

# Geotechnical Investigation Report

## Miles Shore Road



March 12, 2024

Prepared for:  
Welsh Custom Homes

Cambium Reference: 19793-001

CAMBIUM INC.

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## 1.0 Introduction

Cambium Inc. (Cambium) was retained by Welsh Custom Homes (Client) to complete a slope stability study at 1448 Miles Shore Road East, in the township of Douro-Dummer, Ontario, on Stoney Lake (Site), as illustrated in Figure 1. The study was required in order to assess the stability of the existing slope and determine an adequate setback for the proposed development of a new structure, based on the Ontario Ministry of Natural Resources and Forestry (MNR) "Geotechnical Principles For Stable Slopes" (June 1998). It is understood that the proposed structure is to be located in the location of the existing structure, identified in Figure 2, and is to have a walkout basement slab approximately 3.0 m lower in elevation than the current elevation at the top of the slope. The structure is to be founded on bedrock.

An existing boathouse structure is situated to the east of the existing residential building at the base of the slope, adjacent to the water. It is understood that the Client intends to replace the existing structure with a new structure in the same location. Inspections were also carried out on the slope adjacent to this structure and assessed for potential instability.



## 2.0 Slope Stability Inspection

An on-site visual inspection of the slope was completed on April 14, 2024. The inspection included a visual assessment of the site, test pits, hand augers, completion of a slope inspection record and slope rating chart, and a brief survey of the slope using a Sokkia RTK survey unit. Three cross sections of the slope were generated and are presented in Figure 3. Section A-A' and Section B-B' extends through the slope on either side of the proposed/existing residential structure, whereas Section C-C' extends through the slope adjacent to the proposed/existing boathouse. The field investigation work is summarized below with the Inspection Record and Rating Chart provided in Appendix A, test pit logs provided in Appendix B and site photographs presented in Appendix C.

The slope in question at the Site is generally defined as the inclination that extends from the shoreline of Stoney Lake to the top of the approximately 5.4 m high, 2 Horizontal to 1 Vertical (3H:1V) slope. The land at the top of the slope is relatively flat with minimal drainage over slope.

Test pits were advanced by the Client at the top of the slope on both the east and west sides of the existing residential structure. Excavations revealed 0.3 m to 1.4 m of topsoil and fill overlying metasedimentary Precambrian bedrock. Bedrock was encountered at 1.4 m below existing grade (mbeg) in TP101-24, on the east side of the existing structure. The overburden soils were mainly silty gravelly sand fill with limestone screenings used at surface for the driveway. The septic tank was visible in the northwest corner of the test pit. Bedrock was found to be mostly competent bedrock with some thin areas of fissile rock that could easily be removed by the excavator. Bedrock bedding had a strike of 89 degrees and dip of 61 degrees, providing evidence that the bedrock was dipping down into the slope, with no associated failure plane in line with the slope itself. Bedrock was encountered at 0.3 mbeg in TP102-24, on the west side of the existing structure. The overburden soils were entirely topsoil. The bedrock was found to be weathered and easily excavatable to a depth of 0.8 mbeg, where massive, competent bedrock was encountered. Bedrock bedding had a strike of 75 degrees



and dip of 61 degrees, providing evidence that the bedding planes were again perpendicular to the slope.

Hand augers were advanced within the face of the slope, which revealed topsoil and gravelly sand soils overlying bedrock at a depth of approximately 0.6 m. Exposed bedrock outcrops were visible in several locations along the shoreline of the property.

As per the appended Slope Inspection Record and Slope Stability Rating Chart found in Appendix A, the total ratings value sums to 20 for the slope in front of the residential structure and 18 for the slope situated behind the existing boathouse, with the understanding that that the slope is comprised mostly of bedrock, with a thin cover of soil. Given that much of the site is underlain by bedrock, the slope has a low potential for instability. Specific items of interest that contribute to this rating are outlined below:

#### 1. Slope Inclination

- based on surveyed data, the slope has inclinations ranging from 2H:1V to 3H:1V, giving a rating value of 0.

#### 2. Soil Stratigraphy

- The slope consists mainly of bedrock, with a thin cover of topsoil and sand soils, generally no thicker than 1.5 m, giving a rating of 0.

#### 3. Seepage from Slope Face

- At the time of the investigation, there was no apparent seepage from the slope face giving a best-case rating of 0.

#### 4. Slope Height

- Based on survey data, the height of the existing slope is 6.0 m, resulting in a rating of 4.

#### 5. Vegetation Cover on Slope Face

- The top of the slope was vegetated with grasses and sparse cedars and pine trees; the face of the slope was vegetated with grasses, sparse cedars and pine trees of



mixed ages, as well as common saplings; the bottom of the slope was vegetated with sparse, older growth cedar and pine trees; resulting in a rating of 4.

#### 6. Table Land Drainage

- A road with ditch prevents surface water from reaching the slope. The area at the top of the slope is relatively flat allowing for negligible drainage over the slope with no signs of active erosion, giving a rating of 0.

#### 7. Proximity of Watercourse to Slope Toe

- Stoney Lake is located at the base of the slope, resulting in a rating of 6.

#### 8. Previous Landslide Activity

- No apparent previous landslide activity was observed at the time of the investigation, giving a best-case rating of 0.

Based on the visual inspection, the slope is characterized as having a low potential for instability and no further investigation is required. Many of these features are evident in the Test Pit Logs and Site Photographs found in Appendix B and Appendix C, respectively.



### **3.0 Development recommendations**

Based on the assessed low potential for instability, it is Cambium's recommendation that the slope is considered stable in both the location of the existing residential building, as well as that of the existing boathouse. Section 4.3.2 of the MNRF Technical Guide indicates that only a site inspection is required for sites that have low potential for instability, where no existing structure, or proposed inhabitable development, is located within a distance equal to the height of the slope from the slope crest. This caveat is typically understood to apply to slopes comprised of soil, not bedrock, and as such, is not applicable at this site.

As the slope is deemed to have low potential for instability and the slope is comprised of bedrock, no setbacks are required from a geotechnical perspective. Provided all footings for the proposed structure are founded on the shallow unweathered bedrock, the loading of the new development will have no detrimental impact on the slope and vice versa. If the bedrock is sloped, any foundation footings/piers should be dowelled/anchored into clean bedrock.

We recommend that a Cambium Technician be on Site to inspect the bedrock at footing depth prior to placement of footings and the basement slab to ensure that the subsurface conditions are similar to those identified during this inspection and that the bedrock is adequately unweathered, and free of voids and fractures. Cambium can also inspect the bedrock to estimate bearing capacity values and inspect dowels/anchors.



## **4.0 Erosion Control**

During construction, care should be taken to retain as much of the vegetation on the slope as possible and erosion control measures should be put in place to maintain the stable slope, including revegetation of the slope if any bushes are removed and ensuring that there is no concentration of runoff from downspouts or construction activities down the slope.



## 5.0 Closing

Please note that this work program and report are governed by the attached Qualifications and Limitations. If you have questions or comments regarding this document, please do not hesitate to contact the undersigned at (705) 742-7900.

Respectfully submitted,

**Cambium Inc.**

DocuSigned by:  
  
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SEB/bjp

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## 6.0 Standard Limitations

### Limited Warranty

In performing work on behalf of a client, Cambium relies on its client to provide instructions on the scope of its retainer, and, on that basis, Cambium determines the precise nature of the work to be performed. Cambium undertakes all work in accordance with applicable accepted industry practices and standards. Unless required under local laws, other than as expressly stated herein, no other warranties or conditions, either expressed or implied, are made regarding the services, work or reports provided.

### Reliance on Materials and Information

The findings and results presented in reports prepared by Cambium are based on the materials and information provided by the client to Cambium and on the facts, conditions and circumstances encountered by Cambium during the performance of the work requested by the client. In formulating its findings and results into a report, Cambium assumes that the information and materials provided by the client or obtained by Cambium from the client or otherwise are factual, accurate and represent a true depiction of the circumstances that exist. Cambium relies on its client to inform Cambium if there are changes to any such information and materials. Cambium does not review, analyze or attempt to verify the accuracy or completeness of the information or materials provided, or circumstances encountered, other than in accordance with applicable accepted industry practice. Cambium will not be responsible for matters arising from incomplete, incorrect or misleading information or from facts or circumstances that are not fully disclosed to or that are concealed from Cambium during the provision of services, work or reports.

Facts, conditions, information and circumstances may vary with time and locations and Cambium's work is based on a review of such matters as they existed at the particular time and location indicated in its reports. No assurance is made by Cambium that the facts, conditions, information, circumstances or any underlying assumptions made by Cambium in connection with the work performed will not change after the work is completed and a report is submitted. If any such changes occur or additional information is obtained, Cambium should be advised and requested to consider if the changes or additional information affect its findings or results.

When preparing reports, Cambium considers applicable legislation, regulations, governmental guidelines and policies to the extent they are within its knowledge, but Cambium is not qualified to advise with respect to legal matters. The presentation of information regarding applicable legislation, regulations, governmental guidelines and policies is for information only and is not intended to and should not be interpreted as constituting a legal opinion concerning the work completed or conditions outlined in a report. All legal matters should be reviewed and considered by an appropriately qualified legal practitioner.

### Site Assessments

A site assessment is created using data and information collected during the investigation of a site and based on conditions encountered at the time and particular locations at which fieldwork is conducted. The information, sample results and data collected represent the conditions only at the specific times at which and at those specific locations from which the information, samples and data were obtained and the information, sample results and data may vary at other locations and times. To the extent that Cambium's work or report considers any locations or times other than those from which information, sample results and data was specifically received, the work or report is based on a reasonable extrapolation from such information, sample results and data but the actual conditions encountered may vary from those extrapolations.

Only conditions at the site and locations chosen for study by the client are evaluated; no adjacent or other properties are evaluated unless specifically requested by the client. Any physical or other aspects of the site chosen for study by the client, or any other matter not specifically addressed in a report prepared by Cambium, are beyond the scope of the work performed by Cambium and such matters have not been investigated or addressed.

### Reliance

Cambium's services, work and reports may be relied on by the client and its corporate directors and officers, employees, and professional advisors. Cambium is not responsible for the use of its work or reports by any other party, or for the reliance on, or for any decision which is made by any party using the services or work performed by or a report prepared by Cambium without Cambium's express written consent. Any party that relies on services or work performed by Cambium or a report prepared by Cambium without Cambium's express written consent, does so at its own risk. No report of Cambium may be disclosed or referred to in any public document without Cambium's express prior written consent. Cambium specifically disclaims any liability or responsibility to any such party for any loss, damage, expense, fine, penalty or other such thing which may arise or result from the use of any information, recommendation or other matter arising from the services, work or reports provided by Cambium.

### Limitation of Liability

Potential liability to the client arising out of the report is limited to the amount of Cambium's professional liability insurance coverage. Cambium shall only be liable for direct damages to the extent caused by Cambium's negligence and/or breach of contract. Cambium shall not be liable for consequential damages.

### Personal Liability

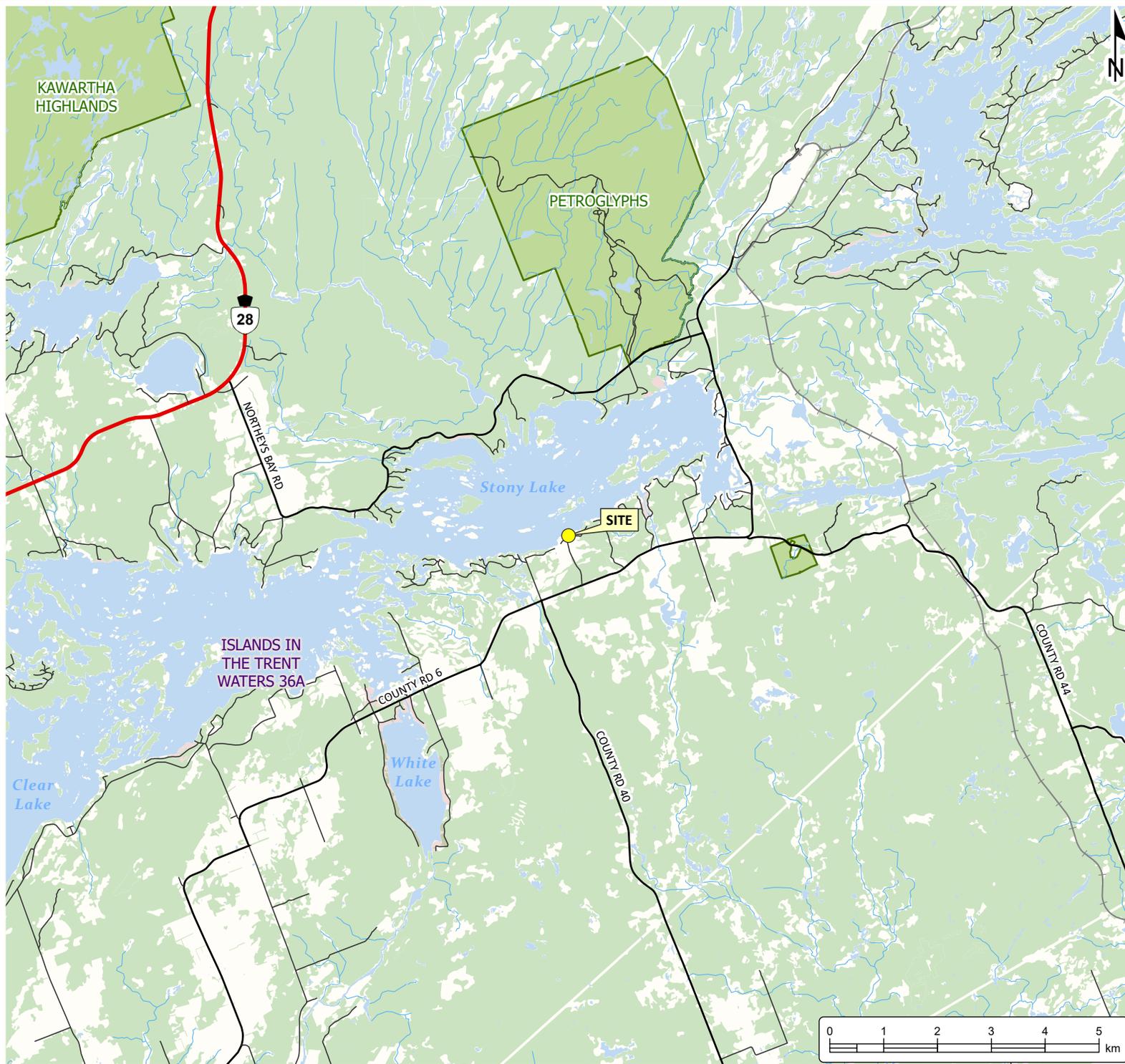
The client expressly agrees that Cambium employees shall have no personal liability to the client with respect to a claim, whether in contract, tort and/or other cause of action in law. Furthermore, the client agrees that it will bring no proceedings nor take any action in any court of law against Cambium employees in their personal capacity.



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## Appended Figures

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**SLOPE STABILITY  
ASSESSMENT**  
WELSH CUSTOM HOMES  
1442 Miles Shore Road  
Douro-Dummer, Ontario

**LEGEND**

-  Highway
-  Major Road
-  Minor Road
-  Railway
-  Watercourse
-  Water Area
-  First Nations Reserve
-  Provincial Park
-  Wooded Area
-  Built Up Area

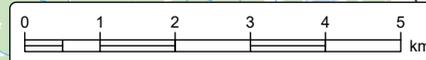
**Notes:**  
 - This document contains information licensed under the Open Government License - Ontario.  
 - Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.  
 - Cambium Inc. makes every effort to ensure this map is free from errors but cannot be held responsible for any damages due to error or omissions. This map should not be used for navigation or legal purposes. It is intended for general reference use only.



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**SITE LOCATION PLAN**

Project No.: 19793-001	Date: February 2024
Scale: 1:100,000	Rev.: NAD 1983 UTM Zone 17N
Created by: MAT	Checked by: BP
Figure: <b>1</b>	





**SLOPE STABILITY ASSESSMENT**  
**WELSH CUSTOM HOMES**  
 1442 Miles Shore Road  
 Douro-Dummer, Ontario

**LEGEND**

- Benchmark
- Test Pit
- Drilled Well
- Edge of Water
- Roadway
- Contour Line (0.5m intervals)
- Top of Slope
- Cross Section
- Building Footprint
- Site (approximate)

**Notes:**  
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**Benchmarks:**  
 BM - Iron bar located at the south west property boundary with a given elevation of 100.0m rel.

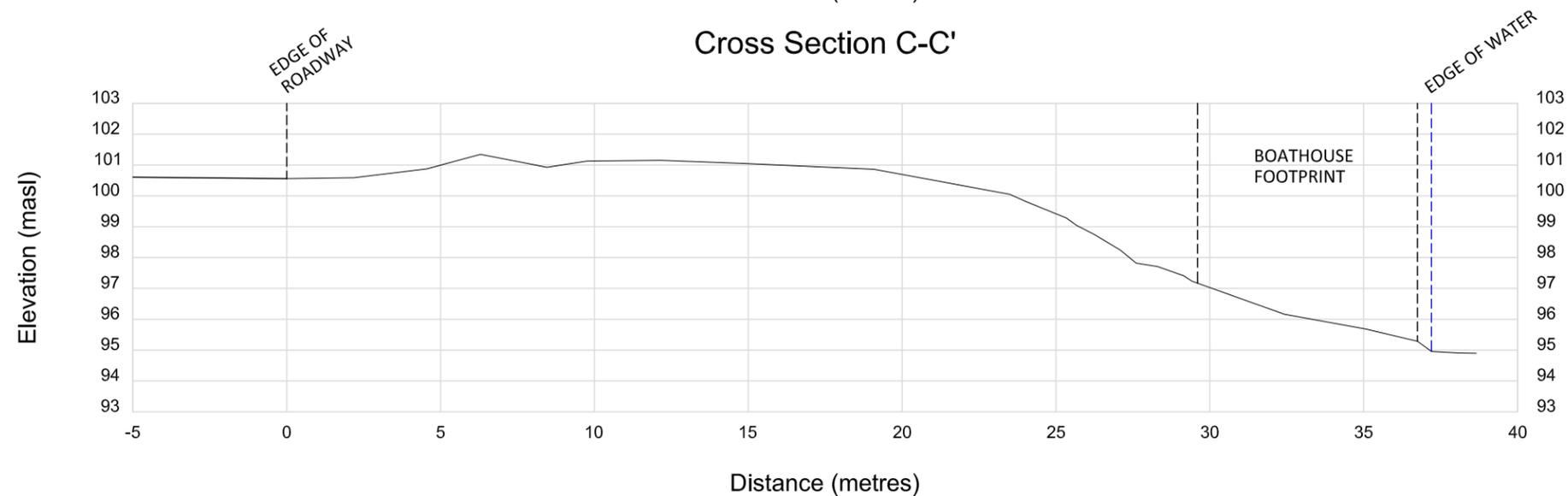
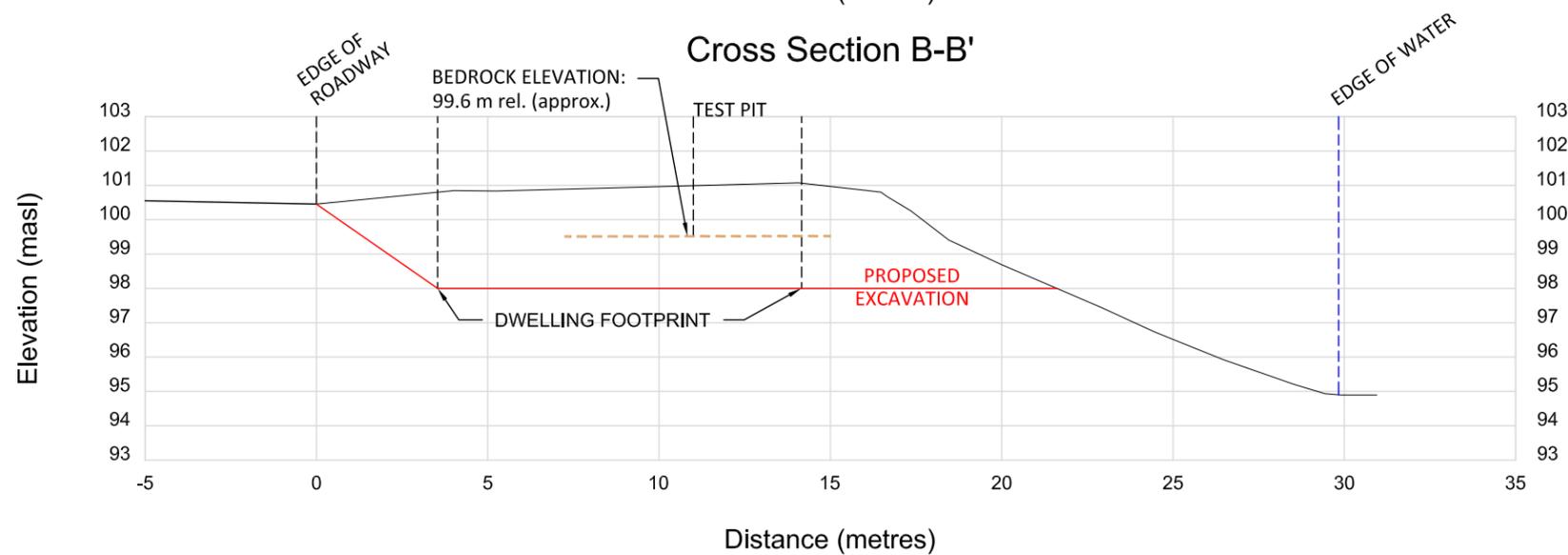
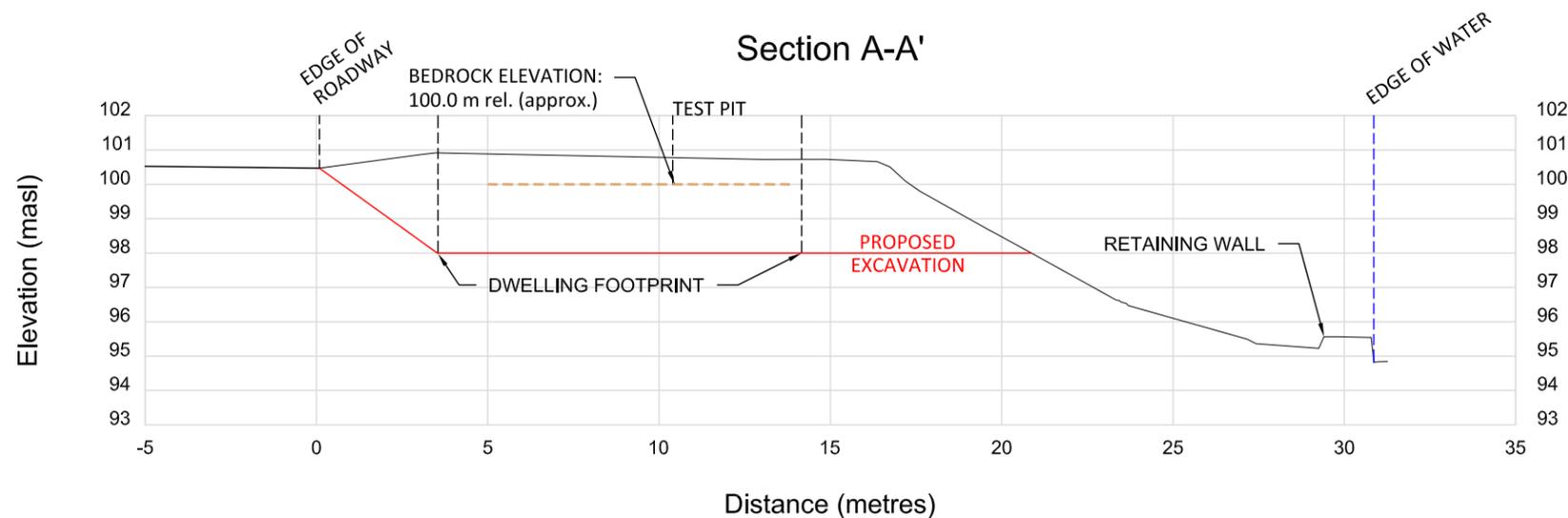


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**SITE PLAN**

Project No.: 19793-001	Date: February 2024
Scale: 1:600	Rev.: Rev.:
Created by: MAT	Checked by: BP
Figure: <b>2</b>	Projection: NAD 1983 UTM Zone 17N

LEGEND



Notes:  
 1. Survey completed by Cambium Inc. February 14, 2024.  
 2. Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.  
 Benchmarks:  
 1. Elevations are relative to an iron bar located at the south west property corner with a given elevation of 100.00 m rel.



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**CROSS SECTIONS PROFILES**

Project No.:	19739-001	Date:	February 2024
Horizontal Scale:	N/A	Vertical Scale:	N/A
Drawn By:	MAT	Checked By:	BP
Figure:	<b>3</b>		



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**Appendix A**

**MNRF Slope Inspection Record & Slope Rating Chart**

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**SLOPE INSPECTION RECORD**

<b>TABLE 4.1 - Slope Inspection Record - Residential Structure</b>				
<b>1. FILE NAME/NO.</b> 19793-001				
INSPECTION DATE: February 14, 2024				
WEATHER (circle):				
	sunny	partly cloudy	cloudy	
	calm	breeze	windy	
	clear	fog	rain	snow
	cold	cool	warm	hot
estimated air temperature: -8 °C				
INSPECTED BY: Tim Paget				
<b>2. SITE LOCATION (describe, main roads, features)</b>				
SKETCH				
See attached figures				
<b>3. WATERSHED</b>				
<b>4. PROPERTY OWNERSHIP (name, address, phone):</b>				
1442 Miles Shore Road, Douro Dummer, ON				
LEGAL DESCRIPTION				
Lot	32			
Concession	9			
Township	Duoro-Dummer			
County	Peterborough County			
CURRENT LAND USE (circle and describe)				
- vacant: field, bush, woods, forest, wilderness, tundra				
- passive: recreational parks, golf courses, non-habitable structures, buried utilities, swimming pools				
- active: habitable structures, residential, commercial, industrial, warehousing and storage				
Two storey dwelling with multiple outbuildings				
- infrastructure or public use: stadiums, hospitals, schools, bridges, high voltage power lines, waste management sites				
<b>5. SLOPE DATA:</b>				
HEIGHT	- 3-6 m	- 6-10 m	- 10-15 m	- 15-20 m
	- 20-25 m	- 25-30 m	- >30 m	
estimated height (m): 6 m				
INCLINATION AND SHAPE				
	4:1 or flatter	up to 3:1	up to 2:1	
	25% 14°	33% 18°	50% 26°	
	up to 1:1	up to :1	steeper than :1	
	100% 45°	200% 63°	>63°	

**SLOPE INSPECTION RECORD****6. SLOPE DRAINAGE (describe):**

TOP None. A road with a ditch prevents surface water from reaching slope. Runoff from north end of house may reach the top of slope.

FACE No visible drainage. Surface runoff only.

BOTTOM Lake at the bottom of the slope.

**7. SLOPE SOIL STRATIGRAPHY (describe, positions, thicknesses, types)**

TOP 0.30 m to 1.4 m of soil overlying precambrian bedrock. East side of slope is 1.4m of fill. West side is 0.30 m of topsoil. 0.50 m of weathered bedrock overlying competent bedrock.

FACE 0.10 m of topsoil overlying 0.50 m of gravelly sand, all overlying bedrock at 0.60 mbgs

BOTTOM Bedrock

**8. WATER COURSE FEATURES (circle and describe)**

SWALE, CHANNEL

GULLY

STREAM, CREEK, RIVER:

POND, BAY, LAKE

Lake at toe of slope

SPRINGS

MARSHY GROUND

**9. VEGETATION COVER (grasses, weeds, shrubs, saplings, trees)**

TOP grasses/mosses. Sparse pine and cedar trees

FACE sparse grasses, pine and cedar of mixed ages, saplings

BOTTOM Pine and cedar trees with sparse shrubs

**10. STRUCTURES (buildings, walls, fences, sewers, roads, stairs, decks, towers)**

TOP Two storey cottage, below ground septic tank at top of slope on east side.

FACE Steps with hand railings down the slope.

BOTTOM Decking to attach a floating dock on the eastern side. Concrete retaining wall at the toe of s

**11. EROSION FEATURES (scour, undercutting, bare areas, piping, rills, gully)**

TOP

FACE No erosion features observed during the inspection. The ground was snow covered, potentially hiding any existing features.

BOTTOM

### SLOPE INSPECTION RECORD

<b>12. SLOPE SLIDE FEATURES (tension cracks, scarps, bulges, grabens, ridges, bent trees)</b>
TOP No slope slide features observed.
FACE No slope slide features observed. All trees remained upright and unbent.
BOTTOM No slope slide features observed. All trees remained upright and unbent.
<b>13. PLAN SKETCH OF SLOPE</b>
See additional report appendices
<b>13. PROFILE SKETCH OF SLOPE</b>
See additional report appendices

## SLOPE STABILITY RATING CHART

Site Location:	1442 Miles Shore Road, Douro Dummer, ON	File No.	19793-001
Property Owner:		Inspection Date:	2024-02-14
Inspected By:	Tim Paget	Weather:	Sunny, Cold
Inspection Task - Residential Structure		Rating Value	
<b>1. SLOPE INCLINATION</b>			
<b>Degrees</b>	<b>Horizontal:Vertical</b>		
a) 18 or less	3:1 or flatter		0
b) 18 to 26	2:1 to more than 3:1		6
c) more than 26	Steeper than 2:1		16
<b>2. SOIL STRATIGRAPHY</b>			
a) Shale, Limestone, Granite (Bedrock)			0
b) Sand, Gravel			6
c) Glacial Till			9
d) Clay, Silt			12
e) Fill			16
f) Leda Clay			24
<b>3. SEEPAGE FROM SLOPE FACE</b>			
a) None or near bottom only			0
b) Near mid-slope only			6
c) Near crest only or from several levels			12
<b>4. SLOPE HEIGHT</b>			
a) 2 m or less			0
b) 2.1 to 5 m			2
c) 5.1 to 10 m			4
d) more than 10 m			8
<b>5. VEGETATION COVER ON SLOPE FACE</b>			
a) Well vegetated, heavy shrubs or forested with mature trees			0
b) Light Vegetation; Mostly grass, weeds, occasional trees, shrubs			4
c) No vegetation, bare			8
<b>6. TABLE LAND DRAINAGE</b>			
a) Table land flat, no apparent drainage over slope			0
b) Minor drainage over slope, no active erosion			2
c) Drainage over slope, active erosion, gullies			4
<b>7. PROXIMITY OF WATERCOURSE TO SLOPE TOE</b>			
a) 15 m or more from slope toe			0
b) Less than 15 m from slope toe			6
<b>8. PREVIOUS LANDSLIDE ACTIVITY</b>			
a) No			0
b) Yes			6
<b>RATING VALUES TOTAL</b>			<b>20</b>
<b>SLOPE INSTABILITY RATING</b>		<b>INVESTIGATION REQUIREMENTS</b>	
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	
<b>Notes:</b>			
a) Choose only one rating value from each category; compare total rating value with above requirements			
b) If there is a waterbody (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.			
c) For leda clay and rock slopes, additional evaluation must be carried out			

**SLOPE INSPECTION RECORD**

<b>TABLE 4.1 - Slope Inspection Record - Boathouse</b>				
<b>1. FILE NAME/NO.</b> 19793-001				
INSPECTION DATE: February 14, 2024				
WEATHER (circle):				
	sunny	partly cloudy	cloudy	
	calm	breeze	windy	
	clear	fog	rain	
	cold	cool	warm	hot
estimated air temperature: -8 °C				
INSPECTED BY: Tim Paget				
<b>2. SITE LOCATION (describe, main roads, features)</b>				
SKETCH				
See attached figures				
<b>3. WATERSHED</b>				
<b>4. PROPERTY OWNERSHIP (name, address, phone):</b>				
1442 Miles Shore Road, Douro Dummer, ON				
LEGAL DESCRIPTION				
Lot	32			
Concession	9			
Township	Duoro-Dummer			
County	Peterborough County			
CURRENT LAND USE (circle and describe)				
- vacant: field, bush, woods, forest, wilderness, tundra				
- passive: recreational parks, golf courses, non-habitable structures, buried utilities, swimming pools				
- active: habitable structures, residential, commercial, industrial, warehousing and storage				
Two storey boathouse at toe of slope, driveway at top.				
- infrastructure or public use: stadiums, hospitals, schools, bridges, high voltage power lines, waste management sites				
<b>5. SLOPE DATA:</b>				
HEIGHT	- 3-6 m	- 6-10 m	- 10-15 m	- 15-20 m
	- 20-25 m	- 25-30 m	- >30 m	
estimated height (m): 5 m				
INCLINATION AND SHAPE				
	4:1 or flatter	up to 3:1	up to 2:1	
	25% 14°	33% 18°	50% 26°	
	up to 1:1	up to :1	steeper than :1	
	100% 45°	200% 63°	>63°	

**SLOPE INSPECTION RECORD****6. SLOPE DRAINAGE (describe):**

TOP Minor drainage along driveway at the top of the slope

FACE No visible drainage. Surface runoff only.

BOTTOM Lake at the bottom of the slope.

**7. SLOPE SOIL STRATIGRAPHY (describe, positions, thicknesses, types)**

TOP 0.15 m of topsoil overlying 0.15 m of sand some gravel, all overlying bedrock at 0.30 mbgs.

FACE 0.20 m of topsoil overlying 0.30 m of gravelly sand, all overlying bedrock at 0.50 mbgs

BOTTOM Large boulders and 0.05 m of gravel overlying bedrock.

**8. WATER COURSE FEATURES (circle and describe)**

SWALE, CHANNEL

GULLY

STREAM, CREEK, RIVER:

POND, BAY, LAKE

Lake at toe of slope

SPRINGS

MARSHY GROUND

**9. VEGETATION COVER (grasses, weeds, shrubs, saplings, trees)**

TOP Grasses and sparse cedar and pine trees

FACE Grasses. Sparse cedar and pine trees of mixed ages. Saplings.

BOTTOM Sparse older growth cedar and pine

**10. STRUCTURES (buildings, walls, fences, sewers, roads, stairs, decks, towers)**

TOP Driveway at the top of the slope

FACE Steps down the slope.

BOTTOM Two storey boathouse at bottom of the slope next the lake. Residential building on the west

**11. EROSION FEATURES (scour, undercutting, bare areas, piping, rills, gully)**

TOP

FACE No erosion features observed during the inspection. The ground was snow covered, potentially hiding any existing features.

BOTTOM

## SLOPE INSPECTION RECORD

<b>12. SLOPE SLIDE FEATURES (tension cracks, scarps, bulges, grabens, ridges, bent trees)</b>
---

TOP      No slope slide features observed.
--

FACE      No slope slide features observed. All trees remained upright and unbent.
--

BOTTOM      No slope slide features observed. All trees remained upright and unbent.
--

<b>13. PLAN SKETCH OF SLOPE</b>
---------------------------------

See additional report appendices
----------------------------------

<b>13. PROFILE SKETCH OF SLOPE</b>
------------------------------------

See additional report appendices
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## SLOPE STABILITY RATING CHART

Site Location:	1442 Miles Shore Road, Douro Dummer, ON	File No.	19793-001
Property Owner:		Inspection Date:	2024-02-14
Inspected By:	Tim Paget	Weather:	Sunny, Cold
Inspection Task - BOATHOUSE		Rating Value	
<b>1. SLOPE INCLINATION</b>			
<b>Degrees</b>	<b>Horizontal:Vertical</b>		
a) 18 or less	3:1 or flatter		0
b) 18 to 26	2:1 to more than 3:1		6
c) more than 26	Steeper than 2:1		16
<b>2. SOIL STRATIGRAPHY</b>			
a) Shale, Limestone, Granite (Bedrock)			0
b) Sand, Gravel			6
c) Glacial Till			9
d) Clay, Silt			12
e) Fill			16
f) Leda Clay			24
<b>3. SEEPAGE FROM SLOPE FACE</b>			
a) None or near bottom only			0
b) Near mid-slope only			6
c) Near crest only or from several levels			12
<b>4. SLOPE HEIGHT</b>			
a) 2 m or less			0
b) 2.1 to 5 m			2
c) 5.1 to 10 m			4
d) more than 10 m			8
<b>5. VEGETATION COVER ON SLOPE FACE</b>			
a) Well vegetated, heavy shrubs or forested with mature trees			0
b) Light Vegetation; Mostly grass, weeds, occasional trees, shrubs			4
c) No vegetation, bare			8
<b>6. TABLE LAND DRAINAGE</b>			
a) Table land flat, no apparent drainage over slope			0
b) Minor drainage over slope, no active erosion			2
c) Drainage over slope, active erosion, gullies			4
<b>7. PROXIMITY OF WATERCOURSE TO SLOPE TOE</b>			
a) 15 m or more from slope toe			0
b) Less than 15 m from slope toe			6
<b>8. PREVIOUS LANDSLIDE ACTIVITY</b>			
a) No			0
b) Yes			6
<b>RATING VALUES TOTAL</b>			<b>18</b>
<b>SLOPE INSTABILITY RATING</b>		<b>INVESTIGATION REQUIREMENTS</b>	
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	
<b>Notes:</b>			
a) Choose only one rating value from each category; compare total rating value with above requirements			
b) If there is a waterbody (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.			
c) For leda clay and rock slopes, additional evaluation must be carried out			



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**Appendix B**  
**Test Pit Logs**

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**TABLE 1: TEST PIT LOGS****GEO - Welsch Custom Homes - 1442 Miles Shore Road, Douro Dummer**

Technician: Tim Paget

Cambium Reference No. 19793-001

Completed: Feb 14, 2024



Test Pit ID	Depth (mbgs <sup>1</sup> )	Soil Sample	% Moisture	Material Description	Depth (m)	DPT <sup>2</sup> (Blows/150 mm)
TP101-24	0.00 - 0.20 0.20 - 0.50 0.5 - 1.40 1.4			<p>FILL, Silty gravelly sand fill            FILL, gravel - Limestone screenings used for driveway            FILL, silty gravelly sand mixed with limestone screenings            Precambrian bedrock - metaseds with bedding, some fissile areas exposed. Strike: 89° Dip: 61°</p> <p>Test pit terminated at 1.4 mbgs on precambrian bedrock.            Notes:            a. Septic tank visible in northwest corner of test pit.            b. Bedding is dipping in the opposite direction of the slope.</p>		
TP102-24	0.00 - 0.30 0.30 - 0.80 0.8			<p>Topsoil, roots and organics            Precambrian bedrock, weathered, fissile bedding, easily excavateable to 0.80 mbgs. Strike: 75° Dip: 61°            Precambrian bedrock, less fissile, no longer easily excavateable.</p> <p>Test pit terminated at 0.80 mbgs on precambrian bedrock.            Notes:            a. Bedding is dipping in the opposite direction of the slope.</p>		

1. mbgs = metres below ground surface

2. Dynamic probe penetration test, consisting of driving a 19 mm diameter steel rod 150 mm into the soil with an 8 kg hammer falling 750 mm.



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**Appendix C**  
**Site Photographs**

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**Photo 1 TP101-24. Various layers of fill overlying Precambrian bedrock. Concrete septic tank on left side of image**



**Photo 2 TP102-24. Bedded Precambrian bedrock dipping to the south. Slope is to the north.**



1442 Miles Shore Rd, Duoro-Dummer  
Welsh Custom Homes  
Cambium Reference: 19793-001



**Photo 3 TP102-24. Weathered fissile bedrock overlying competent bedrock. Weathered bedrock has been excavated and removed from test pit.**



**Photo 4 TP102-24. Competent bedrock exposed at 0.80 mbgs.**



**Photo 5** Top of slope and slope face along the north side of the house.



**Photo 6** Concrete pier at the toe of the slope. Pier extends down to lake level.



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Welsh Custom Homes  
Cambium Reference: 19793-001



**Photo 7** Exposed bedrock between wooden decking and concrete pier at toe of slope.



**Photo 8** TP101-24. Table land above slope was excavated to expose bedrock for investigation.



**Photo 9** Table land above boathouse. The flat, bare snow covered area is a gravel driveway. Slope is to the north.



**Photo 10** Top of slope/edge of driveway, boathouse structure visible in left side of image at the slope bottom.



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**Photo 11 Slope face at eastern edge of boathouse. Flattened snow covered area at entrance consists of decking.**



**Photo 12 Slope face at western edge of boathouse.**



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Cambium Reference: 19793-001



**Photo 13** Shoreline at the bottom of the slope in front of boathouse.



**Photo 14** Boathouse shoreline with gravel overlying shallow bedrock.



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Welsh Custom Homes  
Cambium Reference: 19793-001



***Photo 15 Exposed bedding in bedrock on boathouse shoreline.***