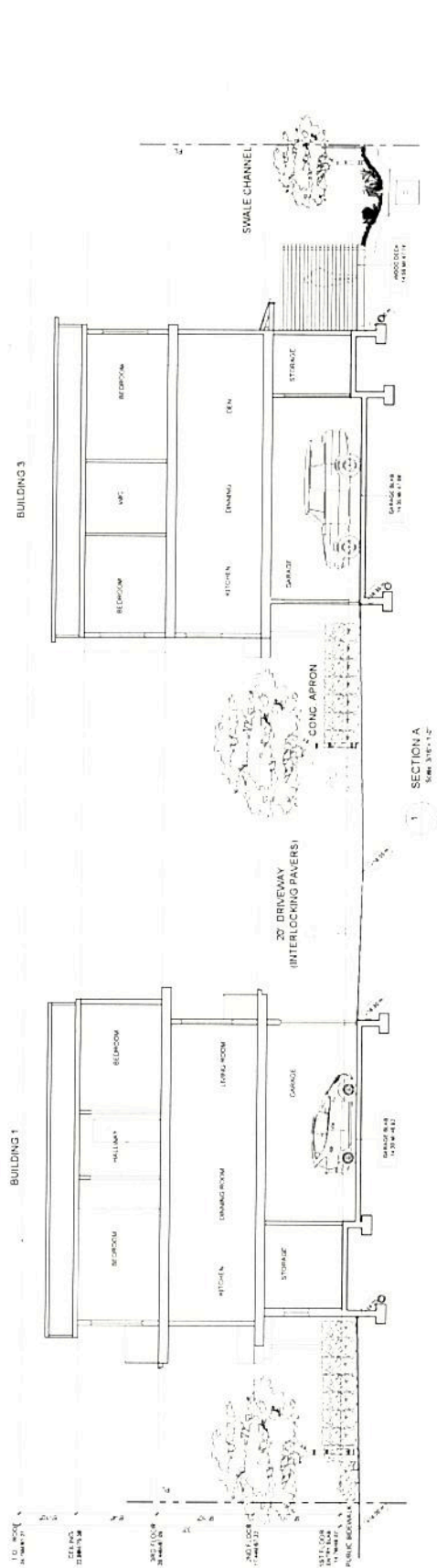
- EXTERIOR MATERIAL LEGEND**
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 - HAZEL HAZEL WOOD
 - CEDAR SHINGLE
 - STONE VENEER
 - DOOR (GLAZED) WHITE WINDOW
 - ALUMINUM IMITATION
 - METAL GARAGE DOOR
 - WOOD POST
 - WOOD TRIM
 - WOOD Siding
 - WOOD Siding
 - CONCRETE

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PROJECT
FORMAN GARDEN
 755 & 775 FORMAN AVE
 NORTH VANCOUVER

DRAWING TITLE
ELEVATIONS

DATE
A3.4



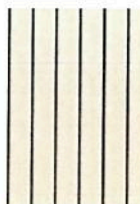
BUILDING MATERIAL -1



ASPHALT SHINGLE
IKO ASPHALT SHINGLES
COLOUR CHARCOAL GREY



CEDAR SHINGLE
SOLID STAIN
COLOR GREY BROWN



HARDI-PLANK SIDING
JAMES HARDIE
COLOUR BEIGE



HARDI-PLANK SIDING
JAMES HARDIE
COLOUR CORNWELL GRAY



WOOD TRIM
SHERWIN WILLIAMS
COLOR USEFUL GREY



WOOD FEATURES
SOLID STAIN
COLOUR WOOD



STONE VENEER
CULTURED STONE
PROFIT LEDGESTONE

PWA

pacific west architecture

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Burnaby, B.C. V5N 4B3
Phone: 461.591.3172
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Email: info@pacificwestarch.com
www.pacificwestarch.com

PROJECT: FORSMAN GARDEN
756 & 778 FORSMAN AVE
NORTH VANCOUVER

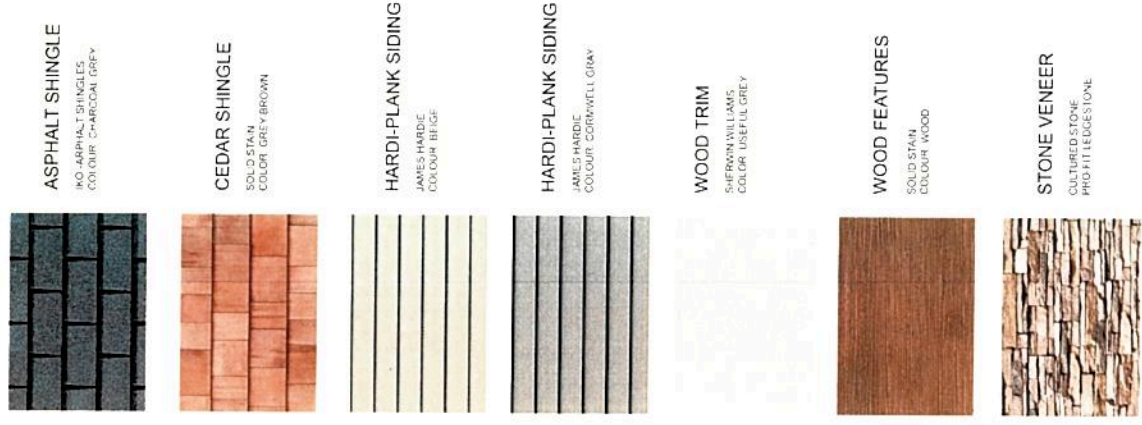
MATERIAL BOARD

A5.1

BUILDING MATERIAL -2



117



PWA

pacific west architecture

1325 West 79th Ave (Fifth/Salmon)
Suite 1132
Vancouver, B.C. V6P 6G2
Tel: 604.273.7777
Fax: 604.273.7778
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REVISIONS

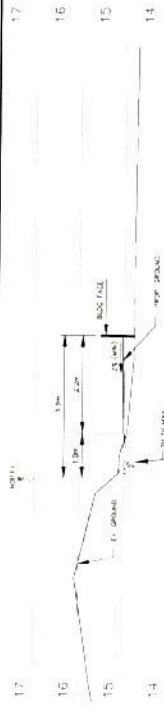
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FORSYTH GARDEN

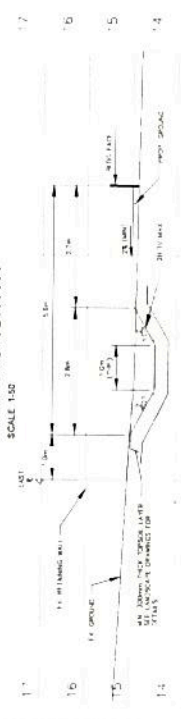
756 & 778 FORSYTH AVE
NORTH VANCOUVER

MATERIAL BOARD

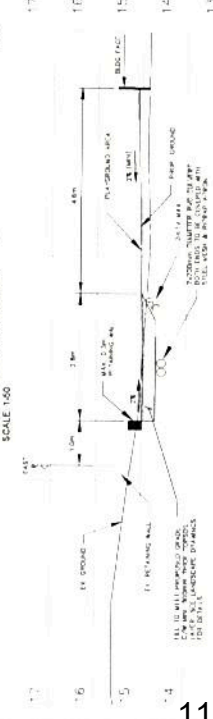
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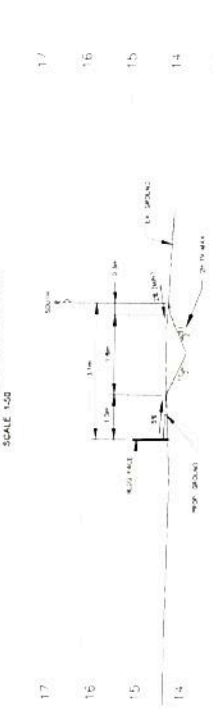
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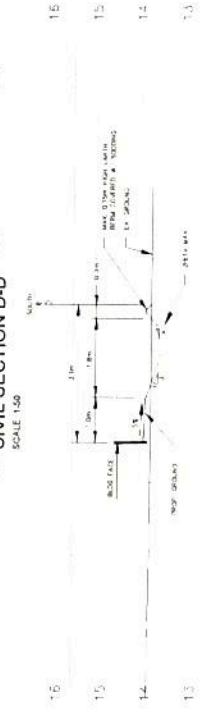
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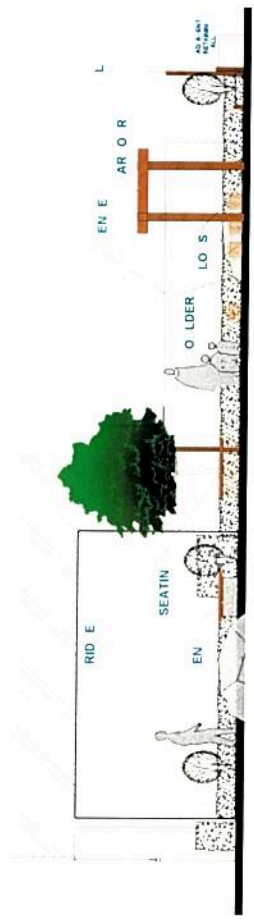
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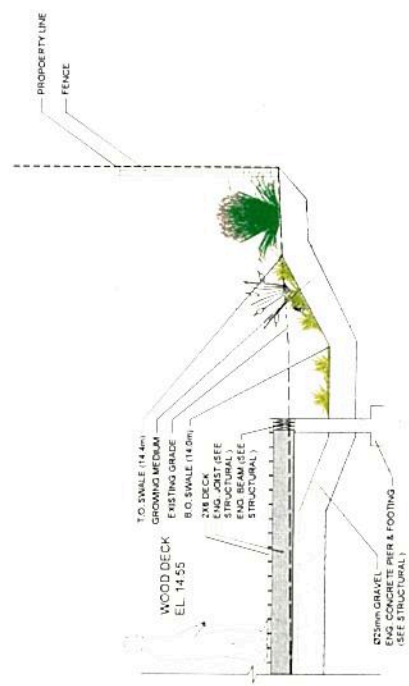
CIVIL SECTION D-D
SCALE 1:50



CIVIL SECTION E-E
SCALE 1:50



SECTION-1: CHILDREN'S PLAY SPACE
SCALE 1:50



SECTION-2: DECK & SWALE
SCALE 1:25

NOTE

FOR CIVIL SECTIONS SEE CIVIL DRAWINGS.

1005198 Ltd.
Attn: Kenny Gu
7532 Conway Ave
Burnaby, BC Canada

SW Landscape Architect
919 Melbourn Avenue
North Vancouver, B.C. V7R 1N8

FORSMAN GARDENS
756 + 778 Forsman Ave NORTH VANCOUVER

L7: SECTIONS

3	APR 24 2017	SUBMISSION
2	APR 15 2017	REVIEW
1	OCT 11 2016	SUBMISSION
		ISSUED / REVISIONS

LANDSCAPE STATEMENT OF INTENT

The intent of the landscape design is to have a landscape treatment that is sustainable and reflects the natural heritage of the Lymnour area in North Vancouver. The front yard is framed by a boxwood hedge, black metal railing and the delicate branches of the beautiful witchhazel shrub, behind which are Rhododendrons, azaleas, fragrant Chiosya and various groundcovers. Along the perimeter is a detachable rain garden that catches water from the site, with biofiltration by sedges, rushes, ferns and other moist loving species. Under the shade of cedars and vine maples is the natural understory of native salmonberry, huckleberry, red twig dogwood and native roses. The children's nature play space with logs, boulders, arbour and native plantings is an appealing play space for kids and gathering/community place for residents. This unique landscape treatment is environmentally sensitive and will also be a delight to the senses.

MATERIALS LIST

BENCHES: 'Camille' backless bench, 16.5 inch by 48 inch by Victor Stanley (see wood slats on powder coated steel frame. Surface mounted on a concrete pad).

WOOD FENCE: 1" X 6" cedar boards finished with Sikken's semi-transparent cedar stain

METAL FENCE AND GATE (front): Powder coated medium gloss black aluminum

ARBOUR: All wood members to be cedar, finished Sikken's semi-transparent cedar stain

WOOD DECKS: 6 inch cedar deck boards, finished Sikken's semi-transparent cedar stain

PAVERS: by Abbottford Concrete Products, Standard Series, 4.5 by 9.0 by 2.4 inches, natural colour, 'herringbone' pattern, with charcoal soldier course on perimeters and accent banding

PERMEABLE PAVERS: 'AquaPave' by Abbottford Concrete Products Abbottford or equivalent

CONCRETE: Sidewalk, walkways, driveway aprons, front porches finished in a medium broom finish. Concrete sidewalk on public property to be installed to municipal standards

GRANITE SCREENINGS: 9 mm crushed granite over compacted base layer

CHILDREN'S NATURE PLAYSPACE: surface-Engineered wood fiber to be FIBAR or equivalent; boulders- 2' 3 men granite boulders, 1'-2 men granite boulders, logs - 1.5' diameter, peeled without roots, log rounds, 2 ft. diameter rounds set 1.0 feet above ground

PLANT MATERIAL: All plant material are to meet current BCLNLA #1 standard and installed according to current BCLNLA standards

GROWING MEDIUM: by Veratec Engineered Products or equivalent, to BCLNLA standards and prepared off site, specifications are for high traffic lawn and shrub planting areas. Depths are 18 inches in shrub beds and 12 inches in lawn areas

STRUCTURAL SOIL: by Veratec Engineered Products or equivalent, to contain graded aggregate, growing medium and stabilizer

ROOT BARRIER: BY Deep Root or equivalent, 24 inch in depth.

NOTES

- The District of North Vancouver is responsible for the on-going maintenance of street trees on off-site areas. Please ensure that the developer is aware that on-going maintenance of shrubs/groundcovers on the off-site areas (i.e. boulevards) is the responsibility of the future property owner.
- The project landscape contractor, the project landscape architect and a District of North Vancouver Parks (DNV parks) representative must be present at the project pre-construction meeting. If this is not possible, the developer must ensure that all three groups meet before any landscape construction work takes place onsite.
- All plantings used in this project must first be inspected by a representative of the District of North Vancouver parks department (DNV Parks) before installation. The District of North Vancouver has the right to refuse any or if of the selected plant material if it does not meet current BCLNLA guidelines.

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756 + 778 Forsman Ave NORTH VANCOUVER

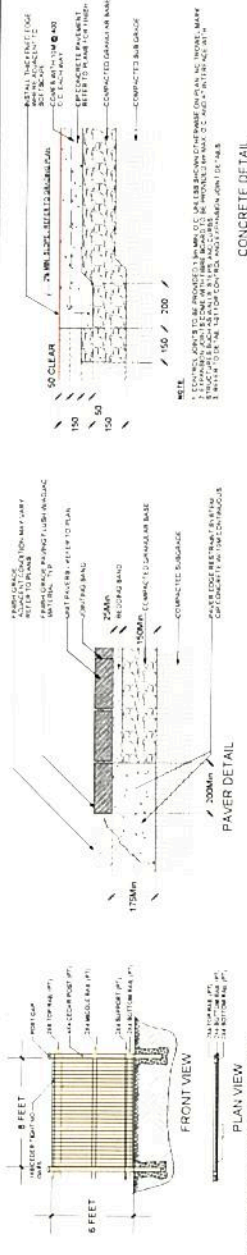
L8: DETAILS

ARBOUR DETAIL
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3 APR 24 2017 SUBMISSION

2 APR 15 2017 REVIEW

1 Oct 11 2016 SUBMISSION
ISSUED / REVISIONS



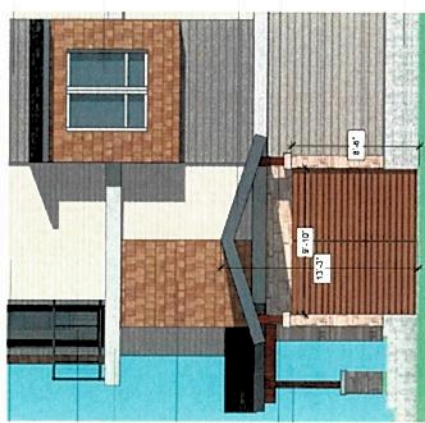
BACK AND SIDE YARD FENCE DETAIL
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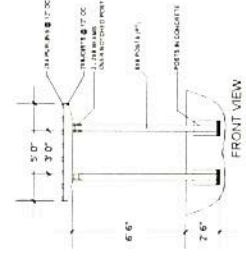
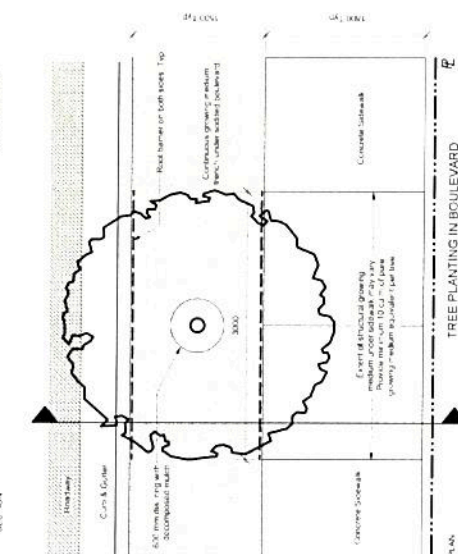
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CONCRETE DETAIL

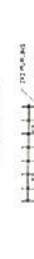


SOUTH ELEVATION GARBAGE RECYCLING ENCLOSURE

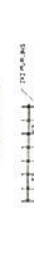


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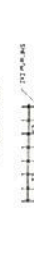
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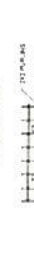
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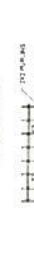
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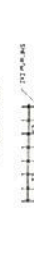
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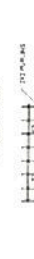
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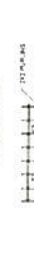
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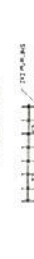
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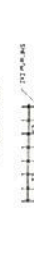
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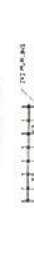
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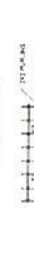
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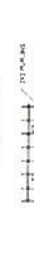
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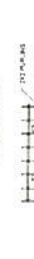
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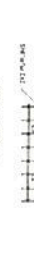
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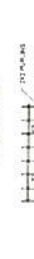
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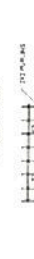
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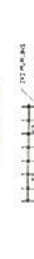
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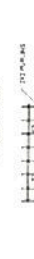
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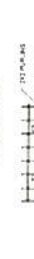
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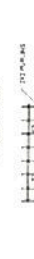
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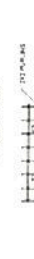
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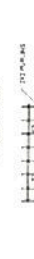
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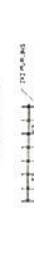
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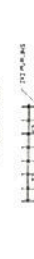
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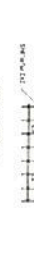
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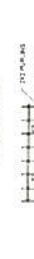
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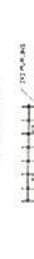
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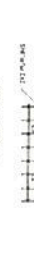
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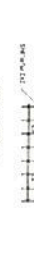
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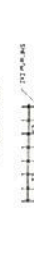
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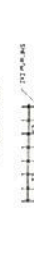
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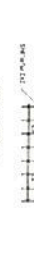
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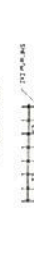
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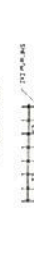
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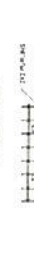
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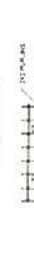
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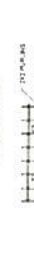
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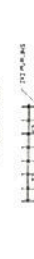
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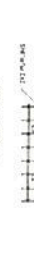
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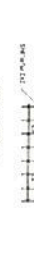
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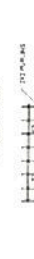
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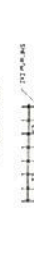
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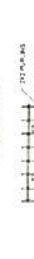
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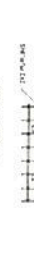
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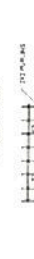
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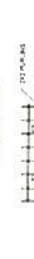
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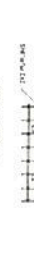
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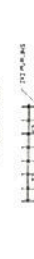
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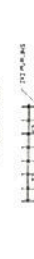
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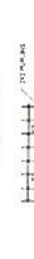
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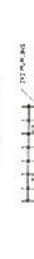
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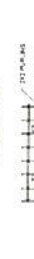
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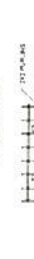
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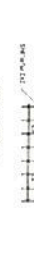
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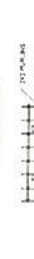
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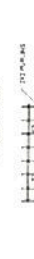
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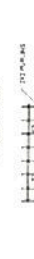
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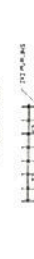
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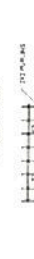
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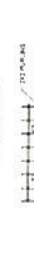
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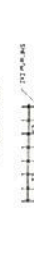
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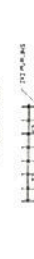
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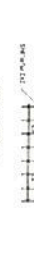
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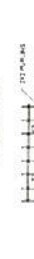
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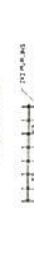
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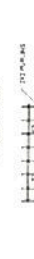
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The Corporation of the District of North Vancouver

Bylaw 8225

A bylaw to amend District of North Vancouver Zoning Bylaw 3210, 1965

The Council for The Corporation of the District of North Vancouver enacts as follows:

1. Citation

This bylaw may be cited as the "District of North Vancouver Rezoning Bylaw 1351 (Bylaw 8225)".

2. Amendments

2.1 District of North Vancouver Zoning Bylaw 3210, 1965 is amended as follows:

a) Section 301 (2) by inserting the following zoning designation:

"Comprehensive Development Zone 101 CD101"

b) Part 4B Comprehensive Development Zone Regulations by inserting the following, inclusive of Schedule B:

"4B101 Comprehensive Development Zone 101 CD 101

The CD 101 zone is applied to:

756 Forsman Avenue, LOT C OF LOT 6 BLOCK A DISTRICT LOT 613 PLAN 20979,
PID: 005-225-957

778 Forsman Avenue, LOT A BLOCK A DISTRICT LOT 613 GROUP 1 NEW
WESTMINSTER DISTRICT PLAN BCP39525, PID: 027-780-228

4B 101-1 Intent

The purpose of the CD 101 Zone is to establish specific land use and development regulations for a 8 unit townhouse project.

4B 101- 2 Permitted Uses:

The following *principal* uses shall be permitted in the CD 101 Zone:

(a) Uses Permitted Without Conditions:

Not Applicable

(b) Conditional Uses:

Residential building, multiple-family townhouse

4B 101-3 Conditions of Use

Balcony enclosures are not permitted.

4B 101-4 Accessory Use

(a) *Accessory uses* are permitted and may include but are not necessarily limited to:

- (i) Home occupations in accordance with the regulations in Section 405 of the Zoning Bylaw, 1965

4B 101-5 Density

- (a) The maximum permitted density in the CD101 Zone is limited to a floor space ratio (FSR) of 0.45, inclusive of any density bonus for energy performance, and a maximum of 2 units;
- (b) For the purposes of calculating floor space ratio, a maximum of 285 m² of individual parking garages (3068.1 sq ft) in total on the lot and a maximum of 74.3 m² of individual unit storage (a maximum of 100 sq ft per unit) in total on the lot as well as balconies and landscape trellis are excluded.
- (c) Balcony enclosures are not permitted.

4B 101-6 Amenities

- (a) Despite subsection 4B101-5, density in the CD101 Zone is increased to a maximum floor space of 1,135.98 m² (12,228 sq ft), inclusive of any density bonus for energy performance and a maximum of 8 units, if the owner:
 - 1. Enters into a Housing Agreement prohibiting any restrictions preventing the owners in the project from renting their units; and

service facility or service / facility improvements; and/or the affordable housing fund.

4B 101-7 Maximum Principal Building Size:

Not applicable

4B 101-8 Setbacks:

- a) Buildings shall be set back from property lines to the closest building face as established by development permit and in accordance with the following regulations:

Setback	Buildings (Min Setback)
Front (west property line)	4.88m (16 ft) to the building face
Rear (east property line)	6.10m (20 ft) to the building face
Side (north)	1.83m (6 ft) to the building face
Side (south)	3.05m (10 ft) to the building face

- b) Projections at the ground level are permissible as follows:

Setback	Maximum Setback Reduction
Front Yard	1.52 m (5.0 ft)

- c) Balconies and trellises are excluded from any setback requirements.

4B 101-9 Building Orientation:

Not applicable

4B 101-10 Building Depth and Width:

Not applicable

4B 101-11 Coverage:

- (a) Building Coverage shall not exceed 36%.
- (b) Site Coverage shall not exceed 61%.

4B 101-12 Height:

The maximum permitted height for each building is 11.3m (37 ft);

4B 101-13 Acoustic Requirements:

In the case of residential purposes, a development permit application shall require evidence in the form of a report and recommendations prepared by persons trained in acoustics and current techniques of noise measurements, demonstrating that the noise levels in those portions of the dwelling listed below shall not exceed the noise levels expressed in decibels set opposite such portions of the dwelling units:

Portion of Dwelling Unit	Noise Level (Decibels)
Bedrooms	35
Living and Dining rooms	40
Kitchen, Bathrooms and Hallways	45

4B 101-14 Flood Construction Requirements:

No basement, or habitable floor space, other than garage and storage space, shall be constructed below the established flood construction levels as identified in a flood hazard report prepared by a qualified registered professional engineer.

4B 101-15 Landscaping:

- (a) All land areas not occupied by buildings, structures, parking spaces, loading spaces, driveways, manoeuvring aisles and sidewalks shall be landscaped or finished in accordance with an approved landscape plan; and
- (b) All electrical kiosks and garbage and recycling container pads not located underground or within a building shall be screened with landscaping.

4B 101-16 Subdivision Requirements:

Not applicable

4B 101-17 Additional Accessory Structure Regulations:

Not applicable.

4B 101-18 Parking and Loading Regulations:

- (a) Parking spaces shall be provided on the basis of 2 spaces/unit plus 2 visitor spaces;
- (b) Not more than 5 spaces may be small car spaces;

- (b) Not more than 5 spaces may be small car spaces;
- (c) All parking spaces shall meet the minimum length and width standards established in Part 10 of the District of North Vancouver Zoning Bylaw."

2.1 The Zoning Map is amended in the case of the lands illustrated on the attached map (Schedule A) by rezoning the land from the Residential Single Family 7200 Zone (RS3) to Comprehensive Development Zone 101 (CD 101).

READ a first time May 29, 2017

PUBLIC HEARING held

READ a second time

READ a third time

Certified a true copy of "Rezoning Bylaw 1351 (Bylaw 8225)" as at Third Reading

Municipal Clerk

APPROVED by the Ministry of Transportation and Infrastructure on

ADOPTED

Mayor

Municipal Clerk

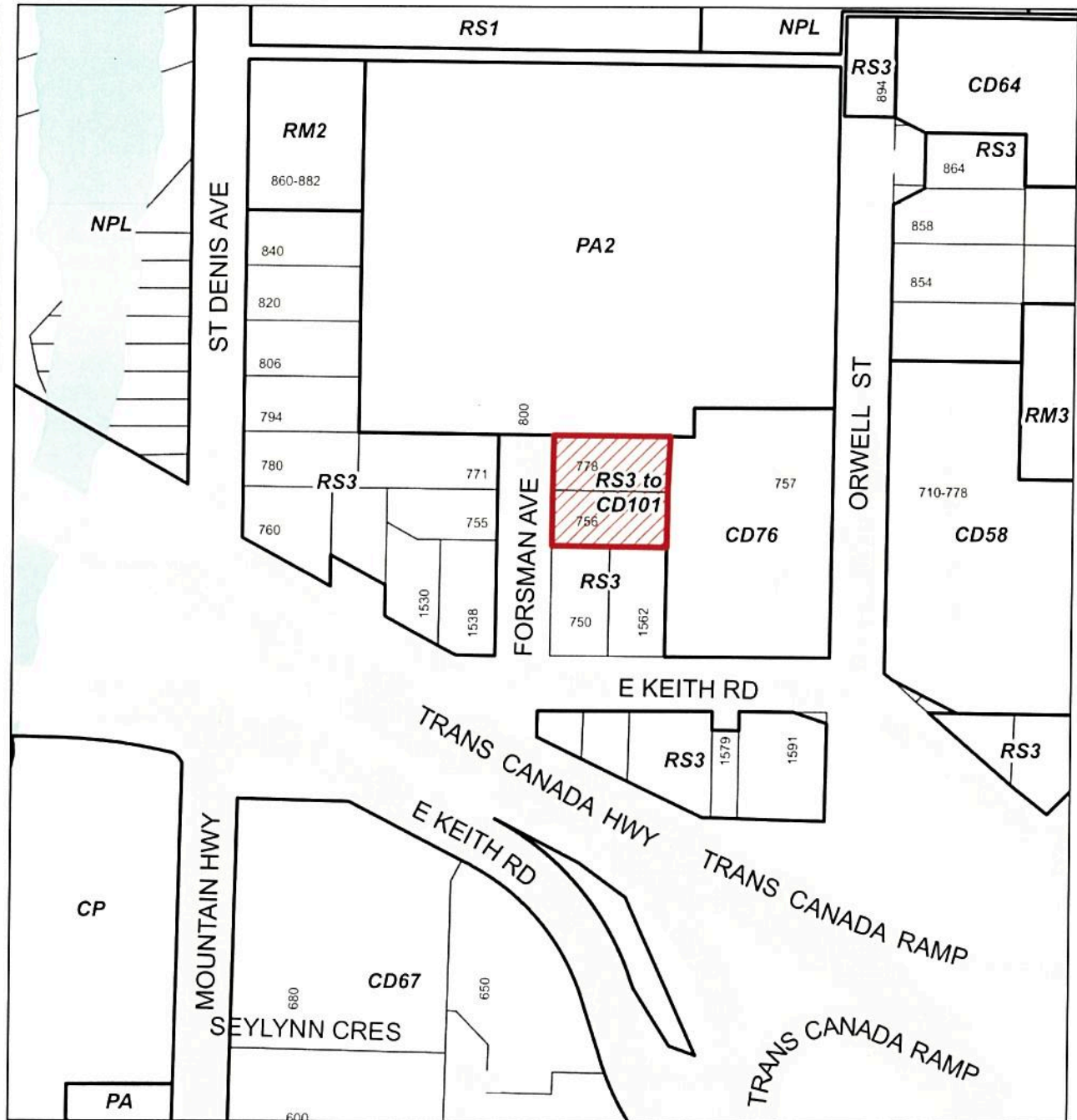
Certified a true copy

Municipal Clerk

Schedule A to Bylaw 8225

BYLAW 8225

The District of North Vancouver Rezoning Bylaw 1351 (Bylaw 8225)



RESIDENTIAL SINGLE FAMILY 7200 ZONE 3 (RS3) TO
COMPREHENSIVE DEVELOPMENT ZONE 101 (CD101)



The Corporation of the District of North Vancouver

Bylaw 8226

A bylaw to enter into a Housing Agreement (756 and 778 Forsman Avenue)

The Council for The Corporation of the District of North Vancouver enacts as follows:

1. Citation

This bylaw may be cited as "Housing Agreement Bylaw 8226, 2017 (756 and 778 Forsman Avenue)".

2. Authorization to Enter into Agreement

2.1 The Council hereby authorizes a housing agreement between The Corporation of the District of North Vancouver and 1009198 B.C Ltd., Inc.No. BC1009198 substantially in the form attached to this Bylaw as Schedule "A" with respect to the following lands:

- a) LOT C OF LOT 6 BLOCK A DISTRICT LOT 613 PLAN 20979, PID: 005-225-957
- b) LOT A BLOCK A DISTRICT LOT 613 GROUP 1 NEW WESTMINSTER DISTRICT PLAN BCP39525, PID: 027-780-228

3. Execution of Documents

The Mayor and Municipal Clerk are authorized to execute any documents required to give effect to the Housing Agreement.

READ a first time May 29, 2017

READ a second time

READ a third time

ADOPTED

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk

Schedule A to Bylaw 8226

SECTION 219 COVENANT – HOUSING AGREEMENT

This agreement is dated for reference the ____ day of _____, 20____

BETWEEN:

1009198 B.C. LTD. (Inc. No. BC1009198), a company incorporated under the laws of the Province of British Columbia having an office at 1108 West 8th Avenue, Vancouver, BC V6H 3Z5

(the “Developer”)

AND:

THE CORPORATION OF THE DISTRICT OF NORTH VANCOUVER, a municipality incorporated under the *Local Government Act*, RSBC 2015, c.1 and having its office at 355 West Queens Road, North Vancouver, BC V7N 4N5

(the “District”)

WHEREAS:

1. The Developer is the registered owner of the Lands (as hereinafter defined);
2. The Developer wishes to obtain development permissions with respect to the Lands and wishes to create a condominium development which will contain residential strata units on the Lands;
3. Section 483 of the *Local Government Act* authorises the District, by bylaw, to enter into a housing agreement to provide for the prevention of rental restrictions on housing, and provides for the contents of the agreement; and
4. Section 219 of the *Land Title Act* (British Columbia) permits the registration in favour of the District of a covenant of a negative or positive nature relating to the use of land or a building thereon, or providing that land is to be built on in accordance with the covenant, or providing that land is not to be built on except in accordance with the covenant, or providing that land is not to be subdivided except in accordance with the covenant;

NOW THEREFORE in consideration of the mutual promises contained in it, and in consideration of the payment of \$1.00 by the District to the Developer (the receipt and sufficiency of which are hereby acknowledged by the Developer), the parties covenant and agree with each other as follows, as a housing agreement under Section 483 of the *Local Government Act*, as a contract and a deed under seal between the parties, and as a covenant under Section 219 of the *Land Title Act*, and the Developer hereby further covenants and agrees that neither the Lands nor any building constructed thereon shall be used or built on except in accordance with this Agreement:

1. DEFINITIONS

1.01 Definitions

In this agreement:

- (a) "*Development Permit*" means development permit No. _____ issued by the District;
- (b) "*Lands*" means land described in Item 2 of the *Land Title Act* Form C to which this agreement is attached;
- (c) "*Owner*" means the Developer and any other person or persons registered in the Lower Mainland Land Title Office as owner of the Lands from time to time, or of any parcel into which the Lands are consolidated or subdivided, whether in that person's own right or in a representative capacity or otherwise;
- (d) "*Proposed Development*" means the proposed development containing not more than eight units to be constructed on the Lands in accordance with the Development Permit;
- (e) "*Short Term Rentals*" means any rental of a Unit for any period less than 30 days;
- (f) "*Strata Corporation*" means the strata corporation formed upon the deposit of a plan to strata subdivide the Proposed Development pursuant to the *Strata Property Act*;
- (g) "*Unit*" means a residential dwelling strata unit in the Proposed Development; and
- (h) "*Unit Owner*" means the registered owner of a Dwelling Unit in the Proposed Development.

2. TERM

This Agreement will commence upon adoption by District Council of Bylaw 8226 and remain in effect until terminated by the District as set out in this Agreement.

3. RENTAL ACCOMODATION

3.01 Rental Disclosure Statement

No Unit in the Proposed Development may be occupied unless the Owner has:

- (a) before the first Unit is offered for sale, or conveyed to a purchaser without being offered for sale, filed with the Superintendent of Real Estate a rental disclosure statement in the prescribed form (the "Rental Disclosure Statement") designating all of the Units as rental strata lots and imposing at least a 99 year rental period in relation to all of the Units pursuant to the *Strata Property Act* (or any successor or replacement legislation), except in relation to Short Term Rentals and, for greater certainty, stipulating specifically that the 99 year rental restriction does not apply to a Strata Corporation bylaw prohibiting or restricting Short Term Rentals; and

- (b) given a copy of the Rental Disclosure Statement to each prospective purchaser of any Unit before the prospective purchaser enters into an agreement to purchase in respect of the Unit. For the purposes of this paragraph 3.01(b), the Owner is deemed to have given a copy of the Rental Disclosure Statement to each prospective purchaser of any Unit in the building if the Owner has included the Rental Disclosure Statement as an exhibit to the disclosure statement for the Proposed Development prepared by the Owner pursuant to the *Real Estate Development Marketing Act*.

3.02 Rental Accommodation

The Units constructed on the Lands from time to time may always be used to provide rental accommodation as the Owner or a Unit Owner may choose from time to time, except that this section 3.02 does not apply to Short Term Rentals which may be restricted by the Strata Corporation to the full extent permitted by law.

3.03 Binding on Strata Corporation

This agreement shall be binding upon all Strata Corporations created by the subdivision of the Lands or any part thereof (including the Units) pursuant to the *Strata Property Act*, and upon all Unit Owners.

3.04 Strata Bylaw Invalid

Any Strata Corporation bylaw which prevents, restricts or abridges the right to use any of the Units as rental accommodations (other than Short Term Rentals) shall have no force or effect.

3.05 No Bylaw

The Strata Corporation shall not pass any bylaws preventing, restricting or abridging the use of the Lands, the Proposed Development or the Units contained therein from time to time as rental accommodation (other than Short Term Rentals).

3.06 Vote

No Unit Owner, nor any tenant or mortgagee thereof, shall vote for any Strata Corporation bylaw purporting to prevent, restrict or abridge the use of the Lands, the Proposed Development or the Units contained therein from time to time as rental accommodation (other than Short Term Rentals).

3.07 Notice

The Owner will provide notice of this Agreement to any person or persons intending to purchase a Unit prior to any such person entering into an agreement of purchase and sale, agreement for sale, or option or similar right to purchase as part of the disclosure statement for any part of the Proposed Development prepared by the Owner pursuant to the *Real Estate Development Marketing Act*.

3.08 Release of Covenant [optional clause]

The District agrees that if the District of North Vancouver Rezoning Bylaw 3210 (Bylaw 8197), is not adopted by the District's Council before [date], the Owner is entitled to require the District to execute and deliver to the Owner a discharge, in registrable form, of this Agreement from title to the Land. The Owner is responsible for the preparation of the discharge under this section and for the cost of registration at the Land Title Office.

4. DEFAULT AND REMEDIES

4.01 Notice of Default

The District may, acting reasonably, give to the Owner written notice to cure a default under this Agreement within 30 days of delivery 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.

4.02 Costs

The Owner will pay to the District upon demand all the District's costs of exercising its rights or remedies under this Agreement, on a full indemnity basis.

4.03 Damages an Inadequate Remedy

The Owner acknowledges and agrees that in the 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 District and to the public interest will be irreparable and not susceptible of adequate monetary compensation.

4.04 Equitable Remedies

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.

4.05 No Penalty or Forfeiture

The Owner acknowledges and agrees that it is entering into this Agreement to benefit the public interest in providing rental accommodation, and that the District's rights and remedies under this Agreement are necessary to ensure that this purpose is carried out, and the District's rights and remedies under this Agreement are fair and reasonable and ought not to be construed as a penalty or forfeiture.

4.06 Cumulative Remedies

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 to 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 for a default by the Owner under this Agreement.

5. LIABILITY

5.01 Indemnity

Except if arising directly from the negligence of the District or its employees, agents or contractors, the Owner will indemnify and save harmless each of the District and its board members, officers, directors, employees, agents, and elected or appointed officials, and their heirs, executors, administrators, personal representatives, successors and assigns, from and against all claims, demands, actions, loss, damage, costs and liabilities that all or any of them will or may be liable for or suffer or incur or be put to any act or omission by the Owner or its officers, directors, employees, agents, contractors, or other persons for whom the Owner is at law responsible, or by reason of or arising out of the Owner's ownership, operation, management or financing of the Proposed Development or any part thereof.

5.02 Release

The Owner hereby releases and forever discharges the District, 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 Proposed Development or any part thereof which has been or hereafter may be given to the Owner by all or any of them.

5.03 Survival

The covenants of the Owner set out in Sections 5.01 and 5.02 will survive termination of this Agreement and continue to apply to any breach of the Agreement or claim arising under this Agreement during the ownership by the Owner of the Lands or any Unit therein, as applicable.

6. GENERAL PROVISIONS

6.01 District's Power Unaffected

Nothing in this Agreement:

- (a) affects or limits any discretion, rights, powers, duties or obligations of the District 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 District's bylaws in relation to the use of the Lands.

6.02 Agreement for Benefit of District Only

The Owner and District agree that:

- (a) this Agreement is entered into only for the benefit of the District:
- (b) this Agreement is not intended to protect the interests of the Owner, any Unit Owner, any occupant of any Unit or any future owner, occupier or user of any part of the Proposed Development, including any Unit, or the interests of any third party, and the District has no obligation to anyone to enforce the terms of this Agreement; and
- (c) The District may at any time terminate this Agreement, in whole or in part, and execute a release and discharge of this Agreement in respect of the Proposed Development or any Unit therein, without liability to anyone for doing so.

6.03 Agreement Runs With the Lands

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 or in any Unit after the date of this Agreement.

6.04 Release

The covenants and agreements on the part of the Owner and any Unit Owner and herein set forth in this Agreement have been made by the Owner and any Unit Owner as contractual obligations as well as being made pursuant to Section 483 of the *Local Government Act* (British Columbia) and as such will be binding on the Owner and any Unit Owner, except that neither the Owner nor any Unit Owner shall be liable for any default in the performance or observance of this Agreement occurring after such party ceases to own the Lands or a Unit as the case may be.

6.05 Priority of This Agreement

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 each Unit in the Proposed Development, including any amendments to this Agreement as may be required by the Land Title Office or the District to effect such registration.

6.06 Agreement to Have Effect as Deed

The District and the Owner each intend by execution and delivery of this Agreement to create both a contract and a deed under seal.

6.07 Waiver

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.

6.08 Time

Time is of the essence in this Agreement. If any party waives this requirement, that party may reinstate it by delivering notice to another party.

6.09 Validity of Provisions

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.

6.10 Extent of Obligations and Costs

Every obligation of a party which is set out in this Agreement will extend throughout the Term and, to the extent that any obligation ought to have been observed or performed prior to or upon the expiry or earlier termination of the Term, such obligation will survive the expiry or earlier termination of the Term until it has been observed or performed.

6.11 Notices

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 or by personal service, to the following address for each party:

If to the District:

District Municipal Hall
355 West Queens Road
North Vancouver, BC V7N 4N5

Attention: Planning Department

If to the Owner:

1009198 B.C. LTD.
1108 West 8th Avenue
Vancouver, BC V6H 3Z5

If to the Unit Owner:

The address of the registered owner which appears on title to the Unit at the time of notice.

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 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.

6.12 Further Assurances

Upon request by the District, the Owner will promptly do such acts and execute such documents as may be reasonably necessary, in the opinion of the District, to give effect to this Agreement.

6.13 Enuring Effect

This Agreement will enure to the benefit of and be binding upon each of the parties and their successors and permitted assigns.

7. INTERPRETATION

7.01 References

Gender specific terms include both genders and include corporations. Words in the singular include the plural, and words in the plural include the singular.

7.02 Construction

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.

7.03 No Limitation

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 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.

7.04 Terms Mandatory

The words "must" and "will" and "shall" are to be construed as imperative.

7.05 Statutes

Any reference in this Agreement to any statute or bylaw includes any subsequent amendment, re-enactment, or replacement of that statute or bylaw.

7.06 Entire Agreement

- (d) This is the entire agreement between the District and the Owner concerning its subject, and there are no warranties, representations, conditions or collateral agreements relating to this Agreement, except as included in this Agreement.
- (e) 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 District Council of a bylaw to amend Bylaw 8226.

7.07 Governing Law

This Agreement is to be governed by and construed and enforced in accordance with the laws of British Columbia.

As evidence of their agreement to be bound by the terms of this instrument, the parties hereto have executed the *Land Title Act* Form C that is attached hereto and forms part of this Agreement.

GRANT OF PRIORITY

WHEREAS COAST CAPITAL SAVINGS CREDIT UNION (the "**Chargeholder**") is the holder of the following charges which are registered in the Land Title Office:

- (a) Mortgage CA3936408; and
- (b) Assignment of Rents CA3936409 (together, the "**Charge**");

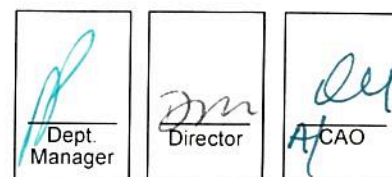
AND WHEREAS the Chargeholder agrees to allow the Section 219 Covenant herein to have priority over the Charge;

THIS PRIORITY AGREEMENT is evidence that in consideration of the sum of \$1.00 paid by THE CORPORATION OF THE DISTRICT OF NORTH VANCOUVER (the "**District**") to the Chargeholder, the receipt and sufficiency of which are hereby acknowledged, the Chargeholder covenants and agrees to subordinate and postpone all its rights, title and interest in and to the lands described in the Form C to which this Agreement is attached (the "**Lands**") with the intent and with the effect that the interests of the District rank ahead of the Charge as though the Section 219 Covenant herein had been executed, delivered and registered against title to the Lands before registration of the Charge.

As evidence of its Agreement to be bound by the above terms, as a contract and as a deed executed and delivered under seal, the Chargeholder has executed the Form C to which this Agreement is attached and which forms part of this Agreement.

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COUNCIL AGENDA/INFORMATION			
<input type="checkbox"/> In Camera	Date: _____	Item # _____	
<input checked="" type="checkbox"/> Regular	Date: <u>May 29, 2017</u>	Item # _____	
<input type="checkbox"/> Agenda Addendum	Date: _____	Item# _____	
<input type="checkbox"/> Info Package	DM# _____	Date: _____	Mailbox: _____
<input type="checkbox"/> Council Workshop			



The District of North Vancouver REPORT TO COUNCIL

May 5, 2017
File: 08.3060.20/066.16

AUTHOR: Emel Nordin, Planner

SUBJECT: 518 Alpine Court – Development Permit 66.16

RECOMMENDATION:

THAT Council issue Development Permit 66.16 (Attachment A) to allow for the construction of a new house and detached garage at 518 Alpine Court.

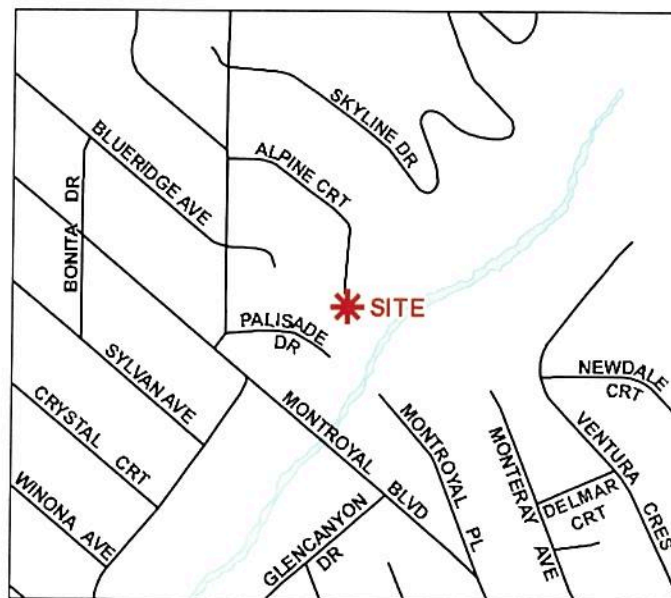
REASON FOR REPORT: The applicant has applied for a Development Permit with variances that requires Council's approval.

SUMMARY:

The application is for a Development Permit with variances to allow for the construction of a new house and garage at 518 Alpine Court. The site is located within Development Permit areas for Slope Hazard, Streamside Protection and Wildfire Hazard. The proposal requires the following variances:

- Maximum principal building depth;
- Maximum principal building eave height; and,
- Maximum height of retaining wall in required rear yard setback.

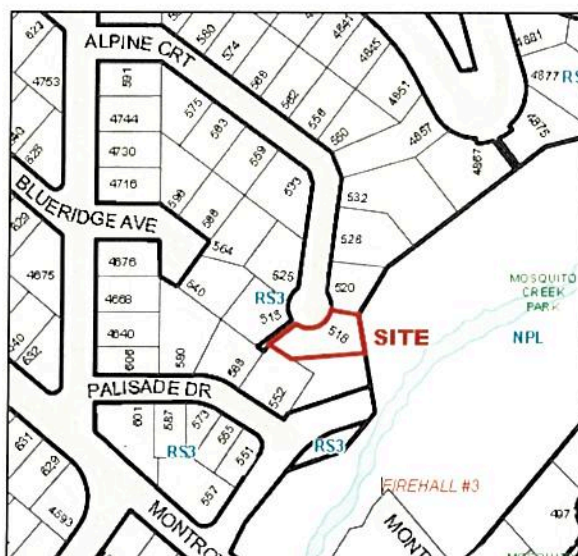
The steep and unusually shallow site conditions, and the construction methods required to improve site stability have contributed to the need for these variances.



BACKGROUND:

Site and Surrounding Area:

The subject property at 518 Alpine Court has an area of 849.3 sq. m. (9,141.90 ft²). The property is located at the end of the Alpine Court cul-de-sac and is bounded by existing residential developments to the north, northeast, west and southwest. The property is also bounded by Mosquito Creek Park to the east and undeveloped District of North Vancouver land to the south. The site and surrounding residential neighbourhood is zoned Single-Family Residential 7,200 Zone (RS3) as shown in the context map and air photo. There is currently an unoccupied, two storey house in the centre of the site.

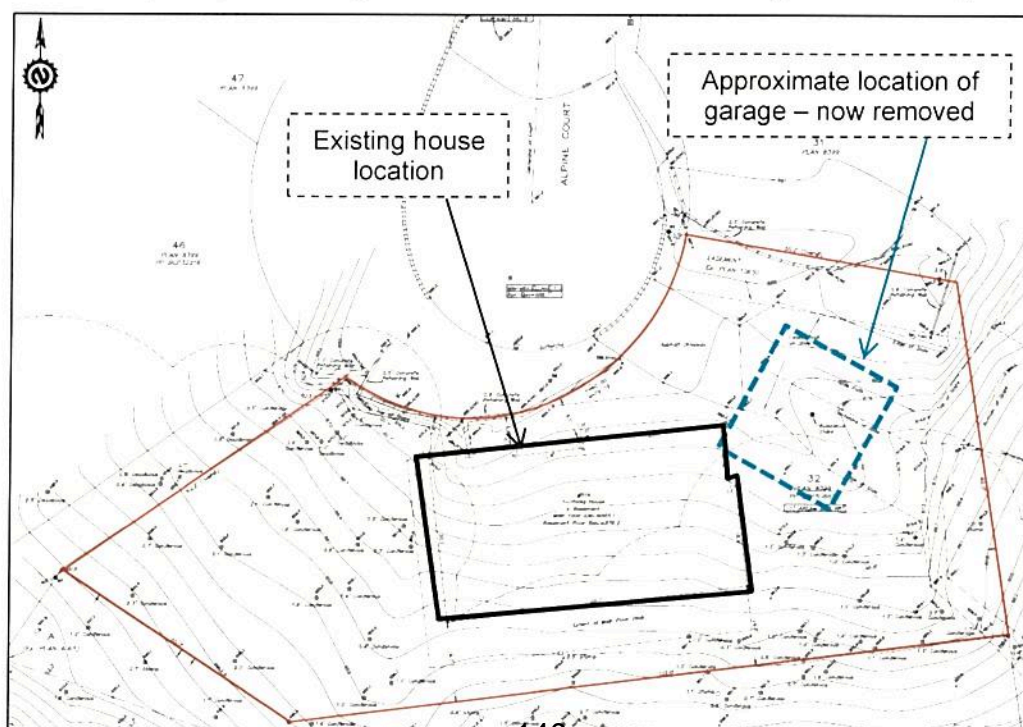


Context Map



Aerial Map

The site is steeply sloped throughout as shown in the following contour map



Contour Map

History of Slope Hazard Assessments:

The subject property was assessed as part of the District's comprehensive landslide risk assessment work undertaken by BGC Engineering in 2009 and 2010. The final report assigned this property a risk tolerance level of "Broadly Acceptable". Since this time, localized slope erosion occurred which elevated the risk to a detached garage structure which has since been removed. The area of slope erosion extends from where the detached garage structure was previously located on the subject property, down to Mosquito Creek Park located south east of the property.

BCG Engineering conducted a site visit of the subject property on January 6, 2011 and documented slope erosion extending from the back of the garage area on the subject property down to Mosquito Creek. Since the initial site visit in 2011, subsequent erosion has occurred on the property.

On June 29, 2012, the District of North Vancouver commissioned Horizon Engineering Inc. to undertake a geotechnical review of the property. Horizon Engineering Inc. summarized their review in a slope stability report that stated:

1. There are slope stability issues that should be addressed in a timely manner;
2. Further unravelling of the east slope area (behind the garage) will occur over time which will destabilise the garage structure;
3. Access to the garage should be restricted;
4. The garage is unsafe and should be demolished or have its foundation underpinned; and,
5. The foundations of the existing home should be reviewed by a qualified professional.

On November 20, 2012, the owner was sent a letter from the General Manager, Engineering Parks and Facilities, with the 2012 Horizon Engineering Inc. report attached, requiring that:

1. Use of the garage be discontinued;
2. A plan to address and remediate the unsafe garage structure on the Property be submitted to the District by no later than January 31, 2013;
3. The garage structure remedial work be commenced within 60 days of approval of the remediation plan and be completed by no later than September 30, 2013; and,
4. Upon completion of the work a Qualified Professional must certify that the garage structure may be safely used.

Remedial Action Requirement Order:

As a result of inaction by the homeowner, on July 23, 2013, District Council issued a Remedial Action Requirement Order (Report to Council included as Attachment B) requiring the registered property owners to address and remediate the unsafe condition of the property as follows:

- (a) Demolish and remove the existing garage on the Property or redesign/reconstruct it in accordance with a plan approved by the Chief Building Official;
- (b) Restore the Property to a safe condition to the satisfaction of the chief Building Official;

- (c) Submit a plan to address and remediate the unsafe garage structure on the Property (the "Remediation Plan"), acceptable to the District's Chief Building Official and prepared by a Qualified Professional retained by the Owners, by no later than September 3, 2013, with such a plan to address re-vegetation for slope stability and storm water management; and,
- (d) Submit a report by a Qualified Professional prior to any remedial work being commenced on the Property, certifying that the house foundation is secure and the building is fit for the use intended.

The owner at the time implemented item (a) by demolishing the garage and transporting the demolition debris off-site for disposal. During this demolition work, temporary slope stabilization was also completed on the property including:

- Construction of a temporary wooden barrier at the toe of this slope;
- Partial re-sloping of the headscarp area; and,
- Placement of a geotextile and tarp for rainsplash erosion at the headscarp.

The existing single-family house was also vacated to facilitate internal demolition activities undertaken under permit as a first step towards renovation of the house which was the intention of the owner at the time. The house remains unoccupied and the property is under new ownership.

PROPOSAL:

The new property owner has retained Horizon Engineering Inc. to ensure all required geotechnical and slope stability issues are addressed to the satisfaction of District staff. The applicant is proposing that the existing unoccupied house be demolished and replaced with a new house and detached garage. This Development Permit with variances has resulted from the construction methods required to restore the property to a safe and stable condition, in accordance with both the District of North Vancouver's Natural Hazards Risk Tolerance Criteria and the recommendations outlined in a geotechnical report prepared by Horizon Engineering Inc., dated April 5, 2017 and based on the proposed building drawings.

ANALYSIS:

Zoning Bylaw Compliance:

The proposed construction requires the following variances:

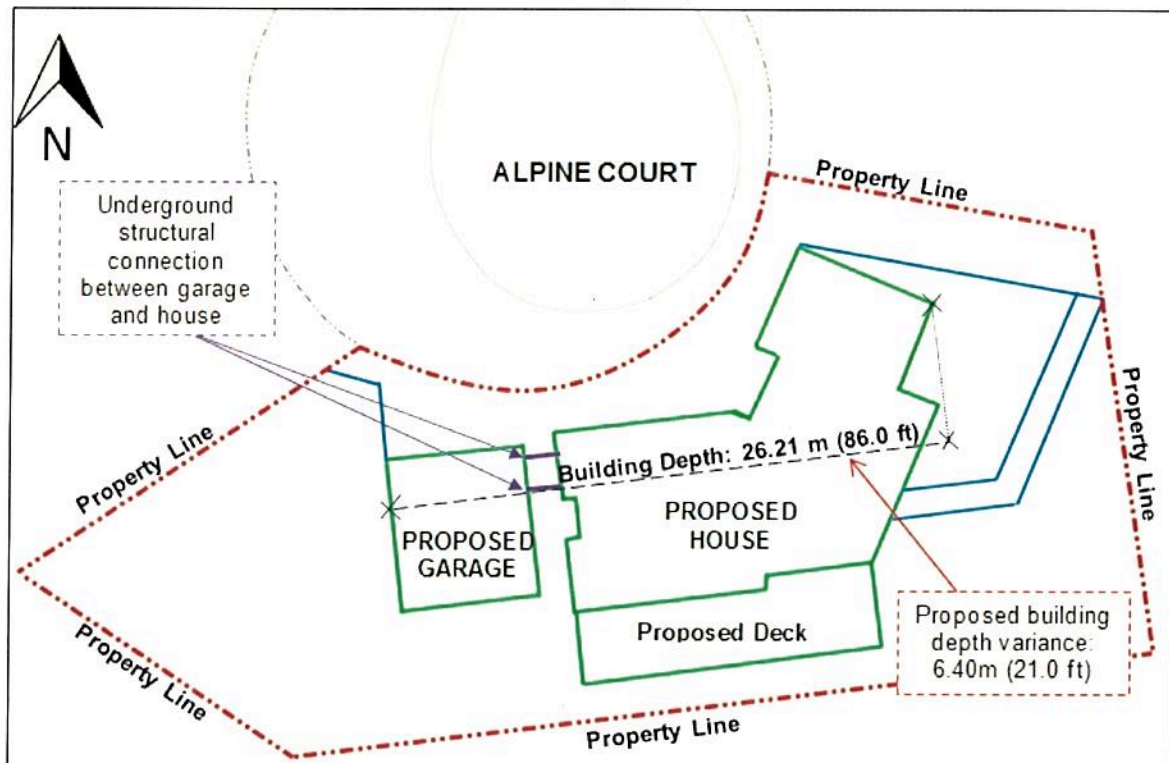
Regulation	Required/ Permitted	New Work	Variance
Maximum Building Depth	19.81 m 65.0 ft	26.21 m 86.0 ft	6.40 m 21.0 ft
Maximum Principal Building Eave Height	6.70 m 22.00 ft	10.08 m 33.10 ft	3.38 m 11.10 ft
Maximum Height of Retaining Wall in Required Rear Yard Setback	1.22 m 4.0 ft	2.36 m 7.75 ft	1.14 m 3.75 ft

Variances:

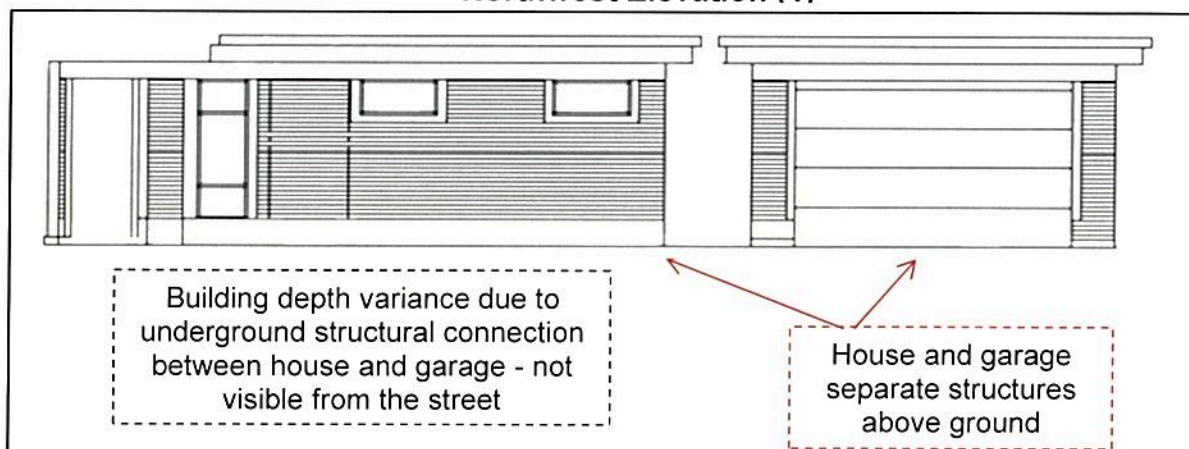
Maximum Principal Building Depth

Horizon Engineering Inc. has determined that the foundation for the proposed new house and detached garage should be structurally connected in order to maximize stability and minimize erosion potential on the property. While the house and parking garage are detached buildings above ground, the need to secure the two structures underground has resulted in the requirement for a variance to maximum building depth without any above-grade visual impacts. If the house and garage were not attached underground, the building depth variance would not be required. The building depth variance is indicated in the site plan and northwest elevation below. The proposed building depth is 26.21 m (86.0 ft) which requires a 6.40 m (21.0 ft) variance.

Site Plan - Building Depth Variance

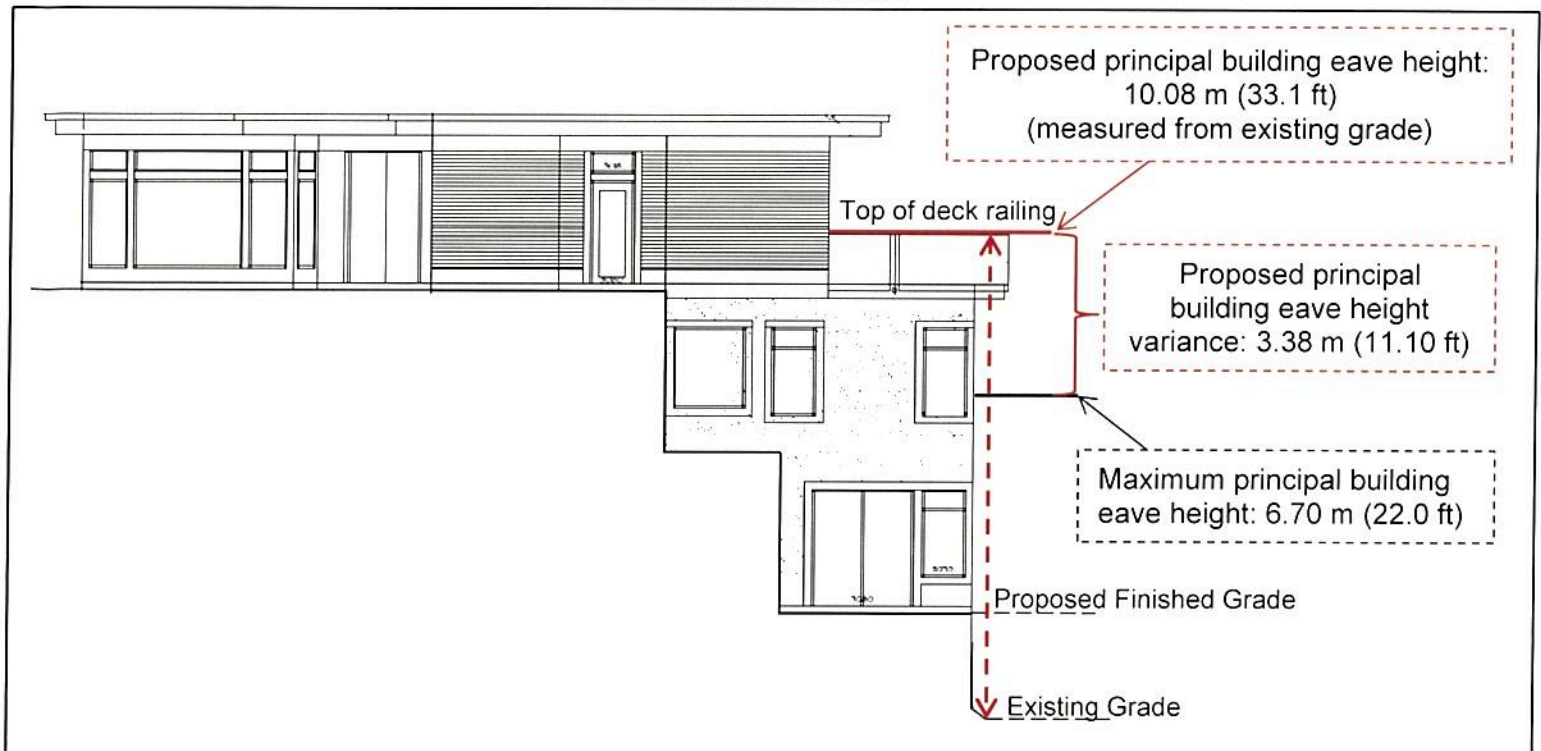


Northwest Elevation (1)



Maximum Principal Building Eave Height

The variance for maximum principal building eave height has resulted from the steep site conditions, with a significant down slope from the front to the rear of the property. In order to improve stability, Horizon Engineering Inc. has recommended that the proposed house be supported on a deep foundation, which has increased the elevation of the house beyond the existing grade. As indicated by the southwest elevation drawing below, the maximum principal building eave height is measured from the existing grade to the top of the railing of the deck located at the rear of the house, as opposed to the proposed finished grade. Therefore, the grade increase required to support the house has resulted in the variance for maximum principal building eave height. The deck and railing are located in the rear yard and are not visible from the street. The proposed principal building eave height is 10.08 m (33.10 ft) which requires a 3.38 m (11.10 ft) variance.

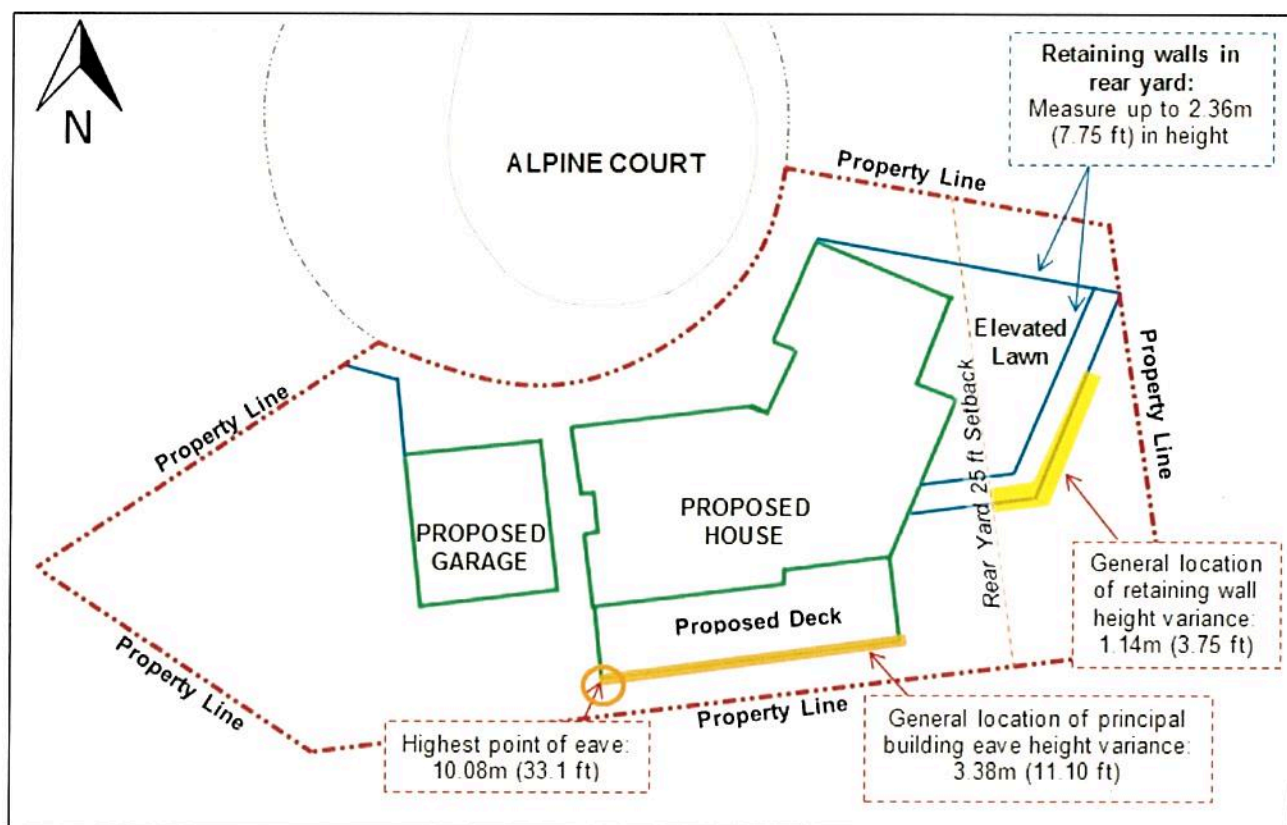
Southwest Elevation

Maximum Height of Retaining Wall in Required Setback:

The owner has proposed to construct a lawn terrace with perimeter retaining walls within the rear yard setback at the east portion of the subject property. In order to improve stability, Horizon Engineering Inc. has recommended that the lawn be supported on a structural suspended slab which is supported on piles. Retaining wall height is measured from the existing grade, as opposed to the proposed finished grade. Therefore, the grade increase required to support the lawn terrace has resulted in the variance for maximum height of retaining wall in required setback. This retaining wall is located in the rear yard and is not visible from the street. The proposed retaining wall height is 2.36 m (7.75 ft) which requires a 1.14 m (3.75 ft) variance.

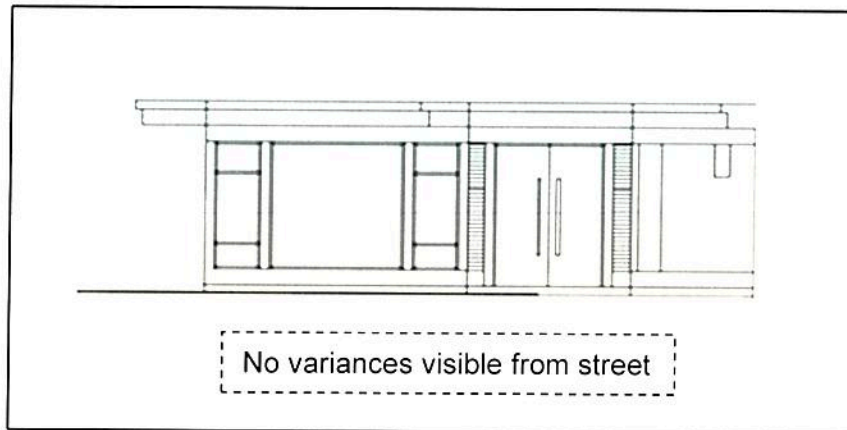
The site plan below indicates the location of both the rear yard retaining walls and the principal building eave height variance.

Site Plan - Eave Height & Retaining Wall Variances

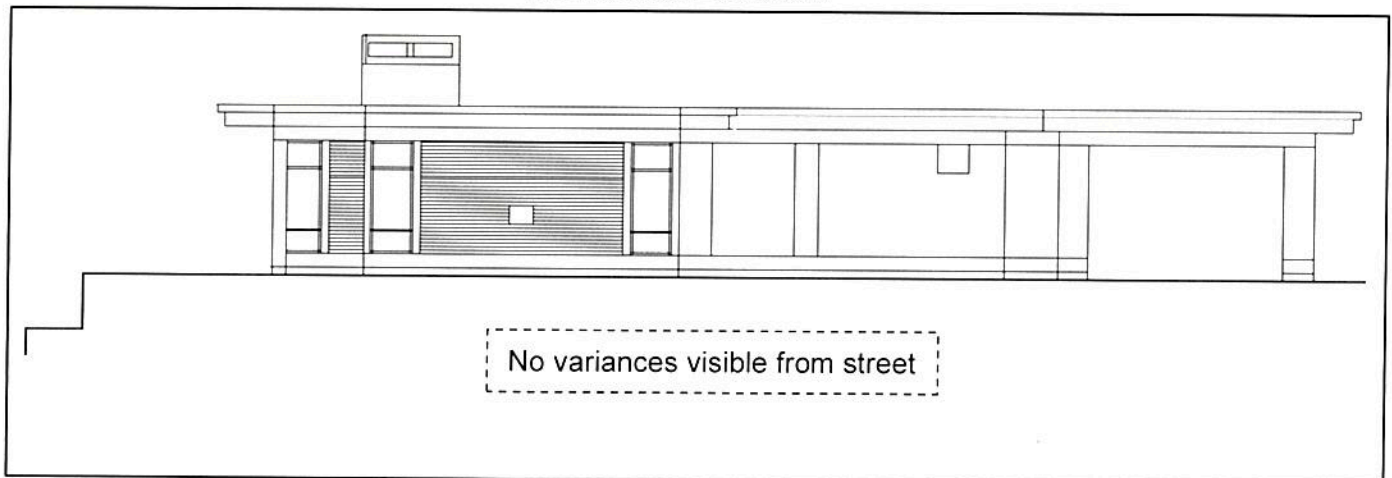


None of the proposed variances are visible from the street, as indicated by the additional street view elevation drawings below.

Northwest Elevation (2)



Northeast Elevation



The following images demonstrate the existing streetscape with unoccupied house, and the proposed new house and garage.

Existing Streetscape



Rendering of Proposed New House and Garage



Development Permits:

The proposal is in Development Permit Areas for streamside protection, and for protection from hazardous conditions for slope hazard and wildfire hazard. The proposal and reports from qualified professionals have been reviewed by the District's Environment Department, Section Manager of Public Safety, and Building Department.

Wildfire Hazard:

The applicant has provided a wildfire assessment and arborist report prepared by B.A. Blackwell & Associates Ltd, dated May 13, 2016 (revised April 5, 2017). This report includes an assessment of the anticipated tree impacts due to the off-site stormwater management drainage works, wildfire hazard assessment, and a proposed restoration planting plan.

B.A. Blackwell & Associates Ltd. has recommended a number of wildfire mitigation measures including the installation of an exterior rooftop sprinkler system on the house. It has been recommended that tree removal be limited to trees in poor health in order to maintain slope stability.

A total of 15 trees within the site and five trees on District owned land are proposed for removal in order to accommodate the on-site and off-site works. A preliminary restoration landscape plan has been provided which recommends the replanting of 11 trees of native species, 40 shrubs and 160 ferns. The applicant is also required to complete outstanding slope vegetation restoration as a condition of a prior tree removal permit issued at the time of garage demolition.

It is anticipated that additional trees may require removal or pruning during the construction works, especially as a result of the off-site drainage works. Therefore, it is recommended that a final restoration landscaping plan be required at the completion of construction.

Development Permit 66.16 references compliance with the wildfire assessment and arborist report as a condition of development. The report is attached to the permit and will be registered on the title of the property.

Slope Hazard:

The applicant has submitted a geotechnical report prepared by Horizon Engineering Inc. which concludes that the proposal meets the District's adopted Risk Tolerance Criteria and Slope Hazard Development Permit Area guidelines. The report includes a statement that the site is safe for the use intended.

Included in the Horizon Engineering Inc. report is a stormwater management plan which outlines recommendations to direct stormwater off-site via a PVC pipe downslope and discharge the stormwater into an infiltration field at the bottom of the slope near Mosquito Creek. This plan has been designed to limit tree removal and impacts to slope stability.

The Horizon Engineering Inc. report also includes an assessment of the B.A. Blackwell & Associates Inc. wildfire assessment and arborist report, which concludes that the stability of

The Horizon Engineering Inc. report also includes an assessment of the B.A. Blackwell & Associates Inc. wildfire assessment and arborist report, which concludes that the stability of the slope will not be negatively impacted by the pruning and removal of select trees, and that it is expected to result in increased understorey, which will have a positive effect on soil stability.

In order to address concerns raised by an adjacent neighbour located southwest of the property of the potential impacts to their property during construction, Horizon Engineering Inc. has recommended additional site safety control measures during development of the property including:

- That the existing slope on 518 Alpine Court be protected by the installation of a wire mesh and application of a skim coat;
- Installation of a temporary debris catchment fence along the south, east and southwest property lines of 518 Alpine Court;
- Completion of a pre-construction assessment of adjacent structures and hard landscape features; and,
- Vibration monitoring during the installation of piles and shoring/anchors.

The Horizon Engineering Inc. report concludes that the proposed development will not impact the stability of the southwest slope located within the neighbour's property.

Development Permit 66.16 references compliance with the geotechnical report as a condition of development. A Section 219 Restrictive Covenant for slope hazard mitigation will be registered on title of the subject property prior to issuance of a Building Permit.

Streamside Protection:

The proposal is exempt from requiring a Development Permit for streamside protection as the proposed work is located more than 15m from top of bank and is outside of the protected area.

PUBLIC INPUT:

An information letter was sent out to the adjacent neighbours and the Edgemont and Upper Capilano Community Association to inform them of the application.

One neighbour expressed concerns regarding the potential impacts to their property from the proposed development, particularly related to potential debris flow downslope to their property during installation of piles and shoring/anchors. Meetings were held between the neighbour, District staff, and the applicant. As a result of these discussions, the geotechnical report was revised to incorporate additional site safety control measures in order to address the neighbour's concerns.

The Community Association had no objection to the application, however, they requested that the neighbour's concerns be addressed by District staff in the review of this proposal.

Municipal notification advising that Council will be considering whether to issue a Development Permit will be sent to the adjacent property owners and the Community Association. Response to the notification will be provided to Council prior to consideration of this application.

CONCLUSION:

Staff are supportive of the Development Permit and associated variances because of the challenging nature of the lot shape and topography. Staff are satisfied that this proposed development will ensure all required geotechnical and slope stability issues are addressed. In addition, the site safety control measures during construction have been adapted to respond to neighbour concerns.

OPTIONS:

The following options are available for Council's consideration:

- 1. THAT** Council issue Development Permit 66.16 (Attachment A) to allow for the construction of a new house and garage at 518 Alpine Court (staff recommendation); or
- 2. THAT** Council deny Development Permit 66.16 including the associated variances.

Respectfully submitted,



Emel Nordin
Planner

Attach

- A. DP 66.16
- B. Report to Council: "Remediation Action Requirements: 518 Alpine Court-Unsafe Structure", dated July 24, 2013

REVIEWED WITH:		
<input type="checkbox"/> Sustainable Community Dev.	<input type="checkbox"/> Clerk's Office	External Agencies:
<input checked="" type="checkbox"/> Development Services	<input type="checkbox"/> Communications	<input type="checkbox"/> Library Board
<input type="checkbox"/> Utilities	<input type="checkbox"/> Finance	<input type="checkbox"/> NS Health
<input type="checkbox"/> Engineering Operations	<input type="checkbox"/> Fire Services	<input type="checkbox"/> RCMP
<input checked="" type="checkbox"/> Environment	<input type="checkbox"/> ITS	<input type="checkbox"/> Recreation Com.
<input type="checkbox"/> Economic Development	<input type="checkbox"/> Solicitor	<input type="checkbox"/> Museum & Arch.
<input type="checkbox"/> Human resources	<input type="checkbox"/> GIS	<input type="checkbox"/> Other:
<input checked="" type="checkbox"/> Engineering - Public Safety		

THE CORPORATION OF THE DISTRICT OF NORTH VANCOUVER

DEVELOPMENT PERMIT NUMBER 66.16

This Development Permit 66.16 is hereby issued by the Council for The Corporation of the District of North Vancouver for the construction of a new house and detached garage on the property located at 518 Alpine Court, legally described as Lot 32 Block C District Lot 578 Plan 8399 (PID: 008-607-371), subject to the following terms and conditions:

- A. The following Zoning Bylaw regulations are varied under Section 490 (1) (a) of the Local Government Act:
1. The maximum building depth is increased from 19.81m (65.0 ft) to 26.21m (86.0 ft);
 2. The maximum principal building eave height is increased from 6.70m (22.00ft) to 10.08m (33.10 ft);
 3. The maximum height of retaining wall in required rear yard setback is increased from 1.22m (4.0 ft) to 2.36 m (7.75 ft); and
 4. The variances above apply only to the renovation as illustrated on the attached drawings (DP66.16 A-M).
- B. The following requirement is imposed under Subsection 490 (1) (c) of the Local Government Act:
1. Substantial construction as determined by the Manager of Permits and Licenses shall commence within two years of the date of this permit or the permit shall lapse.
- D. The following requirements are imposed under Subsections 491 (2) of the Local Government Act:
1. No work shall take place except to the limited extent shown on the attached plans (DP66.16 A -M) and in accordance with the following:
 - (i) Recommendations of the "Preliminary Wildfire Hazard Assessment and Arborist Report" prepared by B.A. Blackwell & associates Ltd., dated May 13, 2016 (amended April 5, 2017) (DP66.16L);
 - (ii) Recommendations of the report titled "Geotechnical Investigation Report" prepared by Horizon Engineering Inc., dated April 5, 2017 (DP66.16M);

- (iii) That an “exterior rooftop sprinkler system” be installed on the house as recommended in the wildfire hazard assessment and arborist report referenced above;
- (iv) A qualified professional engineer shall confirm that the building permit drawings meet the recommendations of the geotechnical report referenced above, or meets and equivalent or higher degree of protection;
- (v) Mitigation measures are carried out in accordance with Sections D.1(i), (ii), (iii) of this permit;
- (vi) At the completion of the development and before first occupancy, a qualified professional shall inspect and sign off that all prescribed mitigation measures have been satisfactorily undertaken pursuant to the Wildfire Assessment Report referenced above; and,
- (i) Prior to issuance of Building Permit, confirmation of registration of the section 219 restrictive covenant for slope hazard mitigation.

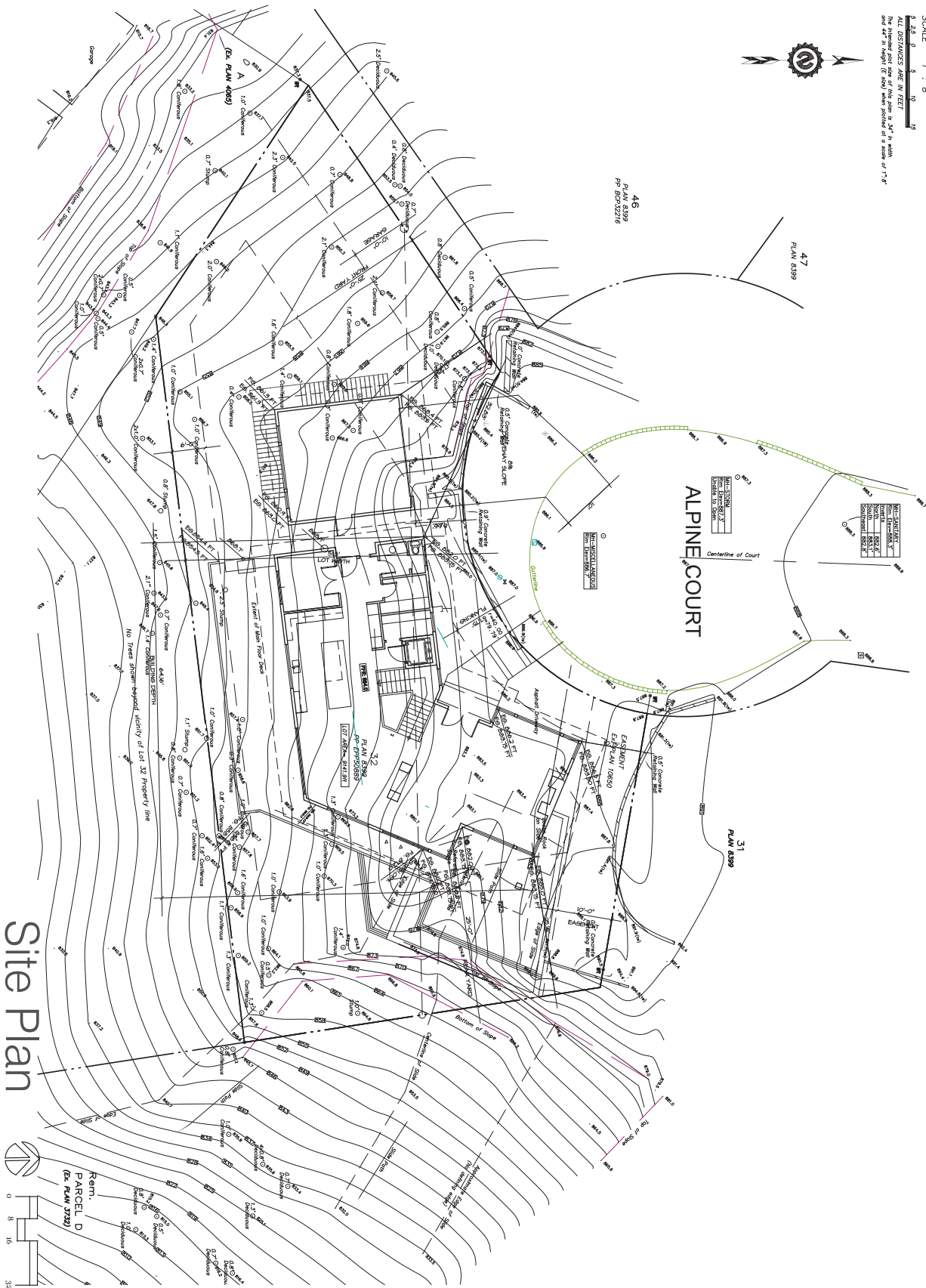
Mayor

Municipal Clerk

Dated this day of , 2017.

CIVIC ADDRESS:
518 Alpine Court, North Vancouver
ED: 009-607-371

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8.25 0 5 10
ALL DISTANCES ARE IN FEET
This drawing and plan of this site is 34" in width
and 48" in height (1:200) when printed at a scale of 1/8"



alexvoth
designconsulting
271-6622 Campbell Ave
North Vancouver, B.C.
V7P 4P2
604-482-2810
alexvoth@alexvoth.com

Issued for Building Permit
July 28, 2016
Issued for DVP
November 8, 2016

518 Alpine Court
North Vancouver
British Columbia
Site Plan
Main Floor

Drawn
Checked
Date
Scale
Sheet Number

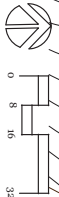
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CIVIC ADDRESS:
518 Alpine Court, North Vancouver
ED. 009-607-371

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ALL DISTANCES ARE IN FEET
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and 48" in height (1:200) when printed at a scale of 1/8"



Site Plan



A-2.1.0

518 Alpine Court
North Vancouver
British Columbia

Site Plan
Lower Floor

Drawn
Checked
Date
Scale
Sheet Number

NOVEMBER 8, 2016
1/8" = 1'-0"
Sheet Number

Issued for Building Permit
July 28, 2016
Issued for DVP
November 8, 2016

alexvoth
designconsulting

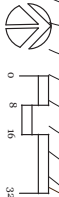
201-662-0397
604-482-2810
1175-1175-1175
alexvoth.com

CIVIC ADDRESS:
518 Alpine Court, North Vancouver
ED. 009-607-371

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ALL DISTANCES ARE IN FEET
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and 4" in height (1:200) when printed at a scale of 1/8"



Site Plan



A-2.2.0

Site Plan
Basement Level

518 Alpine Court
North Vancouver
British Columbia

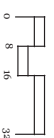
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Date
Scale
Sheet Number

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info@alexvoth.com

Issued for Building Permit
July 28, 2016
Issued for DVP
November 8, 2016

518 Alpine Court
North Vancouver
British Columbia

Contract	
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Date	APRIL 27, 2016
Scale	1/8" = 1'-0"
Sheet Number	



A-4.0

518 Alpine Court
North Vancouver
British Columbia



2. Northeast Elevation

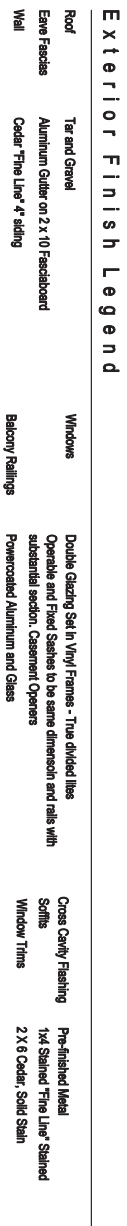
Roof	Windows	Cross Carry Fastening	Pre-finished Metal
Eave Fascias			1x4 Stained "Fine Line" Stained Soffits
Tie and Gable			
Aluminum Gutter on 2 x 10 Fascboard	Double Glazing Seal in Vinyl Frames - Fine etched glass Operable and fixed Sashes to same dimension and rails with substantial section, Casement Operable		

Contract	
Drawing	
Checked	
Date	NOVEMBER 8, 2016
Scale	1/8" = 1'-0"
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32	

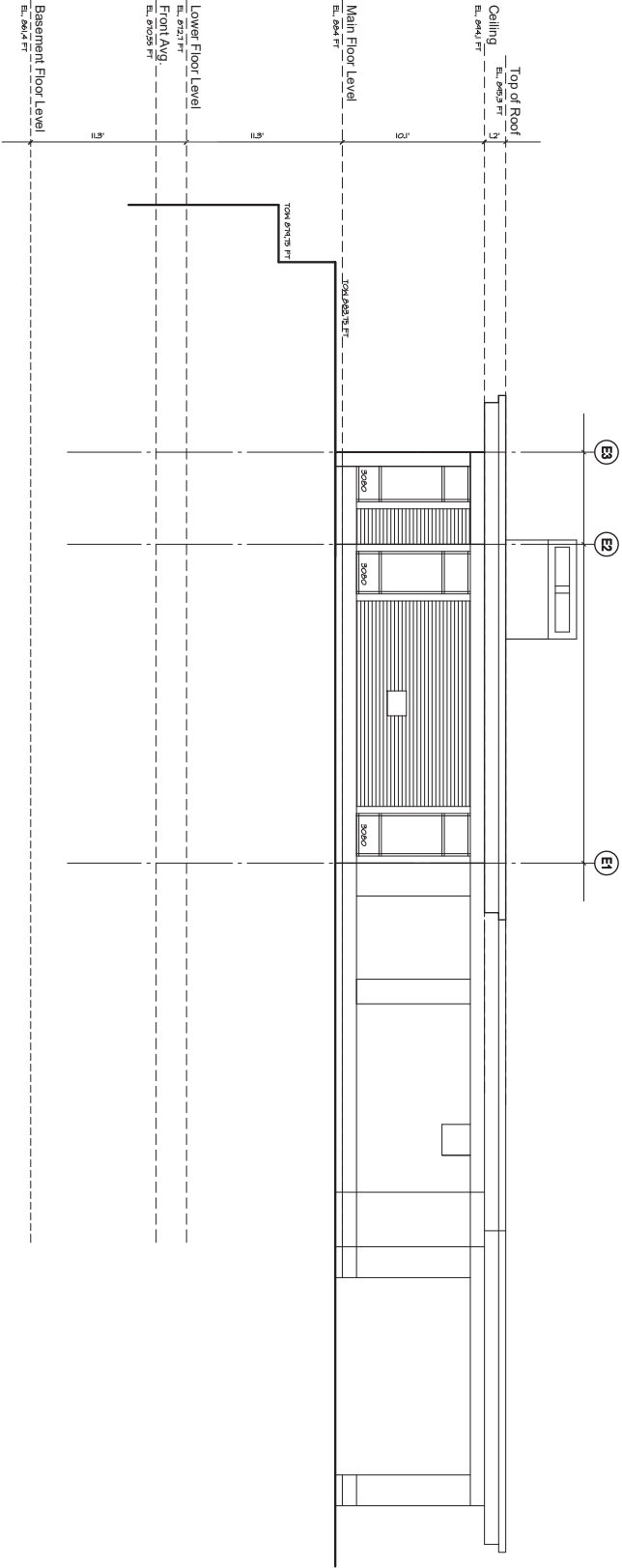
A.4.1

518 Alpine Court
North Vancouver
British Columbia



A-4.2

Contract	
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Date	NOVEMBER 8, 2016
Scale	1/8" = 1'-0"
Sheet Number	



4. Northeast Elevation

Exterior Finish Legend

Roof	Windows	Cross Cavity/Raining
Eave Fascias	Double Glazing Set in Vinyl Frames - True divided lites	Pre-finished Metal
Wall	Operable and Fixed Sections to be same dimension and ribs with substantial section. Casement Operates	1x4 Stained "True Line" Stained
	Powercoated Aluminum and Glass	2 X 6 Cedar, Solid Stain
	Balcony Railings	

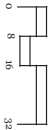
Owner
Drawn
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Date
Scale
Sheet Name

HOUGHTON & SONS
1/8" = 1'-0"
Steel Member

518 Alpine Court
North Vancouver
British Columbia

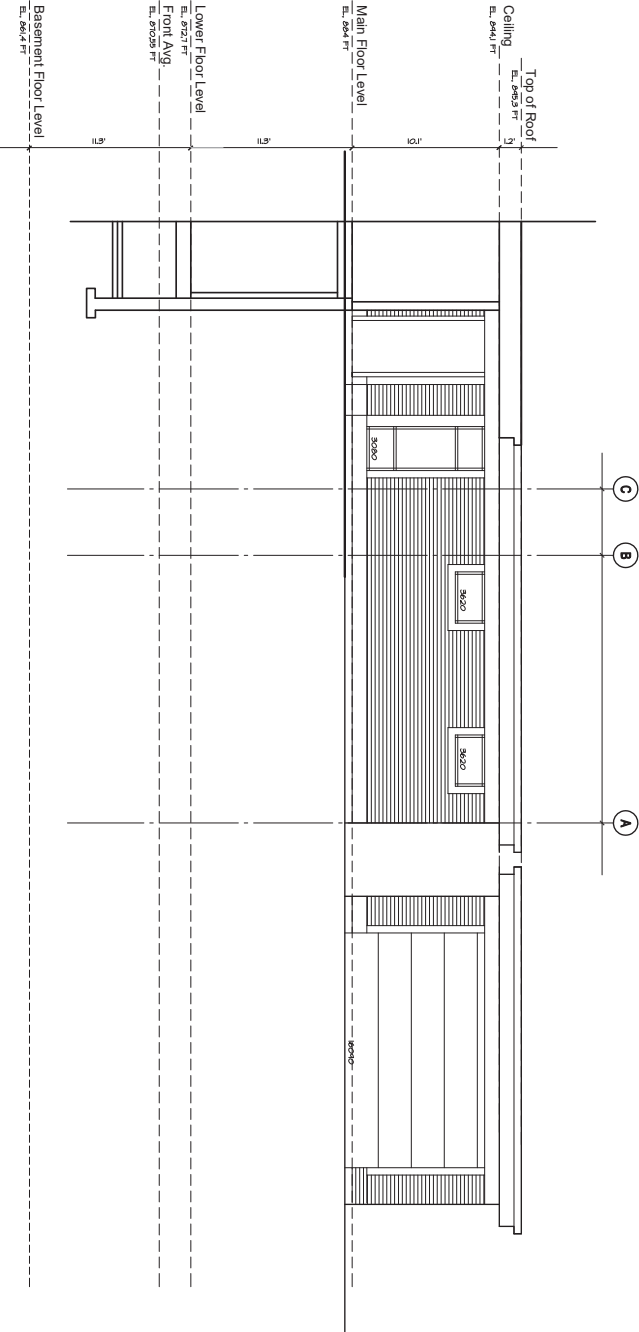
Elevation

Elevation



A-4.3

Elevation



6. Northwest Elevation

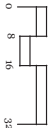
Exterior Finish Legend

Roof	Tie and Gavel	Windows	Cross Cavity Flashing	Pro-finished Metal
Eave Fascias	Aluminum Gutter on 2 x 10 Fascia Board	Double Glazing Set in Vinyl Frames - True divided lites	Soffits	1x4 Stained Pine Liner Stained
Wall	Cedar "True Line" 4" siding	Operable and Fixed Sashes to be same dimension and rails with substantial section. Casement Opens	Window Trims	2 X 6 Cedar, Solid Stain
		Balcony Railings		
		Powercoated Aluminum and Glass		

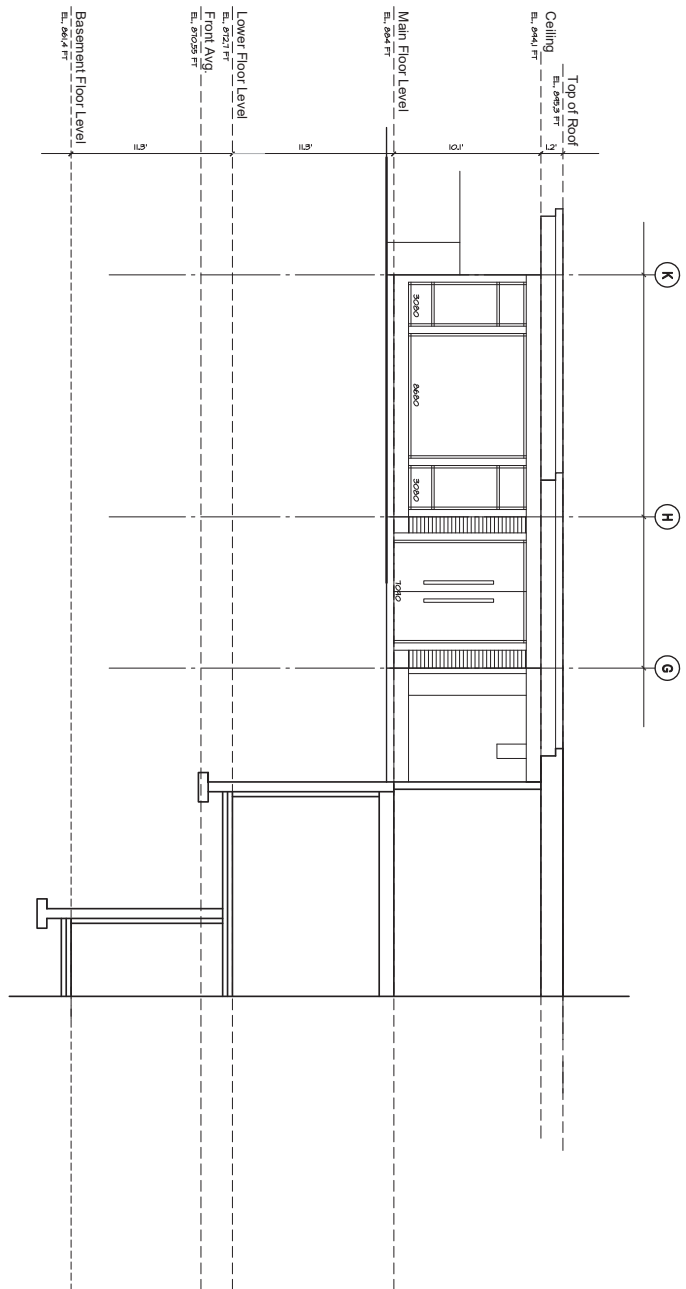
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WAGNER & PAIR
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Elevation



A-4.5

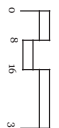


5. Northwest Elevation

Exterior Finish Legend

Roof	Tar and Gravel	Windows	Double Glazing Set in Vinyl Frames - True divided lites Operable and Fixed Sashes to be same dimension and rails with substantial section. Casement Opens	Cross Granty Flashing Sills	Pre-finished Metal 1x4 Stained Pine Line Stained 2 X 6 Cedar Solid Stain
Eave Fascias	Aluminum Gutter on 2 x 10 Fascia Board				
Wall	Cedar "Fine Line" 4" siding	Balcony Railings	Powercoated Aluminum and Glass	Window Trims	

Elevation



A-4.4

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Checked
Date
Scale
Sheet Name

Elevation

518 Alpine Court
North Vancouver
British Columbia

162

Section

Section

A-5.0

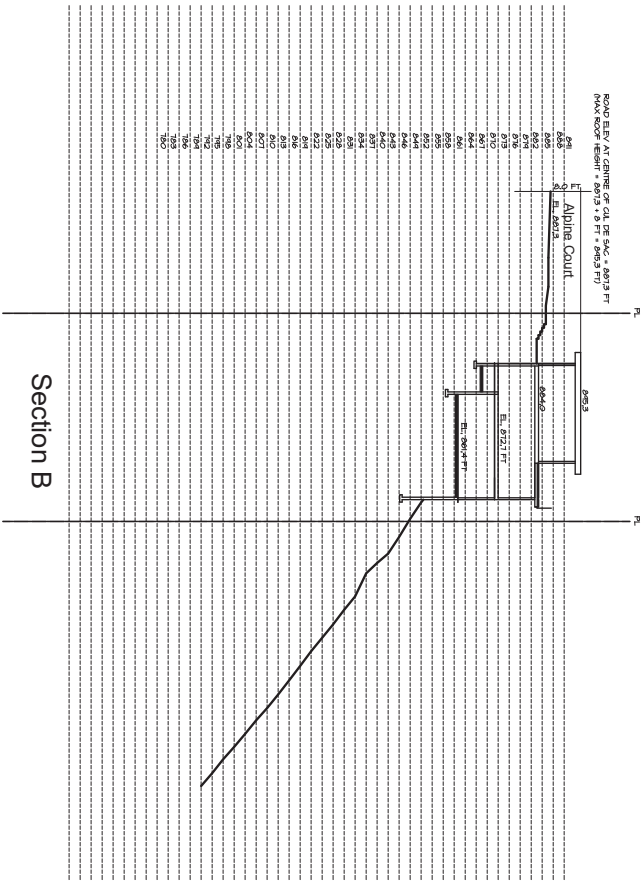


Assembly Legend

- [illegible]

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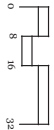
Issued for Building Permit
July 28, 2016
Issued for DVP
November 8, 2016



518 Alpine Court
North Vancouver
British Columbia

Section

Section



A-5.1

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Date
Scale
Sheet Name

1/8" = 1'-0"

Preliminary Wildfire Hazard Assessment and Arborist Report

518 Alpine Court –PID: 008-607-371

AMENDED

April 5, 2017



May 13, 2016

Submitted By:

**Judith Cowan, FIT, ISA Cert Arb &
Bruce Blackwell, MSc, RPF, RPBio
B.A. Blackwell & Associates Ltd.
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Ph: 604-986-8346
Email: j_cowan@bablackwell.com**

Submitted To:

**Harjinder Gupta
GG Home Ventures Corp.
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Ph: 604-365-5494
Email: harjindergupta@gmail.com**

B.A. BLACKWELL & ASSOCIATES LTD.





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1.0 Introduction

B.A. Blackwell and Associates Ltd. (Consultant) were retained by Harjinder Gupta of GG Home Ventures Corp. (Client) to provide a wildfire hazard assessment and professional arboriculture services for 518 Alpine Court in the Cleveland neighbourhood of the District of North Vancouver (DNV). The purpose of the fire hazard assessment is to determine wildfire risk associated with the planned development to ensure compliance with the DNV's Wildfire Hazard Development Permit Area (Wildfire Hazard DPA). The goal of this assessment is to ensure the proposed development falls within an acceptable range of risk from wildfire for the intended use as a residential property. This considers both a house fire spreading from the property to nearby forested District lands and a wildfire spreading from a forested area into the developed portion of this neighbourhood.

The objective of the arborist report is to provide an inventory and assessment of trees, both shared and on adjacent property, which the Client desires to remove. This report will detail the location, species, diameter at breast height (dbh), height, condition, and specific recommendations for each applicable tree. Further objectives are to outline common construction damage to retained trees, and to provide tree protection zones and their associated guidelines for those trees to be retained during development.

The legal description and PID number is:

518 Alpine Court

Lot 32 Block C District Lot 578 Plan 8399

PID: 008-607-371

Bruce Blackwell, MSc, RPF (#2073) has over 28 years' experience in fire and forest ecology, and fire and fuels management. Judith Cowan, RPF (#5433), ISA Certified Arborist (#PN-7314A), and Tree Risk Assessor has over six years' experience in arboriculture in the lower mainland. Bruce Blackwell, RPF meets the requirement of a 'Qualified Professional' (Section 1.1 below).

1.1 Fire Hazard Report Sign Off

At the completion of the development and before first occupancy, the DNV requires that a 'Qualified Professional' inspects and signs off that all prescribed mitigation measures have been satisfactorily undertaken pursuant to this Report, pertaining specifically to the wildfire hazard on the property. A qualified professional must be "*a Registered Professional Forester in good standing and qualified by training or with a minimum of two years' experience in fuel management prescription development and mitigation of wildfire hazards in British Columbia.*"¹

This Report should be shared with contractors, developers and landscapers, as relevant, to ensure that requirements are noted and recommendations are followed as part of compliance with the Wildfire Hazard DPA.

¹ Wildfire Hazard Report Master Requirement SPE115, District of North Vancouver, Version March 31, 2014



Measures required ensuring compliance with the wildfire hazard DPA will be clearly identified and separated from those recommendations made from an arboricultural perspective.

2.0 Documents Reviewed

The following documents were reviewed for the preparation of this report:

1. Geotechnical Investigation Report, prepared by Horizon Engineering Inc. dated April 29, 2016, and received by email May 3, 2016.
2. Site Plan and House Design drawings, prepared by Alex Voth Design dated December 14, 2015, and received by email May 3, 2016.

3.0 Property Description

The property under review is currently unoccupied with a two storey, wood framed house built in 1973. The area of the lot is approximately 895m². 518 Alpine Court extends from the crest to the mid-slope portion of the hill. It has a south aspect with average slope gradients on the sloping terrain portion of the site ranging from 35° to 48°.

4.0 Methodology

Tree assessment for both the arborist report and the fire hazard assessment included the collection of the following data:

- diameter at breast height (dbh) measured to nearest 0.5 cm, except where access to the stem was limited,
- form (hedge, shrub, tree, multi-stem tree),
- location,
- height,
- crown base height,
- crown radius, and
- tree health, condition or defect.

Tree height was measured using clinometers and digitally calculated horizontal distance. Diameter at breast height was measured according to the District of North Vancouver's tree measurement guidelines². Crown radii are ocular estimates to the nearest quarter meter using the most far-reaching branch tip as the basis for measurement. Tree health, condition or defect was assessed visually. No coring, drilling, or climbing was executed.

² District of North Vancouver Environment Department, *Tree Permit Information: How to measure a stem diameter*.



Shrub and hedge assessment included the collection of species, height, and condition only. All measurements (height and width) for shrubs and hedges were ocular estimates.

All vegetation assessed was assigned a unique number, used consistently throughout the report in maps, text, and tables. Trees were assigned a unique number (or numbers) and tagged with plastic or metal tags.

Photographs of the site and specimens were taken for documentation.

4.1 Fire Hazard Assessment Methodology

For the purpose of the fire hazard assessment, on-site analysis included inventory and assessment of all flammable coniferous vegetation on and off the subject parcel that was determined to influence the fire hazard of 518 Alpine Court.

Coniferous trees, shrubs and hedges were assessed, as identified in the above Section 4.0. Deciduous vegetation was not assessed as part of the fire hazard assessment as it was determined that deciduous vegetation in the area does not significantly influence the fire hazard of the parcel at 518 Alpine Court.

All vegetation assessed for the purpose of the fire hazard assessment carry recommendations specific to fire hazard mitigation. The results of this assessment, along with mitigation recommendations, are found in Section 9.1 Arboriculture Assessment.

Eleven trees were assessed as part of the arborist report.

5.0 Fire Hazard Assessment and Site Description

An assessment of the wildfire hazard on the site was conducted on April 29, 2016 by Judith Cowan, FIT, ISA Certified Arborist and Emilie English, Dipl. Tech. The purpose of the assessment is to identify wildfire hazards and the associated level of risk to the property and neighbourhood of a wildfire, and to recommend mitigation measures required to reduce the hazards and risk.

5.1 Site Description

The parcel is located 80 m from the nearest hydrant and access for DNV Fire (Firehall #3) is available to the west along Montroyal Boulevard, north along Skyline Drive and then east on Alpine Court to the cul-de-sac terminus (Figure 1). Foot access is available from the Mosquito Creek Park gravel trail south of the subject lot, but the access is steep and treed. DNV Fire would likely only be able to action a fire from the Alpine Court side of the property.

518 Alpine Court is an odd-shaped, roughly rectangular lot located at the terminus of Alpine Court with a southern aspect. It is surrounded by developed parcels to the north and west, a DNV road right of way to the east, and a DNV owned parcel to the south. The west and southwest portions of the site are exposed to the proximal canopied riparian and forested areas of Mosquito Creek Park.

The property has an easement located along the east portion of the northern property line over which a landslide event occurred at the crest of the hill in 2010 and 2011. The landslide path extended downhill beyond the



Mosquito Creek Park gravel path and since the event slope re-contouring, a wooden retaining wall was constructed at the toe of the slope and both an erosion control geotextile and soil protection from rainfall impact have been installed. In addition, there is active raveling present on the southeast portion of the site and the neighbouring property to the north. 518 Alpine Court has a very high wildfire hazard rating and is immediately adjacent to an extensive connected corridor of flammable vegetation (Mosquito Creek), which further connects to DNV forested land on the lower slopes of Mount Fromme only 500m north of the site.

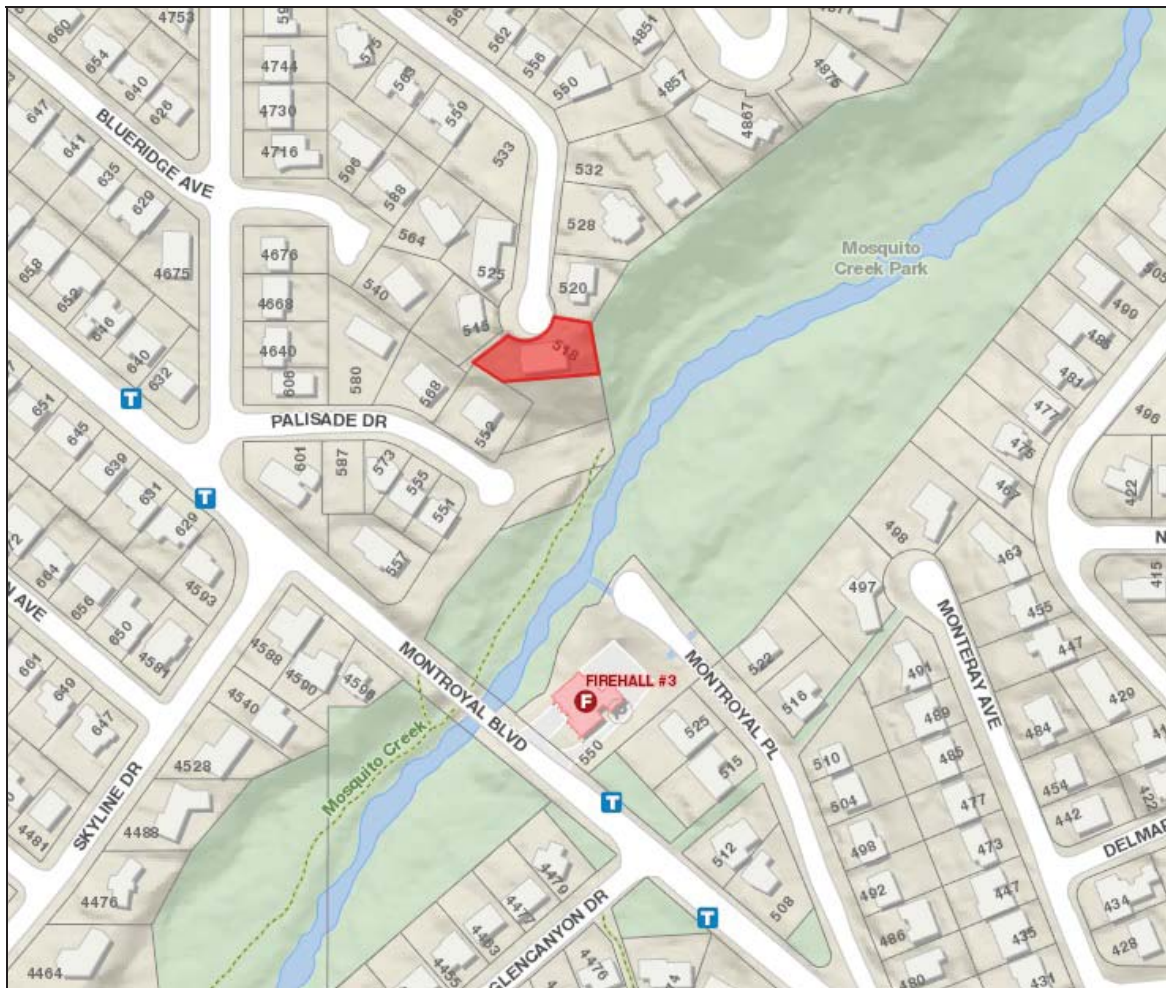


Figure 1. Site context for the planned development of 518 Alpine Court taken from the DNV's GEOweb.

The vegetation to the south, east and west of 518 Alpine Court is primarily composed of coniferous species and forms an even-aged, densely spaced (approximately 800 stems/hectare) stand of trees, which significantly influence the lot's fire hazard. Many trees have been topped on the southern exposure to a height of approximately 10-12 m, which aligns roughly with the existing structures second storey, rear deck height. Trees both on and off the property have previously been topped to preserve the viewshed to Burrard Inlet and beyond. The property encompasses both the Wildfire Risk Area and Wildfire Interface Area.

The residential parcels to the north are not heavily treed with coniferous vegetation and do not influence the fire hazard of 518 Alpine Court.

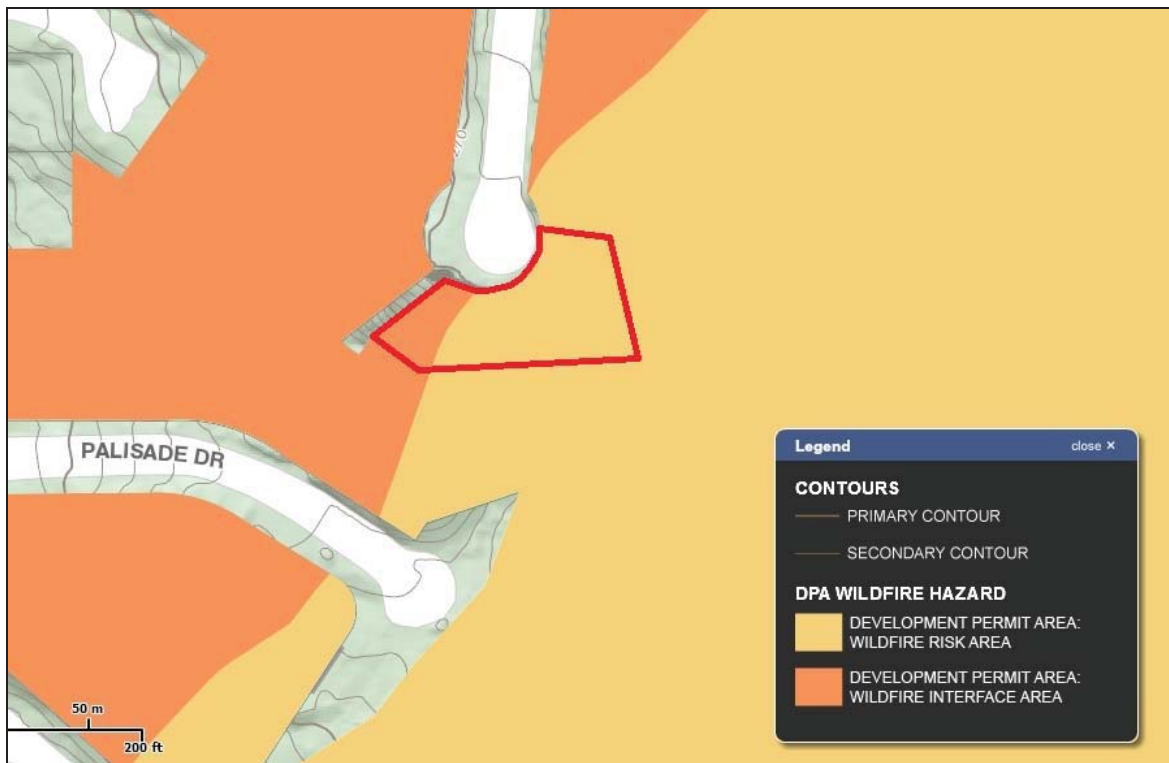


Figure 2. The DNV's Wildfire Hazard DPA in relation to the lot at 518 Alpine Court.

A house fire originating from the 518 Alpine Court under high and extreme fire danger has the potential to spread downslope into the connected, closed canopy forest of Mosquito Creek Park through spotting or radiant heat. A fire originating in the forested portion of Mosquito Creek under high and extreme fire danger has the potential to spread uphill to 518 Alpine Court. The proximity of the proposed house location to the wildland urban interface (WUI) places it at higher risk of ignition due to spotting in the case of a wildfire or interface fire. Spotting is the process by which embers are carried aloft by thermal air currents from a fire front, which then ignite flammable material beyond the advancing fire. To lower the risk level and help protect buildings in this neighbourhood, landscaping, building design, and construction materials should conform to DPA requirements.

The *FireSmart Structure and Hazard Assessment Form* considers both building construction and vegetation related hazards. The overall rating for 518 Alpine Court is **83**, which falls into the Extreme (**>35**) category (Table 1). The extreme rating is attributable to the parcel's direct exposure to a continuous, closed-canopy, coniferous dominated forest with scattered ladder fuels. Construction related hazards are discussed in detail in Section 7.0 Building Construction.



Table 1. Fire Smart Structure and Hazard Assessment form for the planned development of 518 Alpine Court.

Structure and Site Hazard Assessment Form

Factor	Characteristics and Point Rating					Score
Roofing Material	Metal, tile, asphalt, ULC-rated shakes or non-combustible material	Unrated Wood Shakes				0
	0	30				
Roof cleanliness	No combustible material	Scattered combustible material, < 1 cm depth	Clogged gutter, combustible material > 1 cm in depth		0	
	0	2	3			
Building exterior	Non-combustible material, stucco or timber	Log, heavy timbers	Wood or vinyl siding or wood shake		0	
	0	1	6			
Eave, vents and openings	Closed Eaves, vents screened with 3 mm mesh, and accessible	Closed eaves, vents not screened with 3 mm mesh	Open eaves, vents not screened, debris accumulation		0	
	0	1	6			
Balcony, deck, or porch	None, or fire-resistant material sheathed in	Combustible material, sheathed in	Combustible material, not sheathed in		0	
	0	2	6			
Window and door glazing	Tempered	Double Pane		Single Pane		2
		Small/Medium	Large	Small/ Medium	Large	
	0	1	2	2	4	
Location of nearby combustibles	None or > 10 metres from structure	< 10 metres from structure				0
	0	6				
Setback from edge of slope	Adequate	Inadequate				6
	0	6				
Forested Vegetation (overstory)	Deciduous	Mixed wood	Coniferous		0	
			Separated	Continuous		
			< 10 metres	0		30
10-30 metres	0	10	10	30	10	
Surface Vegetation	Lawn or non-combustible material	Wild Grass or shrubs	Dead and down woody material		30	
			Separated	Continuous		
			< 10 metres	0		30
10-30 metres	0	5	5	30	30	
Ladder Fuels	Absent	Scattered	Abundant		5	
	0	5	10			
Total Score					83	
Structure and Site Hazard Level						
Hazard Level	Low < 21	Moderate 21-29	High 30-35	Extreme > 35		



FireSmart uses the concept of priority zones (PZ), or FireSmart zones, to determine where and how hazard assessment should be conducted and to determine appropriate mitigation measures. Priority Zones are defined by FireSmart as follows:

Priority Zone 1 (PZ 1) is a 10 m fuel free zone around structures (Figure 3 and Map 1) which ensures that direct flame contact with the building cannot occur and reduces the potential for radiative heat to ignite the building. Combustible materials such as firewood should not be stored in this zone. While creating this zone is not always possible, landscaping choices (including tree retention and replacement) should reflect the use of less flammable vegetation such as deciduous trees and shrubs, herbs and other species with low flammability. Coniferous vegetation, such as juniper or cedar hedges, is restricted in this 10 m zone, as these are highly flammable. Any vegetation in this zone should be widely spaced and well setback from the house.

Priority Zone 2 (PZ 2) extends from 10 m to 30 m from the structure. In this zone, trees should be widely spaced (5 to 10 m apart), depending on size and species (Map 1). Tree crowns should not touch or overlap. Deciduous trees have much lower volatility than coniferous trees, so where possible deciduous trees should be preferred for retention or planting. Trees in this area should be pruned as highly as possible (without compromising tree health), especially where long limbs extend toward buildings. This helps to prevent a fire on the ground from moving up into the crown of the tree or spreading to a structure. Any downed wood or other flammable material should also be cleaned up in this zone to reduce fire moving along the ground.

It is recognized that in urban and wildland urban interface settings, such as in the DNV, homeowners' have little or no influence or control over fuels and/or landscaping beyond their property boundaries (in PZ 2), but which may influence the fire hazard of their property.

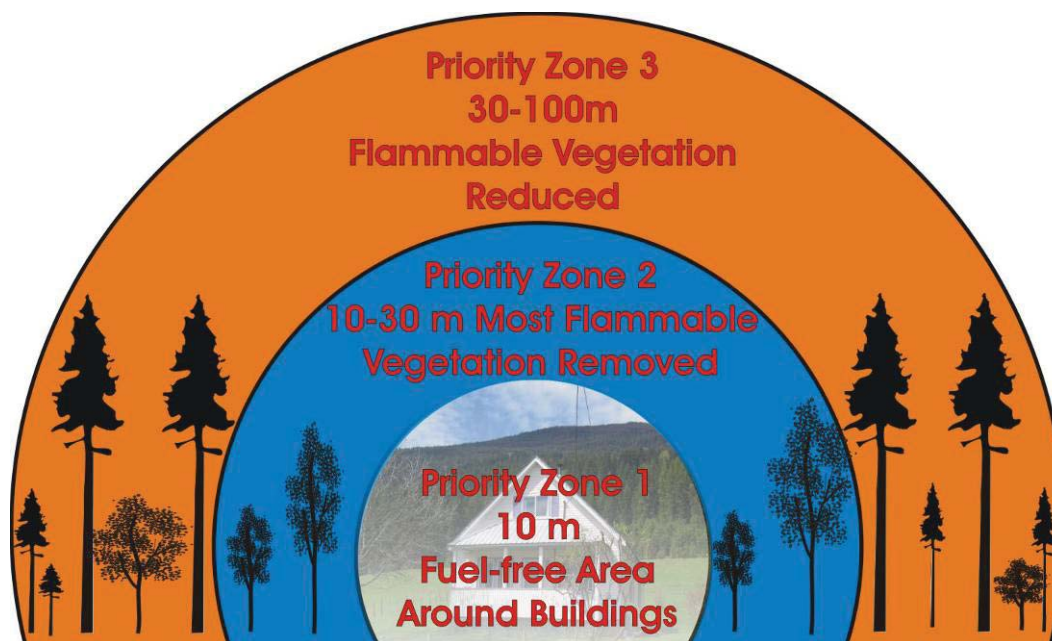


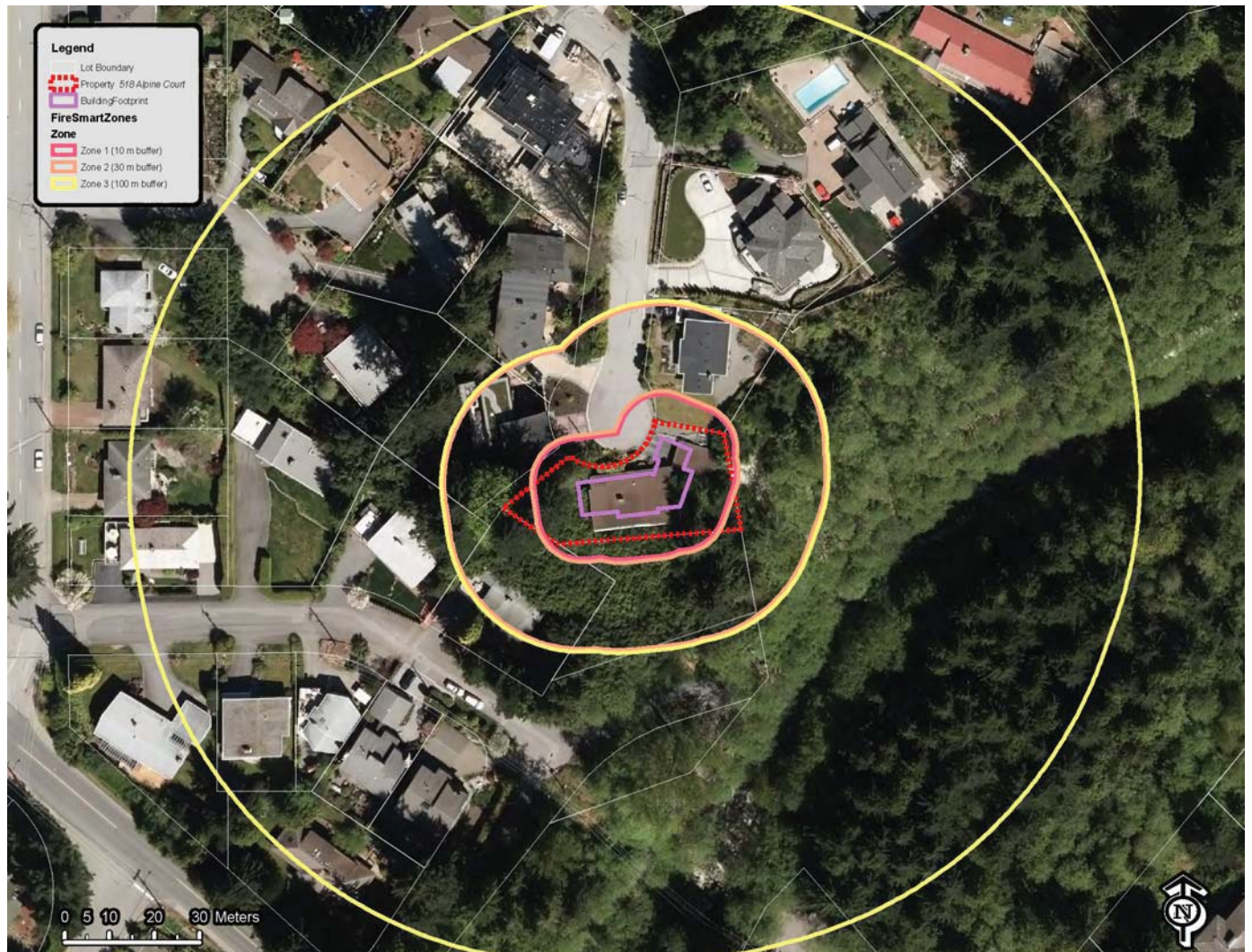
Figure 3. FireSmart Priority Zones.



Due to the slope gradient of the lot, recommendations in this report include all of PZ 1 and extend into PZ 2, where determined applicable through professional opinion. All recommendations to mitigate the hazard are to be implemented in the building construction and landscaping phase (Section 7.0). With FireSmart building materials, FireSmart landscaping, and executing the recommendations in this report, the risk to the home from spotting and/or an ember shower should be sufficiently mitigated.

6.0 Building Setbacks

518 Alpine Court is exposed to a sloped, forested edge on its southern exposure. The distance from the rear (south) property line to the building envelope is approximately 3 m. The set-back from the front (north) property line is approximately 7.5 m and conforms to the District of North Vancouver's minimum requirements for building footprint setbacks.



Map 1. Fire Smart Priority Zones 1, 2, and 3 for 518 Alpine Court in the District of North Vancouver.



7.0 Building Construction

The residential house design, dated December 14, 2015, was provided by the Alex Voth from Alex Voth Design Consulting and a list of proposed exterior building materials was provided by Mr. Harjinder Gupta by email on May 3, 2016. The current plans, elevations and materials for the house are not complete, and therefore not considered Wildfire DPA compliant until further details have been provided. The following suggestions are recommended in order to be in compliance with the DPA. The suggestions below should apply to all structures on the 518 Alpine parcel, including covered outdoor areas.

Cladding

Exterior cladding is planned to be a mix of Hardi-board, cedar, and stucco on foam sheeting. The exterior cladding should be of a non-combustible material or a material which has received a Class A fire rating. Examples of acceptable cladding include, but are not limited to: stucco, Hardi board, stone, tile, concrete and metal (aluminum siding must have received a Class A rating). **If using an uncommon product, such as aluminum siding, or other less common cladding products, receipt of the product used and proof of its class A fire rating are required for sign-off.**

- Cladding must be 80% or greater, by surface area measured in square feet **for each elevation**, composed of a non-combustible material. Brick, stucco, hardiplank, tile, stone and metal siding (with the exception of aluminum) are considered non-combustible. Cedar or other wood, non-rated vinyl and aluminum are not acceptable.

Roofing

Torch-on roofing, as designed, is an acceptable material. Other non-combustible, roofing material choices considered DPA compliant are asphalt shingles, metal, or tile.

Soffits, Trim and Fascia

Soffits should be a class A fire rated material, such as hardi. Trim and corners may be wood. **Combustible materials, such as wood used for trim, fascia, and other detailing will be less than 20% surface area, per side.**

Windows

Windows will be double-glazed with aluminum and PVC frames.

Decking

Decking as planned will be torch-on overlain with stone or tile. Vinyl is not an acceptable material. Decking material for balconies, porches, patios and above ground decks must be made of a non-combustible or Class A fire rated exterior material or fire-resistant material, such as stone, tile, composite, or concrete. All decking must be sheathed in (no exposed joists) to eliminated the entry of firebrands and embers.



Air Exchange

Vents must be accessible and screened with a 3 mm mesh.

Outdoor Burning Devices

Outdoor burning is limited to devices that are fueled by propane, natural gas, or briquettes (DNV Fire Bylaw 7481).

Changes in building materials or design that increase susceptibility to fire are not permitted.

8.0 Environmental Considerations

8.1 Canopy cover

Canopy cover³ will be moderately impacted as a result of fire hazard mitigation and arboriculture recommendations in this report. Current canopy cover is approximately 65%; however, with the recommended removal of 14 trees on the subject lot to accommodate development, it will be reduced to approximately 50%. The effect of canopy cover removal extends onto DNV lands to the south if they consent to tree removal on their property.

Removals will lead to the loss of the ecosystem services associated with those trees removed. Ecosystem services include: storm water management, biomass services, air pollution abatement, microclimate moderation, noise reduction, slope stability, rainwater retention, and wildlife habitat (Carreiro et al., 2008). Retention and protection of those conifers furthest from the home footprint will allow the stand, as a whole, to continue to provide many of these valuable ecosystem services, while reducing the flammable foliage, and thus the wildfire hazard, nearest to the home.

Replacement trees and understorey vegetation will slowly contribute to increased canopy cover over time, though winter season canopy cover will only negligibly increase due to replacements recommended, since deciduous trees do not have foliage during winter months.

8.2 Invasive plants

The existing even-aged stand of trees creates a significant amount of shade to the ground layer beneath their canopy, creating conditions which are unfavourable to the growth of a shrub and herb layer of vegetation. A number of these densely-spaced trees are intended for removal by the client to accommodate building construction in the middle of the property, and slope stabilization measures to the east and south of the proposed house footprint. Site disturbance to the soil through excavation and embankment, and the creation of gaps in the overhead canopy will dramatically increase the amount of light reaching the ground and seedbed layer of the soil.

³ Canopy cover is the area in canopy within a subject property boundary, when viewed from above in plan view, is covered by canopy. In this case, it is estimated in m² from DNV GEOweb aerial photos, with changes estimated due to current state of treed vegetation. <http://www.geoweb.dnv.org/>. Canopy is defined by the DNV Tree Protection Bylaw 7671 as 'the extent of the outer layers of leaves of needles of an individual or group of trees.'



These activities create ideal conditions for the establishment of pioneer plant species such as alder, cottonwood and fireweed. Broadleaf weeds such as Dandelion (*Taraxacum*), Bindweed (*Convolvulus*), and Fireweed (*Epilobium*); and invasive plant species such as Scotch broom (*Cytisus*), Himalayan blackberry (*Rubus*) and English ivy (*Hedera*) have highly competitive growth forms and establish more effectively, often crowding out native plant species. Invasive species, if left unmanaged, will threaten the long-term health of the native/non-invasive trees, hedges and plants. While it is recognized that, in this case, invasive plants do not significantly influence the fire hazard of the 518 Alpine Court, their control through simple changes in practice will help to improve the overall forest health of the adjacent stand.

It is recommended that any invasive plant species that establishes on the property during the construction phase be removed, with careful disposal of their waste to ensure that cuttings do not contribute to vegetative reproduction. Additionally, landscaping should be installed immediately once the house and underground utility structures are in place to avoid colonization of bare soil by invasive plant species.

8.3 Geotechnical

518 Alpine Court is within the DNV's Slope Hazard DPA. As such, a geotechnical report by Horizon Engineering Inc, signed and sealed by Karen Savage, P.Eng., FEC, and Robert Ng, P.Eng., dated April 29, 2016 was provided and interpreted for the purpose of preparation of this report. Subsequently, we collaborated with Horizon Engineering to determine which on-site trees should be removed and which on-site or DNV trees should be pruned. Additionally, we attended on-site with Horizon to determine the optimal alignment for a stormwater connection pipe leading from the proposed residence to the downslope stormwater infiltration system. We have been provided with the updated report by Horizon Engineering Inc dated April 5, 2017. Based on the information provided by Horizon, and pending implementation of the construction recommendations provided in their report, we understand that the subject site will be "safe for the intended use", with reference to the District of North Vancouver Risk Tolerance Criteria and the Legislated Landslide Assessment Guidelines for Residential Developments published by the Association of Professional Engineers and Geoscientists of BC. Due to the slope of the property, the adjacent DNV properties to the east and south inclusive of Mosquito Creek Park and riparian areas, all trees included in this report are considered Protected Trees under Tree Protection Bylaw 7671. The trees are on slopes which meet the DNV's definition of 'sloping terrain':

*"Sloping terrain means land with slope angle greater than 30% over a vertical distance of 3 metres or more."*⁴

Removals in this report may not be undertaken without a permit. Additionally, the District may require further review and sign-off by a geotechnical engineer, or otherwise qualified professional, to ensure that they do not increase the chance of slope instability. In this case, slope with regards to tree removal is outside the scope of this report and not within Ms. Cowan's and Mr. Blackwell's field of expertise.

⁴ District of North Vancouver Tree Protection Bylaw 7671.



The critical root zone of Tree #17 was impacted by landslide and is overhanging the scar with half of its rootplate exposed. The proposed grading plans by Horizon Engineering will regrade the area and this tree will be removed to accommodate these proposed changes.

9.0 Vegetation Inventory

A total of 50 trees were assessed, and all but 6 trees were determined to influence the fire hazard of 518 Alpine Court. The total inventory for the parcel is found in Table 2 and Section 15.0 Appendix A. Recommendations in this report are limited to those that are carried by the vegetation determined to significantly influence the fire hazard of 518 Alpine Court.



Figure 4. Steep slope conditions characteristic of the site (L), and typical topped form of the majority of on and offsite trees.



9.1 Arboriculture Assessment

The following eleven trees located on the property of 518 Alpine Court require removal:

Table 2. Hazardous and/or trees in poor health requiring removal at 518 Alpine Court.

Tree #	Species (common name)	Tree Tag	Location	DBH (cm)	Height (m)	Crown Base Height (m)	Crown Radius (m)	Health/ Structure	Comments
2	Western hemlock	167	518 Alpine	26.0	15	8	5	poor	Heavy sapsucker feeding, likely internal decay
11	Western hemlock	181	518 Alpine	10.5	11	N/A	1.5	poor	Dead
16	Western hemlock	198	518 Alpine	34.0	N/A	7	2.5	poor	Sapsucker feeding, co-dominant stem with significant response growth bulge.
19	Western redcedar	100	518 Alpine	12.7	9	3	2.0	normal	Within building footprint
20	Western hemlock	80	518 Alpine	12.5	8	NA	1.5	poor	Within building footprint
21	Western redcedar	118	518 Alpine	10.5	8	6	1.0	poor	Basal sweep, 2 x 4 support brace for construction access nailed at 0.5 m height.
26	Western redcedar	739	518 Alpine	27.0	10	7	3.0	NA	Dead.
27	Western hemlock	218	518 Alpine	28.5	11	7	2.5	poor	Sapsucker feeding, likely internal decay, poor stem taper and horizontal seam at 6 m
43	Western hemlock	214	518 Alpine	33.5	7	5	4	poor	Sloughing bark, eruptions and stem cracks at base.
44	Western redcedar	737	518 Alpine	32.5	10	8.5	1	poor	Candelabra top, multiple dead branches >4 cm diameter, declining health.
48	Bitter cherry	217	518 Alpine	23.0	15	12	2.0	poor	Unstable, tree lean >15 degrees to west, trunk blisters indicating internal decay from base. Adjacent failures of same species. Possible root disease.



Figure 5. Hazard trees # 2 and 43 (top) Western hemlocks, and 48 Bitter cherry (bottom) recommended for removal.

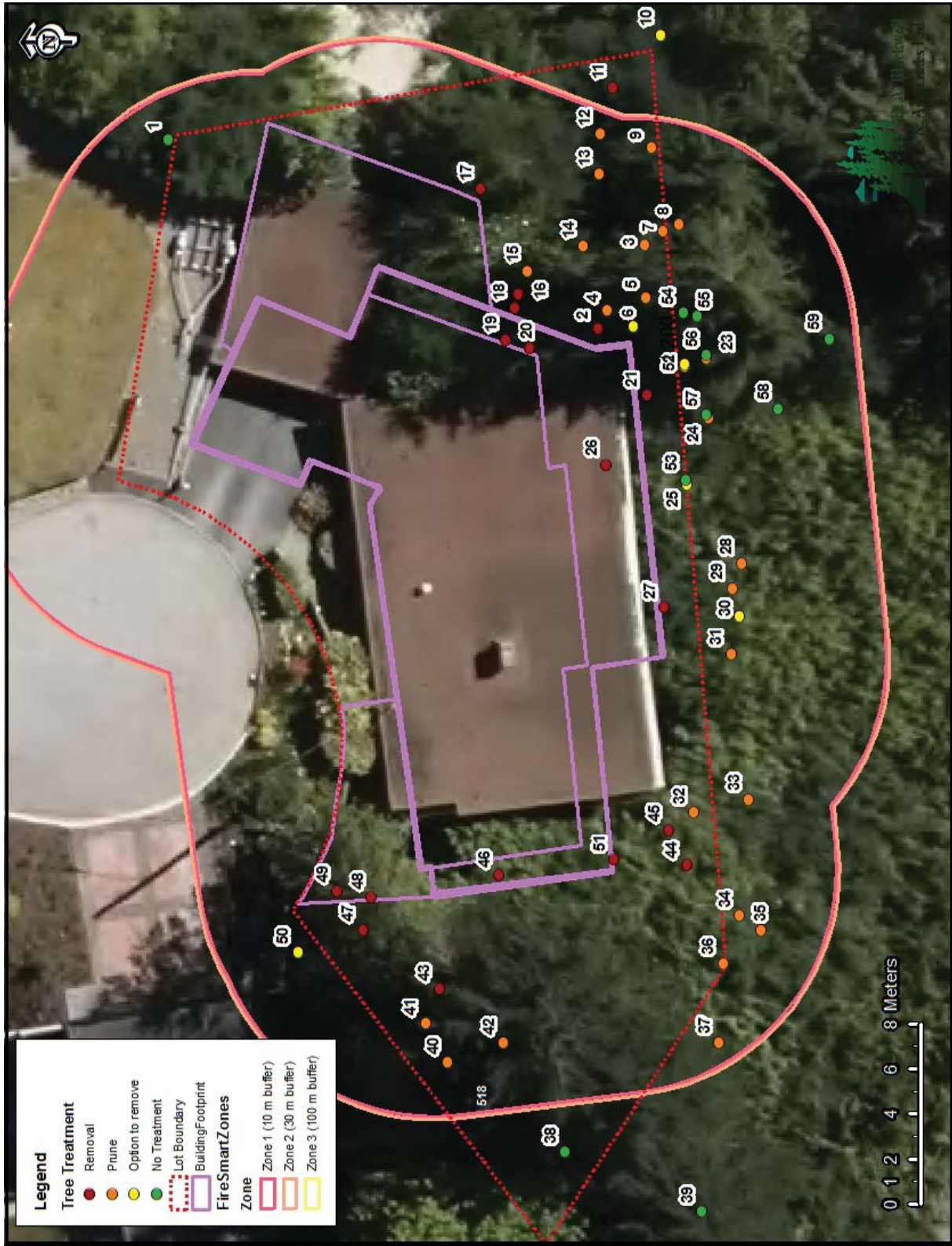


10.0 Proposed Fire Hazard Mitigative Works

There are 22 trees within 5 m of 518 Alpine Court's property line. Four trees are on the property of 552 Palisade, fifteen are on adjacent DNV lands, and the remaining three trees have shared ownership status. Twenty eight trees are within the lot boundary of the subject property under review. Those trees immediately south of the house and rear deck have been topped to preserve the view corridors to the south, and they also have high crown base heights due to the low light conditions under the uniform and even-aged tree canopy. The crown base heights range from 6 m – to 12 m in height, therefore the resulting shortened and multiple top forms are not conducive for pruning. Pruning (or lifting the height of the crown base) is often used as a wildfire hazard treatment in Fire Priority Zone 1 to prevent the formation of ladder fuels which have the potential to transfer a ground fire to a crown canopy fire. Pruning is only an option if 40% of a tree's live crown ratio (LCR) can be maintained to preserve tree health and only if the resultant total tree height (after pruning) is more than 5 m above the highest level of the proposed building's roofline. Pruning is usually reserved for large stature, vigorous specimens where there are scattered to abundant ladder fuels. The trees on the lot at 518 Alpine Court are not good candidates for pruning treatments.

In conclusion, the desired fire hazard mitigation treatments normally used for a site such as 518 Alpine Court, do not align with the geotechnical engineering requirements for slope stability. Alternate strategies to mitigate the risk from wildfire and to preserve the soil holding capacity of the network of tree root systems across the site are necessary. These include:

1. Limiting tree removal to those specimens which are damaged, diseased, show signs of internal decay, or exhibit tree defects compromising tree structure and have the potential to fail (Table 2 in Section 9.1 Arboriculture Assessment).
2. Installing an exterior rooftop sprinkler system on the house which will effectively wet down the house and 5 m of surrounding vegetation in the advent of an advancing wildfire to mitigate the site's vulnerability to spotting.
3. Institute a tree replacement strategy to rejuvenate the stand, by replacing trees in declining health or have poor form and multiple tops with deciduous species suitable for the site's conditions. It is expected that hazard tree removal will create gaps in the canopy and allow replanted vegetation to establish and thrive. No more than 10% of existing trees should be felled/replaced every 8 years to allow new root systems to develop an interlaced network through the soil profile. Tree replacement must occur in tandem with the installation of a broadleaf evergreen shrub understory capable of covering the exposed soil surface.
4. This strategy would be written into the land title to ensure future homeowners remain committed.



Map 2. Trees inventoried and determined to influence the fire hazard of 518 Alpine Court, and the mitigation actions recommended.



10.1 Rooftop Sprinkler System

Given that trees will be retained in Priority Zone 1 and because of the location of the house in close proximity to extensive areas of flammable forest, installation of exterior rooftop sprinklers is required. Sprinkler systems must include robust sprinklers with limited plastic materials capable of wetting all of Priority Zone 1. Between April to the end of October, sprinklers must be connected to the house water system.

In the event of a house fire, sprinklers should be turned on (if safe to do so) to wet the adjacent forested vegetation. This will reduce the potential of radiative heat emanating from combustibles burning in the residence from igniting the flammable foliage of retained coniferous trees within Fire Priority Zone 1.

In the event of a wildfire, sprinklers should be turned on a minimum of two hours before the fire reaches the residence. Although the exterior building construction components will be made of Class A fire rated materials, combustible materials within the interior of the home could potentially ignite if radiant heat within Fire Priority Zone 1 under high or extreme temperatures. The use of sprinklers in the event of a wildfire is not only to wet down surfaces such as roofs and adjacent vegetation, but to raise the relative humidity around the residence. This will help reduce fire behaviour adjacent to the home by making fuels less flammable and reduce the probability of spotting igniting adjacent vegetation or structures.



Figure 6. Rooftop sprinklers can be highly effective in reducing fire behaviour.

Considering these factors, installation of a minimum of seven rooftop sprinklers with a coverage radius of 12 m is required. Sprinkler systems must include robust sprinklers (such as Rainbird sprinklers) with limited plastic materials. Two approaches can be used for sprinkler systems, roof mounted sprinklers on portable mounts or sprinklers incorporated in the roof (Figure 7). Between April to the end of October, sprinklers must be connected to the water supply and tested at the beginning of each fire season. The external sprinkler system must be independent of the internal system to allow for manual use during a wildfire.



Figure 7. Examples of rooftop mounted sprinkler systems.

In order to complete the sign-off of the Wildfire Hazard Report, the rooftop sprinkler system must be installed to the manufacturer's specifications and demonstrated to be in good working order capable of delivering the volume of water at the required pressure to completely wet down all of Fire Priority Zone 1.

The following is a list of suppliers and manufacturers of exterior rooftop sprinkler systems:

1. Just in Case Fire Ltd – Flash Fire & Safety (Alberta). Fire Caddy and ZoneONE Coverage rooftop sprinkler systems. Contact information www.firecaddy.com. Each unit contains:
 - a. Roof Caddy
 - b. 4 impulse sprinkler heads
 - c. Fire hose
 - d. Fire Caddy manifold connection

Cost: Contact sales@firecaddy.com 1-844-FLASH-44 (844.352.7444) for pricing

2. One Stop Fire www.onestopfire.com/sprinklers.htm. Fascia Mount Sprinkler Assembly. Commercial sprinkler head and mounting bracket for attachment to fascia of a building. Ideal for placement on gable ends of a roof peak. Sprinkler is of brass and stainless steel construction with a performance rating of 18m radius and 17.6gpm at 60 psi. Female garden hose fitting is standard on assembly unit.

Cost: \$300.00 / unit CAD (excludes applicable taxes and shipping / delivery)

3. Wildfire Automated Sprinkler Protection (WASP) www.firerescue1.com and www.waspswildfire.com. Gutter Mounted Sprinkler System. Unit contains fascia bracket, standard pole adapter, Nelson Sprinkler head, all connections and ribbed aluminum pole.

Cost: 250.00 CAD / unit (excludes applicable taxes and shipping / delivery)

4. Roof Saver Sprinklers <http://roofsaversprinklers.com/>. Made in the United States. Kit contains:



- a. 1-Patented Roof Saver Sprinkler Base with Rainbird Brass Impulse Sprinkler
- b. 1-3/4" X 50' Never kink Hose
- c. 1-Ridgeline Hose Holder

Cost: \$249.00 USD / unit (excludes applicable taxes and shipping / delivery)

10.2 Removals and Retentions

Recommended removals include 10 coniferous and 1 deciduous trees within the subject lot boundaries (#s 2, 11, 16, 18, 19, 20, 21, 26, 27, 43, 44, 45, and 48). Although their removal helps mitigate the risk from wildfire, the primary reasons for removal are their hazard status and to allow for development of the new house, attached garage and associated retaining walls on the east side of the property as outlined in the geotechnical report (Document 1, Section 2.0).

Additional tree removals on adjacent DNV lands, encompassed in Fire Priority Zone 1, are recommended to allow for defensible space between home and the closed canopy, coniferous corridor to the south and northeast (#s 6, 10, 25, 30, and 50). DNV consent is required for removal.

All proposed tree removals should be reviewed by a geotechnical engineer to determine the impacts of removal on short and long term slope stability. Tree root systems persist as an interconnected network in the soil for approximately 8-12 years, beyond which, the natural processes of decay limit their ability to hold soil in place.

At the time of assembling this report, two trees (#'s 47 and 49) have 'Undetermined' status. They are healthy, vigorous specimens with straight stems and single leader crowns. They have the potential to become large stature trees. Ms. Karen Savage of Horizon Engineering would like to retain these two trees, yet they remain within the bounds of Fire Priority Zone 1. These trees may only remain contingent on whether or not the homeowner installs an exterior rooftop sprinkler system.

Removal recommendations are dependent upon:

- Permit approved by the DNV;
- Geotechnical (or other QP) sign-off that removals will not decrease slope stability or increase the chance of flooding, if required by the DNV; and
- Consent of the tree owners (homeowners of 518 Alpine Court).

Compensation plantings are recommended for removals. Replacement considerations can be found in Section 12.1).

10.2.1 Removal Guidelines

Work should be avoided during the breeding bird season. Breeding bird season is generally between March 1st and September 15th on the south coast of BC, but if there is bird activity detected in the tree, a biologist should be consulted prior to removal. All work activities must comply with the federal Migratory Birds Convention Act (1994) and the Migratory Birds Regulation (1994) that protects migratory birds, their eggs and nests.



If removals are planned within the breeding bird season, a bird survey completed by a professional biologist specializing in birds is recommended in order to ensure legislative compliance.

10.3 Surface Fuels

Current surface fuels on the slope are low. To maintain the surface fuels in a low hazard state, the following actions are recommended. Isolated piles of accumulated pruning debris are located intermittently across the parcel and should be removed to avoid fuel build-up.



Figure 8. Pruning and green waste debris contributing to site fuel loading.

Surface fuels must not be allowed to accumulate on the property or on the adjacent DNV property due to mitigation actions (removals). Coarse woody debris pieces may be left on site to provide biodiversity and habitat, but must meet the following specifications:

- Trees should be bucked in 5 m lengths. Up to 10 pieces, 5 m in length, with a diameter greater than 30 cm may remain on site. Remaining pieces should be flush to the ground along the majority of the length. All limbs and woody pieces smaller than 30 cm in diameter must be removed from the site. All large diameter pieces in excess of the 10 pieces should be removed from the site.
- No dumping of yard waste may occur.



10.4 Pruning

All trees on and off the property, the live crown base heights are between 4 and 12 m. This distance creates an adequate fuel break between the ground layer and the canopy layer. Dead lower branches should be pruned up to a height of 4 m as they represent a source of fuel and can act as ladder fuels if ignited from radiant heat emitted from a surface fire (Figure 9 right photo).

Straddling foliage of trees on DNV lands to the south can be pruned back to the property line.



Figure 9. Dead lower branches typical of most trees due to the closed-canopy forest characteristics of the site.

Proper arboricultural practices must be employed and follow ANSI A300 standards (American National Standards for Pruning) to ensure damage to the trees is limited and all tree climbing must be spurless. Pruning must be executed, or supervised, by an ISA Certified Arborist.



Pruning must retain a minimum of 70% of the current live crown. Live crown percentage refers to the amount of live crown that must be retained on the tree. It is not anticipated that this will result in tree mortality, though tree growth may decrease following pruning.

10.5 Tree Protection

Protection of retained trees will be required in order to prevent root disturbance, as well as construction damage to the stem and/or crowns. Tree protection barriers should be established at the outer edge of the critical rooting zone if possible.

10.5.1 Construction Guidelines

Retained trees can be impacted by construction in many ways, including:

- Physical injury to trunk and crown;
- Cutting of roots;
- Soil compaction;
- Smothering of roots by addition of fill;
- Alteration of hydrological processes leading to tree drought and/or water pooling; and,
- Increased and/or sudden exposure to elements.

Damage to retained trees can be avoided by the following practices:

- Using barriers;
- Limiting access;
- Reducing compaction;
- Careful, supervised, low-impact excavation; and,
- Minimizing the effects of grade changes.

All of the tree impact factors are a concern for the trees that will be retained on the property that are in proximity to the new development and construction area. See Map 4 for the proposed building footprint and location of existing trees.

10.5.2 Tree Protection Zones/ Construction Exclusion Zones

Impacts from construction can be mitigated by installing tree protection barriers (fences) around retained trees. It is recommended that retained trees are protected as a group and that tree protection barriers are erected 5 m from the stems.

It is recommended that an ISA Certified Arborist be contracted to provide regular on-site consultations during construction to ensure that tree protection barriers are in-place, construction exclusion zones are respected, and construction damage is mitigated. This includes ensuring that the tree protection guidelines as outlined in Section 10.5.3 are followed.

In cases where any activity is required in areas within the tree protection zone, as defined by Tree Protection Bylaw 7671 and above, it should be done under the direct supervision of an ISA Certified Arborist to ensure that it does not compromise the critical root zone, or damage the tree, to an extent where the long-term health and the stability of the tree is compromised.



Locations for tree protection barriers for the recommended trees to retain are displayed on Map 3.

10.5.3 Tree Protection Zone Guidelines

The following rules apply to the TPZ:

- **No work or activity of any kind is permitted inside the barriers.**
- **The construction of retaining walls must not change the grade or soil volume.**
- **No dumping of any materials, including fill soil.**
- **No parking, storage of equipment, or construction materials.**
- **No underground utilities.**
- **No alteration of surface drainage, such that it impacts the natural flow of water into and out of the TPZ.**
- **No excavation.**
- **Monitor soil moisture. When conditions seem dry, supply irrigation. Do not allow water to pool around the stem for prolonged periods.**

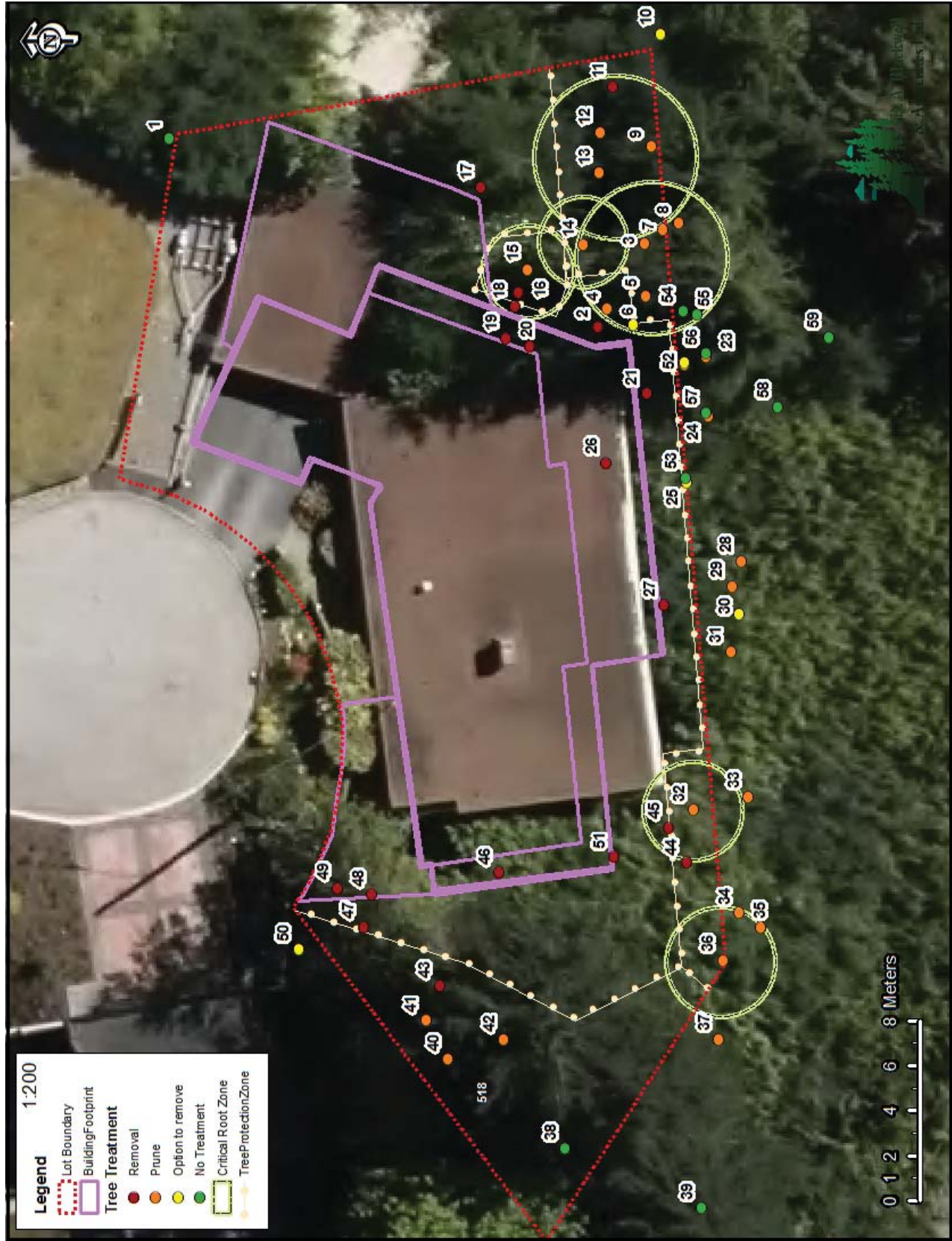
10.5.4 Tree Protection Barriers

Tree protection barriers should be installed prior to demolition of the existing structure and remain in place throughout construction. Tree protection barriers should only be removed once construction is complete.

The barriers must be sturdy temporary or permanent barriers at least 1.2 m in height, with wood-framed top and side rails or equivalent (Bylaw #7671). The barriers must remain in place for the duration of construction. Orange snow fences and 2 x 4s are recommended for their high visibility, height, and durability. However, other fencing material that meets the requirements of the bylaw is acceptable.

10.6 Monitoring Tree Health

It is important to do regular monitoring of retained trees during the construction process. Tree protection barriers, general tree health and condition, soil moisture and drainage, and general work activities around retained trees should be monitored. If concern regarding tree health or stability arise, an ISA certified arborist should be consulted.

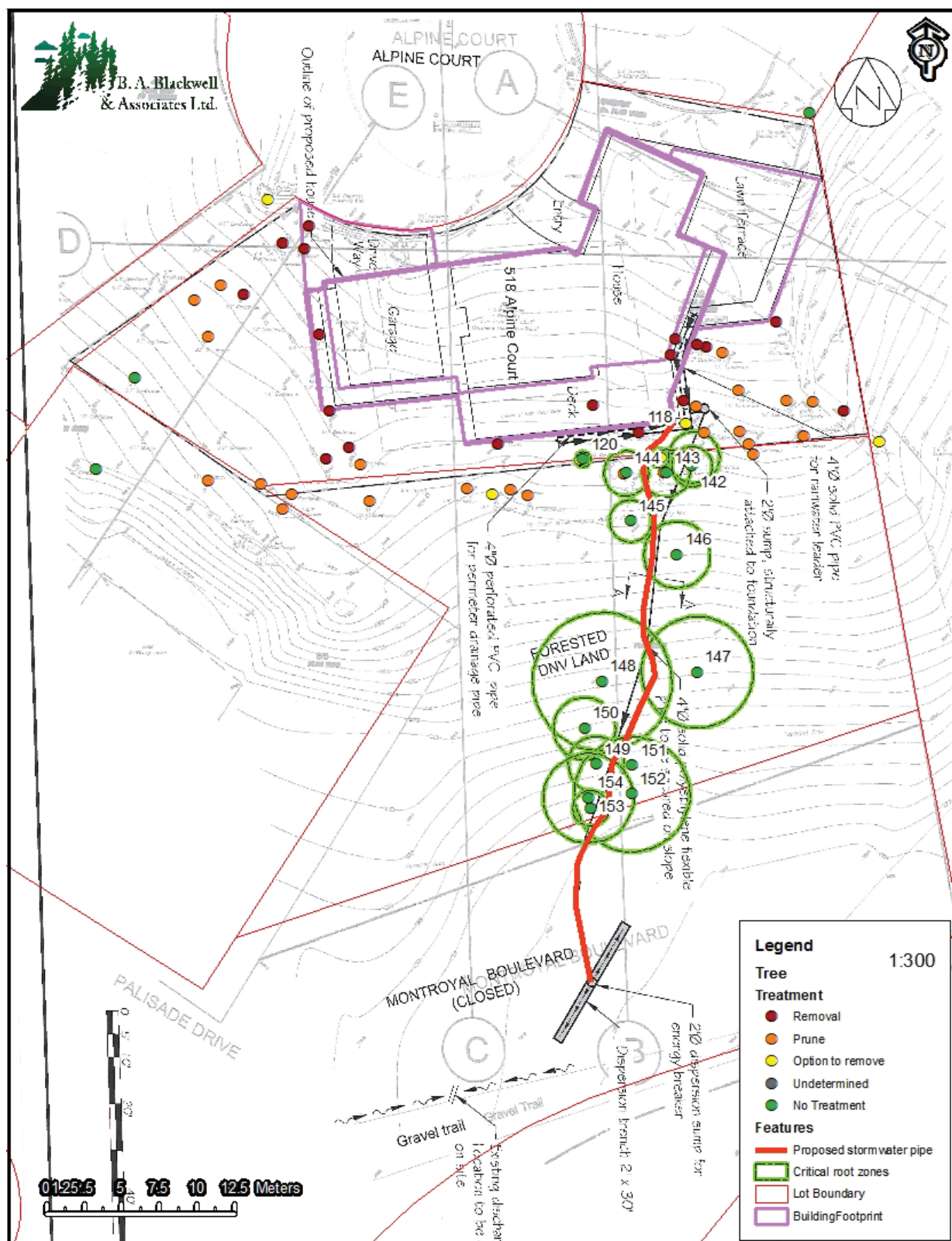




11.0 Stormwater Drainage System

11.1 Introduction

The stormwater collected at the proposed house on 518 Alpine Crt needs to be directed through a stormwater pipe from the house and downhill to a point where it can enter the municipal stormwater network. The pipe is going from the southeastern corner of the proposed home, from the building's rainwater leader and the 0.6 m (2.0 feet) sump, down a steep forested slope, that is owned by the District of North Vancouver. At the toe of the slope, the pipe terminates at a gravel flat area adjacent to a spur of the Mosquito Creek public trail system. At this level grade, the outflow is slowed and the system design allows the water to infiltrate into a 0.6 x 9 m dispersion trench. From this point the flow of the water follows a side ditch sloped in a southwestern direction. As the design uses a flexible PVC plastic pipe to convey water flow, the alignment has some ability to weave around tree root systems in order to mitigate damage during excavation.



Map 4: Planned stormwater pipe (black) and revised layout of stormwater pipe (red) to avoid root zone conflict.



11.2 Pipe Alignment

The pipe will be 10 cm in diameter and will be buried to a depth of 20 cm. The excavation will be performed manually, and only the section adjacent to the gravel trail will be done with a small excavator.

The preliminary pipe alignment starts at the southeast corner of the planned building and travels southwest around tree #140, then through the middle between trees #143 and 144 (see Figure 10). From here, it proceeds straight south around tree #145 and #146 and through the middle between tree #147 and tree #148. From here it goes down a little trench, where an old footpad was located (see Figure 11 and Figure 12) and to a gravel flat located adjacent the trail going from Palisade Drive to Mosquito Creek (see Figure 13). The gravel flat where the water will percolate is vegetated with Salmon Berry and young Red Alders. Depending on the disturbance of this vegetation planting one or two alders could be considered.

Trees growing close to the stormwater drainage system are listed in Table 3.



Figure 10. Looking down the slope from the start of the stormwater pipe.



Figure 11. Looking down to the last third of the preliminary stormwater pipe alignment.



Figure 12. Looking up from the gravel flat to the little trench with stairs from the old footpath.



Figure 13. Gravel flat where the pipe will end.

11.3 Trees Adjacent to the Pipe

All the trees on the slope were topped several times. Topping removes the most important part of the crown and impacts the tree's crown to root ratio. If more than 40% of the live crown ratio is removed, or if done multiple times the food making capability of the tree can be adversely impacted, along with potential root dieback. The large stubs of topped trees are highly vulnerable and become an access point for decay fungi. The new leaders are often more weakly attached to the trunk.

Because of the topping, the trees lose their natural form along with the natural grace and character of its species.

Trees adjacent to the full length of the stormwater system are listed at (Table 3).

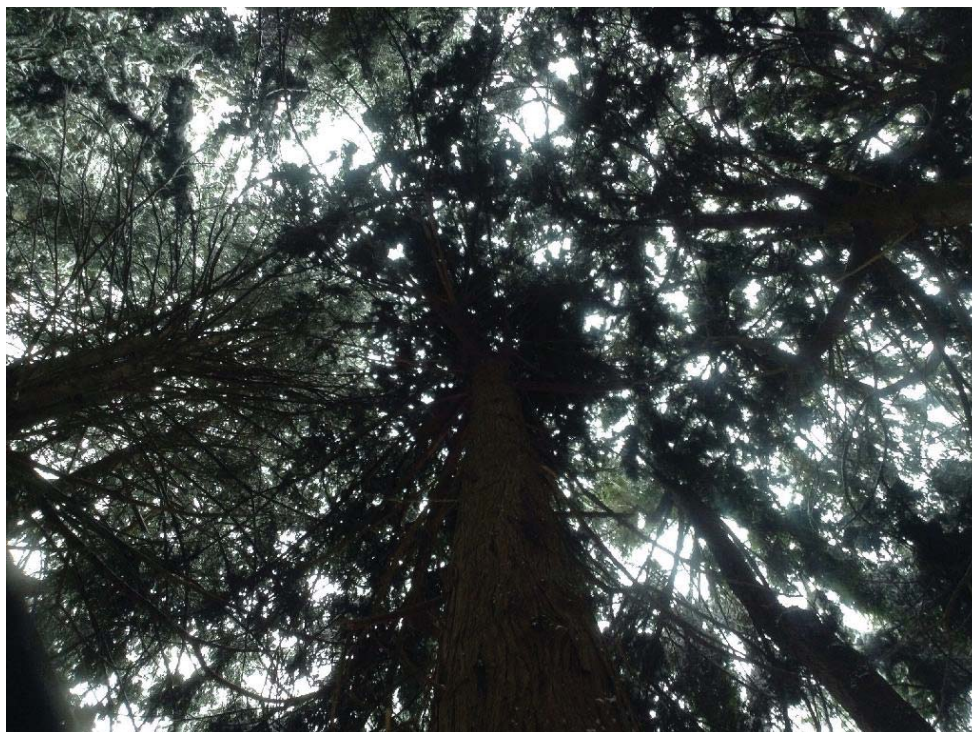


Figure 14. View into tree crowns on the slope. All trees have been topped multiple times.

The impact of the digging for the pipe is considered low, even though the digging will occur in the critical root zone.

The overall impact to the percentage of tree roots damaged would most likely be under 20% because the pipe will be manually dug by hand (i.e. no machinery), and the option exists to adjust the alignment to weave around adjacent trees.

An ISA Certified Arborist should be present in the field to supervise excavation and determine the amount of impacted rooting zone as a result of operations.



Tree #	Species (common name)	Tree Tag	DBH (cm)	Location	Ht (m)	Health	Protected Tree? (Y/N)	TPZ radius (m)	Comment	Action
1	Western Redcedar	118	10.5	Property	8.0	Normal	N	63.0	small, two times topped	Removal, because of fire hazard
2	Western Redcedar	140	8.5	Shared	8.0	Normal	Y	51.0	small one time topped	Option to remove
3	Douglas Fir	120	28.5	Shared	8.0	Normal	Y	171.0	topped	No Treatment
4	Western Hemlock	141	22.5	Adjacent	10.0	Normal	Y	135.0	topped now suppressed	No Treatment
5	Western Hemlock	142	26.5	Adjacent	12.0	Normal	Y	159.0	topped, full of sapsucker holes, several leaders	No Treatment
6	Douglas Fir	143	25.0	Adjacent	9.0	Normal	Y	150.0	topped, small crown	No Treatment
7	Western Redcedar	144	25.0	Adjacent	9.0	Normal	Y	150.0	two times topped, several leaders	No Treatment
8	Western Redcedar	145	23.5	Adjacent	0.0	Normal	Y	141.0	two times topped, several leaders	No Treatment
9	Douglas Fir	146	37.0	Adjacent	20.0	Normal	Y	222.0	topped one leader	No Treatment



Tree #	Species (common name)	Tree Tag	DBH (cm)	Location	Ht (m)	Health	Protected Tree? (Y/N)	TPZ radius (m)	Comment	Action
10	Western Redcedar	147	62.0	Adjacent	25.0	Normal	Y	372.0	two times topped, several leaders, signs of decay by topping point	No Treatment
11	Western Redcedar	148	77.0	Adjacent	30.0	Normal	Y	462.0	one time topped several leaders	No Treatment
12	Western Redcedar	149	31.0	Adjacent	27.0	Normal	Y	186.0	two times topped, several leaders	No Treatment
13	Western Redcedar	150	34.5	Adjacent	25.0	Normal	Y	207.0	two times topped, several leaders	No Treatment
14	Western Redcedar	151	15.0	Adjacent	6.0	Poor	Y	90.0	dead, small	No Treatment
15	Western Hemlock	152	64.0	Adjacent	30.0	Normal	Y	384.0	topped, signs of decay at topping point	No Treatment
16	Golden chain	153	20.0	Adjacent	8.0	Normal	Y	120.0	lean to trail, three stems not topped	No Treatment
17	Western Hemlock	154	50.0	Adjacent	21.0	Normal	Y	300.0	not topped, lean towards trail, unbalanced grown	No Treatment

Table 3: Trees close to the stormwater system



12.0 FireSmart Landscaping

Proposed planting/landscaping plans have not been provided and are therefore not considered Wildfire DPA compliant. The following suggestions are recommended in order to be in compliance with the DPA.

- Limit plantings to low flammability plants within 10 m of the building envelope (including outdoor covered areas and other structures).
- Do not plant highly flammable plants, such as cedar, yew, or cypress hedging within 10 m of the building envelope.
- Consider increased use of lawn, rockery, and other non-flammable components in the landscape design.
- Install irrigation to maintain high foliar moisture content, particularly during the fire season.

There are a number of broadleaved deciduous and evergreen plants with low flammability which can be used for landscaping within FireSmart PZ 1 (within 10 m of structures). Plants that are fire resistant generally have the following characteristics:

- Foliage with high moisture content (moist and supple),
- Little dead wood and do not tend to accumulate dry and dead foliage or woody materials, and
- Sap that is water-like and without a strong odour.³

Coniferous vegetation such as Juniper, Cypress, Yew or Cedar hedging or shrubs must not be planted within this 10 m zone as these species are considered highly flammable under extreme fire hazard conditions. We are unable to sign off on the recommendations in our report where these circumstances occur. 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>.

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

- <http://www.wacpmc.org/images/Fire-Resistant-Plants.pdf>⁵
- <http://www.firefree.org/wp-content/uploads/2016/02/Fire-Resistant-Plants.pdf>⁶
- <http://bcwildfire.ca/Prevention/Property/Landscape/fireresistantplants.htm>⁷

Grass, shrubs, and herbs must be maintained in a state that reduces fire hazard by maintaining foliar moisture content (keeping plants watered and in good health) and ensuring dead material is removed annually and is not allowed to build-up on site.

⁵ Washington Association of Conservation Districts (WACD) Plant Material Center

⁶ A Pacific Northwest Extension Publication: Oregon State University, Washington State University, University of Idaho. August 2006.

⁷ BC Wildfire Service: Fire Resistant Plants



Placement of combustible materials such as firewood or wooden structures (sheds, storage or other outbuildings) must be a minimum of 5 m from the primary building (including neighbouring houses). This will limit the potential for these materials to be ignited and spread fire to an adjacent building.

As per DNV Fire Bylaw 7481, no open air fires are permitted. Construction of fire pits or other outdoor burning devices fueled by materials other than propane, natural gas, or briquettes are not permitted.

12.1 Replanting

Replanting requirements are required by the DNV as compensation for tree removals. The DNV Tree Bylaw states that 3 replacement trees are required for every 1 protected tree removed if the lot is $>420 \text{ m}^2$. As 518 Alpine Court has a total area of 894 m^2 and it is recommended to remove 11 protected trees (slopes $>30\%$), 33 replacement trees are recommended to be replanted as compensation. There is not enough room for 33 trees on the site given the existing nutrient and light conditions. The need to limit soil disturbance and decrease the susceptibility of erosion is also a prime consideration. Eleven deciduous tree species could be planted in the canopy gaps created from hazard tree removal and the balance (22 trees) could be comprised of vigorous, shade tolerant, native plant species would be a suitable alternative in the understorey. The shrub to tree ratio should be calculated at 3:1. Therefore 66 shrubs would require planting.

Furthermore, planting of native shrubs and herbs on the western slope leading to Mosquito Creek and the southern slope is recommended to compensate for removals of coniferous trees.

12.1.1 Tree replanting guidelines

Replacement trees shall be deciduous to reduce the fire hazard of the parcel (recommended species anticipated to establish given the ecological conditions of the property can be found in Table 4). Order plants by their Latin name to avoid confusion as the same plant may have multiple common names. Plants must be sourced from a reputable nursery in conformance with the Canadian Standards for Nursery Grown Stock (8th edition, 2006). Select only specimens with intact root balls, stem and crowns free from disease and mechanical injury.

Site preparation, installation and maintenance works shall use the 2012 edition of the BC Landscape Standards for reference (BC Landscape & Nursery Association, 2012). Prepare a suitable sized pit to accommodate root ball height and width. Planting depth is at the point where the trunk flare meets the root ball and may or may not be similar to the depth at the nursery. The best time to plant trees is in the autumn when precipitation will keep the root ball moist and is conducive to an early spring flush of growth. Do not plant during times of drought, extreme heat or other unfavourable conditions. Backfill with on-site native soils or suitable topsoil stockpiled during construction, or if unavailable, imported topsoil free from weeds, invasive plant seeds and parts or other deleterious materials. Mulch with 7.5 cm (3") wood chips avoiding contact with the trunk. Form a 1.0 m saucer around each tree to avoid runoff during watering activities. Water immediately following planting and remove any damaged branches resulting from installation using horticultural pruning practices. Avoid the use of planting stakes except in circumstances of regular and consistent local wind forces.

It is recommended that the 11 replacement trees are selected from the list of native species in Table 4 based on their likelihood to succeed on the site. It should be noted that vine maple is recommended for microsites with greater amounts of shade (*i.e.* along the edges of the canopy gaps), while red alder should be reserved for areas



receiving more direct sunlight for the greater portion of the day (*i.e.* in the centre of the canopy gaps). The DNV's replanting list offers additional acceptable choices (Appendix B: DNV Replanting List).

Table 4. Deciduous tree species recommended for replanting at 518 Alpine Court.

Common Name	Latin Name	Size (height)
Red alder	<i>Alnus rubra</i>	1.5 m
Vine maple	<i>Acer circinatum</i>	1.5 m

A recommended watering regime for the first two growing seasons is:

- Once/2 weeks during April, May and June.
- Once/week during July, Aug and Sept

Hand watering with a spring-loaded nozzle is necessary during the times of DNV watering restrictions

12.1.2 Shrub and herb replanting guidelines

It is unfeasible to replant trees on the slope, as the canopy is dense and very little light reaches the understorey. Native shrubs such as Indian plum and Snowberry and native perennials such as Sword fern should be considered for planting in order to remediate and re-vegetate the slope impacted during construction activities and tree removals (Table 5). Eight canopy gaps will be created upon completion of hazard tree removal and trees removed for development. Within each of the newly created spaces, a mass planting of understorey should be installed to cover the exposed soil and consist of 30 Sword fern plants, and 5 shrubs including at least one Vine maple for a total of 8 groupings. Spacing between individual shrubs should be approximately 1.5 m.

Table 5. Shrubs and perennials recommended for slope re-vegetation. If perennials are not available in 1 gallon pot size, double the number of plants required for 4" or 10 cm pot size.

# of Plants (for secondary size)	Common Name	Latin Name	Size	Spacing
40	Vine maple	<i>Acer circinatum</i>	3 gallon pot	NA
	Indian plum	<i>Oemelaria cerasiformis</i>	1 gallon pot	NA
	Snowberry	<i>Symphoricarpus albus</i>	1 gallon pot	NA
160	Sword fern	<i>Polystichum munitum</i>	1 gallon pot	45 cm



12.1.3 Estimated Costs

Estimated costs for replanting (supplies and labour) are found in Table 6. Actual costs to be confirmed with contractors prior to work.

Table 6. Estimated costs for replanting recommendations.

Activity	Estimated Cost
Stock (trees, shrubs, and perennials as described above)	\$ 2,200.00
Labour	\$ 2,000.00
Total	\$ 4,200.00

13.0 Maintenance of Property in Low Fire Hazard State

To ensure that a low fire hazard rating is maintained at 518 Alpine Court, all landscaping must be properly maintained in low hazard conditions as described in Section 11.0 FireSmart Landscaping.

The roof and gutters should be kept clean of debris from conifers to reduce the potential for spotting to ignite these materials during a wildfire event.

Meeting the recommendations in this report and maintaining the property in the described manner will reduce the overall fire hazard risk for the parcel at 518 Alpine Court. The implementation of these measures does not guarantee that the property or structures are safe from wildfire, only that the risk level of the property is within acceptable standards and that fire hazards have been identified and appropriate mitigation measures outlined.

It is recommended that all vegetation, both currently existing and newly planted, be maintained in a low hazard state. This may include future pruning to maintain defensible space around the home.

14.0 Limitations

This Fire Hazard Assessment is based on site observations noted on the date specified only. The project forester has endeavored to use her skill, education and knowledge to provide accurate representation. Every effort has been made to ensure that the opinions expressed are an accurate assessment of the condition of the construction information provided by the client and site vegetation reviewed. It is the owner's responsibility to maintain the home and the trees in a reasonable standard and to carry out the mitigation measures stated in this report.

Tree assessments represent the condition of the tree and site at the time of inspection. Tree inspections are limited to visual examination only without employing methods of coring, climbing or excavating. The inherent characteristics of trees are that they are unpredictable and can fail due to environmental or internal problems. It is not possible for the Consultant to detect every condition or defect that could result in failure of a tree, shrub or part thereof. Trees, as living organisms, are prone to attack by insects, disease, and other abiotic factors such as wind, snow, and frost. Given these factors, the consultant cannot guarantee that the trees will be safe and healthy



under all situations or for a given amount of time. Any prescribed mitigation measures for tree health or safety cannot be assured.

Adjustments, assumptions, and the conclusions drawn in this report are based on the professional experience of Judith Cowan, FIT, ISA Certified Arborist and Tree Risk Assessor and Bruce Blackwell, MSc, RPF and principal at B.A. Blackwell and Associates Ltd. ('Consultant'). The opinions expressed below are also based on written and verbal information supplied in part by other parties.

Tree treatments such as pruning, topping, protection or removal could potentially involve issues beyond the breadth of the Consultant's services including: improperly marked private land boundaries, ownership, neighbourly disputes and other considerations.

The Consultant cannot accept responsibility for any issues or events that have arisen since the date of the inspection and the date the report was written. The Consultant accepts that the report represents professional judgment and that the Consultant's responsibilities are limited to the content of this report.



15.0 Appendix A. Complete Vegetation Inventory

Table 7. Full vegetation inventory, recommendations, and tree protection distances of those trees assessed on or adjacent to 518 Alpine Court, DNV.

Tree #	Species (common name)	Tree Tag	DBH (cm)	Location	Ht (m)	Crown Base Height (m)	Crown Radius (m)	Form	Health	Protected Tree? (Y/N)	TPZ radius (m)	Comment	Action
1	Douglas fir	NA	60.0	DNV	7	0.5	5	tree	normal	Y	NA	On edge of Fire Priority Zone 1. Multi-stem (6), topped multiple times with vigorous re- growth, poor form for this species, unidentified sap rot fungi on older branches.	No Treatment due to position on precipice of slope.
2	Western hemlock	167	26.0	518 Alpine	15	8	4	tree	poor	Y	NA	Within Fire Priority Zone 1. Fork at 12 m, evidence of sapsucker feeding, internal decay likely, previously topped. Hazardous.	Remove for hazard tree mitigation. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
3	Western hemlock	136	25.0	518 Alpine	14	8	2.5	tree	normal	Y	2.0	Within Fire Priority Zone 1. Previously topped at 8 m height to maintain viewshed.	Prune up to a height of 4 m to prevent the formation of ladder fuels.
4	Western hemlock	NA	22.0	DNV	14	9	2.5	tree	normal	Y	2.0	Within Fire Priority Zone 1. Previously topped at 10 m height, straight stem, crooked branch forming above top cut.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required.
5	Western hemlock	NA	44.5	DNV	20	10	4	tree	normal	Y	2.0	Within Fire Priority Zone 1. Straight stem, otherwise no observed defects.	Prune up to a height of 4m to prevent the formation of ladder fuels. Consent required.
6	Western hemlock	NA	25.5	DNV	15	10	3	tree	poor	Y		Within Fire Priority Zone 1. Sapsucker feeding, internal decay column likely.	Option to remove for hazard tree mitigation. Slope impacts to be reviewed by geotechnical engineer. Consent by DNV, and Tree Permit required.
7	Western hemlock	093	39.0	DNV / 518 Alpine	25	14	4.5	tree	good	Y	2.0	Within Fire Priority Zone 1. Shared tree with DNV. Straight stem. Root response growth extending up and down hill from base.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required.



Tree #	Species (common name)	Tree Tag	DBH (cm)	Location	Ht (m)	Crown Base Height (m)	Crown Radius (m)	Form	Health	Protected Tree? (Y/N)	TPZ radius (m)	Comment	Action
8	Western redcedar	NA	35.0	DNV	13	8	2.5	tree	normal	Y	NA	Within Fire Priority Zone 1. Previously topped at 6.5 m, forked with co-dominant stem. Seam on west side where 2 stems have fused.	Prune up to a height of 4m to prevent the formation of ladder fuels. Consent required.
9	Western hemlock	089	36.5	518 Alpine	25	10	4.5	tree	good	Y	2.0	Outside Fire Priority Zone 1. Straight stem, dead lower branches from 2-10 m height	Prune up to a height of 4m to prevent the formation of ladder fuels.
10	Douglas fir	NA	34.5	DNV	18	6	6	tree	normal	Y	NA	Outside Fire Priority Zone 1. Half of root plate on edge of cut slope, the other half is exposed, >15% lean, instability issues	Option to remove upon review of by geotechnical engineer. Consent by DNV, and Tree Permit required.
11	Western hemlock	181	10.5	518 Alpine	11	NA	1.5	tree	poor	Y	NA	Outside Fire Priority Zone 1. Suppressed growth form and recently dead. Very poor form	Remove for hazard tree mitigation. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
12	Douglas fir	173	30.0	518 Alpine	18	10	3	tree	normal	Y	2.0	On edge of Fire Priority Zone 1. Broken stem at 1.5 m height, large crook at 4m height, basal sweep	Prune up to a height of 4 m to prevent the formation of ladder fuels.
13	Douglas fir	097	12.0	518 Alpine	12	8	1.5	tree	normal	Y	2.0	Within Fire Priority Zone 1. Minor basal sweep, poor height to diameter ratio, suppressed growth form.	Prune up to a height of 4 m to prevent the formation of ladder fuels.
14	Western hemlock	203	28.4	518 Alpine	22	8	3	tree	good	Y	2.0	Within Fire Priority Zone 1. Good form, straight stem, root response growth on downhill side of stem.	Prune up to a height of 4 m to prevent the formation of ladder fuels.
15	Western redcedar	027	36.2	518 Alpine	20	7	2.5	tree	normal	Y	2.0	Within Fire Priority Zone 1. Topped at 2 m height, resulting multiple branching pattern, thinning crown, downhill lean but re-corrected top growth.	Prune up to a height of 4 m to prevent the formation of ladder fuels.



Tree #	Species (common name)	Tree Tag	DBH (cm)	Location	Ht (m)	Crown Base Height (m)	Crown Radius (m)	Form	Health	Protected Tree? (Y/N)	TPZ radius (m)	Comment	Action
16	Western hemlock	198	34.0	518 Alpine	12	7	2.5	tree	poor	Y	NA	Within Fire Priority Zone 1. Co-dominant stem from 1.5 m, fusing together with response wood growth. Basal sweep, multiple branch top, extensive pruning and topping, sapsucker feeding, basal sweep	Remove for hazard tree mitigation. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
17	Douglas fir	133	38.5	518 Alpine	17	6	4	tree	normal	Y	2.0	Minor basal sweep, half of root plate soil eroded/fallen away, 3-15 cm bolts in lower stem, forked at 4 m, multiple tops.	Remove for development. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
18	Western hemlock	085	35.0	518 Alpine	8	6	1.5	tree	normal	Y	2.0	Within Fire Priority Zone 1. Topped at 5 m height. Eroding surface soil from slope piled against north side of tree base. Multi-top.	Remove for development. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
19	Western redcedar	100	12.7	518 Alpine	9	3	2	tree	normal	Y	NA	Within Fire Priority Zone 1. Topped at 6 m, multiple top.	Remove for hazard tree mitigation. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
20	Western hemlock	080	12.5	518 Alpine	8	NA	1.5	tree	poor	Y	NA	Within Fire Priority Zone 1. Crook at 3 m height, heavily suppressed, possibly dead.	Remove for hazard tree mitigation. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
21	Western redcedar	118	10.5	518 Alpine	8	6	1	tree	poor	Y	NA	Within Fire Priority Zone 1. Very thin crown, suppressed growth form, basal sweep.	Remove for hazard tree mitigation. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
22	Western redcedar	NA	9.0	DNV	10	9	1	tree	poor	Y	2.0	Within Fire Priority Zone 1. Poor height to diameter ratio, heavily suppressed.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required.



Tree #	Species (common name)	Tree Tag	DBH (cm)	Location	Ht (m)	Crown Base Height (m)	Crown Radius (m)	Form	Health	Protected Tree? (Y/N)	TPZ radius (m)	Comment	Action
23	Douglas fir	NA	24.5	DNV	10	9	2	tree	poor	Y	2.0	Within Fire Priority Zone 1. Broken stem attachment at 1.5 m height, pistol butt, topped at 10m height to maintain viewsheds.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required.
24	Western redcedar	NA	25.0	DNV	10	8	2.5	tree	normal	Y	2.0	Within Fire Priority Zone 1. Topped at 10 m height to maintain viewsheds, multiple stems at 6m.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required.
25	Douglas fir	120	29.0	DNV / 518 Alpine	10	8	3	tree	poor	Y	2.0	Within Fire Priority Zone 1. Declining health. Topped at 10 m height (the height of existing deck) to maintain viewsheds.	Option to remove upon review of by geotechnical engineer. Consent by DNV, and Tree Permit required.
26	Western redcedar	739	27.0	518 Alpine	10	7	3	tree	normal	Y	NA	Within Fire Priority Zone 1. Topped at 4m. Candelabra branching pattern at 4m, topped again at 10m. Large seam from 0.25 – 2 m height (west side).	Remove for hazard tree mitigation. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
27	Western hemlock	218	28.5	518 Alpine	11	7	2.5	tree	poor	Y	NA	Within Fire Priority Zone 1. Pistol butt, sapsucker feeding, topped at 11 m, fork at 8m, likely internal decay.	Remove for development. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
28	Western redcedar	NA	39.0	DNV	11	8	3	tree	poor	Y	2.0	Within Fire Priority Zone 1. Topped at 11 m, basal sweep, seam from 2.5-4 m, candelabra top, evidence of decay at top of stem.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required.
29	Western redcedar	NA	19.1	DNV	11	10	1	tree	poor	Y	2.0	Within Fire Priority Zone 1. Topped at 11 m, very little live crown.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required.
30	Western redcedar	NA	48.2	DNV	11	9	1.5	tree	poor	Y	NA	Within Fire Priority Zone 1. Topped at 11 m, dead branches, internal decay (cavity with punky wood from base to 5 m, 30 cm deep).	Option to remove upon review of by geotechnical engineer. Consent by DNV, and Tree Permit required.



Tree #	Species (common name)	Tree Tag	DBH (cm)	Location	Ht (m)	Crown Base Height (m)	Crown Radius (m)	Form	Health	Protected Tree? (Y/N)	TPZ radius (m)	Comment	Action
31	Western redcedar	NA	38.5	DNV	11	7	4.5	tree	normal	Y	2.0	Within Fire Priority Zone 1. Multi top at 8 m, evidence of decay. Topped at 11 m, large branches forming a candelabra top, co-dominant stem from base (1 has died).	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required.
32	Western redcedar	084	22.0	518 Alpine	11	7	3	tree	normal	Y	2.0	Within Fire Priority Zone 1. Co-dominant stem from fork at 5 m.	Prune up to a height of 4 m to prevent the formation of ladder fuels.
33	Western hemlock	NA	23.5	DNV	12	10	2	tree	poor	Y	2.0	Within Fire Priority Zone 1. Sapsucker feeding, topped at 12 m.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required.
34	Douglas fir	NA	53.5	DNV	13	9	2.5	tree	normal	Y	2.0	Within Fire Priority Zone 1. Multi stem branching pattern, topped at 12 m.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required.
35	Western hemlock	NA	21.5	DNV	12	9	2	tree	poor	Y	2.0	Within Fire Priority Zone 1. Broken top at 5m, long scar with response growth on east side, multi top.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required.
36	Western hemlock	092	36.5	552 Palisade / 518 Alpine	14	10	2	tree	poor	Y	2.0	Within Fire Priority Zone 1. Large fork / crook at 5m, topped at 12m, multiple top.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required from 552 Palisade.
37	Western hemlock	090	34.0	552 Palisade	14	11	2	tree	poor	Y	NA	Outside Fire Priority Zone 1. Sapsucker feeding. Co-dominant stem from 1.5 m, multiple tops, extensive decay, cankers on stem, stem growing around metal fencing.	Prune up to a height of 4 m to prevent the formation of ladder fuels. Consent required from 552 Palisade.
38	Western redcedar	172	65.0	552 Palisade	12	10	4	tree	normal	Y	NA	Outside Fire Priority Zone 1. Topped at 10 m, candelabra branching, punctures from climbing spikes.	No Treatment for slope instability concerns.



Tree #	Species (common name)	Tree Tag	DBH (cm)	Location	Ht (m)	Crown Base Height (m)	Crown Radius (m)	Form	Health	Protected Tree? (Y/N)	TPZ radius (m)	Comment	Action
39	Douglas fir	NA	70.5	552 Palisade	25	10	6	tree	normal	Y	NA	Outside Fire Priority Zone 1. Fork at 10 m (co-dominant stem from 10 m to top)	No Treatment for slope instability concerns.
40	Douglas fir	192	70.0	552 Palisade / 518 Alpine	23	12	6	tree	good	Y	2.0	Outside of Fire Priority Zone 1. No observed defects.	Prune up to a height of 4 m to prevent the formation of ladder fuels.
41	Douglas fir	156	62.5	518 Alpine	23	8	5	tree	normal	Y	2.0	Outside Fire Priority Zone 1. Co-dominant stem at 2m, significant response growth, shallow cavity on southwest side.	Prune up to a height of 4 m to prevent the formation of ladder fuels.
42	Western redcedar	079	47.5	518 Alpine	8	6	4	tree	normal	Y	2.0	Within Fire Priority Zone 1. Punctures from climbing spikes, topped at 8 m, candelabra top.	Prune up to a height of 4 m to prevent the formation of ladder fuels.
43	Western hemlock	214	35.5	518 Alpine	7	5	4	tree	poor	Y	NA	Within Fire Priority Zone 1. Significant internal decay. Topped at 7 m. Three decay cavities at stem base, sapsucker feeding.	Remove for hazard tree mitigation. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
44	Western redcedar	757	32.5	518 Alpine	10	8.5	1	tree	poor	Y	NA	Within Fire Priority Zone 1. Thinning crown, topped at 6 m, candelabra top, punctures from climbing spikes. Cavities at base on NW + SE sides with punky wood 10 cm deep.	Remove for hazard tree mitigation. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.
45	Western redcedar	149	24.5	518 Alpine	9	6	2.5	tree	normal	Y	2.0	Within Fire Priority Zone 1. Response growth at stem base on uphill side. Topped at 9 m.	Remove for development. Slope impacts to be reviewed by geotechnical engineer. Tree Permit required.



Tree #	Species (common name)	Tree Tag	DBH (cm)	Location	Ht (m)	Crown Base Height (m)	Crown Radius (m)	Form	Health	Protected Tree? (Y/N)	TPZ radius (m)	Comment	Action
46	Western redcedar	212	24.5	518 Alpine	8	6.5	3	tree	normal	2.0	2.0	Within Fire Priority Zone 1. Topped at 5m, large branches forming candelabra top.	Prune up to a height of 4 m to prevent the formation of ladder fuels.
47	Western redcedar	180	24.5	518 Alpine	12	4	2.5	tree	good	Y	2.0	Within Fire Priority Zone 1. Straight stem, no observed defects.	Remove for development. Tree Permit required.
48	Bitter cherry	217	23.0	518 Alpine	15	12	2	tree	poor	Y	NA	Within Fire Priority Zone 1. Heavy lean (>15%) to the west, eruptions along stem. Failures of adjacent cherries due to butt rot. Likely extensive internal decay.	Remove for development. Tree Permit required.
49	Western redcedar	205	43.0	518 Alpine	17	0	4	tree	good	Y	2.0	Within Fire Priority Zone 1. Young. Mechanical damage at base. Punctures from climbing spurs.	Remove for development. Tree Permit required.
50	Western redcedar	NA	22.0	DNV	13	6	3	tree	good	Y	NA	Within Fire Priority Zone 1. Healthy, 1 m west of property line on DNV land.	Option to remove for fire hazard mitigation. Slope impacts to be reviewed by geotechnical engineer. Consent by DNV, and Tree Permit required.



16.0 Appendix B: DNV Replanting List

Recommended Native Tree and Shrubs for Replacement Plantings - Deciduous Species Only

Botanical Name	Common Name	Size*
<i>Acer circinatum</i>	Vine maple	small
<i>Acer glabrum</i> var. <i>douglasii</i>	Douglas maple	medium
<i>Acer macrophyllum</i>	Big-leaf maple	large
<i>Alnus rubra</i>	Red alder	medium
<i>Alnus sitchensis</i>	Sitka alder	medium
<i>Betula papyrifera</i> var. <i>commutata</i>	Western white birch	large
<i>Crataegus douglasii</i>	Black hawthorn	medium
<i>Cornus</i> 'Eddie's White Wonder'	Hybrid dogwood	medium
<i>Corylus cornuta</i>	Beaked hazelnut	small
<i>Malus fusca</i>	Pacific crabapple	small
<i>Populus balsamifera</i> or <i>P. trichocarpa</i>	Black cottonwood	large
<i>Prunus emarginata</i>	Bitter cherry	medium
<i>Rhamnus purshiana</i>	Cascara	medium
<i>Salix lucida</i> sspl <i>lasiandra</i>	Pacific willow	medium
<i>Sorbus scopulina</i>	Mountain ash	medium
<i>Sorbus sitechensis</i>	Sitka ash	small

* Relative size ranges:

- Small trees to 7m
- Medium trees 8m – 25m
- Large trees greater than 25m -



Project Arborist

Judith Cowan PN-7314 A
B.A. Blackwell & Associates Ltd

April 5, 2017

Reviewing Professional

Bruce Blackwell, MSc, RPF, RPBio
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April 5, 2017



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GEOTECHNICAL INVESTIGATION REPORT

for a

PROPOSED RESIDENTIAL DEVELOPMENT

at

**518 Alpine Court,
North Vancouver, BC**

Our File: 116-3924

April 5, 2017



EXECUTIVE SUMMARY

The subject property was the location of a landslide which occurred in 2010. The landslide scarp remains unvegetated and active. In 2013, the District of North Vancouver issued a Remedial Action Requirement Order to the previous owners mandating that the pre-existing and undermined garage be made safe, stormwater be managed, the landslide scarp be protected from erosion, and any residence on this site meet the District of North Vancouver Risk Tolerance Criteria. In later 2015, the subject property was purchased by the current owners for the purpose of development with a new single family residence.

Design of the proposed residence has been iterative with the owners, architect and Horizon in order to design a development (including siting the house and detached garage buildings) in a manner which:

- meets the District of North Vancouver requirements with respect to yard setbacks, Floor Space Ratio, Maximum Wall Line, etc,
- conforms with the two covenants,
- achieves the Remedial Action Requirement Order directives,
- meets the District of North Vancouver requirements with respect to Slope Hazard and Risk Tolerance Criteria,
- buttresses steep areas at upslope property lines (north and east),
- protects the footprint of the landslide headscarp (east portion of site) and to-be-demolished residence (central and southern portions of site) from erosion,
- minimizes removal of trees at the west portion of the site, upslope of the downslope neighbouring residence at 552 Palisade Drive, and
- cost-effectively results in a marketable residence with enjoyable landscaping.

Placement of surcharge loads on the subject site should be avoided as they will decrease the stability of the site. Accordingly, it is proposed to support the proposed house and garage (including grade level slabs for both buildings) as well as several landscaping elements, including retaining walls, on deep foundations, augmented with battered piles as required to resist lateral loads. Excavation shoring (utilizing soil anchors which temporarily encroach onto adjacent public property) will be required in order to construct the two, below grade levels of the proposed house. In order to minimize vibration during construction, piles will be installed using the same drilling methodology used to install the soil anchors. Vibration monitoring during construction and pre-construction assessment of nearby properties are both recommended to further mitigate risks.

Within the 'rear yard setback' at the east portion of the subject property, it is proposed to construct a lawn terrace with perimeter retaining walls which meet District of North Vancouver requirements regarding Maximum Wall Line with respect to the east and south property lines. The subject retaining walls will be cantilever pile-supported. However, in order to minimize surcharge loads, the lawn is proposed to be supported on a structural suspended slab in turn supported on piles. Grade increases above this suspended slab in order to achieve the elevation of the lawn terrace will be with geofoam, a lightweight fill.

A cantilever pile-supported retaining wall is also proposed to be located in front (south) of the existing mortared rock retaining wall in poor condition at the west portion of the north property line.



We have been provided with structural drawings, dated March 10, 2017, prepared by Mainland Engineering Consultants Corporation, showing the pile layout and design vertical and seismic loads.

It is understood that stormwater collected at the subject site may be directed downslope to an infiltration gallery located on District of North Vancouver land. It is proposed that this would also include stormwater infiltrating the lawn terrace and collected on top of the supporting suspended slab. A stormwater management plan has been prepared by Horizon Engineering Inc and published separate to this report. A reconnaissance of the location of the proposed infiltration gallery and pipe leading to it was carried out in the company of the professional forester for this project as part of our due diligence for this design.

We have been provided with a Preliminary Wildfire Hazard Assessment and Arborist Report, prepared by B.A. Blackwell & Associates Ltd, dated February 4, 2017. In addition, we have worked together with B.A. Blackwell & Associates Ltd for the purpose of developing a safe tree removal plan, as required by the District of North Vancouver and we have provided input to the finalized report dated April 5, 2017.

We conclude that the recommended works will result in a residence which is safe for the intended use. In addition, the stability of the subject property will be improved, including above the downslope neighbouring residence at 552 Palisade Drive. Furthermore, the Risk Tolerance Criteria will be achieved; however, it is considered impracticable to negate the risk of future slope movements since there are area-wide, natural, hillslope processes that will continue to modify the terrain.

This document was previously issued on April 29, 2016 and has been updated based on new available information regarding the proposed development, including the aforementioned structural drawings and arborist report.



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1.0 INTRODUCTION

This document reports on the results of the geotechnical assessment carried out at the above-noted property and provides comments and recommendations to address the stability of the slopes on the subject property and the foundation for a proposed house with consideration of the District of North Vancouver's Natural Hazards Risk Tolerance Criteria, SPE 105 Master Requirement and the site-specific Remedial Action Requirement Order. Authorization to Proceed was received from yourself on April 26, 2015 with reference to our proposed scope of services dated April 15, 2015 (File No. P15-2072).

This report has been updated based on the structural drawings prepared by Mainland Engineering Consultants Corporation, dated March 10, 2017, and the Arborist Report prepared by B.A. Blackwell & Associates Ltd, dated April 5, 2017.

2.0 SITE DESCRIPTION

The subject property is located at 518 Alpine Court in the Cleveland Neighbourhood of the District of North Vancouver and has a legal description of Lot 32, Block C, District Lot 578, Group 1, NWD Plan 8399. The property is located at the southeast terminus of Alpine Court and is bounded by Alpine Court to the north, a right-of-way in turn bounded by 515 Alpine Court to the west, 520 Alpine Court to the northeast, and 552 Palisade Drive to the southwest, as shown on Figure 1, attached following the text of this document. The aforementioned properties are each developed with single family residences. The property is also bounded by Mosquito Creek Park to the east and undeveloped District of North Vancouver land to the south. Mosquito Creek is located farther to the east within an approximately northeast-to southwest oriented creek channel at the base of an approximately 20 metres deep ravine.

The subject property forms a polygon that is approximately rectangular in plan with an easement located along the east portion of the north property line. At the time of publishing this report, the property is developed with an unoccupied, two storey, wood framed house at the central portion of the site. A low height mortared rock retaining wall that extends onto the neighbouring property to the north is present at the northeast portion of the site, as shown on Figure 2 attached to this document. A 4 to 5 metres high mortared rock retaining wall is present along the west portion of the north property line. This wall features a significant crack where it abuts a retaining wall (comprising part of the development at 515 Alpine Court) in the adjacent District of North Vancouver right-of-way.

The existing house has a basement level that is at-grade and daylights towards the south. The existing house foundation system consists of a series of posts supported on concrete strip footings or grade beams that in turn appear to be founded essentially at ground surface. No information regarding the design and construction of the foundation system is available for reference at the time of publishing this document.

Topographically, the subject property is situated at the south terminus of a terrace landform where the terrain transitions from a gently to moderately sloping bench to steep slopes down towards the southeast, south, and southwest. Beyond the footprint of the existing house, the terrain on the southwest and south aspects of the slope is vegetated with trees with sparse understorey growth.



It appears that the toe of the southwest aspect slope was excavated to allow the 1994 development of 552 Palisade Drive. The lower portion of this slope is steeply sloping, poorly vegetated and appears to be prone to surficial ravelling.

The terrain on the southeast aspect of this hill slope has been recently modified by a landslide event that occurred during 2010 to early 2011. The landslide headscarp is located near the crest of the hill slope and the landslide path extended down to and beyond a trail located in Mosquito Creek Park. Since the subject event, the headscarp has been partially resloped and continued to erode. Slope hazard management works previously carried out on this landslide path included construction of a temporary, wooden barrier at the toe of this slope, removal of a detached garage formerly located at the landslide headscarp, partial re-sloping of the headscarp area, and placement of a geotextile and tarp for rainsplash erosion at the headscarp.

There is significant topographic relief on the subject property and adjacent hill slope areas. Based on a topographic survey prepared by Target Land Surveying Ltd and dated May 12, 2015, the southwest, south, and southeast aspect slopes have heights of about 65, 95, and 80 feet, respectively. Average slope gradients on the sloping terrain within the subject property and adjacent hill slope were noted to vary from about 35 to 48 degrees. At the landslide headscarp area, considerably steeper slope gradients of about 70 degrees are present. The areas beyond the toe of these steep slopes transition to gently to moderately steeply sloping terrain.

3.0 BACKGROUND INFORMATION

3.1 General

Based on information provided by the District of North Vancouver's online geographical information system called GeoWeb, it is understood that the existing house was built in 1973 and the house is connected to the District water and sanitary services. There is no drawing information regarding storm sewer connection to the District utilities which indicates that the property is currently not connected to the District storm sewer system.

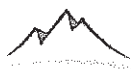
The subject property is identified as being within Development Permit Areas for Slope Hazard and Wildfire Hazard. The Slope Hazard area is shown across the entire footprint of the subject property and the sloping terrain adjacent to the site. The Wildfire Hazard area encompasses the southeast corner of the subject property and forested terrain adjacent to Mosquito Creek. No debris flow, liquefaction, flooding, or tsunami hazards have been identified within the subject property.

In addition to the GeoWeb data, the following documents have been read and interpreted in preparation of this report:

- Land Registry Act Form C dated September 26, 1970 [regarding maximum height of building at 518 Alpine (in favour of 520 Alpine)];
- Land Registry Act Form C dated September 29, 1970 [regarding Right of Way at shared property line between 518 and 520 Alpine for common use for the purpose of access];



- a letter report regarding "Preliminary Slope Stability Assessment; Alpine Court / Mosquito Creek Escarpment, North Vancouver, BC; Geotechnical Comments, Recommendations and Scope of Services" published by Horizon Engineering Inc (dated May 29, 2007; File: 107-1890);
- a final report titled "District of North Vancouver 2009 Landslide Risk Assessment for Select Escarpment Slopes" published by BGC Engineering Inc (dated January 4, 2010; Project No: 040-030);
- a final report titled "District of North Vancouver Landslide Risk Summary" published by BGC Engineering Inc (dated November 12, 2010; Project No: 040-035);
- a letter report regarding "Slope Stability Reconnaissance; 518 Alpine Court, North Vancouver, BC; Preliminary Geotechnical Comments" published by Horizon Engineering Inc (dated November 16, 2012; File: 109-2489);
- a letter regarding "518 Alpine Court, Slope Stability Reconnaissance" published by the District of North Vancouver (dated November 20, 2012; File: 11.5225.01/005.000);
- a District of North Vancouver Report to Council document regarding "Remedial Action Requirements - 518 Alpine Court: Unsafe Structure" (dated June 12, 2013; File: 08.3200.01);
- a report titled "518 Alpine Court Erosional Scarp Slope Inspection" published by BGC Engineering Inc (dated July 24, 2013; Project No: 0404-047);
- a District of North Vancouver Report To Council document regarding "Remediation Action Requirements: 518 Alpine Court-Unsafe Structure" (dated July 24, 2013; File: 08.2300.01);
- a letter regarding "518 Alpine Court - Remedial Action Requirement Order" from the District of North Vancouver (dated July 30, 2013; File: 09.4000.30/000.001);
- a topographic site plan prepared by Target Land Surveying (dated May 12, 2015);
- a set of architectural drawings prepared by Alex Voth Design (dated February 7, 2017);
- a set of structural drawings prepared by Mainland Engineering Consultants Corporation (dated March 10, 2017); and,
- an arborist report titled, Preliminary Wildfire Hazard Assessment and Arborist Report" prepared by B.A. Blackwell & Associates Ltd (dated April 5, 2017).



3.2 Geological Survey of Canada

Based on published information from the Geological Survey of Canada [Canadian Geoscience Map 203 (preliminary), Surficial Geology, District of North Vancouver, 2014], the surficial geology at the subject property is expected to consist of Outwash Terrace Deposits underlain by a Till Blanket. The Outwash Terrace Deposits are described as being "1 to 10m thick; forming terraces along valley sides; in places, perched above modern fluvial deposits". These outwash deposits may be expected to consist of stratified sand and gravel soil types that are well to poorly sorted with minor inclusions of diamicton. [A diamicton is an unsorted to poorly sorted, heterogeneous, terrigenous or marine sediment that has a wide range of particle sizes often including boulder-sized clasts supported in a fine soil matrix and where the origin of the material is not defined.]

The Till Blanket is described as being greater than 2 metres thick with a continuous cover that forms an undulating topographic surface which obscures the surface geometry of underlying geological materials. The till is expected to consist of diamicton that was deposited directly by glaciers and have a sandy to clayey matrix containing numerous clasts of mixed lithology. The Till Blanket is mapped as the surficial material type along the face of the steep hill slope area adjacent to the south and west portions of the subject property in addition to the neighbouring slope to the north. Along the base of the steep terrain generally east and north of the subject property and overlooking the western slope of the Mosquito Creek channel valley, an apron of landslide and slump debris has been identified. Furthermore, a number of small landslide events are also identified both at the subject property and on the neighbouring slope to the north.

These Outwash Terrace Deposits are part of the Capilano Sediments lithologic unit as described in previous surficial geology maps that encompass the subject property and surrounding areas (Geological Survey of Canada, Map 1486A, Surficial Geology Vancouver, 1979). Capilano Sediments in this general area are described as "raised deltaic and channel fill medium sand to cobble gravel up to 15 m thick deposited by proglacial streams and commonly underlain by silty to silty clay loam".

3.3 Seismic Hazard Calculation

Based on published information from Natural Resources Canada's on-line 2015 National Building Code Seismic Hazard Calculation, a seismic event with 2% probability of exceedance in 50 years at the project site would have a peak ground acceleration of 0.336g, where g is the gravitational acceleration. This peak ground acceleration is for firm ground conditions and is assumed to have no vertical acceleration component. The published 5%-damped horizontal spectral acceleration values for different natural periods associated with the aforementioned peak ground acceleration are presented in Table 1.

Table 1: Spectral Acceleration Values for Different Natural Periods*

Sa (0.2)	Sa (0.5)	Sa (1.0)	Sa (2.0)
0.774	0.682	0.389	0.239

* based on a design seismic event with a 2% probability of exceedance in 50 years



3.4 Design Development

Design of the proposed residence has been iterative with the owners, architect, structural engineer, professional forester and Horizon in order to design the development (including siting the house and detached garage buildings) in a manner which:

- meets the District of North Vancouver requirements with respect to yard setbacks, Floor Space Ratio, Maximum Wall Line, etc,
- conforms with the two covenants,
- achieves the Remedial Action Requirement Order directives,
- meets the District of North Vancouver requirements with respect to Slope Hazard and Risk Tolerance Criteria,
- buttresses steep areas at upslope property lines (north and east),
- protects the footprint of the landslide headscarp (east portion of site) and to-be-demolished residence (central and southern portions of site) from erosion,
- minimizes removal of trees at the west portion of the site, and
- cost-effectively results in a marketable residence with enjoyable landscaping.

As will be described following, placement of surcharges on the subject site will serve to decrease the stability of the site. Accordingly, it is proposed to support the proposed house, garage and several landscaping elements, including retaining walls, using deep foundations.

4.0 PROPOSED DEVELOPMENT

We have been provided with a digital set of architectural drawings published by Alex Voth Design (File Date: November 8, 2016) that show the proposed development resulting from the above-described design collaboration on topographic plans and sections. The existing house will be demolished and replaced with a new house, a detached garage, and various landscaping features including decks, retaining walls and the above-described lawn terrace.

The new house will be a single level building over two basement levels that daylight towards the south. As shown on Figure 2, attached, the footprint of the new house is to be located across the central portion of the site, generally encompassing the former building footprint. The Finished Floor elevations for the main level, lower level, and basement level are to be at geodetic elevations of 884.0 feet, 872.7 feet, and 861.4 feet; respectively. The proposed building levels in relation to the slope geometries are shown in slope profiles A, C, and D on Figures 3, 4, and 5, respectively. The slope profile labels A, C, and D are consistent with the profiles shown in the architectural drawings. As shown in slope profile C on Figure 4, the south portion of the basement floor level will be located above current slope grades. As shown in Figures 3 and 5, the north portion of the basement floor level is below existing grades.

The garage will be located west of the house footprint with a parking level Finished Floor elevation at 884.0 feet. As shown in Profile D on Figure 5, the garage structure will include two lower levels required for structural integrity and to practicably allow construction of the suspended slab at the parking level.



Within the 'rear yard setback' at the east portion of the subject property, it is proposed to construct a lawn terrace with perimeter retaining walls which meet District of North Vancouver requirements regarding Maximum Wall Line with respect to the east and south property lines. The subject retaining walls will also be pile-supported with the east wall cantilevering to support the easement. Ongoing ravelling of the landslide headscarp and path should be expected. The lawn is therefore proposed to be supported on a structural suspended slab in turn supported on piles. Grade increases above this suspended slab in order to achieve the elevation of the lawn terrace will be with geofoam, a lightweight fill.

A cantilever pile-supported retaining wall is also proposed to be located in front (south) of the existing mortared rock retaining wall in poor condition at the west portion of the north property line.

It is understood that stormwater collected at the subject site may be directed downslope to an infiltration gallery located on District of North Vancouver land. It is proposed that this would also include stormwater infiltrating the lawn terrace and collected on top of the supporting suspended slab.

We have received structural drawings showing the pile layout and detailed structural loads from the structural engineer. The subject drawings have been developed collaboratively between Horizon Engineering and Mainland Engineering Consultants Corporation. Based on our communications with the structural engineer, we understand that the inclined piles will resist the seismic lateral earth pressures and that the magnitude of lateral load transferred to the vertical piles will be negligible. The structural engineer will also provide details of the pile caps and connections to the suspended slabs and/or basement and/or retaining walls.

5.0 SITE INVESTIGATION

Horizon Engineering personnel have attended the subject site and surrounding area during previous engineering assessments in 2007 and 2012, and are familiar with the local site conditions and geology. For the purpose of this project, Mr Robert Ng, P.Eng. and Mr Jason Tam, E.I.T from Horizon Engineering attended that subject property on June 24, 2015 and July 3, 2015 to carry out a slope reconnaissance. On August 14, 2015 and December 11, 2015; Ms Karen Savage, P.Eng. and Mr Ng attended the subject property to review site conditions with respect to slope stability and geotechnical design considerations. On February 7, 2017; Mr Takahiro Shozen, M.A.Sc., P.Eng attended the subject property in the company of a professional forester from B.A. Blackwell & Associates Ltd, with the purpose of locating the proposed infiltration gallery and pipeline to it.

During the June and July 2015 site visits, a traverse of the sloping terrain at and adjacent to the subject property was carried out. Soil exposures were reviewed to provide geotechnical information regarding the expected surficial geology. The soil stratigraphy exposed at the landslide headscarp generally consisted of a dry, slightly cemented, light grey sand and gravel with matrix-supported, cobbles and boulders of mixed lithology. At areas adjacent to the landslide headscarp, this slightly cemented sand and gravel was overlain by a veneer of weathered, dry, grey to light brownish grey, sand and gravel with cobbles, boulder, and organics (roots and rootlets). The weathered sand and gravel was inferred to be compact to loose and the slightly cemented sand and gravel was inferred to be dense. These soil exposures were in excess of 6 feet tall and had local slope gradients of about 70 degrees to near vertical. It was noted that the surface of the slightly cemented sand and gravel was susceptible to erosion and individual soil particles could be detached with moderate



effort. At mid to lower elevation slope areas along the landslide path, colluvium consisting of loose to very loose sand, gravel, cobbles, and boulders including occasional debris formed a blanket over the slope.

At the sloping terrain located south and west of the existing house, the slopes were generally uniform in gradient and covered with forest litter and colluvium consisting of dry, light brownish grey sand and gravel that was inferred to be loose. From the soil exposures adjacent to the landslide path, this forest litter and colluvium was noted to be underlain by the aforementioned slightly cemented sand and gravel.

On the hill slope located adjacent to the north side of the landslide area, soil exposures estimated to be greater than 10 feet tall were observed across a portion of the upper elevation slope area. The soil stratigraphy generally consisted of the forest litter and weathered sand and gravel with organics overlying the slightly cemented sand and gravel which in turn was found to be overlying a light brownish grey till. The till consisted of a moist to dry silty sand to sandy silt with varying amounts of gravel, cobbles and boulders which were matrix-supported and of mixed lithology. The till contact surface was noted to slope down towards the south and the thickness of the overlying slightly cemented sand and gravel increased towards the south. Measurements of these soil exposures were not carried out during our site visit due to safety considerations of being directly below areas of active rockfall and detachment of materials from the steep soil exposures.

With the exception of the moist soil conditions at the till exposure located north of the subject property, no ground water discharge or surface water flow was noted during our site visits. It is estimated that surface water that infiltrates into the ground may be locally perched on the till contact surface. Thus, till exposures on the hillslope would appear moist and locally have dispersed ground water discharge especially during and after periods of wet weather.

As noted above, the presence of active rockfall and detachment of materials from the steep soil exposures was observed. The loose to very loose colluvium at mid to lower elevation areas of the landslide path were also sources of rockfall when disturbed. With the exception of the steep soil slopes and loose colluvium at and adjacent to the landslide path, existing or potential landslide activity was not observed other areas (eg generally restricted to forested areas). More specifically, no indicator signs of slope instability such as tension cracks, settlement cracks, jackstrawed trees, or other landslide scars were noted.

The forested areas of the subject property have generally vertical tree growth on a uniform slope. At mid to upper elevation slope areas and particularly at areas directly south and downslope of the existing house footprint, root flare at the bases of the trees was typically not visible; thus indicating soil or fill has deposited around the base of these trees and therefore erosion of material and accumulation of colluvium is an ongoing process indicative of marginally stable surficial soil conditions. Isolated pistol butted trees were noted within the south, forested terrain; however, these trees were not considered reliable indicator signs of local or global slope instability as their curved tree growth may be attributed to other, non-geotechnical causes.

Subsequently, we have received photographs of the toe of the southwest slope within property at 552 Palisade Drive. It appears that the lower portion of this slope was excavated for the construction of the existing property. The cut slope is steep, poorly vegetated, and actively eroding; additionally trees at the crest appear to be pistol butt.



6.0 SLOPE STABILITY ANALYSIS

6.1 General

A commercially available limit equilibrium slope stability analysis program (Slope/W Version 7.20, Build 5033 by Geo-Slope International) was used to carry out the analysis for this project under both static and design seismic ground conditions. The Morgenstern-Price method of analysis was used to determine stability of potential failure and design slip surfaces.

For the purpose of communicating the comparative stability of a slope, a Factor of Safety may be determined for a given slope condition. A Factor of Safety is based on the ratio of resisting forces to driving forces, where the resisting forces help to stabilize a slope and the driving forces contribute to instability. A Factor of Safety greater than 1.0 would indicate that the slope is more likely to be stable, while a Factor of Safety less than 1.0 would indicate that the slope is likely to be unstable.

The District of North Vancouver has published the following information regarding "Natural Hazards Risk Tolerance Criteria" (File: 11.5225.00/000.000; dated November 10, 2009):

- i) For re-developments involving an increase to gross floor area on the property of less than or equal to 25%:
 - a) under static conditions the slope stability Factor of Safety must be greater than 1.3; and
 - b) under non-static conditions (e.g. for earthquake ground motions) the slope stability Factor of Safety must be greater than 1.0 or predicted ground displacement must be less than 0.15 metre with a 1:475 annual chance of exceedance.
- ii) For new developments and for re-developments involving an increase to gross floor area on the property of greater than 25%:
 - a) under static conditions the slope stability Factor of Safety must be greater than 1.5; and
 - b) under non-static conditions (e.g. for earthquake ground motions) the slope stability Factor of Safety must be greater than 1.0 or predicted ground displacement must be less than 0.15 metre with a 1:2,475 annual chance of exceedance.

Based on the information provided, the proposed development would be categorized as a new development. Therefore, the analysis would be based on a minimum slope stability Factor of Safety of 1.5 under static conditions and either a minimum Factor of Safety of 1.0 under seismic conditions or with predicted ground displacement of less than 0.15 metre. The design seismic condition would be based on a seismic event with a 1:2,475 annual chance of exceedance, which is a 2% probability of exceedance in 50 years.

6.2 Slope Stability Model

Slope profile C as shown on Figure 4 was used for the slope stability model. The building locations in relation to the slope gradients as shown in slope profiles A and D on Figures 3 and 5 were not considered to have the critical slope stability conditions. More specifically, the building footprints on these southeast and southwest facing slopes are more favourable in terms of global slope



stability than the south facing slope in profile C since the overall slope height is less and the building footprints will be set back farther into the slope. Thus, the global slope stability condition expected at the building foundation as shown in slope profile C would provide the design constraint for slope stability considerations.

The loose surficial soil encountered at ground surface was not considered to be a contributing factor with respect to the slope stability analysis required at the proposed development footprint area. Potential slope instability within the loose surficial soil would be expected to result in shallow landslide events of localized extent and would not be the failure mechanism that would be the design constraint for the proposed pile-supported development. Therefore, the soil stratigraphy used in the slope stability model was simplified into a single soil layer that represented the natural, undisturbed, dense sand and gravel with matrix-supported cobbles and boulders as observed in soil exposures below the site. Soil strength parameters based on a linear Mohr-Coulomb failure criteria were assigned to this soil type.

A sensitivity analysis of the soil strength properties of this stratum and estimated groundwater conditions was carried out as part of the model calibration process. It should be noted, that soil strength properties that may be attributed to "apparent cohesion" from effects such as matric suction, root mass cohesion, aging, or cementation are difficult to accurately quantify, may vary with time and location, and are thus excluded from the computer model when considering long term slope stability conditions.

However, because of these phenomena, it should be understood that apparent cohesion allows cohesionless soil types, such as sand and gravel, to form steep slope gradients (such as those observed at site) at angles greater than what would be limited by only the internal angle of friction of the material. It should also be understood that this zone of increased soil strength is generally limited to comparatively shallow soil depths and may be expected to govern only surficial and shallow slope stability conditions.

A dense till layer as observed on the neighbouring slope to the north may be expected at depth; however, the slope stability model conservatively does not include a till layer since there is no site-specific data to reliably quantify the contact surface geometry and in-situ strength properties of this soil type.

Based on the observed site conditions, published literature, and our local experience with the surficial geology for similar projects, an angle of internal friction of 38 degrees was assigned to the subject stratum comprising natural, undisturbed, dense sand and gravel with matrix-supported cobbles and boulders the soil parameters. A unit weight of 19 kN/m^3 (121 pcf) was used within the model for this stratum.

Perched groundwater conditions would be expected at the interface between the loose surficial soil and underlying dense soil types. This perched groundwater may be associated with surface water infiltration and would be expected to vary seasonally. It should be noted that no direct measurements or site specific data of the phreatic surface were available at the time of publishing this report. Therefore, the groundwater surface was estimated based on the slope geometry, site geology, and observed site conditions in conjunction with our local experience. The local ground water table may be at depths of several metres near the slope crest but shallower towards lower slope areas. For the purpose of the slope stability model, the groundwater surface was considered to be at considerable depth and beyond the areas of interest for this analysis.



It is judged that the stability of the lower portion of the southwest slope within property 552 Palisade Drive will not be impacted by the proposed development, hence, slope stability analyses have not been completed for this portion of the slope. However, the stability of the toe cut on this property is likely marginal and assessment by professionals retained by the downslope property owner is judged to be warranted.

6.3 Static Condition Analysis

Both shallow and deep seated failure surfaces were investigated as part of this slope stability analysis. Small, localized, shallow surficial failures generated in the computer model were excluded from this analysis since the model represented a simplified slope geometry and subsurface geology of the overall slope.

For the proposed development, potential slip surfaces that may intersect the building footprint were found to have Factors of Safety of less than 1.5. From the computer analyses, a design slip surface with a slope stability Factor of Safety of 1.5 was determined, as shown on Figure 6, attached. The design slip surface is approximately linear and intercepts the building footprint at depths greater than 25 feet below current grades. This indicates that, in order to provide the required Factor of Safety against a global slope failure at the subject house, foundations will need to extend below this slip surface and be designed to resist lateral forces associated with seismic inertial response of the building and some mass of soil above this slip surface. We note that construction of the proposed house will result in removal of significant volumes of soil at the slope crest, thereby increasing the slope stability. This soil removal has been considered within the subject model.

6.4 Seismic Condition Analysis

In accordance with the District of North Vancouver's Natural Hazards Risk Tolerance Criteria, the peak ground acceleration for a design seismic event used in this slope stability analysis was based on a 2% probability of exceedance in 50 years. The seismic acceleration value is provided in Section 3.3 of this document.

Potential slip surfaces that may intersect the proposed building footprint were found to have a Factor of Safety of less than 1.0 when the seismic acceleration was applied.

Since the proposed development footprint was found to have potential slip surfaces with a Factor of Safety of less than 1.0, seismic slope displacement analysis was carried out based on the Guidelines for Legislated Landslide Assessments for Proposed Residential Developments in BC (Association of Professional Engineers and Geoscientists of British Columbia, Revised May 2010). Based on the design slip surface determined under static conditions as previously described, a yield acceleration that corresponded with the seismic acceleration value to result in a Factor of Safety of 1.0 was found to be 0.2g. The estimated slope displacement along the design slip surface using this yield acceleration was found to be 0.12 metre which is less than aforementioned Natural Hazards Risk Tolerance Criteria maximum allowable ground displacement of 0.15 metre.



6.5 Tree Removal

Based on the aforementioned arborist report, the following trees are recommended for removal.

Table 2: Proposed Tree Removal

Tree No.	Arborist Recommendation
2	Remove for hazard tree mitigation.
6	Option to remove for hazard tree mitigation.
10	Option to remove.
11	Remove for hazard tree mitigation.
16	Remove for hazard tree mitigation.
17	Remove for development.
18	Remove for development.
19	Remove for hazard tree mitigation.
20	Remove for hazard tree mitigation.
21	Remove for hazard tree mitigation.
25	Option to remove.
26	Remove for hazard tree mitigation.
27	Remove for development.
30	Option to remove.
43	Remove for hazard tree mitigation.
44	Remove for hazard tree mitigation.
45	Remove for development.
47	Remove for development.
48	Remove for hazard tree mitigation.
49	Remove for development.
50	Option to remove for fire hazard mitigation.

Based on available information and our field observations, all of the above noted trees are located near the crest of the slope and expected to have roots extending within the previously described loose surficial soils. Based on the expected subsurface conditions, results from our slope stability analyses, and the slope conditions at the proposed tree removal locations, it is our opinion that the stability of the slope will not be negatively impacted by the pruning and removal of select trees; it is expected to result in increased understorey, which will have positive effect on surficial stability.

However, as the existing understorey is minimal, the existing canopy does provide some erosion protection which should be preserved until earthworks are complete and the stormwater system has been suitably commissioned. Additionally, it is recommended that roots for the subject trees not be removed. In general, removal of the above noted trees is not expected to impact the permanent slope stability of the proposed development or adjacent areas.



7.0 CONCLUSIONS and DISCUSSION

7.1 General

Based on the site assessments, slope stability analysis results, and our experience with similar projects, it is concluded that the site is considered suitable for the proposed development as described in this report and that the District of North Vancouver's RARO will be satisfied provided the recommendations contained in this report are implemented into the project design and construction. It is also concluded that the District of North Vancouver's Natural Hazards Risk Tolerance Criteria for new developments will be satisfied with respect to the proposed development. Therefore, as required by Community Charter Section 56, it is our professional opinion that the land may be used safely for the use intended where "safe" is defined as satisfying the District of North Vancouver's Natural Hazards Risk Tolerance Criteria.

The landslide event on the subject property in addition to the active ravelling present on the southeast portion of the site and at the neighbouring slope to the north indicate the natural hill slope conditions may be susceptible to future landslide events if appropriate slope stability management practices are not implemented. Therefore, 'best practice' recommendations for slope stability management are provided in this report and should be implemented at the subject property to reduce the potential for future landslide events. With regards to the southwest slope, slope stability is judged to be primarily governed by off-slope geometry and not impacted by the proposed development.

This published surficial geology information for the area encompassing the subject site is considered to be consistent with our observations at the site and our local experience. The surficial soil types at the subject property are expected to comprise comparatively dense soil conditions which would typically be considered suitable for supporting similar residential developments on development sites with little to no topographic relief. However, the foundation design for the subject property is governed by slope stability as opposed to bearing capacity requirements.

Based on our analysis, a design slip surface which satisfies the District of North Vancouver's Natural Hazards Risk Tolerance Criteria can be described as a plane with an inclination of 1.0 vertical to 2.0 horizontal, or approximately 26.5 degrees, as measured from the toe of the slope. For the proposed house and garage structures, the toe of slope is with reference to the south facing portion of the hillslope with the largest elevation difference up to the subject property. For the proposed deck and retaining walls over the landslide path, the toe of slope is with reference to the southeast facing portion of the hillslope. Therefore, foundation structures are to be seated at or below the design slip surface as conceptually shown on Figure 6, attached. The required depths from the lowest floor elevation of the structures to the design slip surface would exclude shallow foundation structures as a practicable design. Thus, the use of deep foundations will be required.

For deep foundations at the subject property, the presence of cobbles and boulders in the surficial soil types would be an installation consideration. Large diameter drilled piles or driven pile systems are not recommended due to constraints associated with access for large equipment and ground vibrations that could adversely impact the slope stability including of neighbouring properties. It is recommended that the deep foundations consist of mini pipe piles installed using comparatively small footprint, track-mounted drilling equipment. Helical piles are not recommended for the expected ground conditions due to limited penetration capability in the compact to dense granular soil conditions, potential effective refusal above the required design elevations and limited shear



and bending moment capacity. Small diameter, self-boring micropiles, such as hollow bar anchor systems, are not recommended for the vertical foundation supports due to potential alignment deviation at cobble and boulder obstructions. The recommended piles should consist of steel pipe piles installed into pre-drilled and possibly cased holes to the required depths.

Details of pile types and connection details will be provided at the time of Building Permit application by the Structural Engineer for this project. We have received detailed structural loads and pipe layout from the structural engineer, including factored loads at Ultimate Limit States (ULS) for seismic loading conditions, as well as Serviceability Limit States (SLS) loading conditions. The minimum required bond length for each pile was then estimated in order to meet the factored ULS loads. The unbonded lengths of the piles were determined based on a design slip surface extending at 1 Vertical : 2 Horizontal from the toe of the slope. An ultimate bond stress of 6 kips has been used for estimation of bond lengths. This should be verified on site by tension tests on minimum 3 sacrificial anchors (10 feet minimum bond lengths). Three additional pipe piles are recommended to be installed and left accessible and without interior grout to allow for post seismic deformation assessment via camera and/or with slope inclinometers.

The resulting pile design will include for:

- foundation support of the proposed house and garage buildings,
- retaining wall to provide lateral support of the side slope of the landslide area adjacent to neighbouring property to the north,
- retaining wall to provide lateral support of the existing mortared rock retaining wall adjacent to the west portion of the north property line, and
- foundation support of the lawn terrace structure.

7.2 Remedial Action Requirement Order

The District of North Vancouver's 2009 Landslide Risk Assessment classified the subject property as Broadly Acceptable; however, a landslide event that occurred circa 2010 to early 2011 resulted in unsafe conditions that required remediation and which eventually triggered the District of North Vancouver to issue a Remedial Action Requirement Order (RARO). The items of the RARO are listed as follows:

- a) Demolish and remove the existing garage on the Property or redesign/reconstruct it in accordance with a plan approved by the Chief Building Official;
- b) Restore the Property to a safe condition to the satisfaction of the Chief Building Official;
- c) Submit a plan to address and remediate the unsafe garage structure on the Property (The "Remediation Plan"), acceptable to the District's Chief Building Official and prepared by a Qualified Professional retained by the Owners, by no later than September 3, 2013, with such plan to address re-vegetation for slope stability and storm water management; and,
- d) Submit a report by a Qualified Professional, prior to any remedial work being commenced on the Property, certifying that the house foundation is secure and the building is fit for the purpose intended.



The former property owner implemented item a) in the RARO by demolishing the garage and transporting the demolition debris off-site for disposal. During this demolition work, temporary slope stabilization works consisting of re-grading the upper portion of the headscarp and installation of a wooden barrier at the toe of the slope were implemented. The temporary wooden barrier was intended to restrict rockfall runout during earth works from impacting the public-use trail area adjacent to the toe of the slope. It is understood that the second phase of this slope stabilization work was intended but was not implemented; thus, there are outstanding items requiring completion for the RARO.

With respect to items b), c), and d) in the RARO, it is envisaged that the term "safe" pertains to residences and is per the District of North Vancouver's Natural Hazards Risk Tolerance Criteria as previously discussed in Section 5.1 of this report. Furthermore, details and recommendations to address items b), c), and d) in the RARO are provided in this report. A summary of these recommendations specific to addressing the outstanding items in the RARO is discussed as follows.

The area of the former unsafe garage is to be re-sloped to remove the remaining steep soil exposure in conjunction with construction of retaining walls to laterally support the north slope located adjacent to the easement proximate to the common property line with 520 Alpine Court. A pile-supported suspended slab supporting a lawn terrace over the landslide footprint within the subject property will provide erosion protection to the headscarp area in addition to a safe and usable yard area. A deep foundation system consisting of a suspended slab supported on piles would be used to transfer the loads from the deck and retaining walls down to depths that do not adversely impact the stability of the slope and which satisfy the District of North Vancouver's Natural Hazards Risk Tolerance Criteria.

A drainage system would be present on top of the suspended slab to collect and transport intercepted surface water away from the landslide path for slope stability management purposes. Geofoam, which is a light weight polystyrene construction material, would be used as part of the fill materials to raise grade from the suspended slab to the design lawn elevation.

A combination of "hung" walls and concrete retaining walls would be used at areas below and above the suspended slab elevation, respectively, along the east and south sides of the lawn terrace. Backfill against the north concrete retaining wall to support the slope adjacent to the northeast property line and easement would consist of Engineered Fill as defined in this report.

At the landslide path, the exposed soil conditions and slope geometry are not suitable for re-vegetation due to on-going ravelling of the loose soil and debris. Ravelling and potential detachment of loose materials from the steep segments of the landslide path are natural processes that are expected to continue until the slope geometry has reached a long-term stable angle, such as the material's "angle of repose".

It is not practicable to re-grade this area to its angle of repose without encroaching into the Alpine Court cul-de-sac. Construction of a rockfall barrier or other similar retention structure at the upper slope area of this landslide path is neither practicable nor effective for its intended purpose. Therefore, a strategy intended to reduce the surface ravelling along the steep areas of the landslide path would be more practicable and effective.



In an effort to manage the ravelling and potential rockfall hazard, it is recommended that a draped rock mesh system be installed over the loose soil and steep landslide path within the subject property. This rock mesh would be attached to the foundations for the proposed house and/or lawn terrace structures and would serve to attenuate the initiation and initial velocity of ravelled materials from the on-site crest area.

The existing house is to be demolished and a new structure will be constructed with foundation structures that are seated at depths that will satisfy the District of North Vancouver's Risk Tolerance Criteria for slope stability requirements. Furthermore, a new storm water management system would be designed and constructed to collect water from the roof and hard surfaced landscaping and transport the water to a suitable in-ground disposal system at the toe of the slope within District of North Vancouver property. It is understood that the District of North Vancouver is agreeable with this transport and in-ground disposal system off the subject property as part of the slope stability management strategy.

8.0 RECOMMENDATIONS

The following sections of this report provide recommendations for:

- 8.1 Slope Stability Management,
- 8.2 Site Preparation,
- 8.3 Temporary Excavation Slopes,
- 8.4 Deep Foundations,
- 8.5 Fill Materials,
- 8.6 Lateral Earth Pressures on Basement and Retaining Walls,
- 8.7 Foundation Drainage,
- 8.8 Stormwater Management
- 8.9 Landslide Headscarp Stability Improvement - Deck and Walls

8.1 Slope Stability Management

The following recommendations are provided with respect to maintaining the stability of the slope on the subject property and to reduce the potential for triggering future landslide events:

- no additional surcharge loads, such as fill, retaining walls, or other structures, should be placed on the slope without suitable engineering recommendations regarding slope stability;
- landscaping waste material (eg garden debris) is not to be disposed of on or adjacent to the sloping terrain;
- collected water from the house and hard landscaping areas is to be discharged into the storm water disposal system;
- concentrated surface water should be prevented from flowing onto the sloping terrain and where surface water is required to discharge onto sloping terrain, the discharge location is to be designed with suitable erosion control measures to prevent slope deterioration or destabilization of the surficial soil;



- vegetation on the slope should be retained and enhanced where possible in an effort to reduce surface erosion and soil ravelling;
- where exposed soil slopes are present, erosion protection may comprise re-establishing the vegetation cover where feasible, or installation of a draped rock mesh;
- the existing slope geometry should not be steepened;
- excavation work on or at the toe of the slope should not be carried out without prior review and recommendations from a geotechnical engineer; and,
- at the location of the existing landslide path, access should be restricted as disturbance to the loose surficial soil should be expected to result in erosion and ravelling.
- no additional excavation or alterations to the existing slope geometry or tree removal should be completed without prior review and recommendations from a geotechnical engineer; and,
- tree roots should be retained on areas of tree removal proposed as part of this development to reduce the potential for soil erosion.
- vegetation cover should be enhanced but local sprinkling should be by the drip method only.

Should there be any observed signs of ground movement such as settlement or tension cracks, these areas should be immediately reviewed by a qualified professional engineer.

8.2 Site Preparation

Prior to mobilization of construction workers or equipment to the site, it is recommended that pre-construction assessments of adjacent properties be carried out.

We recommend that pre-construction measures be incorporated for the improvement of local surficial stability of the slope conditions on the east portion of the site. We recommend that the existing slope be protected by the installation of hexagonal double-twist wire mesh and the application of a skim coat.

In addition, we recommend the construction of a temporary Lock Block wall along the toe of the southeast slope and the construction of a protection fence along the south, east and southwest property lines, with the purpose of capturing any debris falling during construction.

Details of the preconstruction mitigation measures are shown in Figure 10, attached following the text of this document. Detailed construction, staging and excavation shoring design drawings will be presented by Horizon Engineering under separate cover.



8.3 Temporary Excavation Slopes

Where there is sufficient room between the toe of the excavation and the nearest property line, it is recommended that unshored excavation slopes that are less than 20 feet tall and situated above the local groundwater level, be no steeper than 1.0 vertical to 1.0 horizontal in the loose fill and weathered soil conditions and no steeper than 4.0 vertical to 3.0 horizontal in the compact to dense soil conditions. For the proposed development, it is envisaged that temporary excavation depths will be in the order of 25 feet upslope of the development and there will not be sufficient room relative to the property line to accommodate a sloped excavation; therefore, temporary excavation support will be required. It is envisaged that tied-back, reinforced shotcrete and anchors will be practicable. An excavation shoring design will be prepared under separate cover and submitted to support the Building Permit Application.

It is recommended that excavated spoil and construction materials be stockpiled no closer than the greater horizontal distance of 6 feet or a distance equal to the excavation depth. Where surcharge loads, such as crane pads, construction materials, and vehicle traffic, are required to be placed closer to excavation slopes or shoring than the above-recommended set back distances, the excavation or shoring system should be designed to accommodate these loading conditions.

Grade adjacent to an excavation should be sloped to direct surface runoff away from the excavation slopes. Alternatively, any surface water should be controlled such that it does not discharge over the crest into the excavation. We recommend that improvement of local surficial stability of the east slope with hexagonal double-twist wire mesh and skim coat, and the construction of a trench system with the purpose of collecting and discharging surface runoff.

Unshored excavation slopes in soil should be protected by a layer of 6 mil polyethylene sheeting securely attached to the ground.

Excavations may be expected to encounter perched groundwater discharge. We envisage that the groundwater discharge could be controlled using conventional trenches, sumps and pumping as opposed to using well-points to de-water or lower the ground water levels. Groundwater discharge during construction should be captured and discharged into the erosion and sediment control system. The in-situ conditions associated with groundwater discharge in the excavation should be reviewed by the Geotechnical Engineer of Record and recommendations for stable excavation slope geometries may need to be adjusted accordingly.

Excavations deeper than 4 feet should be reviewed by the Geotechnical Engineer of Record to confirm the slope conditions. Therefore, the Geotechnical Engineer of Record should be provided with opportunities to review the soil and groundwater conditions encountered during excavation to confirm the suitability of the ground conditions with respect to excavation slope stability.

It is estimated that most of the materials encountered at the soil exposures could be excavated using conventional hydraulic excavation equipment in good repair. It is possible that large boulders may be encountered which may require splitting for removal. It is common that boulders with a volume in excess of 35 cubic feet be defined as "rock" for contractual purposes and typically the volumes of boulders are quantified (i.e. measured / surveyed) by the owner, or owner's agent.



8.4 Deep Foundations

As previously discussed, deep foundations consisting of mini pipe piles are recommended to be installed to support the proposed structures. Settlement of structures supported on piles installed into the natural, undisturbed, dense soil located below the design slip surface elevations it is expected to be negligible. It is recommended that these mini pipe piles consist of minimum 4 inch diameter, corrosion protected, steel pipe piles or an approved equivalent.

The number, location, steel grade, and design loads of these mini pipe piles was provided by the Structural Engineer for this project. The connection details between the piles and building have also been provided by the Structural Engineer. The Geotechnical Engineer will specify embedment lengths, to be presented under separate cover.

The geotechnical capacity of a mini pipe pile is determined by the frictional resistance of the grouted or bonded length that is within suitable bearing materials below the design slip surface. The suitable bearing material is expected to consist of natural, undisturbed, dense sand and gravel with cobbles and boulders. There are also other factors that influence the soil-grout bond strength including the methods of drilling, drilling equipment and installation operations. In this regard, it is assumed that a contractor with suitable experience and equipment will be carrying out the drilling and pile installation work.

Based on our experience with similar soil types and ground conditions, it is recommended that the bond length for each micropile be calculated based on a presumptive transfer load of 2 kip/ft under Serviceability Limits States design. For example, an axial design load of 10 kips would require a minimum bond length of 20 feet below the slip surface under Serviceability Limits States design. For short term transient loading conditions under Ultimate Limits States design, such as those induced by wind and earthquakes, a transfer load of 6 kip/ft is recommended. The recommended minimum bond lengths for the mini pipe piles will be provided by Horizon Engineering. It is recommended that vertical oriented piles should not be spaced closer than 4 feet-on-centre due to potential installation complications associated with drilling deviation. Inclined piles orientation should consider the proximity to adjacent vertical piles and property lines, and should allow for any deviations during pile installation.

The dense soil conditions expected at depth are considered to be well-suited for mini pipe pile installation. Installation of mini pipe piles is typically carried out by advancing a drill hole into the subsurface and penetrating into the suitable bearing layer to required depths. The required depth for each mini pipe pile is determined based on the design slip surface and bond length as previously discussed in this report. The cuttings expelled from the drilling would provide a visual confirmation of the material in which the pile will be seated. The contractor responsible for mini pipe pile installations should be prepared for drilling in ground conditions that may contain cobbles and boulder.

Drill holes are to be advanced with a straight alignment of either vertical or inclined as will be specified on design drawings where lateral loads are to be supported. The drill hole should be cleaned of any loosened material and free of water at the time of pile installation and grouting. Grout shall consist of a non-shrink cementitious grout with a minimum compressive strength of 3.6 ksi (25 MPa) after 3 days (such as "Microsil" grout supplied by Ocean Construction Supplies) and batched in accordance with the Manufacturer's specifications.



The drill hole diameter should be sized to ensure a minimum 0.5 inch grout cover and centralizers used to centre the mini pipe pile within the drill hole. Grout is to be introduced into the drill hole from the bottom using a tremmie pipe to prevent air pockets from forming in the grout.

In accordance with Section 4.2, Subsection 4.2.2.3(2), of the 2012 edition of the British Columbia Building Code, the installation of the piles should be confirmed on a continuous basis by the designer responsible for their long term performance. Piles cannot be inspected after installation and the quality and capacity of a pile is governed by its installation. Therefore, full-time field reviews during installation of piles is required. If subsurface conditions are not consistent with those expected, the pile design and/or capacity should be adjusted accordingly to reflect the in-situ conditions.

Mini pipe piles have a limited capacity to resist lateral loads. The ability of these piles to resist lateral loads depends on many factors including depth of penetration into the suitable bearing material and how the piles are connected to grade beams (as specified by the structural engineer). Based on information provided by the structural engineer, we understand that inclined piles have been designed to resist the lateral loads, and that the resulting magnitude transferred to the vertical piles will be negligible.

The inclined / battered piles required to resist lateral loads will be loaded in tension and thus function as soil anchors. These soil anchors will be sized to meet the load requirements and the required anchor lengths have been estimated based on the expected subsurface conditions. The design of soil anchors will also address the potential for failure of the ground mass surrounding the anchors in addition to failure of the soil-grout bond.

It is not expected that the installation of the proposed piles will result in impact to the adjacent properties or global slope stability. However, we recommended that a preconstruction assessment of the adjacent structures and hard landscape features be completed as a record of the existing conditions. In addition, we recommend that during construction vibration monitoring be carried out to confirm that the peak particle velocities do not exceed the recommended vibration limits.

8.5 Fill Materials

8.5.1 Re-Use of Excavated Soil

Locally derived material consisting of well-graded sand which is free of any organics, debris, or deleterious material and satisfies the specifications for an Engineered Fill as defined in this report may be considered suitable for re-use as an excavation backfill material.

Fine grained soil types or granular soil with a considerable amount of fine grained soil content are sensitive to moisture and typically not recommended for re-use as Engineered Fill due to the potential difficulty of placement and achieving suitable compaction. Fine grained soil consists of silt to clay sized soil particles. Fine grained soil may be suitable for landscaping purposes and where support of settlement sensitive structures or free draining conditions are not required.

On site material may be re-used as Engineered Fill. Imported fill which is not commercially sourced should be approved by an environmental engineer prior to being brought to site.



8.5.2 Engineered Fill

Within the context of this report, Engineered Fill should consist of select, inert, clean, well-graded granular material with less than 5% fines content by mass, 100% passing a 4 inch sieve designation, and capable of withstanding the effects of handling, spreading, and compaction without excessive degradation or production of deleterious fines. Fine grained soil is defined as particles passing the US #200 sieve (finer than 0.075 mm diameter). The particles should be reasonably uniform in quality and free from organic materials and deleterious matter.

Where settlement sensitive structures are to be supported, Engineered Fill, within 2% of its optimum moisture content for compaction, should be placed in suitable lifts and compacted to the equivalent of at least 100% of its maximum dry density when determined in accordance with ASTM D698 (Standard Proctor).

Field density testing should be carried out on each lift of Engineered Fill placed and compacted.

The Geotechnical Engineer of Record, who is responsible for the long term performance of any settlement sensitive structure supported on Engineered Fill should be provided with the opportunity to review the supplier's specifications, material, and actual compaction level achieved using periodic field density tests.

Density test results should be forwarded to the Geotechnical Engineer of Record for review. Field reviews should also be carried out by the Geotechnical Engineer of Record to confirm that fill placement procedures are satisfactory and density test results are representative.

8.5.3 Backfill

Basement and foundation wall excavation backfill should consist of a free-draining, clear gravel or Engineered Fill as specified in this report in order to limit lateral soil earth pressures. Specific locations of the uses of these backfill types will be specified by Horizon Engineering during construction to suit actual conditions encountered during construction.

It should be noted that even backfills compacted to the strictest criteria may experience post-construction settlement which may vary up to about 0.5% of the total fill thickness. Therefore, any paved areas or hard landscaping spanning across areas with thick fill, such as between the building/backfill and adjacent existing grades, should be designed accordingly.

8.6 **Lateral Earth Pressures**

8.6.1 General

The earth pressure on basement and retaining walls depends on a number of factors including the backfill material, surcharge loads, backfill slope, drainage, rigidity of the retaining wall, and method of construction; including sequence and degree of compaction.



The recommended design earth pressures provided below assume that the area behind the wall is horizontal, fully drained, and no adjacent structures or surcharges are situated within a distance of 1.0 vertical to 2.0 horizontal from the base of the wall. If it is not possible to provide drainage behind the wall, then hydrostatic pressures must be assumed to act on the wall and these hydrostatic pressures would be additive to the static design earth pressures. If the area behind the wall is sloping, the lateral earth pressure against the wall would be greater than the recommendations provided in this report and should be adjusted accordingly for the design geometry.

8.6.2 Static Design

For basement and retaining walls that will be backfilled with granular material such as sand and gravel that is lightly tamped and that can move 0.2% of the wall height, then locally, the condition is presumed to be unrestrained. Therefore, it is recommended that the wall be designed on the basis of a $30 \times h$ (psf) triangular earth pressure distribution, where h is the distance from the top of the wall measured in feet.

In the circumstance that the backfill will be required to support settlement-sensitive structures, these backfill areas would require compacting. In this circumstance, a compaction earth pressure of 400 psf uniform pressure distribution should be used in the top approximate 13.5 feet. At depths greater than 13.5 feet, the aforementioned triangular earth pressure distribution should be used.

8.6.3 Seismic Design

For seismic loading conditions, the effect of earthquake shaking can be assumed to add an additional triangular pressure to the top of the wall, decreasing to zero at the base of the wall. Based on the Mononobe-Okabe method (Mononobe and Matsuo, 1929; Okabe, 1924), the seismic surcharge pressure can be assumed to be $16.4 \times (H-h)$ (psf), where h is the distance from the top of the wall and H is the total wall height, both measured in feet. This seismic lateral earth pressure distribution is based on the peak, horizontal, firm ground acceleration for a design seismic event with a 2% probability of exceedance in 50 years.

Although the Mononobe-Okabe method is recommended in the 4th edition of the Canadian Foundation Engineering Manual (2006), the equations do not account for the stiffness of the structure nor the soil-structure interaction. If a more accurate determination of seismic earth pressure is required, more rigorous analytical methods such as finite element analysis to account for soil-structure interaction should be carried out. We would be pleased to provide additional information regarding this type of engineering service if requested.

Seismic lateral earth pressures are not added at depths where the recommended static lateral earth pressure is governed by the compaction earth pressure.

8.7 Foundation Drainage

It is recommended that a 4 inch diameter, rigid, perforated, PVC pipe be placed around the perimeter of the below grade building. The maximum invert elevation of the drain pipe should be at least 4 inches below the elevation of the underside of the basement slab. The pipes should be bedded on and surrounded by a minimum of 6 inches of 3/4 inch clear crushed gravel. The



crushed gravel should be covered with a layer of non-woven geotextile filter fabric (Nilex 4545, or an approved equivalent) prior to placing backfill as previously described.

In addition, we recommend the construction of a hydraulic barrier for the purpose of forcing the collected groundwater to run into the perforated pipe and prevent water from running downslope. The perforated pipe will be directed to a solid pipe in turn connected to the stormwater management system.

8.8 Stormwater Management

It is proposed to direct groundwater intercepted by perimeter foundation drains, including from retaining walls as well as rainwater intercepted from roofs, driveway, decks and lawn terrace areas to a stormwater dispersal field at the toe of the slope south of the subject property. The location envisaged for this field is north of the trail accessing the Mosquito Park Trail from the east terminus of Palisade Drive. Existing boulders dumped in this area would require removal.

Stormwater would be conducted down the slope below the proposed residence in a solid pipe securely staked to the ground surface. The pipe will be secured to the ground surface by stakes driven into the ground, and protected against falling debris with gravel sandbags on either side. Excavation of a trench is not recommended. Details of the staking and protection of the pipe are included in Figure 10, following the text of this document. The pipe alignment has been provided by the professional arborist.

This pipe will be connected to an energy dissipation sump in turn connected to an infiltration field. There is currently a 4 inch diameter PVC pipe which appears to drain the east end of a shallow ditch at the north side of the above-noted Palisade trail, likely to Mosquito Creek. It is envisaged that this pipe would provide suitable overflow capacity for the subject infiltration trench. Details regarding the proposed stormwater management system are presented under separate cover.

As a breach of this conveyance pipe could negatively impact surficial slope stability, it is recommended that the condition of the pipe be assessed annually to ensure that it has not been impacted by fallen trees, become distorted due to surficial soil creep or otherwise had its integrity compromised or made vulnerable.

8.9 Landslide Headscarp Stability Improvement - Deck and Walls

As previously discussed, the slopes adjacent to the landslide at the east portion of the subject property and adjacent to the northeast property line will require stability improvement including and erosion protection measures. A variety of strategies have been considered, and it was concluded that a practicable solution to address the slope stability and erosion control in addition to providing safe and usable landscaped areas on the property would be construction of a pile supported suspended slab and retaining walls. We note that complete stabilization of this area is not practicable.

The deck would extend from the east side of the new house at an elevation of 883.75 feet to a new retaining wall that would be located adjacent to the easement along the northeast property line. As shown in Figure 8, attached, the deck would be constructed on top of a suspended concrete slab and the slab would be at about El. 879.79 feet. As shown in the detail on Figure 8, the slab



would be designed with a 3% slope directed to a trough that would transport collected surface water to the stormwater drainage system for the property.

A minimum 6 inch thick layer of 3/4 inch clear crushed gravel would be placed on the suspended slab to provide a drainage blanket. Light weight fill material consisting of geofabric would be used to raise grade to design elevations for landscaping medium. The gravel drainage blanket would be hydraulically connected to gravel chimney drains installed at the perimeter of the geofabric backfill. On the surface of the geofabric and gravel chimney drains, two layers of non-woven filter fabric would be placed as a filter and separator from the overlying Sechelt Sand and growing medium above. This terrace would appear as a grass lawn at design elevation to provide accessible yard area for the proposed development. It would not be designed to support permanent structures or heavy surcharge loads such as vehicles but it would have to be designed to support snow loads.

As conceptually shown on Figures 8 and 9, the south and east faces of the deck structure would have hanging walls for aesthetic and rain splash erosion protection purposes. These hanging walls would have a tiered geometry and be located within the District of North Vancouver's Maximum Wall Line. The space behind these hanging walls and below the suspended slab would be left as voids. At the areas below the deck and where loose soil is present on a steep slope geometry, a rock mesh drapery system to attenuate raveling and rockfall initiation would be installed as part of the slope stability management strategy.

Along the north side of this deck, a pile supported retaining wall would be constructed adjacent to the easement and northeast property line. This retaining wall would extend above the lawn terrace elevation and Engineered Fill would be placed behind this wall to provide lateral support to the slopes adjacent to the easement area and the neighbouring property at 520 Alpine Court. The slope conditions at this northeast portion of the site may require a layer of lightly reinforced shotcrete in advance of the pile and deck construction works in an effort to temporarily support and/or bind the loose surficial materials in order to minimize raveling down onto the worksite. Other temporary slope stabilization measures may be required and would be determined based on site conditions at the time of construction.

9.0 REVIEWS

It is recommended that Horizon Engineering Inc be provided with the opportunity to review Building Permit Application drawings from the design team including the Architect, Structural Engineer Landscape Architect prior to tender or construction in order that the recommendations in this report can be confirmed or augmented, as required.

In accordance with the 2012 edition of the British Columbia Building Code and the associated *Letters of Assurance* program, the Geotechnical Engineer of Record will be required to perform *Field Reviews* regarding the following items:

Plumbing

4.2 Site and Foundation Drainage



Geotechnical - Temporary

- 7.1 Excavation
- 7.2 Shoring

Geotechnical - Permanent

- 8.1 Bearing capacity of the soil
- 8.2 Geotechnical aspects of deep foundations
- 8.3 Compaction of engineered fill
- 8.4 Structural considerations of soil, including slope stability and seismic loading
- 8.5 Backfill

Where deep foundations are implemented, Horizon Engineering will be required to carry out full-time field reviews during installation in accordance with the British Columbia Building Code's Letters of Assurance program.

Therefore, Horizon Engineering should be given the opportunity to confirm the following geotechnical items during construction:

- 1. preconstruction slope stabilization prior to framing demolition,
- 2. suitability and stability of temporary excavations,
- 3. installation of excavation shoring,
- 4. installation of piles,
- 5. vibration monitoring during piles installation,
- 6. suitability of Engineered Fill and backfill materials including their placement and compaction,
- 7. installation of perimeter, underslab and overslab (at the lawn terrace) drainage,
- 8. installation of the stormwater disposal system, and
- 9. and any other slope stability and/or drainage works.

In addition, density test results for fill materials should be forwarded to us in a timely fashion for our review.

It is the responsibility of the Client to ensure Horizon Engineering is contact to carry out the aforementioned field reviews during construction. The BC Building Code Schedule C-B Letters of Assurance can not be completed without having carried out the required field reviews.



10.0 CLOSURE

This report has been prepared for the sole use of our client, **Mr Harjinder Gupta**, and other consultants for this project, as described. Any use or reproduction of this report for other than the stated intended purpose is prohibited without the written permission of Horizon Engineering Inc.

We are pleased to be of assistance on this project and we trust that our comments and recommendations are both helpful and sufficient for your current purposes. If you would like further details or require additional information of the above, please do not hesitate to contact us.

For
HORIZON ENGINEERING INC

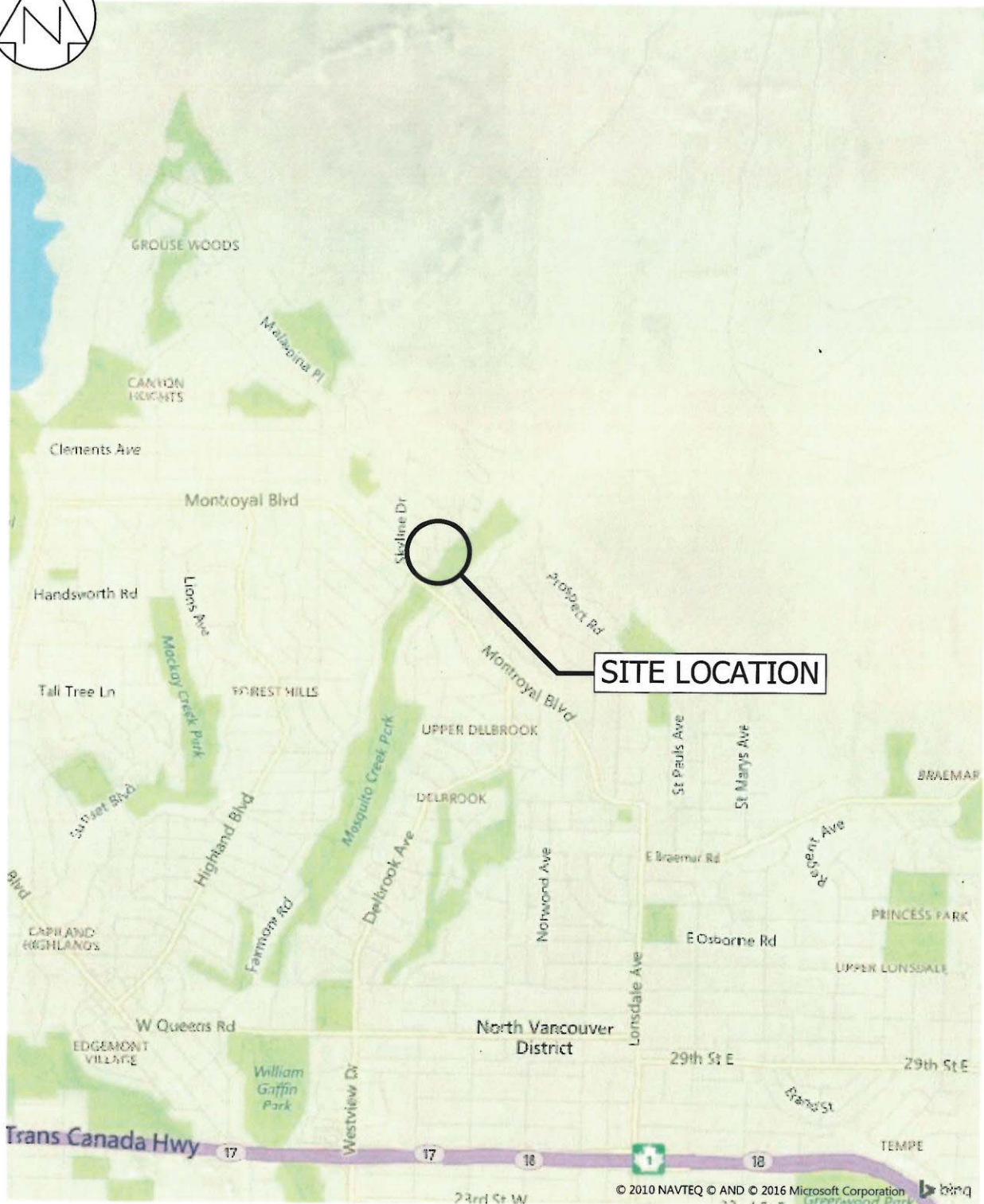
Ann Castellanos, M.Eng., E.I.T
Geotechnical Engineer

For
HORIZON ENGINEERING INC

Karen E. Savage, P.Eng., FEC
President

Attachments:

- Figure 1 - Site Location Plan
- Figure 2 - Topographic Site Plan
- Figure 3 - Slope Profile A
- Figure 4 - Slope Profile C
- Figure 5 - Slope Profile D
- Figure 6 - Slope Stability Analysis Results
- Figure 7 - Conceptual Foundation Design
- Figure 8 - Conceptual Deck and Retaining Walls - Slope Profile D - D
- Figure 9 - Conceptual Deck and Retaining Walls - Slope Profile B1 - B1
- Figure 10 - Perimeter Stabilization Followed by framing demolition



HARJINDER GUPTA
1808 Crawford Rd, North Vancouver, BC

DEVELOPMENT PERMIT APPLICATION
518 Alpine Court, North Vancouver, BC

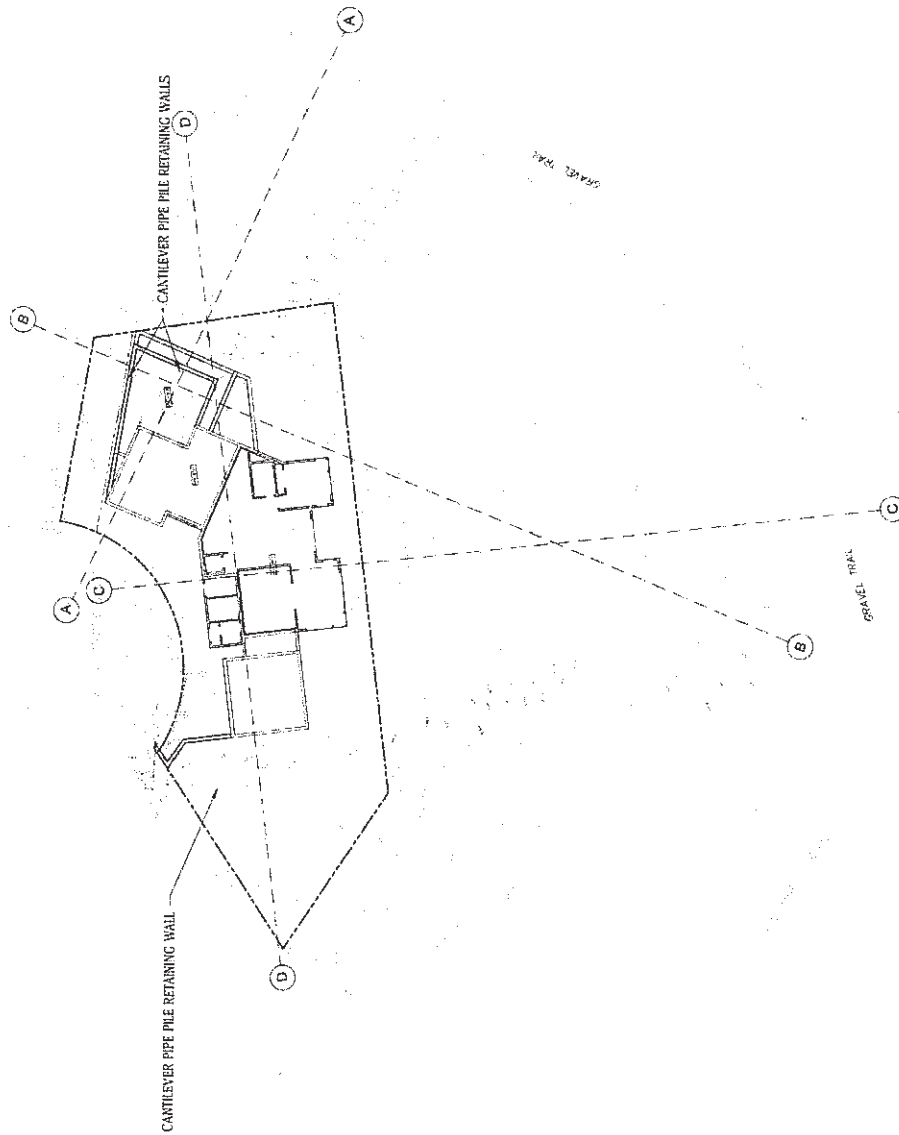
SITE LOCATION PLAN



HORIZON
ENGINEERING INC

Scale:	NTS	Job No:	115-3924	Date:	APR/2016	FIGURE:
Des:	RN	Dwn:	CT	Chk:	KS	Rev:

1



REFERENCE DRAWING
Topographic Site Plan by
Target Land Surveying, dated
12 May 2013
Site Plan and Sections by Alex
Voth Design Consulting, digital
file dated 29 March 2016.

NO	DATE	REVISION
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HARINDER GUPTA
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**DEVELOPMENT PERMIT
APPLICATION**
518 Alpine Court
North Vancouver, BC

**TOPOGRAPHIC
SITE PLAN**

SCALE	DATE
1/32" = 1'-0"	APR/2016
DESIGN	PROJECT
REVISION	CT
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116-3924

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APPLICATION
518 Alpine Court
North Vancouver, BC

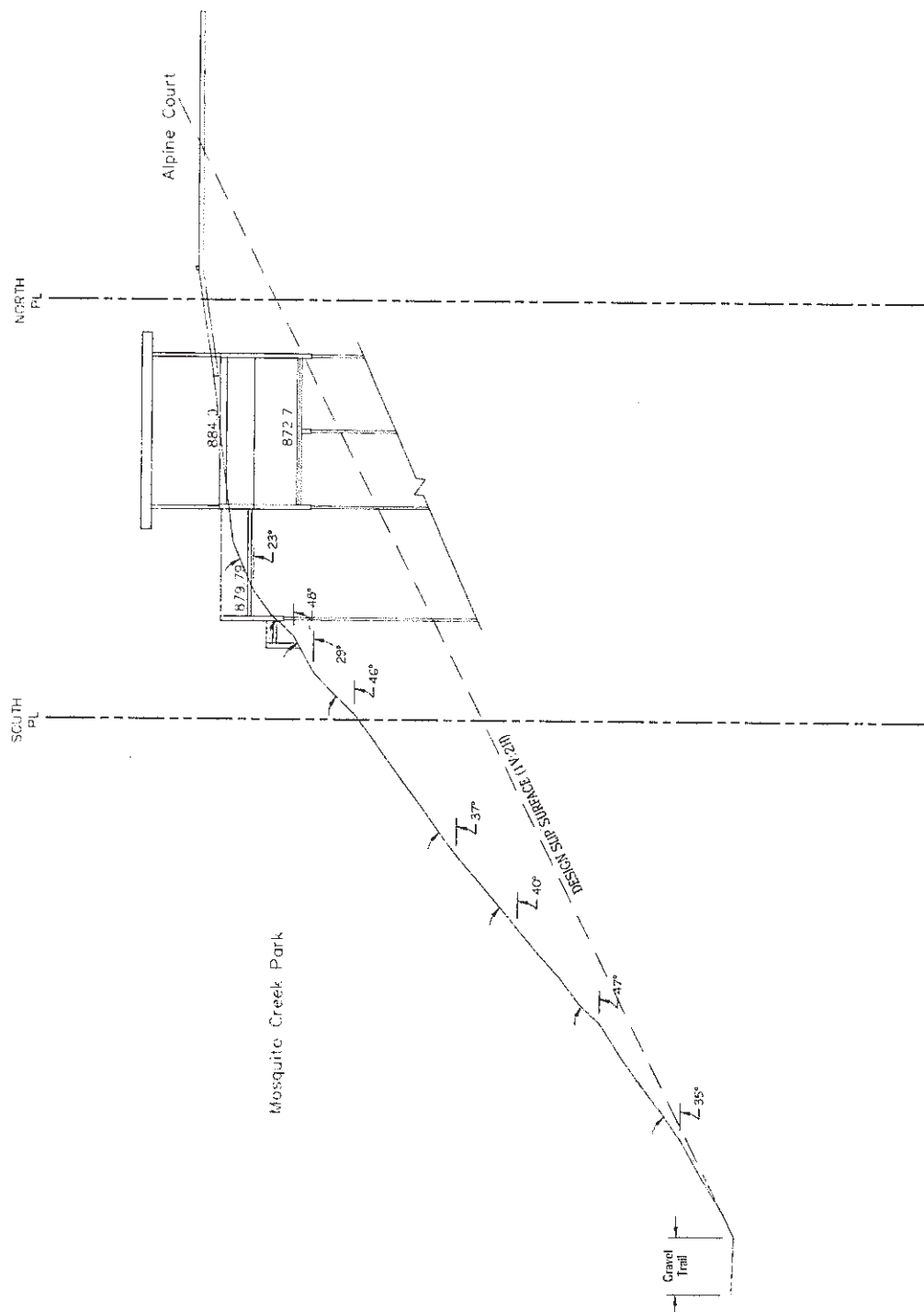
**SLOPE PROFILES
SECTION A**

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Case Number

116-3924



Topographic Site Plan by
Target Land Surveying, dated
12 May 2015.
Site Plan and Sections by Alex
Voth Design Consulting, digital
file dated 29 March 2016.

REFERENCE DRAWINGS

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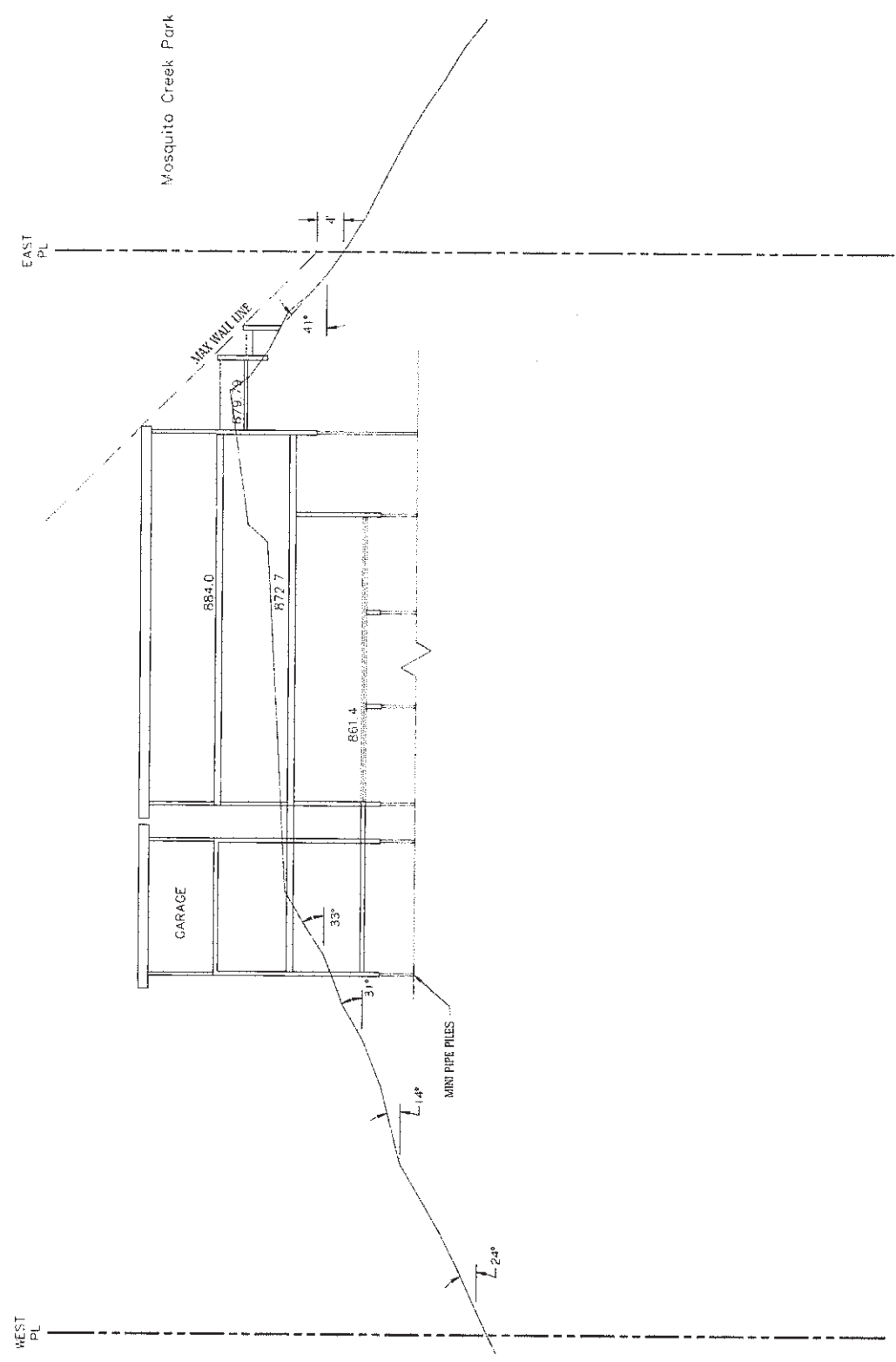
DEVELOPMENT PERMIT
APPLICATION
518 Alpine Court
North Vancouver, BC

SLOPE PROFILES
SECTION D

SCALE	DATE
1/16" = 1'-0"	APR/2016
DESIGN	CHECKED
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116-3924



REFERENCE DRAWINGS
Topographic Site Plan by
Target Land Surveying, dated
12 May 2015.
Site Plan and Sections by Alex
Voth Design Consulting, digital
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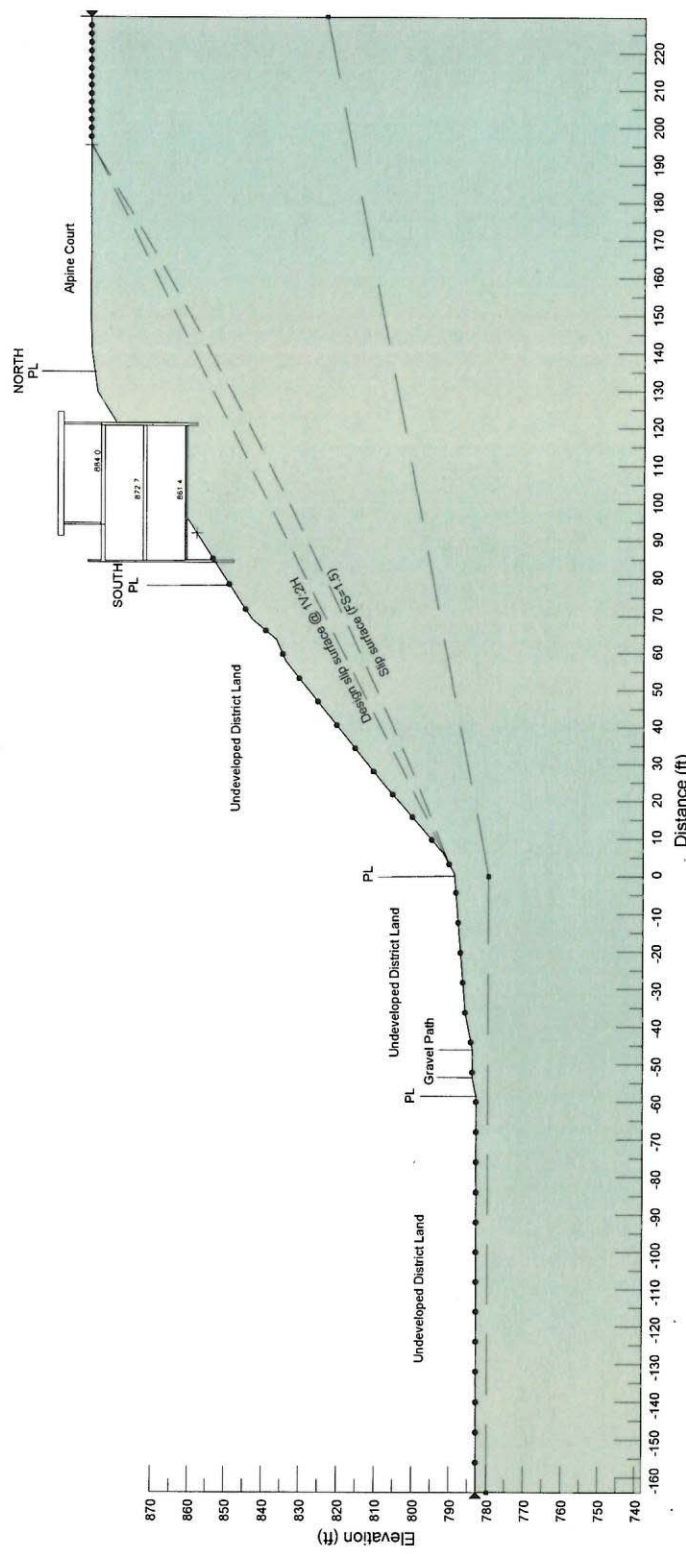
**DEVELOPMENT PERMIT
APPLICATION**
518 Alpine Court
North Vancouver, BC

**SLOPE STABILITY
ANALYSIS RESULTS**

SCALE	DATE
1/32" = 1'-0"	APR/2016
DESIGN	DRAWN
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FIGURE	

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116-3924



SECTION C-C

Topographic Site Plan by
Target Land Surveying, dated
12 May 2015
Site Plan and Sections by Alex
Voth Design Consulting, digital
file dated 29 March 2016.

REFERENCE DRAWINGS

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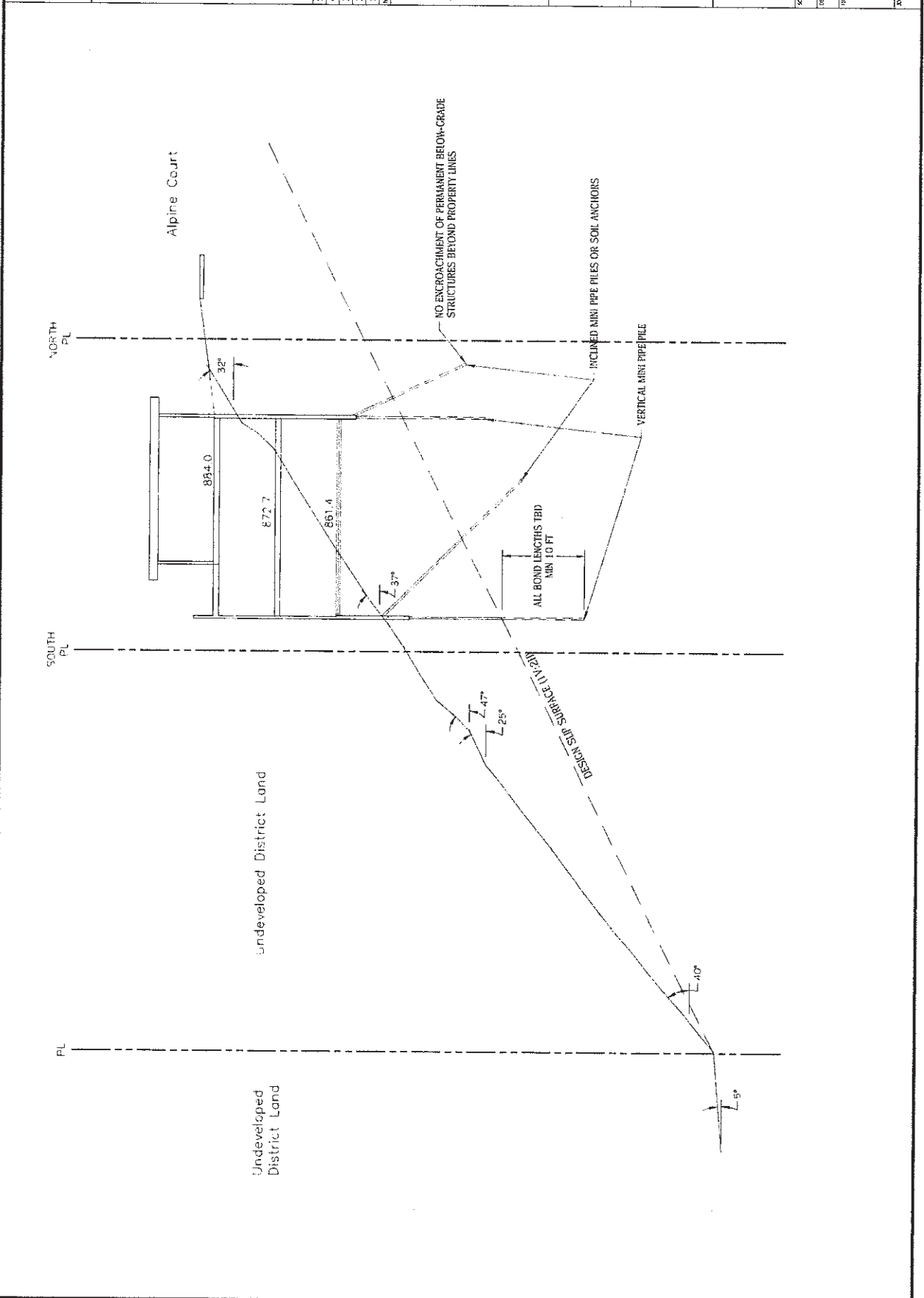
DEVELOPMENT PERMIT
APPLICATION
518 Alpine Court
North Vancouver, BC

CONCEPTUAL
FOUNDATION DESIGN
SECTION C-C

SCALE	DATE
1/16" = 1'-0"	APR/2016
DESIGN	CHECKED
BY	KS
TITLE	

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116-3924



REFERENCE DRAWINGS
 Topographic Site Plan by
 Target Land Surveying, dated
 12 May 2015.
 Site Plan and Sections by Alex
 Voith Design Consulting, digital
 file dated 29 March 2016.

NO.	DATE	REVISION
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HORIZON
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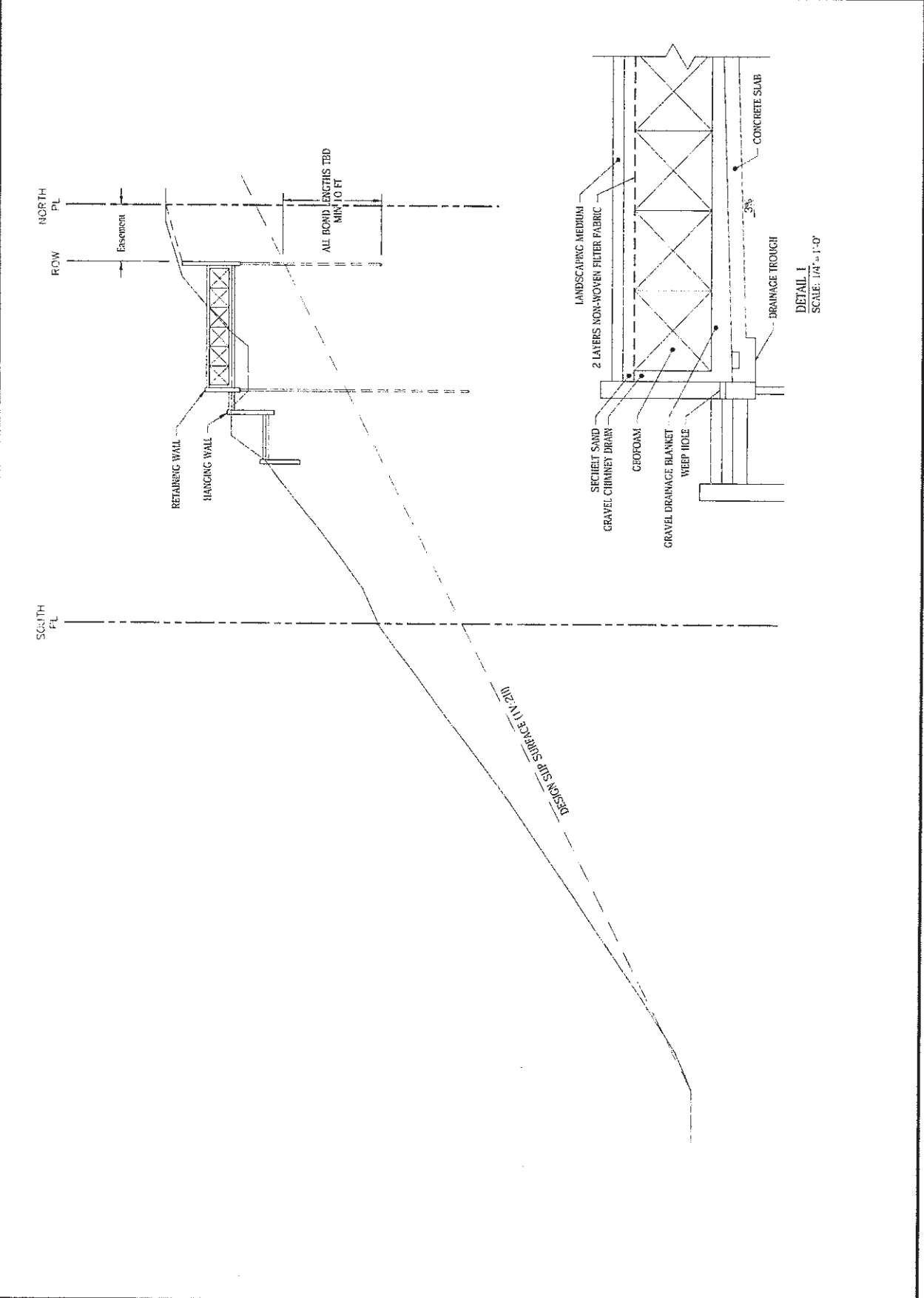
HARJINDER GUPTA
 1808 Crawford Road
 North Vancouver, BC

DEVELOPMENT PERMIT
 APPLICATION
 518 Alpine Court
 North Vancouver, BC

CONCEPTUAL DECK
 AND RETAINING WALLS
 SECTION B-B

SCALE	DATE
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DESIGN	TOWN
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 116-3924



APPENDIX D: LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

Note: This Statement is to be read and completed in conjunction with the "APEGBC Guidelines for Legislated Landslide Assessments for Proposed Residential Development in British Columbia", March 2006/Revised September 2008 ("APEGBC Guidelines") and the "2006 BC Building Code (BCBC 2006)" and is to be provided for *landslide assessments* (not floods or flood controls) for the purposes of the Land Title Act, Community Charter or the Local Government Act. Italicized words are defined in the APEGBC Guidelines.

To: The Approving Authority
District of North Vancouver

Date: July 19, 2016

355 West Queens Road North Vancouver, BC, V7N 4N5

Jurisdiction and address

With reference to (check one):

- ☐ Land Title Act (Section 86) – Subdivision Approval
- ☐ Local Government Act (Sections 919.1 and 920) – Development Permit
- ☒ Community Charter (Section 56) – Building Permit
- ☐ Local Government Act (Section 910) – Flood Plain Bylaw Variance
- ☐ Local Government Act (Section 910) – Flood Plain Bylaw Exemption
- ☐ British Columbia Building Code 2006 sentences 4.1.8.16 (8) and 9.4 4.4.(2) (Refer to BC Building and Safety Policy Branch Information Bulletin B10-01 issued January 18, 2010)

For the Property:

Lot 32, Block C, DL 578, Plan 8399, LTOPID 008-607-371 / 518 Alpine Court, North Vancouver, BC

Legal description and civic address of the Property

The undersigned hereby gives assurance that he/she is a *Qualified Professional* and is a *Professional Engineer* or *Professional Geoscientist*.

I have signed, sealed and dated, and thereby certified, the attached *landslide assessment* report on the Property in accordance with the *APEGBC Guidelines*. That report must be read in conjunction with this Statement. In preparing that report I have:

Check to the left of applicable items

- ☒ 1. Collected and reviewed appropriate background information
- ☒ 2. Reviewed the proposed *residential development* on the Property
- ☒ 3. Conducted field work on and, if required, beyond the Property
- ☒ 4. Reported on the results of the field work on and, if required, beyond the Property
- ☒ 5. Considered any changed conditions on and, if required, beyond the Property
- 6. For a *landslide hazard analysis* or *landslide risk analysis* I have:
 - ☒ 6.1 reviewed and characterized, if appropriate, any *landslide* that may affect the Property
 - ☒ 6.2 estimated the *landslide hazard*
 - ☒ 6.3 identified existing and anticipated future *elements at risk* on and, if required, beyond the Property
 - ☒ 6.4 estimated the potential *consequences* to those *elements at risk*
- 7. Where the Approving Authority has adopted a *level of landslide safety* I have:
 - ☒ 7.1 compared the *level of landslide safety* adopted by the Approving Authority with the findings of my investigation
 - ☒ 7.2 made a finding on the *level of landslide safety* on the Property based on the comparison
 - ☒ 7.3 made recommendations to reduce *landslide hazards* and/or *landslide risks*
- 8. Where the Approving Authority has **not** adopted a *level of landslide safety* I have:

- ☐ 8.1 described the method of *landslide hazard analysis* or *landslide risk analysis* used
- ☐ 8.2 referred to an appropriate and identified provincial, national or international guideline for *level of landslide safety*
- ☐ 8.3 compared this guideline with the findings of my investigation
- ☐ 8.4 made a finding on the *level of landslide safety* on the Property based on the comparison
- ☐ 8.5 made recommendations to reduce *landslide hazards* and/or *landslide risks*
- ☒ 9. Reported on the requirements for future inspections of the Property and recommended who should conduct those inspections.

Based on my comparison between

Check one

- ☒ the findings from the investigation and the adopted *level of landslide safety* (item 7.2 above)
- ☐ the appropriate and identified provincial, national or international guideline for *level of landslide safety* (item 8.4 above)

I hereby give my assurance that, based on the conditions^[1] contained in the attached *landslide assessment* report,

Check one

- ☐ for subdivision approval, as required by the Land Title Act (Section 86), "that the land may be used safely for the use intended"

Check one

- ☐ with one or more recommended registered covenants.
- ☐ without any registered covenant.

- ☐ for a development permit, as required by the Local Government Act (Sections 919.1 and 920), my report will "assist the local government in determining what conditions or requirements under [Section 920] subsection (7.1) it will impose in the permit".

- ☒ for a building permit, as required by the Community Charter (Section 56), "the land may be used safely for the use intended"

Check one

- ☒ with one or more recommended registered covenants.
- ☐ without any registered covenant.

- ☐ for flood plain bylaw variance, as required by the "Flood Hazard Area Land Use Management Guidelines" associated with the Local Government Act (Section 910), "the development may occur safely".

- ☐ for flood plain bylaw exemption, as required by the Local Government Act (Section 910), "the land may be used safely for the use intended".

Karen E. Savage

Name (print)

Signature

July 19, 2016

Date



^[1] When seismic slope stability assessments are involved, *level of landslide safety* is considered to be a "life safety" criteria as described in the National Building Code of Canada (NBCC 2005), Commentary on Design for Seismic Effects in the User's Guide, Structural Commentaries, Part 4 of Division B. This states:

"The primary objective of seismic design is to provide an acceptable level of safety for building occupants and the general public as the building responds to strong ground motion; in other words, to minimize loss of life. This implies that, although there will likely be extensive structural and non-structural damage, during the DGM (design ground motion), there is a reasonable degree of confidence that the building will not collapse nor will its attachments break off and fall on people near the building. This performance level is termed 'extensive damage' because, although the structure may be heavily damaged and may have lost a substantial amount of its initial strength and stiffness, it retains some margin of resistance against collapse".

220 - 18 Gostick Place

Address

North Vancouver, BC V7M 3G3

604-990-0546

Telephone



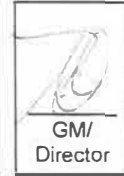
If the *Qualified Professional* is a member of a firm, complete the following.

I am a member of the firm Horizon Engineering Inc.

and I sign this letter on behalf of the firm.

(Print name of firm)

AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: <u>July 29, 2013</u>
<input type="checkbox"/> Workshop (open to public)	Date: _____



The District of North Vancouver REPORT TO COUNCIL

July 24, 2013
File: 08.2300.01

AUTHOR: Brett Dwyer, Manager Development Services
Michelle Weston, Public Safety Section Manager

SUBJECT: Remediation Action Requirements: 518 Alpine Court-Unsafe Structure

RECOMMENDATION:

That Council pass the following Resolutions:

1. Council incorporate this report and attachments to supplement the decision-making on the proposed Remediation Action Requirements 518 Alpine Court Unsafe Structure and;
2. Council declares, pursuant to section 73 of the *Community Charter*, SBC 2003 c. 26, that the garage located at 518 Alpine Court, legally described as:

PID: 008-607-371
Lot 32, Block C, District Lot 578, Plan 8399

(the "Property") is in and creates an unsafe condition;

3. Council hereby imposes the following remedial action requirements (the "Remedial Action Requirements") on Peter Twist, and Julie Rogers, the registered owners of the Property (the "Owners") to address and remediate the above unsafe condition:
 - a. Demolish and remove the existing garage on the Property or redesign/reconstruct it in accordance with a plan approved by the Chief Building Official;
 - b. Restore the Property to a safe condition to the satisfaction of the Chief Building Official;
 - c. Submit a plan to address and remediate the unsafe garage structure on the Property (the "Remediation Plan"), acceptable to the District's Chief Building Official and prepared by a Qualified Professional retained by the Owners, by no

later than September 3, 2013, with such plan to address re-vegetation for slope stability and storm water management; and

- d. Submit a report by a Qualified Professional, prior to any remedial work being commenced on the Property, certifying that the house foundation is secure and the building is fit for the purpose intended;
2. If the garage is retained, upon completion of the work, the Owner's Qualified Professional must certify that the garage structure may be safely used for the purpose intended. Alternatively, if the garage is demolished the Owner's Qualified Professional must certify the stability of the Property.
 3. The Remedial Action Requirements must be completed in accordance with the Remediation Plan and to the satisfaction of the Chief Building Official by no later than October 31, 2013.
 4. Council hereby directs that in the case of failure of the Owner to comply with the Remedial Action Requirements, then:
 - a. the District, its contractors or agents may enter the Property and may carry out the following remedial actions:
 - i. demolish and remove the garage the Property;
 - ii. clean up any associated slide debris from the Property;
 - iii. generally restore the Property to a safe condition to the satisfaction of the Chief Building Official; and
 - iv. for the foregoing purposes may retain the services of a professional engineer to provide advice and certifications;
 - b. the charges incurred by the District in carrying out the aforementioned remedial actions will be recovered from the Owner as a debt; and
 - c. if the amount due to the District under 4(b) above is unpaid on December 31st in any year then the amount due shall be deemed to be property taxes in arrears under section 258 of the *Community Charter*.

REASON FOR REPORT:

At the June 24, 2013 Council meeting, after hearing public testimony from the property owners of 518 Alpine Court, Council resolved:

THAT the matter of remedial action requirements for 518 Alpine Court be referred back to staff for further study.

Accordingly, staff had a geotechnical consultant review the past history of the DNV slope property below 518 Alpine Court. The consultant was requested to determine if the Mosquito Creek channel stabilization works, placed by DNV in the early 1980s caused or increased the slope erosion condition.

SUMMARY:

DNV retained BGC Engineers to review the slope erosion and the geotechnical and hydrologic reports from Kerr Wood Leidal Associates LTD Consulting Engineers prepared during the Mosquito Creek Stabilization Project. The findings of the BGC report, determined that the creek mitigation works, prevented further undercutting of the bank, buttressed the slope, and relocated the creek channel away from the base of the slope. Therefore, the creek mitigation works did not increase the natural rate of erosion on the slope.

The property owners have submitted additional information and a slope assessment report by Clayton Anderson, an independent consultant to Council on July 19, 2013. BGC reviewed the homeowner submission and the opinions provided in that documentation did not cause BGC to alter their report's conclusions.

BACKGROUND:

This report provides information to supplement the June 24, 2013, Remedial Action Requirements-518 Alpine Court Unsafe Structure Council Report, File # 08.3200.01.

ANALYSIS:

The 1982 creek mitigation work relocated the creek away from the toe of the slope and placed additional materials to buttress the base of the slope. This did not create a condition which caused an increase in the natural erosion process of the slope.

Drawing 31-82-9 of the Mosquito Creek Stabilization Project as-built shows the location of the garage structure and has the following footnote on the slope below the garage, "Relocate channel away from the toe of the slope to prevent further undercutting. Place fill to stabilize toe of slope. Excavate into east bank to provide required channel width...".

A report by BGC Engineers concluded that the creek mitigation works were unlikely to have increased the natural rate of erosion of the bank.

The structure of the garage is not safe for intended use due to the natural erosion of the bank.

CONCURRENCE:

This report has been prepared in consultation with the Municipal Solicitor.

CONCLUSION:

The 1982 Mosquito Creek mitigation work relocated the creek away from the toe of the slope and placed additional materials at the base of the slope. This did not create a condition which caused an increase to the natural erosion process of the slope below the garage structure at 518 Alpine Court.

Respectfully submitted,



Brett Dwyer, Chief Building Official
Manager Development Services



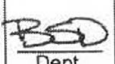


Michelle Weston
Section Manager, Public Safety

Attachments

- A: June 12, 2013 Council Report: Remediation Action Requirements-518 Alpine Court:
- B: KWL Mosquito Creek Stabilization Project drawing
- C: BGC geotechnical report July 24, 2013
- D: Homeowner submission July 19, 2013
- E: BGC response to homeowner submission (email correspondence)

REVIEWED WITH:		
<input type="checkbox"/> Sustainable Community Dev. _____	<input type="checkbox"/> Clerk's Office _____	External Agencies:
<input type="checkbox"/> Development Services _____	<input type="checkbox"/> Communications _____	<input type="checkbox"/> Library Board _____
<input type="checkbox"/> Utilities _____	<input type="checkbox"/> Finance _____	<input type="checkbox"/> NS Health _____
<input type="checkbox"/> Engineering Operations _____	<input type="checkbox"/> Fire Services _____	<input type="checkbox"/> RCMP _____
<input type="checkbox"/> Parks & Environment _____	<input type="checkbox"/> ITS _____	<input type="checkbox"/> Recreation Com. _____
<input type="checkbox"/> Economic Development _____	<input type="checkbox"/> Solicitor _____	<input type="checkbox"/> Museum & Arch. _____
<input type="checkbox"/> Human resources _____	<input type="checkbox"/> GIS _____	<input type="checkbox"/> Other: _____

AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: <u>JUNE 24, 2013</u>
<input type="checkbox"/> Workshop (open to public)	Date: _____

 Dept. Manager	 GM/ Director	 CAO
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9.2

The District of North Vancouver REPORT TO COUNCIL

June 12, 2013
File: 08.3200.01

AUTHOR: Brett Dwyer and Michelle Weston

SUBJECT: Remedial Action Requirements - 518 Alpine Court: Unsafe Structure

RECOMMENDATION:

That Council pass the following Resolutions:

1. Council declares, pursuant to section 73 of the *Community Charter*, SBC 2003 c. 26, that the garage located at 518 Alpine Court, legally described as:

PID: 008-607-371
Lot 32, Block C, District Lot 578, Plan 8399

(the "Property") is in and creates an unsafe condition;

2. Council hereby imposes the following remedial action requirements (the "Remedial Action Requirements") on Peter Twist, and Julie Rogers, the registered owners of the Property (the "Owners") to address and remediate the above unsafe condition:
 - a. Demolish and remove the existing garage on the Property or redesign/reconstruct it in accordance with a plan approved by the Chief Building Official;
 - b. Restore the Property to a safe condition to the satisfaction of the Chief Building Official;
 - c. Submit a plan to address and remediate the unsafe garage structure on the Property (the "Remediation Plan"), acceptable to the District's Chief Building Official and prepared by a Qualified Professional retained by the Owners, by no later than July 29, 2013, with such plan to address re-vegetation for slope stability and storm water management; and

- d. Submit a report by a Qualified Professional, prior to any remedial work being commenced on the Property, certifying that the house foundation is secure and the building is fit for the purpose intended;
2. If the garage is retained, upon completion of the work, the Owner's Qualified Professional must certify that the garage structure may be safely used for the purpose intended. Alternatively, if the garage is demolished the Owner's Qualified Professional must certify the stability of the Property.
3. The Remedial Action Requirements must be completed in accordance with the Remediation Plan and to the satisfaction of the Chief Building Official by no later than September 30, 2013.
4. Council hereby directs that in the case of failure of the Owner to comply with the Remedial Action Requirements, then:
 - a. the District, its contractors or agents may enter the Property and may carry out the following remedial actions:
 - i. demolish and remove the garage the Property;
 - ii. clean up the slide debris from the Property;
 - iii. generally restore the Property to a safe condition to the satisfaction of the Chief Building Official; and
 - iv. for the foregoing purposes may retain the services of a professional engineer to provide advice and certifications;
 - b. the charges incurred by the District in carrying out the aforementioned remedial actions will be recovered from the Owner as a debt; and
 - c. if the amount due to the District under 4(b) above is unpaid on December 31st in any year then the amount due shall be deemed to be property taxes in arrears under section 258 of the *Community Charter*.

REASON FOR REPORT:

To address an unsafe condition related to a garage structure and unstable slope located on the property at 518 Alpine Court by ordering remedial action requirements to demolish or underpin the existing garage

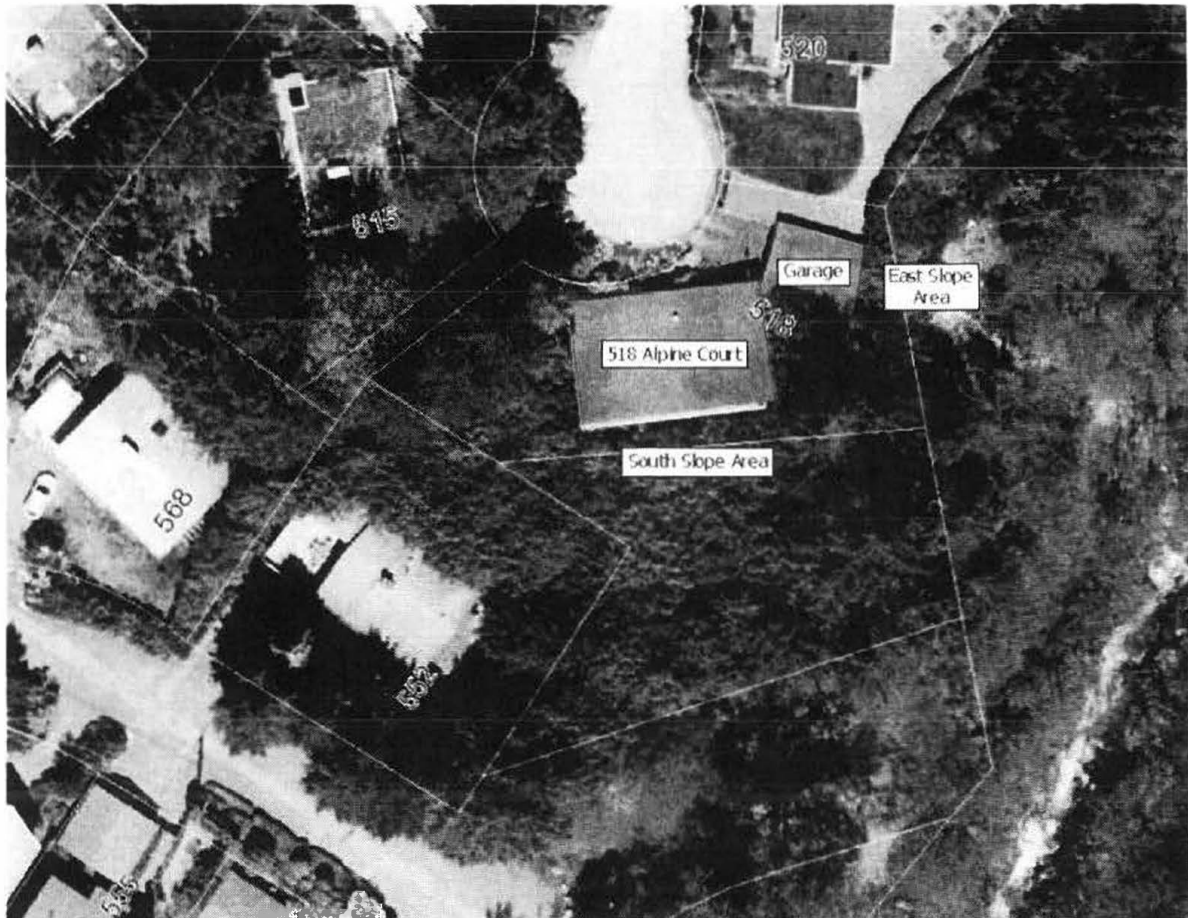


Image showing subject property, garage and sloped areas

BACKGROUND:

The existing house was built in 1973 and the house is connected to District water and sanitary services. There appears to be no connection to the municipal storm water system. The property is located within a Development Permit Area for Slope Hazard.

The District owns the property immediately downslope of the property and there is a non-sanctioned trail immediately below along Mosquito Creek. The trail is signed that there are hazardous zones and impassable areas and advising not to use the trail for your own protection.

As part of the District's landslide risk assessment work undertaken by BGC Engineering Inc. in 2009 and 2010 this property was reviewed and at the final report stage was assigned a Risk Tolerance Level of "Broadly Acceptable". Results of these studies and analyses were provided to all affected homeowners.

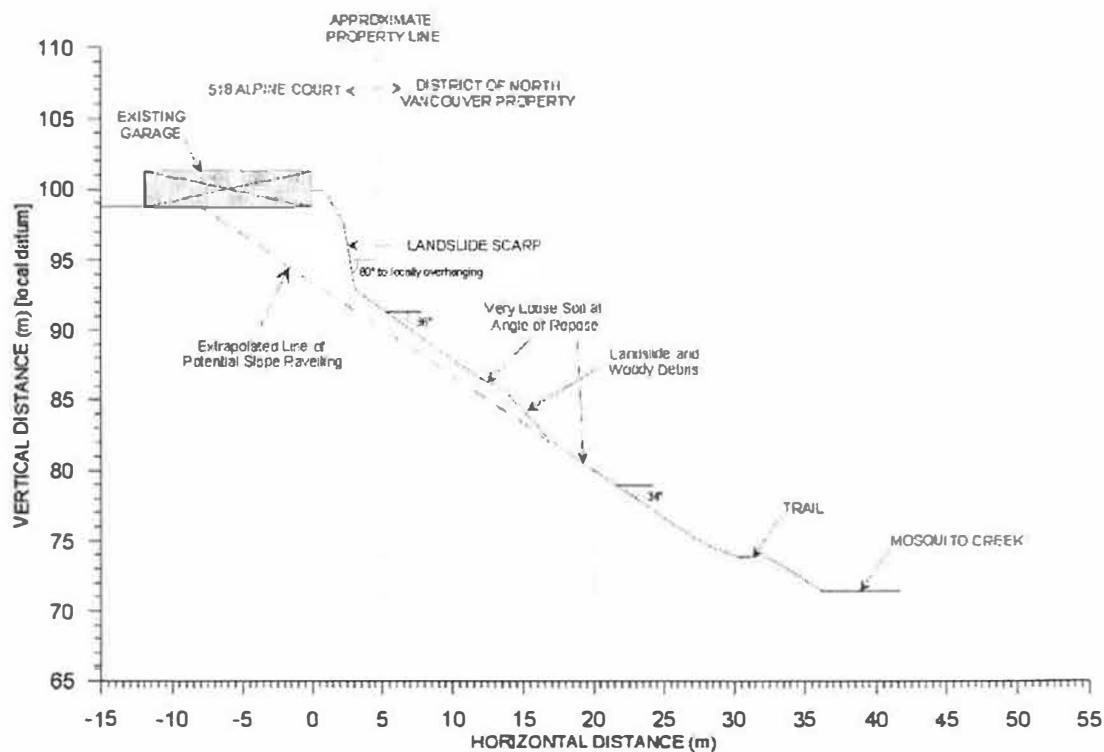
ANALYSIS:

As a follow up to a more recent report from the homeowner of an unstable slope, the District commissioned Horizon Engineering Inc. to undertake a geotechnical review of the property. The completed report dated November 16, 2012 (Attachment 1) concludes as follows:

1. There are slope stability issues that should be addressed in a timely manner
2. Further unravelling of the east slope area (behind the garage) will occur over time which will destabilise the garage structure
3. Access to the garage should be restricted
4. The garage is unsafe and should be demolished or have its foundation underpinned
5. The foundations of the existing home should be reviewed by a qualified professional



Photo showing the unstable East Slope Area behind and below the existing garage.



The above graphic from the 2012 Horizon Report shows the garage located on fill material located on the subject property. Continued unravelling of this slope and fill material will eventually undermine the foundation of the garage. Note on the diagram the extrapolated line of potential slope unravelling and the location of the property line. The report recommends that use of the garage cease and that the garage be removed or stabilised by underpinning of the foundations. Practically speaking underpinning of this 40 year old garage structure may be cost prohibitive. Demolishing the garage or demolishing and rebuilding in a location away from the crest of the slope (closer to the street) may be a more practical solution.

On November 20, 2012, the Owner was sent a letter from the General Manager, Engineering, Parks and Facilities (Attachment 2) and a copy of the 2012 Horizon report requiring the use of the garage to discontinue and requesting the following:

1. A plan to address and remediate the unsafe garage structure on the Property (the "Remediation Plan"), acceptable to the District's General Manager, Parks and Engineering Services and prepared by a Qualified Professional retained by the Owner, must be submitted to the District by no later than January 31, 2013;
2. The remedial work required by the Remediation Plan must be commenced within 60 days of the approval of the Remediation Plan by the General Manager, Engineering, Parks and Facilities and must be completed in accordance with the Remediation Plan and to the satisfaction of the General Manager, Engineering, Parks and Facilities by no later than September 30, 2013.

3. Upon completion of the work your Qualified Professional must certify that the garage structure may be safely used for the purpose intended.

The owner does not dispute the unsafe condition of the garage and slope but maintains that the stabilization of the slope is the District's responsibility. The District's position remains that the District did not cause or contribute to the current soil instability issues and that it is the responsibility of the individual property owner to ensure that structures contained thereon are properly and safely supported.

EXISTING POLICY:

Section 72 of the Community Charter authorizes local governments to impose "remedial action requirements" with respect to hazardous conditions and declared nuisances. Council can require a person to remove, demolish, alter, or otherwise deal with the matter in accordance with the directions of Council or a person authorized by Council.

Section 73 of the Charter specifically authorizes local councils to impose a remedial action requirement where council considers a "matter or thing is in or creates an unsafe condition or the matter or thing contravenes the provincial building regulations or a bylaw under section 8(3)(1) of Division 8 [building regulation] of this Part."

The resolution imposing a remedial action requirement must specify a time by which the required action must be taken which must be at least 30 days after notice of the order is sent. If the person wishes to appeal, they have 14 days to request reconsideration by Council.

If the remedial action requirements are not completed within the time permitted, the District can complete the requirements at the expense of the property owner (per s. 17 of the Charter). If the costs are unpaid at the end of the year, they may be added to the property taxes (s. 258).

Timing/Approval Process:

It is recommended that the deadline for submitting the remedial action plan be as soon as possible. The Community Charter requires that the deadline cannot be earlier than 30 days after the notice of the remedial action requirements is sent to the owner. Accordingly, staff recommends a deadline of July 29, 2013 (allowing time for delivery of order) to submit the remediation plan. It is recommended that the actual work be completed prior to the start of the wet season so the requirement is to have all the work completed by Sept 30, 2013.

Concurrence:

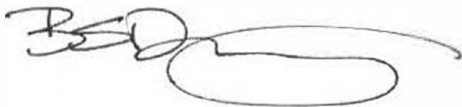
This report has been reviewed and is supported by the Municipal Solicitor.

Financial Impacts:

In the case of default, the District may undertake the remedial action requirements at the expense of the owner and recover the costs as a debt (s. 17 of the Charter). If the debt remains unpaid on December 31, the amount may be added to the property taxes (s. 258 of the Charter).

Conclusion:

The garage structure on this site is in an unsafe condition due to an unstable slope. A remedial action order is required from Council to ensure that the unsafe condition is addressed.



Brett Dwyer, Chief Building Official
Manager Development Services



Michelle Weston
Section Manager, Public Safety

REVIEWED WITH:		
<input type="checkbox"/> Sustainable Community Dev. _____	<input type="checkbox"/> Clerk's Office _____	External Agencies:
<input type="checkbox"/> Development Services _____	<input type="checkbox"/> Communications _____	<input type="checkbox"/> Library Board _____
<input type="checkbox"/> Utilities _____	<input type="checkbox"/> Finance _____	<input type="checkbox"/> NS Health _____
<input type="checkbox"/> Engineering Operations _____	<input type="checkbox"/> Fire Services _____	<input type="checkbox"/> RCMP _____
<input type="checkbox"/> Parks & Environment _____	<input type="checkbox"/> ITS _____	<input type="checkbox"/> Recreation Com. _____
<input type="checkbox"/> Economic Development _____	<input type="checkbox"/> Solicitor _____	<input type="checkbox"/> Museum & Arch. _____
<input type="checkbox"/> Human resources _____	<input type="checkbox"/> GIS _____	<input type="checkbox"/> Other: _____



HORIZON
ENGINEERING INC

Unit 114
2433 Dollarton Hwy
North Vancouver, BC
Canada V7H 0A1

Phone (604) 990-0546
Fax (604) 990-0583
www.horizoneng.ca

November 16, 2012

Our File: 109-2489

DISTRICT OF NORTH VANCOUVER
355 West Queens Road
North Vancouver, BC V7N 4N5

Attention: Michelle Weston

Re: Slope Stability Reconnaissance
518 Alpine Court, North Vancouver, BC
Preliminary Geotechnical Comments

1.0 INTRODUCTION

As requested on June 29, 2012 by the District of North Vancouver, we have attended the above-noted site to review the site conditions with respect to slope stability adjacent to the east side of the subject property and subsequently met with the District of North Vancouver on October 25, 2012. This document summarizes the relevant background information, results of the site reconnaissance, and provides geotechnical comments regarding slope stability.

Horizon Engineering has previously carried out a preliminary site reconnaissance at this general area in April 2007 for the District of North Vancouver and the observations from that previous site visit are also provided in this document.

2.0 SITE CONDITIONS

The subject property is located at the southeast terminus of Alpine Court and at the crest of an escarpment that overlooks the west bank of Mosquito Creek as shown on Figure 1, attached following the text of this document. At the time of our site visit, the east and central portions of the property were developed with a detached garage and existing house; respectively, as shown on Figure 2 which also identifies the approximate property line locations. The west portion of the property consisted of undeveloped forested terrain. The existing house is a single level, at-grade structure with a basement level that daylights towards the south.

Based on topographic information from the District of North Vancouver, there is an elevation difference of about 15 metres across the subject property from north to south and 28 metres from the crest to toe of slope along the east side of the site down to Mosquito Creek. Slope gradients on and immediately adjacent to the subject property vary from moderate to steep with near vertical slopes at the upper elevation portions of the hillside along the east side of the garage. The crest of the east slope is located near the east property line and immediately adjacent to the garage.

Consulting Geotechnical Engineers



3.0 BACKGROUND INFORMATION

Based on information provided by the District of North Vancouver's online GeoWeb mapping system, it is understood that the existing house was built in 1973 and there are records indicating the house is connected to the District water and sanitary services. There is no drawing information regarding storm sewer connection to the District utilities. It is also understood that the subject property is located within an area identified as having potential slope hazards.

On April 25, 2007; Horizon Engineering attended the subject slope for the District of North Vancouver and noted that the distance from the east side of the garage to the vegetated slope crest was approximately 13 feet. At the slope crest, there was an approximately 10 foot tall, near vertical exposure of slightly cemented soil comprised of sand, gravel, cobbles, and occasional boulders. The soil particles were noted to be rounded to subrounded. Downslope from the base of this near vertical soil exposure, the terrain was noted to be sparsely vegetated, covered with colluvium, and with an average slope gradient of about 38 degrees. At an area north of the subject slope, a till-like soil exposure was examined near the slope crest and discontinuities within the soil mass, such as an open crack, were noted. The results of this preliminary site assessment were summarized in a report dated May 29, 2007 (File No: 107-1890) which recommended that a detailed site assessment be carried out.

On July 28, 2008; BGC Engineering Inc attended the subject property as part of the preliminary landslide hazard assessment and risk analysis for the Mosquito Creek escarpment. The results of their assessment were published in a report dated April 30, 2009 for the District of North Vancouver (Project No: 0404-018). Their report documented various observations pertaining to the slope and foundation conditions adjacent to the south side of the house in addition to the garage being located less than three metres from the east slope/scarp crest. Furthermore, loose glaciofluvial gravels were noted to be present on the eastern slope which is located adjacent to the garage. The subject property was assigned a 'high' landslide probability, a 'high' spatial probability, and a 'very high' partial risk rating.

The approximate location and extent of the erosional scarp situated adjacent to the east side of the garage was documented in BGC Engineering Inc's report titled "2009 Landslide Risk Assessment for Select Escarpment Slopes" (Project No: 0404-030; dated January 4, 2010) prepared for the District of North Vancouver. The report did not document any changes to the site conditions with respect to the July 28, 2008 assessment.

BGC Engineering carried out a site visit on January 6, 2011 and documented that there was a recent landslide extending from the back of the garage area on the subject property down to Mosquito Creek. The slope along this landslide path was noted to be bare and some of the landslide debris had deposited on the walking path adjacent to the toe of the slope. It was observed that there was overhanging soil and vegetation at the slope crest and tension cracks were present behind the headscarp. Furthermore, the headscarp was located approximately 0.5 metre from the garage and there was about 2 to 3 centimetres of "soil separation from the garage". No surface water flow was observed from the slope crest.



4.0 OBSERVATIONS

A reconnaissance of the ground conditions at the east and south portions of the subject property and adjacent sloping terrain was carried out by Mr Robert Ng, P.Eng and Ms Pamela Bayntun, P.Eng of Horizon Engineering on July 6, 2012.

The site and ground conditions observed on the sparsely vegetated slope at the south portion of the site were consistent with the observations and commentary provided in the aforementioned BGC Engineering documents. Although there were some isolated, pistol butted trees present on this portion of the slope, the majority of the trees appeared to be near vertical. A black, flexible, plastic pipe was observed on the mid-slope area and at the discharge point, no obvious sign of water flow or erosion was noted. Adjacent to the south side of the house foundation, there were local areas where sandy fill materials in excess of 3 feet thick were supported against a tree as shown in Photograph 1 on Figure 3. Adjacent to the south side of the house foundation, erosion of the exposed soil slope was noted and an old log placed across the slope was partially retaining the ravelled soil as shown in Photograph 2 on Figure 3. No tension cracks or recent landslide scars were noted in this area.

Adjacent to the east portion of the site, recent landslide activity and on-going ravelling has resulted in a landslide headscarp to be located immediately adjacent to the east side of the garage and extending both north and south of the assessed area. As shown in Photograph 3 on Figure 3, the south foundation wall of the garage is exposed at-grade whereas backfill is present against the east foundation wall. As shown in Photograph 4 on Figure 3, the slope crest is located about 0.75 metre from the east wall of the garage. The area of reported soil separation from the garage by BGC Engineering as previously discussed was not observed at the time of our site visit. The slope profile from the garage down to the edge of Mosquito Creek was measured with a hand held inclinometer and measuring tape and is presented on Figure 4, attached. The upper portion of this slope had gradients that varied from approximately 45 degrees to near vertical with locally overhanging areas as shown in Photograph 5 on Figure 4. The soil exposed in this headscarp area consisted of a moist, grey, slightly cemented sand and gravel with rounded cobbles and boulders. The soil appeared to be broadly graded with some coarse stratigraphic bedding. At adjacent crest areas, the surface vegetation was noted to be undermined and soil as previously described was exposed beneath the root mass. No tension cracks were observed in the soil exposure; however, loosening of soil particles at this headscarp was noted.

The mid to lower portions of this slope along the existing landslide path were cleared of vegetation cover. Slope gradients of about 34 to 36 degrees were measured and the surficial material was noted to be primarily comprised of loosely deposited sand and gravel that was considered to be essentially at its natural angle of repose. At approximately mid-slope elevation, landslide and woody debris appear to have accumulated along the landslide path previously reported by BGC Engineering resulting in a local transition in slope geometry as shown in Photograph 6 on Figure 5. At lower elevation areas, the landslide deposit contained more cobbles and boulders and was deposited at angles of about 33 to 34 degrees. The landslide debris was deposited across a walking trail at the toe of the slope and is estimated to have reached the west bank of Mosquito Creek.

No ground water discharge was noted on or adjacent to the slope at the time of our site visit. Furthermore, there were no obvious signs of surface water erosion on the landslide deposit.



5.0 CONCLUSIONS

The following conclusions are based on the site observations, limited data, and our local experience with similar ground conditions. It should be noted that neither a subsurface investigation nor detailed engineering analysis has been carried out within the scope of this reconnaissance. Should additional information become available or site conditions change, the information in this document should be updated accordingly.

Based on the observed site conditions and available background information, it is concluded that there are slope stability issues at the subject property and adjacent sloping terrain which should be addressed in a timely manner before further deterioration of slope conditions occur. The areas of slope stability concern can be divided into east and south portions which are discussed as follows.

5.1 East Slope Area

Despite the lack of modelling/analyses, based on our experience with previous slope stability analysis, it is concluded that the steep soil exposure at the recent landslide headscarp located at the east portion of the site and immediately beside the garage is not suitably stable in its current condition based on the District of North Vancouver's Natural Hazards Risk Tolerance Criteria (File: 11.5225.00/000.00 and dated November 10, 2009). It is estimated that the exposed soil face will continue to ravel until the slope geometry is essentially at its natural angle of repose. This extrapolated, natural angle of repose, slope gradient would be expected to intersect the garage footprint and be considered to have a slope stability Factor of Safety of 1.0 when there is no surcharge load or ground water influence.

It is estimated that the headscarp which is currently located about 0.75 metre from the east side of the garage will migrate westward and undermine the foundation. This slope failure mechanism may occur rapidly if there are existing planes of weakness within the soil mass or where cementation in the soil matrix is lost. A slope failure may also occur during an earthquake or when surcharge loads are present such as snow accumulation; especially if saturated from a rain-on-snow event. Moreover, the stability of the landslide headscarp area may be adversely affected by wet weather or prolonged periods of precipitation. Therefore, slope stabilization work should be carried out as soon as practicable.

5.2 South Slope Area

Along the south portion of the subject property, there are potential, long term slope and building foundation stability issues which are associated with the presence of loose, surficial materials. These loose, surficial materials are considered susceptible to erosion and thus any water that is directed towards or discharged onto this slope should be reviewed and properly designed to ensure that the slope and soil conditions are not adversely impacted. Misdirected surface water and soil erosion may result in a loss of foundation bearing soil confinement at the house footprint and potential initiation of mass wasting (e.g. landslide) events on the soil slope. The stability of the building foundation under both static and design seismic conditions should be reviewed.



6.0 RECOMMENDATIONS

6.1 East Slope Area

Based on the current site conditions, it is recommended that access and use of the garage be restricted due to potential deterioration of the foundation and slope stabilities. The owner should remove any valuable items from within the garage in the event that the garage foundation stability is compromised. Furthermore, any surcharge loads placed within the garage, such as heavy equipment or vehicles, should be removed to reduce the weight placed at the crest of the potentially unstable slope.

It should be emphasized that there is a higher risk exposure to people with increased exposure time to the potential hazard; therefore, restricting access to the garage area should be considered a risk management option.

For discussion purposes, it is envisaged that it would not be practicable to construct a buttress structure to support the upper portion of the slope due to the required size of the structure in addition to ensuring that the weight of the buttress does not adversely impact the slope stability. It is also envisaged that a permanent tied-back shotcrete shoring system installed at the steep soil face would not be practicable due to the hazard of drilling anchors into the potentially unstable slope which could further disturb or destabilize the area. It should be noted that both the buttress and permanent shoring concepts would also have considerable challenges with respect to equipment access to the subject slope.

As an alternative to directly stabilizing the slope, it may be possible to permanently underpin the garage foundation by installing micropiles that transfer the building loads down to suitably stable materials at depth. The micropiles would need to be designed to function as columns as the soil erodes and the slope crest migrates west and below the building. This concept should be reviewed by a Structural Engineer for practicability since there are considerable technical details with respect to modifying the at-grade foundation and floor slab structure to become a pile supported and suspended slab structure. It should be noted that this concept could provide a suitable foundation for the garage but does not address the slope stability hazard which would impact the downslope area.

A more practicable strategy for stabilizing the slope would be to remove the existing garage and then address the unstable slope crest area by permanently removing the soil. Equipment access would be comparatively straight forward from Alpine Court after the garage is removed. It is envisaged that a working bench could be constructed at the bottom of this temporary excavation on which new foundations could be constructed. A new garage with a suspended floor slab would be supported on this foundation structure and the area beneath the garage would be stabilized with either a series of reinforced earth retaining walls or a tied-back, reinforced shotcrete surface. This slope stabilization strategy is conceptually shown on Figure 6, attached.

It is recommended that detailed slope stability assessment and engineering analysis be carried out in order to confirm the concepts as previously discussed and/or to develop suitable recommendations for stabilizing the slope and building foundation. As part of this detailed assessment, an updated topographic survey should be prepared that extends from the toe of slope up to the existing house. Detailed slope sections that include the existing house and any underground structures in the crest area should also be developed for use in the slope stability analysis.



It is recommended that hoarding be placed along the slope crest where the soil has been undermined to restrict access to these areas of potentially unstable ground conditions. The hoarding should be located the greater of 6 feet from the slope crest or a horizontal distance equal to the height of the potentially unstable slope segment. Where the slope or surficial materials are undermined, the hoarding should be located beyond the extent of undermined ground.

It is recommended that until the slope stabilization work is suitably implemented, regular monitoring of this slope should be carried out for any increased signs of ground movement or slope deterioration.

Recommendations that pertain to the area beyond the subject property will be provided under separate cover to the District of North Vancouver.

6.2 South Slope Area

It is recommended that monitoring of this slope for any ongoing movement or soil erosion, especially from the building foundation area, be carried out on a regular basis. This slope monitoring program should include both a visual assessment and surveyed reference points. The survey points should include locations at the building foundation, areas of past slope movement, and slope breaks. This monitoring program should be implemented bi-annually or more frequently if there are any signs of slope movement. After precipitation events associated with landslide activity in the North Shore area, this slope should also be reviewed.

It is also recommended that local surface water management be reviewed to ensure that the discharged water in this area is suitably managed.

It may be timely to assess the south slope area and develop remedial measures that could be implemented in conjunction with slope stabilization works for the east slope area.



7.0 CLOSURE

This report has been prepared for the sole use of our Client, The District of North Vancouver, and other consultants for this project as described. Any use or reproduction of this report for other than the stated intended purpose is prohibited without the written permission of Horizon Engineering Inc.

We are pleased to be of assistance to you on this project and we trust that our comments are both helpful and sufficient for your current purposes. If you would like further details or require clarification of the above, please do not hesitate to contact us.

For
HORIZON ENGINEERING INC.

For
HORIZON ENGINEERING INC.

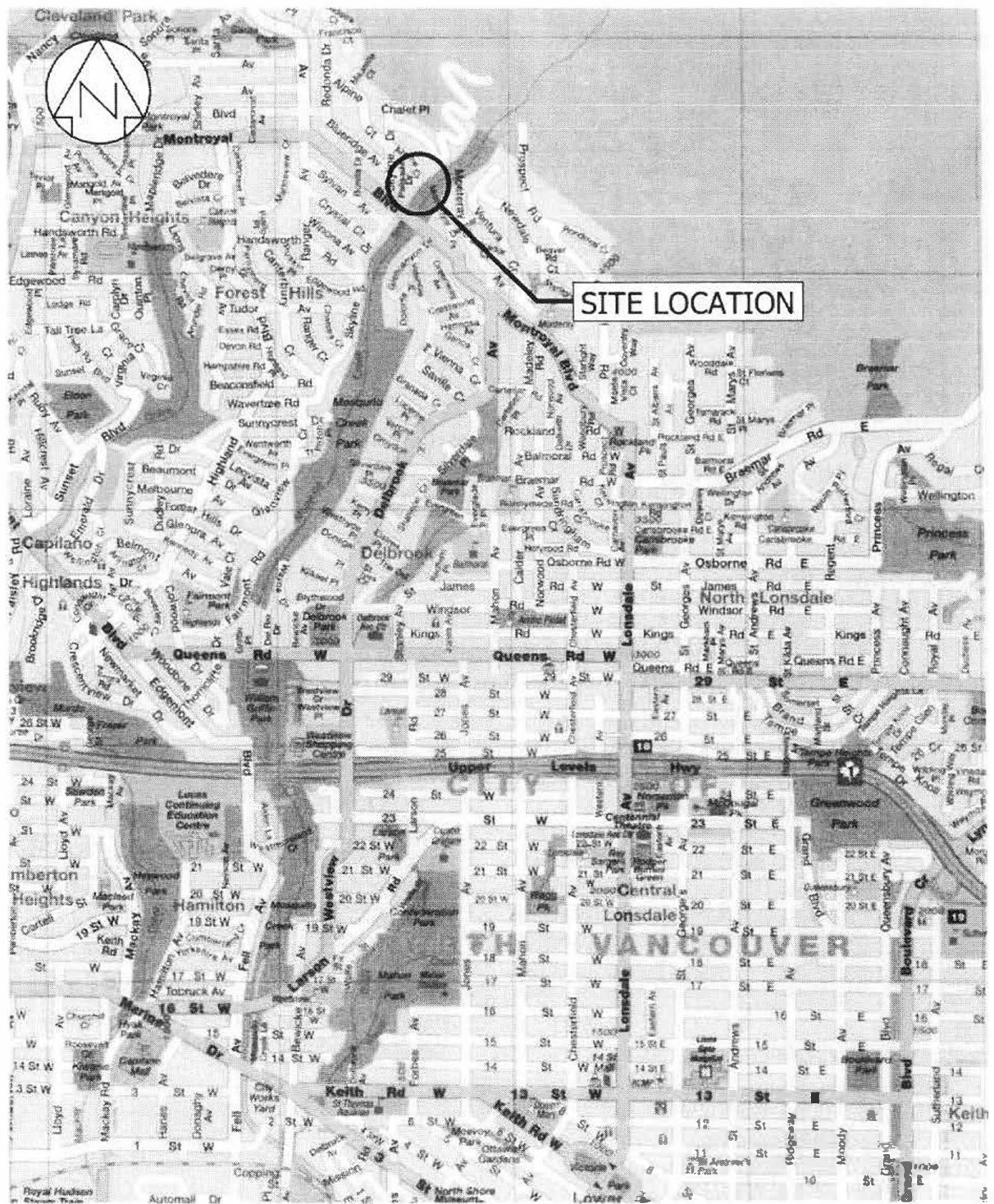
Robert Ng, P.Eng.

Karen E. Savage, P.Eng.
President

Attachments:	Figure 1 - Site Location Plan	[1 page]
	Figure 2 - Site Plan Aerial Photograph	[1 page]
	Figure 3 - Photographs 1 to 4	[1 page]
	Figure 4 - Slope Profile	[1 page]
	Figure 5 - Photographs 5 and 6	[1 page]
	Figure 6 - Conceptual Slope Stabilization Strategy	[1 page]

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24-Aug-12, 10:59:11 AM, Branson, N., 2009 Projects\109-2459 DNV Various Projects\120706 518 Alpine Court\518 Alpine Court Figure 1.dwg



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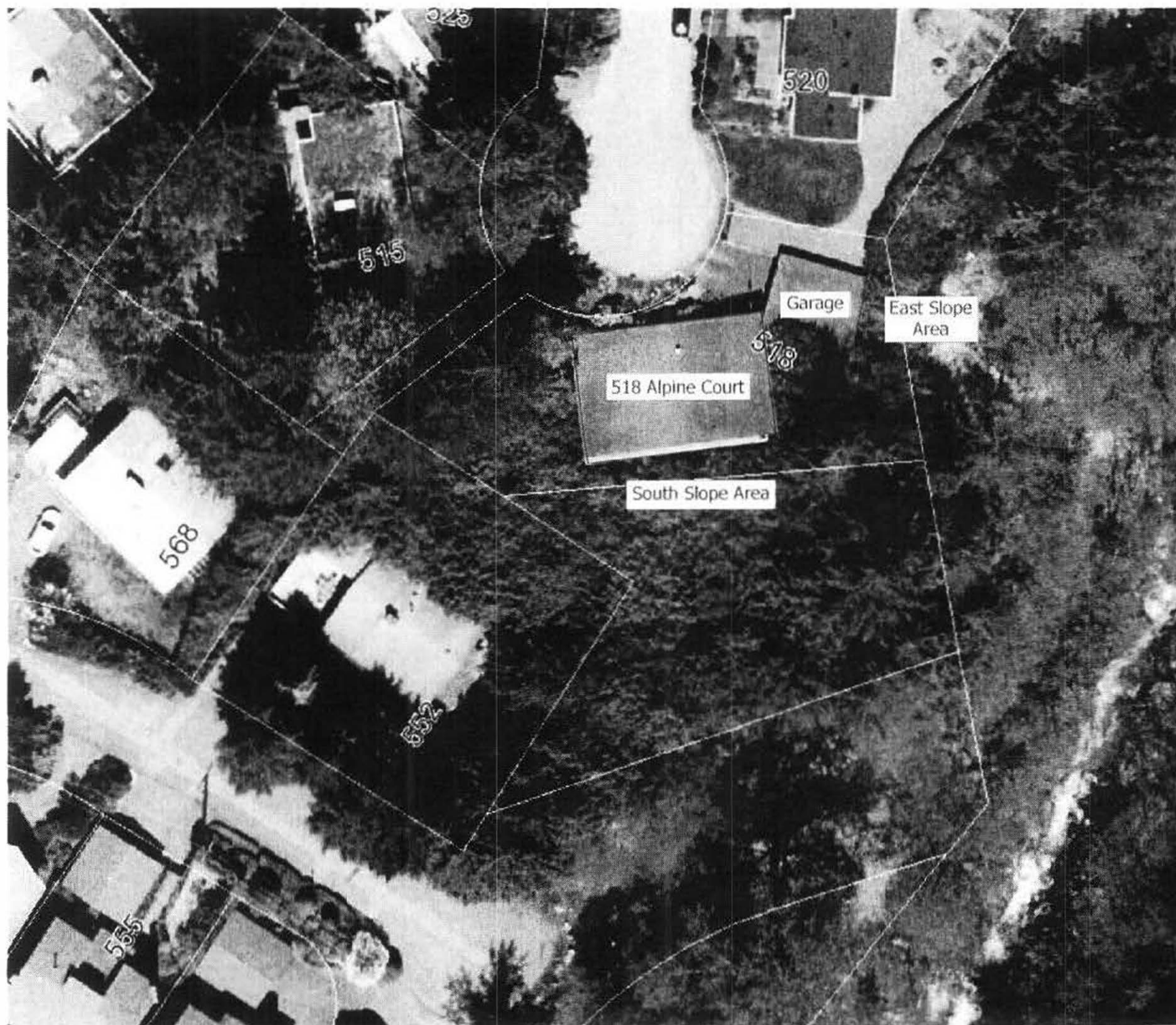
Slope Stability Reconnaissance
518 Alpine Court, North Vancouver, BC

Site Location
Plan



HORIZON
ENGINEERING INC

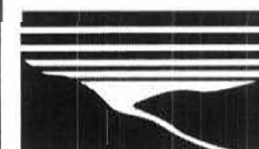
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REFERENCE (IF ANY)

1. Aerial Photograph: District of North Vancouver: 2004/05

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2.		
3.		
4.	DATE	REVISION



HORIZON ENGINEERING INC

Suite 114 - 2433 Dollarton Highway
North Vancouver, BC, V7H 0A1
Phone 604-990-0546
Fax 604-990-0583
www.horizeng.ca

District of North Vancouver
355 Queens Road
North Vancouver, BC

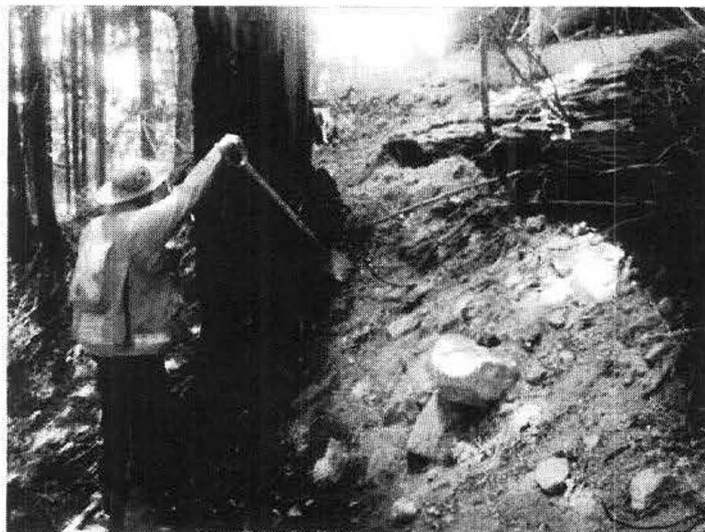
Slope Stability
Reconnaissance
518 Alpine Court
North Vancouver, BC

Site Plan Aerial Photograph

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APPROVED		QUANTITY	

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FILE NUMBER: 109-2489



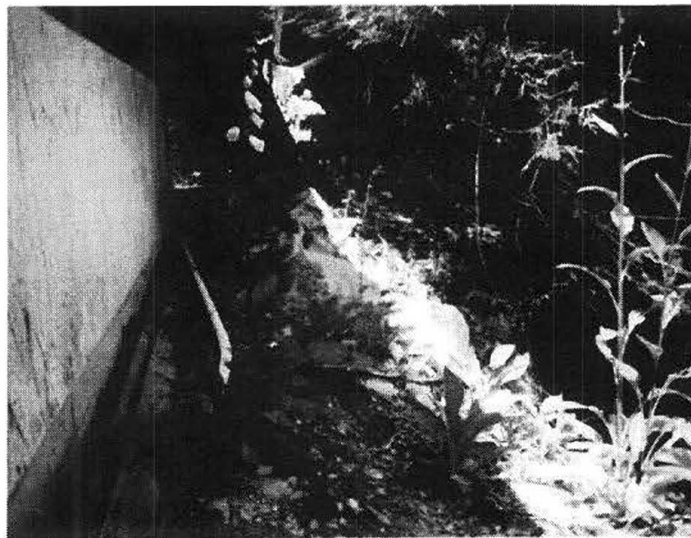
Photograph 1: south portion of site where fill/colluvium is supported against a tree.



Photograph 2: erosion at south side of house foundation and old log supporting ravelled soil.



Photograph 3: southeast corner of existing garage.



Photograph 4: east wall of garage beside landslide headscarp.

REFERENCE DRAWINGS

3		
2		
1		
REV	DATE	REVISION



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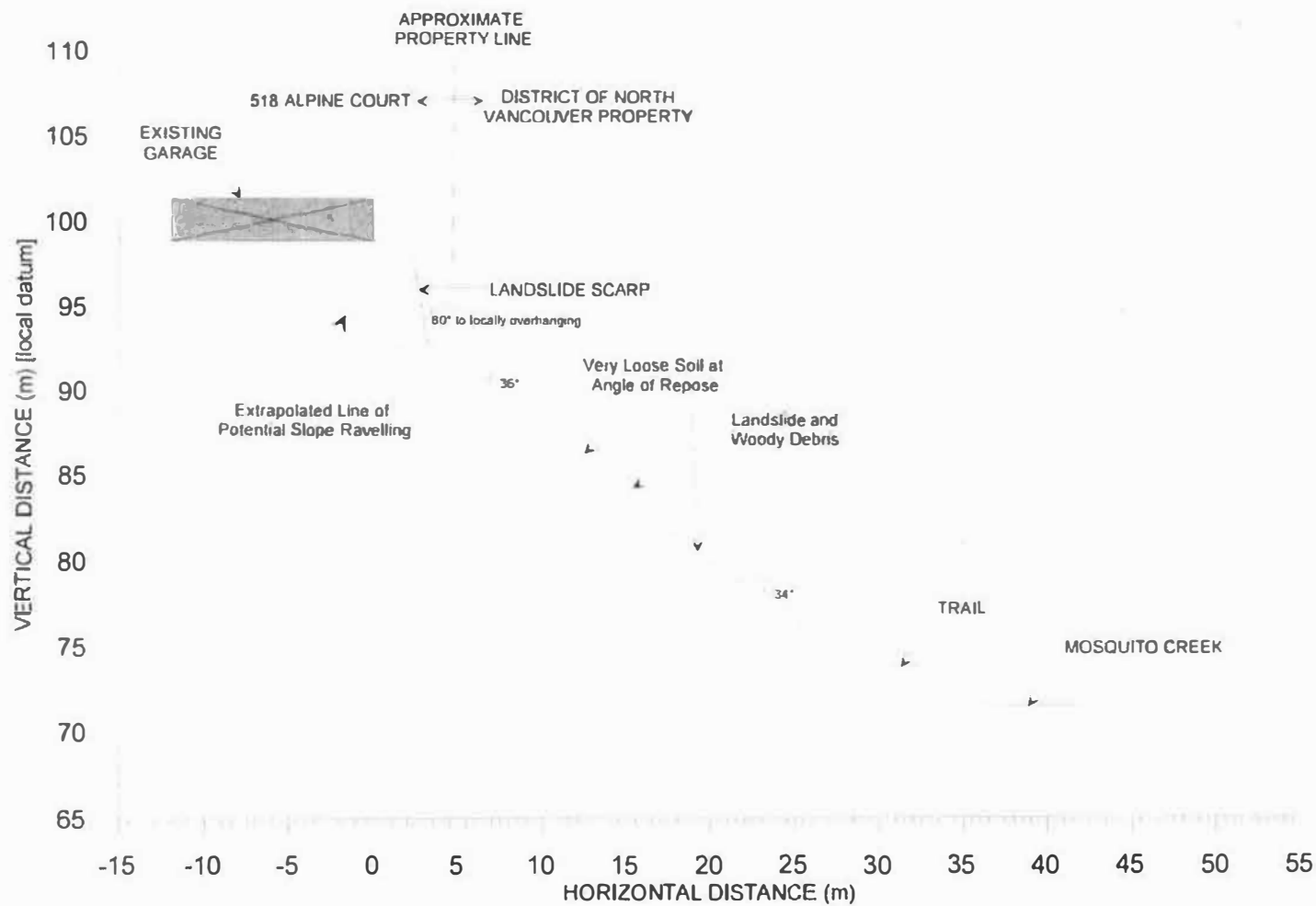
Slope Stability
Reconnaissance
518 Alpine Court
North Vancouver, BC

Photographs
1 to 4

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FIGURE
3

109-2489

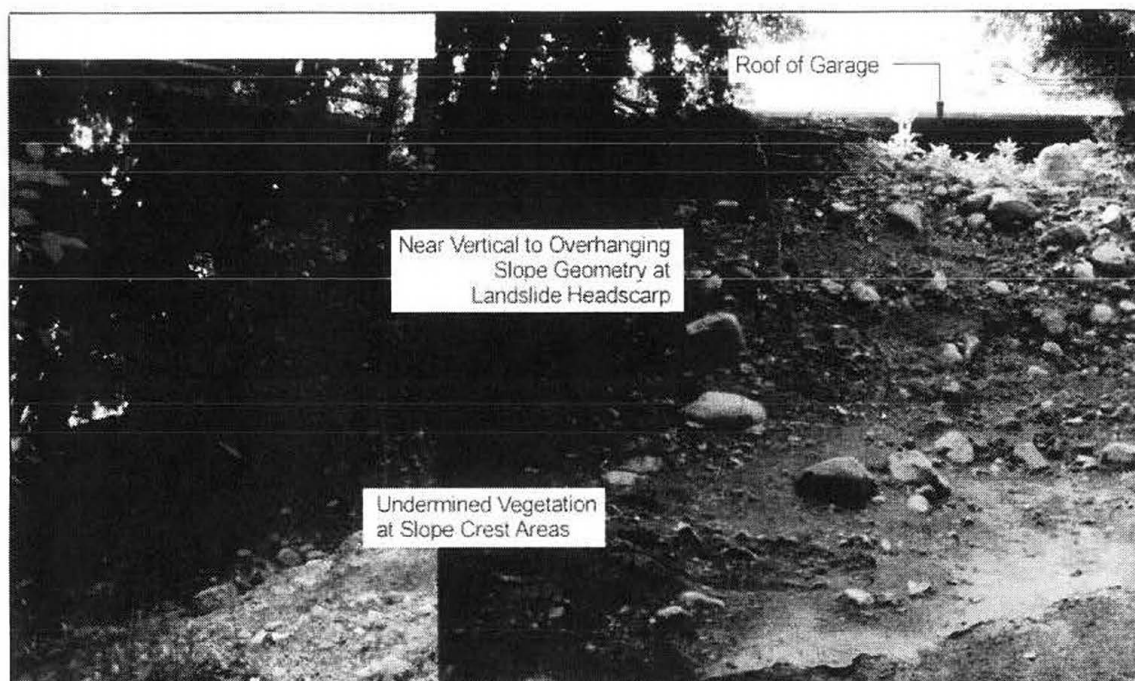


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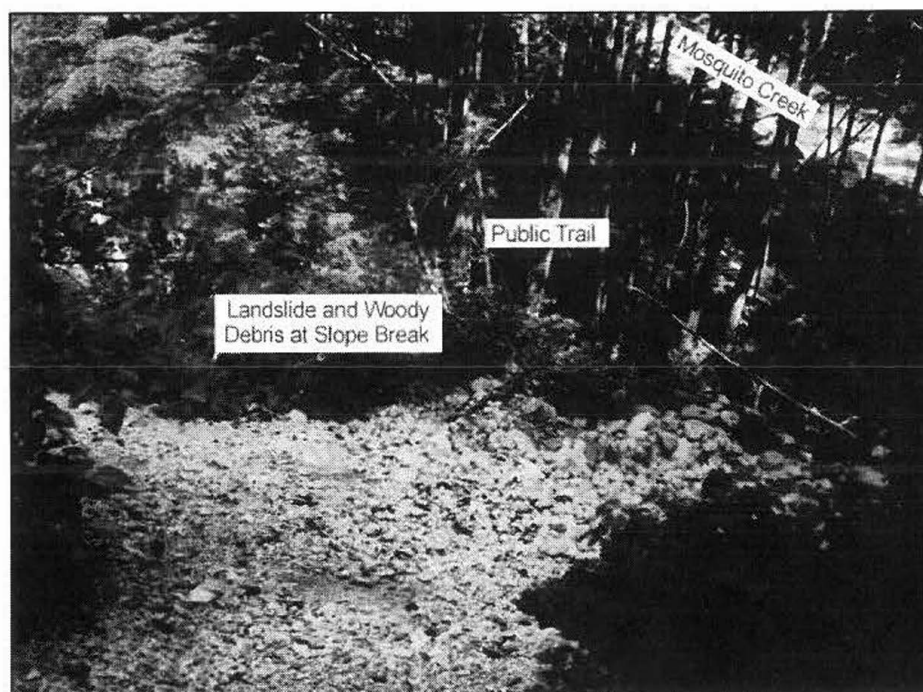
DISTRICT OF NORTH VANCOUVER
518 ALPINE COURT, NORTH VANCOUVER, BC

SLOPE PROFILE


Scale As Shown	File No 108-2489	Date JUL/12	FIGURE
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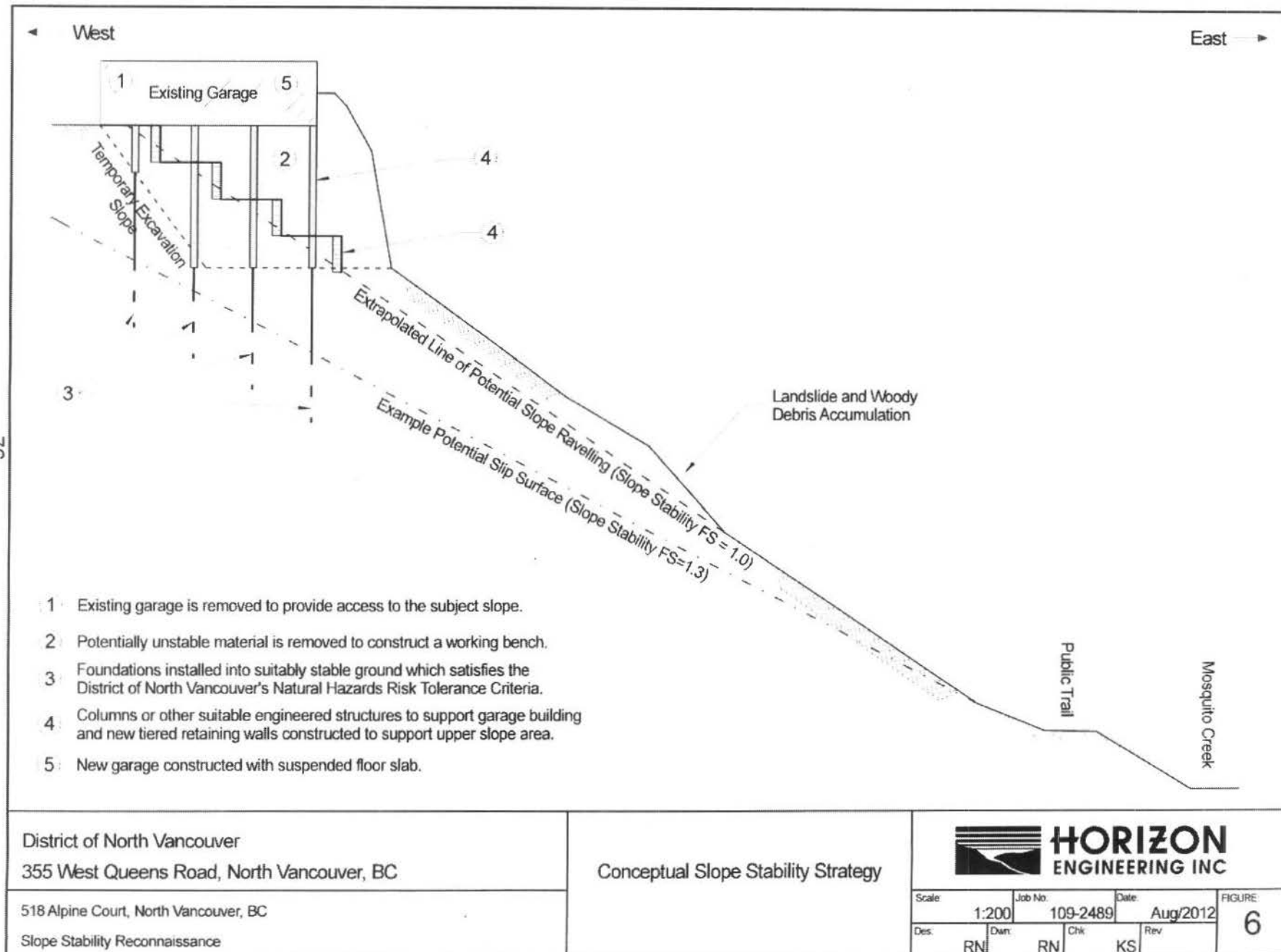


Photograph 5: headscarp area below garage with overhanging and undermined portions of the slope.



Photograph 6: landslide and woody debris at a mid-elevation slope break.

District of North Vancouver	Photograph 5 and Photograph 6	 HORIZON ENGINEERING INC			
518 Alpine Court, North Vancouver, BC		Scale: NTS	Job No: 109-2489	Date: Aug/2012	FIGURE 5
Slope Stability Reconnaissance		Des: RN	Dwn: RN	Chk: RN	



355 West Queens Road
North Vancouver BC
V7N 4N5

www.dnv.org



ATTACHMENT 2

Gavin Joyce, P. Eng.
General Manager of Parks & Engineering Services
Phone: 604 990 2205
Fax: 604 990 3831
joyceg@dnv.org

Mr. Peter Twist
518 Alpine Court
North Vancouver
BC

File: 11.5225.01/005.000

Dear Mr. Twist;

Re: 518 Alpine Court, Slope Stability Reconnaissance

Attached please find a report prepared for the District by Horizon Engineering Inc. dated November 16, 2012 (the "Report"). The Report addresses slope stability issues on your property at 518 Alpine Court. The key recommendation from the report is as follows:

- the garage is unsafe and should be either demolished and removed or permanently underpinned to remove the unsafe condition, and in the meantime you should discontinue use of the structure

The District retained Horizon Engineering to undertake the attached Report when you brought this matter to the District's attention on June 29, 2012. At that time you expressed the view that stabilization of the slope on your property was the District's responsibility. Upon review of this matter we can advise that the District neither caused nor contributed to the current soil instability issues on your property. As is the case for any property owner, it is your responsibility to ensure that structures on your land are properly and safely supported. In particular, it is your responsibility, as the registered owner of the property, to mitigate the unsafe condition of the garage.

The District takes no responsibility for the unsafe condition of the garage or for the continuing instability of the slope on your property, and requires that you, as the owner of the property, undertake or cause to be undertaken all steps necessary to address these unsafe conditions. In this regard the District requires that you comply with the following:

- (a) a plan to address and remediate the unsafe garage structure on the Property (the "Remediation Plan"), acceptable to the District's General Manager, Parks and Engineering Services and prepared by a Qualified Professional retained by the Owner, must be submitted to the District by no later than **January 31, 2013**;
- (b) the remedial work required by the Remediation Plan must be commenced within **160 days** of the approval of the Remediation Plan by the General Manager, Engineering, Parks and Facilities and must be completed in accordance with the Remediation Plan and to the satisfaction of the General Manager, Engineering, Parks and Facilities by no later than **September 30, 2013**.
- (c) upon completion of the work your Qualified Professional must certify that the garage structure may be safely used for the purpose intended.

Re: 518 Alpine Court, Slope Stability Reconnaissance
November 20, 2012

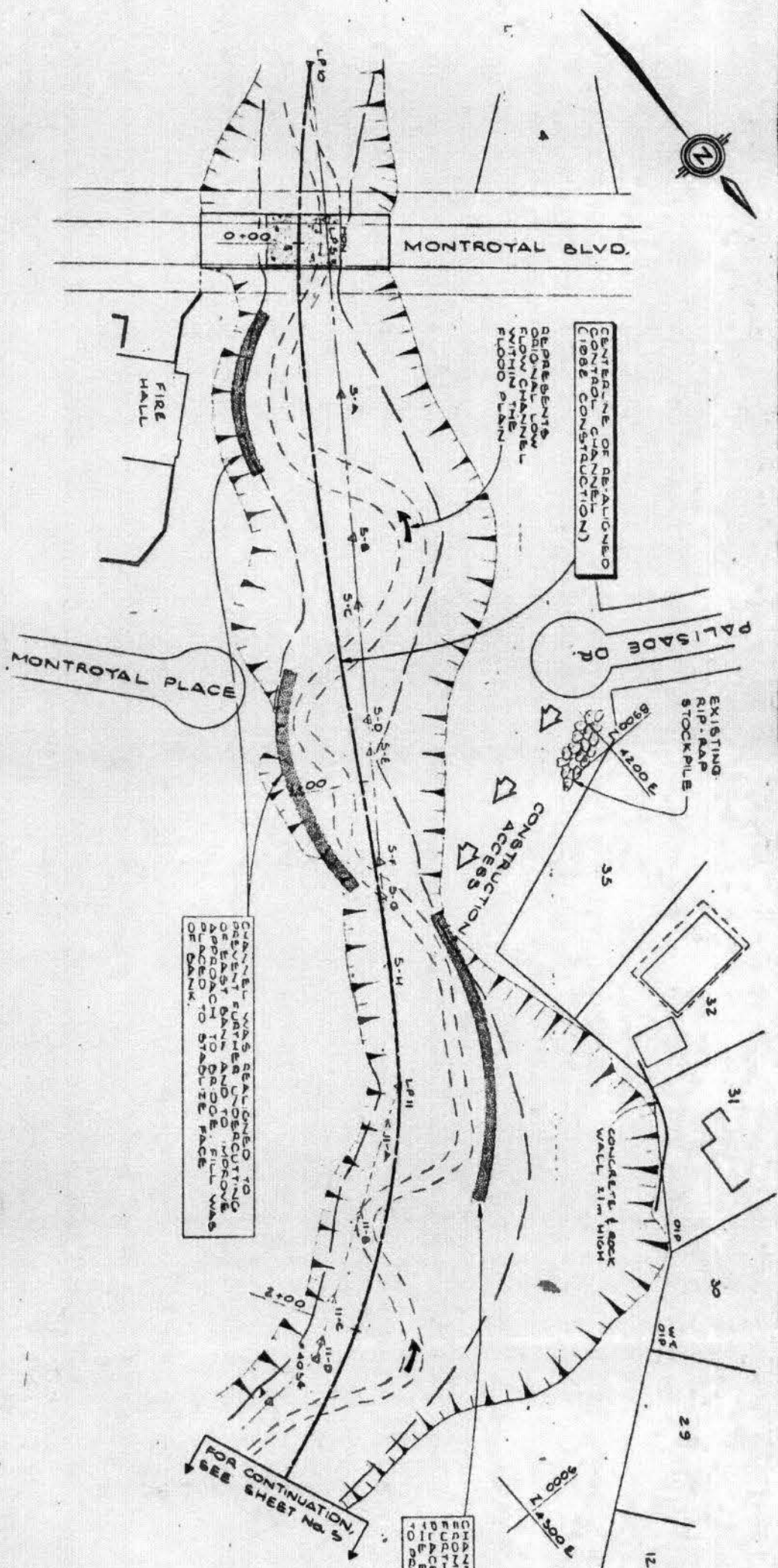
Page 2

Division 12 of the *Community Charter* authorizes a municipal council to impose remedial action requirements regarding hazardous conditions. The District will postpone consideration of imposing a formal remediation action order at this time provided that the work items listed in (a) to (c) above are completed to the satisfaction of the General Manager, Parks and Engineering Services by the stipulated dates. If any part of the required work is not completed by a stipulated date then Council may consider formal imposition of remedial action requirements. If Council imposes remedial action requirements and if the requirements are not satisfied by the dates stipulated by Council, the District may carry them out at your expense. If those expenses are not paid they will be added to the property taxes.

Should you have any questions or concerns please do not hesitate to contact our office at 604-990-3819.

Sincerely,

Gavin Joyce, P. Eng.
General Manager of Parks and Engineering Services



DESIGN WIDTH (FOR Q200)		13.7 meters (45 feet)	15.2 meters (50 feet)	15.2 meters (50 feet)	18.3 meters (60 feet)					
CHANNEL SLOPE		12%	13%	14%	17%					
260										
250										
240										
230										
220										
210										
STATION NUMBER		00+00	05+00	10+00	15+00					
INVERT ELEVATION		97.24	97.22	97.1	97.2					
FLOW EVENT	DISCHARGE	VELOCITY	DEPTH	VELOCITY	DEPTH	VELOCITY	DEPTH	VELOCITY	DEPTH	
	cfs	mps	meters	mps	meters	mps	meters	mps	meters	
MEAN ANNUAL FLOOD	11	4.00	2.7	9	0.3	1.1	2.6	8%	0.3	0.9
OCTOBER 31, 1981 FLOOD (25 TO 50 YEARS)	54	19.00	4.9	16	0.8	3.0	4.7	15%	0.8	2.7
200 YEAR DESIGN STORM	71	29.00	5.5	18	1.1	3.7	5.3	17%	0.8	2.6

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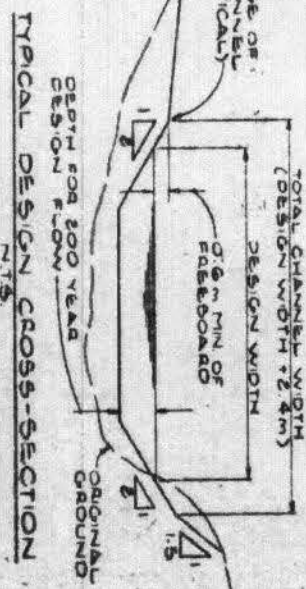


NOTES FOR SHEETS 4 AND 5

(1) THE PURPOSE OF THESE SHEETS IS TO: SUMMARIZE HYDROLOGIC/HYDRAULIC DATA THAT PROVIDE THE BASIS FOR DESIGN OF THE CHANNEL RELOCATION PROJECT. THE LOCATION OF PROBLEM AREAS THAT PROVIDED THE BASIS FOR THE 1982 EARTHMOVING PROGRAM TO RE-SHAPE THE CHANNEL DESIGN WITH VARIOUS AS SHOWN ARE RESTRICTED BY THE WATERWAY OPENING UNDER THE BRIDGE AND THE CONSTRUCTION ABOVE STATION 1+00

(2) THE CHANNEL DESIGN WITH VARIOUS AS SHOWN ARE RESTRICTED BY THE WATERWAY OPENING UNDER THE BRIDGE AND THE CONSTRUCTION ABOVE STATION 1+00

FOR REFERENCE ONLY.





DISTRICT OF NORTH VANCOUVER

518 ALPINE COURT

EROSIONAL SCARP SLOPE INSPECTION

PROJECT NO.: 0404-047
DATE: July 24, 2013

DISTRIBUTION:
DNV: 2 copies
BGC: 2 copies



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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Vancouver, BC Canada V6Z 2A9
Telephone (604) 684-5900
Fax (604) 684-5909

July 24, 2013
Project No.: 0404-047

Michelle Weston
District Of North Vancouver
355 West Queens Road
North Vancouver, B.C., V7N 4N5

Dear Ms. Weston,

Re: 518 Alpine Court – Erosional Scarp and Slope Inspection

Please find attached a copy of our above referenced report dated July 24, 2013. Should you have any questions or comments, please do not hesitate to contact me at the number listed above.

Yours sincerely,

BGC ENGINEERING INC.
per:

Michael Porter, M.Eng., P.Eng.
Vice President, Senior Geological Engineer

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LIMITATIONS

BGC Engineering Inc. (BGC) prepared this document for the account of the District of North Vancouver. The material in it reflects the judgment of BGC staff in light of the information available to BGC at the time of document preparation. Any use which a third party makes of this document or any reliance on decisions to be based on it is the responsibility of such third parties. BGC accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this document.

As a mutual protection to our client, the public, and ourselves, all documents and drawings are submitted for the confidential information of our client for a specific project. Authorization for any use and/or publication of this document or any data, statements, conclusions or abstracts from or regarding our documents and drawings, through any form of print or electronic media, including without limitation, posting or reproduction of same on any website, is reserved pending BGC's written approval. If this document is issued in an electronic format, an original paper copy is on file at BGC and that copy is the primary reference with precedence over any electronic copy of the document, or any extracts from our documents published by others.

1.0 INTRODUCTION

In 2013 the owners of 518 Alpine Court, North Vancouver, were notified by the District of North Vancouver (DNV) that their garage was unsafe and required remediation based on the results of a geotechnical review completed by Horizon Engineering Inc. (Horizon 2012).

We understand (DNV 2013a) the owners of 518 Alpine Court are concerned that work completed by the DNV following a 1981 flooding event on Mosquito Creek at the base of the slope caused or contributed to the retrogression of an erosional scarp located below the garage. Due to the current proximity of the erosional scarp to the garage, Horizon concluded that the garage is now considered unsafe and requires remediation (DNV 2013b). The locations of pertinent site features are illustrated in Figure 1.

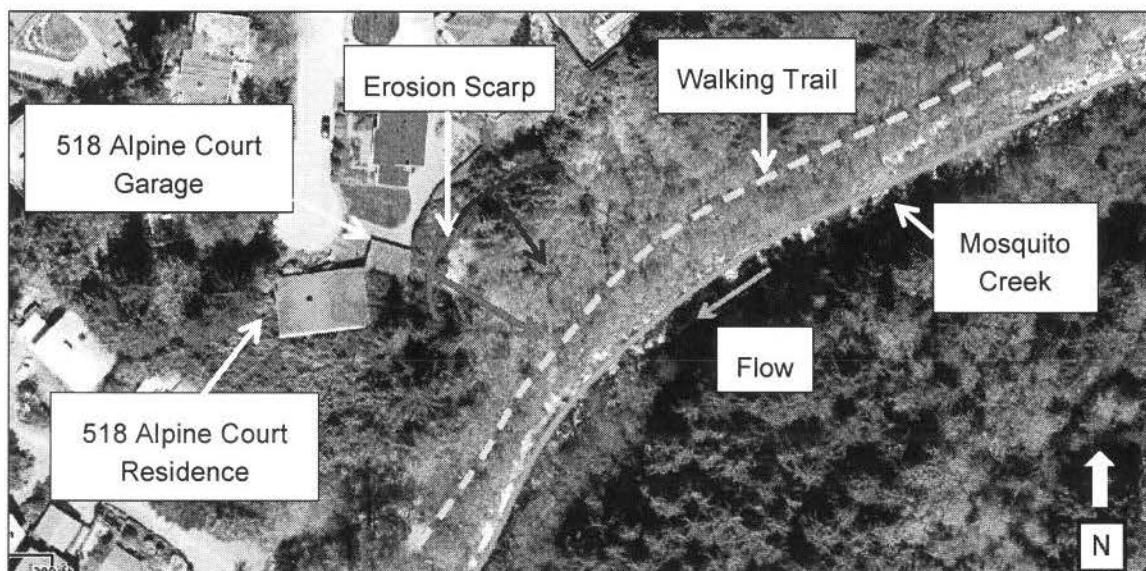


Figure 1 518 Alpine Court, North Vancouver property location (From DNV's GEOweb, July 19, 2013)

The DNV subsequently retained BGC Engineering Inc. (BGC) to determine if the mitigation works completed along Mosquito Creek to address bank stability and erosion following the flooding event on October 31, 1981 could have contributed to the retrogression of the upper erosional scarp. BGC's scope included review of the historical reports for the design and construction of the mitigation measures following the 1981 event, and subsequent site inspection reports for the property that date back to 2006. BGC was also asked to conduct a brief slope inspection of the escarpment below the garage at 518 Alpine Court.

This report provides a summary of the background information and presents the observations from a site inspection completed by BGC on July 8, 2013. The report provides

our opinion on whether mitigation works completed along Mosquito Creek following the 1981 event caused or contributed to the erosion rates below the garage at 518 Alpine Court.

2.0 BACKGROUND

Slope instability in the form of raveling was first reported by KWL (1982a) who noted extensive erosion and slope stability issues along the banks of Mosquito Creek and particularly along the escarpment crest behind 518 Alpine Court, following the 1981 flood event.

A summary of the engineering reports for the mitigation works to address the bank stability and erosion problems along Mosquito Creek and subsequent site inspections and reports dating back to 1982 are presented Table 1, Appendix A. The table summarizes the objectives, observations, conclusions, and the recommendations for each of the reports.

BGC requested as-built drawings and construction records from the DNV for any construction along Mosquito Creek downslope from 518 Alpine Court. Construction reports and timing of construction are not well-documented. A drawing depicting as-built in-stream works outlined in the 1982 KWL reports was provided by the DNV and is presented in Appendix B (DNV 2013c). No date was present on the as-built drawing. The drawing indicates that a toe berm was constructed of fill in front of a pre-existing steep slope below 518 Alpine Court.

3.0 JULY 8, 2013 SITE OBSERVATIONS

A site visit was carried on July 8, 2013 by Michael Beaupre, E.I.T., G.I.T. and Ken Clapcott, P.Eng. of BGC. The inspection was conducted on the DNV property that extends from the downslope side of the erosion scarp to the base of the slope adjacent to Mosquito Creek. BGC did not inspect the ground between the erosion scarp and the garage of 518 Alpine Court.

The overall slope height ranges from 25 to 30 m with an average slope angle from the crest of the escarpment to Mosquito Creek of approximately 38°.

A 3 to 5 meter high erosion scarp in well consolidated massive, well-graded, compact and slightly cohesive glacial till is located at the crest of the escarpment. The erosion scarp varies in grade from locally overhanging to approximately 80° (Photograph 1). BGC staff did not observe the presence of any fill materials at the crest of the slope.

Soils immediately below the erosion scarp consist of a moderate to well graded, fine to coarse grained sand and gravel, with trace to some sub-rounded to sub-angular cobbles and boulders (Photograph 2). The cobbles and boulders predominantly consist of a grey, medium to coarse grained granite. The light grey sand and gravel was dry to moist and had weak to moderate cementation. These soils are likely deltaic and channel sand and cobble gravels that were interpreted to be have been deposited by proglacial streams have been mapped at a 1:50,000 scale in the vicinity of 518 Alpine Court (GSC 1979).

Further below the scarp, the slope grades between 34 to 38° for approximately 35 m to a walking trail located at the base of the slope. The soils along this part of the slope consisted of loose sand and gravel with larger cobbles accumulating mid-slope behind woody debris and along the walking trail located at the base of the slope. These materials are colluvium derived from the upslope erosion scarp.

Low lying brush was observed from mid-slope extending to the walking path at the base of the slope. No trees were present on the slope directly downslope from the scarp suggesting that the slope has been exposed to raveling and creep for some time which has prohibited the growth of mature trees (Photograph 3).

A walking path has been established near creek level on top of what appears to be a toe berm as shown in Figure 1 and Figure 2. Sub-angular, 0.50 to 0.75 m diameter placed riprap boulders were observed along the upslope edge of the walking path and extend approximately 2 m upslope (Photograph 4). The central portion of the riprap along the toe of the slope directly below the scarp was covered with loose sand and gravel and the walking trail contained granitic, sub-rounded to sub-angular cobbles and boulders (Photograph 5). The sub-angular riprap boulders extended approximately 4 m from the downslope side of the walking path to the base of Mosquito Creek. Young (estimated less than 10 years old) deciduous trees were growing through the riprap downslope of the walking path

(Photograph 6). An overview of the slope highlighting the location of the scarp, riprap, walking trail, and Mosquito Creek are presented Photograph 7.

During the July 8, 2013 site visit, seepage was observed roughly 5 m below the escarpment crest within a head scarp that is situated approximately 30 m upstream of the garage at 518 Alpine Court. Active seepage was not observed along the erosion scarp or the slope below the erosion scarp directly below 518 Alpine Court during the July 8, 2013 site visit; however it is quite likely that seepage does occur during or following winter rainstorm events.

4.0 CONCLUSIONS

The historical reports and site observations indicate that a toe buttress was constructed along the right bank of Mosquito Creek and along the toe of the slope downslope of 518 Alpine Court. We understand this toe buttress was constructed following a large flood and bank erosion event that occurred in 1981.

We understand that the purpose of the toe buttress was to increase the stability of the lower slope by decreasing the amount of bank erosion and undercutting from Mosquito Creek during subsequent flood events. It is expected that the toe buttress would have also decreased the likelihood of shallow landslides along the lower slope by increasing the weight, and thus, the resisting force along the slope toe.

The toe buttress appears to be approximately 4 m high (Figure 2; Photograph 7). Based on the available information, it appears the buttress beneath 518 Alpine Court was constructed of fill, and not by cutting into the toe of the slope. This conclusion is based on historical photographs that show a naturally over-steepened bank at the toe of the slope prior to berm construction, the presence of the placed riprap, and an as-built sketch of the in-stream works provided by DNV (2013c).

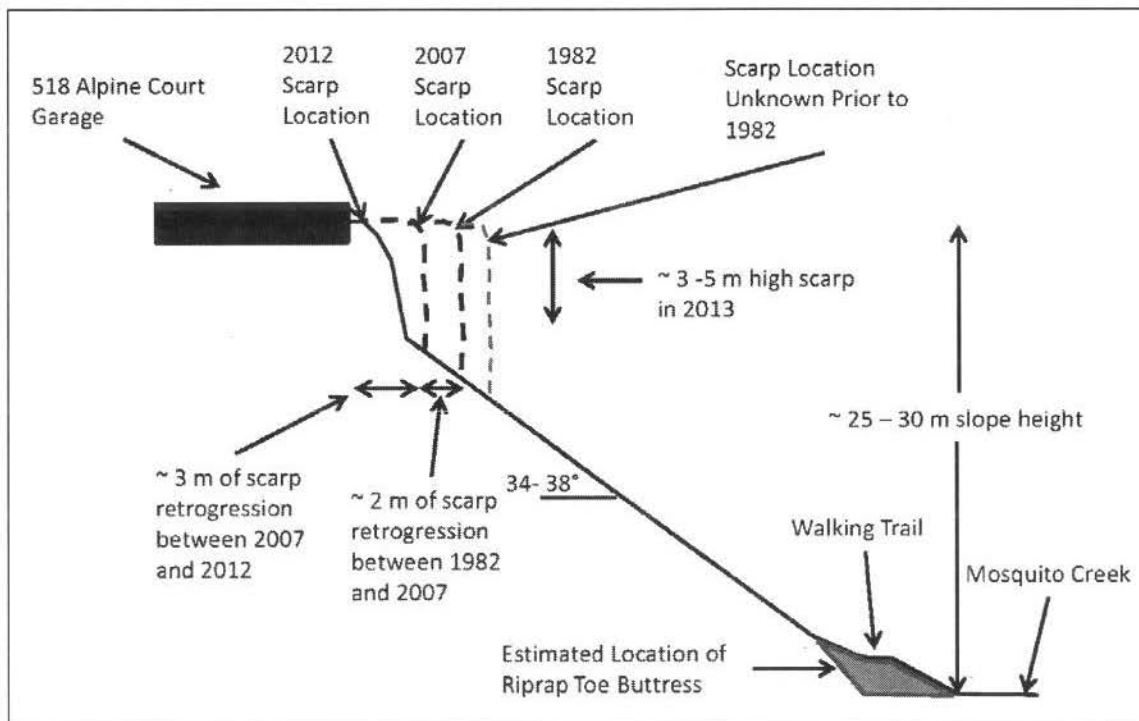


Figure 2 Schematic cross section behind 518 Alpine Court (Not to Scale).

There is presently no evidence to suggest that additional undercutting or bank erosion has occurred along the right bank of Mosquito Creek downslope of 518 Alpine Court following the

installation of the buttress and riprap along this section of the Mosquito Creek. At the time of the site inspection, the riprap along the right bank did not appear to have been displaced and appeared to be functional.

At the time of inspection, it did not appear that the walking trail located at the base of the slope is detrimentally affecting erosion or slope stability at the escarpment crest.

The overall slope angle below the erosion scarp is comparable to the angle of friction expected from a coarse grained soil that typically ranges between 35 and 40°.

Ongoing erosion and raveling of the in situ material within the over-steepened scarp will likely continue as the material is at an angle greater than its angle of friction. Raveling along the upper section of the escarpment was noted in the KWL 1982 report. The persistence of this process is further supported by the presence of cobbles and boulders located along the walking trail and on the riprap at the toe of the slope, and the lack of mature vegetation on the slope as observed during recent inspections and on air photographs dating back to the early 1960s. Although not observed during BGC's July 8, 2013 inspection, seepage during winter rainstorm events likely contributes to the erosion and raveling processes at the crest of the slope.

Balancing physical evidence, geomorphic reasoning, and generally accepted geotechnical principals, it appears that works conducted by DNV in the early 1980s have not contributed to instability along the over-steepened scarp below the garage at 518 Alpine Court.

It is likely that the placement of the toe buttress along the right bank of Mosquito Creek reduced bank erosion and prevented conditions from worsening further, but the toe buttress was likely not designed to prevent the continuation of erosion and raveling at the crest of the escarpment.

No subsurface information was collected, nor were any slope stability calculations completed as part of this assessment.

5.0 CLOSURE

We trust the above satisfies your requirements at this time. Should you have any questions or comments, please do not hesitate to contact us.

Yours sincerely,

BGC ENGINEERING INC.
per:

Michael Beaupre, M.Eng., E.I.T., G.I.T.
Geological Engineer

Reviewed by:

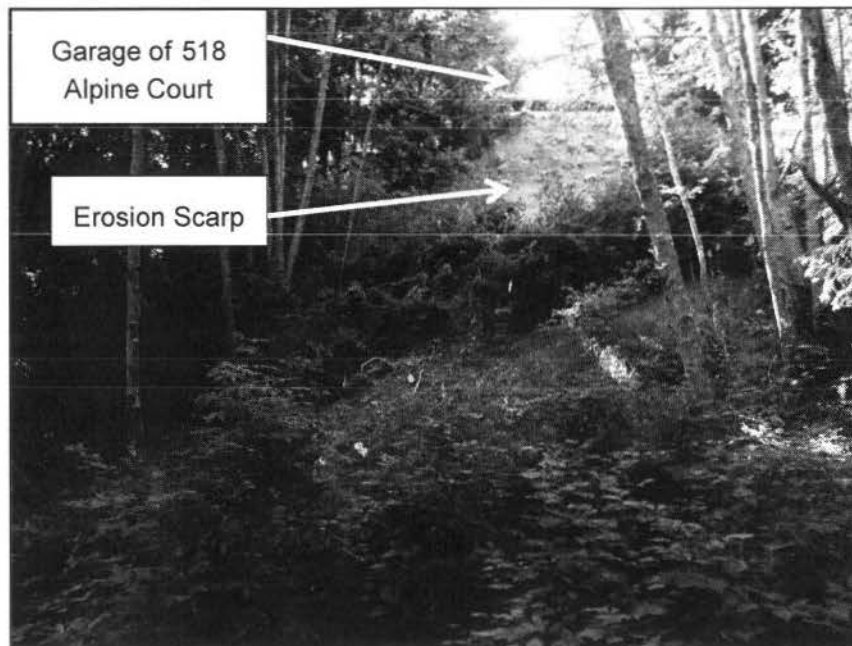
A handwritten signature in black ink, appearing to read 'M. Porter', is written over a circular professional engineer stamp. The stamp has a double-lined border. The outer ring contains the text 'PROFESSIONAL' at the top and 'ENGINEER' at the bottom. The inner circle contains the text 'PROVINCE OF' at the top, 'M. J. PORTER' in the center, '#27247' below the name, and 'BRITISH COLUMBIA' at the bottom.

Michael Porter, M.Eng., P.Eng.
Vice President, Senior Geological Engineer

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- BGC Engineering Inc. 2006. Site inspection completed on December 19, 2006. DNV Natural Hazards Database accessed on July 8, 2013.
- BGC Engineering Inc. 2009. Mosquito Creek Escarpment - Preliminary Landslide Hazard Assessments and Risk Analysis. District of North Vancouver. April 30, 2009
- BGC Engineering Inc. 2010. 2009 Landslide Risk Assessment for Select Escarpment Slopes. District of North Vancouver. January 4, 2010.
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- BGC Engineering Inc. 2013. Site inspection completed on March 15, 2013. DNV Natural Hazards Database accessed on July 8, 2013.
- District of North Vancouver. 2013a. Personnel communication – Request for services contained in an email received on June 27, 2013.
- District of North Vancouver. 2013b. Agenda – Regular Meeting of Council, Report 9.2 – Remedial Action Requirements – 518 Alpine Court: Unsafe Structure. June 24, 2013.
- District of North Vancouver. 2013c. Personnel communication – As-built drawing contained in an email received on July 22, 2013.
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- Horizon Engineering Inc. 2007. Preliminary Slope Stability Assessment, Alpine Court / Mosquito Creek Escarpment, North Vancouver, BC, Geotechnical Comments, Recommendations and Scope of Services. File: 107-1890. May 29, 2007.
- Horizon Engineering Inc. 2012. Slope Stability Reconnaissance 518 Alpine Court, North Vancouver, BC, Preliminary Geotechnical Comments. District of North Vancouver. File: 109-2489. November 16, 2012.
- Kerr Wood Leidal Associates LTD. 1982a. Report on Creek Systems and Stormwater Control, Working Paper No. 4, Report on Mosquito Creek, District of North Vancouver. June 1982.
- Kerr Wood Leidal Associates LTD. 1982b. Report on Creek Systems and Stormwater Control. District of North Vancouver. July 1982.

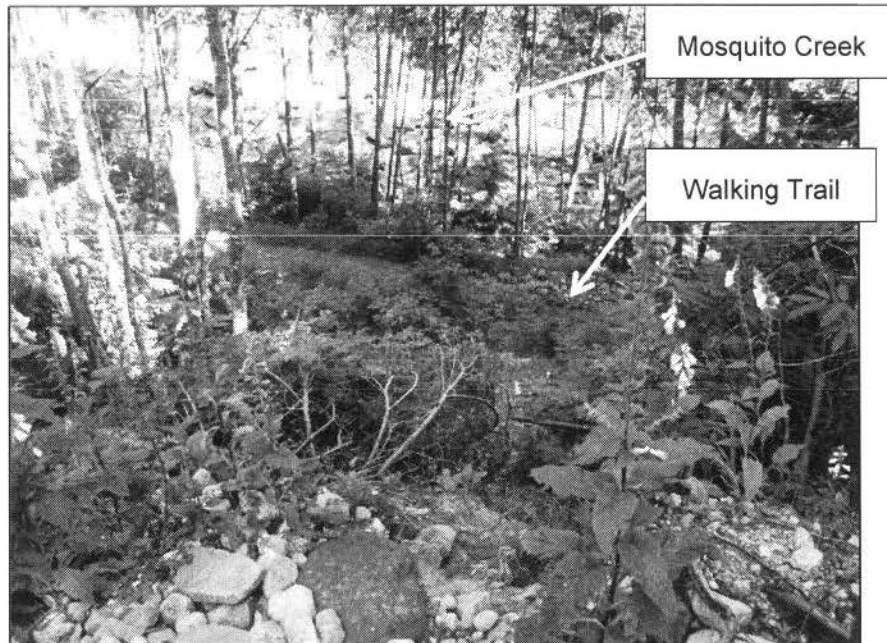
PHOTOGRAPHS



Photograph 1 Looking upslope from the walking trail at the base of the slope at the erosion scarp (July 8, 2013).



Photograph 2 Detailed view of the erosion scarp (July 8, 2013).



Photograph 3 Looking downslope from mid-slope at the walking trail and Mosquito Creek (July 8, 2013).



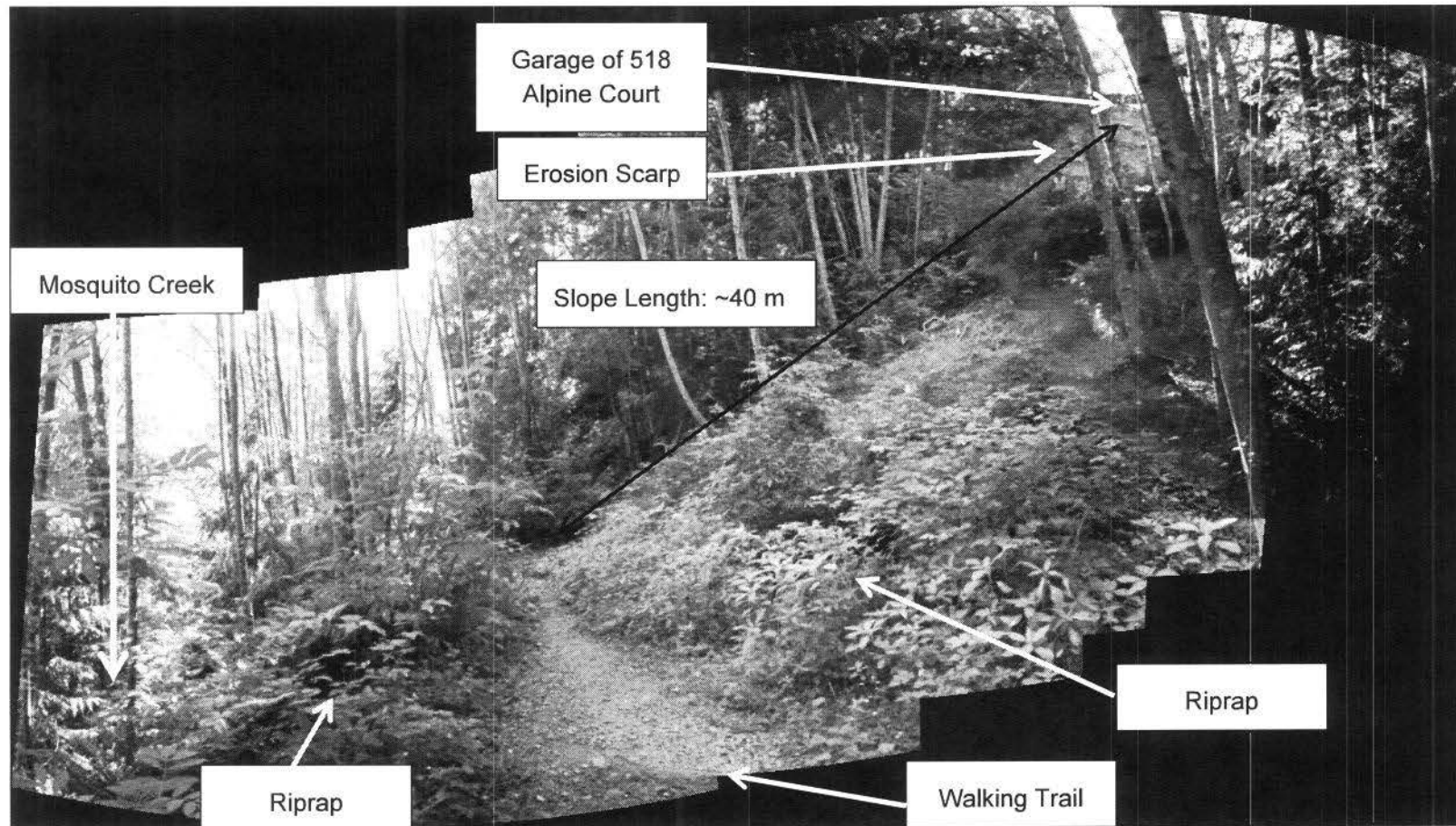
Photograph 4 Approximately 0.50 - 0.75 m diameter riprap located upslope of the walking trail at the toe of the slope (July 8, 2013).



Photograph 5 Looking upstream along the walking trail at the toe of the slope (July 8, 2013).



Photograph 6 View from the walking trail at the approximately 0.50 to 0.75 m diameter riprap along the right bank of Mosquito Creek at the toe of the slope (July 8, 2013).



Photograph 7 Looking downstream along the walking path at the base of the slope (July 8, 2013).

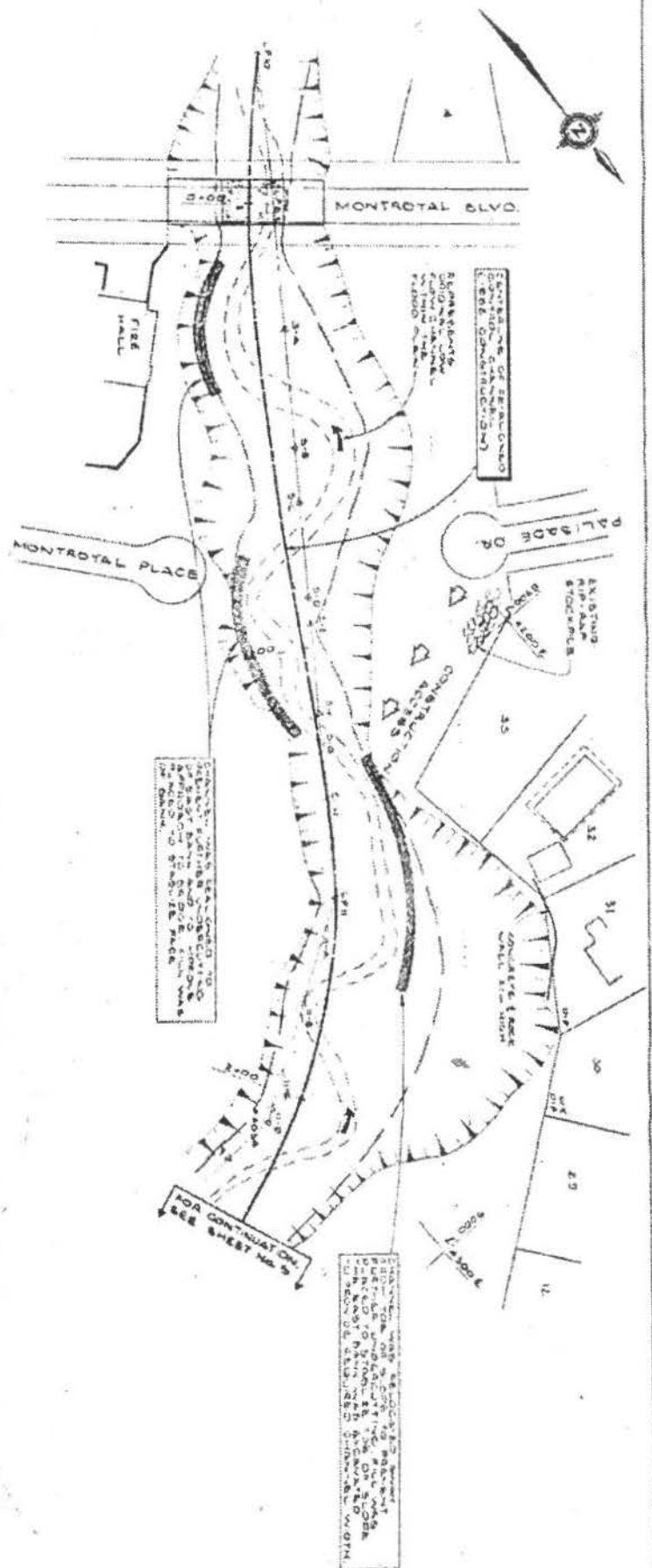
APPENDIX A HISTORIC REPORT SUMMARY

Report Title	Report Objectives	Observations	Conclusions	Recommendations	Reference
KWL – Report in Mosquito Creek (Working Paper No. 4) 1982a	Provide a comprehensive reference on the conditions of Mosquito Creek which included: <ul style="list-style-type: none"> Summarizing field observations from site visits, Assessment of channel stability, Recommendations for creek improvements. 	<ul style="list-style-type: none"> Extensive bank stability and erosion problems extending ~300 m upstream from the Montroyal Bridge. Ravelling of surficial, loose sandy gravels along the upper slope. Undercutting, sloughing, and erosion of the creek banks. 	<ul style="list-style-type: none"> The slope behind the garage of 518 Alpine Court appears to have had "a history of erosion". Ravelling of the sand and gravel unit at the crest of the slope was an on-going problem and was not considered related to the undercutting of the banks by the creek. Ravelling would continue to occur until a stable angle was achieved which was estimated to be between 35 to 40°. Continued ravelling will likely encroach on private properties (518 & 520 Alpine Court). 	<ul style="list-style-type: none"> A full geotechnical investigation for the west bank above the Montroyal Bridge. Trimming the upper slope to an angle between 35 to 40° to achieve a stable angle. Hydro-seeding on all failed slopes to reduce the ravelling process. A riprap toe buttress place to a height of ~ 3 m above the creek bed to reduce undercutting of the toe by Mosquito Creek. 	KWL 1982a
KWL – Report on Creek Systems and Stormwater Control 1982b	Provide the DNV with a Master Plan for stabilizing creek systems and improving storm water control following October 31, 1981 flooding event.	<ul style="list-style-type: none"> Channel erosion and bank instability extending approximately 300 m upstream of the Montroyal Bridge. 	<ul style="list-style-type: none"> Following a big storm there was large scale bank instability and slope failures. Erosion of the creek bed with major bedload movement. 	<ul style="list-style-type: none"> Creek stabilization with the construction of a riprap lined channel. Energy dissipating structures consisting of a vertical drop structures and large boulders to reduce the stream flow velocities. Re-aligned of the channel to move the creek away from problem areas. 	KWL 1982b
KWL - Mosquito Creek In-stream As-built Drawing	As-built drawing of in-stream works for Mosquito Creek outline in the 1982 KWL reports.	<ul style="list-style-type: none"> Drawing indicates that the Mosquito Creek channel was relocated away from the toe of the slope to prevent further undercutting. Fill was placed to stabilize the toe of the slope. Based on the drawing, the erosion scarp was located approximately 6 m from the garage of 518 Alpine Court. 	<ul style="list-style-type: none"> No conclusions noted 	<ul style="list-style-type: none"> No recommendations noted 	DNV 2013c
BGC - Site Inspection 2006	Ground based site inspection along the walking path at the base of the slope.	<ul style="list-style-type: none"> Two landslide scarps were identified along the crest of the escarpment behind 518 and 520 Alpine Court. The scarps extended from the crest to the walking trail. No erosion and no visible signs of slope instability at the toe of the slope. 	<ul style="list-style-type: none"> No conclusions noted. 	<ul style="list-style-type: none"> Complete a ground inspection to inspect for fresh erosion on slope. 	BGC 2006
Horizon – Preliminary Slope Stability Assessment – Alpine Court / Mosquito Creek Escarpment, North Vancouver, BC., Geotechnical Comments, Recommendations and Scope of Services 2007	Identify and provide geotechnical comments regarding the existing and potential slope stability problems along the mid-slope and crest of the escarpment.	<ul style="list-style-type: none"> A 12 to 15 m high, steep, exposure of soil located adjacent to 520, 528, and 532 Alpine Court. Visible seepage and several prominent discontinuities and apparent tension cracks were observed. The erosional scarp was located approximately 4 m southeast of the 518 Alpine Court garage. 	<ul style="list-style-type: none"> No imminent hazard for the inspected residences. Horizon predicted the southwest slope behind 518 and 520 Alpine Court continue to have on-going retrogressive ravelling and that the garage of 518 Alpine Court may be adversely impacted as the crest migrates. 	<ul style="list-style-type: none"> A detailed assessment of the 518 Alpine Court garage foundation and slope crest. Detailed slope stability and risk assessment for 518, 520, 528, and 532 Alpine Court to develop slope stabilization or management options. 	Horizon 2007
BGC – Mosquito Creek Escarpment – Preliminary Landslide Hazard Assessments and Risk Analysis, 2009	Complete a preliminary landslide hazard assessment to prioritize properties that require additional investigation and identify properties where risks are tolerable.	<ul style="list-style-type: none"> The garage was located less than 3 m from the scarp crest. An air photo interpretation was completed as part of the qualitative landslide risk assessment. The air photograph assessment was based on air photographs dating back to the early 1960s. Bank erosion and lack of vegetation on the slope east of 518 – 520 Alpine Court was noted. 	<ul style="list-style-type: none"> The structures at 518 Alpine Court had a "High" landslide probability and a "High" spatial probability of impact resulting in a "Very High" landslide risk rating. 	<ul style="list-style-type: none"> Further site characterization and risk assessment within 1 year. 	BGC 2009

Report Title	Report Objectives	Observations	Conclusions	Recommendations	Reference
BGC - Landslide Risk Assessment for Select Escarpment Slopes 2010	Complete a quantitative landslide risk assessment for loss of life to house occupants from rapid landslides along the Mosquito Creek Escarpment.	<ul style="list-style-type: none"> Approximately 10 cm of separation between the soil and the south east corner of the garage of 518 Alpine Court. 	<ul style="list-style-type: none"> Results from the risk assessment concluded that the residence of 518 Alpine Court had a 'Broadly Acceptable' risk under the DNV's risk tolerance criteria. The quantitative landslide risk assessment focused on estimating the potential loss of life for people living in residential houses and subsequently did not account for uninhabited outbuildings such as garages or garden sheds located on residential properties. 	<ul style="list-style-type: none"> Periodic visual monitoring of slopes to document any changes in slope conditions to prevent landslide hazards from developing or going undetected. Keep the sites under observation and reduce the landslide risk if practical. 	BGC 2010
BGC - Site Inspection 2011	Ground Inspection as part of DNV's on-demand inspection program after heavy rainfall.	<ul style="list-style-type: none"> A recent landslide extended from the crest of the escarpment with the runout reaching the walking trail at the base of the slope. Several tension cracks behind the overhanging soil mat located at the crest of the slope. The scarp was located approximately 0.5 m from the garage of 518 Alpine Court. 	<ul style="list-style-type: none"> No conclusions noted. 	<ul style="list-style-type: none"> DNV consider completing a drainage study at this site. 	BGC 2011
Horizon - Slope Stability Reconnaissance 518 Alpine Court, North Vancouver, BC, Preliminary Geotechnical Comments 2012	Review site conditions and provide comments on the stability of the slope behind 518 Alpine Court.	<ul style="list-style-type: none"> The scarp was located 0.75 m from the garage of 518 Alpine Court. No tension cracks or seepage were observed. 	<ul style="list-style-type: none"> The scarp behind the garage was not sufficiently stable its current condition. It was expected that the sand and gravel unit would continue to ravel until the slope reached its natural angle of repose. 	<ul style="list-style-type: none"> Restrict access to the garage. Several conceptual options for slope stabilization were presented. Complete a detailed slope stability assessment to confirm conceptual options. Monitor the slope until slope stabilization is implemented. 	Horizon 2012
BGC - Site Inspection 2013	Ground Inspection as part of DNV's on-demand inspection program after heavy rainfall.	<ul style="list-style-type: none"> No signs of very recent erosion or landslide activity along scarp. 	<ul style="list-style-type: none"> Erosion and periodic ravelling of sand and gravel unit is expected to occur within erosion scarp. 	<ul style="list-style-type: none"> Continue to monitor slope and refer to the Horizon 2012 report for potential remedial options. 	BGC 2013

Notes: 1) The slope has had a history of instabilities dating back to 1982.

APPENDIX B KWL AS-BUILT DRAWING

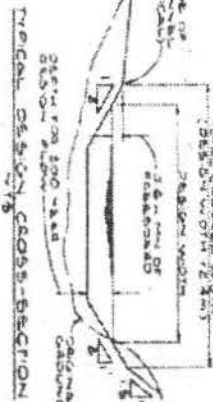


STATION	15.1 meters (50 feet)	15.2 meters (50 feet)	15.3 meters (50 feet)	15.4 meters (50 feet)
1	12%	12%	14%	17%

EXISTING GRADE, 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH

PROPOSED 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH

PROPOSED 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH



TYPICAL SECTION CROSS-SECTION

NOTES FOR SHEETS 4 AND 5

1. THE PROPOSED 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING NOTES:

- (a) THE PROPOSED 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING NOTES:
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- (q) THE PROPOSED 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING NOTES:
- (r) THE PROPOSED 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING NOTES:
- (s) THE PROPOSED 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING NOTES:
- (t) THE PROPOSED 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING NOTES:
- (u) THE PROPOSED 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING NOTES:
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- (y) THE PROPOSED 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING NOTES:
- (z) THE PROPOSED 12' x 12' CULVERT WITH CONCRETE & RAIL WALL 12' HIGH IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING NOTES:

STATION	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
VELOCITY	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
DEPTH	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
VELOCITY	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
DEPTH	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
VELOCITY	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
DEPTH	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100



FOR CONSTRUCTION ONLY



To: The District of North Vancouver Council

From: Peter Twist & Julie Rogers, 518 Alpine Court

Our findings, submitted for your review, prior to your Council meeting on July 29th.

Thank you,

Julie Rogers, Peter Twist

Please find attached relevant photographs, drawing and documentation from slope experts and archives. Our summary is below. Please also see the notes from our slope expert's assessment.

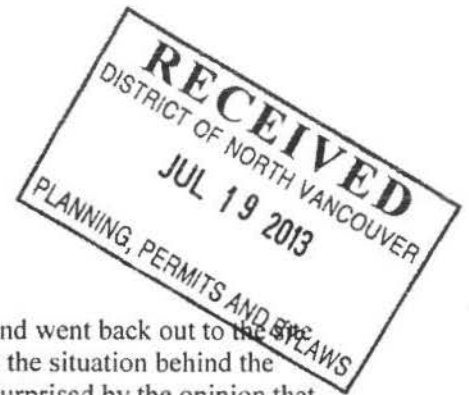
1. There was road work in the early 1980's removing the toe of a steep slope and without any stabilization of the toe of the slope.
2. This slope failure did not occur due to over-steepening by placing fill at the top of the slope, by increasing loads at the top of the slope, by running water over the slope or by adding water to the slope.
3. This slope failure began at the toe of the slope and not the top and has progressed to the point it is at today.
4. Given its location on the stream, when the road was built the slope at this location would have already been at the maximum angle it could maintain and any road cut would have resulted in an unstable situation immediately.
5. Historical photographic evidence demonstrates the initiation of the erosion and slides down-slope on district land and an assessment of the slope and resultant analysis generated a report and drawing to support what the photographs illustrate. Those are included for your review and include:
 - Cross sections of slope, road cut and slides
 - 1987 post road construction at toe of slope
 - 1996 518 lands still intact
 - 2009 518 lands still intact, erosion and slides to date occurring below property line on District property
 - Road-cut and slope cross sections that show impact of road cut as compared to natural slope

- Two photos showing toe of slope adjacent road cut, south of main slide where slope is naturally less steep but road cut impact at toe of slope evident. Nothing has been done by district to stabilize this area.
6. 1987 photo: Shows erosion and slide on district lands below our property initiating at the toe of slope which was removed for road 1981-84 road work and not stabilized.
 7. The August 2012 Horizon Engineering report utilizes a photograph I believe was from the geotech sight in 2009. It shows all of the land and thick vegetation inside the 518 Alpine property line intact. The slope erosion is outside of the property line. It extends from the toe of the slope up towards our property but starts and terminates on district land. It has been in that condition long enough that vegetation regrowth is now evident towards the bottom where it commenced.
 8. When we purchased the property in 2007, the land inside our property line was completely intact with fence, hedge outside the fence and plenty of vegetation. In fact, unless one walked down to the creek and looked up, from my yard and inside my property line any sign of a slide was unseen.
 9. It is interesting that only now after the problem has grown significantly, has become a serious safety and financial issue, and has encroached onto our private property that the District insists that something need be done and done urgently. There has been 30 years to manage this.
 10. The imposition of financial hardship, safety risk for my family, loss of land, resultant inability to sell property, decrease in property value, time we are forced to consume and the opportunity cost of our time, emotional and mental stress, and the impact of imposing unnecessary and unjust stress onto my health returning from stage 4 cancer are all being tallied for proper reconciliation should legal assistance be required. We don't take lightly having this imposed on us nor our family home at risk and devalued, and the personal cost forced to deal with the culmination of lack of action by the district over the past three decades despite knowledge and information they possessed, and the initial approach to place the cost of remediation on the home owners without suitable remediation to the slope and reconciling of the financial damage to the private land owners.
 11. We have lost considerable valuable land as a result of the 29 year conclusion to graduating erosion and many slides which today now terminate atop our property. The area of that lost land has definable financial value.
 12. This slope failure began at the toe of the slope and not the top and has progressed to the point it is at today. The district could have built a wall or moved large rocks in place in 1984 to prevent. Or acted upon subsequent erosion and multiple slides on their property.

13. However no action was done and it was only when the owners of 518 Alpine notified the District the erosion has reached 518's property line, did the District act by demanding 518 Alpine remediate the situation and placing both liability and financial responsibilities upon the owners of 518. This is reprehensible. This has negatively impacted our property, our financial wellbeing and our emotional health as well as imposing stress and duress during a time of health recovery. We remain hopeful the east slope, garage and overall property will be rectified and reconciled to a point we don't need to take legal action to properly represent ourselves.
14. Alpine Court, and view properties in particular, are in high-demand today as West Vancouver style homes and buyers look to this area as an attractive alternative. Despite initial high interest and traffic of prospective buyers, zero have made an offer stating the district lands and slope reports being of high risk and presents too much uncertainty given the reluctance to repair and stabilize the slopes over the past many years. We are being asked to pay taxes on a \$1.4 million home. Any investment is worth precisely what someone will pay for it. This home we purchased for over a million dollars, and have invested in and carried since 2007, today is worth exactly zero dollars. That needs reconciliation with the district.
15. It has not been difficult to get Engineers to walk our property, walk the district lands, and assess the situation. It has however been difficult to get them to document this for stated fear of reprisal. This was very telling and places into question the reports generated on the District's behalf. It is a reality. We are not at this time confident we have received neither objective analysis nor appropriate action by the District which long ago would have prevented this situation. We have presented facts and are confident in the sources. Should these be refuted we would need to fly in geotechs who are comfortable documenting their findings inside the District of North Vancouver and with legal leadership who understands how to quarterback this on our behalf inside the District.
16. The owners of 518 Alpine have been constructive taxpayers initiating businesses in North Vancouver that created employment for many and brought thousands of visitors to the region for high performance athlete camps, educational conferences, leadership summits, film production, and research all generating both tax dollars and economic benefit. Moreover, Twist's and Roger's primary business mission is to enhance fitness, sport performance and help many return from injury, disease and learn how to become their very best, as well as educate and certify other health and fitness professionals to do similar. As leaders in our industry globally who travel to guest speak and well published with hundreds of articles, books and DVDs, we are tremendous ambassadors of the Vancouver brand. We don't ask or expect any special treatment related to this. Just fair and ethical treatment.

A handwritten signature in black ink, appearing to be 'Roger Twist', with a stylized, sweeping flourish extending from the bottom right.

July 2013



Peter,

I read the Horizon Engineering report and the CDNV communications and went back out to the site and had another look. I agree with Horizon Engineering and CDNV that the situation behind the garage is serious and agree that something should be done but am very surprised by the opinion that this is your problem to fix.

I am not a lawyer nor a geotechnical engineer but as you know I have been an actual slope expert both teaching and spearheading projects on this specialization. I have worked on the assessment and remediation of slope and streambank stabilization projects for over twenty years, am a certified professional in erosion and sediment control, long studied in slope erosion and stabilization and lecture on slope erosion and streambank and slope stabilization at the College and University level including teaching graduate studies, and have been involved in hundreds of slope projects so I have a good understanding of the situation.

This slope failure did not occur due to over-steepening by placing fill at the top of the slope, by increasing loads at the top of the slope, by running water over the slope or by adding water to the slope.

This slope failure began at the toe of the slope and not the top and has progressed to the point it is at today.

Only five years ago you could not even have seen the slide area from behind the garage as there was dense vegetation and a hedge there. To the north of your property you can see other similar situations that have not yet reached the top of bank.

With the position on the stream at the outside bank downstream of a bend in the stream this slope would have been subject to toe erosion at the streambed for many years prior to development or interference by human activities and even without any interference this bank would have eventually (in centuries perhaps) failed to this point. This natural erosion is a very slow process and is present on all streams, especially steep high energy mountain streams such as the streams in North Vancouver.

The erosion process appears to have been accelerated here by over-steepening of the toe of the slope to construct a road alongside the creek.

Given it's location on the stream, when the road was built the slope at this location would have already been at the maximum angle it could maintain and any road cut would have resulted in an unstable situation immediately.

The effect of the road cut is graphically shown when comparing cross sections of the slope from top of slope to streambed immediately downstream (south) of the slide area and through the slide area (see attached).

There was a steeper slope prior to the construction of the road yet this makes the road cut even more significant and incriminating. Cutting into a less stable bank and not protecting the slope is even more hazardous and will result in failures *much* quicker than cutting the base of an otherwise less steep or more stable bank.

I noted that the location of the slope on the outside bank at the downstream end of a bend in the stream would have had the natural slope at its maximum stable angle already, prior to any disturbance by man. This would have made any roadcut much more detrimental at this location than at nearby locations where the slope may have been at an even slightly less steep angle and stabilized with vegetation.

Stable slope angles from top of bank to the toe would exist if not for the road cut. I've included a couple of cross sections I measured below your house and garage and to have included a second depiction of the cross sections where I drew the steep portion of the slope that is at the top near garage at the bottom of the slope above the road. This represents the situation prior to the slides beginning after the road was cut through the base of the slope. Drawn this way it is very similar to the cross section immediately south of the slide area. If nothing is done it is likely that eventually this will occur there as well - below the southeast corner of your home. Fortunately the slope above the road/ trail below the house is slightly less steep (perpendicular to the roadcut) the further south you go so most of the home is only at minimal risk due to slow natural erosion and not the accelerated severe erosion occurring below the garage.

Even if you had been aware of the work done on the neighbouring District property prior to your purchase there is little that you could have done to prevent this current situation as 100% of the entire problem was not on your property until the last large slide occurred. As such I find it hard to understand the CDNV position that it is up to you to suffer financial losses and correct the situation at your cost due to their lack of action. The way I understand common law, if a property owner does or allows something to be done on their property that harms someone else then they are liable for the resulting damages and remediation. You have lost a considerable percentage of your valuable property, and incurred loss in value. I would suggest that you use the help of a lawyer experienced with such things as it looks fairly clear to me that you can not be responsible for the results of work done years ago on someone else's property. Even if the CDNV was unaware of this slope instability prior to the slide that encroached onto your property it would be hard to understand their position... but they *have* been aware of the problem for years as they maintained the roadway / trail and they had slope stabilization reports done that mentioned the stability issue.

The photos from 1987 illustrate slope erosion and a slide near the bottom of the district property, yet it was not acted on and today almost 30 years after the toe cut during road work, they claim it is your responsibility now that it has graduated to the very top of the slope onto several feet of your property.

It is interesting that only now after the problem has grown significantly, has become a serious safety and financial issue, and has encroached onto your property that they insist that something need be done and done urgently.

As for what can be done to stabilize the slope - treating the results of the problem at the top of the slope will likely be much more expensive than dealing with the cause of the problem (the roadcut and erosion) at the toe of the slope. Unfortunately it is a bit late for that below the garage but I would suggest that it is still possible to rebuild a stable slope in that area. That is not uncommon and CDNV has even completed projects such as that in the past to protect infrastructure, parks and homes. They could have taken care of this decades ago and can still today.

I hope you have found a good lawyer and a good geotech engineer. Unfortunately it may be difficult for you as a property owner to find local expertise and professionals willing to provide an opinion on this as like me no one who works with and wants to continue to work with the CDNV will be eager to contradict the CDNV or get involved in something that CDNV may not want to deal with or that will expose the CDNV to bad press. Horizon Engineering are a good firm familiar with the local slopes but are representing the CDNV and will provide opinion's on the CDNV's behalf, so you will have to find another. I understand engineers visiting your property share my assessments yet are unwilling to document opinion contrary to the District. I will try to come up with a couple names for you. I believe the fellow who headed one of the past slope studies that included this property is now on Vancouver Island but may be interested. Alternatively you may want to first find a lawyer experienced with these issues and use someone he or she is familiar with.

I hope this is of value to you.

Clayton Anderson

RECEIVED
DISTRICT OF NORTH VANCOUVER
JUL 19 2013

1987 Air Photo
Slope failure evident -
existing original vegetation
behind garage

Existing garage

ERS 3710 - 58



approximate cross section locations showing slopes, road cut and slide area
above creek on CDNV property below 518 Alpine Court



Clayton Anderson
1291 White Pine Place
Coquitlam, BC, Canada, V3B 6Y5

email hwr@telus.net

Mosquito Creek Bank
**Location of Sections below house & garage
(CDNV property adjacent to 518 Alpine Court,
North Vancouver)**

for Pete Twist, owner 518 Alpine Court

June 28, 2013

Drawing #

51102-p01



In 1987 a road is present along the toe of the slope, and vegetation near the road has been cut back. There is still vegetation at the top of the slope behind the garage. There is no vegetation on the slope below the garage.



Clayton Anderson
1291 White Pine Place
Coquitlam, BC, Canada, V3B 6Y5

email fwr@telus.net

Mosquito Creek Bank
1987 Airphoto
**(CDNV property adjacent to 518 Alpine Court,
North Vancouver)**

for Pete Twist, owner 518 Alpine Court

June 28, 2013

Drawing #

51102-p04



In 1996 the road is still visible along the toe of the slope and the cut banks, slides and damaged areas have re-vegetated. This could have been similar to the situation when the property was purchased by the current owner.



Clayton Anderson
1291 White Pine Place
Coquitlam, BC, Canada, V3B 6Y5

email fwr@telus.net

Mosquito Creek Bank
1996 Airphoto
**(CDNV property adjacent to 518 Alpine Court,
North Vancouver)**

for Pete Twist, owner 518 Alpine Court

June 28, 2013

Drawing #

51102-p05

attachment E

Michael Porter

From: Michael Porter
Sent: July-24-13 2:07 PM
To: 'Brett Dwyer'; Michelle Weston
Cc: Steve Ono; Brian Bydwell; Mike Beaupre
Subject: 518 Alpine Documentation submitted by Twist and Rogers

Michelle,

This is to confirm that BGC received and reviewed copy of documentation submitted to DNV on July 19, 2013 by Peter Twist and Julie Rogers of 518 Alpine Court. The opinions provided in that documentation do not cause us to alter the conclusions presented in our report to DNV on this matter, dated July 24, 2013.

Sincerely,

BGC ENGINEERING INC.

per:

Michael Porter, M.Eng., P.Eng., LEG
Vice President, Senior Geological Engineer



BGC ENGINEERING INC.

Suite 800 - 1045 Howe Street
Vancouver, BC, CAN, V6Z 2A9
Telephone: (604) 684-5900 ext. 41123
Direct: (604) 629-3847
Cellular: (604) 240-8055
Facsimile: (604) 684-5909
www.bgcengineering.ca

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COUNCIL AGENDA/INFORMATION		
<input type="checkbox"/> In-Camera	Date: _____	Item # _____
<input checked="" type="checkbox"/> Regular	Date: <u>May 29, 2017</u>	Item # _____
<input type="checkbox"/> Info Package	Date: _____	Item # _____
<input type="checkbox"/> Agenda Addendum	Date: _____	Item # _____

9.6

		
Dept. Manager	Director	Municipal Manager

The Corporation of the District of North Vancouver

REPORT TO COUNCIL

May 29, 2017
File: 05.1960

AUTHOR: Andy Wardell, Acting General Manager, Finance & Technology

SUBJECT: COUNCIL REMUNERATION AND EXPENSES PAID DURING 2016

RECOMMENDATION:

THAT the report Council Remuneration and Expenses Paid During 2016 be approved.

REASON FOR REPORT:

Council must prepare a report each year in compliance with Section 168.1 of the Community Charter. The 2016 report must be available for public inspection at the Municipal Hall during its regular office hours until June 30, 2018.

The Finance and Audit Committee has reviewed and recommends that the report Council Remuneration and Expenses Paid During 2016 be approved.

Section 168.1 of the Community Charter requires that:

At least once a year, a council must have prepared a report separately listing the following for each council member by name:

- (a) the total amount of remuneration paid to the council member for the discharge of the duties of office, including any amount specified as an expense allowance;
- (b) the total amount of expense payments for the council member made to the council member as reimbursement for expenses incurred by the council member or as an allowance that is not reported under paragraph (a);
- (c) the total of any benefits, including insurance policies and policies for medical or dental services, provided to the council member or the member's dependants;
- (d) any contracts reported under Section 107 (disclosure of contracts with Council members and former Council members), including a general description of their nature.

SUBJECT: COUNCIL REMUNERATION AND EXPENSES PAID DURING 2016

May 29, 2017

Page 2

REPORTING OF REMUNERATION AND EXPENSES

Council Member	Total Amount of Remuneration Paid Under Sec. 168.1 (a)	Total Amount of Expenses Paid Under Sec. 168.1 (b)
Bassam, Roger	43,233	1,038
Bond, Matthew	42,209	3,834
Hanson, James A.	43,233	3,237
Hicks, Robin D.	42,209	3,986
MacKay-Dunn, Doug	42,987	1,066
Muri, Lisa A.	41,934	95
Walton, Richard S.B.	100,677	11,446
Grand Total	\$356,482	\$24,702

Section 168.1(c)

No expenses

Section 107

No Section 107 contracts exist.

Respectfully Submitted,



Andy Wardell, Acting General Manager, Finance & Technology

REVIEWED WITH:

- ☐ Communications
- ☐ Env. Protection
- ☐ Human Resources
- ☐ Eng. Public Works
- ☐ Eng. Admin.
- ☐ Eng. Parks

REVIEWED WITH:

- ☐ Finance
- ☐ Fire Services
- ☐ Legislative Services
- ☐ Land
- ☐ Permits & Licenses
- ☐ Planning
- ☐ Social Planning

REVIEWED WITH:

External Agencies:



- ☐ Recreation Commission
- ☐ Library Board
- ☐ Health Dept.
- ☐ RCMP
- ☐ Other: _____

REVIEWED WITH:

Advisory Committees:

- ☐ _____
- ☐ _____
- ☐ _____

AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: <u>May 29, 2017</u>
<input type="checkbox"/> Other:	Date: _____

Dept. Manager	 GM/ Director	 CAO
------------------	--	--

The District of North Vancouver REPORT TO COUNCIL

May 18, 2017

File: 05.1780/Financial Plan 2017

AUTHOR: Rozy Jivraj, Section Manager, Financial Planning

SUBJECT: 2017-2021 Consolidated Financial Plan Amendment #1

RECOMMENDATION:

THAT Council provide FIRST, SECOND, and THIRD reading of the "2017 – 2021 Consolidated Financial Plan Approval Bylaw 8214, 2017, Amendment Bylaw 8234, 2017 (Amendment 1)".

REASON FOR REPORT:

To meet the requirements of the Community Charter any changes that have occurred since the adoption of the 2017 - 2021 Financial Plan on February 6, 2017 must be formally adopted in an amended financial plan. The major changes were identified and discussed at the Finance and Audit Standing Committee on May 16, 2017 with the resulting bylaw recommended for consideration by Council.

SUMMARY:

Changes must be formally adopted in an amended financial plan to meet Community Charter requirements. Since February 6, 2017, Council has supported changes through resolution and direction to amend the Financial Plan.

Major capital changes discussed at the Finance and Audit Standing Committee total \$6.1 million, net of an energy grant of \$340k with remaining housekeeping changes of \$270k primarily related to prior year's capital maintenance and private contributions to infrastructure.

Major operating changes discussed at the Finance and Audit Standing Committee realize net savings of \$323k in 2017 with remaining housekeeping items of \$26k related to timing, reallocations, and the use of surplus and reserves for authorized adjustments.

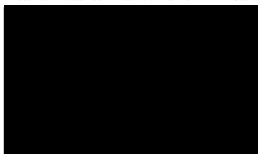
Timing/Approval Process:

The Financial Plan must be amended for spending authority to be in place for related expenditures prior to year-end.

Financial Impacts:

See attached report

Respectfully submitted,



Rozy Jivraj, CPA, CA
Section Manager, Financial Planning

REVIEWED WITH:

☐ Sustainable Community Dev. _____
☐ Development Services _____
☐ Utilities _____
☐ Engineering Operations _____
☐ Parks _____
☐ Environment _____
☐ Facilities _____
☐ Human Resources _____

☐ Clerk's Office _____
☐ Communications _____
☐ Finance _____
☐ Fire Services _____
☐ ITS _____
☐ Solicitor _____
☐ GIS _____
☐ Real Estate _____

External Agencies:
☐ Library Board _____
☐ NS Health _____
☐ RCMP _____
☐ NVRC _____
☐ Museum & Arch. _____
☐ Other: _____

The Corporation of the District of North Vancouver

Bylaw 8234

A bylaw to amend the 2017-2021 Consolidated Financial Plan Approval Bylaw 8214, 2017

The Council for The Corporation of the District of North Vancouver enacts as follows:

1. Citation

This bylaw may be cited as "2017-2021 Consolidated Financial Plan Approval Bylaw 8214, 2017, Amendment Bylaw 8234, 2017 (Amendment 1)".

2. Amendments

2.1 2017-2021 Consolidated Financial Plan Approval Bylaw 8214, 2017 is amended as follows:

- a. Schedule A to Bylaw 8214 is deleted in its entirety and is replaced with the new *Schedule A to Bylaw 8214 District of North Vancouver 2017-2021 Consolidated Financial Plan* as shown in Schedule 1 of this bylaw.
- b. Schedule C to Bylaw 8214 is deleted in its entirety and is replaced with the new *Schedule C to Bylaw 8214 Reserve Fund Appropriations* as shown in Schedule 2 of this bylaw.

READ a first time

READ a second time

READ a third time

ADOPTED

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk

Schedule 1 to Bylaw 8234

Schedule A to Bylaw 8214 District of North Vancouver 2017-2021 Consolidated Financial Plan (\$000's)

	2016	2017	2018	2019	2020	2021
Revenue						
Taxation	\$ 94,706	\$ 98,335	\$ 101,534	\$ 104,947	\$ 108,462	\$ 112,081
Sales, Fees, and Other User Charges	83,547	85,956	87,759	90,549	93,230	95,998
Developer Contributions	6,541	19,631	11,446	34,093	36,890	20,732
Grants and Other Contributions	4,043	8,396	5,439	4,372	2,637	2,291
Investment Income	3,670	3,587	3,896	4,326	5,369	6,207
Penalties & Interest on Taxes	705	705	719	733	748	763
	193,212	216,610	210,793	239,020	247,336	238,072
Proceeds from Debt	-	-	-	-	-	-
Transfers In from:						
Operating Reserves & Surplus	6,901	7,607	1,323	407	540	238
Capital Committed Funds	19,512	260	-	-	-	-
Reserve Funds	26,872	46,784	64,382	58,574	36,450	39,355
	53,285	54,651	65,705	58,981	36,990	39,593
Source of Funds	\$ 246,497	\$ 271,261	\$ 276,498	\$ 298,001	\$ 284,326	\$ 277,665
Operating Expenditures						
Community Services	\$ 34,122	\$ 35,376	\$ 35,906	\$ 36,531	\$ 37,719	\$ 38,931
Planning and Development	9,987	10,522	10,496	10,560	10,719	10,881
Transportation and Engineering	7,589	7,957	7,807	7,990	8,142	8,293
Protective Services	39,839	40,284	41,548	42,578	43,430	44,300
Utilities	40,174	41,960	44,357	46,991	49,979	51,428
Governance and Admin	15,700	16,548	13,243	14,185	14,758	15,735
	147,411	152,647	153,357	158,835	164,747	169,568
Capital Expenditures	72,244	55,929	68,264	61,249	37,795	39,948
Debt Service	5,267	4,206	3,982	2,927	2,927	2,927
Transfers Out to:						
Operating Reserves & Surplus	185	491	640	606	599	607
Reserve Funds	21,390	57,988	50,255	74,384	78,258	64,615
	21,575	58,479	50,895	74,990	78,857	65,222
Use of Funds	\$ 246,497	\$ 271,261	\$ 276,498	\$ 298,001	\$ 284,326	\$ 277,665

Schedule 2 to Bylaw 8234


Schedule C to Bylaw 8214 Reserve Fund Appropriations

	LAND	RENEWAL		UPGRADE / EXPAND			UTILITIES			Total
	Land Opportunity	Infrastructure	Equipment Replacement	New Capital & Innovation & Other	Local Improvement & Public Art	Development (DCC's, CAC's) ⁽¹⁾	Recycling & Solid Waste	Water	Sewer & Drainage	
2017 Opening Balance	\$ 3,260,276	\$ 21,646,617	\$ 10,885,645	\$ 5,062,714	\$ 4,243,915	\$ 23,085,111	\$ 858,366	\$ 6,899,624	\$ 12,809,583	\$ 88,751,852
Appropriations:										
Mountain Highway Underpass	1,728,060									1,728,060
Strategic Land Acquisition	200,000									200,000
Infrastructure Renewal										
- Community Services		3,776,393								3,776,393
- Governance & Admin		1,817,312								1,817,312
- Planning & Development (Lynn Valley Village)		819,099								819,099
- Protective Services (incl. Maplewood Fire Facility)		2,523,632								2,523,632
- Transportation		5,132,840								5,132,840
Debt Principal		1,006,282								1,006,282
Delbrook Stabilization			126,476							126,476
Fire Equipment			451,700							451,700
General Equipment			1,379,000							1,379,000
Golf Facilities Equipment			169,200							169,200
ITS Applications & Equipment		1,000,853	553,000							1,553,853
Recreation Equipment			273,000							273,000
Active Transportation		475,000		425,000		100,000				1,000,000
Braemar/ Fromme Parking Lot				399,500		(CAC - Spirit Trail)				399,500
Community Facility Upgrades				130,000						130,000
Facilities and Energy Projects		1,559,234		475,000						2,034,234
Inter River Artificial Turf Field - Design		200,000								200,000
Karen Magnussen Energy Retrofit				75,000						75,000
Kirkstone Artificial Turf Field		122,500		602,500						725,000
Lane Millings		62,500		62,500						125,000
New Delbrook Community Centre		1,280,500							219,500	1,500,000
Ron Andrews Energy Retrofit				250,000						250,000
Seylynn Development - Airspace Parcel				1,500,000						1,500,000
Street Light (LED)		235,000		235,000						470,000
WiFi & Technology Expansion		72,500		40,000						112,500
Local Improvement Program					67,500					67,500
Public Art Renewal					50,000					50,000
Drainage (DCC)						1,134,680			4,012,420	5,147,100
Parks (DCC)						2,625,000				2,625,000
Sewer (DCC)						375,720			1,686,880	2,062,600
Water (DCC)						1,119,773		5,102,427		6,222,200
Cap West Development - Sanitary Line						181,000				181,000
Inter River Retaining Wall						145,230		199,054	130,716	475,000
MSP Multi-Use Path (CAC)						25,000				25,000
Lions Gate Community Centre (CAC)						250,000				250,000
Lynn Creek Community Centre (CAC)		62,000				138,000				200,000
Subtotal - Appropriations from Reserves	1,928,060	20,145,645	2,952,376	4,194,500	117,500	6,094,403	-	5,301,481	6,049,516	46,783,481
Contributions including Interest	43,035	17,687,566	2,185,422	2,394,097	80,932	20,056,088	1,322,570	5,342,883	8,757,574	57,870,167
2017 Closing Balance	\$ 1,375,251	\$ 19,188,538	\$ 10,118,691	\$ 3,282,311	\$ 4,207,347	\$ 37,046,796	\$ 2,180,936	\$ 6,941,026	\$ 15,517,641	\$ 89,838,538

Note 1) The Keith Road Bridge Upgrade Project has been funded on an interim basis from the Infrastructure Reserve. The DCC Road Reserve will repay it's proportionate share of ~\$3.11 million for this project when funds are available (projected 2018)

AGENDA INFORMATION

- | | |
|---|-------------|
| <input type="checkbox"/> Council Workshop | Date: _____ |
| <input type="checkbox"/> Finance & Audit | Date: _____ |
| <input type="checkbox"/> Advisory Oversight | Date: _____ |
| <input type="checkbox"/> Other: | Date: _____ |

Dept. Manager	 GM/ Director	CAO
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The District of North Vancouver REPORT TO COMMITTEE

May 16, 2017

File: 05.1780/Financial Plan 2017

AUTHOR: Rozy Jivraj, Section Manager, Financial Planning

SUBJECT: 2017-2021 Consolidated Financial Plan Amendment #1

RECOMMENDATION:

THAT the Finance & Audit Standing Committee recommend to Council:

THAT Council provide FIRST, SECOND, and THIRD reading of the "2017 – 2021 Consolidated Financial Plan Approval Bylaw 8214, 2017, Amendment Bylaw 8234, 2017 (Amendment 1)"

REASON FOR REPORT:

To meet the requirements of the Community Charter any changes that have occurred since the adoption of the 2017 - 2021 Financial Plan on February 6, 2017 must be formally adopted through a Financial Plan Amendment.

SUMMARY:

Since February 6, 2017, Council supported Capital Plan changes totalling \$6.1 million and Operating Plan changes realizing net savings of \$323K in 2017, through resolution and direction to amend the Financial Plan. Operating savings reach \$462k by 2019 and are anticipated to grow in the outer years under the new RCMP Cost Sharing Agreement.

Housekeeping items, while not detailed in the analysis below, are summarized and included in the Financial Plan Amendment Bylaw.

BACKGROUND:

On February 6, 2017, Council adopted the 2017-2021 Consolidated Financial Plan Approval Bylaw 8214. The 2017-2021 Financial Plan includes the Operating and Capital Plans, highlights of the work program, and the tax increase for 2017.

EXISTING POLICY:

Section 173 (2) of the Community Charter states that "a municipality may make an expenditure that is included in that year of its financial plan, so long as the expenditure is not expressly prohibited by or under this or another act". Section 173 (3) of the Community Charter adds "A municipality may make an expenditure for an emergency that was not

contemplated for that year in its financial plan, so long as the expenditure is not expressly prohibited by or under this or another Act", and under 173 (4b) "If an expenditure is made under that subsection, as soon as practicable, the council must amend the financial plan to include the expenditure and the funding source for the expenditure".

ANALYSIS:

This amendment includes adjustments to existing projects, new projects and initiatives and operating savings from changes to service and cost sharing agreements.

Consistent with prior years, housekeeping items (i.e. reallocations, reclassifications between funds, privately funded infrastructure, and use of surplus and reserves for authorized adjustments) are summarized and included in the Financial Plan Amendment Bylaw 8234.

A summary of the key Capital and Operating Plan changes are described below:

Capital Plan:

During the year, Council supported changes to capital expenditures through resolution and direction to amend the Financial Plan. The key changes are summarized in Table A and noted below:

1. Inter River Retaining Wall

Based upon higher tender results and unforeseen ground conditions, the construction of the retaining wall at Inter River Park along Lynn Creek Dyke Road is anticipated to cost \$1.4 million, an increase of \$475k. The original scope of work was modified to optimize construction costs and provide a more aesthetically pleasing and proportional wall height. The wall addresses slope stability issues, public safety concerns, and facilitates the future creation of additional sport field facilities. As the project provides additional capacity to receive fill from utility projects, thereby reducing utility costs (saving approximately \$700,000/year), the water and sewer and drainage utilities equally fund this project through their reserves and DCC's.

2. Delbrook Community Recreation Centre

Revised estimates to complete the Delbrook Community Recreation Centre total \$53.5 million, a net increase of \$1.5 million (2.9%) over existing budget after applying energy grants of \$340k. A project contingency of 7% was deemed reasonable in the fall of 2014 as construction estimates were at 65% certainty. A project contingency of 10% is more typical for projects of this size and complexity. Unforeseen soil conditions, refinements to design and construction delays resulted in the increase. Surplus from projects closed in 2016 will be reallocated to fund the \$1.5 million balance.

3. Seylynn Development

The District is to acquire an airspace parcel as part of the Seylynn Development Partnering Agreement approved by Council in 2012. The \$1.5 million payment is subject to the developer meeting certain conditions. These conditions are in the final stages of review and approval before payment is issued. The New Capital and Innovation Reserve received related revenues at the time of the 2012 agreement from the previous developer and will be the source of funds for this final payment.

In 2017, \$900k was set aside for a day care to be constructed at Seylynn funded by Community Amenity Contributions. This day care will be built by the developer and privately owned and operated. As the District will not own this asset, the costs and funding will be removed from the financial plan but tracked for future reporting on development.

4. Mount Seymour Parkway Multi-use Paths

An increase in scope required to meet Ministry of Transportation highway use permit requirements. Total project cost is now estimated at \$180k requiring an additional \$50k. 50% is external funded from Bike BC with the remaining 50% funded through community amenity contributions.

5. Artificial Turf Field (ATF) in South Inter River Park

Based upon the current field condition assessment, the existing south grass field requires a complete rebuild with new drainage and regrading in order to return it to a usable field. An all new ATF in South Inter River Park is proposed and will support current and future community demand year-round, accommodating soccer, baseball, field hockey, and football. Preloading is required for 2 years to stabilize the ground and reduce future settlement issues. Detailed design drawings and a pre-loading plan require \$200k in 2017, with interim funding from the Infrastructure Reserve. Total project costs for the new ATF are estimated at \$6.4 million. Timing and funding decisions are deferred to the fall where adjustments to user fees and other funding strategies are considered through Council's Long Term Financial Plan workshop(s).

6. Lynn Valley Area Inflow & Infiltration

The District was awarded a \$2.9 million grant from the Federal and Provincial governments to accelerate \$3.5 million in rehabilitation work in Lynn Valley. The area has historically had problems with water inflow into the sewer system which then in turn causes overflows within Metro Vancouver's sewer system. The balance of \$0.6 million, representing the District's share, will be funded from the existing sewer main remediation program.

7. Fullerton to Curling Sanitary Sewer Replacement

LARCO is replacing and expanding the sanitary line that runs from Fullerton to Curling in the Lions Gate area as part of their offsite work for the Cap West Development. The estimated cost is \$365k with funding shared approximately 50% LARCO and 50% DCC's.

TABLE A (in \$000s)

Major Capital Projects	Total Project Cost	Funding Already Approved	2017 Amendment
<u><i>With Council Resolution</i></u>			
Inter River Retaining Wall	1,375	900	475
Delbrook Community Recreation Centre	53,500	52,000	1,500
Seylynn Development - Airspace Parcel	1,500	-	1,500
Seylynn Development - Daycare	-	900	(900)
<u><i>Resolution through Financial Plan</i></u>			
Mt Seymour Pathway Multi-Use Path	50	-	50
Artificial Turf Field - South Inter RiverPark	200	-	200
Lynn Valley Area Inflow & Infiltration	3,520	598	2,922
Fullerton to Curling Sanitary Sewer	365	-	365
			6,112

Operating Plan:

During the year Council supported changes to the Operating Plan through resolution and direction to amend the Financial Plan. The key changes are summarized in Table B and noted below:

1. RCMP Cost Sharing

On May 8, 2017, District and City Councils approved a new cost sharing formula for the North Vancouver RCMP, which has a combined annual cost for policing of approximately \$29 million. The formula is expected to result in a savings to the District of \$73k in 2017, \$186k in 2018, and \$370k in 2019. Savings are anticipated to grow in the outer years based on current trends.

2. Tsleil-Waututh Nation Agreement for Services

A new agreement for services for the period January 1, 2016 to December 31, 2020, has been approved by Council. Operating revenue increases are estimated at \$250k in 2017, followed by \$92k for 2018 and 2019. The 2017 amount includes an adjustment to 2016 of \$158k.

The agreement also includes a new charge of \$6,028 per unit for off-site capital costs. The charges will be collected as development occurs and include both DNV (\$4,899) and Metro (\$1,129) charges.

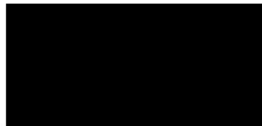
TABLE B (in \$000s)

Major Operating Items	2017 Amendment	2018	2019
<u>Source of funds</u>			
Tsleil-Waututh Nation Agreement - revenue	250	92	92
<u>Use of funds</u>			
RCMP Cost Sharing - Savings	(73)	(186)	(370)
Net Savings	323	278	462

Timing/Approval Process:

The Financial Plan must be amended for spending authority to be in place for related expenditures prior to year-end.


Respectfully submitted,



Rozy Jivraj CPA, CA
Section Manager, Financial Planning

REVIEWED WITH:		
<input type="checkbox"/> Sustainable Community Dev.	<input type="checkbox"/> Clerk's Office	External Agencies: <input type="checkbox"/> Library Board <input type="checkbox"/> NS Health <input type="checkbox"/> RCMP <input type="checkbox"/> NVRC <input type="checkbox"/> Museum & Arch. <input type="checkbox"/> Other:
<input type="checkbox"/> Development Services	<input type="checkbox"/> Communications	
<input type="checkbox"/> Utilities	<input type="checkbox"/> Finance	
<input type="checkbox"/> Engineering Operations	<input type="checkbox"/> Fire Services	
<input type="checkbox"/> Parks	<input type="checkbox"/> ITS	
<input type="checkbox"/> Environment	<input type="checkbox"/> Solicitor	
<input type="checkbox"/> Facilities	<input type="checkbox"/> GIS	
<input type="checkbox"/> Human Resources	<input type="checkbox"/> Real Estate	

AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: <u>May 29, 2017</u>
<input type="checkbox"/> Other:	Date: _____

 Dept. Manager	 GM/ Director	 CAO
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The District of North Vancouver

REPORT TO COUNCIL

May 19, 2017
File: 13.6480.30/001.001

AUTHOR: Tom Lancaster, Manager of Community Planning

SUBJECT: Terms of Reference, 2017 OCP Implementation Monitoring Committee

RECOMMENDATION:

That the May 19th, 2017 report of the Manager of Community Planning entitled Terms of Reference, 2017 OCP Implementation Monitoring Committee is received for information.

That Council approve the Terms of Reference for the OCP Implementation Monitoring Committee.

REASON FOR REPORT:

On January 9th, 2017 council passed the following motion: That staff report back on a set of terms of reference for a new OCP Implementation Monitoring Committee. At the Workshop on May 9, 2017, Council reviewed and discussed a draft Terms of Reference (TOR) and agreed to proceed with the process to establish the Committee and begin soliciting prospective members. Changes suggested by Council at the May 9 Workshop have been incorporated into the TOR (Attachment 1). Council also requested to see how this TOR for the new OCP Implementation Monitoring Committee differs from the previous OCP Implementation Committee TOR. A redline version, tracking the changes made to the previous TOR can be found in Attachment 2.

SUMMARY:

A new OCP Implementation Monitoring Committee Terms of Reference (TOR) has been developed at the request of Council and through discussion at Council Workshops. The new OCP Implementation Monitoring Committee will provide commentary and observations regarding:

1. Community engagement in implementing the OCP Network of Centres and other relevant Council Policy;
2. The direction of OCP implementation to ensure consistency with the OCP Vision and Goals;
3. Other key aspects of the OCP such as housing diversity;

Conclusion:

The Terms of Reference (TOR) for a new OCP Implementation Monitoring Committee in Attachment 1 respond to the Council direction on the role, term, responsibilities, and membership of the Committee. A redline version of the TOR shows the changes that have been made to the TOR for the old OCP Implementation Committee.

Options:

1. **That** Council approve the Terms of Reference for the OCP Implementation Monitoring Committee.
2. **That** Council request staff make changes to the Terms of Reference for the OCP Implementation Monitoring Committee.
3. **That** Council not approve the Terms of Reference for the OCP Implementation Monitoring Committee

Respectfully submitted,



Tom Lancaster
Manager of Community Planning

REVIEWED WITH:		
<input type="checkbox"/> Sustainable Community Dev. _____	<input type="checkbox"/> Clerk's Office _____	External Agencies:
<input type="checkbox"/> Development Services _____	<input type="checkbox"/> Communications _____	<input type="checkbox"/> Library Board _____
<input type="checkbox"/> Utilities _____	<input type="checkbox"/> Finance _____	<input type="checkbox"/> NS Health _____
<input type="checkbox"/> Engineering Operations _____	<input type="checkbox"/> Fire Services _____	<input type="checkbox"/> RCMP _____
<input type="checkbox"/> Parks _____	<input type="checkbox"/> ITS _____	<input type="checkbox"/> NVRC _____
<input type="checkbox"/> Environment _____	<input type="checkbox"/> Solicitor _____	<input type="checkbox"/> Museum & Arch. _____
<input type="checkbox"/> Facilities _____	<input type="checkbox"/> GIS _____	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Human Resources _____	<input type="checkbox"/> Real Estate _____	

District of North Vancouver

Terms of Reference

OCP Implementation Monitoring Committee

Name	Official Community Plan (OCP) Implementation Monitoring Committee.
Purpose	<p>The purpose of the North Vancouver District OCP Implementation Monitoring Committee is to encourage meaningful community engagement in the implementation of the OCP and to provide commentary and observations, as requested, on elements of OCP implementation, monitoring, and communications with the public.</p> <p>Specifically, the OCP Implementation Monitoring Committee will provide commentary and observations regarding:</p> <ol style="list-style-type: none"> 1) Community engagement in implementing the OCP Network of Centres and other relevant Council Policy; 2) The direction of OCP implementation to ensure consistency with the OCP Vision and Goals; 3) Other key aspects of the OCP such as housing diversity; 4) A review of the OCP monitoring program to ensure meaningful and appropriate indicators for monitoring progress on OCP targets.
Delegated Authority	There is no delegation of authority to the Committee. Council will appoint two Council members to observe Committee activities and act as a liaison between the Committee and Council.
Origin of Work	Work assignments for this Committee will come through the Manager of Community Planning and will be consistent with the purpose of the Committee, the workplan, and any direction provided by Council.
Membership	The Committee will be comprised of up to 14 members.
Appointment	
Qualification	<p>Up to 14 members at large, selected to represent the demographic and geographic diversity of the DNV's projected future. Members should have a range and variety of interests relevant to OCP implementation.</p> <p>All members should be residents of the District of North Vancouver;</p>

Remuneration	Appointees will receive no remuneration for their service.
Conflict of Interest	Appointees are required to be vigilant for issues of real or perceived conflict of interest and take appropriate action. District staffs (Clerk, Directors, CAO) are available to discuss issues of conflict of interest with a potentially affected appointee.
Code of Ethics	Appointees will be required to sign a statement saying that they have read, understood, and will conform to the District's Code of Ethics. This will be required immediately upon appointment.
Dissolution	At the discretion of Council.

District of North Vancouver




Terms of Reference

OCP Implementation Monitoring Committee

Name	Official Community Plan (OCP) Implementation <u>Monitoring</u> Committee.
Purpose	<p>The purpose of the North Vancouver District OCP Implementation <u>Monitoring</u> Committee is to encourage meaningful community engagement in the implementation of the new OCP and to provide <u>commentary and observations, as requested, on elements of OCP implementation, monitoring, and communications with the public, to staff on the direction of implementation plans to ensure they support the community's vision as expressed in the OCP.</u></p> <p>Specifically, the OCP Implementation <u>Monitoring</u> Committee will provide <u>advice commentary and observations</u> regarding:</p> <ol style="list-style-type: none"> 1) Community engagement in implementing the OCP Network of Centres <u>and other relevant Council Policy</u>; 2) The direction of <u>Centres Implementation Plans based on OCP implementation to ensure</u> consistency with the OCP Vision <u>and Goals</u>; 3) Other key <u>strategies related to the OCP Network of Centres Vision and policies (e.g. housing, climate action) aspects of the OCP such as housing diversity</u>; 4) A <u>review of the OCP</u> monitoring program to <u>measure progress on OCP ensure meaningful and appropriate indicators for monitoring progress on OCP targets.</u>
Delegated Authority	There is no delegation of authority to the Committee. <u>Council will appoint two Council members to observe committee activities and act as a liaison between the Committee and Council.</u>
Origin of Work	Work assignments for this Committee will come through the Manager of <u>Sustainable Community Development Planning</u> and <u>will be consistent with the purpose of the Committee, the workplan, and any direction provided by Council.</u>
Membership	The Committee will be comprised of <u>up to 12–14</u> members, <u>and two Council liaisons.</u>
Appointment	
Qualification	Up to 14 members at large, selected to represent <u>the demographic and geographic diversity of the DNV's projected future. Members should have a range and variety of community planning interests relevant to OCP implementation., which may include members</u>

Duties	See "Purpose".
Work Plan	A workplan based on the Committee's purpose <u>will be prepared jointly by the Committee and staff for Council approval.</u> and the OCP implementation and engagement program will be prepared by the Committee with staff assistance. The Committee may establish temporary working groups (for example on housing issues) from its membership as needed to advance the work program.
Budget	A modest budget for the Committee will be maintained by the Manager Sustainable of Community <u>Development Planning</u> as part of the OCP Implementation program.
Meeting Schedule	The Committee will meet as required through the determination of the Chair and staff. It is anticipated the Committee will meet approximately every 1-2 months in light of the OCP implementation program. A m Meetings between the Committee and Council will be coordinated from time to time (recommended twice/year) to update on the work of the committee.
Procedures	Decisions of the Committee will be made by consensus.
Reporting	Oversight of the The Committee will report be to the <u>responsibility of the</u> General Manager, Planning, <u>Properties & Permits</u> and Properties . The Committee may also report to Council as appropriate <u>will report quarterly, or as appropriate to Council.</u>
Staff Support	Staff support to the Committee will be provided by Sustainable Community <u>Development Planning</u> . Professional advice will be provided by District staff as needed.
Remuneration	Appointees will receive no remuneration for their service.
Conflict of Interest	Appointees are required to be vigilant for issues of real or perceived conflict of interest and take appropriate action. District staffs (Clerk, Directors, CAO) are available to discuss issues of conflict of interest with a potentially affected appointee.
Code of Ethics	Appointees will be required to sign a statement saying that they have read, understood, and will conform to the District's Code of Ethics. This will be required immediately upon appointment.
Dissolution	At the discretion of the General Manager Planning, Permits and Properties <u>Council.</u>

AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: May 29, 2017
<input type="checkbox"/> Other:	Date: _____

 Dept. Manager	 GM/ Director	 CAO
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The District of North Vancouver REPORT TO COUNCIL

May 23, 2017
File: 13.6480.30/00.003

AUTHOR: Karen Rendek, Policy Planner

SUBJECT: **Maplewood Village Centre Implementation Planning and Community Engagement - Phase 3 Update**

RECOMMENDATION:

THAT the May 23, 2017, report of the Policy Planner entitled Maplewood Village Centre Implementation Planning and Community Engagement – Phase 3 Update is received for information.

REASON FOR REPORT:

At the Workshop on January 31, 2017, Council discussed and provided feedback on key aspects of the Phase 2 Maplewood concept. Staff has updated the Maplewood concept and is proceeding with Phase 3 of the planning process. Council requested a review of the changes made to the Maplewood concept prior to commencing public engagement.

PURPOSE:

To update Council on the refinements made to the Maplewood design concept in response to Council feedback and review with the public and to describe the upcoming public engagement that will be undertaken as part of Phase 3 planning.

BACKGROUND:

On July 6, 2015, Council directed staff to proceed with the Maplewood Village Centre implementation planning process. At that time, Council recognized the significant economic potential of the employment lands in Maplewood, and emphasized the need to protect adjacent environmentally sensitive areas in the Maplewood area.

In April 2016 work commenced on the three-phase planning and community engagement process to complete a Maplewood Centre Implementation Plan. Phase 1 included preliminary ideas-generation and background research. Phase 2 involved an intensive two day charrette to develop a draft concept for the Maplewood Village area. Phase 3 includes refining the design concept based on feedback received and feasibility testing several key components to develop a draft implementation plan and policies.

SUBJECT: Maplewood Village Centre Implementation Planning and Community Engagement - Phase 3 Update

May 23, 2017

Page 2

A Council Workshop was held on July 18, 2016, to update Council on the results of the public and stakeholder engagement process completed for Phase 1 of Maplewood Village Centre Implementation, and to provide Council with preliminary findings on two background studies that were underway: (i) Employment Lands Review and (ii) Environmental and Hydrological Assessment for Maplewood. Please see Report to Council dated July 18, 2016, for details and see <http://www.dnv.org/news/maplewood-community-plan-phase-1-report-now-available> to view the Maplewood Area Plan Summary of Engagement Phase I Report, prepared by Modus Planning & Design Inc.

A subsequent Council Workshop was held on December 5, 2016, to update Council on the community stakeholder charrette results completed for Phase 2, to present a summary of community feedback received on the preliminary ideas, and to outline next steps to complete Phase 3 of the process. A Report to Council dated December 5, 2016, contains for more details and <http://www.dnv.org/property-and-development/maplewood-village-centre> includes the charrette report. Staff also sought Council feedback on the Maplewood Charrette design concept and recommended that Council direct staff to proceed with Phase 3 of the Maplewood Village Centre Planning and Engagement process.

At the December 5, 2016, Workshop Council requested a follow-up meeting be held in January 2017 to continue the discussion and receive additional feedback prior to proceeding to Phase 3. This follow-up Council workshop was held on January 31, 2017. As part of the OCP implementation review process, Council reaffirmed the Maplewood initiative as a priority project and staff proceeded to complete Phase 3 works and forward the draft plan for Council consideration in fall of this year. Further, at the May 9, 2017, Council Workshop staff received approval to proceed with five high priority initiatives as a result of the OCP Implementation Review process, one of which was to "complete and commence implementation of the Maplewood Implementation Plan".

EXISTING POLICY:

The 2011 Official Community Plan, Bylaw 7900 (OCP) identifies Maplewood Village Centre as an area for growth and revitalization to be guided by an implementation plan. Under the OCP "Network of Centres" concept Maplewood Village Centre is identified as one of four key growth centres in the District. Schedule A of the OCP includes a broad vision and high level policy directions on land use, economics, housing opportunities, and mobility network concepts for this centre. The OCP also includes key objectives and policies to encourage the productive and efficient use of employment lands; promote infill development, redevelopment and intensification of underutilized sites on employment lands (where appropriate); as well as to protect and improve the ecological health of our natural systems.

OUTLINE OF THE PLANNING PROCESS:

The Maplewood planning process includes three phases. Phases 1 and 2 have now been completed with revisions made to the concept as a result of feedback and analysis. Staff is about to commence the public engagement component of **Phase 3: Policy & Plan Development**.



Phase 1: Opportunities, principles, and big ideas

This phase invited the public and stakeholders to help identify guiding principles, opportunities, and issues for the future of Maplewood. This feedback was then used to provide direction on Phase 2 concept design.

Phase 2: Concept design and development

Conceptual designs were developed based on direction was set through Phase 1. Concept options included land use, mobility and open space network ideas, proposed transportation networks and linkages, diagrams, sketches, and photos to illustrate ideas.

A two day long design charrette (October 18 and 19, 2016), followed by an interactive public open house and two week online survey were held to receive public feedback on the Maplewood community design concept developed at the charrette event.

Phase 3: Policy and Plan Development

This phase includes the preparation of a draft plan based on a review of feedback received on concept options and refinement of a preferred option, which is to be feasibility-tested, i.e. detailed infrastructure and transportation modelling to inform a draft plan that will be prepared and presented to the public for review prior to proceeding to Council for consideration of approval.

Communications and Engagement

The next public engagement session will be held in mid to late June, 2017 with Council consideration of a final draft plan in the fall. Engagement efforts will be informed by the District's Public Engagement Guide and will include a variety of outreach components. Postcards will be mailed out to local residents and businesses in the study area to inform them of upcoming opportunities. Staff will reengage with stakeholders involved during Phases 1 and 2 of the process. Information and promotion of consultation events will be

made via the District's website (dnv.org/Maplewood), social media (Facebook and Twitter), email blasts to prior participants and those who have asked to receive information on this process, advertisements in the North Shore News and road signage. The District has a dedicated page for the Maplewood process on its website and includes information on the process, previous open house display materials, background reports, and summaries of public input received during both Phase 1 and 2. Phase 3 will include a Public Open House in the community followed by a two-week online survey to receive feedback on the elements to be included in the final draft plan.

ANALYSIS:

The following refinements have been made to the concept developed at the charrette based on feedback received from the public, stakeholders and Council. These refinements and overall policy directions will be presented as part of the upcoming public engagement in June to receive further review and feedback (Attachment A).

Village Centre and Heart

Highest density development within the Maplewood area is envisioned to be located within the compact village core. Based on the preliminary ideas generated at the charrette the maximum height of the taller buildings was suggested to be up to 18 storeys at strategic locations. Based on feedback received the height of taller buildings has been reduced from 18 to 12 storeys at strategic locations within the core. Possible locations for taller buildings will be included in the draft land use plan as well as draft policy statements to include provisions to negotiate density and height on a case by case basis in order to achieve housing objectives in Council-adopted policy.

Eco-cluster housing and Location of Active Park Space East of Riverside

The charrette identified opportunities to integrate innovative cottage or eco-clustered housing on the east side of Riverside Drive and north of Old Dollarton Road, and in a manner that respects the natural context. Land uses in this area have been changed to light industrial – artisan to provide additional opportunities for light industrial and studio live-work spaces and multi-family residential housing options above industrial including the opportunity to provide a range of more affordable and non-market housing options within the study area. The location of the active park space has also been shifted westward in order to ensure the future playing fields are located outside of the environmentally sensitive area.

Innovative Industry Focussed on Local Needs

Four different areas within the plan have been identified for industrial uses. Each area has unique characteristics and options for land use. Two of the areas (west of Amherst and east of Amherst) will focus on industrial intensification options while the other two areas will focus on creative and innovative industrial land use options. Artisan industrial will focus on providing employment for local servicing smaller businesses looking for live-work opportunities and the innovation district will focus on mixing uses on these vacant land employment lands to maximize flexibility by combining employment, recreation, service, learning and employee housing. The variety of uses and flexibility to adapt to changing conditions will be fundamental to the success of this area, and its ability to meet the changing

employment needs of the District. In order to be consistent with the Major Industrial Accidents Council of Canada (MIACC) guidelines, no residential development is to be considered within the two areas south of Dollarton Highway.

Transportation Network

Urban Systems, the consultant who completed the Maplewood Village Transportation Study in January 2014 is now modelling the transportation concept developed at the charrette. The technical analysis looks at existing conditions and future transportation conditions that are anticipated as a result of the future land use plan. It includes an analysis of driving and goods movement, walking, cycling and transit movements. At present, an extension of Berkley Road to Dollarton is an assumed transportation network element as it is identified in the Official Community Plan as a potential new road to improve connectivity of the network and provide an additional north-south connection in Maplewood. At the January 2017, Council questioned whether the Berkley extension is needed. Staff are awaiting the final technical analysis that will demonstrate the network impacts, implications to the functionality of Riverside, and emergency access to provide recommendations to Council on the Berkley Road extension.

Staff are also working with TransLink and Metro Vancouver to determine how/when the Frequent Transit Network will be extended to Maplewood Village. Interim discussions with senior TransLink staff indicate the extension of frequent transit to Maplewood is contingent on the timing and adopting of the Maplewood implementation plan and the density and land use mix achieved. At this time, B-line service to Maplewood has been identified as part of the Mayors' Council *10-Year-Vision* 2017-2026 investment plan for the future of the transportation system.

Timing/Approval Process:

Phase 1 and Phase 2 of the Maplewood Planning process are now complete. Phase 3 of the process includes staff and consultants' preparing a draft implementation plan with accompanying policies and design guidelines to be presented at a Public Open House in June 2017. The final implementation plan is anticipated to be completed for Council consideration of approval in fall 2017.

Concurrence:

This Maplewood Planning and Engagement process has been supported by a technical staff team from Community Planning, Development Planning, Parks, Engineering, Transportation, Environment, Facilities, Corporate Communications, Emergency Services, Real Estate and Properties and Public Safety.

Conclusion:

The Maplewood design concept provides an overall framework that integrates ideas for housing innovation, business creation and expansion, ecological restoration, improvements to transportation, additional services and community amenities. The design concept was developed through a collaborative, interdisciplinary approach and informed by stakeholder and public feedback. Overall, the preliminary ideas presented have been well received.

SUBJECT: Maplewood Village Centre Implementation Planning and Community Engagement - Phase 3 Update

May 23, 2017

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Refinements included in this report are based on feedback received as part of Phase 2 of the process and these refinements will be presented back to the public and stakeholders to inform development of the final draft plan. The anticipated target date for completion of the draft plan is the fall 2017.

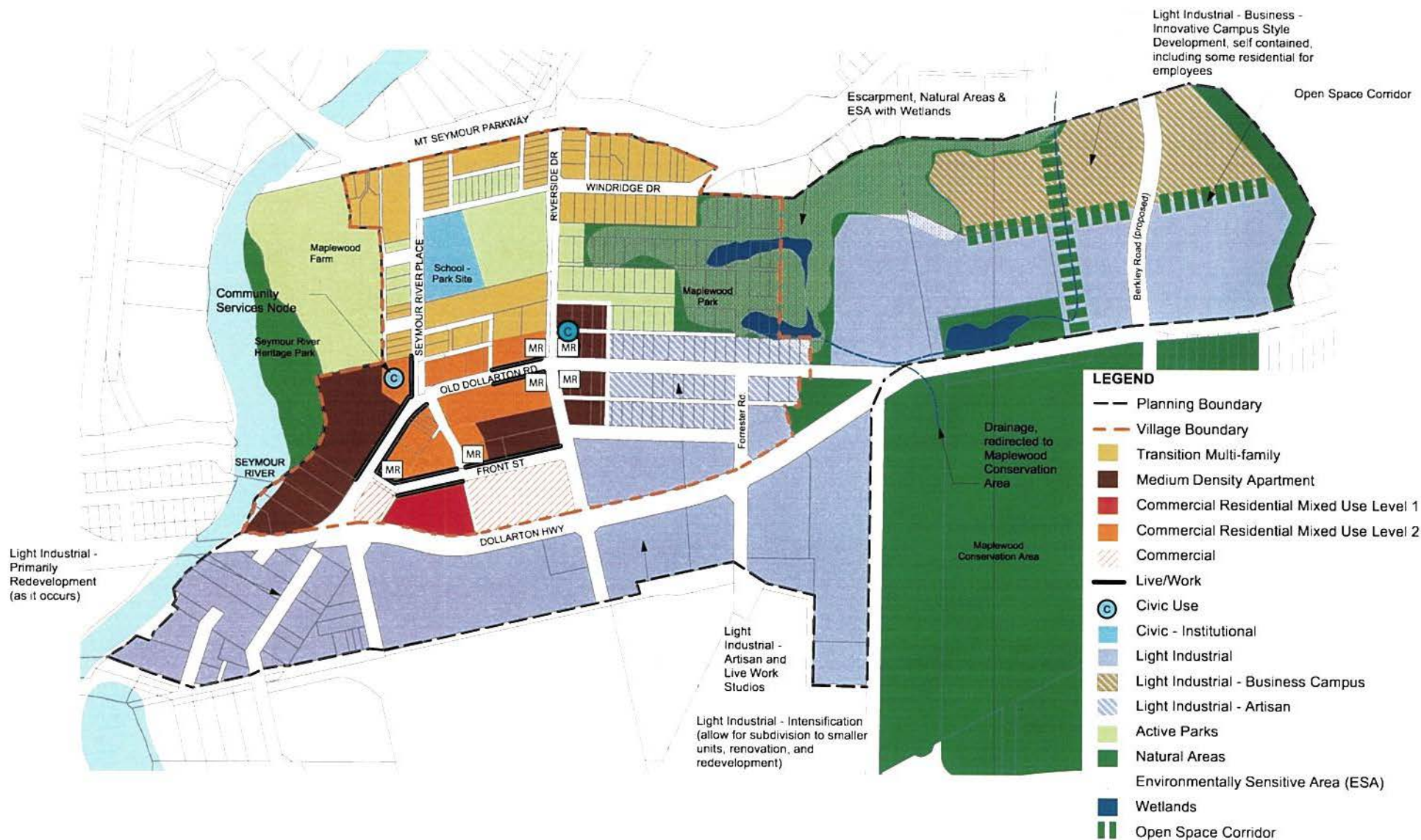
Respectfully submitted,



Karen Rendek, MCIP, RPP
Policy Planner

Attachment: Draft Maplewood Concept

REVIEWED WITH:		
<input type="checkbox"/> Sustainable Community Dev. _____	<input type="checkbox"/> Clerk's Office _____	External Agencies:
<input type="checkbox"/> Development Services _____	<input type="checkbox"/> Communications _____	<input type="checkbox"/> Library Board _____
<input type="checkbox"/> Utilities _____	<input type="checkbox"/> Finance _____	<input type="checkbox"/> NS Health _____
<input type="checkbox"/> Engineering Operations _____	<input type="checkbox"/> Fire Services _____	<input type="checkbox"/> RCMP _____
<input type="checkbox"/> Parks _____	<input type="checkbox"/> ITS _____	<input type="checkbox"/> NVRC _____
<input type="checkbox"/> Environment _____	<input type="checkbox"/> Solicitor _____	<input type="checkbox"/> Museum & Arch. _____
<input type="checkbox"/> Facilities _____	<input type="checkbox"/> GIS _____	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Human Resources _____	<input type="checkbox"/> Real Estate _____	

Proposed Locations for Midrise Buildings (max. 12 storeys) MR

Date: May 18, 2017
Scale: 1: 5000

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