TOWN OF LADYSMITH
DEVELOPMENT PERMIT

(Section 489 *Local Government Act)*

FILE NO: 3060-20-15

DATE: June 16, 2020

Name of Owner(s) of Land (Permittee): Edward Donald Gregson and Sheila Louise Gregson

Applicant: Angela Quek, Architect

Subject Property (Civic Address): 373 Chemainus Road

1. This Development Permit is subject to compliance with all of the bylaws of the Town of Ladysmith applicable thereto, except as specifically varied by this Permit.

2. This Permit applies to and only to those lands within the Town of Ladysmith described below, and any and all buildings structures and other development thereon:

   Lot A (DD 82674-N), District Lot 42, Oyster District, Plan 4858
   PID: 006-035-001 (373 Chemainus Road)
   (referred to as the "Land")

3. This Permit has the effect of authorizing the issuance of a building permit for the construction of a building on the Land in accordance with the plans and specifications attached to this Permit, and subject to all applicable laws.

4. The Permittee, as a condition of the issuance of this Permit, agrees to:

   (a) Develop the lands in accordance with **Schedule A: Site Plan**
   (b) Retain the vegetation on the slope as shown in **Schedule A: Site Plan**
   (c) For Ryan: Lewkowich to confirm soil conditions. For Colin: Flood plain?
   (d) Follow all recommendations in **Schedule B: Geotechnical Hazard Assessment Single Family Residence, 373 Chemainus Road** (Lewkowich Engineering Associates, June 2020), including:
      i. Direct water from the hill side and the yard areas toward the foreshore.
      ii. Establish a 4.0 metre setback from the toe of the slope to the wall of the building.
      iii. Monitor the foreshore and natural boundary of the sea annually (by the Permittee). If erosion is noted, the Permittee will commission an assessment of the foreshore conditions (**Note:** A Development Permit is required for any land alteration on the Land).

5. If the Permittee does not substantially start any construction permitted by this Permit within **two years** of the date of this Permit as established by the authorizing resolution date, this Permit shall lapse.

6. The plans and specifications attached to this Permit are an integral part of this Permit.

7. Notice of this Permit shall be filed in the Land Title Office at Victoria under s.503 of the *Local Government Act,* and upon such filing, the terms of this Permit **(3060-20-15)** or any amendment hereto shall be binding upon all persons who acquire an interest in the land affected by this Permit.

8. This Permit prevails over the provisions of the Bylaw in the event of conflict.

9. Despite issuance of this Permit, construction may not start without a Building Permit or other necessary permits.

AUTHORIZING RESOLUTION PASSED BY THE COUNCIL OF THE TOWN OF LADYSMITH ON THE 16th DAY OF JUNE 2020.

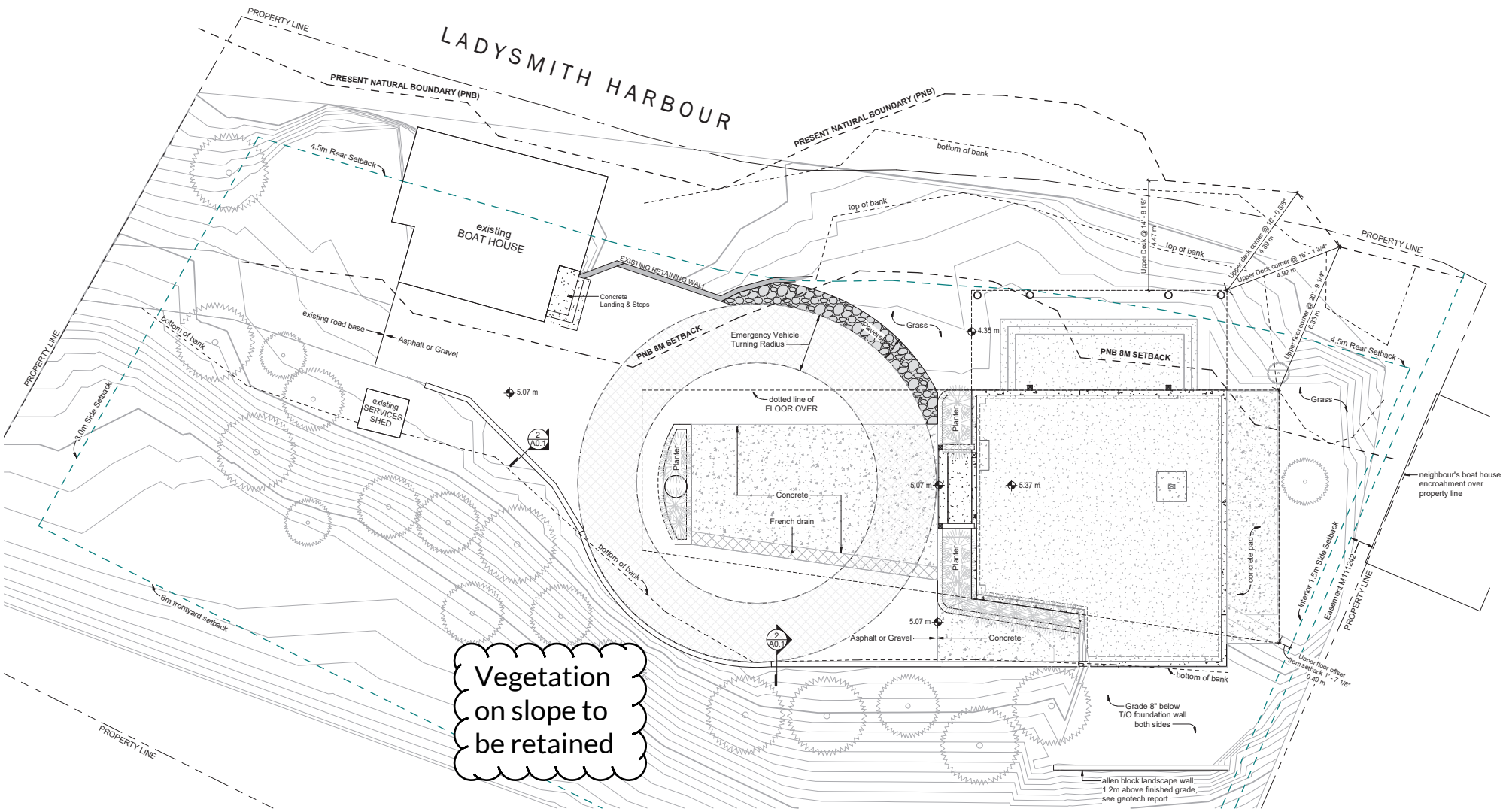
_____
Mayor (A. Stone)

_____
Corporate Officer (D. Smith)

I HEREBY CERTIFY that I have read the terms and conditions of the Development Permit contained herein. I understand and agree that the Town of Ladysmith has made no representations, covenants, warranties, guarantees, promises or agreements (verbal or otherwise) with **Edward Donald Gregson or Sheila Louise Gregson** other than those contained in this permit.

_____	_____
Signed	Witness
_____	_____
Title	Occupation
_____	_____
Date	Date
_____	_____
Signed	Witness
_____	_____
Title	Occupation
_____	_____
Date	Date

Schedule A - Site Plan
DP 3060-20-15
373 Chemainus Road



GEOTECHNICAL HAZARD ASSESSMENT

Single-Family Residence
373 Chemainus Road, Ladysmith, BC

Legal Address:
Lot A (DD82674N) of District Lot 42, Oyster District, Plan, Plan 4858

Prepared For:
Ed and Sheila Gregson c/o

AYQP Architecture

13270 Doole Road
Ladysmith, BC, V9G 1G6

Attention:
Ms. Angela Quek
April 15, 2020

File No.: F7075.01
Revision No.: 00
Prepared by: John Hessels, AScT
Chris Hudec, M.A.Sc., P.Eng.

Lewkowich Engineering Associates Ltd.
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Lewkowich Engineering Associates Ltd.

ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA

OQM CERTIFIED

DISCLAIMER

1. Lewkowich Engineering Associates Ltd. (LEA) acknowledges that this report, from this point forward referred to as "the Report," may be used by the Town of Ladysmith (ToL) as a precondition to the issuance of a development and/or building permit. This Report and any conditions contained in the Report may be included in a restrictive covenant under Section 919.1(1)(b) of the local government act and registered against the title of the Property at the discretion of the ToL.
2. This report has been prepared in accordance with standard geotechnical engineering practice solely for and at the expense of AYQP Architecture. We have not acted for or as an agent of the ToL in the preparation of this report.
3. The conclusions and recommendations submitted in this report are based upon information from relevant publications, a visual site-assessment of the Property, anticipated subsurface soil conditions, available floodplain data, current construction techniques, and generally accepted engineering practices. No other warrantee, expressed or implied, is made. If unanticipated conditions become known during construction or other information pertinent to the structure becomes available, the recommendations may be altered or modified in writing by the undersigned.
4. The conclusions and recommendations issued in this report are valid for a maximum of two (2) years from the date of issue. The 2-year term may be reduced as a result of updated bylaws, policies, or requirements by the authority having jurisdiction, or by updates to the British Columbia Building Code. Updates to professional practice guidelines may also impact the 2-year term. If no application of the findings in this report have been made to the subject development, the conclusions issued in this report become void and re-assessment of the Property will be required.
5. This report has been prepared by Mr. John Hessels, AScT and by Mr. Chris Hudec, M.A.Sc., P.Eng. Messrs. Hessels and Hudec are both adequately experienced in geotechnical engineering and hazard assessments and are also members in good standing with the Applied Science Technologists of BC (ASTT) and Geoscientists of British Columbia (EGBC) respectively.

EXECUTIVE SUMMARY

1. The following is a brief synopsis of the Property, assessment methods, and findings presented in the Report. The reader must read the Report in its entirety; the reader shall not rely solely on the information provided in this summary.
2. The Property, 373 Chemainus Road, Ladysmith, BC, from this point forward referred to as "the Property," is located on the east coast of Vancouver Island and the entrance to Ladysmith Harbour (Strait of Georgia). The proposed development for the Property at the time of this report includes removal of the existing house and construction of a new single-family dwelling
3. A site-specific hazard assessment was conducted to identify potential geotechnical hazards for the subject Property. The primary geotechnical hazards identified relates to the Property's close proximity and height from the Strait of Georgia (oceanic flooding) and close proximity to a steep (front yard) slope.
4. The Combined Method (CM) approach was used in order to determine a suitable flood construction level for the Property. It was determined that an FCL of 4.89m geodetic datum be used for any future development relating to habitable residential construction. The slope analysis indicated that a minimum 4.0m set back from the toe of the slope is recommended for the new residence.
5. Implications for future development as they relate to steep slope protection, erosion, resultant shift of the oceanic natural boundary, and set back from this boundary are also discussed. The design and implementation of mitigation measures are beyond the scope of this report.

List of Abbreviations Used in the Report

Abbreviation	Title
CM	Combined Method
EGBC	Engineers and Geoscientists of British Columbia
FB	Free Board
FCL	Flood Construction Level
FHA	Flood Hazard Assessment
FNB	Future Natural Boundary
GD	Geodetic Datum
KWL	Kerr Wood Leidel Associates Ltd.
LEA	Lewkowich Engineering Associates Ltd.
MFLNRO	Ministry of Forests, Lands, and Natural Resources
PNB	Present Natural Boundary
RA	Regional Adjustment for Isostatic Rebound
SLR	Sea Level Rise
SS	Storm Surge
TALS	Turner & Associates Land Surveying
ToL	Town of Ladysmith
WE	Wave Effect

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Background

a. The Property is located on the east coast of Vancouver Island and borders the entrance to Ladysmith Harbour and the Strait of Georgia. See Figure 1.1 below.

Figure 1.1 – Site Location (Satellite Imaging from Google Earth®)

b. The proposed development for the Property at the time of this report includes the removal of the existing house and the construction of a new single-family dwelling.

c. We (LEA) understand that future development of the subject Property requires a geotechnical report stating what (if any) natural hazards exist that may impact the proposed development and make comment and recommendations for those hazards. The primary geotechnical hazard of concern for the Property relates to its proximity to the steep slope (DP Area) and potential oceanic flooding.

d. Following EGBC's Professional Practice Guidelines for Legislated Flood Assessments[1], this FHA would be categorized as a Class 0 assessment, applicable for developments related to:

- Renovations

- Expansions
- New single-family residence
- New duplex residence

e. In preparation of this report we have reviewed the most current and relevant technical documents provided by EGBC, MFLNRO, along with historical air photo data and the attached site-specific survey information provided by TALS.

f. The landslide risk analysis follows the "Guidelines for Legislated Landslide Assessments for residential development in BC" (APEGBC, 2010).[5]

1.2 Covenant Review

a. As part of our assessment we have reviewed the documents registered on the legal title of the Property, specifically, any restrictive covenants registered against the Property that may relate to the conclusions and recommendations provided in this report.

b. Current to the date of this Report, there are no restrictive covenants registered against the Property.

2.0 SITE CONDITIONS

2.1 Physical Setting

The Property is located in the central area of the ToL at its eastern extent (Ladysmith Harbour) and within DPA 7 steep slope area. The site is situated on the east side of Chemainus Road, approximately 500m south of the Highway 1 and Chemainus /N Davis Road intersection. The site is accessed via the Chemainus Road frontage. The Property location is shown above in Figure 1.1, as well as in the attached Site Plan prepared by AQYP Architecture.

2.2 Terrain and Features

a. LEA visited the Property on April 18th, 2019, and conducted a visual hazard assessment. At the time of our assessment, the Property was developed with an older existing house, older boat house and associated driveway and parking areas. We understand the boathouse is not part of the development plan at this time.

b. The topography of the Property is generally described a rectangular in shape with a driveway incised into a 6-8m high slope off Chemainus Road leading toward a flat bench at an 4.0m elevation. The slope is ocean facing with a relatively consistent inclination of 30 to 40 degrees. Beyond the lower flat bench there is a small foreshore slope fronting the proposed building area that is 2-3m tall and is comprised of fill material

covered in berry vines some smaller boulders and woody debris near the toe. The intertidal zone is flat and has a gentle gravelly pebble slope seaward approximately 25m between the NB and water at low tide.

c. The vegetated area consists primarily of a dense forest of mature evergreen and deciduous trees and thick bushes with salal and ferns. Developed areas consist of small trees, manicured lawns and gravel driveway and parking areas.

2.3 Soil Conditions

a. A subsurface investigation was not included as part of this assessment. Generally, subsurface soil conditions, as encountered by this office in similar investigations in the area, consist of a layer of topsoil, underlain by compact, naturally deposited sand and gravel.

b. Published surficial geology mapping identifies the area as part of the Bowser formation, a soil formation consisting of marine, gravelly, loamy sands.[2]

2.4 Surface and Groundwater Conditions

a. There was no ponded or surface water observed during our field review nor any evidence of abnormal groundwater conditions.

b. Groundwater flows may fluctuate seasonally with cycles of precipitation. Groundwater conditions observed at other times may differ from those observed during our assessment. We would expect that groundwater movement would be rapid, given the coarse nature of the site soil conditions.

2.5 Foreshore Conditions

a. The foreshore can be characterized as a low bank intertidal zone facing the Ladysmith Harbour (Strait of Georgia) to the north. The total height of the foreshore slope was approximately 2-3 m at the time of our assessment.

b. Foreshore soil conditions consist of loose to compact sand and gravel with some cobbles. Vegetation along the foreshore consisted of sea grasses, other small grasses and/or small plants. Large pieces of woody debris were observed. The foreshore conditions, at the time of our assessment, are shown below in Figure 2.5.

Figure 2.5 – Foreshore Condition

3.0 COASTAL FLOOD COMPONENTS

3.1 Tides

a. For a summary of published January 2020 tide elevations related to the Property see Table 3.1.

Table 3.1 – Summary of Ladysmith Tide Elevations. Station ID: 7460

Tidal Condition	Tide Elevation
HHWLT	4.09m
HHWMT	3.67m
MWL	2.53m
LLWMT	0.95m
LLWLT	-0.08m

The Design HHWLT calculated as follows:

Tidal HHWLT (4.09m) – MWL (2.53m) = Design HHWLT (1.56m)

3.2 Sea Level Rise

a. Information prepared by the provincial government in 2011 regarding policy for coastal floodplain mapping assumes a 1.0m rise in sea level from the year 2000 to 2100[3]. See figure 4.2 below.

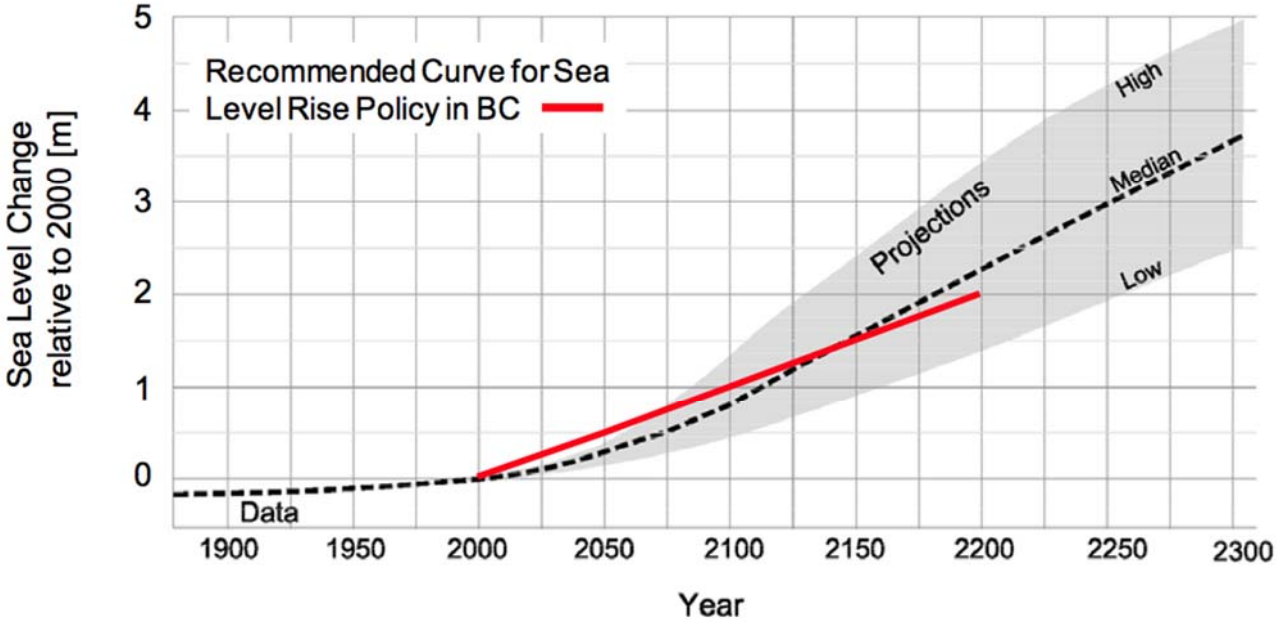


Figure 3.2 – Recommended Global SLR Curve for Planning and Design in BC

b. The assumed amount of SLR is based on current information and will be evaluated in the future as more information becomes available. It should be noted that a 1.0m SLR estimate by the year 2100 is a conservative projection and has been used in the preparation of this report. Whereas the 2.0m SLR estimate by the year 2200 would be considered a mid to low range projection.

c. Forecasting this far into the future carries significant uncertainties. Monitoring changes of SLR is beyond the scope of this report. We expect local authorities to remain informed in order to adjust their flood management plans/guidelines accordingly.

3.3 Regional Adjustment – Isostatic Rebound

Future sea level is also affected by vertical land movement due to tectonic shifting. Calculations in SLR reflect changes in the regional rebound or subsidence of the land surface. Areas where the land elevation is increasing (rebound) should decrease the allowance for SLR, while areas where the land elevation is decreasing (subsidence) should increase the allowance for SLR. An RA value of -0.17m was derived from the MFLNRO report prepared by KWL[3]. This value accounts for the 100-year design requirement for the Property.

3.4 Storm Surge

a. Sea levels along the BC coast are not only affected by astronomical tide cycles but also by storms. Storms may affect water levels due to:
   - Changes in atmospheric pressure.
   - Strong winds acting on the water surface generating waves.
   - Changes in ocean currents or temperature.
   - The combined effect of all these factors is termed “storm surge” (SS).

b. The 1:200-year design SS value of 1.25m GD was derived from Table 2-1 of the MFLNRO report prepared KWL.[3]

3.5 Wave Effect

a. Breaking waves during the design storm event must also be considered, as breaking waves may further increase the depth of water along the shoreline as well as increase risk of runup and overtopping leading to flooding.

b. The foreshore area of the Property consists of a natural gravel-pebble shoreline, therefore a WE value of 0.65m as prescribed by the MFLNRO 2011 report prepared by KWL was used during preparation of the Report.

3.6 Freeboard

A nominal FB value is typically added when calculating an FCL. The FB value accounts for uncertainties associated with value estimations used. Following recommendations from the MFLNRO report prepared by KWL, a FB value of 0.6m was used during preparation of the Report.

4.0 FLOOD CONSTRUCTION LEVEL

4.1 Combined Method

a. We have used the CM approach in order to determine a suitable FCL for the Property. The CM was established by KWL as part of the MFLNRO report on Coastal Floodplain Mapping Guidelines and Specifications. At the time of this report it is the recommended method for determining an FCL for this Class of assessment and is supported by EGBC.

b. The CM takes into account the effects of tides HHWLT, SLR, RA, SS, WE, and FB. The equation for Calculating the FCL using the CM is as follows:

FCL = HHWLT + SLR + RA + SS + WE + FB

c. Table 4.1 shows the calculation based on a projected 100-year design life for subject development.

Table 4.1 – FCL Determination using the CM to the year 2120

FCL Components	Year 2120
HHWLT	1.56m
SLR	1.00m
RA	(-0.17m)
SS	1.25m
WE	0.65m
FB	0.60m
Calculated FCL:	**4.89m**

5.0 DISCUSSION AND RECOMMENDATIONS

5.1 Recommended FCL

We recommend that an FCL of 4.89m GD be used for any future development relating to habitable residential construction.

5.2 Floodwater and Inundation

a. In the event of a design flood event (1 in 200-year), it is possible that floodwater from the Strait of Georgia would inundate the Property. The general risk of flooding increases as the sea level rises.

b. Provided any construction within the Property satisfies the minimum recommended FCL, we do not anticipate any damage to the structure or its contained goods as a result of floodwater. However, any areas constructed below the recommended FCL, could be subject to flooding during less than design flood events.

5.3 Scour and Erosion Protection

a. If structural fill materials are used for foundation support, and include structural fills above existing site grades, further assessment may be required. Structural fills above existing grades may require protective measures from scour and erosion.

b. Additional information related to flood proofing and constructability of the proposed development is beyond the scope of this report and will need to be addressed in a construction specific geotechnical report.

5.4 Site Grading

a. Yard areas between the proposed single-family dwelling and the Natural Boundary should be sloped as to direct water away from the proposed house and toward the foreshore area.

b. Waters from the hill side should be directed around the building toward the north yard area and foreshore beyond.

5.5 Steep Slope

a. Detailed slope stability analyses are generally required when building development is proposed at the bottom of a slope closer than the ground surface intersection of a 2 Horizontal to 1 Vertical (2H:1V) slope down to the toe (referred to as the "2H:1V intersection"), or at the bottom of slope where runout is likely to extend. Building beyond the 2H:1V intersection is generally considered a safe setback due to the fact that the internal angle of friction of most soils is appreciably greater than 26.6°, or 2H:1V.

b. We have reviewed the 6 to 8m tall slope which is well vegetated and shows no signs of global stability (cracking, fissures etc.). Based on our observations and experience, slope movement would be confined to surficial sliding of the vegetated mat during extreme weather or seismic events.

c. Considering the southernmost portion of the proposed building is at or near the toe of the 36 degree slope it is recommended that a minimum set back of 4.0m is created by raising the building's foundation concrete wall, adding a small 1.2m high yard wall and infilling the space as a protective measure from a surficial sliding event. This newly created setback would be beyond the projected "Safe" 2(H):1(V) Line . See Figure 5.5 below.

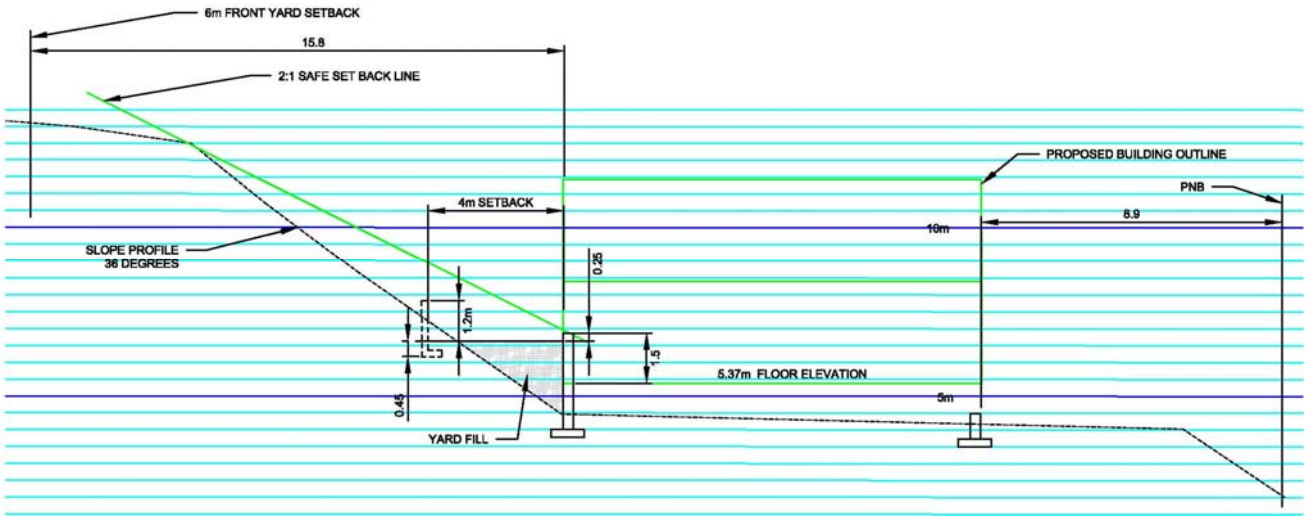


Figure 5.5 Building-Slope Cross Section

5.6 Foreshore Set back – Future Natural Boundary

a. The Town of Ladysmith has set a minimum set back from the natural boundary of 8.0m, which we note, the proposed design adheres to. Any encroachment into this set back, such as the proposed deck must not be structurally attached the main building. Note: There is a second storey encroachment into the setback via a cantilevered section which has no impact on the 8m setback to the foundation.

b. Over the required 100-year design life of the development SLR will likely expose the existing shoreline to increased wave action that may result in erosion of the foreshore area.

c. Evaluation of the rate and/or extent of erosion along the foreshore area of the Property is beyond the scope of this Report. It should be noted however, that intertidal zones consisting of sand and gravels are typically susceptible to erosion or accretion by wave action and flooding, and we expect the alignment of the PNB will slowly shift over time.

d. SLR is expected to be 1.0m over the next 100 years. Provincial guidelines require that the foreshore setback from the NB be maintained for the lifespan of the building[4]. This is referred to as the future natural boundary (FNB). Given the 2-3m high foreshore bank, the FNB in a 100-year timeframe that considers 1.0m of SLR would end up near the same location as it is today, barring any accretion or recession of the bank.

e. If the Client wishes to address the issue of potential erosion along the NB within the foreshore area, then further investigation and analysis into the use and installation of mitigative measures is required.

f. As a minimum, we recommend the foreshore and alignment of the NB be monitored annually by the current and future property owners. Any notable regression of the NB, specifically following a significant storm event or winter season or otherwise, would require a reassessment of the foreshore conditions.

g. LEA can provide recommendations for design of mitigative works for foreshore erosion if requested.

5.7 Local Government Conformance Statement

a. LEA confirms that the recommendations made in this report conform to the guidelines and objectives expressed under ToL OCP and DPA 7 Hazard Lands[6].

b. The Ladysmith Harbour (Strait of Georgia) is a defined watercourse located to the north of the Property. All construction/development shall be carried out in conformance within the requirements of any jurisdictional limitations. Any jurisdictional limitations applicable to the Property and proposed development shall supersede the geotechnical recommendations made in this report.

6.0 CONCLUSION

a. Based on our review of the relevant publications and site-specific field assessment, it is the opinion of LEA that slope stability and oceanic flooding from the Strait of Georgia are the only significant aspects, or potential geotechnical hazards within the subject Property.

b. Provided the recommendations in this report are followed, we (LEA) confirm that from a geotechnical point of view the site is considered safe and suitable for the permanent sitting of a permanent single-family residence, with the probability of a geotechnical failure resulting in property damage of less than:

- 2% in 50 year for seismic events,
- 1 in 200-year return for flooding,
- 10% in 50 years for all other geotechnical hazards.

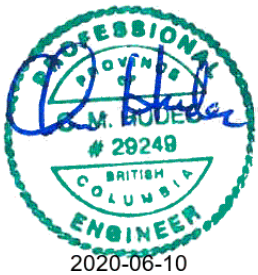
and that the proposed development will not result in a detrimental impact on the environment, subject Property or adjoining properties.

c. Please refer to the attached EGBC - Appendix I: Flood Assurance Statement and Appendix D: Landslide Assessment Assurance Statement for additional information.

7.0 CLOSURE

Lewkowich Engineering Associates Ltd. appreciates the opportunity to be of service on this project. If you have any comments, or additional requirements at this time, please contact the undersigned at your convenience.

Respectfully Submitted,
Lewkowich Engineering Associates Ltd.



2020-06-10

John Hessels, AScT
Senior Technologist

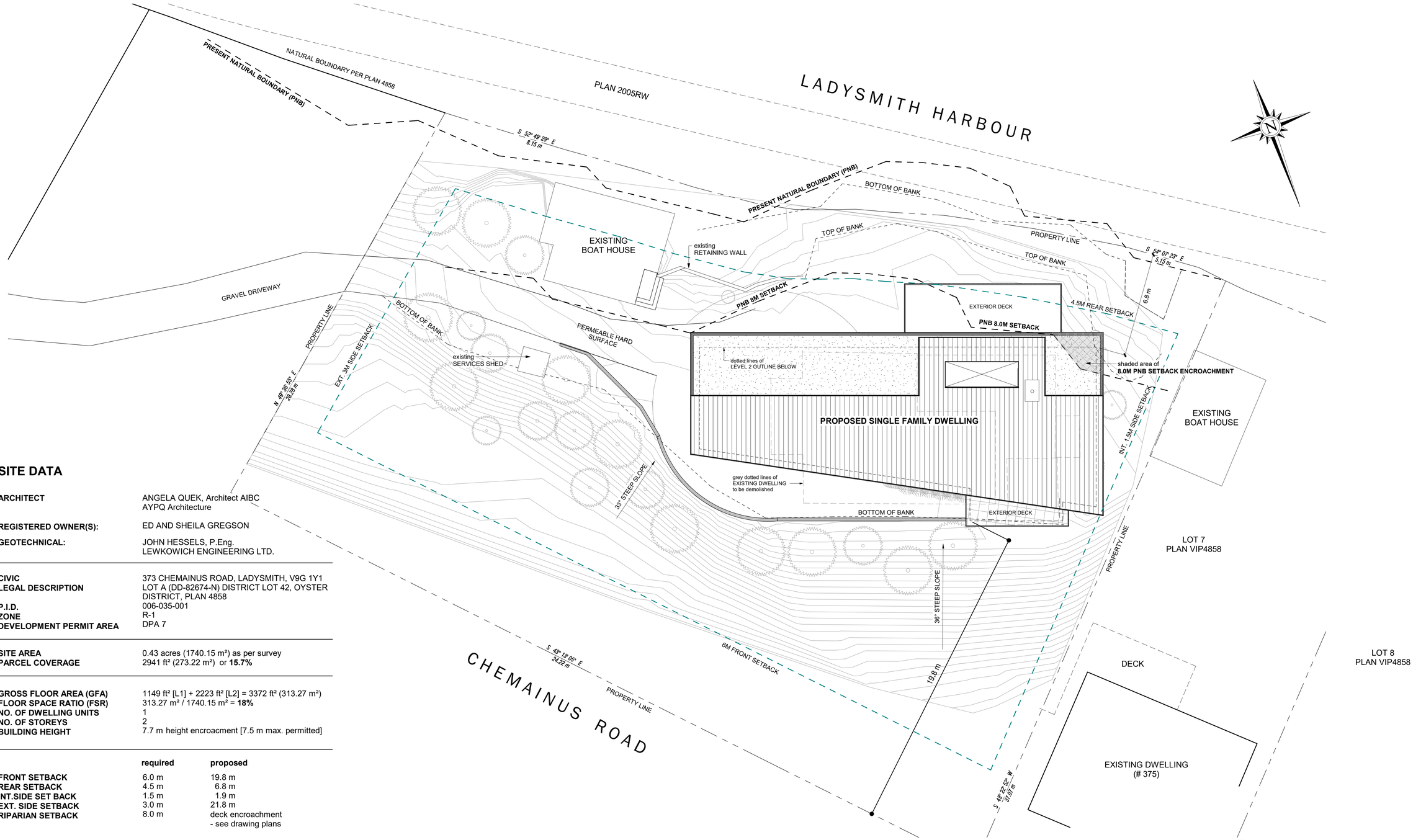
Chris Hudec, M.A.Sc., P.Eng.
Senior Project Engineer

8.0 ATTACHMENTS

1. AYPQ Architecture "Site Layout" DVP0.1 March 25, 2020
2. Engineers and Geoscientists British Columbia (EGBC) Appendix I: Flood Assurance Statement, Signed April 16, 2020.
3. Engineers and Geoscientists British Columbia (EGBC) Appendix D: Landslide Assessment Assurance Statement, Signed April 16, 2020.

9.0 REFERENCES

1. Engineers and Geoscientists of British Columbia report titled "Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC," version 2.1, dated August 28, 2018.
2. Soils of South Vancouver Island, British Columbia, Soil Survey Report No. 44 – Sheet 3
3. Ministry of Forests, Lands and Natural Resource Operations report titled – Coastal Floodplain Mapping – Guidelines and Specifications, 2011. Prepared by Kerr Wood Leidal Associates Ltd.
4. Ministry of Water, Land and Air Protection Province of British Columbia report titled – Flood Hazard Area Land Use Management Guidelines. Amended by: Ministry of Forests, Land, Natural Resource Operations and Rural Development, January, 2018.
5. Guidelines for legislated Landslide Assessment for Proposed Residential Developments in BC, May 2010
6. Town of Ladysmith OCP DPA7 Hazard Lands Guidelines - August, 2018.



SITE DATA

ARCHITECT	ANGELA QUEK, Architect AIBC AYPQ Architecture
REGISTERED OWNER(S):	ED AND SHEILA GREGSON
GEOTECHNICAL:	JOHN HESSELS, P.Eng. LEWKOWICH ENGINEERING LTD.
CIVIC	373 CHEMAINUS ROAD, LADYSMITH, V9G 1Y1
LEGAL DESCRIPTION	LOT A (DD-82674-N) DISTRICT LOT 42, OYSTER DISTRICT, PLAN 4858
P.I.D.	006-035-001
ZONE	R-1
DEVELOPMENT PERMIT AREA	DPA 7
SITE AREA	0.43 acres (1740.15 m²) as per survey
PARCEL COVERAGE	2941 ft² (273.22 m²) or **15.7%**
GROSS FLOOR AREA (GFA)	1149 ft² [L1] + 2223 ft² [L2] = 3372 ft² (313.27 m²)
FLOOR SPACE RATIO (FSR)	313.27 m² / 1740.15 m² = **18%**
NO. OF DWELLING UNITS	1
NO. OF STOREYS	2
BUILDING HEIGHT	7.7 m height encroacment [7.5 m max. permitted]

	required	**proposed**
FRONT SETBACK	6.0 m	19.8 m
REAR SETBACK	4.5 m	6.8 m
INT.SIDE SET BACK	1.5 m	1.9 m
EXT. SIDE SETBACK	3.0 m	21.8 m
RIPARIAN SETBACK	8.0 m	deck encroachment - see drawing plans

AYPQ ARCHITECTURE
13270 Doole Road
Ladysmith, British Columbia
Canada V9G 1G6
tel 250 245-7555 fax 7565
www.aypqarchitecture.com

draft

AQ1911 DVP

Gregson Residence

373 Chemainus Road,
Ladysmith, V9G 1Y1

DVP0.1

Site Layout

Scale: As indicated

2020-03-25 12:12:44 PM

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: April 16, 2020 LEA File# F7075

Town of Ladysmith

410 Esplanade, PO Box 220, Ladysmith, BC, V9G 1A2

Jurisdiction and address

With reference to (CHECK ONE):

- ☐ *Land Title Act* (Section 86) – Subdivision Approval
- ☑ *Local Government Act* (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 A (DD82674N) of District Lot 42, Oyster District, Plan, Plan 4858; 373 Chemainus Road

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:

_____

☑ 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

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:

[redacted]

☐ 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 Flood Assessment 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* 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.

April 16, 2020
Date

Chris Hudec
Prepared by

Chris Hudec
Name (print)

Signature

1900 Boxwood Road
Address

Nanaimo, BC, V9S 5Y2

(250) 756 0355
Telephone

chudec@lewkowich.com
Email

Reviewed by

JOHN HESSELS
Name (print)

Signature

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
C. M. HUDEC
29248
04-16-20

(Affix PROFESSIONAL SEAL here)

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

I am a member of the firm Lewkowich Engineering Associates Ltd.
and I sign this letter on behalf of the firm. (Name of firm)

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* Date: April 16, 2020 File# F7075

Town of Ladysmith

410 Esplanade, PO Box 220, Ladysmith, BC, V9G 1A2

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 A (DD82674N) of District Lot 42, Oyster District, Plan, Plan 4858; 373 Chemainus Road

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".

Chris Hudec, M.A.Sc., P.Eng.
Name (print)

April 16, 2020
Date

Signature

[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".

1900 Boxwood Road, Nanaimo, BC, V9S 5Y2

Address

250 756 0355

Telephone

(Affix Professional seal here)

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

I am a member of the firm Lewkowich Engineering Associates Ltd.
and I sign this letter on behalf of the firm. (Print name of firm)