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## Staff Report

Planning and Development Services – Planning Division

Report To:	Committee of the Whole
Meeting Date:	August 11, 2020
Report Number:	PDS.20.65
Subject:	Planning Recommendation Report O'Neill & Renwick Zoning By-law Amendment (Part of Lot 18, Concession 3)
Prepared by:	Denise Whaley, Planner II

## A. Recommendations

THAT Council receive Staff Report PDS.20.65, entitled "Planning Recommendation Report O'Neill & Renwick Zoning By-law Amendment (Part of Lot 18, Concession 3)";

AND THAT Council enact a Zoning By-law Amendment to change the zoning symbol on a portion of the property from the Hazard (H) zone to the Residential One (R1-1) zone, to permit a residential use on the property, as outlined in Attachment #1.

## B. Overview

This report provides a summary of the public meeting and recommendation on a proposal to rezone a portion of the property known as Part of Lot 18, Concession 3 (a vacant lot in Swiss Meadows), from the Hazard (H) to the Residential One (R1-1) zone.

## C. Executive Summary

Application File #: P2792

Application Received Date: September 6, 2019

Application Deemed Complete Date: September 14, 2019

Official Plan Designation: Residential Recreational Area (RRA)

Zone Category: R1-1 and H (requesting to reduce the Hazard area)

Location: Part of Lot 18, Concession 3 (a vacant lot in Swiss Meadows)

Road Frontage: Swiss Meadows Boulevard (open and maintained Municipal Road)

Short Term Accommodations: Not Permitted in the R1-1 Zone

The applicants submitted a zoning by-law amendment application to facilitate development of the property as a residential lot. The application seeks to refine the Hazard (H) Zone on the property to allow them to build a single detached house. The current zoning is Residential One (R1-1) and Hazard (H). The area of Hazard (H) is located through the centre portion of the lot and impacts the ability to locate and build a house.

## D. Background

## Location and Description

Although the property is located in Swiss Meadows subdivision, it is not legally part of the subdivision plan and therefore does not have a lot number within this registered plan. The property does have frontage onto Swiss Meadows Boulevard. A key map of the location of the lot (see Figure 1) and an aerial photograph (see Figure 2) is provided below.

Figure 1: Key Map



The property is in an area of existing single detached residential dwellings and is adjacent to the Blue Mountain Resorts ski hill and a trail system.

Figure 2: Aerial Photo of Subject Property



#### **Zoning Application**

This application requests to reduce the area of mapped as Hazard, as reviewed by and recommended by the Grey Sauble Conservation Authority (GSCA). The Applicants pre-consulted with the GSCA to determine if there was a suitable building envelope available. In support of this application the Applicants included a sketch of the property (see Figure 3) which shows the proposed reduction of the Hazard area.

If this application is approved, the basic zoning will remain Residential One (R1-1) and the Hazard (H) area would be reduced to a smaller area on the north east portion of the lot. No other development is proposed aside from a single detached dwelling and uses accessory thereto.

Based on recommendations from the Grey Sauble Conservation Authority (GSCA), a Karst Investigation also needed to be completed to support the application, and be accepted prior to Council rendering a decision. The Karst Investigation was completed following the Public Meeting and was subsequently submitted to the Town and GSCA for acceptance.

#### Figure 3: Applicant's Sketch



## Public meeting

The Town held a public meeting on October 7, 2019 and circulated the Notice of Public meeting to the public and agencies. No comment was received from any member of the public on this application. The comments received from agencies were generally supportive of the zoning amendment. These comments are summarized below. As the comments received were brief, a separate comments matrix is not provided as an attachment to this report. However, all comments in full are provided in Attachment #1.

#### **Table 1: Summary of Public Meeting Comments**

Name	Comments
County of Grey	No concerns with the application.
Grey Sauble Conservation Authority (GSCA)	Supportive of the ZBA and provided the Town new mapping to reflect actual Hazard features. Recommend a karst assessment to determine if karst features are present. Should karst be present within the proposed building envelope, a study would be required to assess the impacts and mitigation measures relating to development.

Historic Saugeen	No objection or opposition to the application.
Metis	

## E. Analysis

This section provides the staff analysis on based on the relevant legislation and policies and summaries are provided in the following sections.

### Planning Act

The Ontario Planning Act provides municipal Council with the authority to pass zoning by-laws, and make amendments to existing zoning by-laws, under Section 34 of the Act. The Planning Act also requires that in making planning decisions Council must have regard for matters of Provincial Interest, as outlined by Section 2 of the Act, as well as the matters within the Provincial Policy Statement.

It is noted that the subject property is an existing lot of record within a Settlement Area. Much of the matters of Provincial Interest are not applicable. There are no identified natural heritage, archeological or known public health and safety concerns. As noted earlier in this report, the GSCA provided comments in support of the refined Hazard area and recommended a Karst investigation be completed (which has been done). Staff are satisfied that there are no concerns relating to matters of Provincial Interest.

Town Planning staff are satisfied that the application has appropriate regard for matters under the Planning Act.

#### Provincial Policy Statement 2020

The Provincial Policy Statement 2020 (PPS) provides more detailed policy direction on matters of provincial interests related to land use planning and development. Within the framework of the PPS, the subject lands are located within a Settlement Area. A Settlement Area is a built up area where development is concentrated, within either an urban or rural settlement area, such as a city, town, village or hamlet. Withing Section 1.1.3.1 of the PPS the Settlement Areas are to be the focus of growth and development.

Section 3.1 of the PPS directs development outside of Natural Hazard areas in order to protect public health and safety. As part of the Zoning Application, the Applicants consulted with the GSCA to determine the actual extent of the Hazard area on the lands. It has been determined that no development is proposed on that portion of the lot that is within an area of Natural Hazard, and the proposed building envelope is located well outside of that portion of the lot that is a Hazard area. This determination is based on investigation conducted by the GSCA as part of its site visit of the property.

Town Planning staff are satisfied the application is consistent with the PPS.

## Niagara Escarpment Plan

The Niagara Escarpment Plan provides land use policies to guide development while ensuring the preservation and enhancement of the Niagara Escarpment as an internationally recognized World Biosphere Reserve. Key objectives of the Plan are to maintain and enhance the natural environment and the open landscape character of the escarpment and adjacent lands. New development is permitted subject to the land use designation requirements to ensure compatibility with the purpose of the Plan.

The subject lands are designated **Escarpment Recreation Area** which recognizes those areas of existing and potential recreational development associated with the Escarpment. Permitted uses include those uses allowed in the Town of The Blue Mountains Official Plan underlying land-use designations. New development must not generate substantial negative impact on environmental features and must be designed and located in a manner to preserve the natural, visual and cultural characteristics of the area. Site design and layout must also be in harmony with and maintain the existing character of the escarpment landscape.

Comments were not received from the Niagara Escarpment Commission regarding this application. However, it is recognized that the Plan supports the development of single detached units, and that is consistent with the existing zoning category of Residential One (R1-1) now on a portion the subject lands. The minor refinement of the Hazard zoning on the lands is also consistent with the Niagara Escarpment Plan objectives and policies, when such refinement can be supported through technical investigations (which has been done).

Town Planning staff are satisfied that the proposed Zoning By-law Amendment conforms or does not conflict with the Niagara Escarpment Plan.

## **Official Plans**

#### **County Official Plan**

The County of Grey Official Plan designates the lands **Escarpment Recreation Area**. The County Official Plan does not identify a Hazard designated area on the subject lands.

County policies are designed to be flexible and leave more detailed land use policies and development criteria in the Escarpment Recreation Area to the Town of The Blue Mountains Official Plan, provided the development is not in conflict with the provisions of the Niagara Escarpment Plan. Planning staff is satisfied that this proposed development does not conflict with the Niagara Escarpment Plan.

Town Planning Staff confirmed that there are no identified Natural Heritage features, including Significant Woodlands, on or within the adjacent lands (120 metres from the subject property) mapped within the County Official Plan.

Town Planning staff are satisfied that the proposed zoning amendment conforms to the County Official Plan.

## Town Official Plan

The Blue Mountains Official Plan designates the lands **Residential Recreational Area** and partly **Hazard** (see Figure 4). The Residential Recreational Area designation recognizes areas within the Town where there is a mix of seasonal and permanent residential and recreational uses, and those where some residential uses are located to support and provide access to resort and recreational amenities. Residential Recreational Area designation permits residential uses, including the proposed single detached dwelling.



Figure 4: Official Plan Excerpt

Section B5.4.2 of the Town Official Plan (Development Policies - Hazard), Subsection e) allows for minor alteration of Hazard Lands mapping without amendment to the Official Plan, in consultation with the appropriate Conservation Authority. It should be noted that the Hazard mapping in both the Town Official Plan and Zoning By-law is provided to the Town by the GSCA.

Minor refinements to Hazard Lands mapping without an Official Plan Amendment (based on site inspections conducted by the GSCA) are supported by the above Official Plan policy. The GSCA have conducted a site inspection of the lot, and based on their review, the GSCA is satisfied where the correct Hazard mapping limits are in the field. Planning staff have developed the proposed Zoning By-law Amendment Schedule "A-1" (discussed in more detail in the following section) based on the recommended Hazard area as determined on-site by the GSCA.

Town Planning staff are satisfied that the proposed zoning amendment conforms to the Town's Official Plan.

## Zoning By-law 2018-65

The Town's Comprehensive Zoning By-law 2018-65 zones the lands Residential One (R1-1) and partly Hazard (H). As shown in Figure 5 below, the Hazard (H) zoned area is through the centre of the property. This application seeks to refine the Hazard (H) zone based on the "on the ground" investigation conducted by the GSCA and their site visit.

Based on the site visit, the GSCA concluded that the area of natural hazard is only at a small area of the property, and that this area is situated well outside the proposed building envelope sought by the Applicants.



**Figure 5: Zoning Excerpt** 

A draft Zoning By-law Amendment and Schedule "A-1" has been provided in Attachment #1 that reflects the recommendations of the GSCA.

## Other Matters

The GSCA supported the zoning amendment with the recommendation that a Karst Investigation by a qualified engineer be completed for the proposed building envelope to determine if there was any Karst potential on the lands.

Following the public meeting, the Applicants moved forward with the Karst Investigation. The Karst Investigation is now complete and was submitted to the Town and GSCA for review. The Karst Investigation did not identify the presence of Karst within any of the test pits.

In consultation with the Town's Chief Building Official, it was determined that based on the Karst Investigation recommendations, a Building Permit will be issued by the Town with a requirement that an Engineer must submit a soil bearing analysis prior to the placement of concrete. The GSCA is also satisfied with the Karst investigation and with the above approach. The Karst Investigation has been provided as Attachment #3.

It is also noted that the area of Swiss Meadows does not have municipal sewer services. As such this lot will need to be serviced by a private septic system. The Applicants have been made aware that the majority of Swiss Meadows is supplied with Town water through a private distribution system. The Applicants will need to confirm whether connection to this private distribution system is possible, or alternatively the property will need its own private well system.

## Conclusions

Staff are satisfied that the proposed zoning by-law amendment meets the requirements of the Planning Act, is consistent with the Provincial Policy Statement, and conforms with both the

County and Town's Official Plans. Staff recommend approval of this zoning by-law amendment and a draft zoning by-law amendment is attached to this report.

## F. The Blue Mountains Strategic Plan

The recommendation in this report supports the following goal and objectives from the Strategic Plan:

Goal #3:Support Healthy LifestylesObjective #3Manage Growth and Promote Smart GrowthObjective #4Commit to Sustainability

## G. Environmental Impacts

There are no anticipated Environmental Impacts as a result of this rezoning.

### H. Financial Impact

None.

### I. In consultation with

Tim Murawsky, Chief Building Official/Manager of Building Services

Trevor Houghton, Manager of Community Planning.

## J. Public Engagement

The topic of this Staff Report has been the subject of a Public Meeting and/or a Public Information Centre which took place on October 7, 2019. Those who provided comments at the Public Meeting, including anyone who has asked to receive notice regarding this matter, have been provided notice of this Staff Report.

Comments regarding this report should be submitted to Denise Whaley, Planner II planning@thebluemountains.ca .

## K. Attached

- 1. Draft Zoning By-law Amendment
- 2. Comments Received
- 3. Karst Investigation

Respectfully submitted,

Denise Whaley, MSc MCIP RPP Planner II

Nathan Westendorp, MCIP RPP Director of Planning and Development Services

For more information, please contact: Denise Whaley, Planner II <u>planning@thebluemountains.ca</u> 519-599-3131 extension 262

## The Corporation of the Town of The Blue Mountains

## By-Law Number 2020 -

Being a By-law to amend Zoning By-law No. 2018-65 which may be cited as "The Blue Mountains Zoning By-law";

Whereas the Council of The Corporation of the Town of The Blue Mountains deems it necessary in the public interest to pass a by-law to amend By-law No. 2018-65;

And Whereas pursuant to the provisions of Section 34 of the Planning Act, R.S.O. 1990, c. P.13, the By-law may be amended by Council of the Municipality;

Now Therefore Council of The Corporation of the Town of The Blue Mountains hereby enacts as follows:

- 1. That Schedule A, Map 18 is amended by changing the zoning symbol for a portion of the lands known as Part of Lot 18, Concession 3 (formerly the Township of Collingwood) from the Hazard (H) Zone to the Residential One (R1-1) Zone, as shown on the attached Schedule 'A-1'.
- 2. That Schedule 'A-1' is declared to form part of this By-law.

And Further that this By-law shall come into force and take effect upon the enactment thereof.

Enacted and passed this \_\_\_\_\_ day of \_, 2020

Alar Soever, Mayor

Corrina Giles, Clerk

I hereby certify that the foregoing is a true copy of By-law No. 2020-\_\_\_\_ as enacted by the Council of The Corporation of the Town of The Blue Mountains on the \_\_\_ day of \_\_\_\_\_, 2020.

Dated at the Town of The Blue Mountains, this \_\_\_\_\_ day of \_\_\_\_\_, 2020.

Corrina Giles, Clerk

# Town of The Blue Mountains Schedule 'A-1'

## By-Law No.\_\_\_\_\_

## Legend



Subject Lands of this Amendment

Area to be rezoned from H to R1-1





## Planning and Development

595 9<sup>th</sup> Avenue East, Owen Sound Ontario N4K 3E3 519-372-0219 / 1-800-567-GREY / Fax: 519-376-7970

September 30th, 2019

Denise Whaley Town of Blue Mountains PO Box 310 – 32 Mill Street Thornbury, ON N0H 2P0 \*Sent via E-mail

## RE: Zoning By-law Amendment ZBA O'Neill and Renwick Part of Lot 18, Concession 3 Town of the Blue Mountains Applicant/Owner: Kaley O'Neill and Jane Renwick

Dear Ms. Whaley,

This correspondence is in response to the above noted application. We have had an opportunity to review the application in relation to the Provincial Policy Statement (PPS) and the County of Grey Official Plan (OP), Recolour Grey. We offer the following comments.

The applicants are seeking approval to refine the zoned hazard area on the property, to allow them to build a single detached house. The current zoning is Residential (R1-1) and Hazard (H). The area of Hazard (H) is through the centre of the lot and impacts the ability to build a house.

This application requests to reduce the area of mapped hazard, as recommended by the Grey Sauble Conservation Authority. If this application is approved, the zoning will remain Residential (R1-1); however, the Hazard (H) will be reduced to a small area on the north east portion of the lot. No other development is proposed.

Schedule A of Recolour Grey designates majority of the subject lands as 'Escarpment Recreation Area'. Section 6.1 of the OP states,

2) Local official plans and/or secondary plans will provide detailed land use policies and *development* criteria in these areas that are not in conflict with the provisions of the Niagara Escarpment Plan.

3) The Town of The Blue Mountains Official Plan and Official Plan for the Castle Glen Resort Community are recognized within the Niagara Escarpment Plan.

Page 2 September 30<sup>th</sup>, 2019

4) The importance of the Four Seasons Recreational Resort Areas to the tourism sector of Ontario's economy, Grey *County* and the Town of The Blue Mountains is recognized.

County planning staff would refer to the Niagara Escarpment Plan and the approved Town of The Blue Mountains Official Plan for detailed development standards. County planning staff have no further concerns.

County planning staff have no concerns with the subject application.

The County requests notice of any decision rendered with respect to this application.

If you wish to discuss this matter further, please do not hesitate to contact me.

Yours truly,

Hiba Hussain Planner (519) 372-0219 ext. 1233 <u>hiba.hussain@grey.ca</u> <u>www.grey.ca</u>



237897 Inglis Falls Road, R.R.#4, Owen Sound, ON N4K 5N6 Telephone: 519.376.3076 Fax: 519.371.0437 www.greysauble.on.ca

July 15, 2019

Dear Mr. O'Neill:

RE: Site Inspection for Re-zoning Part Lot 18, Concession 3 Roll No.: 42-42-000-005-099-00 Town of The Blue Mountains, formerly Collingwood Township Our File: P19277

### Subject Proposal

It is our understanding that the proponent wishes to construct a residential dwelling and associated services on the subject property. A portion of the property is currently zoned as 'Hazard (H)' in the Town of The Blue Mountains Zoning By-law. The purpose of this letter and site inspection is to review the extent of the hazard on the subject property, and outline requirements for re-zoning the 'Hazard (H)' to facilitate development on the property.

The Grey Sauble Conservation Authority (GSCA) has reviewed this request in accordance with our mandate and policies for natural hazards, for natural heritage issues as per the Memorandum of Agreement with the Town of The Blue Mountains and relative to our policies for the implementation of Ontario Regulation 151/06. We offer the following comments.

#### Site Description

The subject property is located on the northeast corner of the Scandia Lane and Swiss Meadows Boulevard intersection, within the Town of The Blue Mountains, formerly Collingwood Township. The property is approximately 0.34 hectares in size, with 60 metres of frontage on Swiss Meadows Boulevard. The property is bounded by residential lots to the north, south, and west, and the Blue Mountain slope to the east. The east property line is irregular in shape, as it runs parallel to a private access road that follows the top of the slope. The property is relatively level and is treed in a variety of species including Manitoba maple, staghorn sumac, and ash, among others.

#### **GSCA Regulations**

A portion of the subject property is regulated under Ontario Regulation 151/06: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. The regulated area is associated with a watercourse flowing out of the base of a small cliff face at the top of the Blue Mountain slope, immediately east of the subject property.



Watershed Municipalities Arran-Elderslie, Chatsworth, Georgian Bluffs, Grey Highlands Meaford, Owen Sound, South Bruce Peninsula, Blue Mountains Site Inspection for Re-zoning Part Lot 18, Concession 3 Roll No.: 42-42-000-005-099-00 Town of The Blue Mountains (Collingwood Township) Our File: P19277

Under this regulation a permit is required from this office prior to the construction, reconstruction, erection or placing of a building or structure of any kind; any change to a building or structure that would have the effect of altering the use or potential use of the building or structures, increasing the size of the building or structure, or increasing the number of dwelling units in the building or structure; site grading; or, the temporary or permanent placing, dumping or removal of any material originating on the site or elsewhere, if occurring within the regulated area. Also, a permit is required for interference with a wetland, and/or the straightening, changing, diverting or in any way interfering with an existing channel of a river, lake, creek stream or watercourse.

## Provincial Policy Statement (2014)

#### 3.1 Natural Hazards

The current 'Hazard (H)' zoning on the subject property is associated with a previously mapped watercourse. Through in-field reconnaissance, it has been determined that the watercourse does not run through the subject property, but rather emerges at the base of a small cliff face associated with the Blue Mountain slope, east of the subject property. This watercourse and the updated hazard area are shown on the attached map.

Karst topography has been previously noted in the surrounding area, and the watercourse emerging from the Blue Mountain slope feature indicates the presence of karst topography. As such, we recommend that an assessment of the proposed area of development is undertaken. In determining if karst features are present within the development envelope, the proponent shall dig two test holes in the location of the proposed main building, one test hole within the location of the proposed sewage system, and one test hole in the location of each accessory structure. The test holes shall be inspected by a qualified third party consultant, and a brief report of the findings should be prepared and submitted to the relevant authorities. If the test holes reveal shallow overburden, less than one metre in depth, above fractured bedrock, then a study by a qualified individual shall be prepared to assess impacts and mitigation measures relating to the proposed development.

#### 2.1 Natural Heritage

The woodland covering the adjacent Blue Mountain slope is mapped as Significant Woodland in the County of Grey Official Plan (OP). Section 2.1.8 of the Provincial Policy Statement (PPS) states that development and site alteration shall not be permitted on adjacent lands to significant woodlands unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural feature or its ecological function. The County OP defines the adjacent lands to significant woodland as 120 metres. The entirety of the subject property falls within this adjacent lands width.

#### Additional Comments and Recommendations

It has been determined through a site inspection of the subject property and surrounding area that the 'Hazard (H)' zoning in the Town's Zoning By-law is not reflective of existing conditions. This 'Hazard (H)' has been updated on the attached map to reflect observed conditions. As such, our office would support an application for Zoning By-law Amendment to the 'Hazard (H)' zone to reflect that of the attached map.

Site Inspection for Re-zoning Part Lot 18, Concession 3 Roll No.: 42-42-000-005-099-00 Town of The Blue Mountains (Collingwood Township) Our File: P19277

In order to support this amendment, our office recommends that the proponent commission a karst assessment on the subject property to determine if karst features are present within the proposed building envelope. If shallow overburden is observed (less than 1 metre in depth, above fractured bedrock), then a study by a qualified individual shall be prepared to assess impacts and mitigation measures relating to the proposed development.

We note that a permit is required from our office for development and/or site alterations within the regulated area on the subject property.

If any questions should arise, please contact our office.

Regards,



enclosure

cc Planning Department, Town of The Blue Mountains

## GSCA: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (Ontario Regulation 151/06)



![](_page_17_Figure_2.jpeg)

Subject Property (approx.) Ontario Regulation 151/06 (approx.) Natural Hazard (approx.) Watercourse (approx.) Scale = 1:750 25 m

0

Regulation Map Part Lot 18, Concession 3 Roll No.: 42-42-000-005-099-00 Town of The Blue Mountains (formerly Collingwood Township) Our File: P19277

Monday, July 15, 2019

![](_page_17_Picture_7.jpeg)

The included mapping has been compiled from various sources and is for information purposes only. Grey Sauble Conservation is not responsible for, and cannot gumatee, the secures of all the information contained within the map. Argulation lines were created by Grey Sauble Conservation (GSC) using 1 meter constant interpolated from the Provincial (10 meter) Digital Elevation Model Versions 1 & 2 & 1:10000 scale mapping.

By accepting this map you agree not to edit the map or disclaimer without the exclusive written permission of Grey Stuble Conservation. You sho schnowledge that the information on this map is relevant only to the subject property and may be subject to change.

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From:	<u>Chris Hachey</u>
То:	Jenny Haines
Subject:	Request for Comments - Blue Mountains (O"Neill & Renwick) - Proposed Zoning By-law Amendment
Date:	Wednesday, September 18, 2019 9:26:17 AM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Your File: Zoning Bi-law Amendment Our File: Town of Blue Mountains Municipality

Ms. Haines,

The Historic Saugeen Métis (HSM) Lands, Resources and Consultation Department has reviewed the relevant documents and have no objection or opposition to the proposed development, land re-designation, zoning, land severance, Official plan and/or Zoning By-law Amendments.

Thank you for the opportunity to review this matter.

Regards,

Chris Hachey

Assistant Coordinator, Lands, Resources and Consultation

Historic Saugeen Métis 204 High Street Southampton, Ontario, N0H 2L0 Telephone: (519) 483-4000 Fax: (519) 483-4002 Email: <u>hsmasstlrcc@bmts.com</u>

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![](_page_19_Picture_1.jpeg)

GEOTECHNICAL INVESTIGATION PROPOSED RESIDENCE SWISS MEADOWS BOULEVARD TOWN OF THE BLUE MOUNTAINS, ONTARIO

for MR. KALEY O'NEILL

PETO MacCALLUM LTD. 25 SANDFORD FLEMING DRIVE UNIT 2 COLLINGWOOD, ONTARIO L9Y 5A6 PHONE: (705) 445-0005 FAX: (705) 734-9911 EMAIL: collingwood@petomaccallum.com

Distribution: 1 cc: Mr. Kaley O'Neill (+email) 1 cc: PML Barrie PML Ref.: 19CF026 Report: 1 Revised February 2020 Peto MacCallum Ltd.

February 14, 2020

PML Ref.: 19CF026 Report: 1 Revised

Mr. Kaley O'Neill 5 Euclid Street Unionville, Ontario L3R 1P3

Dear Mr. O'Neill

Geotechnical Investigation Proposed Residence Swiss Meadows Boulevard <u>Town of The Blue Mountains, Ontario</u>

Peto MacCallum Ltd. (PML) is pleased to present the results of the geotechnical investigation recently completed at the above noted project site. Authorization for the work described in this report was provided by Mr. K. O'Neill in the signed Engineering Services Agreement dated November 8, 2019.

A new residence is proposed at the vacant lot at the northeast corner of Scandia Lane and Swiss Meadows Boulevard (east of 229 Swiss Meadows Boulevard) in The Town of The Blue Mountains. Based on layout provided by the Client, the proposed residence will comprise a two-storey house with a basement, approximately 10.0 m by 12.5 m in plan. The site and approximate house configuration are shown on Drawing 1, appended. It is understood that the Grey Sauble Conservation Authority (GSCA) is in support of Mr. O'Neill's application for Zoning By-Law Amendment provided karst characteristics are not present within the proposed building envelope.

A geotechnical investigation was requested to assess the subsurface conditions at the site, and based on this information, provide comments and geotechnical engineering recommendations for house foundations and comment on the quality of any bedrock encountered.

Geoenvironmental services (observations, recording, testing or assessment of the environmental conditions of the soil and ground water) were not within the terms of reference for this assignment, and no work has been carried out in this regard. If excess excavated soils requiring transportation off-site are generated, a program of soil sampling and chemical testing will be needed to determine the chemical properties of the soil to evaluate appropriate Receiving Site options, in accordance with the Ministry of the Environment, Conservation and Parks (MECP) document; Management of Excess Soil – A Guide for Best Management Practices, January, 2014.

25 Sandford Fleming Drive, Unit 2, Collingwood, Ontario L9Y 5A6 Tel: (705) 445-0005 E-mail: collingwood@petomaccallum.com BARRIE, COLLINGWOOD, HAMILTON, KITCHENER, LONDON, TORONTO

![](_page_21_Picture_1.jpeg)

The comments and recommendations provided in this report are based on the site conditions at the time of the investigation, and are applicable only to the proposed works as addressed in the report. Any changes in the proposed plans will require review by PML to re-assess the validity of the report, and may require modified recommendations, additional investigation and/or analysis.

#### **INVESTIGATION PROCEDURES**

The field work for this project was conducted on December 19, 2019, and consisted of Test Pits 1 to 3 surrounding, but not within, the proposed house envelope so footing and underfloor subgrade would not be disturbed. The test pits were programmed to about 2.5 m depth based on the proposed footings being founded about 1.5 m depth below existing grade. Due to refusal on bedrock, test pits were terminated at 0.5 to 0.9 m depth below existing grade. Test pit locations are shown on Drawing 1, appended.

Test pit locations were laid out in the field by PML based on the proposed building location provided by the Client at the time of the investigation. The ground surface elevation at the borehole locations was obtained with a Sokkia SHC5000 Global Navigation Satellite System (GNSS). Vertical and horizontal accuracy of this unit are 0.1 m and 0.5 m, respectively.

Co-ordination for clearances of underground utilities was provided by PML. The test pits were excavated cognizant of the underground utilities.

The test pits were excavated using a rubber track mounted excavator, supplied and operated by an excavating contractor, working under the full-time supervision of a member of PML's engineering staff.

Topsoil thicknesses were measured and the underlying stratigraphy was reviewed and logged. Ground water conditions in the test pits were closely monitored during the course of the field work.

The test pits were backfilled upon completion.

![](_page_22_Picture_1.jpeg)

#### SUMMARIZED SUBSURFACE CONDITIONS

Reference is made to the appended Log of Test Pit sheets for details of the subsurface conditions, including soil classifications, inferred stratigraphy and ground water observations.

Topsoil was present at the surface of the test pits, overlying native sandy silt, overlying shale bedrock. A description of the distribution of the subsurface conditions encountered is provided below.

Topsoil was encountered at the surface across the site. The thickness of the topsoil ranged from 0.2 to 0.3 m depth (elevation 445.5 to 445.8). The topsoil was frozen.

Underlying the topsoil in all the test pits, a native sandy silt unit was present and extended to 0.4 to 0.75 m depth (elevation 445.1 to 445.5). The sandy silt was described as compact and moist.

Weathered shale bedrock was below the sandy silt unit and extended to 0.5 to 0.9 m depth of exploration (elevation 444.9 to 444.5). The backhoe was only able to penetrate 0.1 to 0.2 m into the weathered shale before reaching refusal. Karst characteristics, including fractured bedrock, were not observed at the test pit locations.

Ground water was not encountered during excavation or upon completion of the test pits. Ground water levels will fluctuate seasonally, and in response to variations in precipitation.

![](_page_23_Picture_1.jpeg)

#### **GEOTECHNICAL ENGINEERING CONSIDERATIONS**

A new residence is proposed at the vacant lot at the northeast corner of Scandia Lane and Swiss Meadows Boulevard (east of 229 Swiss Meadows Boulevard) in The Town of The Blue Mountains. Based on layout provided by the Client, the proposed residence will comprise a two-storey house with a basement, approximately 10.0 m by 12.5 m in plan. The site and approximate house configuration are shown on Drawing 1, appended.

Bedrock was encountered in all test pits between 0.5 and 0.9 m depth below existing grade. Test pits were only able to penetrate through the weathered portion of the bedrock (0.1 to 0.2 m depth) before reaching refusal. Karst characteristics, including fractured bedrock, were not observed at the test pit locations.

#### Site Grading and Engineered Fill

The grading for the site has not been set. Where grades are to be raised the fill below the house slabs and footings will need to be constructed as engineered fill.

The topsoil is unsuitable to support footings or floor slab-on-grade and will have to be removed. Grades can then be raised as required with engineered fill.

Reference is made to Appendix A for guidelines for engineered fill construction. The following general highlights are provided:

- Strip existing topsoil and other deleterious materials down to competent native inorganic soil. The excavated soil will generally comprise organic soil and should be stockpiled for reuse in landscaped areas;
- The native sandy silt will be exposed as the subgrade soil and will become sensitive to site traffic if wet or allowed to get wet (proofrolling may not be possible subject to geotechnical review during construction). If the soil is not wet, proofroll using a heavy roller to targeted 100% Standard Proctor maximum dry density, under geotechnical review;

![](_page_24_Picture_1.jpeg)

- Following geotechnical review and approval of the subgrade, spread approved material in maximum 200 mm thick lifts and uniformly compact to 100% Standard Proctor maximum dry density in building areas. In areas outside the building, 95% Standard Proctor maximum dry density is acceptable. If wet subgrade conditions are present the initial lift or two of engineered fill shall comprise OPSS Granular B Type II;
- Subject to geotechnical review during construction, the excavated inorganic soil is expected to be too wet to be suitable for reuse as engineered fill under the building and only anticipated to comprise a very small quantity. It is recommended that imported material be utilized under buildings or other structures, with on-site soils used in landscaped areas. Imported material should comprise OPSS Select Subgrade Material (SSM) or OPSS Granular B Type I. Other sources of imported material should be reviewed by our office to ensure suitability;
- The engineered fill pad must extend at least 1 m beyond the structure to be supported, then outwards and downwards at no steeper than 45° to the horizontal to meet the underlying approved native subgrade. In this regard, strict survey control and detailed documentation of the lateral and vertical extent of the engineered fill limits should be carried out to ensure that the engineered fill pad fully incorporates the structure to be supported;
- Engineered fill construction must be carried out under full-time field review by PML, to approve sub-excavation and subgrade preparation, backfill materials, placement and compaction procedures, and to verify that the specified compaction standards are achieved throughout.

#### **House Foundations**

As noted earlier, footing elevations have not been established. Therefore, it is not known what soil will support the footings.

Footings founded on the native sandy silt and/or engineered fill can be designed for a geotechnical bearing resistance at Serviceability Limit States (SLS) of 100 kPa, and a factored bearing resistance at Ultimate Limit State (ULS) of 150 kPa.

![](_page_25_Picture_1.jpeg)

If all footings are extended down to the shale bedrock then footings can be designed for a geotechnical bearing resistance at SLS of 200 kPa, and a factored bearing resistance at ULS of 300 kPa. Where footings are supported by both soil and shale the bearing resistance for soil shall be utilized for the design.

The geotechnical bearing resistances at SLS are based on 25 mm or settlement in the bearing stratum with differential settlement not exceeding 75% of the value.

Footings subject to frost action should be provided with a minimum 1.5 m of earth cover or equivalent insulation. It is noted that 25 mm of polystyrene insulation is equivalent to 600 mm of earth cover.

Prior to placement of structural concrete, all founding surfaces should be reviewed by PML to verify the design bearing capacity is available, or to reassess the design parameters based on the actual conditions revealed in the excavation.

It is noted that if the native subgrade soils are wet in-situ or allowed to become wet due to weather they will become easily disturbed under construction or pedestrian traffic. If the footing subgrade is disturbed it will have to be sub-excavated. As such, the contractor should adopt construction methodology and equipment to suit. Concrete skim coats may be required in some areas.

#### Seismic Design

Based on the soil profile revealed in the test pits, Site Classification D is applicable for Seismic Site Response as set out in Table 4.1.8.4.A of the Ontario Building Code (2012). Based on the type and relative density of the soil cover at the site there is a low potential for liquefaction of soils to occur.

![](_page_26_Picture_1.jpeg)

#### **Basement Walls and Floor Slabs**

Basement walls must be designed to resist the unbalanced horizontal earth pressure imposed by the backfill adjacent to the walls. The lateral earth pressure, P, may be computed using the following equation and assuming a triangular pressure distribution:

$$P = K (\gamma h + q) + C_p$$

Where

P = lateral pressure at depth h (m) below ground surface (kPa)

K = lateral earth pressure coefficient of granular backfill = 0.5

h = depth below grade (m) at which lateral pressure is calculated

 $\gamma$  = unit weight of compacted granular backfill = 21.0 kN/m<sup>3</sup>

q = surcharge loads (kPa)

 $C_p$  = compaction pressure

The above equation assumes that drainage measures will be incorporated to prevent the buildup of hydrostatic pressure. In this regard, foundation wall backfill should and is anticipated to comprise free draining OPSS Granular B (engineered fill). Alternatively, a proprietary drainage board product can be utilized with on-site inorganic soil as backfill. A weeping tile system should be installed to prevent the build-up of hydrostatic pressure behind the wall. The weeping tiles should be protected by a properly designed granular filter or geotextile to prevent migration of fines into the system. The drainage pipe should be placed on a positive grade and lead to a frostfree outlet.

Foundation/basement wall backfill should be placed in thin lifts compacted to a minimum 95% Standard Proctor maximum dry density. Over compaction close to the walls should be avoided as this could generate excessive pressure on the walls.

The basement floor slab is feasible on the engineered fill or native soil/bedrock. Under floor drains are recommended where the basement slab is less than 0.5 m above the existing ground elevation. A minimum 200 mm thick base layer of crushed stone (nominal 19 mm size) is recommended directly under the basement slab. A polyethylene sheet vapour barrier should be incorporated under the basement floor slab if a vapour sensitive floor finish is planned.

![](_page_27_Picture_1.jpeg)

Exterior grades should be established to promote surface drainage away from the buildings.

Reference is made to the appended Figure 1 for general recommendations regarding drainage and backfill requirements for basement walls and floor slabs.

#### Excavation and Ground Water Control

Excavation for the house is expected to extend less than 1 m below existing grade. Excavation will encounter topsoil and sandy silt unit, possibly the shale bedrock depending on the design. Harder digging can be expected in the shale bedrock.

Subject to the ground water control as discussed below, the site soils encountered at the site should be considered as Type 3 soil requiring excavation sidewalls to be constructed at no steeper than one horizontal to one vertical (1H:1V) from the base of the excavation in accordance with the Occupational Health and Safety Act.

Ground water was not encountered in the test pits. For excavation as much as 1.0 m below existing grade, conventional sump pumping should suffice to control ground water seepage.

Water taking in Ontario is governed by the Ontario Water Resources Act (OWRA) and the Water Takings and Transfer Regulation O. Reg. 387/04. Section 34 of the OWRA requires anyone taking more than 50,000 L/d to notify the Ministry of Environment, Conservation and Parks (MECP). This requirement applies to all withdrawals, whether for consumption, temporary construction dewatering, or permanent drainage improvements. Where it is assessed than more than 50,000 L/d but less than 400,000 L/d of ground water taking is required, the Owner can register online via the Environmental Activity and Sector Registry (EASR) system. Where it is assessed that more than 400,000 L/d of ground water taking is required then a Category 3 Permitto-Take-Water (PTTW) is required.

Based on the discussion above, a PTTW or EASR are likely not required for the excavation as described above. When design details including final grading are available, they should be submitted to PML for review to more fully assess ground water requirements and the need for Site Specific Hydrogeological Site Assessment and application for a PTTW or EASR.

![](_page_28_Picture_1.jpeg)

#### **Geotechnical Review and Construction Inspection and Testing**

It is recommended that the final design drawings be submitted to PML for geotechnical review for compatibility with site conditions and recommendations of this report.

Earthworks operations should be carried out under the supervision of PML to approve subgrade preparation, backfill materials, placement and compaction procedures and check the specified degree of compaction is achieved throughout.

Prior to placement of structural concrete, all founding surfaces must be inspected by PML to verify the design bearing capacity is available, or to reassess the design parameters based on the actual conditions.

The comments and recommendations provided in the report are based on information revealed in the test pits. Conditions away from and between test pits may vary. Geotechnical review during construction should be ongoing to confirm the subsurface conditions are substantially similar to those encountered in the test pits, which may otherwise require modification to the original recommendations.

Proposed Residence, Swiss Meadows Boulevard, The Town of The Blue Mountains, Ontario PML Ref.: 19CF026, Report: 1 Revised February 14, 2020, Page 10

![](_page_29_Picture_1.jpeg)

#### **CLOSURE**

We trust this report is complete within our terms of reference, and the information presented is sufficient for your present purposes. If you have any questions, or when we may be of further assistance, please do not hesitate to call our office.

Sincerely

Peto MacCallum Ltd.

![](_page_29_Picture_6.jpeg)

Doug Chisholm, P.Eng. Manager, Inspection and Testing Services

![](_page_29_Picture_8.jpeg)

Geoffrey R. White, P.Eng. Director Manager, Geotechnical and Geoenvironmental Services

DC/GRW:jlb/tc

Enclosures: Figure 1 - General Recommendations Regarding Drainage and Backfill Requirements for Basement Wall & Floor Slab Construction List of Abbreviations Log of Test Pit Nos. 1 to 3 Drawing 1 – Test Pit Location Plan Appendix A – Engineered Fill

![](_page_30_Figure_0.jpeg)

![](_page_31_Picture_1.jpeg)

#### PENETRATION RESISTANCE

Standard Penetration Resistance N: - The number of blows required to advance a standard split spoon sampler 0.3 m into the subsoil. Driven by means of a 63.5 kg hammer falling freely a distance of 0.76 m.

Dynamic Penetration Resistance: - The number of blows required to advance a 51 mm, 60 degree cone, fitted to the end of drill rods, 0.3 m into the subsoil. The driving energy being 475 J per blow.

#### **DESCRIPTION OF SOIL**

The consistency of cohesive soils and the relative density or denseness of cohesionless soils are described in the following terms:

CONSISTE	NCY N (blows/0.3 m)	<u>c (kPa)</u>	<b>DENSENESS</b>	N (blows/0.3 m)
Very Soft	0 - 2	0 - 12	Very Loose	0 - 4
Soft	2 - 4	12 - 25	Loose	4 - 10
Firm	4 - 8	25 - 50	Compact	10 - 30
Stiff	8 - 15	50 - 100	Dense	30 - 50
Very Stiff	15 - 30	100 - 200	Very Dense	> 50
Hard	> 30	> 200		
WTLL	Wetter Than Liquid Limit			
WTPL	Wetter Than Plastic Limit			
APL	About Plastic Limit			

#### **TYPE OF SAMPLE**

DTPL

SS	Split Spoor		ST	Slotted Tube Sample
WS	Washed Sa	ample	TW	Thinwall Open
SB	Scraper Bu	cket Sample	TP	Thinwall Piston
AS	Auger Sam	ple	OS	Oesterberg Sample
CS	Chunk Sam	ple	FS	Foil Sample
GS	Grab Samp	le	RC	Rock Core
	PH	Sample Advanced H	lydraulica	lly
	PM	Sample Advanced M	lanually	

**Drier Than Plastic Limit** 

#### SOIL TESTS

Qu	Unconfined Compression	LV	Laboratory Vane
Q	Undrained Triaxial	FV	Field Vane
Qcu	Consolidated Undrained Triaxial	С	Consolidation
Qd	Drained Triaxial		

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Proposed Residence, Swiss Meadows Boulevard, The Town of The Blue Mountains, Ontario PML Ref.: 19CF026, Report: 1 Revised February 14, 2020

![](_page_36_Picture_1.jpeg)

## **APPENDIX A**

Engineered Fill

![](_page_37_Picture_1.jpeg)

The information presented in this appendix is intended for general guidance only. Site specific conditions and prevailing weather may require modification of compaction standards, backfill type or procedures. Each site must be discussed, and procedures agreed with Peto MacCallum Ltd. prior to the start of the earthworks and must be subject to ongoing review during construction. This appendix is not intended to apply to embankments. Steeply sloping ravine residential lots require special consideration.

For fill to be classified as engineered fill suitable for supporting structural loads, a number of conditions must be satisfied, including but not necessarily limited to the following:

#### 1. Purpose

The site-specific purpose of the engineered fill must be recognized. In advance of construction, all parties should discuss the project and its requirements and agree on an appropriate set of standards and procedures.

#### 2. Minimum Extent

The engineered fill envelope must extend beyond the footprint of the structure to be supported. The minimum extent of the envelope should be defined from a geotechnical perspective by:

- at founding level, extend a minimum 1.0 m beyond the outer edge of the foundations, greater if adequate layout has not yet been completed as noted below; and
- extend downward and outward at a slope no greater than 45° to meet the subgrade

All fill within the envelope established above must meet the requirements of engineered fill in order to support the structure safely. Other considerations such as survey control, or construction methods may require an envelope that is larger, as noted in the following sections.

Once the minimum envelope has been established, structures must not be moved or extended without consultation with Peto MacCallum Ltd. Similarly, Peto MacCallum Ltd. should be consulted prior to any excavation within the minimum envelope.

#### 3. Survey Control

Accurate survey control is essential to the success of an engineered fill project. The boundaries of the engineered fill must be laid out by a surveyor in consultation with engineering staff from Peto MacCallum Ltd. Careful consideration of the maximum building envelope is required.

![](_page_38_Picture_1.jpeg)

During construction it is necessary to have a qualified surveyor provide total station control on the three-dimensional extent of filling.

#### 4. Subsurface Preparation

Prior to placement of fill, the subgrade must be prepared to the satisfaction of Peto MacCallum Ltd. All deleterious material must be removed and, in some cases, excavation of native mineral soils may be required.

Particular attention must be paid to wet subgrades and possible additional measures required to achieve sufficient compaction. Where fill is placed against a slope, benching may be necessary and natural drainage paths must not be blocked.

#### 5. Suitable Fill Materials

All material to be used as fill must be approved by Peto MacCallum Ltd. Such approval will be influenced by many factors and must be site and project specific. External fill sources must be sampled, tested and approved prior to material being hauled to site.

#### 6. Test Section

In advance of the start of construction of the engineered fill pad, the Contractor should conduct a test section. The compaction criterion will be assessed in consultation with Peto MacCallum Ltd. for the various fill material types using different lift thicknesses and number of passes for the compaction equipment proposed by the Contractor.

Additional test sections may be required throughout the course of the project to reflect changes in fill sources, natural moisture content of the material and weather conditions.

The Contractor should be particularly aware of changes in the moisture content of fill material. Site review by Peto MacCallum Ltd. is required to ensure the desired lift thickness is maintained and that each lift is systematically compacted, tested and approved before a subsequent lift is commenced.

#### 7. Inspection and Testing

Uniform, thorough compaction is crucial to the performance of the engineered fill and the supported structure. Hence, all subgrade preparation, filling and compacting must be carried out under the full-time inspection by Peto MacCallum Ltd.

All founding surfaces for all buildings and residential dwellings or any part thereof (including but not limited to footings and floor slabs) on structural fill or native soils must be inspected and approved by PML engineering personnel prior to placement of the base/subbase granular material and/or concrete. The purpose of the inspection is to ensure the subgrade soils are capable of supporting the building/house foundation and floor slab loads and to confirm the building/house envelope does not extend beyond the limits of any structural fill pads.

![](_page_39_Picture_1.jpeg)

#### 8. Protection of Fill

Fill is generally more susceptible to the effects of weather than natural soil. Fill placed and approved to the level at which structural support is required must be protected from excessive wetting, drying, erosion or freezing. Where adequate protection has not been provided, it may be necessary to provide deeper footings or to strip and recompact some of the fill.

#### 9. <u>Construction Delay Time Considerations</u>

The integrity of the fill pad can deteriorate due to the harsh effects of our Canadian weather. Hence, particular care must be taken if the fill pad is constructed over a long time period.

It is necessary therefore, that all fill sources are tested to ensure the material compactability prior to the soil arriving at site. When there has been a lengthy delay between construction periods of the fill pad, it is necessary to conduct subgrade proof rolling, test pits or boreholes to verify the adequacy of the exposed subgrade to accept new fill material.

When the fill pad will be constructed over a lengthy period of time, a field survey should be completed at the end of each construction season to verify the areal extent and the level at which the compacted fill has been brought up to, tested and approved.

In the following spring, subexcavation may be necessary if the fill pad has been softened attributable to ponded surface water or freeze/thaw cycles.

A new survey is required at the beginning of the next construction season to verify that random dumping and/or spreading of fill has not been carried out at the site.

#### 10. Approved Fill Pad Surveillance

It should be appreciated that once the fill pad has been brought to final grade and documented by field survey, there must be ongoing surveillance to ensure that the integrity of the fill pad is not threatened.

Grading operations adjacent to fill pads can often take place several months or years after completion of the fill pad.

It is imperative that all site management and supervision staff, the staff of Contractors and earthwork operators be fully aware of the boundaries of all approved engineered fill pads.

Excavation into an approved engineered fill pad should never be contemplated without the full knowledge, approval and documentation by the geotechnical consultant.

If the fill pad is knowingly built several years in advance of ultimate construction, the areal limits of the fill pad should be substantially overbuilt laterally to allow for changes in possible structure location and elevation and other earthwork operations and competing interests on the site. The overbuilt distance required is project and/or site specified.

![](_page_40_Picture_1.jpeg)

Iron bars should be placed at the corner/intermediate points of the fill pad as a permanent record of the approved limits of the work for record keeping purposes.

#### 11. Unusual Working Conditions

Construction of fill pads may at times take place at night and/or during periods of freezing weather conditions because of the requirements of the project schedule. It should be appreciated therefore, that both situations present more difficult working conditions. The Owner, Contractor, Design Consultant and Geotechnical Engineer must be willing to work together to revise site construction procedures, enhance field testing and surveillance, and incorporate design modifications as necessary to suit site conditions.

When working at night there must be sufficient artificial light to properly illuminate the fill pad and borrow areas.

Placement of material to form an engineered fill pad during winter and freezing temperatures has its own special conditions that must be addressed. It is imperative that each day prior to placement of new fill, the exposed subgrade must be inspected and any overnight snow or frozen material removed. Particular attention should be given to the borrow source inspection to ensure only nonfrozen fill is brought to the site.

The Contractor must continually assess the work program and have the necessary spreading and compacting equipment to ensure that densification of the fill material takes place in a minimum amount of time. Changes may be required to the spreading methods, lift thickness, and compaction techniques to ensure the desired compaction is achieved uniformly throughout each fill lift.

The Contractor should adequately protect the subgrade at the end of each shift to minimize frost penetration overnight. Since water cannot be added to the fill material to facilitate compaction, it is imperative that densification of the fill be achieved by additional compaction effort and an appropriate reduced lift thickness. Once the fill pad has been completed, it must be properly protected from freezing temperatures and ponding of water during the spring thaw period.

If the pad is unusually thick or if the fill thickness varies dramatically across the width or length of the fill pad, Peto MacCallum Ltd. should be consulted for additional recommendations. In this case, alternative special provisions may be recommended, such as providing a surcharge preload for a limited time or increase the degree of compaction of the fill.