

March 4, 2025
Project No. 2409083

VIA EMAIL: [REDACTED]

Georgian Escapes Ltd.
[REDACTED]

**Re: Slope Review - Revised
505153 Grey Road 1
Township of Georgian Bluffs**

Dear Laurence:

It is understood that you are proposing to develop portions of the above noted property. The development includes the construction of seven (7) rental cottages and associated servicing. The site plan for the development is being undertaken by GSS Engineering Ltd.

As part of the draft plan submission for the proposed development, Grey Sauble Conservation Authority (GSCA) identified potential slope hazards on the site that require the review by a geotechnical engineer. This includes providing comments on the condition of the slopes and confirmation that the proposed development will not negatively impact the stability of the slopes on-site.

Site Setting and Background

The site is located within the Township of Georgian Bluffs, along Grey Road 1. There is an existing entrance located centrally on the property, which leads to the existing cottage on the south end of the property. There is a walking trail along the toe of the slope, that runs parallel to Grey Road 1. A 525mm dia. culvert crosses Grey Road 1, and outlets through a ditch on the subject property.

The "Physiography of Southern Ontario", Chapman and Putnam, 1985, identifies the subject area as part of the Bruce Peninsula physiographic region. The region is characterized by the shallow overburden soils, over bedrock. Some shallow testholes were dug across the development area on August 17, 2021 by others. The encountered subsurface was generally surficial topsoil and shore stones over brown silty sand. The testholes were terminated within 1.2 mbgs on blue clay and shale. Groundwater was not reported to be encountered within the testholes.

Slope Review

The undersigned visited the site on December 16, 2024, to review the existing slope conditions. Based on the desktop review of the site from the available GSS Engineering Site Plans, the top of slope is generally considered to be at elevation 186.00m on the north end of the site and 184.00m towards the south. The bottom of slope varies in elevation, and along the north end of the site is 180.00m, and 179.00m at the south end. The steepest sections of the slope are towards the south end of the site, at an inclination of approximately 2.5H: 1V. At the north end of the site, the existing slopes are at an inclination varying from 3.6H:1V to 4.6H:1V. For typical local soil conditions, a slope is generally considered stable at 3H: 1V.

During the site visit, general measurements of the slope inclinations were taken and were generally consistent with the desktop review, with the steeper sections noted from the desktop review noted to be less steep. The slope was well treed, with a mix of coniferous and deciduous tree growth. There was no evidence of active erosion or over steepened sections of the slope. Additionally, no seepage of groundwater was observed along the sections of the slope reviewed.

Slope Stability Rating

Based on the above noted observations and slope measurements, the Slope Stability Rating Chart (Table 8.1) from the Ministry of Natural Resources (MNR) Geotechnical Principles for Stable Slopes Guidelines was used to evaluate the slope and determine the potential investigation requirements. The scoring of slope based on the parameters of the Chart is attached to this letter report. The total rating value was determined to be 18, which corresponds to a Low Potential for Slope Instability based on the existing conditions of the slope.

Proposed Development

As presented on the GSS Engineering The proposed development includes seven (7) rental cottage units, located on the north end of the subject property. The cottages will be accessed from a private laneway, located along the west side of the property, with two entrances from Grey Road 1. A shoreline well is proposed, and on-site water treatment plant and pumping station to service the cottage units. Sanitary services direct flows through proposed pump chamber to the in-ground wastewater treatment plant and dispersal bed located near the south end entrance.

The existing crossing culvert will receive additional erosion protection measures on the downstream end. Gabion stone will be placed at the end of the culvert, and along the drasinage path towards Georgian Bay.

Initial grading concepts suggest the finished floor elevations of the cottage rental units are 186.30 to 186.00. The development will require filling portions of the top of slope to build the access road for the cottages and for the driveways and frontage. The cottage units are to be built on piers, with helical piles installed a minimum of 1.2m below ground surface. Bedrock grades are expected to vary across the site, based on the provided information from the testholes. From TH-3, the bedrock was found to be within 1.2m below existing ground surface.

Hollow structural steel posts connect the piles to the joists of the cottage structure. Cross members are proposed between the hollow structural steel posts. The proposed initial concept includes for 1.2m between the ground elevation and underside of joists for the cross members to be installed. Due to the sloping nature of the site, the location and number of structural cross members will need to be reviewed by the designers and conform with the proposed final grading. We note that, at the rear of the cottages (east side) the length of the hollow steel posts will be near 4m to length from the proposed main floor elevation to the existing ground elevation. Along the east side of the cottages there is less than 1.2m between the underside of joists and proposed grading.

An area near the south entrance is considered for future cottage units. A larger septic system is identified to be constructed on the southern portion of the lot, west of the existing cottage located on the site.

Closing

Based on the existing slope conditions, and provided that the proposed excavation for the roadway and site development is directed within the limits proposed, the proposed development is not expected to negatively impact the slope stability within the subject area. The existing slopes are at a maximum 3H:1V across the subject property. There was no evidence of active erosion or over steepened sections of the slope. The proposed development is setback from the 15 m wave up-rush limit by approximately 3.5m, and therefore outside of the shoreline hazard.

It must be noted that ground movement along the edges any slopes due to surficial erosion, long term soil creep or shallow surficial slippage is likely to occur over the long-term as part of the naturally evolving slope. The removal of existing trees and vegetation along the slopes should be minimized during construction.

Furthermore, should soil and site conditions be found to very significantly different than those discussed here in and observed during the excavation of the identified testholes, the owner or contractor is requested to contact the undersigned to review the site conditions and to confirm that the opinion provided herein remains appropriate.

The comments provided only relate to the slope review and therefore any site reviews related to the building and roadway construction are to be completed by other qualified persons or by GEI Consultants as part of an additional scope of work.

We trust that this report is satisfactory for your use, if you have any questions, please feel free to contact me.

GEI CONSULTANTS CANADA LTD.



Ethan C.J. Webb, P.Eng.
Project Designer



EW/WD:sg

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Appendices

Appendix A Slope Stability Rating Chart

cc: GSS Engineering Consultants Ltd. – Ross Slaughter - rossslaughter@gssengineering.ca
GEI: Bill Dubeau – bdubeau@geiconsultants.com
File No. 2409083

Appendix A Slope Stability Rating Chart

Site Location: 505153 Grey Road 1
 Property Owner: Georgian Escapes Ltd.
 Inspected By: E. Webb

File No: 2409083
 Inspection Date: December 16, 2024
 Weather: Overcast

1. SLOPE INSPECTION			Rating Value
	Degrees	Horiz. : Vert.	
a)	18 or less	3 : 1 or flatter	0
b)	18 to 26	2 : 1 to 3 : 1	<input checked="" type="checkbox"/> 6
c)	more than 26	steeper than 2 : 1	16
2. SOIL STRATIGRAPHY			
a)	Shale, Limestone, Granite (Bedrock)		<input checked="" type="checkbox"/> 0
b)	Sand, Gravel		6
c)	Glacial Till		9
d)	Clay, Silt		12
e)	Fill		16
f)	Leda Clay		24
3. SEEPAGE FROM SLOPE FACE			
a)	None or Near bottom only		<input checked="" type="checkbox"/> 0
b)	Near mid-slope only		6
c)	Near crest only or from several levels		12
4. SLOPE HEIGHT			
a)	2 metres or less		0
b)	2.1 to 5 metres		2
c)	5.1 to 10 metres		<input checked="" type="checkbox"/> 4
d)	Greater than 10 metres		8
5. VEGETATION COVER ON SLOPE FACE			
a)	Well vegetated; heavy shrubs or forested with mature trees		<input checked="" type="checkbox"/> 0
b)	Light vegetation; Mostly grass, weeds, occasional trees, shrubs		4
c)	No vegetation; bare		8
6. TABLELAND DRAINAGE			
a)	Tableland flat, no apparent drainage over slope		0
b)	Minor drainage over slope, no active erosion		<input checked="" type="checkbox"/> 2
c)	Drainage over slope, active erosion, gullies		4
7. PROXIMITY OF WATERCOURSE TO SLOPE TOE			
a)	15 metres or more from slope toe		0
b)	Less than 15 metres from slope toe		<input checked="" type="checkbox"/> 6
8. PREVIOUS LANDSLIDE ACTIVITY			
a)	No		<input checked="" type="checkbox"/> 0
b)	Yes		6
			TOTAL
SLOPE INSTABILITY RATING		RATING VALUE TOTAL	18
INVESTIGATION REQUIREMENTS			
1.	Low potential	<24	Site inspection only, confirmation, report letter.
2.	Slight potential	25-35	Site inspection and surveying, preliminary study, detailed report.
3.	Moderate potential	>35	Boreholes, piezometers, lab tests, surveying, detailed report.
NOTES:	a) Choose only one from each category; compare total rating value with above requirements.		
	b) If there is a water body (stream, creek, river, pond, bay, lake) at the slope toe; the potential for toe erosion and undercutting should be evaluated in detail and, protection provided if required.		