

Appendix F: Development Permit with Variance DV000080



CAPITAL REGIONAL DISTRICT

DEVELOPMENT PERMIT WITH VARIANCE DV000080

1. This Development Permit with Variance is issued under the authority of Sections 490, and 498 of the *Local Government Act* and subject to compliance with all of the bylaws of the Regional District applicable thereto, except as specifically varied or supplemented by this Permit.
2. This Development Permit with Variance applies to and only to those lands within the Regional District described below (legal description), and any and all buildings, structures, and other development thereon:

PID:	025-664-468;
Folio:	762.16032.039
Legal Description:	Lot A, Section 7, Otter District, Plan VIP75055
3. This development permit authorizes construction of a single-family dwelling (the "development") on the Land, located within the development permit areas established under the Otter Point Official Community Plan, 2014, Bylaw No. 3819, Section 6.4 (Marine Shoreline Areas), in accordance with the plans submitted to the CRD and subject to the conditions set out in this Permit.
4. The conditions under which the development referred to in section 3 may be carried out are as follows:
 - a. That the proposed development comply with the Site Plan dated May 19, 2021;
 - b. That the proposed development comply with the Building Design Drawings May 13, 2021;
 - c. That the proposed development comply with the recommendations outlined in the Geotechnical Reports certified by Scott Currie, P.Eng., dated June 14, 2021, and certified by Scott Currie, P.Eng. and Andrew Jackson, P.Geo., L.Eng., dated March 23, 2021; and
 - d. That upon substantial completion of the development, a final report be submitted from a qualified professional confirming that the recommendations outlined in the Geotechnical Reports have been completed in accordance with the reports.
5. The Capital Regional District's **Bylaw No. 2040** is varied under Section 498 of the *Local Government Act* as follows:
 - a. Part 1, Section 2.0 by varying the definition of *height* as it applies to the proposed single-family dwelling to mean the average vertical distance from finished grade at the outermost corners of the building to the mean level of the highest roof plane between the eaves and the ridge of a sloping roof;
 - b. Part 2, Section 13A.11(b) to allow that the elevation of the lot may be increased in accordance with the Building Design Drawings and Geotechnical Reports; and
 - c. Part 2, Section 13A.13(a) to reduce the front yard setback from 4.5 m to 2.3 m in accordance with the Site Plan.
6. Notice of this Permit shall be filed in the Land Title Office at Victoria as required by Section 503 of the *Local Government Act*, and the terms of this Permit (DV000080) or any amendment hereto shall be binding upon all persons who acquire an interest in the land affected by this Permit.
7. If the holder of a permit does not substantially start any construction permitted by this Permit within 2 years of the date it is issued, the permit lapses.
8. The land described herein shall be developed strictly in accordance with the terms and conditions and provisions of this Permit, and any plans and specifications attached to this Permit which shall form a part hereof.



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9. The following plans and specifications are attached to and form part of this Permit:
 - Appendix A: Site Plan
 - Appendix B: Building Design Drawings
 - Appendix C: Geotechnical Reports
10. This Permit is NOT a Building Permit.
11. In issuing this Development Permit, the CRD does not represent or warrant that the land can be safely developed and used for the use intended and is acting in reliance upon the conclusions of the Geotechnical Report regarding the conditions to be followed for the safe development of the land.

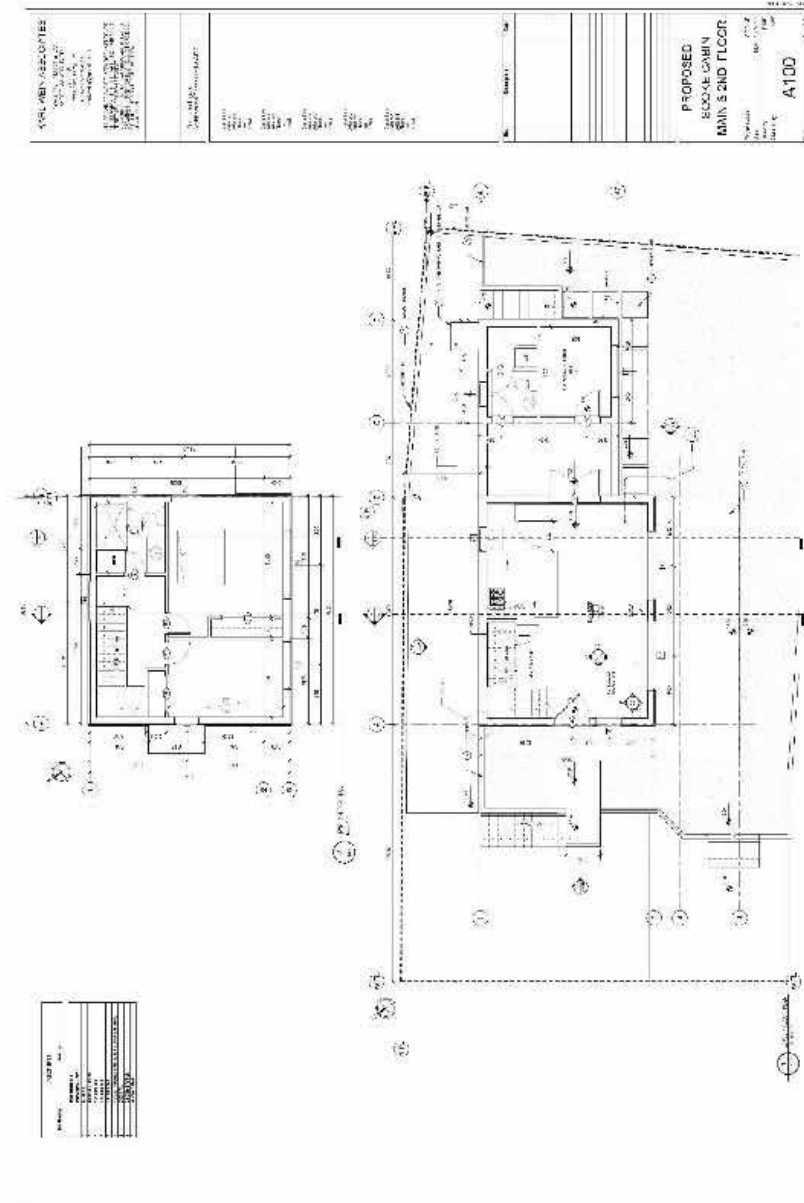
RESOLUTION PASSED BY THE BOARD, THE ____ day of _____, 2021.

ISSUED this ____ day of _____, 2021

Kristen Morley
Corporate Officer

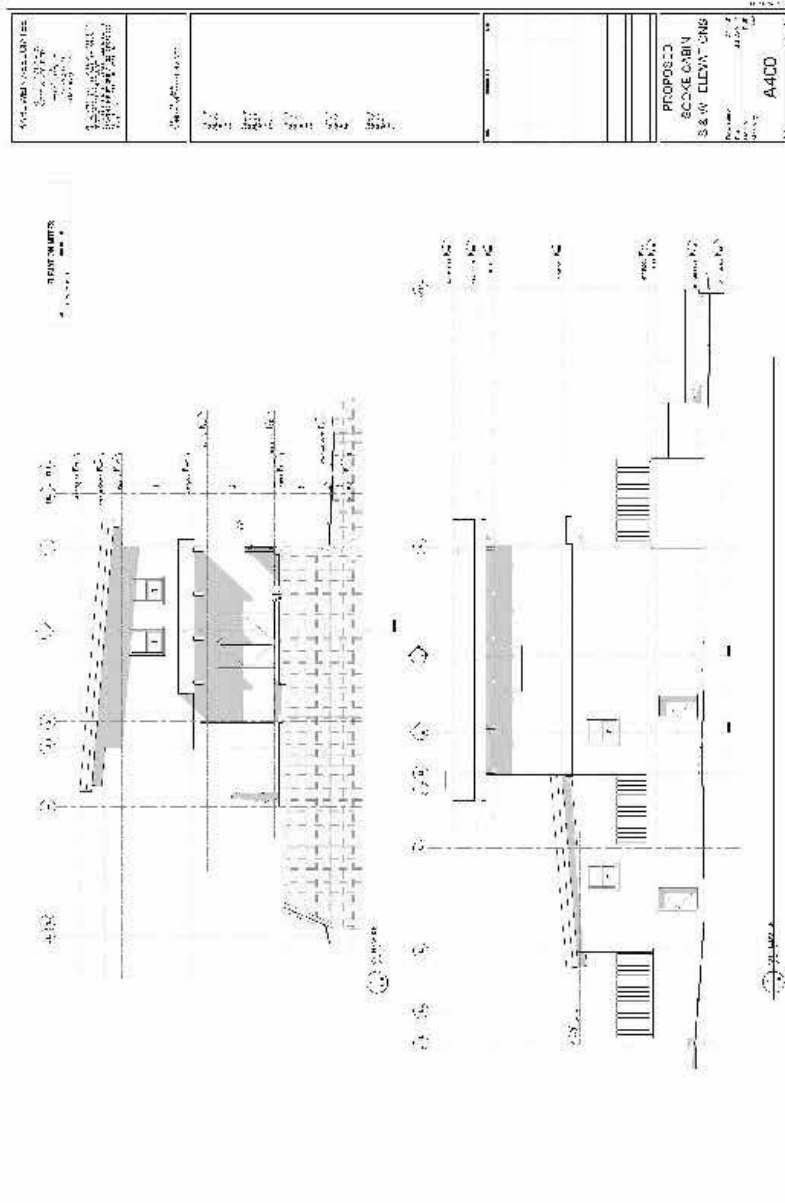


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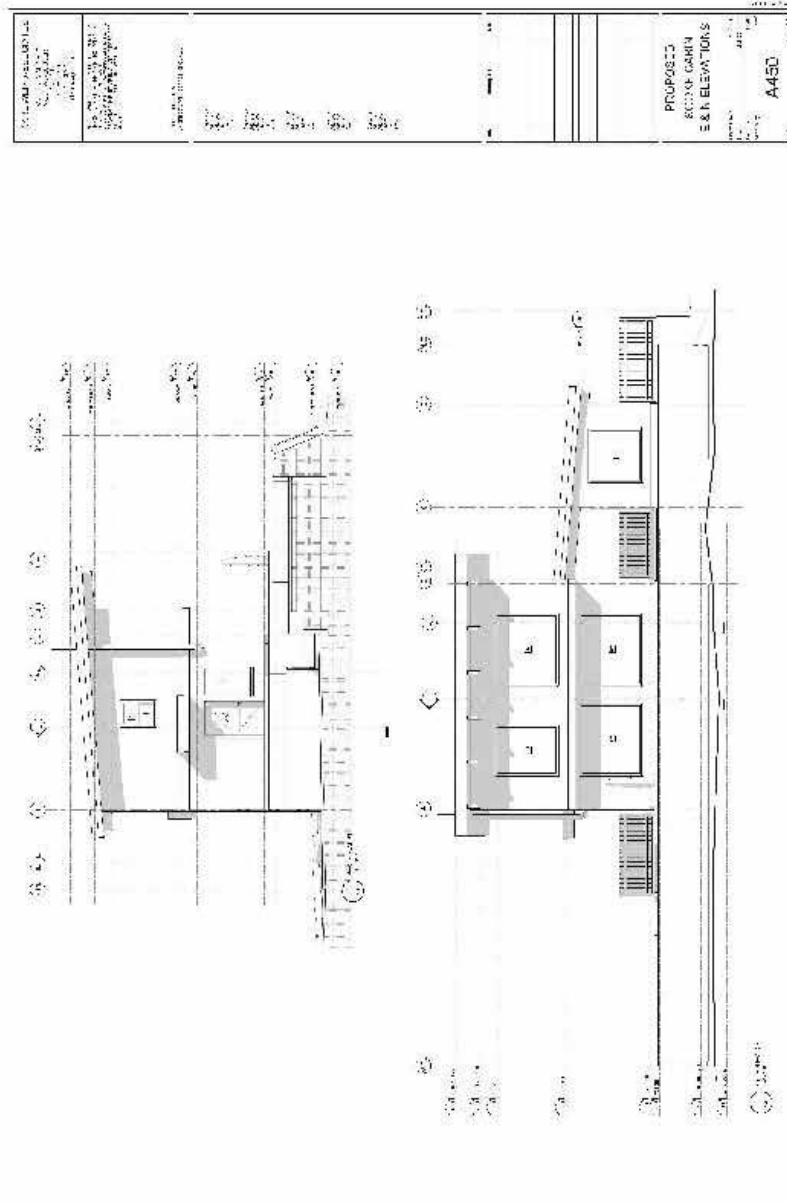


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Appendix C: Geotechnical Reports



June 14, 2021
File No: 4013-2

MCM Excavating Inc.
(by email: [REDACTED])

Attn: [REDACTED]

Dear Sir,

Re: Proposed Residential Development
8709 West Coast Road Otter Point, BC

As requested, we have attended site to carry out a geotechnical assessment as such relates to the construction of a new dwelling (cottage). The site is located within Development Permit Area No.2: Marine Shorelines Areas, as defined by the Otter Point Official Community Plan, Bylaw No. 3819. The proposed dwelling footprint is located within the 15 m setback from the Present Natural Boundary (PNB) noted in DPA No.2, with the current proposal indicating that a 7.5 m setback is being sought. We understand that imposition of the 15 m setback may render the existing lot sterile to development due to the accompanying front yard setback from West Coast Road. We understand that geotechnical commentary is required in order to support the requested setback relaxation. Our work has been completed in accordance with the previously accepted Terms of Engagement.

Previous Ryzuk Geotechnical Ltd. (Ryzuk) involvement at the site has included preparation and submission of our letter report of March 3, 2021, where commentary and recommendations were provided in relation to a suitable Flood Construction Level (FCL) for this development site. The elevation determined for underside of floor system was 5.3 m Geodetic.

The site is located within the central portion of Gordon's Beach, generally bounded by similar residential properties to the northwest and southeast, Highway 14 to the northeast, and the foreshore of the Strait of Juan de Fuca to the southwest. The terrain slopes gently up from the edge of the road to a level area which is noted on the attached survey drawing to have an elevation of approximately 4 m geodetic. An original cottage present in this area of the site had been demolished prior to our attendance. An existing arrangement of stacked boulders forms a seawall that defines the southwestern property line (Present Natural Boundary) with the beach beyond. Soils at the site, where visible at the surface, were generally noted to consist of compact gravel, similar to the shoreline deposits present with the adjacent beach, although some

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8709 West Coast Road – Otter Point, BC

June 14, 2021

disturbance to native deposits should be expected as a result of past use. See attached Site Photograph and the JB Anderson Site Plan, dated Feb 16/21.

It is proposed that a new cottage be constructed at the site. We understand that such will be a two storey wood framed structure utilizing conventional shallow concrete foundations and crawl space. Foundation loads are expected to be light. Associated landscaping and civil infrastructure is anticipated. See attached Cross Section A450 by Karl Wein Associates. We understand that the height of the main floor has been positioned in accordance with the recommendations of our previous FCL report.

We understand from discussions with the CRD that as part of consideration being given to this development and the requested relaxation, that confirmation of the suitability of the existing seawall is required. As we were not involved with the construction of the original wall, we would recommend that such be re-constructed to provide protection from active erosion of the shoreline frontage over the long term. We consider the shoreline within the location to be subject to moderately high wave energy, particularly during winter storms. This is evident by the presence of a relatively steep shoreline slope. When coupled with high tides, the wave impact area extends up to the current arrangement of stacked boulders, as indicated by the presence of driftwood along the backshore.

We recommend that new (or reconstructed) seawall of sound, durable, 1.2 m to 1.5 m diameter boulders be placed just back from the PNB to create a wave barrier. The base row of boulders should be embedded by 1/2 boulder dimension and fit tightly together with the rough facing profile acting to reduce longitudinal wave amplification effects. The boulders must be backfilled with a nominal 1 m wide thickness of compacted 10 kg class rip rap and then a layer of heavy weight filter fabric to prevent migration of fines from the site due to wave action. See attached Seawall Construction Detail drawing. The boulders should also be rammed along the side yard property boundaries by several meters to retain the fill as required. This seawall/barrier may require maintenance from time to time and should be adequate to provide protection over the next 50 to 75 years. Existing boulders from the current seawall may be suitable for reuse, subject to inspection. Further, we do not consider this installation will result in an increase of erosion to adjacent properties over the noted design life. The top of the boulder sea wall must be sufficient in order to provide cover and protection for the foundations of the new dwelling but does not necessarily need to extend up to the FCL level. We note on the architectural plans/sections that concrete landscaping walls are utilized to raise the site grade to the main floor level.

We consider that the undisturbed native mineral soils of the site, or engineered fill placed upon such, will be suitable for support of the proposed foundations. A bearing resistance of 145 kPa (SLS) / 215 kPa (ULS) is considered suitable for design purposes. All subgrade bearing must be inspected and approved by a geotechnical professional prior to foundation pour. We consider that the collected drainage from the residence and hard surfaces could be directed to a shallow infiltration pit filled with drain rock and dug into the course native gravels. We do not expect that the site work would create a significant risk of sediment ingress to the foreshore. However, disturbed soils should be revegetated as soon as possible following disturbance, and all fills should be placed and compacted in thin lifts and not loosely stockpiled within 5 m of the PNB. Furthermore, the equipment operation and site work should be compliant with the DFO procedures due to working close to the shoreline.

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Proposed Residential Development
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Given the above, we consider the proposed construction of a single family residence to be feasible at the proposed site location. We consider that the land may be used safely for the use intended, pursuant to Section 56 of the Community Charter and Section 219 of the Land Title Act. Our assessment considers a design seismic occurrence with a 2% probability of exceedance in 50 years.

As climate change and sea level rise occur, the impact of flooding events beyond the current boundary of the sea can be expected to advance incrementally with time. Accordingly, advance notice of months or even years would be available to owners/users to allow safe access and egress, removal of personal effects, as well as to consider flood proofing improvements to the building to mitigate the increasing level of risk. This is not the case where instantaneous and devastating conditions could occur, as might be anticipated with a high energy seismic event resulting in tsunami. Commentary on the hazard and risk associated with tsunami was provided in our FCL report.

We trust the preceding is suitable for your purposes at present, if you have any questions or require further clarification, please contact us.

Yours truly,
Ryzuk Geotechnical

RS Currie, P.Eng.
Geotechnical Engineer

Attachments: Site Photograph
JE Anderson Site Plan
Architectural Cross Section
Seawall Construction Detail



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Proposed Residential Development
8709 West Coast Road – Otter Point, BC

June 14, 2021



Site Photograph Looking to Southeast across development site



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March 23, 2021
File No. 4013-2

MCM Excavating Inc.
(by email: [REDACTED])

Attn: [REDACTED]

Dear Sir,

Re: Flood Construction Level Assessment
8709 West Coast Road - Shirley, BC

As requested, we have undertaken a geotechnical background review and analysis of the flooding hazard at the referenced site in order to determine the Flood Construction Level (FCL) as such relates to the proposed construction of new cottage. Our work and recommendations herein have been provided in accordance with, and are subject to, the attached Terms of Engagement.

PROPOSED DEVELOPMENT

The site is located within the central portion of Gordon's Beach, generally bounded by similar residential properties to the northwest and southeast, Highway 14 to the northeast, and the foreshore of the Strait of Juan de Fuca to the southwest. The terrain slopes gently up from the edge of the road to a level area which is noted on the attached survey drawing to have an elevation of approximately 4 m geodetic. The original cottage present in this area of the site had been demolished prior to our attendance. An arrangement of stacked boulders likely defines the southwestern property line (Present Natural Boundary) with the beach beyond. Soils at the site, where visible at the surface, were generally noted to consist of compact gravel, similar to the shoreline deposits present with the adjacent beach. See attached JE Anderson Site Plan, dated Feb 16/21, and site photograph.

We consider the shoreline within the location to be subject to moderately high wave energy, particularly during winter storms. This is evident by the presence of a relatively steep shoreline slope. When coupled with high tides, the wave impact area extends up to the stacked boulders, as indicated by the presence of driftwood and littoral drift along the backshore.

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Flood Construction Level Assessment
8709 West Coast Road - Shirley, BC

March 23, 2021

DETERMINATION OF FLOOD CONSTRUCTION LEVEL (FCL)

The FCL may be defined as the minimum required elevation of the underside of a wooden floor system or the top of a grade supported concrete slab floor, for habitable buildings. The FCL for the site was determined considering the methodology outlined in the following Guideline documents:

- Accorn – Capital Regional District, Modelling of Potential Tsunami Inundation Limits and Run-Up, June 2013.
- Accorn – Capital Regional District, Sea Level Rise Risk Assessment, January 2015.
- Ausenco Sandwell – Climate Change Adaption Guidelines for Sea Dikes and Coastal Flood Hazard Land Use; Guidelines for Management of Coastal Flood Hazard Land Use, 27 January 2011.
- Engineers and Geoscientists BC – Professional Practice Guidelines, Legislated Flood Assessments in a Changing Climate in BC, v2.1, 28 August 2018.
- James, T.S., Henton, J.A., Leonard, L.J., Darlington, A., Forbes, D.L., and Craymer, M. Relative Sea-level Projections in Canada and the Adjacent Mainland United States, Geological Survey of Canada, Open File 7737, 2014.
- Kerr Wood Leidel – Provincial Guidelines for Coastal Floodplain Mapping, June 2011.
- Province of British Columbia – Flood Hazard Area Land Use Management (FHALUM) Guidelines, May 2004, Amended January 2018 (Sections 3.5 and 3.6).
- Capital Region Coastal Flood Inundation Mapping Project Summary (2020)

The Flood Construction Level for coastal areas was determined following the methodology outlined in the Provincial "Guidelines for Management of Coastal Flood Hazard Land Use," published in January 2011 and the Provincial Guidelines for "Coastal Floodplain Mapping" published in June 2011. Further, the "Flood Hazard Area Land Use Management Guidelines" with amendments of January 1, 2018, specifically related to coastal flood construction levels was also reviewed.

The FCL was calculated following the "Combined Method" provided in the FHALUM Guidelines. Additional information required to establish the FCL was obtained from the Canadian Hydrographic Service (CHS). The FCL methodology utilizes the highest predicted tide (HHWLT) which was provided by the CHS as a base, upon which the predicted Sea Level Rise (SLR), storm surge, wave effect, local uplift, as well as an additional free board factor were considered.

The Provincial Guidelines outline a 1.0 m sea level rise, and accordingly, a factor of 1.0 m was applied to account for the predicted 100-year sea level rise (Ausenco Sandwell). In addition, a correction factor has been added to account for regional uplift and isostatic rebound. A regional uplift rate of -3 mm/year was selected for the area based on "Relative Sea-level Projections in



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Flood Construction Level Assessment
 8709 West Coast Road - Shirley, BC
 March 23, 2021

Canada and the Adjacent Mainland United States” by James et al. (2014), therefore the FCL has been reduced by 0.3 m over the 100-year sea level rise period. An estimated wave effect of 1 m, and a freeboard amount of 0.6 m have also been included in the analysis. The following table summarizes how the FCL was determined.

Table 1: Summary of FCL calculations (geodetic)

Item:	(m geo)	Notes:
Higher High Water Large Tide (HHWLT)	1.7	As per CHS ¹ – based on the Sooke Tidal Station
Total Storm Surge during “designated storm”	1.3	As per Guidelines for Victoria – 1:500 annual probability of exceedance storm event
Estimated wave effect	1.0	0.35 m above Guidelines
Regional Uplift	-0.3	3 mm/year for Juan De Fuca Area
Sea Level Rise (SLR)	1.0	As per Guidelines
Free Board Factor	0.6	0.3 m above Guidelines
FLOOD CONSTRUCTION LEVEL (m geodetic)	+5.3	

¹ Canadian Hydrographic Service

The storm surge and estimated wave effect components of the FCL were estimated based on recommendations for the area in the Guidelines. However, the storm surge and wave effect will vary based on the local conditions of a given site. No site-specific analyses were completed to quantify the effect of local conditions at the site on the storm surge and wave effect.

We have not undertaken detailed wave run-up analyses or associated magnitude return period frequency analyses of tsunami events to quantify the risk at the referenced site. A review of the Capital Region Coastal Flood Inundation Mapping Project Summary (2020) indicates a maximum water level of 4.9 m for the Juan De Fuca Electoral Area (inclusive of the mean tidal elevation) for a design 1:500 annual probability of exceedance earthquake (CSZ-NS). As per Amendment Section 3.5 of “Flood Hazard Area Land Use Management Guidelines” (2018) the greater of the tsunami maximum water level and FCL shall apply. The FCL is the greater of the two for the subject site, and as such the FCL of 5.3 m is recommended. However, we do recommend that residents review and understand the Provincial Tsunami Advanced Warning System as modelling indicates that water levels may reach 7.4 m geodetic for a tsunami with a 1:2500 annual probability of exceedance (CSZ-L1).



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Based on the above, and in general accordance with the Guidelines, a FCL (or minimum elevation for habitable spaces) of **5.3 m Geodetic** is recommended for the site.

ROLE OF QUALIFIED PROFESSIONALS

Section 3.7.2.1 of the EGBC Guidelines notes that the Province of BC has not adopted Flood Risk tolerance criteria, yet professional practice standards generally imply some level of risk tolerance. Commentary within this Section advises that when a Qualified Professional (QP) provides the statement that “the land may be safely used for the use intended” that the QP is declaring that the risks and consequences of a given Hazard Scenario are tolerable or acceptable. As defined by the Guidelines, “tolerable” risks are “those that society can live with given the perceived or real benefit that emerges by developing in a hazardous area”, while “acceptable” risks are those broadly accepted by society. In the case of tolerable risks, such require monitoring and typically there are conditions associated with the safe land use. It is not for the QP to stipulate the tolerable or acceptable risk criterion and accordingly the definition of safe use must be clearly outlined in the report such that the Regulatory Agency is aware of the implications in their decision making.

It is important to note that the objectives of the FHALUM Guidelines and as elaborated upon in the EGBC Professional Practice Guidelines is “to reduce or prevent injury, human trauma, and loss of life and to minimize property damage from flooding events in B.C.” It is also important to recognize that both documents have been prepared to address *all* types of flooding, not simply coastal flooding due to sea level rise. The potential for injury, trauma, loss of life and property damage is orders of magnitude greater when one considers flooding of major systems such as the Fraser River, or high energy events such as debris flows, torrents or major channel avulsion. Sea level rise is foreseeable and in conjunction with extreme tides the design event will be highly predictable such that the public has sufficient time to protect themselves and their assets before inundation would occur.

It also must be recognized that it is not an absolute requirement for a QP to adhere to each and every stipulation within either the EGBC Guidelines or the FHALUM Guidelines. This is clearly stated in Section 1.4 of the EGBC Guidelines:

“Notwithstanding the purpose and scope of these guidelines, an Engineering/Geoscience Professional’s decision not to follow one or more aspects of the guidelines does not necessarily represent a failure to meet required professional obligations. Such judgements and decisions depend upon weighing facts and circumstances to determine whether another reasonable and prudent QP, in a similar situation, would have conducted himself/herself similarly.”

We maintain that the calculated FCL is conservative and such is expressly stated in the EGBC Guidelines. Section G5 reads, with emphasis added:



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“Recent studies (Mazzotti et al. 2008) project relative sea level rise on the BC coast to 2100. For the Fraser River delta, the rise is expected to be between 32 and 68 cm, with a contribution of 1 to 2 mm/a (10 to 20 cm for a century) from sediment consolidation (Mazzotti et al. 2009). (On loaded sites, short-term subsidence may be an order of magnitude higher.) At Victoria, the range of expected sea level rise is 17 to 34 cm, and at Prince Rupert it is 18 to 75 cm (from projection of GPS trends). These results are different than global averages. On the outer coast of Vancouver Island, however, sea level is expected to fall because of tectonic effects, but that effect might be offset by the occurrence of a major earthquake. There is evidence for past sudden coastal subsidence of up to 2 m (Hyneman and Rogers 2010). In view of changing rates of sea level rise, however, a recent conservative estimate for planning purposes is that sea level rise on the BC coast may be as much as 1 m by the end of the century (Ausenco Sandwell 2011). Ausenco Sandwell (2011) further discusses issues and guidelines to be incorporated into a program of upgrading sea defenses to meet the circumstances of rising sea level.”

We draw a parallel between flood hazard and seismic hazard. Except in the case of Post Disaster structures, it is generally accepted that many new buildings will sustain significant damage and may not be habitable subsequent to the design event. The critical test is that the building must remain safe for egress to protect against loss of life and human trauma. It is unlikely that lives will be lost or human trauma at site will result, as the result of flooding associated with sea level rise. It is highly likely that economic losses will occur in the area, but this will occur regardless of whether development proceeds at the subject site.

As climate change and sea level rise occur, the impact of flooding events beyond the current boundary of the sea can be expected to advance incrementally with time. Accordingly, advance notice of months or even years would be available to owners/users to allow safe access and egress, removal of personal effects, as well as to consider floodproofing improvements to the building to mitigate the increasing level of risk. This is not a case where instantaneous, devastating, or unforeseeable conditions could occur, as might be anticipated with a high energy channel avulsion or debris flow path, high flow velocities, or deep flood water.

SUMMARY

For the structure proposed, we understand that it will be possible to achieve underside of a wooden floor system or the top of a concrete slab floor, for both: the habitable and non-habitable buildings at 5.3 m geodetic. Accordingly, we consider that the land may be used for the use intended in accordance with Section 56 of the Community Charter. A Flood Assessment Statement is attached.

Amendment to Section 3.5 and 3.6 of “Flood Hazard Area Land Use Management Guidelines” (2018) also indicates that for new building lots, a setback of 15 m from the calculated Year 2100 FCL should be implemented. However, on established lots, where meeting such would render the lot sterile, the approving official may agree to modify setback requirements, provided that this is augmented through a restrictive covenant stipulating the hazard, building requirements, and



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Flood Construction Level Assessment
8709 West Coast Road - Shirley, BC

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liability disclaimer. Accordingly, and in lieu of meeting the FCL setback guideline, a restrictive covenant will likely be required on title such that current and future owners are aware of the risk for any part of the structure that is constructed within the Year 2100 setback, while insurers and the Capital Regional District are held harmless.

We trust the preceding is suitable for your purposes at present, if you have any questions or require further clarification, please contact us.

Yours truly,
Ryzuk Geotechnical

RS Currie, P.Eng.
Geotechnical Engineer

Andrew Jackson, P. Geo. P.L. Eng.
Review Geoscientist

Attachments Site Photograph
JE Anderson Site Plan
Flood Assessment Statement



DV000080

Flood Construction Level Assessment
8709 West Coast Road - Shirley, BC

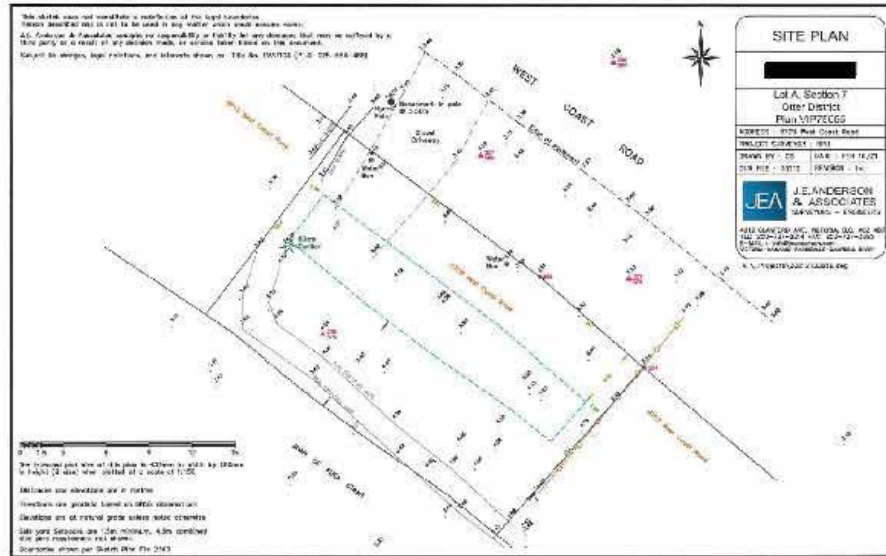
March 23, 2021



Site Photograph – Looking to Southeast across development site



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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: 23 March 2021

CHATEL REINFORCE DISTRICT
P.O. BOX 10000 VICTORIA BC V8B 2S6
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":

8709 WEST COAST ROAD - SHIRLEY, BC
Legal description and civic address of the Property

The undersigned hereby gives assurance that he/she is a Qualified Professional and is a Professional Engineer or Professional Geoscientist 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

PROFESSIONAL PRACTICE GUIDELINES
LEGISLATED FLOOD ASSESSMENTS IN A CHANGING CLIMATE IN BC



DV000080

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: Food 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 or 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)
 - Will 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 E24), "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".

PROFESSIONAL PRACTICE GUIDELINES
LEGISLATED FLOOD ASSESSMENTS IN A CHANGING CLIMATE IN BC

VERSION 2.1

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FLOOD ASSURANCE STATEMENT

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

23 March 2021
Date

Rizuk Geotechnical Ltd
Prepared by

Scott Currie
Name (print)

[Signature]
Signature

Unit #6 - 40 Cadogan Ave
Address

Vancouver BC V6Z 1T2

70 475 3131
Telephone

Scott@ryzuk.com
Email

Reviewed by

Andrew Jackson
Name (print)

[Signature]
Signature



(Affix PROFESSIONAL SEAL here)

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

I am a member of the firm Rizuk Geotechnical Ltd
and I sign this letter on behalf of the firm. (Name of firm)

PROFESSIONAL PRACTICE GUIDELINES
REGULATED FLOOD ASSESSMENTS IN A CHANGING CLIMATE IN BC