Comox Valley REGIONAL DISTRICT

Staff Report

DATE: June 2, 2021

FILE: 3160-20/FR 1A 21

TO: Chair and Directors
Electoral Areas Services Committee

FROM: Russell Dyson
Chief Administrative Officer

Supported by Russell Dyson
Chief Administrative Officer

R. Dyson

RE: **Site Specific Floodplain Management Bylaw Exemption (Slater and Dutton)**
Lot 1, Plan VIP89233, Lince Rd
Baynes Sound - Hornby/ Denman Islands (Electoral Area A)
Lot 1, District Lot 86, Comox District, and Section 4 Nelson District, Plan VIP89233, PID 028-739-329

Purpose
To provide background on the subject property and to report on discussion between applicants and Comox Valley Regional District (CVRD) staff on Royston Seaside Trail.

Recommendation from the Chief Administrative Officer:
This staff report is for information only.

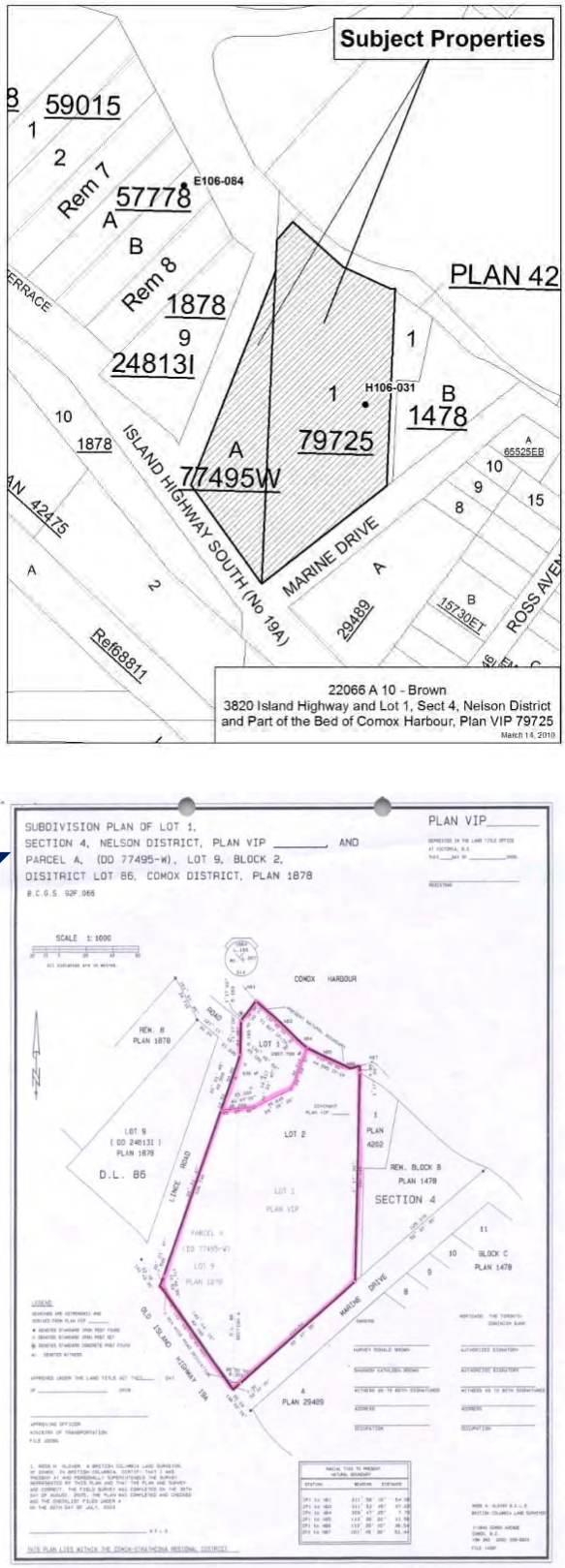
Executive Summary

- The floodplain management bylaw exemption application (Appendix A) was presented to the Electoral Areas Services Committee on May 10, 2021. The Committee requested CVRD staff to meet with the applicants to discuss connectivity with Royston Seaside Trail.
- The subject property was created as a lot line adjustment between two adjacent lots on December 9, 2011 (Figure 1). No new lots were created. For this lot line adjustment, CVRD had no legislative authority to request parkland dedication.
- The *Local Government Act* (LGA) (RSBC, 2015, c. 1) sets out a mechanism for creating parkland. Section 510 of the LGA enables local government to acquire parkland or cash in lieu when a subdivision proposal involves three or more lots, where the smallest lot is 2 hectares or less. Parkland may also be acquired at the time of rezoning pursuant to the Rural Comox Valley Official Community Plan's community amenity contribution policies, where applicants propose an increase in residential density or increase in commercial/industrial floor area (Section 482 of LGA).
- Parks and planning staff met with the applicants on May 12, 2021. The meeting explored options and opportunities for future trail connectivity. Both parties agreed to have ongoing discussions to improve experience and safety of trail users outside the framework of the floodplain management bylaw exemption application. The meeting established a positive relationship between the applicants and CVRD staff.

Prepared by:	Concurrence:	Concurrence:
B. Chow	***T. Trieu***	***A. Mullaly***
Brian Chow, RPP, MCIP Planner	Ton Trieu, RPP, MCIP Manager of Planning Services	Alana Mullaly, RPP, MCIP General Manager of Planning and Development Services

Government Partners and Stakeholder Distribution (Upon Agenda Publication)

Applicants	✔



Two Adjacent Properties Involved in a Lot Line Adjustment Pre-December 2011

Lot Line Adjustment in which No New Lots are Created

Figure 1: Lot Line Adjustment of Two Adjacent Lots

Attachments: Appendix A – Bylaw exemption staff report dated May 5, 2021

Comox Valley REGIONAL DISTRICT

Staff Report

DATE: May 5, 2021

FILE: 3160-20/FR 1A 21

TO: Chair and Directors
Electoral Areas Services Committee

FROM: Russell Dyson
Chief Administrative Officer

Supported by Russell Dyson
Chief Administrative Officer

R. Dyson

RE: **Site Specific Floodplain Setback Reduction (Slater and Dutton)**
Lot 1 Plan VIP89233 Lince Rd
Baynes Sound - Hornby/ Denman Islands (Electoral Area A)
Lot 1, District Lot 86, Comox District, and Section 4 Nelson District, Plan VIP89233, PID 028-739-329

Purpose
To consider a request for a site specific exemption to the floodplain setback and flood construction level (FCL) for a proposed residential development.

Recommendation from the Chief Administrative Officer:
THAT the Comox Valley Regional District Board grant an exemption to Bylaw No. 600 being the "Floodplain Management Bylaw No. 600, 2020" to allow an elevator from meeting the minimum flood construction level of 5.04 metres and to place fill within 15 metres of the Strait of Georgia (FR 1A 21, Slater and Dutton) described as Lot 1, District Lot 86, Comox District, and Section 4 Nelson District, Plan VIP89233, PID 028-739-329 (Lot 1, Plan VIP89233, Lince Rd);

AND FINALLY THAT, as a condition of the site specific exemption of the flood construction level for the elevator and setback for fill, the property owners, at their own expense, register a restrictive covenant under Section 219 of the *Land Title Act*, specifying conditions that would enable the land to be safely used for the use intended according to the terms of the engineer reports by Ken Woods, P. Eng., dated November 17, 2020, February 12, 2021, February 23, 2021, and March 22, 2021, which will form part of the restrictive covenant, as well as an acknowledgement that no Disaster Financial Assistance funding is available for the building or its contents and releasing and indemnifying the Comox Valley Regional District from liability in the event any damage is caused by flooding or erosion.

Executive Summary

- The subject property is an undeveloped waterfront lot, and the applicants propose to build a single detached dwelling, an accessory dwelling unit, decks and landscaping.
- The proposed single detached dwelling includes an elevator for barrier-free access, and part of the elevator does not meet the minimum FCL. In addition, the proposed development includes placing fill at the northern section of the dwelling (Oceanside). The fill will be graded to have a slope downward towards the ocean and will be integrated into the overall landscape design. The fill does not meet the minimum floodplain setback. The placement of fill will trigger an Aquatic and Riparian Habitat, and Eagle Nest Development Permit (DP).
- The engineer states that the elevator electrical and mechanical workings are above the FCL, and the elevator can be raised above the FCL during flood events. The fill will help to protect the proposed single detached dwelling from wave action and scouring. Staff supports the floodplain exemption requests.

Prepared by:	Concurrence:	Concurrence:
B. Chow	***T. Trieu***	***A. Mullaly***
Brian Chow, RPP, MCIP Planner	Ton Trieu, RPP, MCIP Manager of Planning Services	Alana Mullaly, RPP, MCIP General Manager of Planning and Development Services

Government Partners and Stakeholder Distribution (Upon Agenda Publication)

Applicants	✔

Background/Current Situation

The subject property is an undeveloped waterfront lot, and is approximately 0.3 hectares in area (Figures 1 and 2). The property is located on Lince Road in the Baynes Sound – Denman/Hornby Islands Electoral Area (Electoral Area A). The subject property is triangular in shape, with the shoreline being the widest side. The land narrows to a point upland.

The property is mostly flat with an embankment along the southeastern boundary abutting a covenanted area, which prohibits development (Figure 3). The beach area has been previously cleared of native vegetation and is currently dominated by Scotch broom and Himalayan blackberry interspersed by thickets of native Nootka rose. A small freshwater creek flows along the Lince Road, which includes a section of the Royston Seaside Pedestrian Trail managed by Comox Valley Regional District (CVRD). The proposed development area contains some maturing Douglas fir, but is otherwise mostly open grassy area.

The applicants propose to build a single detached dwelling, an accessory dwelling unit (either a secondary dwelling or a carriage house), decks, landscaping and related residential development on the property (Figures 3 to 5).

In accordance with Bylaw No. 600 being the "Floodplain Management Bylaw No. 600, 2020" (Floodplain Management Bylaw), an engineer has to determine the minimum floodplain setback and FCL for the year 2100. Additionally, new buildings or changes to existing buildings are required to meet these standards.

The proposed single detached dwelling requires an elevator to provide barrier-free access from the garage to the second floor, and the lower part of the elevator would not meet the minimum FCL. Therefore, a floodplain exemption is required for the proposed elevator.

In addition, the proposed development includes the placement of fill as part of the landscape plan. The proposed fill will be placed within the minimum floodplain setback. Therefore, the floodplain exemption is also required for the proposed fill. The placement of fill will trigger an Aquatic and Riparian Habitat, and Eagle Nest DP application. A condition of the aquatic and riparian DP is that a coastal engineer review of the proposal will be required. The consideration of the DP application has been delegated to CVRD Officers.

Planning Analysis

Official Community Plan Analysis

Bylaw No. 337, being the "Rural Comox Valley Official Community Plan Bylaw No. 337, 2014" (OCP), designates the subject property within Settlement Expansion Areas. Sections 15 and 16 of the OCP provide objectives and policies regarding development in the vicinity of natural hazards. Section 15(2) states, "To direct new development away from hazard areas" and Section 16(1) states,

"Do not permit new development in hazard areas, including mapped floodplains, steep slopes and areas of active erosion." The proposed development is under guidance and recommendations by an engineer, who provides measures to minimize floodplain hazards. The proposal is consistent with OCP policies.

Zoning Bylaw Analysis

The subject property is zoned Residential One (R-1) which permits a single detached dwelling and an accessory dwelling unit. The proposal meets other provisions of the Zoning Bylaw, such as the minimum lot line setbacks and maximum lot coverage of the R-1 zone.

Floodplain Management Bylaw Analysis

Sections 302(3) and 303(2) of Floodplain Management Bylaw state that if new construction of habitable area is proposed within 100 metres of the sea, an engineer report is required to prescribe the minimum FCL and floodplain setback based on minimum allowance for future sea level rise to the year 2100.

The applicants submitted an engineer report prepared by Ken Woods, P. Eng., dated November 17, 2020 (Appendix A). In this report, the engineer describes the property to have a gentle slope of less than one per cent from the present natural boundary of the sea to 40 metres inland. Beyond this area, the land slopes up towards the south. The engineer calculates the minimum FCL for the year 2100 is 5.04 metres. The recommended floodplain setback is 15 metres.

During the design of the single detached dwelling, it was proposed that an elevator is required to provide barrier-free access from the garage on the ground floor to the second floor. Part of the proposed elevator can be damaged if flooded, so a floodplain exemption of the minimum FCL for the proposed elevator is required.

Section 403 of the Bylaw allows for a property owner to apply for a site specific exemption. In support of the application, the applicant submitted a Floodplain Assessment with addendums prepared by Ken Woods, P. Eng., dated February 12, 2021, February 23, 2021, and March 22, 2021 (Appendix A).

In the February 12, 2021 assessment, the engineer states that the electrical and mechanical workings of the proposed elevator are located at the top of the elevator shaft, which is above the minimum FCL. The elevator car electrical controls are at mid-height in the car, and in the event of a flood, the elevator car can be raised to the second floor to avoid damage. The proposed elevator sump is shallow and contains mechanic fasteners for the elevator frameworks. No other electrical motors, wiring or controls are required in the elevator sump.

Besides elevator components, the garage or storage area below the FCL would not be used for habitable area or for the storage of goods, possessions or equipment damageable by floodwaters. As the elevator electrical and mechanical workings are above the FCL and the elevator car can be raised above the FCL, the engineer deems the proposed elevator to be satisfactory for the intended purpose.

The February 23, 2021, addendum is to incorporate a landscape plan (Appendix B), which is supported by a Biophysical Assessment, for floodplain protection. Section 304(3) of the Floodplain Management Bylaw states,

> "A person may use structural support or compacted landfill or a combination of both to elevate the underside of the floor system or the top of the pad above the flood construction levels specified in Section 302. The structural support and compacted

> landfill shall be protected against scour and erosion from flood flows, wave action, ice and other debris. The structural support and compacted landfill shall be installed and compacted under the direction of a Professional Geotechnical Engineer."

Based on this section, the engineer recommends that a one-metre wide concrete trench be installed at the northern side of the proposed single detached dwelling. Note that this trench is located in the upland area, facing the sea. The trench will be backfilled and will consist of a slope down and away from the single detached dwelling towards the sea, tapering to the sea level. Vegetation will be planted on top of the fill in accordance with the landscape plan. According to the engineer, this combination of the trench and fill satisfies the aforementioned section to protect the proposed dwelling against scour and erosion in flood events. The engineer further states that the fill is not expected to be a safety concern or hazard, and would not have a negative impact on the neighbour properties.

Should the CVRD Board grant the exemption, the bylaw requires the property owners to prepare and register a Section 219 Restrictive Covenant that releases and indemnifies the CVRD from liability in the event any damage is caused by flooding or erosion.

Policy Analysis
Section 524 of the *Local Government Act* (RSBC, 2015, c. 1) (LGA) authorizes a local government to establish a bylaw to designate a flood plain and specify a setback from a watercourse, body of water or dike to any landfill or structural support required to elevate a floor system or pad above the flood level. Sections 524(7) and (8) allow a local government to grant an exemption to a floodplain bylaw upon receipt of a report by a qualified professional that the land may be used safely for the use intended and that the exemption may include terms and conditions the local government considers necessary or advisable.

Options
The board may choose to grant or refuse the site specific exemption of the floodplain specifications. Based on the discussions outlined in this report, the board is recommended to grant the floodplain exemption request.

Financial Factors
Applicable fees have been collected for this application under the "Comox Valley Regional District Planning Procedures and Fees Bylaw No. 328, 2014."

Legal Factors
This report and recommendation contained herein are in compliance with the LGA and CVRD bylaws.

Regional Growth Strategy Implications
Bylaw No. 120, being the "Comox Valley Regional District Regional Growth Strategy Bylaw No. 120, 2010" (RGS), designates the subject property within Rural Settlement Areas. Policy 1D-2 of the RGS, pertaining to the public costs of housing, states, "Direct new housing away from high risk natural hazard areas such as flood plains, areas exposed to sea-level rise…" Policy 8F-6 pertaining to planning for climate change adaption states, "All new development within established floodplains should be discouraged and redevelopment of lands within floodplain areas should only be supported where technical analysis by a qualified professional has been undertaken to ensure that lands are safe for use, development will not impact floodplain functions, and construction levels include safety factors to account for climate change and potential sea level rise and associated extreme storm surges." The proposed renovation is supported by recommendations from a Qualified Professional.

Intergovernmental Factors
The subject property is within a mapped archaeological site (Borden ID: DjSf-11). As such, the applicants were advised to follow the directions contained within the provincial Archaeological Notification Letter, and to contact the Archaeological Branch for guidance.

Interdepartmental Involvement
This proposal was referred to applicable internal departments. None of the departments had any concerns or comments on this application.

Citizen/Public Relations
There are no citizen and/or public relations factors related to this report

Attachments: Appendix A – "Engineer Reports and Addendums"
Appendix B – "Landscape Plan"

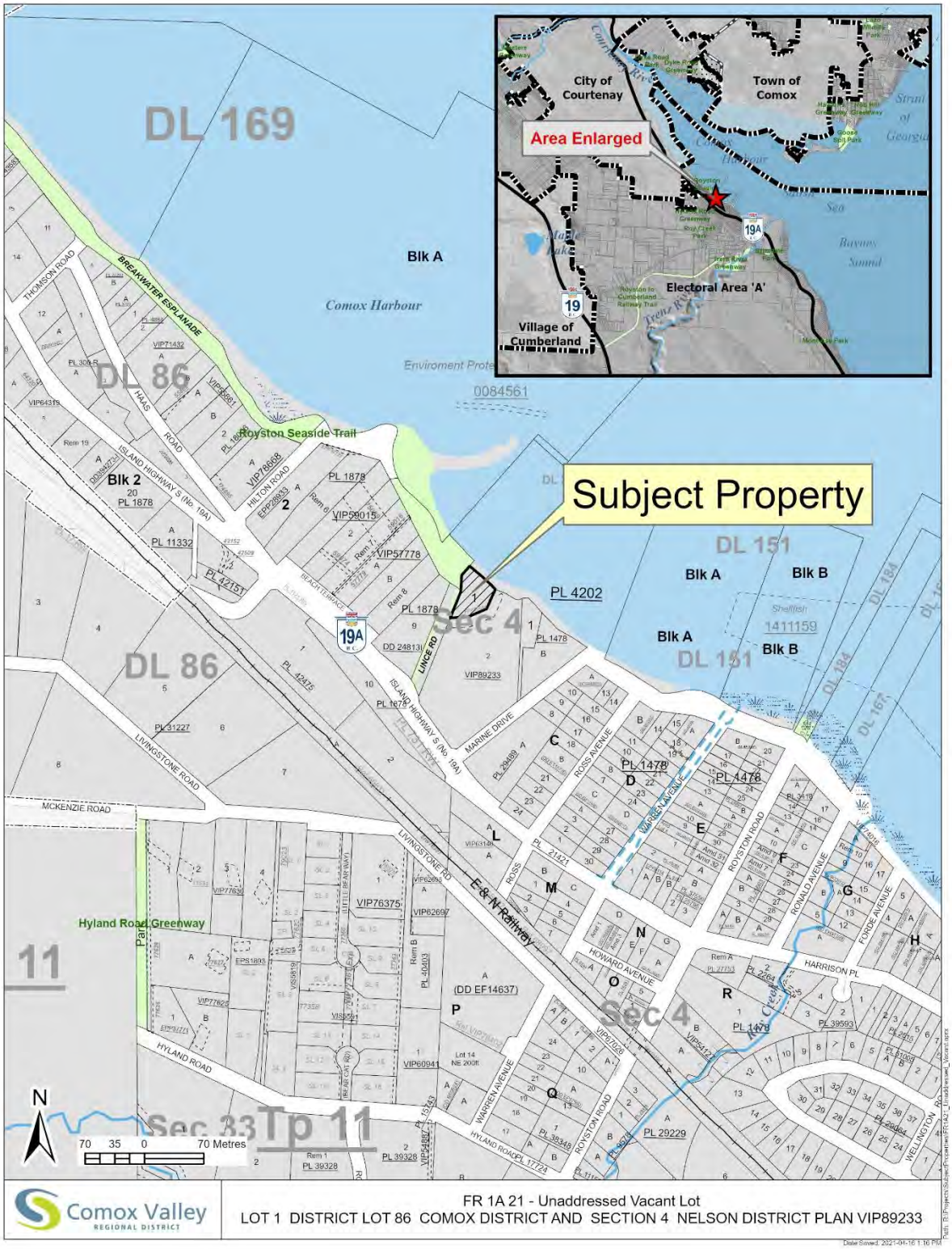


Figure 1: Subject Property Map

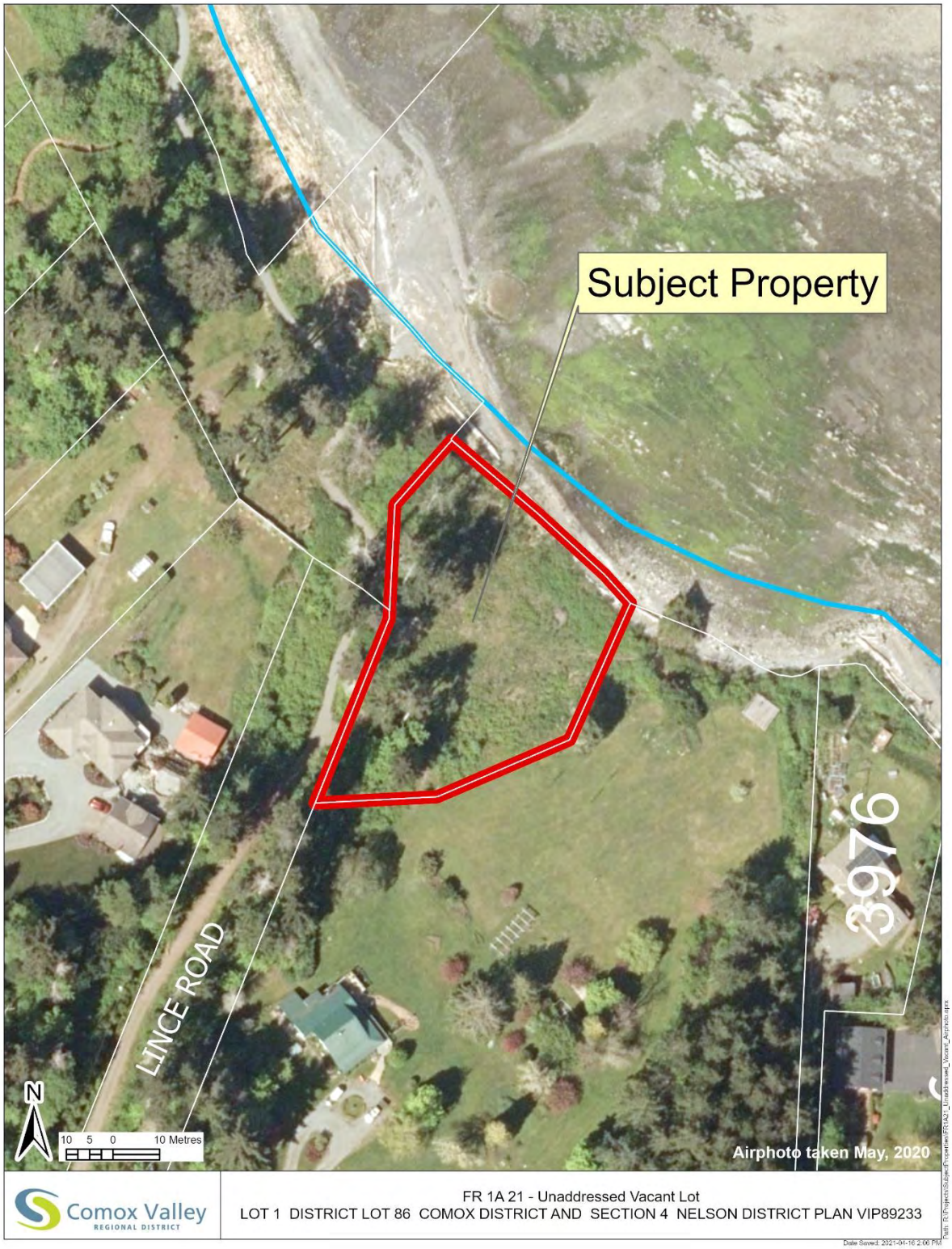


Figure 2: Air Photo

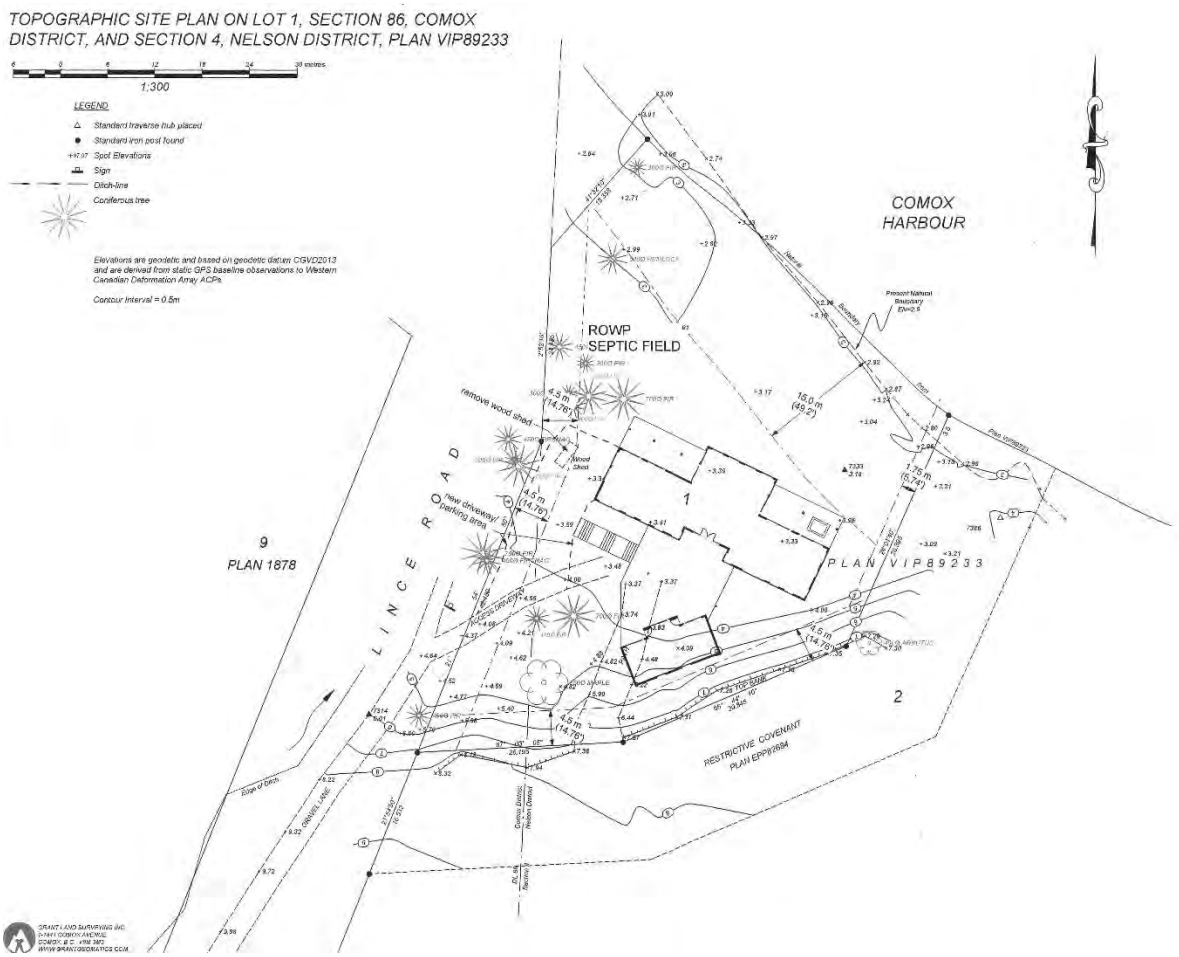


Figure 3: Site Plan

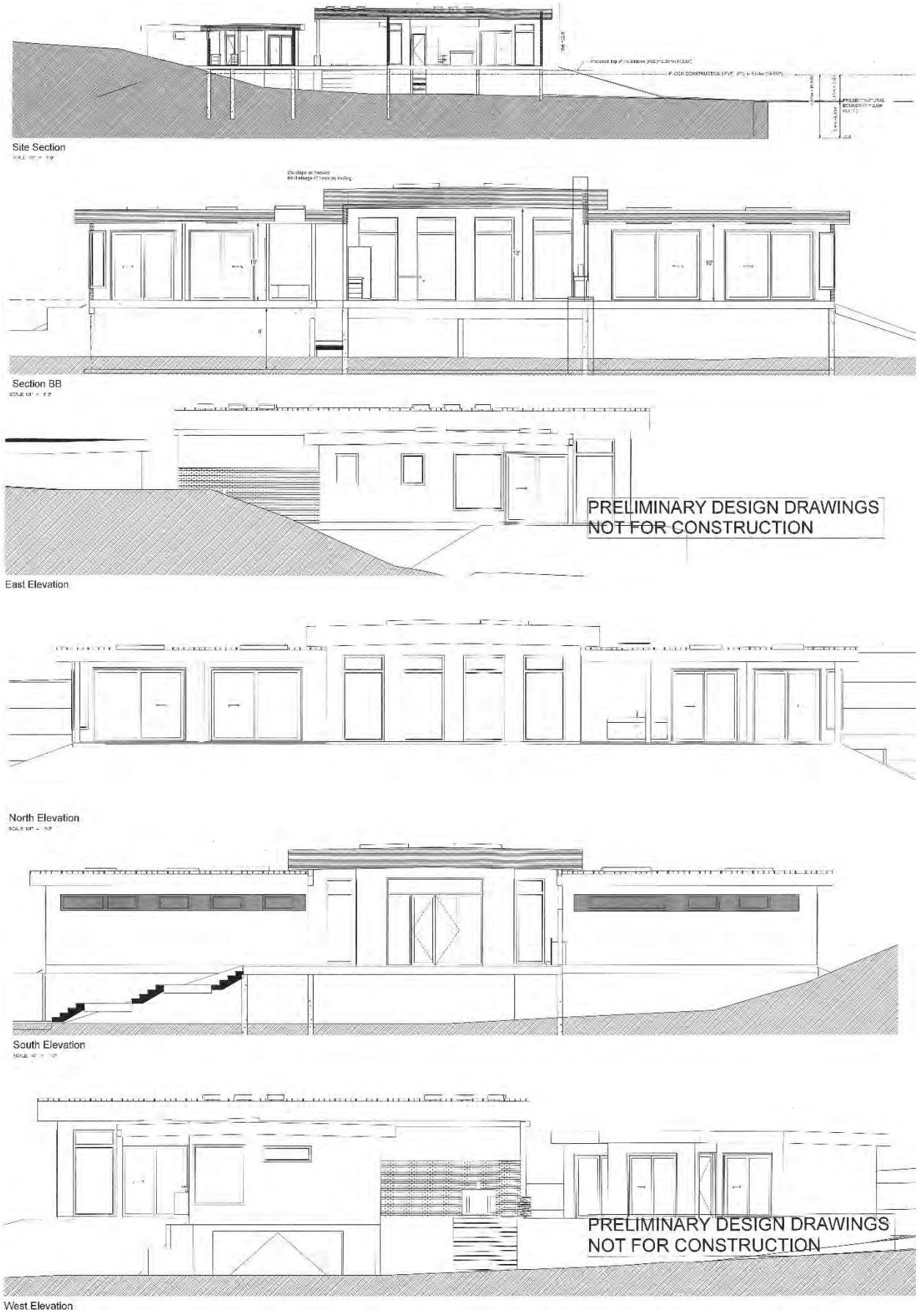


Figure 4: Elevation Drawings of Proposed Site Designs

Figure 5: 3D Diagrams of Proposed Site Design

Ken Woods, P. Eng. 2351 Barbara Road Courtenay, B.C. V9J 1L9
250-897-8584 kenwoodspeng@gmail.com

November 17, 2020

Attn: Bill Lane
WJL Enterprises Inc.
3883 Warren Avenue
Royston, B.C.
250-650-5263
Lane4535@shaw.ca

Re: **Flood Construction Level**

At: **Lince Road**
Royston, B.C.

Legal: Lot 1, Section 86, Comox District, Plan VIP89233
PID: 028-739-329
Roll: 01190.460
Acres: 0.73 acres or 0.3 hectares
Sewer: Septic
Water: Municipal

Purpose:

WJL Enterprises has requested a recommendation for the Flood Construction Level at Lot 1, Lince Road, Royston, B.C. This memo summarizes recommendations for the required Flood Construction Level based on minimal allowance for future sea level rise to the year 2100, at the above location.

Introduction:

The proposed construction at Lot 1 Lince Road is a single-family residence, and carriage house, supported by concrete strip footings and walls, and use of concrete columns.

The Flood Construction Level for the single family residence and carriage house would be regulated by the Floodplain Management Bylaw No. 600, 2020.

Both the residence and carriage house will have non-habitable garage space below the Flood Construction Level.

The specified Floodplain setback from the Natural Boundary of the sea is 15 meters.

If a proposed residence is constructed within 100 meters of the sea and the lands are likely subject to flooding from high tides, storm surge, and wave effects, the property owner is required to provide a

report from a qualified professional engineer to provide a flood construction level based on minimum allowance for future sea level rise to the year 2100.

Both the single family residence and the carriage house are within the 100 meters of the sea.

Site Description:

Lot 1 Lince Road is a waterfront lot facing northwest. The Straight of Georgia is to the west, Comox Harbour 2.7 kilometers to the north, and the Courtenay River Estuary to the north-west. Millard Creek is 2.4 kilometers to the north-west and the Courtenay River is 3.8 kilometers to the north-east. The shoreline is oriented in a north-west to south-east direction.

The Courtenay River channel flows past Comox Harbour then around Goose Spit. The Straight of Georgia has the dominant affect on Lot 1 Lince Road.

Lot 1 is 0.3 hectares, roughly triangular in shape with the widest side the shoreline, and the narrowest, to the point of the triangle, at the rear of this lot (see drawing).

Most of Lot 1 has grass cover with blackberry and other brush. A small grove of mature fir trees is near the west property line.

From the Natural Boundary 40 meters inland the property has a gentle downslope of less than 1% toward the ocean. From this flat area to the back property line is a moderate upslope from 4 meters elevation to 7 meters elevation.

The shoreline is made up of single grain sands with mixed gravels. The tidal zone is stones followed by exposed shale in lower tides.

Storms generally originate from the south-east and blow to the north-east. This property shoreline lies approximately parallel to the south-east storms, although exposed to south-east storm surge and wave action.

Occasionally a storm will blow from the north-west. The Comox Peninsula offers protection from N-W storms although Lot 1 Lince Road still open to localized wave action.

Geodetic Datum:

Geodetic Elevations are provided by Grant Land Surveying Inc. Elevations are based on geodetic datum CVGD2013 and are derived from static GPS baseline observations to Western Canadian Deformation Array ACP's.

Soils:

Sub-surface soil investigation was not done at this time. The competency of soils to support the planned construction would be determined at the time of excavation.

Ground Water:

The level of the water table is not known at this time as no excavation has been done. Surface water conditions showed no standing or pooling water, and no evidence of water flow on Lot 1.

Tsunami Hazard:

This area of the Straight of Georgia is not subject to significant Tsunami hazard.

Flood Construction Level:

Construction of the new residence and carriage house is within the 100 meter setback of the Present Natural Boundary requiring a Flood Construction Level elevation.

Flood Construction Levels (FCL) establish the minimum elevation for the underside of wood floor system or the top of concrete slab for habitable buildings, or equipment that is susceptible to damage by floodwater.

The new construction is beyond the 15 meter floodplain setback from the sea.

Approximate locations for the residence and carriage have been explored at this time.

The Flood Construction Level is the sum of the following components:

Higher High Water Large Tide – based on estimated sea level rise (Kerr Wood Leidal 2011)

Sea Level Rise – Recommended Global Sea Level Rise Curve for Planning and Design in BC, 2020 to 2100.

Crustal Rebound – uplift due to plate tectonics (KWL, 2011).

Storm Surge and Wave Effect – (Table 2-4, KWL, 2011)

Freeboard – to account for uncertainties in design water level estimates (KWL, 2011)

• Higher High Water Large Tide	2.1 m
• Sea Level Rise to Year 2100	1.0 m
• Crustal Rebound-Uplift	-0.26 m
• Storm Surge	1.25 m
• Wave Effect	0.65 m
• Freeboard	0.3 m
• Flood Construction Level	5.04m

Provided construction at Lot 1 Lince Road satisfies the minimum recommended Flood Construction Level, damage as a result of flooding is not anticipated. Although areas previously constructed below the recommended FCL (crawl space) could be subject to flooding during less than design flood events.

The general risk of flooding and the degree or severity of flood water increases as the sea level rises.

Proposed Residence and Carriage House:

The proposed residence and carriage house will have to conform to the Flood Construction Level of 5.04 meters elevation. The start of wood construction would be at the FCL, as the habitable areas of the carriage house would be above the FCL. The garage, or storage area below the FCL would not be for a habitable area or for the storage of goods, possessions, or equipment susceptible to damage by floodwaters.

Year 2100 Natural Boundary Setback:

The provincial flood hazard guidelines recommend a minimum setback of 15 meters from the future estimated Natural Boundary of the sea at year 2100, or a setback where the natural ground elevation contour is equivalent to the FCL for year 2100.

Appendix A Page 4 of 32

The Present Natural Boundary has an elevation, from Topographical Site Plan by Grant Land Surveyors Ltd., of 2.9 meters elevation. A Year 2100 sea level increase of 1.0 meter to 3.9 meters elevation is approximately equal to the elevation of this property, except where the land rises at the rear of the property. The above provincial flood hazard guidelines can not be met within the boundaries of this property and leave a useful area for construction.

Recommended Minimum Natural Boundary Setback:

The triangular shape of Lot 1 must be considered when selecting the Minimum Natural Boundary Setback. The wide portion of Lot 1 is the shoreline, moving upland of the shore the triangular shape narrows the lot to a point at the rear of the lot.

An increase in the Natural Boundary Setback will diminish the area available to build a residence. Add the construction setbacks from the side and rear lot lines and the available area is further reduced. An allowance for area needed to construct a riprap retaining wall (for compacted landfill protection) must be considered.

A person must not site a building or structure within any floodplain setbacks specified.

In order for this lot to be useful the recommended minimum Natural Boundary Setback is 15 meters.

Protection of Landfill and Structural Support:

Structural support and/or compacted landfill may be used to elevate the underside of the floor system to the specified Flood Construction Level. The structural support and/or the compacted landfill shall be protected against scour and erosion from flood flows, wave action, ice, and other debris.

A riprap retaining wall or other substantial method of protection and retention of structural and/or compacted fill is recommended.

Structural support, compacted landfill, and retaining wall must not extend within any floodplain setbacks.

Site Plan:

See attached drawings by Bruce Lewis Land Surveying Inc.

Conclusion:

The recommended Flood Construction Level for Lot 1 Lince Road is 5.04 meters elevation.

The recommended minimum Year 2100 Natural Boundary setback is 15 meters.

It is recommended that a BC Land Surveyor provide Flood Construction Level elevations as references in the field prior to construction.

The above referenced site is considered suitable for the intended purpose provided the recommendations presented herein are followed.

Geotechnical Assurance and Quality Assurance:

The 2018 B.C. Building Code requires Geotechnical Assurance by an engineer to provide review of geotechnical components, and to provide and take responsibility of field reviews during the construction of buildings.

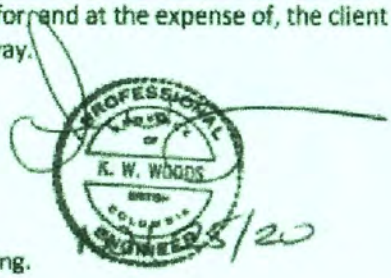
Limitations:

a.) The recommendations and scope of this report are based upon data provided by visual inspections of the site that did not include subsurface investigations.
b.) The recommendations provided are provided based upon conditions presented during the visual inspection and are consistent with general engineering practices.
c.) No other warranty, expressed or implied, is made.
d.) Due to geological variation and randomness of soil formations, no guarantee of soil conditions is made or implied, away from the areas inspected during the site visit. Conditions of subgrades and soils are known only at sites inspected and when exposed. If other conditions or soils become known during further construction or unanticipated conditions become evident, the recommendations may be altered or modified in writing by the undersigned engineer.
e.) I have acted in good faith on information provided by the client and third parties that their information is accurate, reliable, and fit for the intended purpose, I accept no responsibility for deficiency or inaccuracy as a result of omissions or errors as a result of third party omissions, errors, or misstatements.

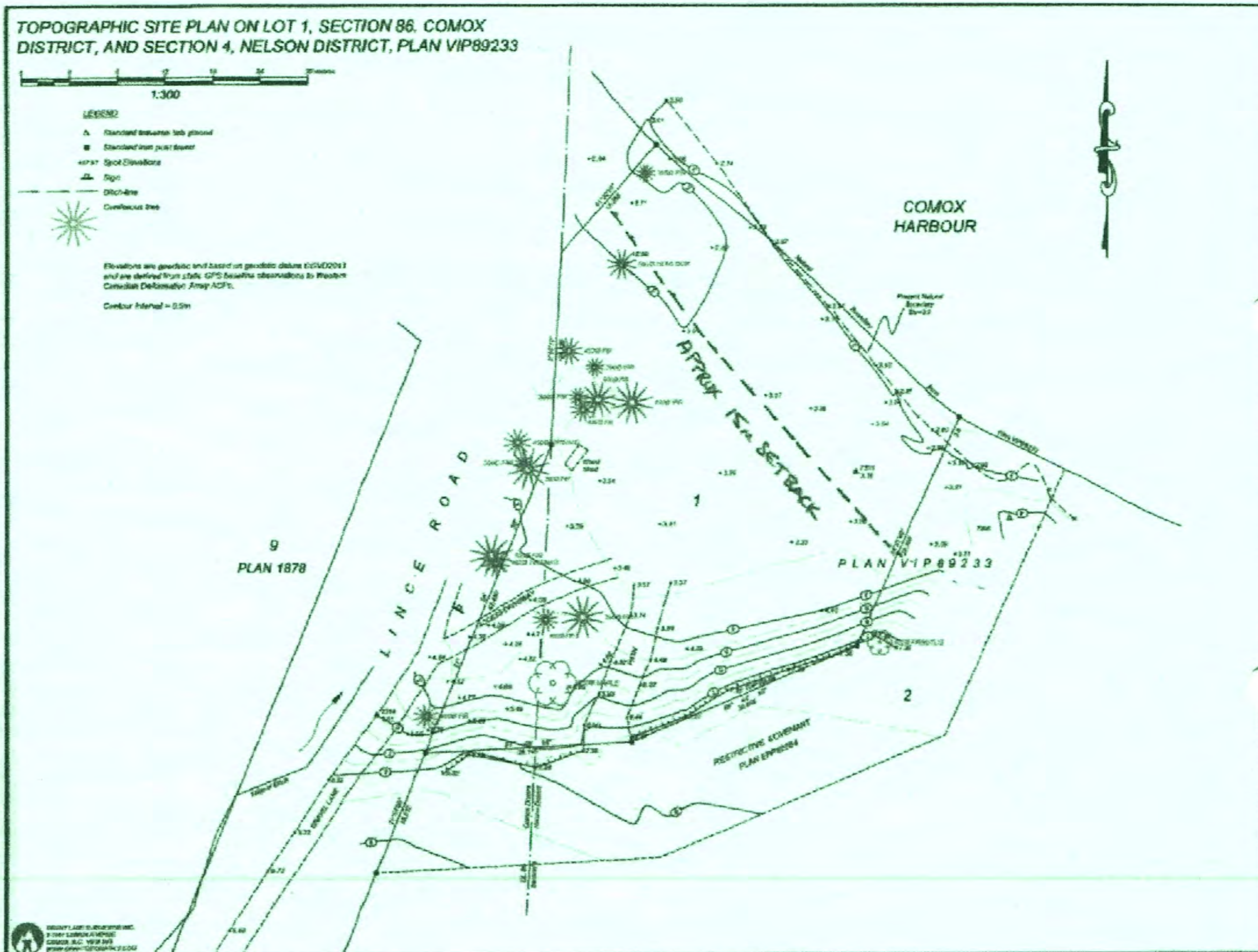
Acknowledgements:

This report has been completed by Ken Woods, P. Eng., a Geotechnical Engineer in good standing with Engineers and Geoscientists of B.C. I acknowledge that this report may be requested by the building inspector at the Comox Valley Regional District prior to the issuance of building permits. Building officials and approving officers may rely on this report for application of building permits. The report has been prepared for and at the expense of, the client and have not acted on behalf of the Comox Regional District in any way.

Your truly,



Ken Woods, P.Eng.


TOPOGRAPHIC SITE PLAN ON LOT 1, SECTION 86, COMOX DISTRICT, AND SECTION 4, NELSON DISTRICT, PLAN VIP89233
1:300
COMOX HARBOUR
9
PLAN 1878
LINCE ROAD
APPROX 15m SETBACK
1
2
PLAN VIP89233

SECONDARY PROFESSIONAL LIABILITY GROUP INSURANCE PLAN

CERTIFICATE OF INSURANCE

INSURED'S NAMES: MEMBERS of the following PARTICIPATING ASSOCIATIONS; Association of Professional Engineers and Geoscientists of Alberta (APEGA); Engineers and Geoscientists of British Columbia; Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS); Engineers Geoscientists Manitoba; Engineers and Geoscientists New Brunswick; Engineers Nova Scotia; Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG); Engineers PEI; Engineers Yukon; Professional Engineers and Geoscientists Newfoundland and Labrador (PEGNL); Association of Professional Geoscientists of Ontario (APGO); Association of Professional Geoscientists of Nova Scotia (APGNS); Ordre des géologues du Québec (OGQ)

The insurance contract will only cover claims reported to the INSURER during the policy period and for any circumstance, dispute or controversy, which were unknown before subscription to the present Group Insurance Plan. This certificate is issued for information purposes only and the holder should refer to the master policy. We suggest that you carefully read the master policy in its entirety to familiarize yourself with your rights and obligations and the details of coverage. Please note the master policy has a certain number of limitations and exclusions restricting coverage.

1.	INSURANCE COMPANY	**XL SPECIALTY INSURANCE COMPANY** 100 King Street West, Suite 3020, Toronto (Ontario) M5X 1C9	
2.	BROKER	**HUB INTERNATIONAL ONTARIO LIMITED** 675 Cochrane Drive, Suite 200, East Tower, Markham (Ontario) L3R 0B8	
3.	POLICY NUMBER	DPX 9450703	
4.	POLICY PERIOD	March 31, 2020 to March 31, 2021	
5.	LIMITS OF INSURANCE	Each claim	$250,000
		Project Limit	$500,000
		Policy Aggregate	$20,000,000
		Deductible	NIL

This is to certify that the insurance contract DPX 9450703 has been issued to the above Associations. Should there be any conflict between this document and the insurance contract DPX 9450703 (or any renewal or replacement), only the provisions of the English version of contract DPX 9450703 will prevail except in the Province of Quebec where the French version of contract DPX 9450703 will prevail. Endorsements issued or to be issued are deemed to be part of the policy.

AUTHORIZED REPRESENTATIVE/
XL SPECIALTY INSURANCE COMPANY

Comox Valley Regional District

Assurance of Professional Liability Insurance

This form to be completed by registered professionals when submitting BCBC letters of assurance

Date: NOVEMBER 25, 2020

Project information (please print)

Description of project	FLOOD CONSTRUCTION LEVEL
Address of project	LOT 1 LINCE ROAD
Legal description of project	LOT 1 SECTION 86 COMOX DISTRICT PLAN VIP 89233

The undersigned hereby certifies that:

a) I have fulfilled my obligation to obtain a subsisting policy of professional liability or errors and omissions insurance as prescribed in section 24.(3) of the Comox Valley Regional District Building Bylaw No. 142, 2011.

b) I have enclosed a copy of my certificate of insurance indicating the particulars of such coverage.

c) I am a *registered professional* as defined by section 1.4.1.2. in part 1 of division A of the British Columbia building code.

d) I will notify the building official immediately if this insurance coverage is reduced or terminated at any time during construction of the above project.

Name of professional: KEN WOODS P. ENG	Signature
Address: 2351 BARBARA ROAD, COURTENAY. B.C. V9J1L9	Phone: 250-897-8584.

If the *registered professional* is a member of a firm, complete the following:

I am a member of the firm:

Name of firm (print): n/a

And I sign this form on behalf of the firm.

Notes:

1. The above form must be signed by a *registered professional*. The British Columbia building code defines a *registered professional* to mean

   a) a person who is registered or licensed to practise as an architect under the *Architects Act*, or

   b) a person who is registered or licensed to practise as a professional engineer under the *Engineers and Geoscientists Act*

2. This form must be submitted along with the application for permit in circumstances where letters of assurance have been required in accordance with sections 9.(5)(f), 9.(5)(g), 10.(8)(e), 12.(2)(b), 14.(4)(a), 24(1) and 24.(2) of the Comox Valley Regional District Building Bylaw No. 142, 2011.

3. In this form the words in italics have the same meaning as in the British Columbia building code.

Required: attach a copy of your current professional liability insurance showing expiration date.

Ken Woods, P. Eng. **2351 Barbara Road Courtenay, B.C. V9J 1L9**
250-897-8584 kenwoodspeng@gmail.com

February 12, 2021

Attn: Bill Lane
WJL Enterprises Inc.
3883 Warren Avenue
Royston, B.C.
250-650-5263
Lane4535@shaw.ca

Re: **Flood Construction Level and the Proposed Elevator**

At: **3810 Island Highway**
Royston, B.C.

Legal: Lot 1, Section 86, Comox District, Plan VIP89233
PID: 028-739-329
Roll: 01190.460
Acres: 0.73 acres or 0.3 hectares
Sewer: Septic
Water: Municipal

Purpose:

WJL Enterprises has requested a Geotechnical recommendation for an elevator for 3810 Island Highway considering the Flood Construction Level.

Introduction:

The proposed residence will have a fulltime occupant who is disabled. The disabled family member requires transportation by a van, the van and wheelchair require access to the elevator for transport from the garage elevation to the main house elevation.

Elevator:

The electrical and mechanical workings for the elevator are located at the top of the elevator shaft, on the second level, the main house elevation. The elevator car electrical controls are mid-height in the car. In the event of a flood, the car be raised to the second floor to avoid damage.

The elevator sump is shallow and contains mechanical fasteners for the elevator frameworks. No other electrical motors, wiring, or controls are required in the elevator sump.

Proposed Residence and Carriage House:

The proposed residence and carriage house will have to conform to the Flood Construction Level of 5.04 meters elevation. The start of wood construction would be at the FCL, as the habitable areas of the carriage house would be above the FCL. The garage, or storage area below the FCL would not be for a habitable area or for the storage of goods, possessions, or equipment susceptible to damage by floodwaters.

Elevation Views:

See attached drawings for proposed house and elevator elevations and elevator Location.

Conclusion:

The soils for construction of the proposed house, including the elevator, will have to meet the acceptable bearing pressure.

The elevator electrical and mechanical workings are above the FCL, and the elevator car can be raised above the FCL.

Upon an acceptable geotechnical field review and assessment, the elevator shall be satisfactory for the intended purpose.

Geotechnical Assurance and Quality Assurance:

The 2018 B.C. Building Code requires Geotechnical Assurance by an engineer to provide review of geotechnical components, and to provide and take responsibility of field reviews during the construction of buildings.

Limitations:

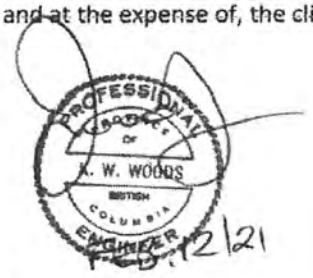
a.) The recommendations and scope of this report are based upon data provided by visual inspections of the site that did not include subsurface investigations.
b.) The recommendations provided are provided based upon conditions presented during the visual inspection and are consistent with general engineering practices.
c.) No other warranty, expressed or implied, is made.
d.) Due to geological variation and randomness of soil formations, no guarantee of soil conditions is made or implied, away from the areas inspected during the site visit. Conditions of subgrades and soils are known only at sites inspected and when exposed. If other conditions or soils become known during further construction or unanticipated conditions become evident, the recommendations may be altered or modified in writing by the undersigned engineer.
e.) I have acted in good faith on information provided by the client and third parties that their information is accurate, reliable, and fit for the intended purpose, I accept no responsibility for deficiency or inaccuracy as a result of omissions or errors as a result of third party omissions, errors, or misstatements.

Acknowledgements:

This report has been completed by Ken Woods, P. Eng., a Geotechnical Engineer in good standing with Engineers and Geoscientists of B.C. I acknowledge that this report may be requested by the building

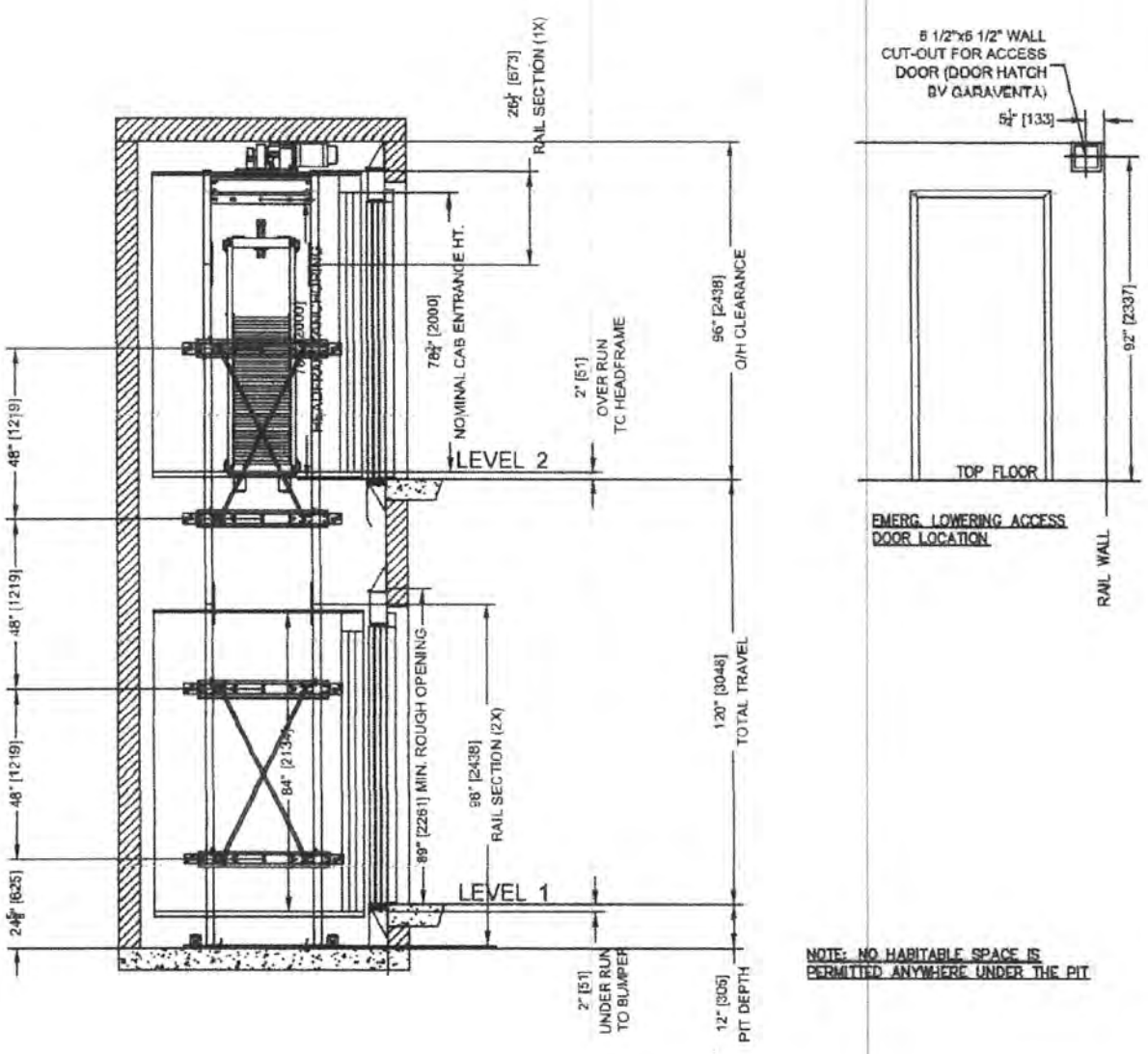
inspector at the Comox Valley Regional District prior to the issuance of building permits. Building officials and approving officers may rely on this report for application of building permits. The report has been prepared for, and at the expense of, the client and have not acted on behalf of the Comox Regional District in any way.

Your truly,



Ken Woods, P.Eng.

ELEVATION VIEW



A	REV A=INITIAL RELEASE. FOR ALL OTHERS SEE REVISION HISTORY (SHEET 6).		UNITS: MM [INCHES]	JAN/19/21	cfoullarde	
REV.	SCALE: N.T.S.	TOLERANCES: DIMENSIONAL ±3 [±1/8] ANGULAR ±1°	PROJECTION:	DATE	DRN.BY	CHK.BY

ELVORON 3 SPEED MR **CONCEPT**

SLATER RESIDENCE
LINE RD
ROYSTON BC

PAGE 1 OF 8

GARVENTA LIFT BC

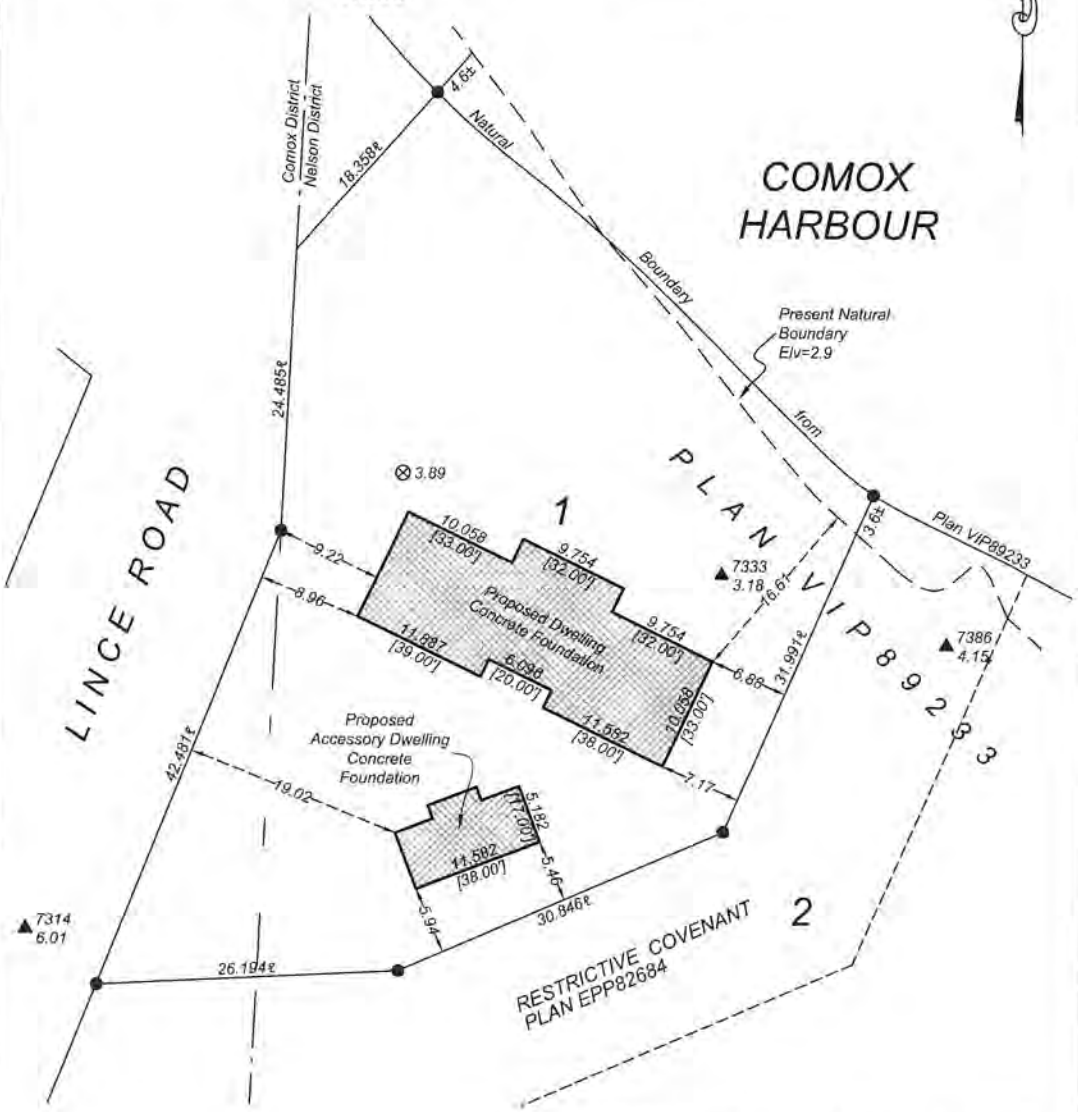
M1001-CI-A

PROPOSED IMPROVEMENTS ON LOT 1, DISTRICT LOT 86, COMOX DISTRICT AND SECTION 4 NELSON DISTRICT, PLAN VIP89233.

Parcel Identifier: 028-739-329

10 0 10 20 30 40 50 metres

1:500



This plan shows the natural boundary according to Plan VIP89233 and an opinion of location of the present natural boundary based on field survey. Dimensions of the lot under survey as shown may not reflect the current extent of title.

Civic Address
Lince Road
Royston, BC

Offset dimensions are to the exterior of the main foundation wall and are perpendicular to the property lines.

Certified Correct

Digitally signed by
Donald Grant 364AG6
Date: 2021.01.29
13:32:11 -08'00'

_____, BCLS

This document is not valid unless digitally signed.

465Layout.dwg
20210129

GRANT LAND SURVEYING INC.
580 10th STREET
COURTENAY, B.C. V9N 1P8
250.871.8040

Ken Woods, P. Eng.

2351 Barbara Road Courtenay, B.C. V9J 1L9

250-897-8584 kenwoodspeng@gmail.com

February 23, 2021

Re: **Addendum to Flood Construction Level**

At: **3810 Island Highway, Royston, B.C.**

Legal: Lot 1, Section 86, Comox District, Plan VIP89233
PID: 028-739-329
Roll: 01190.460
Acres: 0.73 acres or 0.3 hectares
Sewer: Septic
Water: Municipal
Attn: Bill Lane
WJL Enterprises Inc.
3883 Warren Avenue
Royston, B.C.
250-650-5263
Lane4535@shaw.ca

Addendum to Flood Construction Level of November 17, 2020:

Flood Construction Level:

There is no change to the Flood Construction Level of 5.04 meters Geodetic.

Present Natural Boundary Setback:

There is no change to the Present Natural Boundary Setback of 15 meters horizontal distance.

Purpose of Addendum:

The November 17, 2020 plan to protect the structural support and compacted landfill of the building should be modified to work in concert with Landscape Design and Environmental Assessment.

Landscape Design by Arianne Huene Landscape Design and Environmental Assessment by Current Environmental have been presented for 3810 Island Highway.

Also, test pits were dug on the building site to determine the depth and type of bearing soils available to support the building.

"Floodplain Management Bylaw", No. 600, 2020, section 304 Floodplain Construction Requirements part (3):

A person may use structural support or compacted landfill or a combination of both to elevate the underside of a floor system or the top the pad above the flood construction levels specified in section 302. The structural support and compacted landfill shall be protected against scour and erosion from flood flows, wave action, ice and other debris. The structural support and compacted fill shall be installed and compacted under the direction of a Professional Geotechnical Engineer.

Soil Identification:

Surface soils and subsoils:

- 0 to ~80 cm depth.
- coarse single grain sand and shale fragments less than 5mm in size, moist, dark brown to black.
- Decomposed organics mixed through subsoil horizon.
- 20% to 40% gravel less than 3", rounded, smooth gravels.

Bearing Gravel:

- ~80cm to depth.
- Well graded gravel, ~4" minus in size, clean, rounded, smooth gravel.
- No roots, organics not present.
- ~80 cm is the observed seasonal highwater table.

Structural Support and Scour Protection:

To protect the building structure from wave action and scouring below the foundation, a low strength concrete trench fill is proposed. The concrete trench fill would support and protect the building foundation facing the Comox Harbour.

The foundation footings would be surveyed, and the location staked. A 1 meter wide trench would be dug under the footings as located on the side facing Comox Harbour. The trench is to be dug to bearing gravel satisfactory for the building support. The trench would be filled with a 15 Mpa minimum strength concrete up to, or slightly under, the desired footing construction elevation. The concrete trench fill is expected to be approximately 0.6 meters in thickness.

The 15 Mpa concrete filled trench, directly coupled to the footing, is substantial protection against wave action scouring under the foundation facing Comox Harbour.

The Landscaping Plan, supported by the Environmental Plan, proposes an upward sloping fill from the beach to the proposed building. Various types of planting cover the upward sloping grade toward the building. The resulting compacted fill against the concrete foundation of the building would be approximately 2 meters in depth. The ~ 2 meter depth of compacted fill against the concrete foundation of the building, with an upward sloping grade to the building, will add additional protection against wave action and scouring. The depth of the landscape fill, in addition to the concrete trench fill, provides approximately 2.7 meters cover to the bottom of the trench fill, or the bearing soil elevation.

The combination of ~2 meters of landscaping fill and concrete trench fill under the fill satisfies the requirement for protection against scour and erosion from flood flows, wave action, ice and other debris. (Section 304 Floodplain Construction Requirements Part 3)

The proposed rip rap protection of the structure would not be required.

Current Environmental proposes shoreline protection measures against wave action.

The estimated flood risk to structures on the property is low.

The flood risk to adjacent properties due to this plan is Low. Adjacent property structures are at a higher elevation and distant from the proposed construction.

Conclusion:

The required protection of the structural support and landfill of the building, providing the above recommendations are followed, is satisfactory for the intended purpose.

Geotechnical Assurance and Quality Assurance:

The 2018 B.C. Building Code requires Geotechnical Assurance by an engineer to provide review of geotechnical components, and to provide and take responsibility of field reviews during the construction of buildings.

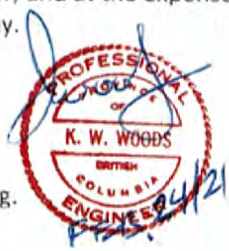
Limitations:

a.) The recommendations and scope of this report are based upon data provided by visual inspections of the site that did not include subsurface investigations.
b.) The recommendations provided are provided based upon conditions presented during the visual inspection and are consistent with general engineering practices.
c.) No other warranty, expressed or implied, is made.
d.) Due to geological variation and randomness of soil formations, no guarantee of soil conditions is made or implied, away from the areas inspected during the site visit. Conditions of subgrades and soils are known only at sites inspected and when exposed. If other conditions or soils become known during further construction or unanticipated conditions become evident, the recommendations may be altered or modified in writing by the undersigned engineer.
e.) I have acted in good faith on information provided by the client and third parties that their information is accurate, reliable, and fit for the intended purpose, I accept no responsibility for deficiency or inaccuracy as a result of omissions or errors as a result of third party omissions, errors, or misstatements.

Acknowledgements:

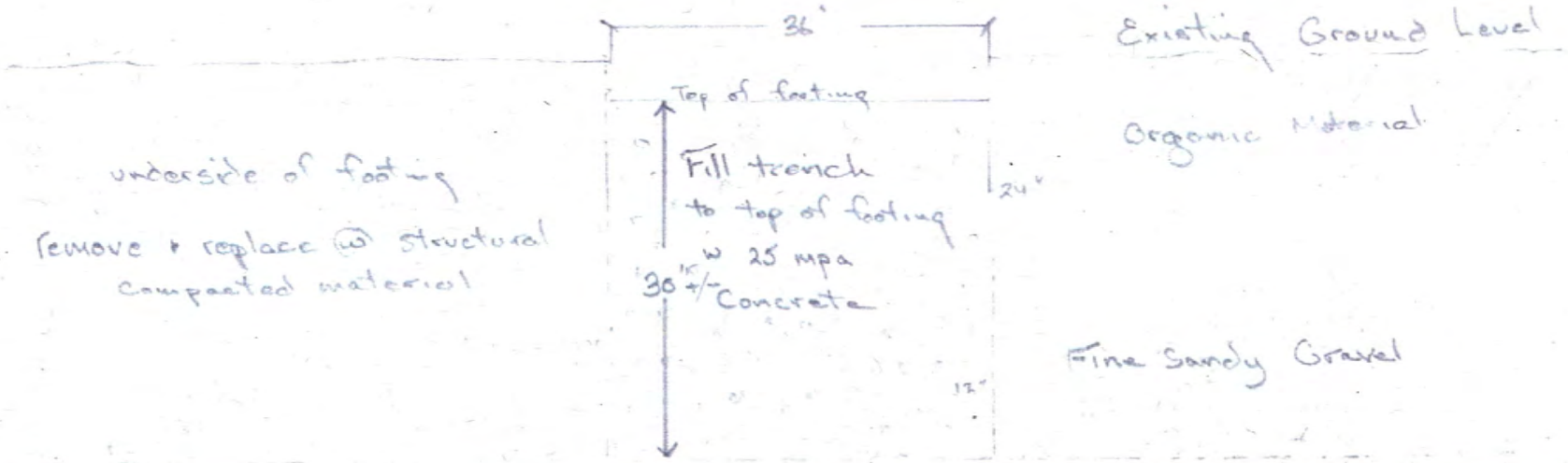
This report has been completed by Ken Woods, P. Eng., a Professional Engineer in good standing with Engineers and Geoscientists of B.C. I acknowledge that this report may be requested by the building inspector at the Comox Valley Regional District prior to the issuance of building permits. Building officials and approving officers may rely on this report for application of building permits. The report has been prepared for, and at the expense of, the client and have not acted on behalf of the Comox Regional District in any way.

Your truly,



Ken Woods, P.Eng.

3810 Island Highway



Coarse Natural Gravel

WSL

Appendix A Page 18 of 32

Ken Woods, P. Eng. 2351 Barbara Road Courtenay, B.C. V9J 1L9
250-897-8584 kenwoodspeng@gmail.com

March 22, 2021

Re: Landfill – Flood Plain Management Bylaw No. 600

At: 3810 Island Highway, Royston, B.C.

Legal: Lot 1, Section 86, Comox District, Plan VIP89233
PID: 028-739-329
Roll: 01190.460
Acres: 0.73 acres or 0.3 hectares
Sewer: Septic
Water: Municipal
Attn: Bill Lane
WJL Enterprises Inc.
3883 Warren Avenue
Royston, B.C.
250-650-5263
Lane4535@shaw.ca

Flood Construction Level:

There is no change to the Flood Construction Level of 5.04 meters Geodetic.

Present Natural Boundary Setback:

There is no change to the Present Natural Boundary Setback of 15 meters horizontal distance.

Landfill Imported to 3810 Island Highway:

The planned protection of the structural foundation is by importing landfill and placing the land fill up to 2 meters high against the concrete foundation wall. The landfill will slope down and away from the concrete foundation toward the ocean (Comox Harbour), tapering from 2 meters in depth to 0 meters.

The landfill is a combination of structural foundation protection for the residence, and fill soils used in landscaping areas toward Comox Harbour.

1. Proposed Setback of Fill:

The majority of the landfill will be used as protection of the structural foundation outside the PNB setback of 15 meters. After removal of invasive species of plants inside the PNB setback, landfill and soils will be used to remediate and prepare the area for the proposed Landscape Design integrating the

protective landfill for the building and the landscape fill soils into a continuous, natural looking, downslope toward the Comox Harbour. The protection of the constructed structural support, the Landscape Design, and the Environmental recommendations should work together to achieve a positive outcome.

2. Volume of Landfill:

The volume of landfill used to achieve structural protection and the Landscape Design is approximately 300 cubic meters. This volume is an estimate and may vary as the project progresses.

3. Safety of Landfill:

The landfill and landscape soils are not expected to be a safety concern or hazard. The adjusted downslope toward Comox Harbour and the designed landscape will be an improvement of the current situation.

4. Impact on Neighbours:

Landfill protection of the building and landfill soils for the landscape design will not have a negative impact on the neighbouring properties.

The General Contractor, WJL Enterprises, has consulted with the neighbours who are pleased with a positive improvement of this property.

General Contracting by WJL Enterprises.

Landscape Design by Arianne Huene Landscape Design.

Environmental Assessment by Current Environmental.

Recommendations:

Landfill used, other than landscape soil, is to have a stable quality like a structural fill.

Conclusion:

The required protection of the structural support by landfill, and the proposed landscape fill soil in concert with the Environmental Assessment recommendations to enhance the property, is satisfactory for the intended purpose, provided the plans are followed as expected.

Geotechnical Assurance and Quality Assurance:

The 2018 B.C. Building Code requires Geotechnical Assurance by an engineer to provide review of geotechnical components, and to provide and take responsibility of field reviews during the construction of buildings.

Limitations:

a.) The recommendations and scope of this report are based upon data provided by visual inspections of the site that did not include subsurface investigations.

b.) The recommendations provided are provided based upon conditions presented during the visual inspection and are consistent with general engineering practices.
c.) No other warranty, expressed or implied, is made.
d.) Due to geological variation and randomness of soil formations, no guarantee of soil conditions is made or implied, away from the areas inspected during the site visit. Conditions of subgrades and soils are known only at sites inspected and when exposed. If other conditions or soils become known during further construction or unanticipated conditions become evident, the recommendations may be altered or modified in writing by the undersigned engineer.
e.) I have acted in good faith on information provided by the client and third parties that their information is accurate, reliable, and fit for the intended purpose, I accept no responsibility for deficiency or inaccuracy as a result of omissions or errors as a result of third party omissions, errors, or misstatements.

Acknowledgements:

This report has been completed by Ken Woods, P. Eng., a Professional Engineer in good standing with Engineers and Geoscientists of B.C. I acknowledge that this report may be requested by the building inspector at the Comox Valley Regional District prior to the issuance of building permits. Building officials and approving officers may rely on this report for application of building permits. The report has been prepared for, and at the expense of, the client and have not acted on behalf of the Comox Regional District in any way.

Your truly,

Ken Woods, P.Eng.

SECONDARY PROFESSIONAL LIABILITY GROUP INSURANCE PLAN

CERTIFICATE OF INSURANCE

INSURED'S NAMES: MEMBERS of the following PARTICIPATING ASSOCIATIONS; Association of Professional Engineers and Geoscientists of Alberta (APEGA); Engineers and Geoscientists of British Columbia; Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS); Engineers Geoscientists Manitoba; Engineers and Geoscientists New Brunswick; Engineers Nova Scotia; Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG); Engineers PEI; Engineers Yukon; Professional Engineers and Geoscientists Newfoundland and Labrador (PEGNL); Association of Professional Geoscientists of Ontario (APGO); Association of Professional Geoscientists of Nova Scotia (APGNS); Ordre des géologues du Québec (OGQ)

The insurance contract will only cover claims reported to the INSURER during the policy period and for any circumstance, dispute or controversy, which were unknown before subscription to the present Group Insurance Plan. This certificate is issued for information purposes only and the holder should refer to the master policy. We suggest that you carefully read the master policy in its entirety to familiarize yourself with your rights and obligations and the details of coverage. Please note the master policy has a certain number of limitations and exclusions restricting coverage.

1.	INSURANCE COMPANY	**XL SPECIALTY INSURANCE COMPANY** 100 King Street West, Suite 3020, Toronto (Ontario) M5X 1C9	
2.	BROKER	**HUB INTERNATIONAL ONTARIO LIMITED** 675 Cochrane Drive, Suite 200, East Tower, Markham (Ontario) L3R 0B8	
3.	POLICY NUMBER	DPX 9450703	
4.	POLICY PERIOD	March 31, 2020 to March 31, 2021	
5.	LIMITS OF INSURANCE	Each claim	$250,000
		Project Limit	$500,000
		Policy Aggregate	$20,000,000
		Deductible	NIL

This is to certify that the Insurance contract DPX 9450703 has been issued to the above Associations. Should there be any conflict between this document and the insurance contract DPX 9450703 (or any renewal or replacement), only the provisions of the English version of contract DPX 9450703 will prevail except in the Province of Quebec where the French version of contract DPX 9450703 will prevail. Endorsements issued or to be issued are deemed to be part of the policy.

AUTHORIZED REPRESENTATIVE/
XL SPECIALTY INSURANCE COMPANY

Comox Valley
REGIONAL DISTRICT

Assurance of Professional Liability Insurance

This form to be completed by registered professionals when submitting BCBC letters of assurance

Date: MARCH 22, 2021

Project information (please print)

Description of project: LANDFILL - FLOOD PLAIN MANAGEMENT
Address of project: 3810 ISLAND HIGHWAY
Legal description of project: LOT 1 SECTION 86 COMOX DISTRICT PLAN VIP 89233

The undersigned hereby certifies that:

a) I have fulfilled my obligation to obtain a subsisting policy of professional liability or errors and omissions insurance as prescribed in section 24.(3) of the Comox Valley Regional District Building Bylaw No. 142, 2011.

b) I have enclosed a copy of my certificate of insurance indicating the particulars of such coverage.

c) I am a *registered professional* as defined by section 1.4.1.2. in part 1 of division A of the British Columbia building code.

d) I will notify the building official immediately if this insurance coverage is reduced or terminated at any time during construction of the above project.

Name of professional: KEN WOODS P.ENG	Signature:
Address: 2351 BARBARA ROAD, COURTENAY BC V9J 1G9	Phone: 250-897-8584

If the *registered professional* is a member of a firm, complete the following:

I am a member of the firm:

Name of firm (print): NA

And I sign this form on behalf of the firm.

Notes:

1. The above form must be signed by a *registered professional*. The British Columbia building code defines a *registered professional* to mean
   a) a person who is registered or licensed to practise as an architect under the *Architects Act*, or
   b) a person who is registered or licensed to practise as a professional engineer under the *Engineers and Geoscientists Act*
2. This form must be submitted along with the application for permit in circumstances where letters of assurance have been required in accordance with sections 9.(5)(f), 9.(5)(g), 10.(8)(e), 12.(2)(b), 14.(4)(a), 24(1) and 24.(2) of the Comox Valley Regional District Building Bylaw No. 142, 2011.
3. In this form the words in italics have the same meaning as in the British Columbia building code.

Required: attach a copy of your current professional liability insurance showing expiration date.

FLOOD ASSURANCE STATEMENT

Note: This statement is to be read and completed in conjunction with the current Engineers and Geoscientists BC *Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC* ("the guidelines") and is to be provided for flood assessments for the purposes of the *Land Title Act*, Community Charter, or the *Local Government Act*. Defined terms are capitalized; see the Defined Terms section of the guidelines for definitions.

To: The Approving Authority

Date: FEBRUARY 23, 2021

COMOX VALLEY REGIONAL DISTRICT

770 HARMSTON AVE., COURTENAY B.C. V9N 0G8

Jurisdiction and address

With reference to (CHECK ONE):

- ☐ *Land Title Act* (Section 86) – Subdivision Approval
- ☐ *Local Government Act* (Part 14, Division 7) – Development Permit
- ☐ Community Charter (Section 56) – Building Permit
- ☑ *Local Government Act* (Section 524) – Flood Plain Bylaw Variance
- ☐ *Local Government Act* (Section 524) – Flood Plain Bylaw Exemption

For the following property ("the Property"):

LOT 1, SECTION 86, COMOX DISTRICT, PLAN VIP 89233

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 who fulfils the education, training, and experience requirements as outlined in the guidelines.

I have signed, sealed, and dated, and thereby certified, the attached Flood Assessment Report on the Property in accordance with the guidelines. That report and this statement must be read in conjunction with each other. In preparing that Flood Assessment Report I have:

[CHECK TO THE LEFT OF APPLICABLE ITEMS]

✓ 1. Consulted with representatives of the following government organizations:
CVRD

✓ 2. Collected and reviewed appropriate background information

✓ 3. Reviewed the Proposed Development on the Property

✓ 4. Investigated the presence of Covenants on the Property, and reported any relevant information

✓ 5. Conducted field work on and, if required, beyond the Property

✓ 6. Reported on the results of the field work on and, if required, beyond the Property

✓ 7. Considered any changed conditions on and, if required, beyond the Property

8. For a Flood Hazard analysis I have:

- ✓ 8.1 Reviewed and characterized, if appropriate, Flood Hazard that may affect the Property
- ✓ 8.2 Estimated the Flood Hazard on the Property
- ✓ 8.3 Considered (if appropriate) the effects of climate change and land use change
- ✓ 8.4 Relied on a previous Flood Hazard Assessment (FHA) by others
- ✓ 8.5 Identified any potential hazards that are not addressed by the Flood Assessment Report

9. For a Flood Risk analysis I have:

- ✓ 9.1 Estimated the Flood Risk on the Property
- ✓ 9.2 Identified existing and anticipated future Elements at Risk on and, if required, beyond the Property
- ✓ 9.3 Estimated the Consequences to those Elements at Risk

FLOOD ASSURANCE STATEMENT

10. In order to mitigate the estimated Flood Hazard for the Property, the following approach is taken:
- ✓ 10.1 A standard-based approach
- ___ 10.2 A Risk-based approach
- ___ 10.3 The approach outlined in the guidelines, Appendix F: Flood Assessment Considerations for Development Approvals
- ___ 10.4 No mitigation is required because the completed flood assessment determined that the site is not subject to a Flood Hazard

11. Where the Approving Authority has adopted a specific level of Flood Hazard or Flood Risk tolerance, I have:
- ___ 11.1 Made a finding on the level of Flood Hazard or Flood Risk on the Property
- ___ 11.2 Compared the level of Flood Hazard or Flood Risk tolerance adopted by the Approving Authority with my findings
- ___ 11.3 Made recommendations to reduce the Flood Hazard or Flood Risk on the Property

12. Where the Approving Authority has not adopted a level of Flood Hazard or Flood Risk tolerance, I have:
- ✓ 12.1 Described the method of Flood Hazard analysis or Flood Risk analysis used
- ✓ 12.2 Referred to an appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk
- ✓ 12.3 Made a finding on the level of Flood Hazard of Flood Risk tolerance on the Property
- ✓ 12.4 Compared the guidelines with the findings of my flood assessment
- ✓ 12.5 Made recommendations to reduce the Flood Hazard or Flood Risk

✓ 13. Considered the potential for transfer of Flood Risk and the potential impacts to adjacent properties

✓ 14. Reported on the requirements for implementation of the mitigation recommendations, including the need for subsequent professional certifications and future inspections.

Based on my comparison between:

[CHECK ONE]

☐ The findings from the flood assessment and the adopted level of Flood Hazard or Flood Risk tolerance (item 11.2 above)

✓ The findings from the flood assessment and the appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk tolerance (item 12.4 above)

I hereby give my assurance that, based on the conditions contained in the attached Flood 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* (Part 14, Division 7), my Flood Assessment Report will "assist the local government in determining what conditions or requirements it will impose under subsection (2) of this section [Section 491 (4)]".

☐ 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* and the *Amendment Section 3.5 and 3.6* associated with the *Local Government Act* (Section 524), "the development may occur safely".

☐ For flood plain bylaw exemption, as required by the *Local Government Act* (Section 524), "the land may be used safely for the use intended".

FLOOD ASSURANCE STATEMENT

I certify that I am a Qualified Professional as defined below.

FEBRUARY 23, 2021
Date

KEN WOODS
Prepared by

Reviewed by

KEN WOODS, P.ENG.
Name (print)

Name (print)

Signature

Signature

2351 BARBARA ROAD
Address

COURTENAY, B.C., V9J 1L9

250- 897-8584
Telephone

kenwoodspeng@gmail.com
Email

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA K. W. WOODS 23/21

(Affix PROFESSIONAL SEAL here)

If the Qualified Professional is a member of a firm, complete the following:

I am a member of the firm na
and I sign this letter on behalf of the firm.

(Name of firm)

Note: This statement is to be read and completed in conjunction with the current Engineers and Geoscientists BC *Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC* ("the guidelines") and is to be provided for flood assessments for the purposes of the *Land Title Act*, Community Charter, or the *Local Government Act*. Defined terms are capitalized; see the Defined Terms section of the guidelines for definitions.

To: The Approving Authority

Date: FEBRUARY 23, 2021

COMOX VALLEY REGIONAL DISTRICT

770 HARMSTON AVE., COURTENAY B.C. V9N 0G8

Jurisdiction and address

With reference to (CHECK ONE):

- ☐ *Land Title Act* (Section 86) – Subdivision Approval
- ☐ *Local Government Act* (Part 14, Division 7) – Development Permit
- ☐ Community Charter (Section 56) – Building Permit
- ☑ *Local Government Act* (Section 524) – Flood Plain Bylaw Variance
- ☐ *Local Government Act* (Section 524) – Flood Plain Bylaw Exemption

For the following property ("the Property"):

LOT 1, SECTION 86, COMOX DISTRICT, PLAN VIP 89233

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 who fulfils the education, training, and experience requirements as outlined in the guidelines.

I have signed, sealed, and dated, and thereby certified, the attached Flood Assessment Report on the Property in accordance with the guidelines. That report and this statement must be read in conjunction with each other. In preparing that Flood Assessment Report I have:

[CHECK TO THE LEFT OF APPLICABLE ITEMS]

✓ 1. Consulted with representatives of the following government organizations:
CVRD

✓ 2. Collected and reviewed appropriate background information

✓ 3. Reviewed the Proposed Development on the Property

✓ 4. Investigated the presence of Covenants on the Property, and reported any relevant information

✓ 5. Conducted field work on and, if required, beyond the Property

✓ 6. Reported on the results of the field work on and, if required, beyond the Property

✓ 7. Considered any changed conditions on and, if required, beyond the Property

8. For a Flood Hazard analysis I have:

✓ 8.1 Reviewed and characterized, if appropriate, Flood Hazard that may affect the Property

✓ 8.2 Estimated the Flood Hazard on the Property

✓ 8.3 Considered (if appropriate) the effects of climate change and land use change

✓ 8.4 Relied on a previous Flood Hazard Assessment (FHA) by others

✓ 8.5 Identified any potential hazards that are not addressed by the Flood Assessment Report

9. For a Flood Risk analysis I have:

✓ 9.1 Estimated the Flood Risk on the Property

✓ 9.2 Identified existing and anticipated future Elements at Risk on and, if required, beyond the Property

✓ 9.3 Estimated the Consequences to those Elements at Risk

FLOOD ASSURANCE STATEMENT

10. In order to mitigate the estimated Flood Hazard for the Property, the following approach is taken:
- ✓ 10.1 A standard-based approach
- ___ 10.2 A Risk-based approach
- ___ 10.3 The approach outlined in the guidelines, Appendix F: Flood Assessment Considerations for Development Approvals
- ___ 10.4 No mitigation is required because the completed flood assessment determined that the site is not subject to a Flood Hazard

11. Where the Approving Authority has adopted a specific level of Flood Hazard or Flood Risk tolerance, I have:
- ___ 11.1 Made a finding on the level of Flood Hazard or Flood Risk on the Property
- ___ 11.2 Compared the level of Flood Hazard or Flood Risk tolerance adopted by the Approving Authority with my findings
- ___ 11.3 Made recommendations to reduce the Flood Hazard or Flood Risk on the Property

12. Where the Approving Authority has not adopted a level of Flood Hazard or Flood Risk tolerance, I have:
- ✓ 12.1 Described the method of Flood Hazard analysis or Flood Risk analysis used
- ✓ 12.2 Referred to an appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk
- ✓ 12.3 Made a finding on the level of Flood Hazard of Flood Risk tolerance on the Property
- ✓ 12.4 Compared the guidelines with the findings of my flood assessment
- ✓ 12.5 Made recommendations to reduce the Flood Hazard or Flood Risk

✓ 13. Considered the potential for transfer of Flood Risk and the potential impacts to adjacent properties

✓ 14. Reported on the requirements for implementation of the mitigation recommendations, including the need for subsequent professional certifications and future inspections.

Based on my comparison between:

[CHECK ONE]

☐ The findings from the flood assessment and the adopted level of Flood Hazard or Flood Risk tolerance (item 11.2 above)

✓ The findings from the flood assessment and the appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk tolerance (item 12.4 above)

I hereby give my assurance that, based on the conditions contained in the attached Flood 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* (Part 14, Division 7), my Flood Assessment Report will "assist the local government in determining what conditions or requirements it will impose under subsection (2) of this section [Section 491 (4)]".

✓ 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* and the *Amendment Section 3.5 and 3.6* associated with the *Local Government Act* (Section 524), "the development may occur safely".

☐ For flood plain bylaw exemption, as required by the *Local Government Act* (Section 524), "the land may be used safely for the use intended".

I certify that I am a Qualified Professional as defined below.

FEBRUARY 23, 2021
Date

KEN WOODS
Prepared by

Reviewed by

KEN WOODS, P.ENG.
Name (print)

Name (print)

Signature

Signature

2351 BARBARA ROAD
Address

COURTENAY, B.C., V9J 1L9

250- 897-8584
Telephone

kenwoodspeng@gmail.com
Email

(Affix PROFESSIONAL SEAL here)

If the Qualified Professional is a member of a firm, complete the following:

I am a member of the firm and I sign this letter on behalf of the firm.

na
(Name of firm)

FLOOD ASSURANCE STATEMENT

Note: This statement is to be read and completed in conjunction with the current Engineers and Geoscientists BC *Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC* ("the guidelines") and is to be provided for flood assessments for the purposes of the *Land Title Act*, Community Charter, or the *Local Government Act*. Defined terms are capitalized; see the Defined Terms section of the guidelines for definitions.

To: The Approving Authority

Date: MARCH 4, 2021

COMOX VALLEY REGIONAL DIST.
770 HARMSTON AVE, COURTENAY B.C., V9N 0G8
Jurisdiction and address

With reference to (CHECK ONE):

- ☐ *Land Title Act* (Section 86) – Subdivision Approval
- ☐ *Local Government Act* (Part 14, Division 7) – Development Permit
- ☑ Community Charter (Section 56) – Building Permit
- ☐ *Local Government Act* (Section 524) – Flood Plain Bylaw Variance
- ☐ *Local Government Act* (Section 524) – Flood Plain Bylaw Exemption

For the following property ("the Property"):

LOT 1 SECTION 86, COMOX DISTRICT, PLAN VIP 89233
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 who fulfils the education, training, and experience requirements as outlined in the guidelines.

I have signed, sealed, and dated, and thereby certified, the attached Flood Assessment Report on the Property in accordance with the guidelines. That report and this statement must be read in conjunction with each other. In preparing that Flood Assessment Report I have:

[CHECK TO THE LEFT OF APPLICABLE ITEMS]

- ✓ 1. Consulted with representatives of the following government organizations:
  COMOX VALLEY REGIONAL DISTRICT
- ✓ 2. Collected and reviewed appropriate background information
- ✓ 3. Reviewed the Proposed Development on the Property
- ✓ 4. Investigated the presence of Covenants on the Property, and reported any relevant information
- ✓ 5. Conducted field work on and, if required, beyond the Property
- ✓ 6. Reported on the results of the field work on and, if required, beyond the Property
- ✓ 7. Considered any changed conditions on and, if required, beyond the Property
- 8. For a Flood Hazard analysis I have:
  - ✓ 8.1 Reviewed and characterized, if appropriate, Flood Hazard that may affect the Property
  - ✓ 8.2 Estimated the Flood Hazard on the Property
  - ✓ 8.3 Considered (if appropriate) the effects of climate change and land use change
  - ✓ 8.4 Relied on a previous Flood Hazard Assessment (FHA) by others.
  - ✓ 8.5 Identified any potential hazards that are not addressed by the Flood Assessment Report
- 9. For a Flood Risk analysis I have:
  - ✓ 9.1 Estimated the Flood Risk on the Property
  - ✓ 9.2 Identified existing and anticipated future Elements at Risk on and, if required, beyond the Property
  - ✓ 9.3 Estimated the Consequences to those Elements at Risk

FLOOD ASSURANCE STATEMENT

10. In order to mitigate the estimated Flood Hazard for the Property, the following approach is taken:

- ✓ 10.1 A standard-based approach
- ___ 10.2 A Risk-based approach
- ___ 10.3 The approach outlined in the guidelines, Appendix F: Flood Assessment Considerations for Development Approvals
- ___ 10.4 No mitigation is required because the completed flood assessment determined that the site is not subject to a Flood Hazard

11. Where the Approving Authority has adopted a specific level of Flood Hazard or Flood Risk tolerance, I have:

- ___ 11.1 Made a finding on the level of Flood Hazard or Flood Risk on the Property
- ___ 11.2 Compared the level of Flood Hazard or Flood Risk tolerance adopted by the Approving Authority with my findings
- ___ 11.3 Made recommendations to reduce the Flood Hazard or Flood Risk on the Property

12. Where the Approving Authority has not adopted a level of Flood Hazard or Flood Risk tolerance, I have:

- ✓ 12.1 Described the method of Flood Hazard analysis or Flood Risk analysis used
- ✓ 12.2 Referred to an appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk
- ✓ 12.3 Made a finding on the level of Flood Hazard of Flood Risk tolerance on the Property
- ✓ 12.4 Compared the guidelines with the findings of my flood assessment
- ✓ 12.5 Made recommendations to reduce the Flood Hazard or Flood Risk

✓ 13. Considered the potential for transfer of Flood Risk and the potential impacts to adjacent properties

✓ 14. Reported on the requirements for implementation of the mitigation recommendations, including the need for subsequent professional certifications and future inspections.

Based on my comparison between:

[CHECK ONE]

☐ The findings from the flood assessment and the adopted level of Flood Hazard or Flood Risk tolerance (item 11.2 above)

✓ The findings from the flood assessment and the appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk tolerance (item 12.4 above)

I hereby give my assurance that, based on the conditions contained in the attached Flood 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* (Part 14, Division 7), my Flood Assessment Report will "assist the local government in determining what conditions or requirements it will impose under subsection (2) of this section [Section 491 (4)]".

☑ 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* and the *Amendment Section 3.5 and 3.6* associated with the *Local Government Act* (Section 524), "the development may occur safely".

☐ For flood plain bylaw exemption, as required by the *Local Government Act* (Section 524), "the land may be used safely for the use intended".

FLOOD ASSURANCE STATEMENT

I certify that I am a Qualified Professional as defined below.

MARCH 4, 2021
Date

KEN WOODS,
Prepared by

Reviewed by

KEN WOODS, P. ENG.
Name (print)

Name (print)

Signature

Signature

2351 BARBARA ROAD
Address

COURTENAY. B.C., V9J 1L9

250-897-8584
Telephone

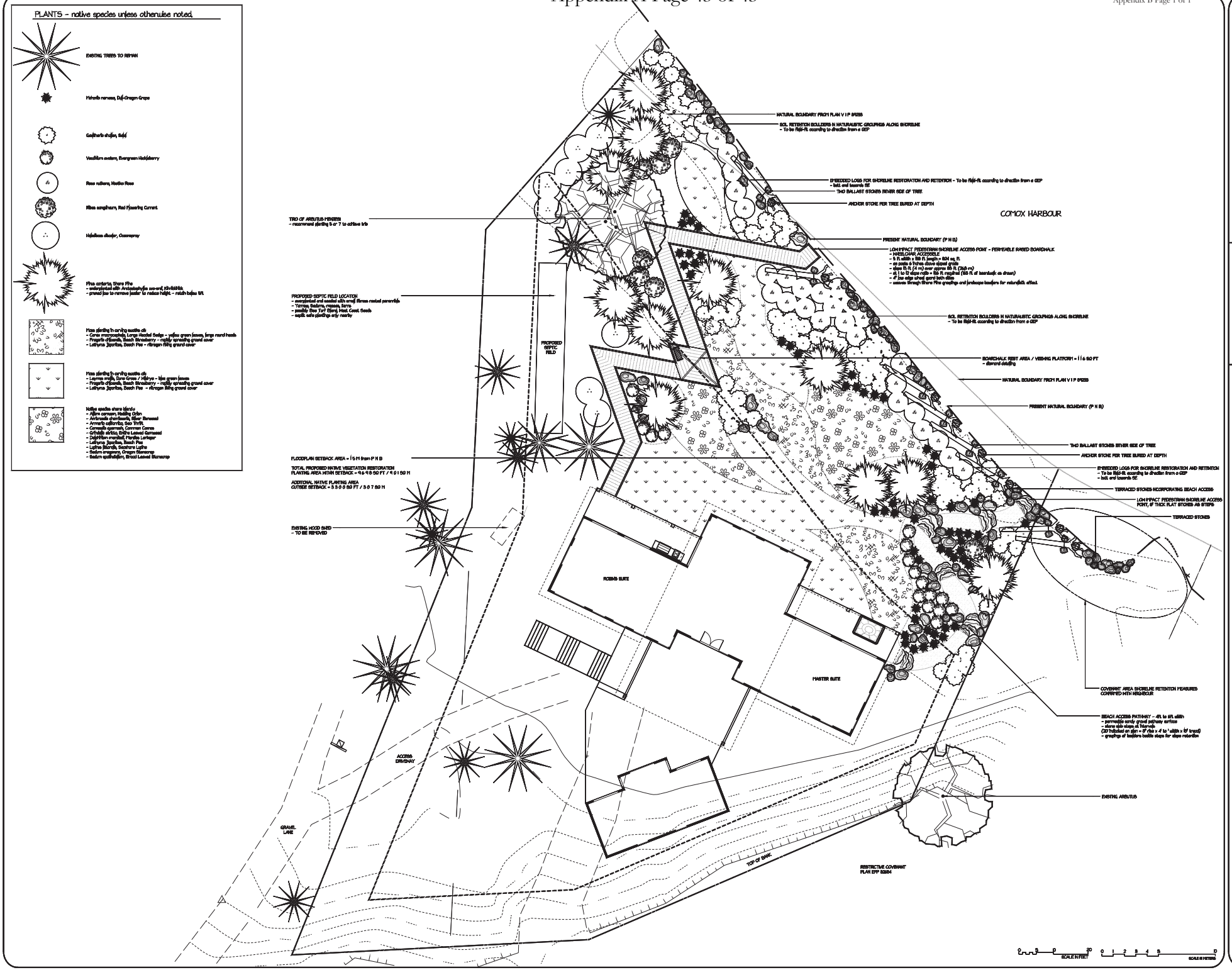
Kenwoodspeng@gmail.com
Email

PROFESSIONAL ENGINEER OF K. W. WOODS BRITISH COLUMBIA ENGINEER 4/21

(Affix PROFESSIONAL SEAL here)

If the Qualified Professional is a member of a firm, complete the following:

I am a member of the firm and I sign this letter on behalf of the firm. — n/a (Name of firm)



Arbona Home
Landscape Designs
63 Powerhouse Road
Courtenay, BC
2508712345

SLATER / DUTTON

Lot 1 Idzes Road

SCALE	DATE	drawing #
1" = 8'	02/22/2023	FLOODPLAIN SETBACK LANDSCAPE PLAN