

Appendix 8: Geotechnical Report

RYZUK GEOTECHNICAL

Engineering & Materials Testing

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August 16, 2018
File No: 8-9042-1



Dear [REDACTED]

Re: Proposed Three Lot Subdivision
5488 Mt. Matheson Road – East Sooke, BC

As requested, we visited the above referenced site on August 14, 2018, to visually assess the proposed subdivision for the potential for slope instability. Portions of the site extend through areas designated as a Steep Slope Development Permit Area (DPA) within the East Sooke Official Community Plan (OCP) Bylaw No. 4000, 2018. Pursuant to the OCP Guidelines as well as Section 56 of the Community Charter, we herein provide our observations, comments, and recommendations for the proposed subdivision. Our work has been carried out in accordance with, and is subject to, the attached Terms of Engagement.

The site is located within the north-east corner of East Sooke and is generally bounded by similar rural residential properties with Mt. Matheson Road to the south. The proposed subdivision consists of three lots, each containing an existing residence. Lot 1 is approximately 1.1 ha, Lot 2 is approximately 1.8 ha, and Lot 3 is approximately 1.0 ha with two additional accessory buildings. Access to the lots is provided by an existing gravel driveway located within a shared easement. Stormwater is attenuated with on-site disposal discretely for each residence, where systems are located in areas of deeper soil deposits located over flat to gentle slopes. No further development is proposed at this time.

Site topography is generally bedrock controlled with gently sloped irregular terrain across the central portion of the property, where all three residences are located. Within the northern portion of the property, an exposed bedrock band runs east-west across the property with slopes ranging from 30° to 50° inclined from horizontal with 2 m to 5 m of vertical relief with gentle irregular terrain located above and below. Within the southern portion of the property, a similar bedrock band runs north-west to south-east with slopes range from 20° to 40° with 4 to 12 m of vertical relief with gentle irregular terrain located above. Below the southern rock band, gentle to moderate irregular slopes lead to the Mt. Matheson Road ditchline. Numerous near vertical bluffs were noted across each rock band with heights ranging from 1 m to 4 m.

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The observed bedrock consisted of massive, moderately weathered, variably fractured gabbro. A discontinuous veneer of native soil was observed atop the bedrock throughout the majority of the site. An isolated area of deeper native soils was observed over gentle terrain within the north-east corner of the property. The native soils were observed to consist of compact to dense sand with some silt and gravel. The site is generally well vegetated with mature trees with light shrub and heavy moss cover.

We consider that the soil and rock slopes are not subject to large scale deeply seated instability, however, it is possible that small scale movements could be experienced over the long term, but such would not affect the residence areas. Observed colluvium below rock outcrops consisted of boulders up to 400 mm diameter. The rock fall hazard is considered low due to the low frequency of event occurrence. None of the existing infrastructure is located within influence of the observed rock fall areas.

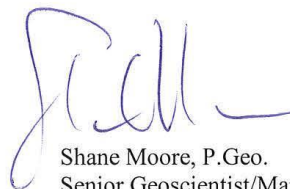
In summary, we consider the proposed subdivision to be feasible from a geotechnical perspective. In this regard, we consider that the land may be used safely for the use intended for residential structures which are completed in accordance with the BC building Code and pursuant to Section 56 of the Community Charter. Our assessment considers a design seismic occurrence with a 2% probability of exceedance in 50 years.

We trust that the preceding is suitable for your purposes at present. Please don't hesitate to contact our office if we can be of further assistance.

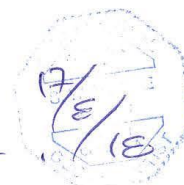
Yours very truly,
Ryzuk Geotechnical



Chris Wickman, EIT
Junior Engineer



Shane Moore, P.Geo.
Senior Geoscientist/Managing Principal



Attachment – Terms of Engagement

TERMS OF ENGAGEMENT

GENERAL

Ryzuk Geotechnical (the Consultant) shall render the Services, as specified in the agreed Scope of Services, to the Client for this Project in accordance with the following terms of engagement. The Services, and any other associated documents, records or data, shall be carried out and/or prepared in accordance with generally accepted engineering practices in the location where the Services were performed. No other warranty, expressed or implied is made. The Consultant may, at its discretion and at any stage, engage sub-consultants to perform all or any part of the Services.

Ryzuk Geotechnical is a wholly owned subsidiary of C. N. Ryzuk & Associates Ltd.

COMPENSATION

All charges will be payable in Canadian Dollars. Invoices will be due and payable by the Client on receipt of the invoice without hold back. Interest on overdue accounts is 24% per annum.

REPRESENTATIVES

Each party shall designate a representative who is authorized to act on behalf of that party and receive notices under this Agreement.

TERMINATION

Either party may terminate this engagement without cause upon thirty (30) days' notice in writing. On termination by either party under this paragraph, the Client shall forthwith pay to the Consultant its Charges for the Services performed, including all expenses and other charges incurred by the Consultant for this Project.

If either party breaches this engagement, the non-defaulting party may terminate this engagement after giving seven (7) days' notice to remedy the breach. On termination by the Consultant under this paragraph, the Client shall forthwith pay to the Consultant its Charges for the Services performed to the date of termination, including all fees and charges for this Project.

ENVIRONMENTAL

The Consultant's field investigation, laboratory testing and engineering recommendations will not address or evaluate pollution of soil or pollution of groundwater. The Consultant will cooperate with the Client's environmental consultant during the field work phase of the investigation.

PROFESSIONAL RESPONSIBILITY

In performing the Services, the Consultant will provide and exercise the standard of care, skill and diligence required by customarily accepted professional practices and procedures normally provided in the performance of the Services contemplated in this engagement at the time when and the location in which the Services were performed.

INSURANCE

Ryzuk Geotechnical is covered by Professional Indemnity Insurance as follows:

1. \$ 2,000,000 each and every claim
2. \$ 4,000,000 aggregate
3. \$ 5,000,000 commercial/general liability coverage

LIMITATION OF LIABILITY

The Consultant shall not be responsible for:

1. the failure of a contractor, retained by the Client, to perform the work required for the Project in accordance with the applicable contract documents;
2. the design of or defects in equipment supplied or provided by the Client for incorporation into the Project;
3. any cross-contamination resulting from subsurface investigations;
4. any Project decisions made by the Client if the decisions were made without the advice of the Consultant or contrary to or inconsistent with the Consultant's advice;
5. any consequential loss, injury or damages suffered by the Client, including but not limited to loss of use, earnings and business interruption;
6. the unauthorized distribution of any confidential document or report prepared by or on behalf of the consultant for the exclusive use of the Client
7. Subsurface structures and utilities

V.1.1

The Consultant will make all reasonable efforts prior to and during subsurface site investigations to minimize the risk of damaging any subsurface utilities/mains. If, in the unlikely event that damage is incurred where utilities were unmarked and/or undetected, the Consultant will not be held responsible for damages to the site or surrounding areas, utilities/mains or drilling equipment or the cost of any repairs.

The total amount of all claims the Client may have against the Consultant or any present or former partner, executive officer, director, stockholder or employee thereof under this engagement, including but not limited to claims for negligence, negligent misrepresentation and breach of contract, shall be strictly limited to the amount of any professional liability insurance the Consultant may have available for such claims.

No claim may be brought against the Consultant in contract or tort more than two (2) years after the date of discovery of such defect.

DOCUMENTS AND REPORTING

All of the documents prepared by the Consultant or on behalf of the Consultant in connection with the Project are instruments of service for the execution of the Project. The Consultant retains the property and copyright in these documents, whether the Project is executed or not. These documents may not be used on any other project without the prior written agreement of the Consultant.

The documents have been prepared specifically for the Project, and are applicable only in the case where there has been no physical alteration to, or deviation from any of the information provided to the Consultant by the Client or agents of the Client. The Client may, in light of such alterations or deviations, request that the Consultant review and revise these documents.

The identification and classification as to the extent, properties or type of soils or other materials at the Project site has been based upon investigation and interpretation consistent with the accepted standard of care in the engineering consulting practice in the location where the Services were performed. Due to the nature of geotechnical engineering, there is an inherent risk that some conditions will not be detected at the Project site, and that actual subsurface conditions may vary considerably from investigation points. The Client must be aware of, and accept this risk, as must any other party making use of any documents prepared by the Consultant regarding the Project.

Any conclusions and recommendations provided within any document prepared by the Consultant for the Client has been based on the investigative information undertaken by the Consultant, and any additional information provided to the Consultant by the Client or agents of the Client. The Consultant accepts no responsibility for any associated deficiency or inaccuracy as the result of a miss-statement or receipt of fraudulent information.

JOBSITE SAFETY AND CONTROL

The Client acknowledges that control of the jobsite lies solely with the Client, his agents or contractors. The presence of the Consultant's personnel on the site does not relieve the Client, his agents or contractors from their responsibilities for site safety. Accordingly, the Client must endeavor to inform the Consultant of all hazardous or otherwise dangerous conditions at the Project site of which the Client is aware.

The client must acknowledge that during the course of a geotechnical investigation, it is possible that a previously unknown hazard may be discovered. In this event, the Client recognizes that such a hazard may result in the necessity to undertake procedures which ensure the safety and protection of personnel and/or the environment. The Client shall be responsible for payment of any additional expenses incurred as a result of such discoveries, and recognizes that under certain circumstances, discovery of hazardous conditions or elements requires that regulatory agencies must be informed. The Client shall not bring about any action or dispute against the Consultant as a result of such notification.

FIELD SERVICES

Where applicable, field services recommended for the Project are the minimum necessary, in the sole discretion of the Consultant, to observe whether the work or a contractor retained by the Client is being carried out in general conformity with the intent of the Services. Any reduction from the level of services recommended will result in the Consultant providing qualified certifications for the work.

DISPUTE RESOLUTION

If requested in writing by either the Client or the Consultant, the Client and the Consultant shall attempt to resolve any dispute between them arising out of or in connection with this Agreement by entering into structured non-binding negotiations with the assistance of a mediator on a without prejudice basis. The mediator shall be appointed by agreement of the parties. If a dispute cannot be settled within a period of thirty (30) calendar days with the mediator, the dispute shall be referred to and finally resolved by arbitration under the rules of the arbitrator appointed by agreement of the parties or by reference to a Judge of the British Columbia Court.

V.1.1