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Geotechnical Investigation Report – 100 Bareille-Snow Street, Ottawa

July 16, 2026

Prepared for:
Wateridge Lifestyles Ltd. And Canada Lands Corporation

Cambium Reference: 24896-001 Rev.4

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1.0 Introduction

Cambium Inc. (Cambium) was retained by Wateridge Lifestyles Ltd. And Canada Lands Corporation (Client) to complete a geotechnical investigation in support of the design of the proposed retirement development to be located at 100 Bareille-Snow Street of the Wateridge Village. The site is located northeast of the intersection of Codd's Road and Tawadina Road in Ottawa, Ontario (Site) as shown on the Site Location Map, Figure 1 attached. The terms of reference for the geotechnical investigation were included in Cambium's Proposal No. 24896-P Rev.1, dated October 27, 2025.

The purpose of the field work and testing was to obtain information on the general subsurface soil and groundwater conditions at the site by means of a series of boreholes across the site. Based on an interpretation of the data, this report provides engineering comments, recommendations, and parameters for geotechnical design aspects of the project, including selected construction considerations which could influence design decisions. It should be noted that this report addresses only the geotechnical (physical) aspects of the subsurface conditions at the site. The geo-environmental (chemical) aspects, including the consequences of possible surface and/or subsurface contamination are not addressed herein.

Cambium is completing a hydrogeological investigation for the site concurrently with this geotechnical investigation. The hydrogeological investigation report is provided separately.

This report provides the results of the geotechnical exploration and testing and should be read in conjunction with the *"Statement of Qualifications and Limitations"* in Section 8.0 which forms an integral part of this document. The reader's attention is specifically drawn to this information, as it is essential for the proper use and interpretation of this report. The data, interpretations and recommendations contained in this report pertain to a specific project as described in the report and are not applicable to any other project or site location. If the project is modified in concept, location or elevation, or if the project is not initiated within eighteen months of the date of the report, Cambium should be given an opportunity to confirm that the recommendations in this report are still valid.

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1.1 Standards and Guidelines

Applicable standards, guidelines and other normative documents utilized in preparing geotechnical engineering recommendations for this report are provided below.

1. Canadian Foundation Engineering Manual – 5th Edition; Canadian Geotechnical Society; 2023.
2. Ontario Provincial Standard Drawing (Nov 2010, Rev 1): OPSD 3090.101- Foundation Frost Penetration Depths for Southern Ontario

1.2 Reviewed Documents

The following documents relevant to the development were provided for review in preparation of this geotechnical report:

1. Paterson Group. (2025, October 31). *Geotechnical investigation report (Report No. PG6331-1, Revision 10).* Paterson Group.
2. Monument-Urso Surveying Ltd. (2025). *Topographic plan of part of Wateridge development, Block 21, City of Ottawa* (Drawing No. 25-0473_Wateridge Village BLK 21 (Chadha)_TPOS_D3). Monument-Urso Surveying Ltd.
3. T. Bonhomme Architect**.** (2026, January 7). *Architectural - Wateridge Lifestyles: Phase 1 retirement home building* [Architectural drawings]. Wateridge Lifestyles Ltd.

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2.0 Site Description

2.1 Site Description

The Site is located at 100 Bareille-Snow Street of the Wateridge Village, just northeast of the intersection of Codd's Road and Tawadina Road, in Ottawa, Ontario. The Site is currently vacant but is understood was once part of a pervious development that was demolished and left vacant for several years. The property is bounded to the south by Tawadina Road and to the west and north by Codd's Road. There is currently no development to the east, but it is understood that the municipal road Bareille-Snow Street will eventually be constructed along the east property boundary.

Publicly available geological maps show that the Site is underlain by fine-textured glacio-marine deposits of silt and clay, minor sand and gravel and shallow bedrock. The underlying bedrock geology is mapped as limestone and/or dolostone of the Gull River Formation.

2.2 Project Description

It is Cambium's understanding that the proposed development will consist of 3 new multi-unit residential buildings. The development will be constructed in 3 phases and will include the following:

- Phase 1: Retirement Home Building – 6 storeys with 1 basement level,
- Phase 2: Senior's Apartment Building – 9 storeys with 1 basement level and link connecting Phase 1 and Phase 2 buildings,
- Phase 3: Senior's Apartment Building – 9 storeys with one basement level,
- The basement level of Phase 1 will be approximately the same size as the above grade structure, and the basement levels for the other two phases will have larger footprints than the above grade portions of the buildings (towers),
- The Phase 1 parking garage level finished floor elevation (FFE) is currently set at 87.75 metres above sea level (mASL), and the Phase 2 and Phase 3 parking garage level FFE is currently set at 86.56 mASL,

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- Phase 1 will be constructed in 2026 with the other phases to be completed in later years; and,
- The buildings will be municipally serviced.

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3.0 Methodology

3.1 Borehole Investigation

The geotechnical field investigation was conducted on December 8th and 9th, 2025, during which time four (4) boreholes, designated as BH101-25 to BH104-25, were advanced across the Site. Table 1 provides a summary of the boreholes. All boreholes encountered practical refusal within investigation depths and rock coring was completed at all borehole locations. The boreholes for the investigation were terminated at a depth of 6.1 metres below ground surface (mbgs). The approximate borehole locations relative to existing conditions are shown on the Borehole Location Plan, Figure 2. Elevations were measured based on the topographic survey [2] and provided based on geodetic metres above sea level (mASL).

Table 1 Borehole Summary

Borehole ID	Surface Elevation (mASL)	Depth (mbgs) / Elevation (mASL)	Location
BH101-25	88.8	6.1 / 82.7	Phase 2
BH102-25	88.7	6.1 / 82.6	Phase 3
BH103-25	88.6	6.1 / 82.5	Phase 2
BH104-25	89.9	6.1 / 83.4	Phase 1

The record of the Borehole Logs is provided in Appendix A, with detailed Rock Core Logs provided separately in Appendix B. Photos of the rock cores are provided in Appendix C.

Drilling and sampling were completed using a track-mounted drill rig operating under the supervision of a Cambium technician. The boreholes were advanced to the sampling depths by means of continuous flight solid stem augers. Samples from the boreholes were collected with 50 mm O.D. split spoon samplers. Standard Penetration Test (SPT) N values were recorded for the sampled intervals as the number of blows required to drive a split spoon sampler 305 mm into the soil, using a 63.5 kg drop hammer falling 750 mm, as per ASTM D1586 procedures. The SPT N values were used in this report to estimate the relative density/consistency of the non-cohesive/cohesive soils.

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The encountered soil units and rock cores were logged in the field using visual and tactile methods, and the obtained soil samples were placed in labelled plastic bags and the rock cores were placed in core boxes for transport, future reference, laboratory testing and storage.

Groundwater conditions were noted in the open boreholes during and upon completion of drilling and four monitoring wells were installed, one in each borehole to allow for subsequent groundwater measurements. All boreholes were backfilled and sealed in accordance with Ontario Regulation (O.Reg.) 903, as amended.

Site soil, rock, and groundwater conditions are described, and geotechnical recommendations are discussed in the following sections of this report.

3.2 Site Survey

The elevation and coordinates of each borehole were measured with RTK Topo surveying unit by a Cambium technician on site. The UTM coordinates and geodetic elevations (mASL) are included on the borehole logs provided in Appendix A. Measured elevations are relative to the site benchmark identified as the top spindle of the fire hydrant located near the intersection of Codd's Road and Tawadina Road as noted in the topographic survey[2]. An elevation of 91.69 mASL was provided as the benchmark.

3.3 Laboratory Testing

Laboratory soil testing included Particle Size Distribution Analyses (LS-702, 705), Atterberg Limit Analysis (LS-703) and Natural Moisture Content Analyses (LS-701) have been assigned for samples taken from this site.

The results of the laboratory testing are provided in Appendix D.

In addition, one sample was submitted for chemical analysis to determine the corrosion potential of buried steel elements and potential of sulphate attack against buried concrete elements in contact with the site soils.

The laboratory results are summarized in the subsequent report sections. Chemical testing certificates of analysis are attached in Appendix E.

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3.4 Subsurface Investigations by Others

A geotechnical investigation has previously been completed by Others for Wateridge Village, which included boreholes advanced within the subject site of this investigation [1]. All boreholes advanced on or near the property were reviewed by Cambium. The locations of these boreholes are shown on the attached Figure 2.

The subsurface information is provided in a signed and sealed engineering report and the information contained is relied upon as factual.

The boreholes were advanced to practical refusal, which due to the consistency of confirmed bedrock, is presumed to be on or near the top of bedrock. A summary of the boreholes advanced by Others is provided in the table below:

Table 2 Summary of Boreholes by Others

Borehole ID	Approximate Surface Elevation (mASL)	Refusal Depth (mbgs) / Elevation (mASL)	Approximate Location
BH1-22	87.9	1.8 / 86.1	Codd's Road, west of development
BH2-22	89.2	1.3 / 87.9	Codd's Road, northwest of development
BH3-22	88.4	1.1 / 87.3	Phase 2
BH4-22	89.2	2.1 / 87.1	Codd's Road, north of development
BH8-22	88.8	2.3 / 86.6	Phase 3
BH27-22	89.7	0.4 / 89.3	Phase 2
BH59-22	88.0	2.0 / 86.0	Intersection of Codd's Road and Tawadina Road
BH61-22	89.8	2.5 / 87.2	Phase 1
BH1-23	89.0	2.2 / 86.8	Phase 2
BH2-23	89.2	3.1 / 86.2	Phase 1
BH14-27	90.5	1.8 / 88.7	Phase 1

Based on review of the previously completed borehole information, the subsurface conditions at the site generally consist of cohesionless fill material overlying shallow bedrock. Some native deposits were encountered underlying the fill material at select locations. The native

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deposits generally consist of cohesionless deposits of silty sand or glacial till. Anticipated bedrock depths range from 0.4 to 3.1 mbgs (Elevation 86.0 to 89.3 mASL).

The relevant borehole logs are provided in Appendix F and the approximate locations of the boreholes, based on the borehole location plan provided in the geotechnical report, are provided on our attached Figure 2.

3.5 Multi-channel Analysis of Surface Waves

As part of this investigation, Multi-channel Analysis of Surface Waves (MASW) survey was completed on the site in order to evaluate the shear wave velocities of the subsurface materials and determine the seismic site class. The survey was completed on November 14, 2025, by Frontwave Geophysics Inc. A total of twenty-four (24) geophones in 1 m spacing were placed at the site in order to acquire shear wave velocities and complete the testing. A report summarizing the testing was provided by Frontwave Geophysics Inc. and included as Appendix G in this report.

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4.0 Subsurface Conditions

The detailed soil profiles encountered during the field investigation are indicated on the attached borehole logs in Appendix A. It should be noted that the conditions indicated on the borehole logs are for specific locations only and can vary between and beyond the borehole locations. The soil boundaries indicated on the borehole logs are inferred from non-continuous sampling and observations during drilling. These boundaries are intended to reflect approximate transition zones and should not be interpreted as exact planes of geological change. In addition, the descriptions provided on the borehole logs are inferred from a variety of factors, including visual observations of the soil samples retrieved, laboratory testing, measurements prior to and after drilling, and the drilling process itself (such as drilling speed and shaking/grinding of the augers).

The conditions of the site generally consist of fill material and/or gravelly silty sand overlying limestone bedrock. All boreholes were cored to prove bedrock.

4.1 Fill Material

Fill material was encountered from the surface in all borehole locations with a thickness ranging from 0.8 to 2.3 m. The fill material varies in composition between each borehole but is generally cohesionless. The material consists of dark brown sand and silt with trace gravel to some gravel. Rootlets were noted in boreholes BH101-25 and BH102-25, plastic debris was noted in borehole BH101-25, and brick and asphalt debris was noted in borehole BH104-25. Cobbles and boulders were also observed within the fill material at all borehole locations.

SPT N values obtained in the fill material ranged from 5 to over 50 blows per 305 mm of penetration, indicative of a loose to very dense relative density.

Particle size distribution analysis was completed on one selected sample of the fill material, and the results are summarized in Table 3.

Table 3 Particle Size Distribution Results – Fill Material

Sample	Depth (mbgs)	Soil	% Gravel	% Sand	% Silt and Clay
BH101-25 SS2B	1.0 to 1.4	Sand and silt, trace gravel	5	60	35

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4.2 Native Material

Native deposits were encountered underlying the fill material at 3 of the borehole locations (BH102-25 through BH104-25). The native material is cohesionless and consisted of brown or grey brown silty sand to sand and silt with trace to some gravel, trace clay. Cobbles and boulders were noted in the native material in boreholes BH102-25 and BH103-25.

The native material was encountered at depths ranging from 0.8 to 2.3 mbgs and extended to depths ranging from 1.3 to 2.8 mbgs. The native material has a thickness measured 1.8 m in BH102-25 and 0.5 m in boreholes BH103-25 and BH104-25.

SPT N values measured within the native soils range from 10 to over 50 blows per 305 mm of penetration, increasing with depth, indicative of a compact to very dense relative density.

Particle size distribution analysis was completed on one selected sample of the native material, and the results are summarized in Table 4.

Table 4 Particle Size Distribution Results – Native Material

Sample	Depth (mbgs)	Soil	% Gravel	% Sand	% Silt	% Clay
BH102-25 SS4	2.3 to 2.7	Sand and silt, some gravel, trace clay	7	54	35	4

4.3 Bedrock

All boreholes were terminated on within the underlying bedrock at the site. The validity of the bedrock was confirmed by rock coring and terminated at target depths of about 6.1 mbgs.

The bedrock is limestone of the Gull River Formation, the rock in this area is generally grey, thinly to medium bedded, slightly decomposed, moderately fractured, and of very poor to good quality. The Rock Core Logs and Rock Core Photos are provided in Appendix B and Appendix C, respectively.

The boreholes advanced by Others within or near the subject property all encountered practical refusal. Based on the consistency of the refusal depths, it is likely that refusal was encountered on the underlying bedrock. Refusal depths in the area range from 0.4 to

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3.1 mbgs. The subsurface soils do contain cobbles and boulders and therefore refusal may have also been encountered on a boulder within the overburden.

Table 5 presents the depths and elevations of (presumed) bedrock in all boreholes. The relevant boreholes completed by Others are also summarized in the table.

Table 5 Depths and Elevations of the Bedrock

Borehole	Surface Elevation (mASL)	Bedrock or Refusal Depth/Elevation (mbgs / mASL)
BH101-25	88.8	2.0 / 86.8
BH102-25	88.7	2.6 / 86.1
BH103-25	88.6	2.8 / 85.8
BH104-25	89.9	1.3 / 88.6
Boreholes Advanced by Others		
BH1-22	87.9	1.8 / 86.1
BH2-22	89.2	1.3 / 87.9
BH3-22	88.4	1.1 / 87.3
BH4-22	89.2	2.1 / 87.1
BH8-22	88.8	2.3 / 86.6
BH27-22	89.7	0.4 / 89.3
BH59-22	88.0	2.0 / 86.0
BH61-22	89.8	2.5 / 87.2
BH1-23	89.0	2.2 / 86.8
BH2-23	89.2	3.1 / 86.2
BH14-27	90.5	1.8 / 88.7

It should be noted that site grades have changed since the time of completion of the geotechnical investigation report by Others. Surface elevations and depth to refusal noted will likely differ, however refusal elevations encountered at each location should be similar. As previously discussed, refusal may have also occurred on boulders within the overburden and do not necessarily indicate bedrock. This is likely the case for BH27-22.

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4.4 Groundwater

No groundwater was encountered in the boreholes following drilling. Stabilized groundwater readings were measured following drilling. The following table provides a summary of the groundwater readings within the wells installed in boreholes BH101-25 through BH104-25.

Table 6 Depths and Elevations of Groundwater

Borehole	Surface Elevation (mASL)	Depth/Elevation of (mbgs/mASL)
		December 16, 2025
BH101-25	88.8	4.3 / 84.5
BH102-25	88.7	2.2 / 86.5
BH103-25	88.6	3.2 / 85.4
BH104-25	89.9	4.6 / 85.3

Groundwater levels at the Site appear to vary between the borehole locations and will fluctuate on a seasonal basis and in response to significant precipitation or snowmelt events. Groundwater levels are generally within or just above the bedrock depths at about 85 mASL ±1.5 m.

4.5 Chemical Analysis

One sample of the native soils was submitted to a qualified third-party laboratory for chemical corrosivity analysis. The laboratory results and certificate of analysis are presented in Appendix E. The sample was analysed for chloride, sulphate, pH, resistivity, redox potential, and sulphide concentrations. The submitted sample was taken from 1.5 to 2.3 mbgs from BH102-25.

To determine the potential for corrosion, the laboratory results were compared to the ANSI/AWWA corrosivity rating system, as shown in Table 7. Based on the total points scored, the soil is determined to be not corrosive.

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Table 7 Corrosivity Testing Results

Parameter	BH102-25	
	Test Results	ANSI/AWWA Point Rating
pH	7.87	0
Resistivity (Ω·cm)	7,660	0
Redox Potential (mV)	365	0
Sulphide	<0.01	2
Moisture Content	Fair	1
	Total Points	**3**

Please note that there may be other overriding factors in the assessment of corrosion potential, such as the application of de-icing salts on any access roads and subsequent leaching into the subsoils and stray currents.

The laboratory test results also indicate that the soluble sulphates concentration of the tested sample measure 13 ppm. Based on this concentration, there is a negligible potential for sulphate attack on concrete. Accordingly, normal Type 10 Portland cement can be used for buried concrete elements.

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5.0 Geotechnical Design Considerations

This section of the report provides engineering information and recommendations for the geotechnical design aspects of the project based on our interpretation of the borehole information, the laboratory test data and on our understanding of the project requirements. The following recommendations are provided to assist designers. It is possible that subsurface conditions beyond the borehole locations may vary from those observed. Recommendations should not be construed as providing instructions to contractors, who should form their own opinions about site conditions. Contractors bidding on or undertaking any work at the Site should examine the factual results of the investigation, satisfy themselves as to the adequacy of the information for construction and make their own interpretation of the factual data as it affects their proposed construction techniques, schedule, equipment capabilities, costs, sequencing, and the like. If significant variations are found before or during construction, Cambium should be contacted so that we can reassess our findings, if necessary.

Cambium will not assume any responsibility for construction-related decisions made by contractors on the basis of this report.

5.1 Project Understanding

The proposed retirement development is to consist of 3 residential high-rise buildings. Each building will have one basement level. The basement level of Phase 1 will be approximately the same size footprint of the tower, and the basement levels of Phases 2 and 3 will have a larger footprint than the supported towers, taking up most of the north side of the property. It is understood that Phase 1 will begin construction this year and the following phases will be constructed much later, likely after the completion of Phase 1.

The parking garage level FFE for the Phase 1 is currently set at 87.75 mASL and the parking garage level FFE for Phases 2 and 3 is currently set at 86.56 mASL. The buildings will be municipally serviced.

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5.2 Overburden Excavations

Based on the current FFE for the basement levels, there may be some areas of Phases 2 and 3 that may terminate just above the bedrock elevation. All foundations are required to extend to the top of sound bedrock.

All excavations must be carried out in accordance with the latest edition of the Occupational Health and Safety Act (OHSA). The existing fill materials and native soils may be classified as Type 3 soils above the groundwater table in accordance with OHSA. Below the groundwater, the fill material may be classified as Type 4 soils.

Type 3 soils may be excavated with side slopes no steeper than 1H:1V.

Type 4 soils may be excavated with side slopes no steeper than 3H:1V.

Excavation side slopes should be protected from exposure to precipitation and associated ground surface runoff and should be inspected regularly for signs of instability. If localized instability is noted during excavation or if wet conditions are encountered, the side slopes should be flattened as required to maintain safe working conditions or the excavation sidewalls must be fully supported (shored).

It should be noted that excavation side slopes below the measured groundwater level prior to any groundwater lowering may remain saturated and as such, should be maintained as Type 4 soils.

Large sized particles (cobbles and boulders) should be anticipated from within the overburden deposits. The size and distribution of particles of this size cannot be predicted with boreholes as the sampler size is insufficient to secure samples of this particle size. It is therefore recommended that provisions are made in contracts for the additional time and materials required for removal of such obstructions within the fill material.

5.3 Bedrock Excavation and Shoring

Excavations for the proposed buildings will extend either to or through the limestone formation. Bedrock depths range from about 1.1 to 3.1 mbgs. Therefore, about 2 to 4 m of bedrock excavation is anticipated throughout the development, depending on the depth of the footings.

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Excavations into the rock can be completed using near vertical sidewalls, provided that the rock faces are scaled and maintained to preclude spalling of the rock face, in combination with an appropriate shoring system to support the overburden. Line drilling will be required along the perimeter of the excavation in order to maintain the excavation footprint and reduce overbreaking. Hoe ramming can be used to remove bedrock within the building footprint.

Blasting may be completed within the building footprints. The City of Ottawa must be consulted prior to any blasting work. It is recommended that any blasting work is kept away from the perimeter of the property in order to avoid rock shatter and overbreak in neighbouring properties. Blasting work should be completed for all 3 phases prior to the start of constructing Phase 1. Based on recent site visits, there are no developments founded on the overburden soils on the adjacent properties. However if this changes prior to the start of any blasting work, preconstruction surveys and vibration monitoring may be required.

5.4 Dewatering

Groundwater measurements taken in December 2025 observed groundwater varying across the site by about 3 m. Additionally, all measurements were taken within groundwater wells sealed within the bedrock. Stabilized groundwater conditions will be provided as part of the hydrogeological investigation, which will included seasonal high measurements and measurements within the overburden. Groundwater is anticipated within excavation depths and therefore, ongoing dewatering will be required during construction work. Pumping from wells or well points to achieve groundwater lowering is considered appropriate.

Additionally, the installation of the site services may also lower the groundwater levels and could be completed in advance of construction of the structure.

If flows from pumps exceed 50,000 L/day, an Environmental Activity and Sector Registry (EASR) will be required for construction dewatering. It is recommended that an EASR posting should be obtained in advance of construction to avoid possible delays. Further discussion on dewatering requirements are provided in the hydrogeological report.

Groundwater levels should also be monitored during construction.

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5.5 Foundation Design

The proposed development will consist of 3 high rise structures, each with one basement level. Foundations for the proposed structures must be supported on the underlying bedrock and therefore may consist of shallow spread footings founded directly on top of sound bedrock.

Foundations made to rest on top of the sound bedrock can be designed using a maximum factored geotechnical resistance at **ULS** of **2000 kPa**. The SLS bearing is a function of acceptable settlement parameters. The settlement of foundations made on sound bedrock occurs as load is applied and is elastic, linear, and non-recoverable. For foundations bearing on bedrock, SLS will be greater than ULS capacity, therefore ULS will govern design.

For any shallow foundations not made to bear on bedrock, footings can be made to bear directly on compact to very dense native soils or directly on a pad of Engineered Fill such as that conforming to Ontario Provincial Standards Specification (OPSS) 1010.MUNI Granular B Type II. The existing fill material is not suitable for support of any foundations.

Any engineered fill placed below foundations should be placed directly on undisturbed native materials or directly on sound bedrock. The imported engineered fill should be placed in maximum 200 mm thick lifts to at least 98 % of the standard proctor maximum dry density (SPMDD) value. To allow for adequate spread of the loading below and beyond the footings, the engineered fill should extend a horizontal distance of at least 300 mm beyond the edge of the footings and then down and away from the edges at an angle of 1H:1V, or flatter. Excavations should be sized to accommodate fill placement.

Foundations made directly on top of compact to very dense native soils or on top of adequately compacted engineered fill should be sized using a net reaction at **SLS** of **150 kPa** and factored geotechnical resistance at **ULS** of **225 kPa**.

Settlement potential at the above-noted SLS loadings is less than 25 mm and differential settlement should be less than 20 mm. Settlement for the SLS loadings directly on sound bedrock will be significantly less than 25 mm (estimated <5mm).

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Footings stepped from one level to another must be at a slope no exceeding 10H:7V from the outside edges of each foundation. The slope inclination may be steepened to 1H:1V from the outside edges of each foundation for stepped footings founded directly on sound bedrock.

5.6 Frost Protection of Foundations

All exterior footings of the proposed buildings should be provided with at least 1.8 m of earth cover for frost protection purposes. If the required depth of earth cover is not practicable, a combination of earth cover and polystyrene insulation could be considered. An insulation detail could be provided upon request.

5.7 Seismic Site Classification

The Ontario Building Code (2024) stipulates the methodology for earthquake design analysis, as set out in Subsection 4.1.8. The determination of the type of analysis is predicated on the importance of the structure, the spectral response acceleration, and the site classification.

An MASW survey has been completed at this site to measure the average V_s of the upper 30 m of the site stratigraphy. The results of this survey indicate an average V_s of 1,384 m/s for the equivalent single layer response between the surface and 30 m in depth. It is assumed the foundations for the proposed buildings will be placed directly on the underlying bedrock at a depth of 4 to 5 mbgs. Therefore, provided that all foundations are placed directly on bedrock, the designation of the seismic analysis can be taken as $\mathbf{X_{2649}}$**.** If foundations are situated above the bedrock, the seismic site designation will have to be revised.

5.8 Backfill For Foundation Elements

The existing native soils across the site may be useable as backfill against foundation elements, provided they are free of organics or deleterious materials.

Structures can be backfilled with non-frost susceptible granular material such as imported material meeting OPSS Granular B Type I or II.

Backfill adjacent to the structural elements should be placed evenly in lifts not exceeding 200 mm loose thickness and should be compacted to at least 95% of SPMDD taking care not to damage the adjacent structures. Light compaction equipment such as small vibratory or

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hand operated ram equipment should be used immediately adjacent to the wall; otherwise, compaction stresses on the wall may be greater than that imposed by the backfill material.

5.9 Overburden Lateral Earth Pressure

The appropriate values for use in the design of structures subject to unbalanced earth pressures at this site are tabulated as follows in Table 8.

Table 8 Lateral Earth Pressure Coefficients

Material	γ	φ	K_a	K_o	K_p
Granular Backfill	21	30	0.33	0.50	3.00
Native Soils	22	30	0.33	0.50	3.00

Where: γ = bulk unit weight of soil (kN/m^3)

φ = internal angle of friction (degrees)

K_a = Rankine active earth pressure coefficient (dimensionless)

K_o = Rankine at-rest earth pressure coefficient (dimensionless)

K_p = Rankine passive earth pressure coefficient (dimensionless)

The above earth pressure parameters pertain to a horizontal grade condition behind a retaining structure. Values of earth pressure parameters for an inclined retained grade condition will vary.

Walls subject to unbalanced earth pressures must be designed to resist a pressure that can be calculated based on the following equation:

$$P = K[\gamma(h - h_w) + \gamma' h_w + q] + \gamma_w h_w$$

Where: P = the horizontal pressure at depth, h (m)

K = the earth pressure coefficient

h = the height of the wall (m)

h_w = the depth below the ground water level (m)

γ = the bulk unit weight of soil, (kN/m^3)

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γ' = the submerged unit weight of the exterior soil, (γ_{sat} - 10 kN/m^3)

q = the complete surcharge loading (kPa)

Where the wall backfill can be drained effectively to eliminate hydrostatic pressures that would act in conjunction with earth pressures, the above equation can be simplified to:

$$P = K[\gamma(h) + q]$$

5.9.1 Bedrock Pressures

The empirical approach for the design of foundation walls below bedrock level has been to use a uniform pressure distribution for the design of the basement walls below the top of bedrock elevation, which is consistent with the maximum earth pressure calculated for the lowest level of soil in the profile. This approach is likely conservative, but it recognizes the practical requirement to have a foundation wall of consistent width.

5.10 Sliding Resistance

The factored geotechnical resistance to sliding of foundation elements is developed by friction between the base of the concrete footing and the soil or bedrock. This friction (**R**) depends on the normal load at the soil contact (**N**) and the frictional resistance of the soil (**tan φ**) expressed as $R_f = N\ tan\varphi$, which is the unfactored resistance. The factored geotechnical resistance at ULS is $R_f = 0.8\ N\ tan\varphi$ for foundations on soil, and $R_f = 0.4\ N\ tan\varphi$ for foundations on unweathered bedrock. A value of **40°** can be used for the internal angle of friction (**φ**) for the limestone bedrock encountered at this site.

5.11 Floor Slab Design Parameters

The basement floor slabs will be made to rest on the underlying bedrock, which is suitable for the support of a slab. The modulus of subgrade reaction appropriate for design of the slab resting on sound bedrock is **80,000 kPa/m**.

It is necessary that building floor slabs be provided with a capillary moisture barrier and drainage layer. This is made by placing the slab on a minimum 300 mm layer of 19 mm clear

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stone (OPSS 1004) nominally compacted by vibration to a dense state. Basement drainage is required as discussed in the following Section.

5.12 Basement Drainage

A separate hydrogeological report will be prepared by Cambium for this site which will provide the approximate dewatering volumes for potential ongoing dewatering during operation.

To assist in maintaining dry basements and preventing seepage, it is recommended that exterior grades around the building be sloped away at a 2 % gradient or more, for a distance of at least 1.2 m.

Provision of nominal subfloor drainage is required in conjunction with the perimeter drainage of the structure, to collect and remove the water that infiltrates at the building perimeter and under the floor. Perimeter and subfloor drainage are required throughout below grade areas.

It is recommended that the subfloor drainage system consists of minimum 100 mm diameter perforated pipes spaced at a maximum of 6 m on center. The pipes must be surrounded on all sides by a minimum of 100 mm of 19 mm clear stone, and the pipe inverts should be a minimum 300 mm below the base of the slab. The elevator pits can be drained separately with an independent lower pumping sump or can be designed as waterproof structures which are below the drainage level. It is recommended to cut the rock subgrade neat to 300 mm beneath the floor slab and place subdrains directly on the subgrade. The subfloor drainage layer is then comprised of 300 mm of 19 mm clear stone (OPSS 1004).

Prefabricated drainage composites, such as Miradrain 2000 (Mirafi) or Terradrain 200 (Terrafix), should be incorporated between the rock face and the cast-in-place concrete foundation wall to make a drained cavity. Drainage from the cavity must be collected at the base of the wall in non-perforated pipes and conveyed directly to the sumps. The flow to the building sump from the subsurface drainage will be governed largely by the building perimeter drainage collection during rainfall and runoff events.

The drainage system is a critical structural element, since it keeps water pressure from acting on the basement floor slab or on the foundation walls. As such, the sump that ensures the performance of this system must have a duplexed pump arrangement for 100% pumping

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redundancy and these pumps must be on emergency power. The size of the pump should be adequate to accommodate the anticipated ground water and storm event flows. It is expected that the seepage can be controlled with typical widely available commercial sump pumps.

Based on the available groundwater data taken as part of this investigation, basement waterproofing is not considered necessary.

5.13 Trench Excavation and Dewatering

Sections 5.2, 5.3, and 5.4 provide the trench excavation and dewatering requirements for any underground services installed on site.

5.13.1 Pipe Bedding and Cover Materials

Bedding and cover material for any services should conform to Ontario Provincial Standard Drawings (OPSD) 802.010 and 802.013 (flexible pipes) and OPSD 802.031 to 802.033 (rigid pipes). The bedding and cover material shall be placed in maximum 200 mm thick lifts and should be compacted to at least 98% SPMDD. At least 300 mm of OPSS Granular A should be used as pipe bedding for sewer and water pipes where the trench is in bedrock. The cover material shall extend a minimum of 300 mm above the top of the pipe and be compacted to a minimum of 98% of SPMDD, taking care not to damage the utility pipes during compaction.

5.13.2 Pipe Backfill

Above the pipe cover material, the pipe can be backfilled by using imported granular fill material such as OPSS.MUNI 1010 Granular B, Type I. The native material may be re-used provided that the material is free of organics. Any re-used material should be inspected and approved by Cambium. The soils should be placed in maximum 300 mm thick lifts compacted to 95% SPMDD.

5.13.3 Frost Protection for Underground Services

It is recommended to place water services at a minimum depth of 300 mm below the frost penetration depth with the top of the pipe located at 1.8 mbgs or lower as dictated by municipal service requirements. If a minimum of 1.8 m of soil cover cannot be provided, then the pipe

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should be insulated with a rigid polystyrene insulation (DOW Styrofoam HI40, or equivalent) or a pre-insulated pipe be installed.

5.14 Pavement Design Consideration

It is understood that on grade driveways will be constructed directly on the concrete parking structures. Depending on the depth of the structure, pavement design can be provided once final site grades are confirmed.

5.15 Winter Construction Recommendations

In order to carry out the work during freezing temperatures and maintain adequate performance of the subgrades, open excavations should be opened for as short a time as practicable. Backfill material should be excavated, stored and replaced without being disturbed by frost or contaminated by snow or ice. For excavations, the overburden soils that will be founding structural elements and buried services should be protected immediately from frozen conditions using heaters, insulated tarps, straw, or other appropriate methods. The overburden soils within the deeper excavation for the pump station should also be protected from freezing until shoring has been installed. Frozen soil may result in damages to existing adjacent structures or services depending on distance from open excavations.

Ice buildup within open excavation may create unsafe conditions for workers. Ice on the sides of excavations should be monitored on a daily basis prior to any workers entering open excavations.

Concrete placement in below freezing conditions must be appropriately protected while curing using straw, insulated tarps, heaters, or any other approved methods.

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6.0 Limitations and Use of Report

This investigation has been carried out using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by engineering practitioners. The discussion and recommendations that have been presented are based on factual data obtained from this investigation.

6.1 Design Review and Inspections

Cambium should be provided the opportunity to review the design drawings, prior to next stage tendering and construction, to ensure that all pertinent geotechnical-related factors have been addressed.

During construction, a sufficient degree of foundation inspections, subgrade inspections, and an adequate number of in situ density tests and materials testing should be carried out to confirm that the conditions exposed are consistent with those encountered in the boreholes, and to monitor conformance to the pertinent project specifications. Concrete testing should be carried out on both the plastic material in the field and of set cylinder samples in a CSA certified laboratory.

Cambium should also be retained to complete testing and inspections during construction operations to examine and approve subgrade conditions, placement and compaction of fill materials.

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7.0 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:
6439A79ECBB1496...

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Project Manager

2026-07-16

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0B68D45279A94B7...

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8.0 Statement of Qualifications and Limitations

Limited Warranty

Cambium relies on its client to provide instructions on the scope of work to be performed. Cambium undertakes all work in accordance with applicable accepted industry practices and standards, and with the degree of care and skill ordinarily exercised by professionals performing similar services for similar projects in the same region. Unless required under applicable 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, results, information and data prepared by Cambium are based on the materials, documents and information provided by the client to Cambium and on the facts, conditions and circumstances encountered by Cambium during the performance of the work. In formulating its findings, results, information and data, Cambium assumes that the information, documents and materials provided by the client to Cambium are factual, accurate and represent a true depiction of the circumstances that exist at the Project. Cambium relies on its client to inform Cambium if there are changes to any such information, documents and materials. Cambium does not review, analyze or attempt to verify the accuracy or completeness of the information, documents or materials provided by the client, 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 Cambium, are unknown by Cambium, or are otherwise concealed from Cambium during the provision of its services.

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 the findings, results, information and data prepared by Cambium. 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 Cambium has completed its work. 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 work.

When preparing reports, Cambium considers applicable legislation, regulations, governmental guidelines and policies. 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 purposes 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 considers any locations or times other than those from which information, sample results and data was specifically received, the work shall be 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 and paid for 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 findings, results, information and data prepared by Cambium, are beyond the scopes of the work performed by Cambium and such matters have not been investigated or addressed.

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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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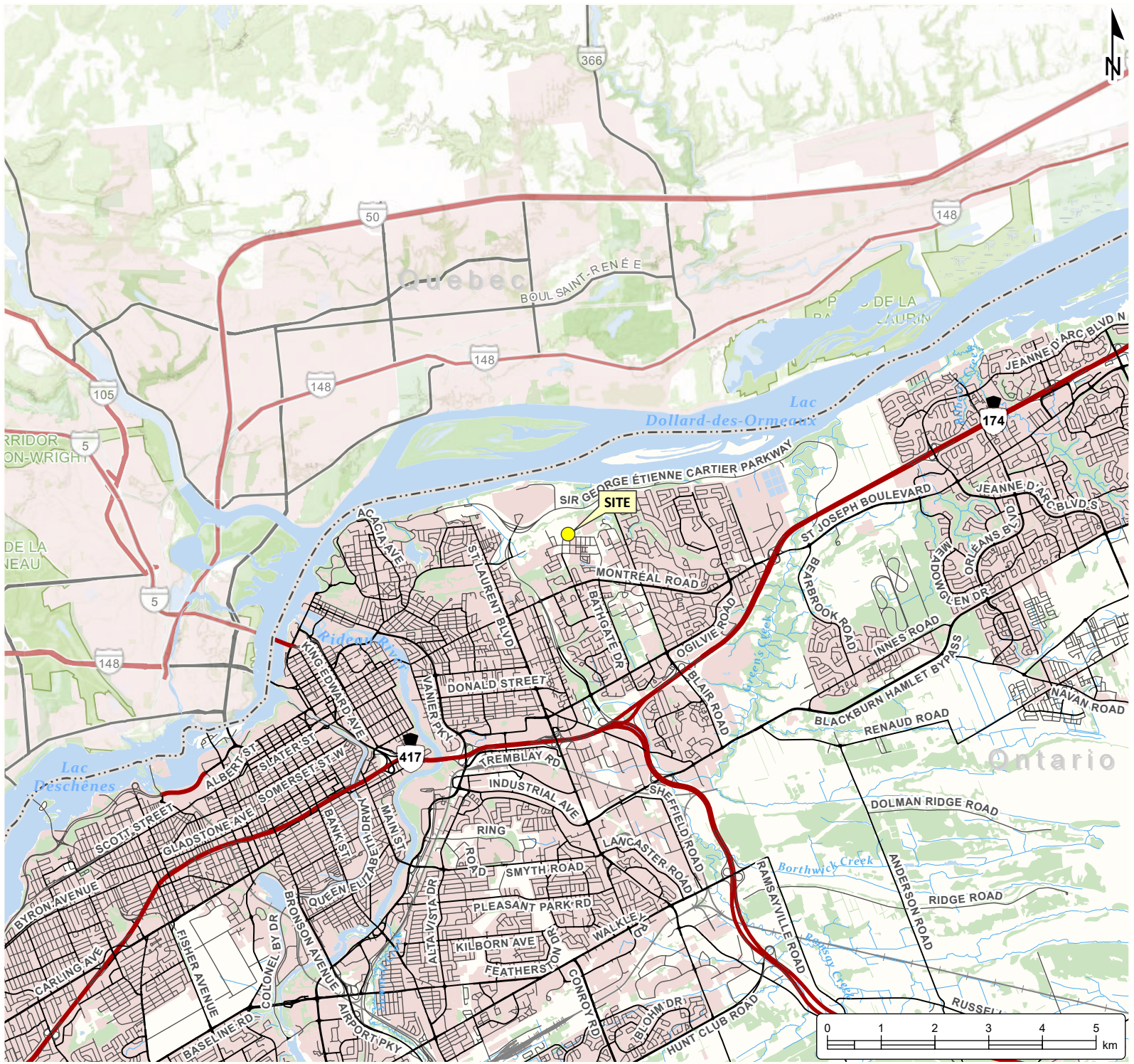

GEOTECHNICAL INVESTIGATION

WATERIDGE LIFESTYLES LTD.
Block 21 - Wateridge Village
Ottawa, Ontario

LEGEND

- Highway
- Major Road
- Minor Road
- Railway
- Watercourse
- Provincial Border
- Water Area
- Wooded Area
- Built Up Area

Notes:
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CAMBIUM
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SITE LOCATION PLAN

Project No.:	Date:
24896.001	December 2025
Scale: 1:100,000	Projection: NAD 1983 UTM Zone 18N
Created by: CC	Checked by: BV
Figure: 1	

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Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

GEOTECHNICAL INVESTIGATION

WATERIDGE LIFESTYLES LTD.
Block 21 - Wateridge Village
Ottawa, Ontario

LEGEND

- Benchmark
- Borehole
- Boreholes by Others
- Proposed Road
- Site (approximate)
- Subject Property (approximate)

Notes:
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SITE LOCATION PLAN

Project No.:	Date:
24896.001	December 2025
Scale: 1:1,500	Projection: NAD 1983 UTM Zone 18N
Created by: CC	Checked by: BV
Figure: 2	

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Appendix A

Borehole Logs

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

CAMBIUM

Client: Wateridge Lifestyles Ltd. and Canada Lands Corporation
Contractor: Marathon Underground
Project No.: 24896-001
Location: 100 Bareille-Snow St, Ottawa ON

Project Name: Wateridge Lifestyles Block 21
Method: Track Mounted Hollow Stem Auger
Elevation: 88.80 mASL
UTM: 18T **N:** 5033762.49 **E:** 450486.51

Log of Borehole: BH101-25
Page: 1 of 1
Date Completed: Dec. 8, 2025

Elevation (m)	Depth	Description	Number	Type	% Recovery	SPT (N)	Atterberg Limits (%) / % Moisture	Shear Strength Cu, kPa / SPT (N)	Well Installation	Log Notes
88.8	0	**(SW) SAND and SILT:** trace gravel; dark brown, with rootlets and plastic debris; non-cohesive, moist, loose [FILL]	1	SS	46	5	30.1%	5	Cap	
88.3	0.5									
			2A	SS			15.5%			
87.8	1	brown, very dense, with cobbles and boulders	2B	SS	100	54	9.8%	54		
87.3	1.5									
		dark brown	3	SS	100	50 / 100 mm	38.9%	50		
86.84	1.96								Bentonite Plug	
86.8	2	**Limestone:** See rock core logs for details.							Riser	Borehole caving not observed. Groundwater not encountered. Standing water not observed.
86.3	2.5									
85.8	3									
85.3	3.5									
84.8	4									
84.3	4.5									Groundwater measured on Dec. 16, 2025.
83.8	5								Sand Pack	
83.3	5.5								PVC Screen	
82.8	6									
82.65	6.15	Borehole terminated @ 6.1 mbgs due to target depth achieved.							Cap	
82.3	6.5									
81.8	7									
81.3										

GRAINSIZE DISTRIBUTION

SAMPLE	GRAVEL	SAND	SILT	CLAY
SS 2B	5	60	35	

Logged By: RR
Input By: RR

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

CAMBIUM

Client: Wateridge Lifestyles Ltd. and Canada Lands Corporation
Contractor: Marathon Underground
Project No.: 24896-001
Location: 100 Bareille-Snow St, Ottawa ON

Project Name: Wateridge Lifestyles Block 21
Method: Track Mounted Hollow Stem Auger
Elevation: 88.71 mASL
UTM: 18T **N:** 5033746.77 **E:** 450542.86

Log of Borehole: BH102-25
Page: 1 of 1
Date Completed: Dec. 8, 2025

Elevation (m)	Depth	Description	Number	Type	% Recovery	SPT (N)	Atterberg Limits (%) / % Moisture	Shear Strength Cu, kPa / SPT (N)	Well Installation
88.7	0	**(SW) SAND and SILT:** trace gravel; dark brown, with rootlets; non-cohesive, moist, compact [FILL]	1	SS	40	16	21.8%	16	Cap
88.2	0.5								
87.95	0.76								
87.7	1	**(SM) SILTY SAND:** some gravel, trace clay, contains cobbles and boulders; brown; non-cohesive, moist, compact	2	SS	50	19	14.3%	19	
87.2	1.5								
		increase in silt content	3	SS	83	23	10.3%	23	Bentonite Plug
86.7	2								
		light brown, SAND and SILT	4	SS	92	50 / 25 mm	10.3%	50	Riser
86.2	2.5								
86.09	2.62	**Limestone:** See bedrock core logs for details.							
85.7	3								
85.2	3.5								
84.7	4								
84.2	4.5								Sand Pack
83.7	5								
83.2	5.5								PVC Screen
82.7	6								
82.56	6.15	Borehole terminated @ 6.1 mbgs due to target depth achieved.							Cap
82.2	6.5								
81.7	7								
81.2									

ENV: BH102-25_1.5-2.3: Corrosivity, Sulfides, Redox Potential

Groundwater measured on Dec. 16, 2025.

Borehole caving not observed. Groundwater not encountered. Standing water not observed.

GRAINSIZE DISTRIBUTION	SAMPLE	GRAVEL	SAND	SILT	CLAY
	SS 4	7	54	35	4

Logged By: RR
Input By: RR

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

CAMBIUM

Client: Wateridge Lifestyles Ltd. and Canada Lands Corporation
Contractor: Marathon Underground
Project No.: 24896-001
Location: 100 Bareille-Snow St, Ottawa ON

Project Name: Wateridge Lifestyles Block 21
Method: Track Mounted Hollow Stem Auger
Elevation: 88.64 mASL
UTM: 18T **N:** 5033718.24 **E:** 450472.47

Log of Borehole: BH103-25
Page: 1 of 1
Date Completed: Dec. 8, 2025

Elevation (m)	Depth	Description	Number	Type	% Recovery	SPT (N)	Atterberg Limits (%) 25 50 75 / % Moisture 25 50 75	Shear Strength Cu, kPa (nat V., rem V.) 20 40 60 80 / SPT (N) 20 40 60 80	Well Installation
88.6	0	**(SW) SAND and SILT:** some gravel; dark brown with cobbles and boulders; non-cohesive; moist, compact [FILL]	1	SS	46	16	14%	16	Cap
88.1	0.5								
87.6	1		2	SS	75	32	10.4%	32	
87.1	1.5								
86.6	2		3	SS	29	75	11.2%	75	Bentonite Plug
86.35	2.29								
86.1	2.5	**(SM) SILTY SAND:** some gravel, trace clay; grey-brown; non-cohesive, moist, compact	4	SS	71	10	11.1%	10	Riser
85.82	2.82								
85.6	3	**Limestone:** See bedrock core logs for details.							
85.1	3.5								
84.6	4								
84.1	4.5								Sand Pack
83.6	5								
83.1	5.5								PVC Screen
82.6	6								
82.52	6.12	Borehole terminated @ 6.1 mbgs due to target depth achieved.							Cap
82.1	6.5								
81.6	7								
81.1									

Borehole caving not observed. Groundwater not encountered. Standing water not observed.

3.2m: Groundwater measured on Dec. 16, 2025.

GRAINSIZE DISTRIBUTION: SAMPLE | GRAVEL | SAND | SILT | CLAY

Logged By: RR **Input By:** RR

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

CAMBIUM

Client: Wateridge Lifestyles Ltd. and Canada Lands Corporation
Contractor: Marathon Underground
Project No.: 24896-001
Location: 100 Bareille-Snow St, Ottawa ON

Project Name: Wateridge Lifestyles Block 21
Method: Track Mounted Hollow Stem Auger
Elevation: 89.91 mASL
UTM: 18T **N:** 5033670.21 **E:** 450542.03

Log of Borehole: BH104-25
Page: 1 of 1
Date Completed: Dec. 8, 2025

Elevation (m)	Depth	Description	Number	Type	% Recovery	SPT (N)	Atterberg Limits (%) LL PL PI / % Moisture (25 50 75)	Shear Strength Cu, kPa (nat V. rem V.) / SPT (N) (20 40 60 80)	Well Installation	Log Notes
89.9	0	**(SM) SILTY SAND:** trace clay; dark brown with brick and asphalt debris; non-cohesive, moist, dense [FILL]	1	SS	83	34	7.9%	34	Cap	
89.15	0.76									
		(SW) SAND and SILT: trace clay, trace gravel, contains cobbles and boulders; light brown; non-cohesive, moist, very dense	2	SS		50 / 25 mm	10.5%	50		
88.59	1.32	**Limestone:** See bedrock core logs for details.							Bentonite Plug	Borehole caving not observed. Groundwater not encountered. Standing water not observed.
									Riser	
									Sand Pack	Groundwater measured on Dec. 16, 2025.
									PVC Screen	
83.76	6.15	Borehole terminated @ 6.1 mbgs due to target depth achieved.							Cap	
82.4	7									

GRAINSIZE DISTRIBUTION: SAMPLE | GRAVEL | SAND | SILT | CLAY

Logged By: RR
Input By: RR

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

Appendix B

Rock Core Logs

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

CAMBIUM

Client: Wateridge Lifestyles Ltd. and Canada Lands Corporation
Contractor: Marathon Underground
Project No.: 24896-001
Location: 100 Bareille-Snow St, Ottawa ON

Project Name: Wateridge Lifestyles Block 21
Method: Track Mounted Hollow Stem Auger
Ground Elevation: 88.80 mASL
UTM: 18 T **N:** 5033762.49 **E:** 450486.51

Log of Borehole: BH101-25
Page: 1 of 1
Date Completed: Dec. 9, 2025

SUBSURFACE PROFILE

Elevation (m)	Depth	Lithology	Description	Elevation / Depth	Core Run	UCS (MPa) 10 50 100 250	Natural Fractures	Lab Notes	Log Notes
87	1.8						3		
86.5	2.3		**Limestone:** grey, moderate to strong, thinly to medium bedded slightly decomposed, moderately fractured [Gull River Formation]		Run 1 TCR = **96%** SCR = **83%** RQD = **88%**		5 2		
86	2.8						1		
85.5	3.3				Run 2 TCR = **98%** SCR = **59%** RQD = **60%**		3 5		
85	3.8						3		
84.5	4.3						30 3		
84	4.8						17		
83.5	5.3				Run 3 TCR = **98%** SCR = **87%** RQD = **77%**		3 0		
83	5.8			82.65			0 1		
82.5	6.3		Rock core terminated @ 6.1m due to due to target depth achieved.	6.15					
82	6.8								
81.5	7.3								
81	7.8								
80.5	8.3								
80									

Logged By: RR **Input By:** RR

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

CAMBIUM

Client: Wateridge Lifestyles Ltd. and Canada Lands Corporation
Contractor: Marathon Underground
Project No.: 24896-001
Location: 100 Bareille-Snow St, Ottawa ON

Project Name: Wateridge Lifestyles Block 21
Method: Track Mounted Hollow Stem Auger
Ground Elevation: 88.71 mASL
UTM: 18 T **N:** 5033746.77 **E:** 450542.85

Log of Borehole: BH102-25
Page: 1 of 1
Date Completed: Dec. 9, 2025

SUBSURFACE PROFILE

Elevation (m)	Depth	Lithology	Description	Elevation / Depth	Core Run	UCS (MPa) 10 50 100 250	Natural Fractures	Lab Notes	Log Notes
86.3	2.4		**Limestone:** grey, moderate to strong, thinly to medium bedded, slightly decomposed, moderately fractured [Gull River Formation]		Run 1 TCR = **100%** SCR = **32%** RQD = **63%**		2 3 4		
85.8	2.9								
85.3	3.4				Run 2 TCR = **100%** SCR = **88%** RQD = **80%**		0 1 1 3		
84.8	3.9								
84.3	4.4								
83.8	4.9				Run 3 TCR = **96%** SCR = **75%** RQD = **70%**		2 3 4 4 4		
83.3	5.4								
82.8	5.9			82.56					
82.3	6.4		Rock core terminated @ 6.1m due to due to target depth achieved.	6.15			0		
81.8	6.9								
81.3	7.4								
80.8	7.9								
80.3	8.4								
79.8	8.9								
79.3									

Logged By: RR
Input By: RR

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

CAMBIUM

Client: Wateridge Lifestyles Ltd. and Canada Lands Corporation
Project Name: Wateridge Lifestyles Block 21
Log of Borehole: BH103-25

Contractor: Marathon Underground
Method: Track Mounted Hollow Stem Auger
Page: 1 of 1

Project No.: 24896-001
Ground Elevation: 88.64 mASL
Date Completed: Dec. 9, 2025

Location: 100 Bareille-Snow St, Ottawa ON
UTM: 18 T **N:** 5033718.24 **E:** 450472.47

SUBSURFACE PROFILE

Elevation (m)	Depth	Lithology	Description	Elevation / Depth	Core Run	UCS (MPa) 10 50 100 250	Natural Fractures	Lab Notes	Log Notes
85.9	2.7		**Limestone:** grey, moderate to strong, thinly to medium bedded, slightly decomposed, moderately fractured [Gull River Formation]		Run 1 TCR = **100%** SCR = **75%** RQD = **67%**		2		
85.4	3.2						3		
							6		
84.9	3.7				Run 2 TCR = **96%** SCR = **75%** RQD = **72%**		2		
84.4	4.2						1		
							2		
83.9	4.7						4		
							1		
83.4	5.2				Run 3 TCR = **98%** SCR = **83%** RQD = **76%**		1		
							1		
82.9	5.7						1		
				82.49					
82.4	6.2		Rock core terminated @ 6.1m due to due to target depth achieved.	6.15					
81.9	6.7								
81.4	7.2								
80.9	7.7								
80.4	8.2								
79.9	8.7								
79.4	9.2								
78.9									

Logged By: RR
Input By: RR

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

CAMBIUM

Client: Wateridge Lifestyles Ltd. and Canada Lands Corporation
Contractor: Marathon Underground
Project No.: 24896-001
Location: 100 Bareille-Snow St,, Ottawa ON

Project Name: Wateridge Lifestyles Block 21
Method: Track Mounted Hollow Stem Auger
Ground Elevation: 89.91 mASL
UTM: 18 T **N:** 5033670.21 **E:** 450542.03

Log of Borehole: BH104-25
Page: 1 of 1
Date Completed: Dec. 9, 2025

SUBSURFACE PROFILE

Elevation (m)	Depth	Lithology	Description	Elevation / Depth	Core Run	UCS (MPa) 10 50 100 250	Natural Fractures	Lab Notes	Log Notes
88.7	1.2		**Limestone:** grey, moderate to strong, thinly to medium bedded, slightly decomposed, moderately fractured [Gull River Formation]		Run 1 TCR = **100%** SCR = **58%** RQD = **58%**		10		
88.2	1.7						1		
							4		
87.7	2.2				Run 2 TCR = **92%** SCR = **59%** RQD = **30%**		5		
							12		
87.2	2.7						23		
86.7	3.2						5		
							16		
86.2	3.7		no water return, brown staining on fractures and joints		Run 3 TCR = **78%** SCR = **29%** RQD = **17%**		6		
							22		
85.7	4.2						30		
85.2	4.7		125 mm clay seem at 4.8 mbgs				10		
							7		
84.7	5.2				Run 4 TCR = **98%** SCR = **64%** RQD = **59%**		3		
							3		
84.2	5.7						2		
				83.76					
83.7	6.2		Rock core terminated @ 6.1m due to due to target depth achieved.	6.15			0		
83.2	6.7								
82.7	7.2								
82.2	7.7								
81.7									

Logged By: RR
Input By: RR

Peterborough, Barrie, Oshawa, Kingston, Ottawa

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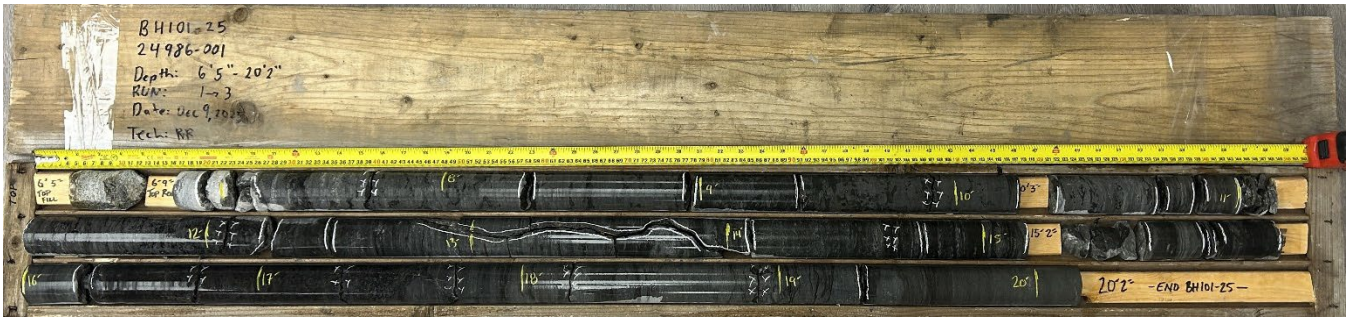
Appendix C

Rock Core Photographs

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B



Borehole BH101-25 Rock core runs 1 through 3, 1.9 to 6.1 mbgs

Borehole BH102-25 Rock core runs 1 through 3, 2.6 to 6.1 mbgs

Borehole BH103-25 Rock core runs 1 through 3, 2.8 to 6.1 mbgs

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Borehole BH104-25 Rock core runs 1 through 3, 1.3 to 4.7 mbgs

Borehole BH104-25 Rock core run 4.7 to 6.1 mbgs

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

Appendix D

Physical Laboratory Testing

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

Grain Size Distribution Chart

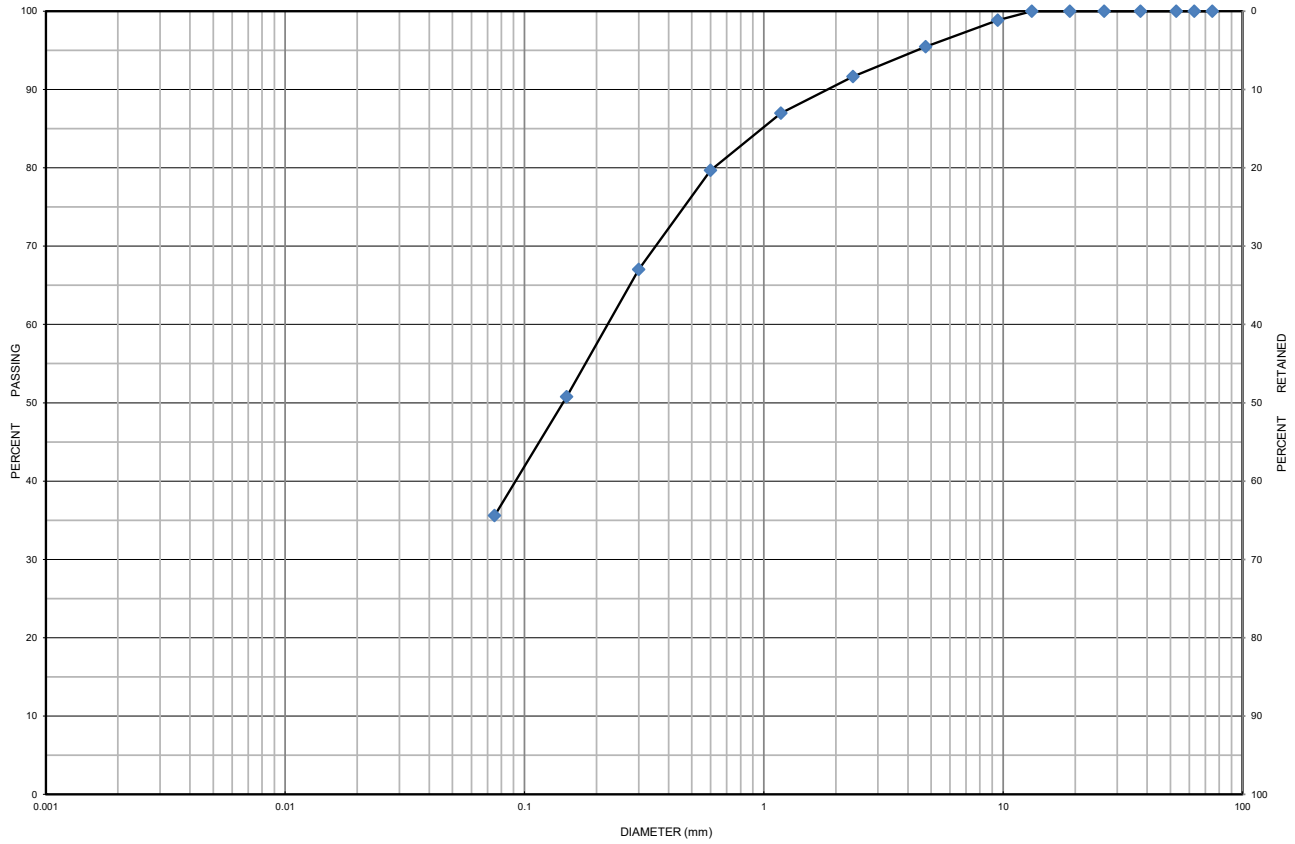
Project Number: *24896-001* **Client:** *Wateridge Lifestyles Ltd.*

Project Name: *Wateridge Lifestyles Block 21*

Sample Date: *December 8 -10, 2025* **Sampled By:** *Rory Ryan - Cambium Inc.*

Location: *BH 101-25 SS 2B* **Depth:** *1 m to 1.4 m* **Lab Sample No:** *S-25-1942*

UNIFIED SOIL CLASSIFICATION SYSTEM					
CLAY & SILT (<0.075 mm)	SAND (<4.75 mm to 0.075 mm)			GRAVEL (>4.75 mm)	
	FINE	MEDIUM	COARSE	FINE	COARSE



MIT SOIL CLASSIFICATION SYSTEM								
CLAY	SILT	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	BOULDERS
		SAND			GRAVEL			

Borehole No.	Sample No.	Depth	Gravel	Sand	Silt	Clay	Moisture
BH 101-25	SS 2B	1 m to 1.4 m	5	60	35		9.8

Description	Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
Sand and Silt trace Gravel	SM	0.225	-	-	-	-

Additional information available upon request

Issued By: _____ *Date Issued:* *January 11, 2026*

(Senior Project Manager)

Cambium Inc. (Laboratory)
866.217.7900 | cambium-inc.com
194 Sophia St. | Peterborough | ON | K9H 1E5

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

Grain Size Distribution Chart

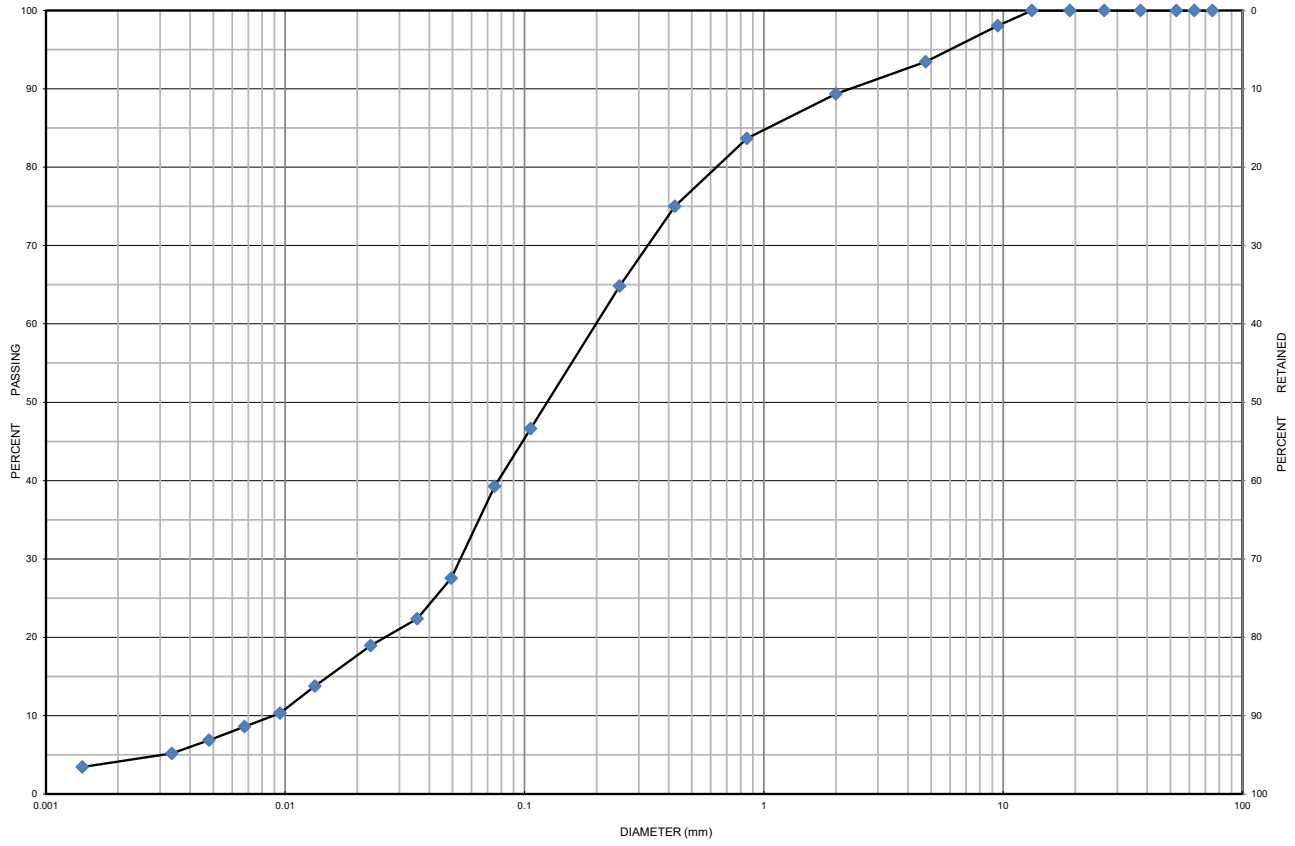
Project Number: *24896-001* **Client:** *Wateridge Lifestyles Ltd.*

Project Name: *Wateridge Lifestyles Block 21*

Sample Date: *December 8 - 10, 2025* **Sampled By:** *Rory Ryan - Cambium Inc.*

Location: *BH 102-25 SS 4* **Depth:** *2.3 m to 2.7 m* **Lab Sample No:** *S-25-1943*

UNIFIED SOIL CLASSIFICATION SYSTEM					
CLAY & SILT (<0.075 mm)	SAND (<4.75 mm to 0.075 mm)			GRAVEL (>4.75 mm)	
	FINE	MEDIUM	COARSE	FINE	COARSE



MIT SOIL CLASSIFICATION SYSTEM								
CLAY	SILT	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	BOULDERS
		SAND			GRAVEL			

Borehole No.	Sample No.	Depth	Gravel	Sand	Silt	Clay	Moisture
BH 102-25	SS 4	2.3 m to 2.7 m	7	54	35	4	10.3

Description	Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
Sand and Silt some Gravel trace Clay	SM	0.200	0.054	0.009	22.22	1.62

Additional information available upon request

Issued By: _____ *Date Issued:* *January 13, 2026*

(Senior Project Manager)

Cambium Inc. (Laboratory)
866.217.7900 | cambium-inc.com
194 Sophia St. | Peterborough | ON | K9H 1E5

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Appendix E

Laboratory Certificate of Analysis

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Certificate of Analysis

Cambium Inc. (Ottawa)
343 Preston St, 11th Floor
Ottawa, ON K7K 7G3
Attn: Blasco Vijayabaskaran

Client PO:
Project: CAM24896.001
Custody: 78386

Report Date: 17-Dec-2025
Order Date: 11-Dec-2025

Order #: 2550338

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2550338-01	BH102-25_1.5-2.3

Approved By:

A. Tirca

Adriana Tirca, B.Eng (Chem)
Supervisor

PARACEL LABORATORIES LTD.

Order #: 2550338

Certificate of Analysis

Report Date: 17-Dec-2025

Client: **Cambium Inc. (Ottawa)**

Order Date: 11-Dec-2025

Client PO:

Project Description: CAM24896.001

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC, water extraction	16-Dec-25	16-Dec-25
pH, soil	MOE E3137 - probe @25 °C, CaCl2 ext	16-Dec-25	16-Dec-25
Resistivity	EPA 120.1 - probe, water extraction	16-Dec-25	17-Dec-25
Solids, %	CWS Tier 1 - Gravimetric	12-Dec-25	15-Dec-25

PARACEL LABORATORIES LTD.

Order #: 2550338

Certificate of Analysis

Report Date: 17-Dec-2025

Client: **Cambium Inc. (Ottawa)**

Order Date: 11-Dec-2025

Client PO:

Project Description: CAM24896.001

	Client ID:	BH102-25_1.5-2.3	-	-	-		
	Sample Date:	08-Dec-25 10:00	-	-	-	-	-
	Sample ID:	2550338-01	-	-	-		
	Matrix:	Soil	-	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	89.7	-	-	-	-	-
General Inorganics							
pH	0.05 pH Units	7.87	-	-	-	-	-
Resistivity	0.1 Ohm.m	76.6	-	-	-	-	-
Anions							
Chloride	10 ug/g	<10	-	-	-	-	-
Sulphate	10 ug/g	13	-	-	-	-	-

PARACEL LABORATORIES LTD.

Order #: 2550338

Certificate of Analysis

Report Date: 17-Dec-2025

Client: **Cambium Inc. (Ottawa)**

Order Date: 11-Dec-2025

Client PO:

Project Description: CAM24896.001

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions								
Chloride	ND	10	ug/g					
Sulphate	ND	10	ug/g					
General Inorganics								
Resistivity	ND	0.1	Ohm.m					

PARACEL LABORATORIES LTD.

Order #: 2550338

Certificate of Analysis

Report Date: 17-Dec-2025

Client: **Cambium Inc. (Ottawa)**

Order Date: 11-Dec-2025

Client PO:

Project Description: CAM24896.001

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	10	ug/g	ND			NC	35	
Sulphate	105	10	ug/g	100			4.9	35	
General Inorganics									
pH	7.59	0.05	pH Units	7.59			0.0	2.3	
Resistivity	79.1	0.1	Ohm.m	76.6			3.2	20	
Physical Characteristics									
% Solids	87.5	0.1	% by Wt.	86.8			0.9	25	

PARACEL LABORATORIES LTD.

Order #: 2550338

Certificate of Analysis

Report Date: 17-Dec-2025

Client: **Cambium Inc. (Ottawa)**

Order Date: 11-Dec-2025

Client PO:

Project Description: CAM24896.001

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	97.8	10	ug/g	ND	97.8	82-118			
Sulphate	191	10	ug/g	100	90.8	80-120			

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PARACEL LABORATORIES LTD.

Order #: 2550338

Certificate of Analysis

Report Date: 17-Dec-2025

Client: **Cambium Inc. (Ottawa)**

Order Date: 11-Dec-2025

Client PO:

Project Description: CAM24896.001

Qualifier Notes:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis unlesss otherwise noted.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

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PARACEL LABORATORIES LTD.

Paracel ID: 2550338

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Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2550338	№ 78386

Client Name: Cambium Inc	Project Ref: CAM-24896.001	Page 1 of 1
Contact Name: Blasco Vijayabaskaran	Quote #:	Turnaround Time
Address: 301 Moodie Dr, suite 100, Ottawa, ON	PO #:	☐ 1 day ☐ 3 day
	E-mail: blasco.vijayabaskaran@cambium-inc.com	☐ 2 day ☒ Regular
Telephone: 613-929-1507	cory.ryan@cambium-inc.com	Date Required:

☐ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Agri/Other ☐ Med/Fine
☐ Table 2 ☐ Res/Park ☐ Coarse
☐ Table 3 ☐ Ind/Comm
☐ Table ___
For RSC: ☐ Yes ☐ No

Other Regulation

☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun: ___
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Field Filtered	Sample Taken: Date	Sample Taken: Time	Coarse Soil	Sulfides	Redox Potential								
1	BH102-25- 1.5-2.3	S		3		Dec. 8, 2025	10:00 AM	X	X	X								
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): K. Ryan	Received at Depot: A	Received at Lab: SO	Verified By: WTJ
Relinquished By (Print): Kory Ryan	Date/Time: Dec 11/25 9:59	Date/Time: Dec 11, 2025 1:20pm	Date/Time: 11/12/25; 14:13
Date/Time: Dec. 11, 2025. 10:00 AM	Temperature: 6.8 °C	Temperature: ~~5.4~~ 5.4 °C	pH Verified: ☐ By:

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Subcontracted Analysis

Cambium Inc. (Ottawa)
343 Preston St, 11th Floor
Ottawa, ON K7K 7G3
Attn: Blasco Vijayabaskaran

Paracel Report No.	**2550338**
Client Project(s):	**CAM24896.001**
Client PO:	
Reference:	**SO Cambium - ENV**
CoC Number:	**78386**

Order Date:	11-Dec-25
Report Date:	17-Dec-25

Sample(s) from this project were subcontracted for the listed parameters. A copy of the subcontractor's report is attached

Paracel ID	Client ID	Analysis
2550338-01	BH102-25_1.5-2.3	Redox potential, soil Sulphide, solid

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Dale Robertson	Work Order Number:	606867
Company:	Paracel Laboratories Ltd. - Ottawa	PO #:	
Address:	300-2319 St. Laurent Blvd. Ottawa, ON, K1G 4J8	Regulation: Project #:	Information not provided 2500338
Phone/Fax:	(613) 731-9577 / (613) 731-9064	DWS #:	
Email:	drobertson@paracellabs.com	Sampled By:	
Date Order Received:	12/12/2025	Analysis Started:	12/17/2025
Arrival Temperature:	20.1 C	Analysis Completed:	12/17/2025

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
BH101-25_1.5-2.3	2235776	Soil	None		12/8/2025	10:00 AM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
RedOx - Soil (T06)	Mississauga	Determination of RedOx Potential of Soil	Modified from APHA-2580B

REPORT COMMENTS

Proceed with analysis for redox potential despite hold time as per client N.P 12-12-25

This report has been approved by:

Aline de Chevigny
Production Coordinator CET

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Paracel Laboratories Ltd. - Ottawa

Work Order Number: 606867

WORK ORDER RESULTS

Sample Description	BH101 - 25 _ 1.5 - 2.3		
Sample Date	12/8/2025 10:00 AM		
Lab ID	2235776		
General Chemistry	**Result**	**MDL**	**Units**
RedOx (vs. S.H.E.)	365 [365]	N/A	mV

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

17-December-2025

Paracel Laboratories
Attn : Dale Robertson

300-2319 St.Laurent Blvd.
Ottawa, ON
K1G 4K6, Canada

Phone: 613-731-9577
Fax:613-731-9064

Date Rec. : 12 December 2025
LR Report: **CA12535-DEC25**
Reference: Project#: 2550338

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Sample ID	Sample Date & Time	Sulphide (Na2CO3) %
1: Analysis Start Date		17-Dec-25
2: Analysis Start Time		10:40
3: Analysis Completed Date		17-Dec-25
4: Analysis Completed Time		10:48
5: RL		0.01
6: BH102-25_1.5-2.3	08-Dec-25 10:00	< 0.01

RL - SGS Reporting Limit

Kimberley Didsbury
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0004364750

Results relate only to the sample tested. Data reported represents the sample submitted to SGS. Reproduction of this analytical report in full or in part is prohibited without prior written approval. Please refer to SGS General Conditions of Services located at https://www.sgs.ca/en/terms-and-conditions (Printed copies are available upon request.)
Test method information available upon request. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

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SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA12535-DEC25**

Quality Control Report

Inorganic Analysis														
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material			
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)		
							%		Low	High		Low	High	
Carbon/Sulphur - QCBatchID: ECS0080-DEC25														
Sulphide (Na2CO3)	0.01	%	< 0.01											

OnLine LIMS

0004364750

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Test method information available upon request. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

PARACEL LABORATORIES LTD.

Paracel ID: 2550338

Paracel Order Number (Lab Use Only): 2550338

Chain Of Custody (Lab Use Only) № 78386

Client Name: Cambium Inc	Project Ref: CAM24896.001	Page 1 of 1
Contact Name: Blasco Vijayaboskaran	Quote #:	Turnaround Time
Address: 301 Moodie Dr, Suite 100, Ottawa, ON	PO #:	☐ 1 day ☐ 3 day
	E-mail: blasco.vijayaboskaran@cambium-inc.com; cory.ryan@cambium-inc.com	☐ 2 day ☒ Regular
Telephone: 613-929-1507		Date Required:

☐ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Agri/Other ☐ Med/Fine
☐ Table 2 ☐ Res/Park ☐ Coarse
☐ Table 3 ☐ Ind/Comm
☐ Table ___
For RSC: ☐ Yes ☐ No

Other Regulation

☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun: ___
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Field Filtered	Sample Taken: Date	Sample Taken: Time	Corrosivity	Sulfides	Redox Potential								
1	BH102-25- 1.5-2.3	S		3		Dec. 8, 2025	10:00 AM	X	X	X								
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign):	Received at Depot: A	Received at Lab: SO	Verified By: LTJ
Relinquished By (Print): Rory Ryan	Date/Time: Dec 11/25 9:59	Date/Time: Dec 11, 2025 1:20pm	Date/Time: 11/12/25; 14:13
Date/Time: Dec. 11, 2025, 10:00 AM	Temperature: 6.8 °C	Temperature: ~~5.4~~ 5.4 °C	pH Verified: ☐ By:

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

Appendix F

Relevant Boreholes Completed by Others on Site

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

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9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Wateridge Village Phases 6, 7 & 8
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Track-Mount Power Auger **DATE** October 26, 2022

FILE NO. PG6331

HOLE NO. BH 1-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	87.85
FILL: Crushed stone, some sand		AU	1				
0.91							
FILL: Brown silty sand with crushed stone		SS	2	50	20	1	86.85
1.22							
GLACIAL TILL: Compact to dense, brown silty sand to sandy silt with gravel, cobbles and boulders		SS	3	89	50+		
1.78							
End of Borehole							
Practical refusal to augering at 1.78m depth.							
(GWL @ 1.54m - Nov. 18, 2022)							

Pen. Resist. Blows/0.3m
● **50 mm Dia. Cone**
○ **Water Content %**

20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

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SOIL PROFILE AND TEST DATA

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Ottawa, Ontario

DATUM Geodetic

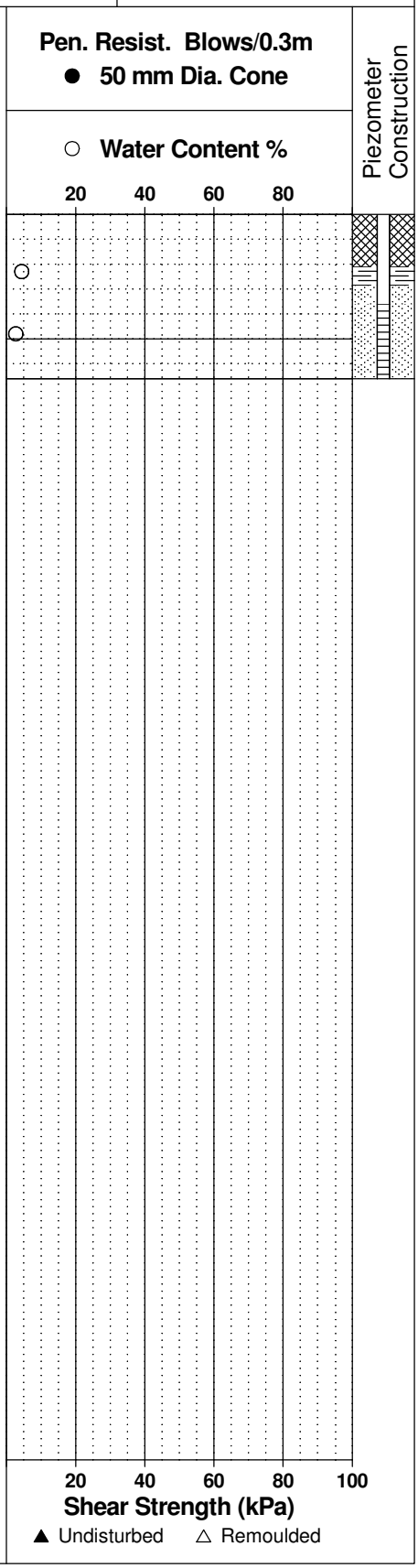
REMARKS

BORINGS BY Track-Mount Power Auger **DATE** October 26, 2022

FILE NO. PG6331

HOLE NO. BH 2-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
Asphaltic concrete 0.03						0	89.20
FILL: Light brown silty sand with gravel and crushed stone		AU	1				
		AU	2			1	88.20
1.32							
End of Borehole							
Practical refusal to augering at 1.32m depth.							
(BH dry - November 18, 2022)							



Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Wateridge Village Phases 6, 7 & 8
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Track-Mount Power Auger **DATE** October 26, 2022

FILE NO. PG6331

HOLE NO. BH 3-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	88.44
Asphaltic concrete 0.03							
FILL: Brown silty sand, some gravel and crushed stone		AU	1				
- trace clay by 0.7m depth		SS	2	63	50+	1	87.44
1.12							
End of Borehole							
Practical refusal to augering at 1.12m depth.							
(GWL @ 0.56m - Nov. 18, 2022)							

Pen. Resist. Blows/0.3m
● **50 mm Dia. Cone**
○ **Water Content %**

20 40 60 80

Piezometer Construction

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Wateridge Village Phases 6, 7 & 8
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Track-Mount Power Auger **DATE** October 26, 2022

FILE NO. PG6331

HOLE NO. BH 4-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	89.20
Asphaltic concrete 0.03		AU	1				
FILL: Brown silty sand with gravel and crushed stone		SS	2	63	5	1	88.20
		SS	3	57	50+		
2.06						2	87.20
End of Borehole							
Practical refusal to augering at 2.06m depth.							
(BH dry - November 18, 2022)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %
20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Wateridge Village Phases 6, 7 & 8
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Track-Mount Power Auger **DATE** October 27, 2022

FILE NO. PG6331

HOLE NO. BH 8-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	88.82
FILL: Brown silty sand with gravel, crushed stone and organics 0.15							
FILL: Brown silty sand with gravel and crushed stone 0.60		AU	1				
Compact, light brown **SILTY SAND,** some gravel		SS	2	67	10	1	87.82
1.45							
Compact, light brown **SILTY SAND to SANDY SILT,** some gravel		SS	3	77	50+	2	86.82
2.26							
End of Borehole							
Practical refusal to augering at 2.26m depth.							
(BH dry - November 18, 2022)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %
20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Wateridge Village Phases 6, 7 & 8
Ottawa, Ontario

DATUM Geodetic

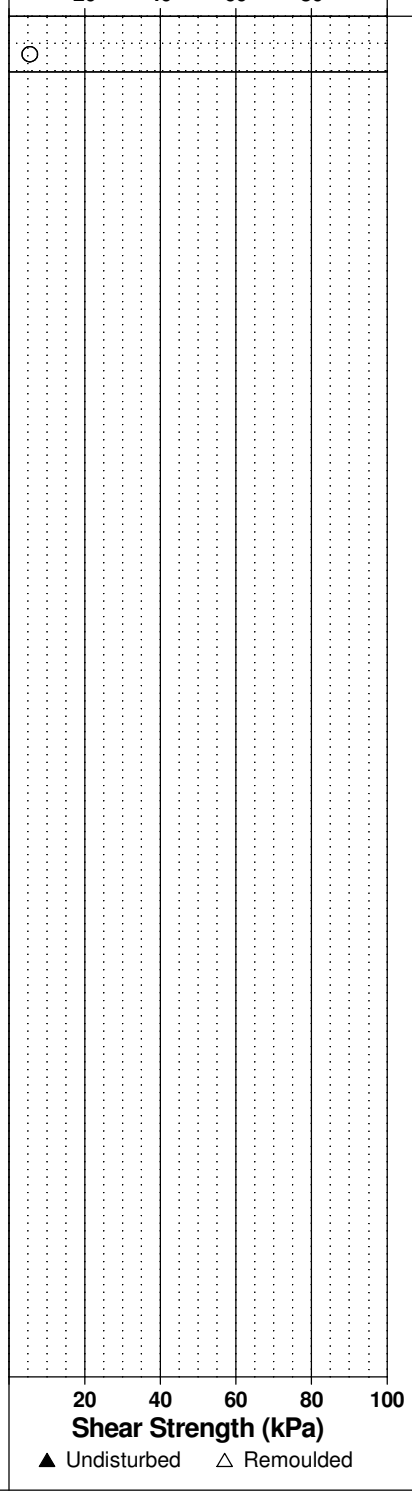
REMARKS

BORINGS BY Track-Mount Power Auger **DATE** October 31, 2022

FILE NO. PG6331

HOLE NO. BH27-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	89.73		
Asphaltic concrete 0.15									
FILL: Brown silty sand, trace gravel 0.41		AU	1						
End of Borehole									
Practical refusal to augering at 0.41m depth.									
(BH dry upon completion)									



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Wateridge Village Phases 6, 7 & 8
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Track-Mount Power Auger **DATE** November 8, 2022

FILE NO. PG6331

HOLE NO. BH59-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	88.03		
FILL: Brown silty sand with crushed stone, gravel and rock fragments		AU	1						
		SS	2	50	17	1	87.03		
		SS	3	60	17				
2.03						2	86.03		
End of Borehole Practical refusal to augering at 2.03m depth.									

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Wateridge Village Phases 6, 7 & 8
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Track-Mount Power Auger **DATE** November 8, 2022

FILE NO. PG6331

HOLE NO. BH61-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	89.78
		AU	1				
FILL: Brown silty sand with crushed stone, gravel, cobbles and boulders		SS	2	67	15	1	88.78
- trace organics by 1.5m depth		SS	3	42	36	2	87.78
2.54		SS	4	43	50+		
End of Borehole							
Practical refusal to augering at 2.54m depth.							
(BH dry - November 18, 2022)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %
20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Development - Wateridge Village Phases 6, 7 & 8
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Track-Mount Power Auger **DATE** April 12, 2023

FILE NO. PG6331

HOLE NO. BH 1-23

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	89.02
FILL: Brown silty sand with crushed stone, trace organics		AU	1				
0.69							
Loose, brown **SILTY SAND,** some gravel		SS	2	33	5	1	88.02
1.45							
GLACIAL TILL: Dense, dark brown silty sand with gravel, cobbles and boulders		SS	3	75	50+	2	87.02
2.23							
End of Borehole							
Practical refusal to augering at 2.23m depth.							
(GWL @ 1.57m - April 20, 2023)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %

20 40 60 80

Monitoring Well Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Development - Wateridge Village Phases 6, 7 & 8
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Track-Mount Power Auger **DATE** April 12, 2023

FILE NO. PG6331

HOLE NO. BH 2-23

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	84.89
FILL: Brown silty sand with gravel and crushed stone, trace organics		AU	1				
0.69							
		SS	2	58	18	1	83.89
FILL: Brown silty sand with gravel and crushed stone, cobbles, trace clay		SS	3	58	41	2	82.89
- some rock fragments by 2.0m depth		SS	4	75	31		
3.05						3	81.89
End of Borehole							
Practical refusal to augering at 3.05m depth.							
(GWL @ 1.82m - April 20, 2023)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %
20 40 60 80

Monitoring Well Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

LOG OF BOREHOLE BH14-27

DST REF. No.: **OE-OT-015358**
CLIENT: **Canada Lands Company**
PROJECT: **Former CFB Rockcliffe**
LOCATION: **Ottawa, Ontario**
SURFACE ELEV.: **90.47 metres**

Drilling Data
METHOD: **Hollow Stem Auger**
DIAMETER: **80 mm ID**
DATE: **March 3, 2014**
COORDINATES: **5033695.61** m N, **450515.28** m E

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE W_p W W_l (20 40 60 80)	Symbol	MATERIAL DESCRIPTION	SAMPLE #	SAMPLE TYPE	'N' VALUE	VANE (kPa) ✖ 20 40 60 80; SPT (N) □ Blows/0.3m DCPT ◆ 20 40 60 80	REMARKS & GRAINSIZE DISTRIBUTION (%) GR SA SI CL
0.0	90				TOPSOIL - with grass and roots	AS1				
1.0	89				SAND - Gravelly, some silt, occasional cobbles and boulders, loose	SS2		8	□	21 66 (12)
2.0	88				End of Borehole at 1.8 m Auger Refusal					
3.0	87									
4.0	86									
5.0	85									
6.0	84									
7.0	83									
8.0	82									
9.0	81									
10.0	80									
11.0	79									
12.0	78									
13.0	77									
14.0	76									
15.0	75									
16.0	74									
17.0	73									
18.0	72									
19.0	71									

BOREHOLE (STANDARD) - OTTAWA GS-OT-015358 ROCKCLIFFE PHASE I.GPJ DST_MIN.GDT 4/11/14

DST consulting engineers
DST Consulting Engineers Inc.
203 - 2150 THURSTON DRIVE
OTTAWA, ONTARIO, K1G 5T9
PH: (613)748-1415
FX: (613)748-1356
Email: ottawa@dstgroup.com
Web: www.dstgroup.com

SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- Bulk Sample
- Rock Core
- Hiller Peat Sampler
- 70mm Thin Wall Tube
- Bentonite
- Sand

ENCLOSURE 2

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

Appendix G

Shear Wave Velocity Sounding for Site Designation Determination Frontwave Geophysics Inc

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

FRONTWAVE
GEOPHYSICS

SHEAR WAVE VELOCITY TESTING
FOR SEISMIC SITE CLASSIFICATION
BLOCK 21, WATERIDGE VILLAGE
OTTAWA, ONTARIO

Submitted to:

Cambium Inc.
194 Sophia Street
Peterborough, Ontario K9H 1E5

Attention:

Mr. Blasco Vijayabaskaran, P.Eng. Email: Blasco.Vijayabaskaran@cambium-inc.com

File No. F-25432

December 5, 2025

Frontwave Geophysics Inc.
Brampton, ON
(647) 514-4724
www.frontwave.ca

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

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Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

1 INTRODUCTION

Frontwave Geophysics Inc. was retained by Cambium Inc. to carry out a geophysical investigation for the proposed development of Block 21 in Wateridge Village, Ottawa, Ontario.

The objective of the survey was to determine site designation for seismic site response based on the average shear wave velocity value measured over the upper 30 m (V_S30). The multi-channel analysis of surface waves (MASW) and seismic refraction methods were employed for this investigation. The MASW aimed to obtain shear wave velocity depth profiles in the overburden; the purpose of the seismic refraction survey was to obtain shear wave velocity values for the top of bedrock.

The fieldwork was conducted on November 14, 2025. The location of the seismic survey line is shown in Figure 1.

This report describes the basic principles of the seismic refraction and MASW methods, survey design, interpretation method, and presents the results of the investigation in the chart and table format.

2 INVESTIGATION METHODOLOGY

2.1 Multichannel Analysis of Surface Waves (MASW)

Overview

The Multi-channel Analysis of Surface Waves (MASW) is a seismic method widely applied to produce shear wave velocity (V_S) profiles. It is based on the dispersive nature of Rayleigh or Love surface waves in layered media. Surface waves with longer wavelengths propagate deeper in the subsurface, hence, their phase velocity is more influenced by the elastic properties of deeper layers. The velocity of surface waves depends mainly on the shear wave velocity of the medium. The distribution of surface waves phase velocities as a function of wavelength (or frequency) can be visualized as a dispersion curve. The inverse problem is then solved by modelling the experimental data with a theoretical dispersion curve; the model parameters are typically limited to layer thickness and shear wave velocity with an assumption of horizontally layered strata. As a result of the inversion, a shear wave velocity depth profile is obtained. Figure 2 illustrates the overall procedure of the MASW method.

Survey Design

The acquisition layout consisted of 24 receivers in a linear array (spread), connected with a multicore cable to a DAQLink 4 seismograph. 4.5 Hz natural frequency vertical geophones were used for this survey. The measurements were conducted with a spread length of 23 m (1 m spacing between geophones).

An 8-kg sledgehammer was used as an energy source. Shots were executed at three locations: one shot in the middle of the spreadand two shots close to the ends of the spread. The record length was set to 1500 ms with a 0.05 ms sampling interval.

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Legend

Location of 23 m, 24-geophone MASW spread

Location of 46 m, 24-geophone seismic refraction spread

Image: Google Earth 2025

Date:	2025-12-05
File No:	F-25432
Title:	Survey location plan
Location:	Wateridge Village Ottawa, ON

FRONTWAVE GEOPHYSICS

Figure: **1**

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

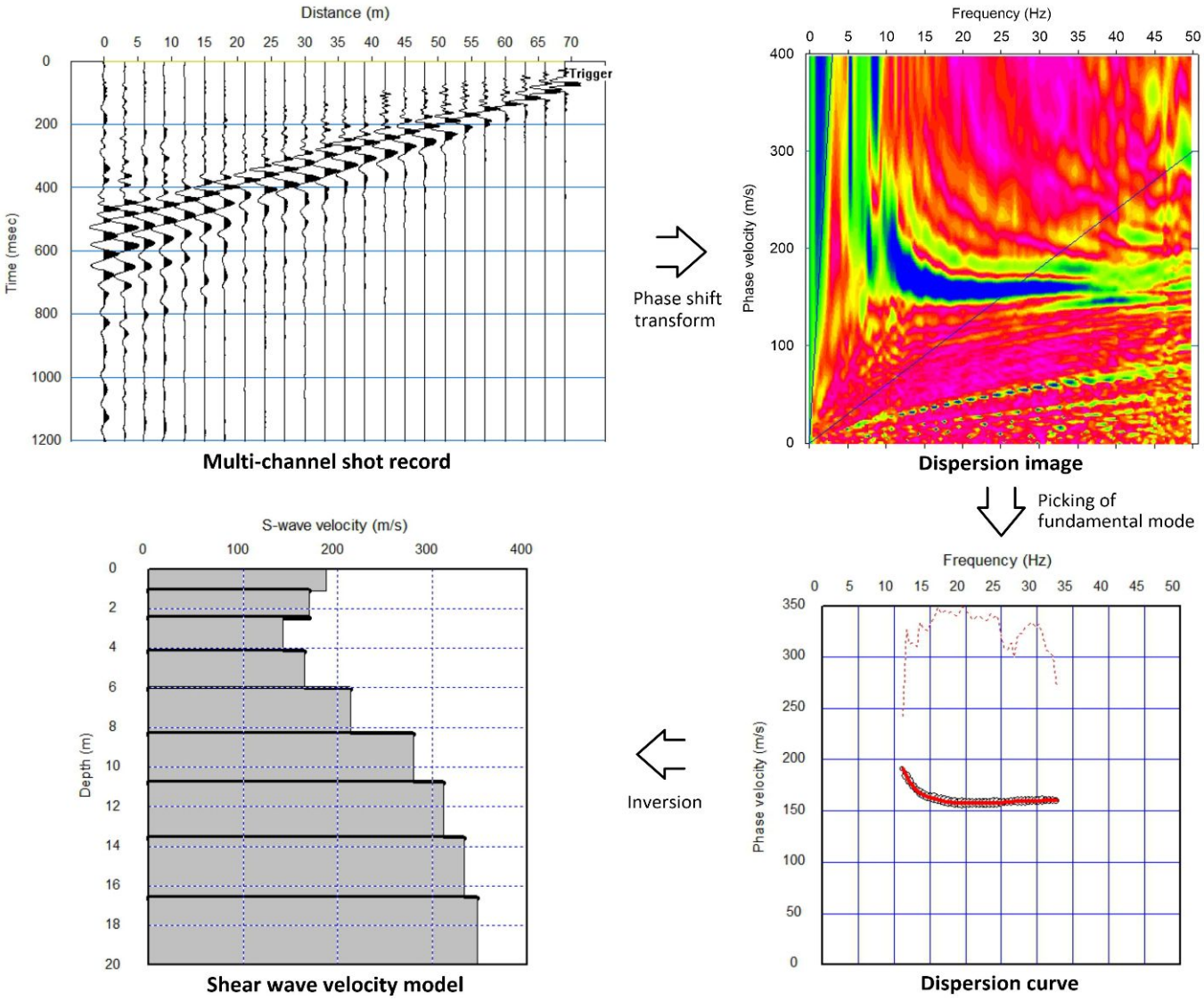

Figure 2 *The procedure of MASW data processing using the SeisImager SW software package.*

Interpretation

A dispersion curve is obtained from each field record by converting the shot gather into a dispersion image and then identifying and picking the fundamental mode. A shear wave velocity profile is obtained through inversion of the dispersion curve by modelling the subsurface as a horizontally layered medium with the model parameters limited to the number of layers, their thickness and shear-wave velocity.

ZondST2D software package was used for processing, picking and inversion of the MASW data.

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

Accuracy of the results

The accuracy of MASW generally depends on the complexity of the subsurface and specific site conditions (noise levels, topography, etc.). Lateral velocity variations and steeper bedrock topography increase the dispersion uncertainty. The presence of high-velocity contrast layers such as bedrock will require the use of a-priory information to optimize model parameters for more accurate results. Hence, if the a-priory information is not available (e.g. when the data are overly noisy to carry out refraction analysis), the accuracy decreases.

At bedrock sites and sites with very shallow overburden overlying bedrock, the MASW method performs poorly. Very strong velocity contrast between layers at shallow depths often results in a superposition of fundamental and higher Rayleigh wave modes which, when superimposed, cannot be distinguished. At sites where the thickness of the overburden is sufficient to obtain a coherent dispersion, the inversion would significantly underestimate the S-wave velocity within the rock. For this reason, it is preferred to supplement the MASW with shear wave refraction data which provide accurate shear wave velocity values for bedrock.

2.2 Seismic Refraction

Overview

The seismic refraction method is based on the measurement of arrival times of seismic waves refracted at interfaces between geological layers. The method is used to obtain velocity depth models and to map interfaces between layers with significant velocity contrast such as water table and bedrock surface. Compressional (P) wave or shear (S) wave refracted arrivals can be recorded using vertically or horizontally oriented sensors and sources, respectively. Figure 3 is a schematic of a simplified seismic model showing the basic principle of the refraction method.

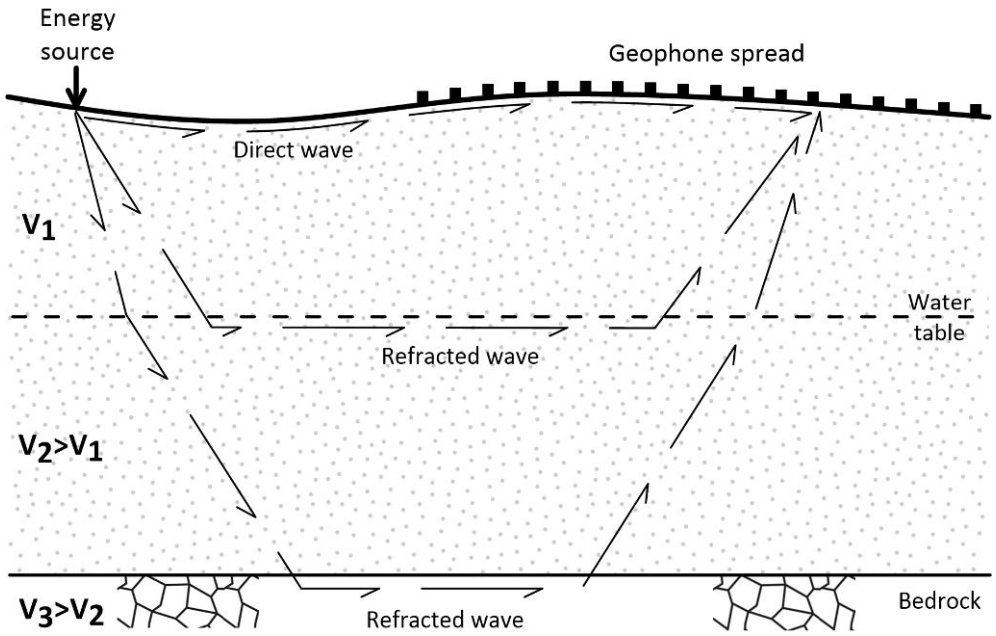

Figure 3 *Seismic model showing the basic principle of refraction method.*

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Survey Design

The acquisition layout consisted of 24 receivers in a linear array (spread), connected with a multicore cable to a DAQLink 4 seismograph. 10 Hz natural frequency horizontal geophones were used for this survey. The measurements were conducted with a spread length of 46 m (2 m spacing between geophones).

An 8-kg sledgehammer was used as an energy source. Shots were executed at four locations per spread: two shots at the ends of the spread and two shots with an offset of 25 m from the ends of the spread. Preferential S-wave energy was generated by horizontally striking a metal bar in a direction perpendicular to the survey line. Shots in two opposite directions were recorded at each shot location to record S-wave arrivals of opposite polarity. The record length was set to 500 ms with a 0.1 ms sampling interval.

Interpretation

The reciprocal (plus-minus) method was used for the interpretation of the seismic refraction data. The method assumes the subsurface as a series of discrete layers (refractors) with simple velocity distributions. It allows calculating the depth and velocity of a continuous undulating refractor, providing the target layer is of sufficient thickness and the dip angles are moderate.

ZondST2D software package was used for processing of the refraction data. The processing involved stacking of shot records obtained with opposite source directions, identification and picking of S-wave first arrivals.

Accuracy of the results

The accuracy of bedrock velocity determination at this site was estimated to be within 10%.

3 RESULTS

The quality of seismic shot records was good; first arrivals of refracted waves and MASW dispersion curves were well defined. Example shot records and an MASW dispersion image obtained at this site are presented in Figure 4.

The results of the interpretation of S-wave refraction data are presented in Figure 5 in the form of a bedrock profile. The interpreted depth to bedrock ranged approximately from 2 to 3.5 m below the ground surface. The shear wave velocity in the bedrock measured using the refraction method was 2649 m/s.

Refraction data were used for parameterization of the initial MASW inversion model. The measured shear wave velocity for the bedrock is representative of the top of competent rock. According to Commentary J (Paragraph 145) of the National Building Code of Canada 2020 (NBC 2020), the measured value may be extrapolated if the rock conditions are known to be continuous to a depth of 30 m.

The resulting shear wave velocity depth profile is presented in Figure 6.

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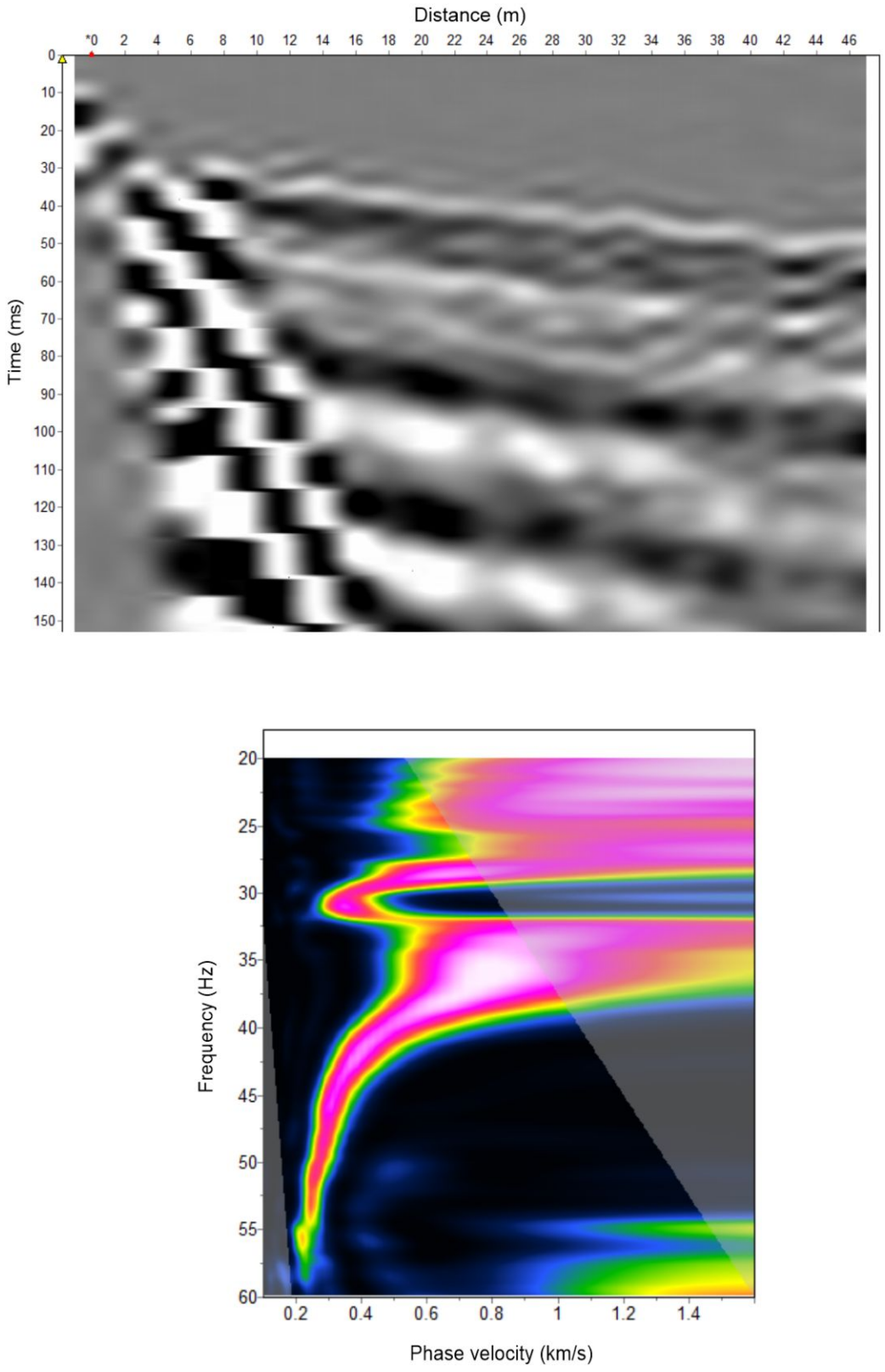

Figure 4 *Data examples displaying a stacked S-wave refraction shot record (top) and MASW dispersion image (bottom).*

Docusign Envelope ID: 7DB8B07D-7E26-8D41-809C-3ABAE284174B

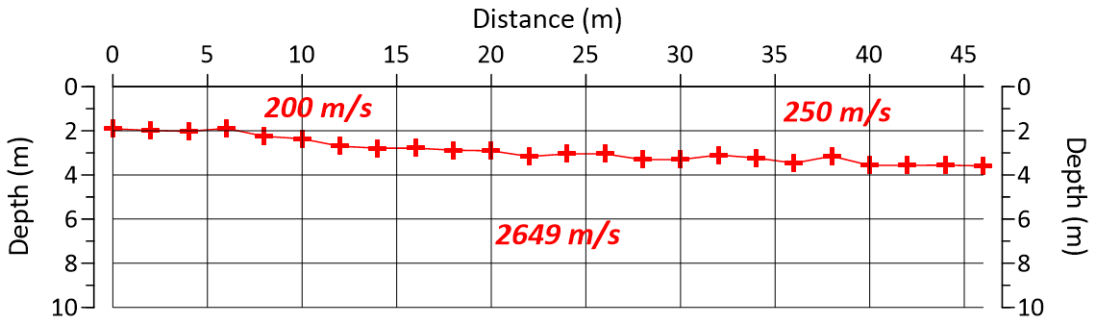

Figure 5 *Interpreted depth to bedrock from S-wave refraction.*

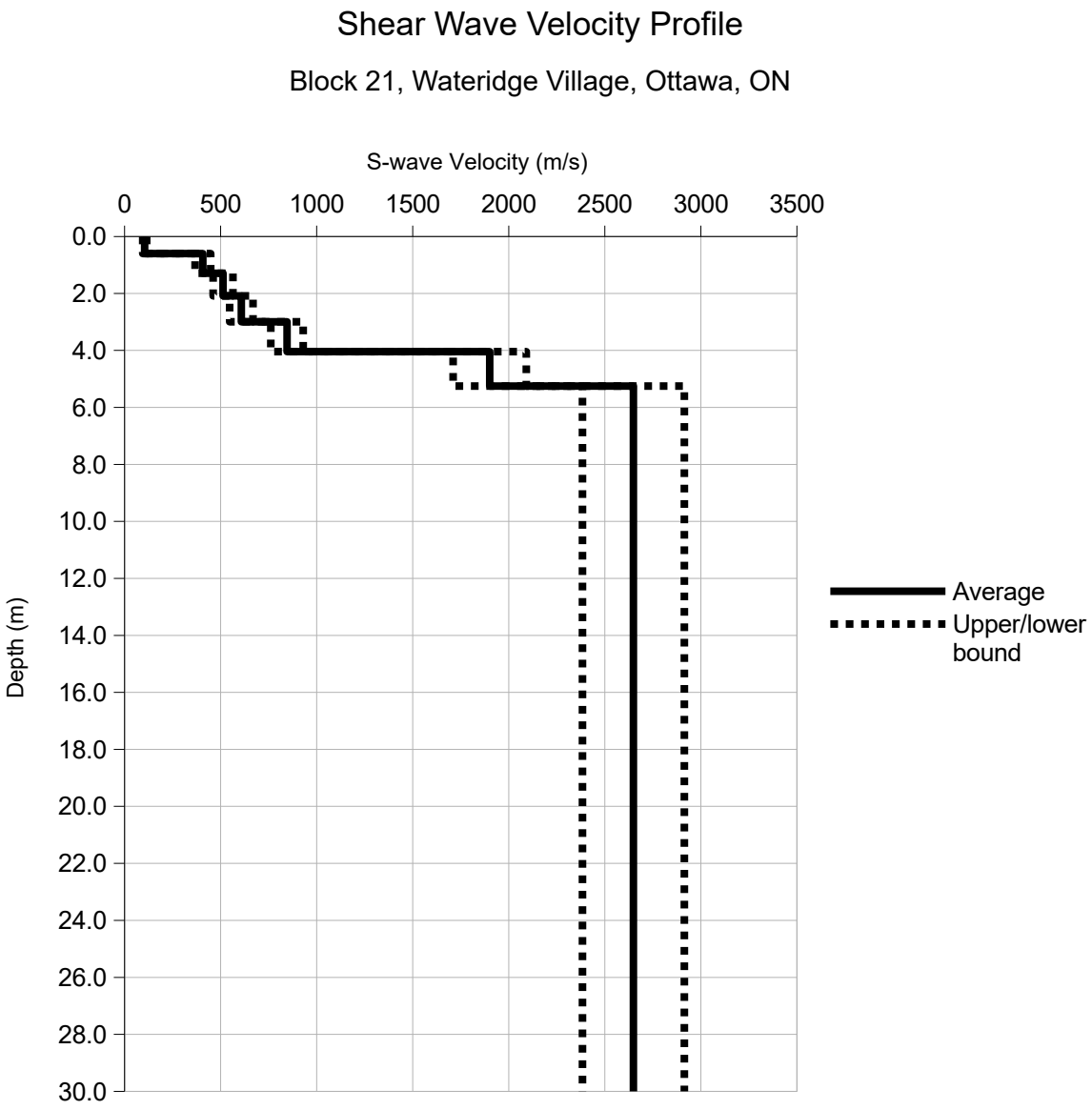

Figure 6 *Shear wave velocity profile from MASW sounding and S-wave refraction.*

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The tabulated shear wave velocity model is presented in Table 1.

Table 1 *Shear wave velocities from MASW sounding and S-wave refraction.*

Depth Interval (m)		S-wave Velocity (m/s)
From	To	
0.0	0.6	105
0.6	1.3	408
1.3	2.1	513
2.1	3.0	608
3.0	4.0	846
4.0	5.3	1901
5.3	30.0	2649

The average shear wave velocity within the upper 30 meters (V_S30) is defined as the travel-time weighted average velocity from surface to a depth of 30 m and calculated using the following formula:

$$V_S30 = 30 / \Sigma (d/V_S),$$

where d is the thickness of any layer and V_S is the layer S-wave velocity. In other words, V_S30 is calculated as 30 m divided by the sum of the S-wave travel times for each layer within the topmost 30 m.

The calculated V_S30 values are presented in Table 2.

Table 2 *V_S30 values from MASW sounding and S-wave refraction.*

Depth Range (m)	Minimum V_S30 (m/s)	Average V_S30 (m/s)	Maximum V_S30 (m/s)	NBC 2020 Site Designation
0 to 30	1246	**1384**	1523	**X_{760}**

The V_S30 values obtained from the S-wave sounding varied from 1246 m/s to 1523 m/s with an average of 1384 m/s.

According to the National Building Code of Canada 2020 (NBC 2020), site designation for seismic hazard assessment is determined by a V_S30 value. Based on the requirements of Table 4.1.8.4.-A of NBC 2020, if the ground profile contains more than 3 m of soil between rock and the underside of footing or mat foundations, **the applicable Site Designation is X_{760}** even if the calculated V_S30 value is greater than 760 m/s.

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4 CLOSURE

Shear wave velocity testing involving the MASW and seismic refraction methodologies was carried out for the proposed development of Block 21 in Wateridge Village, Ottawa, Ontario.

The average shear wave velocity (V_S30) value calculated from in situ shear wave velocity measurements was **1384 m/s**. Based on Sentence 4.1.8.4.(2b) and Table 4.1.8.4.-A of the National Building Code of Canada 2020 (NBC 2020), taking into consideration the presence of more than 3 m of overburden, **the applicable Site Designation is X_{760}**.

According to Commentary J (Paragraph 145) of NBC 2020, where rock conditions are known to be continuous to a depth of 30 m, the shear wave velocity measured in the bedrock may be assumed to be equivalent to V_S30. Thus, if the proposed building foundations are constructed on competent bedrock, Site Designation **X_{2649}** (V_S30 = 2649 m/s) can be applied.

If the building foundations will be constructed below the existing ground level and less than 3 m above the rock surface, the V_S30 value can be recalculated based on the actual depth of the foundations.

We hope you find this report satisfactory. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

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