PATERSON GROUP

Groundwater Impact Assessment

Proposed Commercial Development

301 Somme Street
Ottawa, Ontario

Prepared for W.O. Stinson & Sons Ltd.

Report PH5075-REP.01
dated September 5, 2025

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Appendices

1.0 INTRODUCTION

Paterson Group (Paterson) was commissioned by W.O. Stinson & Sons Ltd. to complete a groundwater impact assessment (GIA) for the proposed commercial development located at 301 Somme Street in the City of Ottawa, Ontario (Refer to Paterson Drawing PH5075-1 - Site Plan in Appendix 1).

The following report has been prepared specifically and solely for the aforementioned project described herein. It contains a hydrogeological review and assessments pertaining to the proposed development as it is understood by Paterson at the time of writing this report.

1.1 Proposed Development

Based on available drawings and information at the time of report preparation, the proposed development will consist of two slab-on-grade buildings and a 3 bay cardlock. Propane storage tanks, equipment storage yard and a stormwater management pond (SWMP) are also proposed for the development. The slab-on-grade buildings will have a maximum excavation depth of 2 m bgs, while the SWMP will be extend to approximately 3m below existing ground surface. Associated asphalt-paved parking areas, access lanes and loading areas are also expected. It is understood the proposed development will be privately serviced.

2.0 BACKGROUND INFORMATION

The field programs completed by Paterson in support of the proposed development were carried out between May 2019 and June 2025. During that time, a total of seven (7) boreholes were advanced across the subject site to a maximum sampling depth of 14.3 m below ground surface (bgs). Previous investigations were also conducted by others between July 2008 and July 2021.

The borehole locations completed by Paterson were distributed in a manner to provide general coverage of the subject site. Borehole information can be found in Appendix 2 of this report. The approximate locations of the boreholes are presented on drawing PG7567-1 - Test Hole Location Plan included in Appendix 2.

3.0 SITE CONDITIONS

The subject site is undeveloped with grassed and brush covered areas, with an engineered fill pad which had undergone a successful deep dynamic compaction program by others. Fill piles were noted within the northeastern limits of the site. The ground surface is generally flat with a with an approximate 1 m difference in elevation and slopes downward near the northern boundary where a watercourse has been identified. The subject site is generally bordered to the north by Rideau Road, to the east by vacant properties, and to the south and west by Somme Street.

3.1 Geology

Generally, the soil profiles at the borehole locations consist of fill material underlain by silty clay and/or silty sand. Specific details of the soil profile at each borehole location within the subject site are presented on the borehole logs included in Appendix 2.

According to surficial mapping prepared by the Ontario Geological Survey (OGS, MRD128-Revised) the subject site is in an area where the surficial geology consists of organic deposits within the western portion of the site. The eastern portion of the site has been mapped as a coarse-textured glaciomarine deposit and Paleozoic bedrock. The surficial mapping is presented on drawing PH5075-2 - Surficial Geology Plan included in Appendix 1.

Fill Material

Fill material was encountered at all borehole locations. The fill generally consists of silty sand and/or silty clay with varying amounts of organics, gravel, asphalt, concrete and bedrock fragments to a maximum depth of 8.7 m bgs.

Silty Clay

A hard to firm brown to grey silty clay was observed in select boreholes underlying the fill material to a maximum depth of 12.0 m bgs.

Silty Sand to Clayey Silt

A layer of dense to compact, brown to grey silty sand to clayey silt with varying amounts of gravel, cobbles and boulders were noted to extend to a maximum depth of 14.3 m bgs.

Bedrock

Practical refusal to augering was encountered at approximate depths ranging from 0.9 to 12.0 m below ground surface. Practical refusal to the DCPT was noted between 5.9 and15.42 m bgs. The bedrock was cored by others at boreholes BH 1-21, BH 2-21 and BH 1 through BH3, and was noted to consist of poor to excellent quality, grey limestone with interbedded sandstone. The bedrock was cored to a maximum depth of 18.9 m below the existing ground surface.

Available geological mapping provided by the Ontario Geological Survey (OGS, MRD 219) has noted the subject site to consist of sandstone of the Nepean formation with a drift thickness of 0 to 2 m bgs. The bedrock geology is presented on drawing PH5075-3 - Bedrock Geology Plan included in Appendix 1.

Karst Features

The term “karst” refers to a geologic formation characterized by the dissolution of carbonate bedrock, such as limestone or dolostone. For karstification to occur, precipitation must be able to infiltrate the top of the bedrock and enlarge previously existing joints and bedding planes through the process of dissolution. Based on available mapping by the Ontario Geological Survey (OGS, GRS005), there is no inferred, potential or known karstification in the subject area.

3.2 Hydrogeology

Existing Aquifer Systems

Aquifer systems may be defined as a geological media, either overburden soils or fractured bedrock, which permit the movement of groundwater under hydraulic gradients. Based on the well records within the subject area, the water supply wells have been noted to be accessing the bedrock aquifer.

Bedrock aquifer mapping, provided by Natural Resources Canada Urban Geology of the National Capital Region mapping, was reviewed as part of this assessment. Using this tool, it was found that the subject site primarily accesses the Nepean formation aquifer system.

Potable water supply wells mapped by the MECP within a 500 m radius of the subject site have been noted to be primarily accessing the bedrock aquifer, extending to depths ranging from 17.4 to 75.6 m bgs. Water bearing fractures were encountered at depths ranging from 17.4 to 75.0 m bgs. Bedrock was encountered between 0 to 8.5 m bgs.

Groundwater Levels

Groundwater levels in the overburden at the subject site were measured between 2.92 and 7.63 m bgs following the completion of the field investigation as indicated on the Soil Profile and Test Data sheets attached to the current report. Based on a review of the water well records, groundwater is also present in the bedrock at depth.

Based on the measured groundwater levels and the proposed excavation depths for the building foundations and the SWMP, minimal groundwater infiltration is expected during construction. It is anticipated that pumping from open sumps will be sufficient to control groundwater influx through the sides of the excavations. It should be noted that groundwater levels can fluctuate seasonally and with precipitation events. Therefore, groundwater levels could vary at the time of construction.

Hydraulic Gradients

Vertical hydraulic gradients were not measured at the subject site as the previous studies completed did not warrant the installation of monitoring well nests.

With respect to horizontal hydraulic gradients, due to the nature of the water levels obtained from field work conducted at the site (monitoring wells), the absolute direction of horizontal hydraulic gradients was not determined. However, using the available data from the groundwater monitoring program, it was possible to approximate the horizontal hydraulic gradients in the overburden material given that the horizontal hydraulic gradient between any 2 points is the slope of the hydraulic head between those points:

$$i=h_2-h_1/L$$

Where: i = horizontal gradient
h = water level (m bgs)
L = horizontal distance between test hole locations

Using the above noted formula and observed groundwater levels at the time of the geotechnical investigation, the horizontal hydraulic gradient has been calculated to be approximately 0.007 in an easterly direction. Shallow groundwater flow in the vicinity of the subject site is expected to reflect local topography. Regional groundwater flow in the bedrock is considered to be in an easterly direction.

Hydraulic Conductivity

The hydraulic conductivity values for the overburden material were conservatively estimated based on experience at similar sites and published values. Hydraulic conductivity for brown to grey silty clay generally ranges from 1 x 10^{-7} to 1 x 10^{-12} m/sec and is dependent on the moisture level and consistency of the material. Hydraulic conductivity for the silty sand to clayey silt with varying amounts of gravel, cobbles and boulders as well as the fill material generally ranges from 1 x 10^{-5} to 1 x 10^{-10} m/sec and is dependent on the composition and level of compaction.

Groundwater Recharge and Discharge

In general, groundwater will follow the path of least resistance from areas of higher hydraulic head to areas of lower hydraulic head. While upward and downward hydraulic gradients may be indicative of discharge and recharge respectively, other factors must be considered.

Based on the Source Protection Information Atlas mapping provided by the MECP, the western portion of the subject site has been noted to be located in a significant groundwater recharge area. It is our interpretation that groundwater will generally flow vertically towards the underlying bedrock. As such, the volume of recharge occurring within the site boundaries is expected to be low to high and is dependent on the variability of the underlying material and thickness, as well as bedrock quality across the site.

With regards to discharge zones, neither the topographical nor geological conditions are suitable for large scale discharge to occur at the subject site.

4.0 POTENTIAL IMPACTS

4.1 Adverse Effects on Neighbouring Water Wells

A search of the Ontario Water Well Records database indicates there are several private wells within 500 m of the site as depicted on drawing PH5075-4 - MECP Water Well Location Plan included in Appendix 1. As previously noted, the wells within the subject area are primarily accessing the bedrock aquifer, extending to depths ranging from 17.4 to 75.6 m bgs. Water bearing fractures were encountered at depths ranging from 17.4 to 75.0 m bgs. Bedrock was encountered between 0 to 8.5 m bgs.

While the neighbouring wells have been noted to be screened in the bedrock aquifer system, any water taking related to the proposed development will occur within the shallow overburden aquifer. Furthermore, water takings at the subject site are expected to be minimal and short term in duration, given the nature of the proposed development and measured groundwater levels. Due to the potential depth of excavation and the short-term nature of the water takings, it is not expected that any of the water takings will negatively affect the water quantity and/or quality of the nearby well user.

However, in order to determine potential impacts to nearby well users for the purpose of this study, conservative theoretical radii of influence have been calculated.

These calculations were completed based on Sichardt (1992) using the equation:

$R = 3000*\Delta h(k^{0.5})$

R = radius of influence (m)
Δh = thickness of drawdown within the aquifer (m)
k = hydraulic conductivity (m/sec)

Based on the measured groundwater levels and proposed excavation depths, minimal groundwater infiltration is anticipated. However, for the purpose of this review, the following assumptions were conservatively made:

- $k = 1 \times 10^{-5}$ m/s
- $\Delta h = 0.5$ m

Using the above equation and assumptions, a radius of influence of 5 m will develop as a steady state condition, extending from the edge of the excavation, in the area of the subject site. As a precautionary measure, it is recommended to apply a factor of safety of 3 to the calculated radius of influence noted above. Given the hydrogeological characteristics of the subject site, and nature of the proposed development, no long-term groundwater monitoring program is required.

Baseline Water Sampling Program

A baseline water sampling program was completed by others under a previous application for the subject site. The sampling program was carried out on June 3, 2022, and included the following participating municipal addresses:

- 4885 Hawthorne Road
- 3500 Rideau Road
- 5213 Hawthorne Road

A raw water sample was collected from each of the above noted private supply wells and submitted to Caduceon Environmental for analysis for a general suite of groundwater chemistry parameters.

Based on the sampling program noted in the report, the majority of the parameters were within the ODWS, with the exception of the following:

- *Hardness, turbidity, sodium, manganese and total dissolved solids (TDS) were elevated in each of the samples above the ODWS*
- *Organic nitrogen exceeded the ODWS at 4885 Hawthorne Road and 5213 Hawthorne Road wells*
- *Chloride was elevated within the 3500 Rideau Road well, and*
- *Total coliform was elevated in the 4885 Hawthorne Road well. The resident was contacted and informed of the result*

Specific details related to the baseline well sampling program have been included in Appendix 3.

Given that the proposed development is expected to take place above the average measured water table, it is anticipated that any minor volumes of groundwater that may be encountered at the time of construction will result in a minimal radius of influence developing from the edge of the excavation. As the potential to interfere with the water quality/quantity of existing well users in the area is negligible during construction, a supplemental baseline sampling program is not recommended for the proposed development.

Onsite Fuel Storage and Well Users

It is understood the proposed development will consist of a cardlock and fuel storage system. To ensure safe storage and handling of fuel, it will be subject to the 2017 TSSA Liquid Fuels Handling Code (LFHC) and O.Reg 217/01. Claybar Contracting Inc. has prepared a memo detailing the regulations and design requirements for the proposed cardlock and fuel storage system, as per the 2017 LFHC. The above noted memo prepared by Claybar Contracting Inc. has been provided in Appendix 3 of this report. Final design of the proposed cardlock fueling system will be prepared by a Qualified Professional and submitted to the TSSA for approval. Due to the stringent 2017 LFHC requirements outlined in the memo prepared by Claybar Contracting Inc., it is not expected that the proposed onsite fuel storage system will have adverse impacts on the adjacent well users.

4.2 Adverse Effects on Adjacent Structures

Existing structures adjacent to the subject site include a commercial building located approximately 40 m south of the southern property line. It is understood that the adjacent slab-on-grade structure is founded on fill material with minimal compressibility. Furthermore, adjacent structures are located outside the theoretical radius of influence. Lastly, water takings are expected to be minimal and short term in duration, given the nature of the development. As such, any effects related to ground surface settlement due to the water taking activities during construction are expected to be negligible.

4.3 Soil, Surface Water and Groundwater

A search of the MECP Brownfields Environmental Site Registry was conducted as part of this assessment. No recorded Brownfield sites were identified within 500 m of the subject site.

All excess soils generated by construction activities that will be transported on-site or off-site should be handled as per Ontario Regulation 406/19: On-Site and Excess Soil Management.

With respect to surface water features, there are none located within the theoretical radius of influence of the proposed excavations. The nearest surface water feature is a drainage ditch located approximately 50 north of the proposed slab-on-grade buildings.

It is expected that a multi-barrier approach (such as hay bales, geosocks, silt fencing, etc.) to a non-frozen, well vegetated area will be utilized in order to promote re-infiltration.

The water that is pumped from the excavations must be managed in an appropriate manner. The contractor may be required to implement a water management and treatment program to dispose of the pumped water. It is expected the water will be discharged to overland. Further treatment may be required should the discharge not meet the required guidelines.

4.4 Adjacent Permits to Take Water

A search of the MECP Permit to Take Water database provided no active PTTW within a 500 m radius of the subject site. Therefore, the risk of cumulative impacts resulting from multiple PTTW in proximity to each other is considered negligible.

A search of the MECP Environmental Activity and Sector Registry (EASR) database provided no active EASRs within a 500 m radius of the subject site. Therefore, the risk of cumulative impacts resulting from multiple EASRs in proximity to the subject site is considered negligible.

4.5 Existing Servicing

It is understood the existing test well currently on site will be utilised to supply the proposed development. Any remaining monitoring wells that have been installed in support of previous and current studies at the subject site must be decommissioned by a licensed well contractor as per O.Reg. 903.

5.0 RECOMMENDATIONS

Further testing and site preparation is recommended for the detailed hydrogeological assessment. The following aspects of the program should be performed prior to commencing construction for the proposed residential development:

- ❑ All existing wells within the proposed development should be properly decommissioned as per O.Reg. 903 prior to construction, if they are not intended to be maintained in accordance with the regulation.

- ❑ Given the current hydrogeological conditions noted on site and within the surrounding area, a supplemental baseline water quality sampling program is not recommended, as the risk to any potential well users in the area resulting from the proposed development is considered negligible.

- ❑ Prior to and during site development, it is recommended that construction best management practices with respect to fuels and chemical handling, spill prevention, and erosion and sediment control be followed.

- ❑ For any water taking of volumes greater than 50,000 L/day, an active Environmental Activity and Sector Registration (EASR) or a Permit to Take Water (PTTW) is required from the MECP, dependant on dewatering requirements.

6.0 STATEMENT OF LIMITATIONS

The recommendations provided in this report are in accordance with our present understanding of the project.

A hydrogeological review of this nature is a limited sampling of a site. The recommendations are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around the test locations. Should any conditions at the site be encountered which differ from those at the test locations, we request notification immediately in order to permit reassessment of our recommendations.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than W.O. Stinson & Sons Ltd. or their agent(s) is not authorized without review by Paterson Group for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.

Nicholas Zulinski, P.Geo., géo.

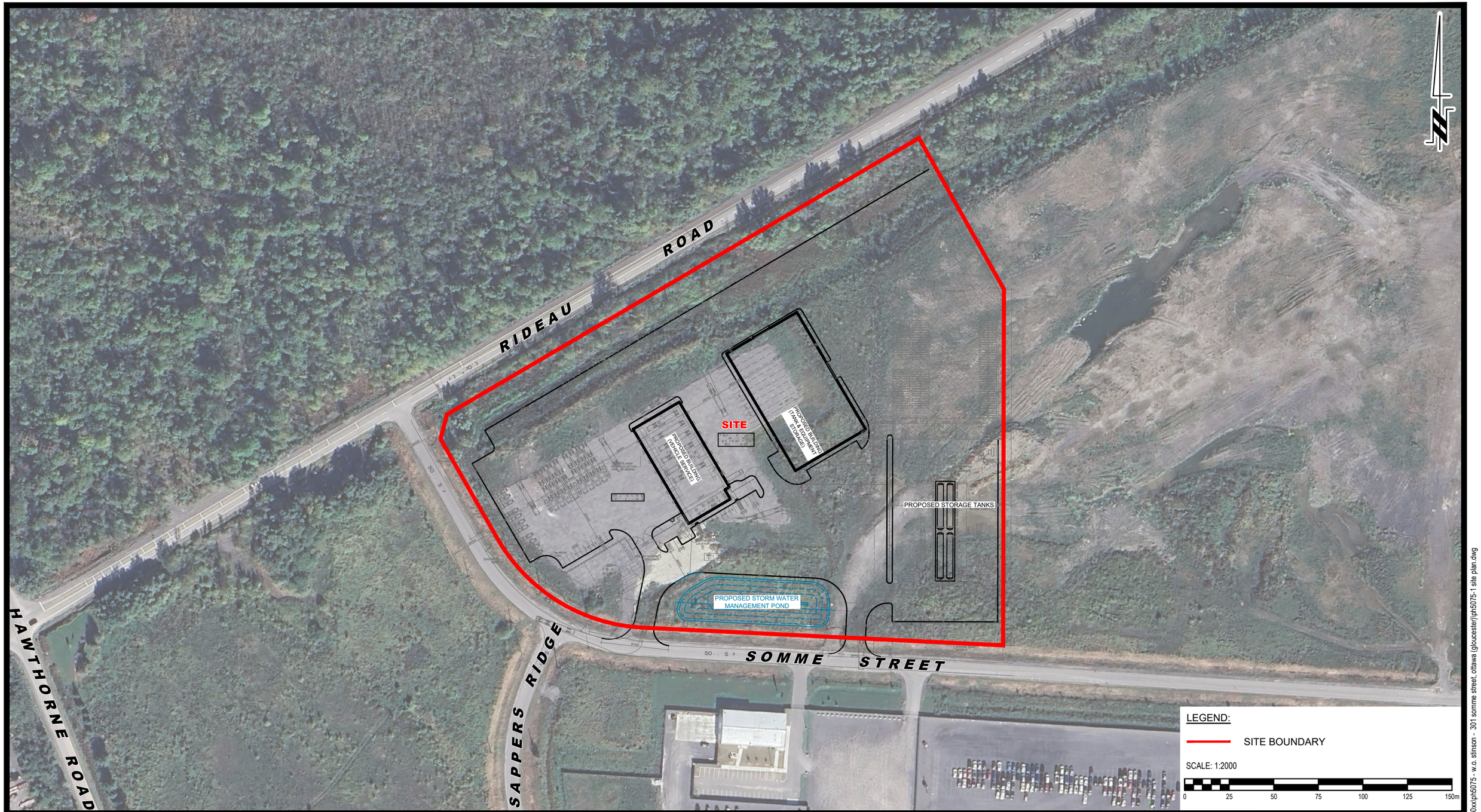
APPENDIX 1

DRAWING PH5075-1 - SITE PLAN

DRAWING PH5075-2 - SURFICIAL GEOLOGY PLAN

DRAWING PH5075-3 - BEDROCK GEOLOGY PLAN

DRAWING PH5075-4 - MECP WATER WELL LOCATION PLAN



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NO.	REVISIONS	DATE	INITIAL

W.O. SINSON & SONS LTD.

GROUNDWATER IMPACT ASSESSMENT
PROPOSED COMMERCIAL DEVELOPMENT
301 SOMME STREET

OTTAWA, ONTARIO

Title:

SITE PLAN

Scale: 1:2000	Date: 09/2025
Drawn by: GK	Report No.: PH5075-1
Checked by: NZ	Dwg. No.: PH5075-1
Approved by: NZ	Revision No.:

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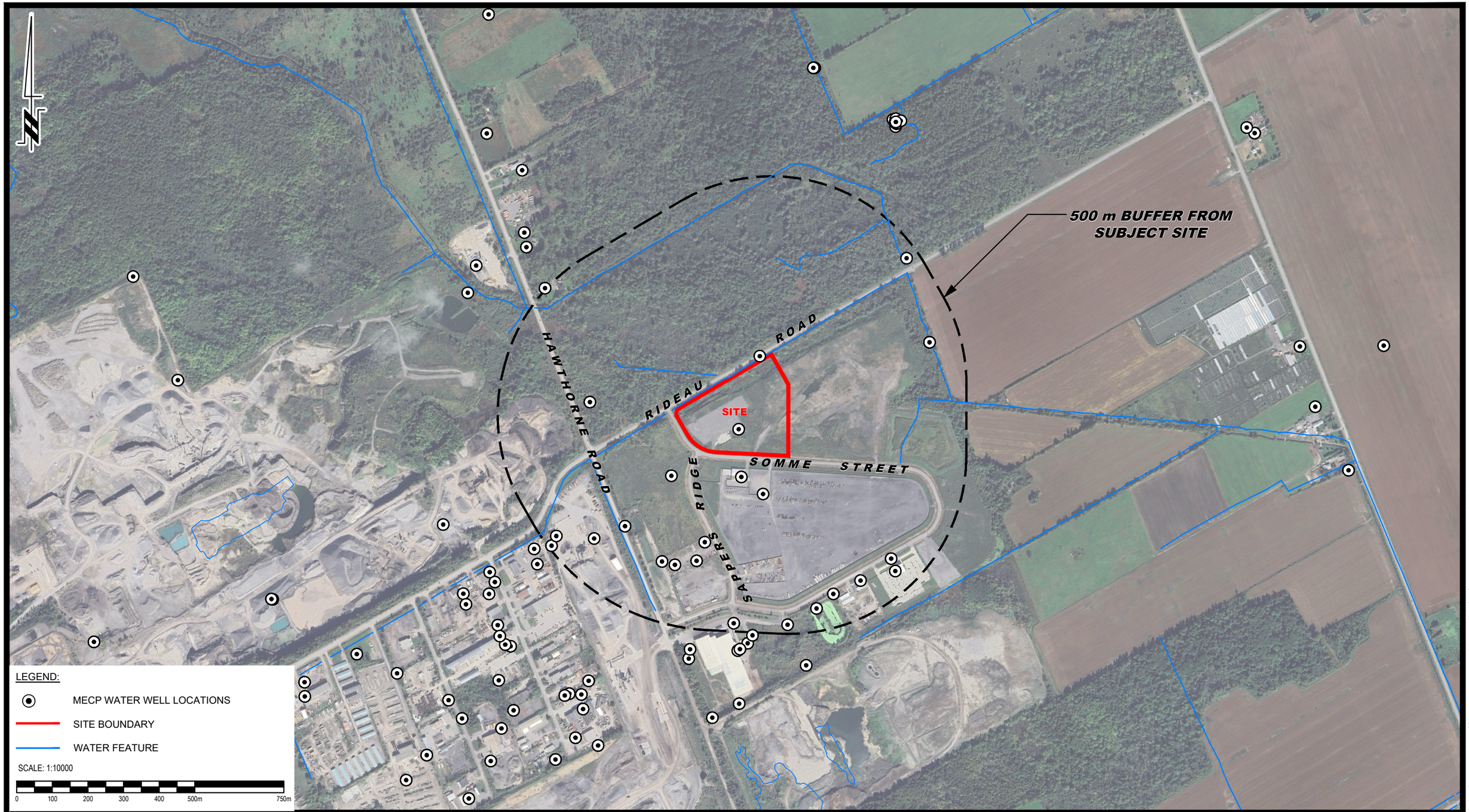

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NO.	REVISIONS	DATE	INITIAL

W.O. SINSON & SONS LTD.
GROUNDWATER IMPACT ASSESSMENT
PROPOSED COMMERCIAL DEVELOPMENT
301 SOMME STREET
OTTAWA, ONTARIO

Title:
MECP WATER WELL LOCATION PLAN

Scale: 1:10000	Date: 09/2025
Drawn by: GK	Report No.: PH5075-1
Checked by: NZ	Dwg. No.: PH5075-2
Approved by: NZ	Revision No.:

11x17

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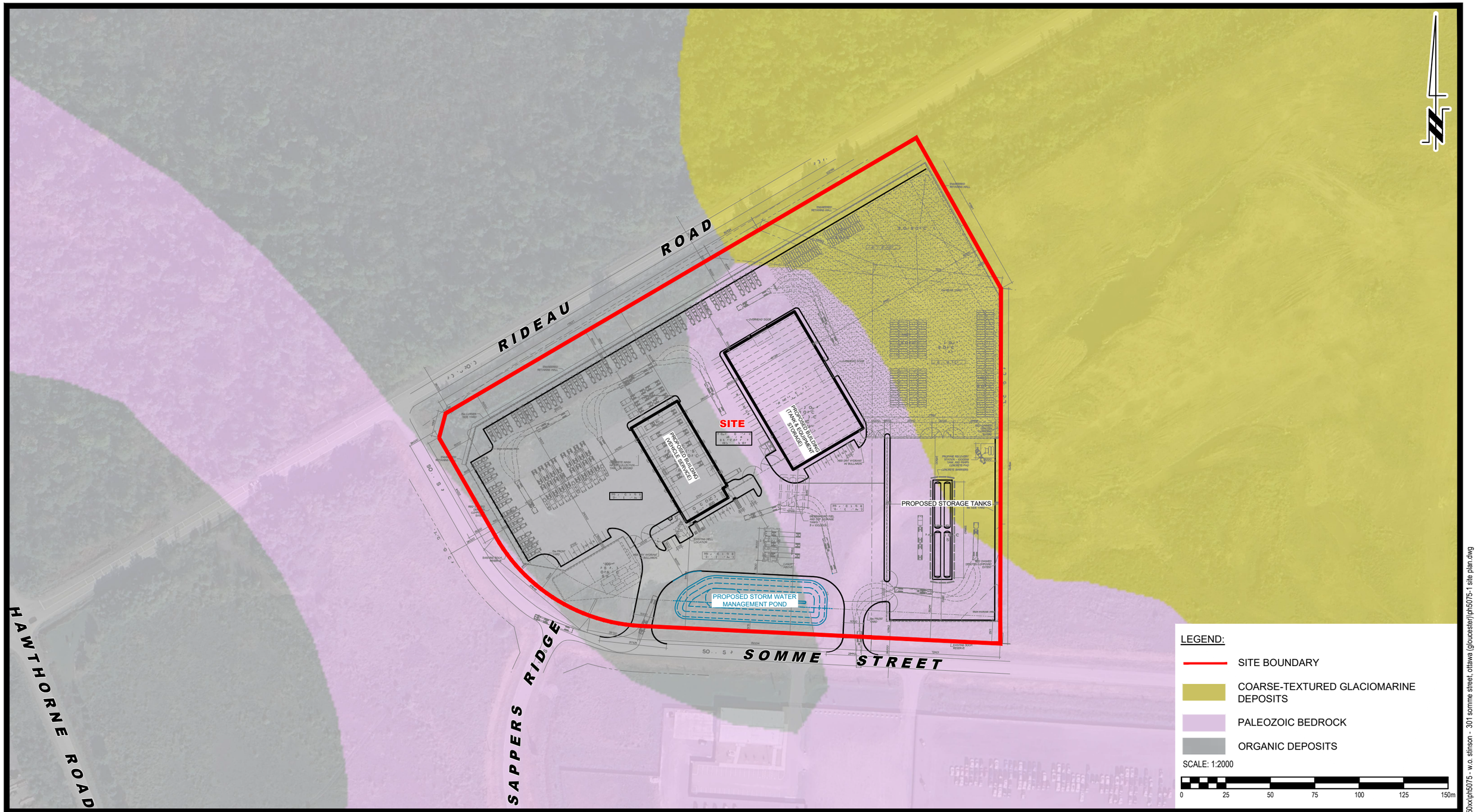

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NO.	REVISIONS	DATE	INITIAL

W.O. SINSON & SONS LTD.
GROUNDWATER IMPACT ASSESSMENT
PROPOSED COMMERCIAL DEVELOPMENT
301 SOMME STREET
OTTAWA, ONTARIO

Title:
SURFICIAL GEOLOGY PLAN

Scale: 1:2000	Date: 09/2025
Drawn by: GK	Report No.: PH5075-1
Checked by: NZ	Dwg. No.: PH5075-3
Approved by: NZ	Revision No.:

11x17

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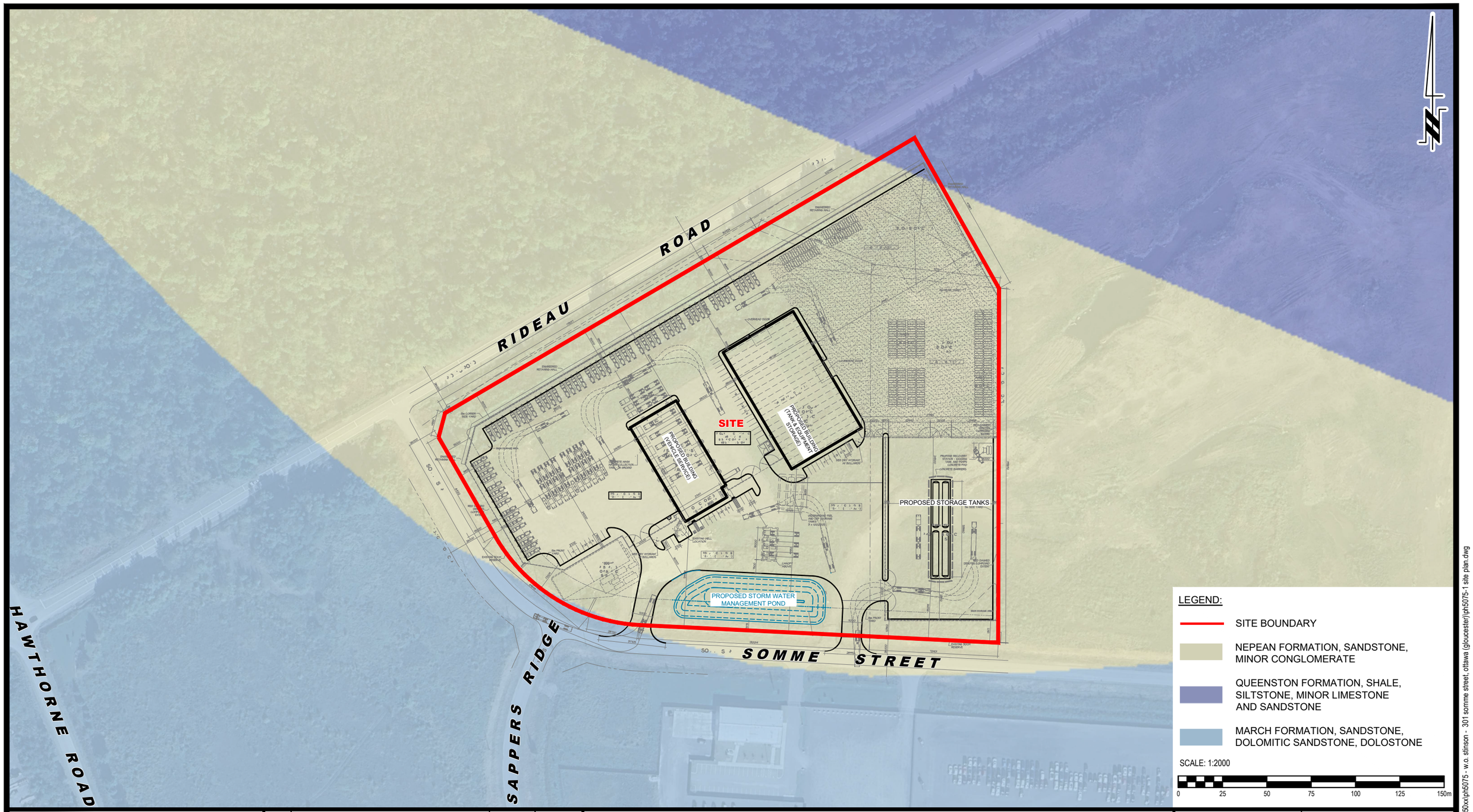

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NO.	REVISIONS	DATE	INITIAL

W.O. SINSON & SONS LTD.
GROUNDWATER IMPACT ASSESSMENT
PROPOSED COMMERCIAL DEVELOPMENT
301 SOMME STREET
OTTAWA, ONTARIO

Title:
BEDROCK GEOLOGY PLAN

Scale: 1:2000	**Date:** 09/2025
Drawn by: GK	**Report No.:** PH5075-1
Checked by: NZ	**Dwg. No.:** PH5075-4
Approved by: NZ	**Revision No.:**

11x17

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APPENDIX 2

PG7567 - SOIL PROFILE AND TEST DATA SHEETS

TEST HOLE LOGS – BY OTHERS

PG7567-1 - TEST HOLE LOCATION PLAN

SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379013.78 **NORTHING:** 5019022.56 **ELEVATION:** 91.31

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 2, 2025

FILE NO. : PG7567

HOLE NO. : BH 1-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	MONITORING WELL CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									
FILL: Gravel and crushed stone, trace sand 0.15m [91.16m]		0	AU 1						91
FILL: Compact to very dense, brown silty sand, with gravel, crushed stone, concrete and ash		1	SS 2	50	10-10-15-21 25				90
			SS 3	27	5-50-/-/ 50/0.13				
		2	SS 4	50	12-9-8-9 17				89
		3	SS 5	42	4-6-6-11 12				88
		4	SS 6	46	4-20-52-21 72				
		5	SS 7	37	2-20-10-5 30				87
5.26m [86.05m]									
FILL: Brown silty sand to sandy silt, some gravel, cobbles and boulders		6	SS 8	42	2-3-5-13 8				86
6.78m [84.53m]			SS 9	71	11-23-15-25 38				85
GLACIAL TILL: Loose to dense, silty sand to sandy silt, some gravel, cobbles and boulders		7	SS 10	46	9-12-12-23 24				84
		8	SS 11	33	6-15-12-16 27				83
		9	SS 12	37	11-12-15-12 27				82
			SS 13	43	7-18-22-50 40				
10.26m [81.05m]		10	SS 14	51	10-51-50-/ 101/0.2				81
End of Borehole Practical refusal to augering at 10.26 m depth (GWL at 3.44 m depth - June 5, 2025)		11							80
		12							79
		13							78
		14							

3.44 m 2025-06-05

4.09m

5.61m

SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379026.72 **NORTHING:** 5019097.92 **ELEVATION:** 91.06

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 2, 2025

FILE NO. : PG7567

HOLE NO. : BH 2-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									91
FILL: Gravel and crushed stone, some sand 0.10m [90.96m]		0	AU 1						
FILL: Compact, brown silty sand to sandy silt, with gravel and crushed stone 1.45m [89.61m]		1	SS 2	58	6-9-4-6 13				90
FILL: Stiff, brown to grey silty clay 2.21m [88.85m]		2	SS 3	71	4-4-3-3 7				89
FILL: Stiff to firm, grey silty clay		3	SS 4	75	P		10		88
			SS 5	83	P		6	43	
		4	SS 6	25	P		10	58	87
		5	SS 7	50	P		7	56	86
5.79m [85.27m]			G 8	0			10	68	
FILL: Compact, grey silty clay, with gravel , cobbles and boulders 6.78m [84.28m]		6	SS 9	67	2-3-9-20 12				85
FILL: Very dense, brown silty sand, with gravel, cobbles and boulders 7.52m [83.54m]		7	SS 10	44	26-50-/-/ 50/0.08				84
End of Borehole		8							83
Practical refusal to augering at 7.52 m depth		9							82
(GWL at 3.01 m depth - June 5, 2025)		10							81
		11							80
		12							79
		13							78
		14							

3.01 m 2025-06-05

SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379085.67 **NORTHING:** 5019059.58 **ELEVATION:** 90.73

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 2, 2025

FILE NO. : PG7567

HOLE NO. : BH 3-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80	REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80	PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE											90
TOPSOIL and organics 0.08m [90.65m]			AU 1								
FILL: Compact to very dense, brown silty sand, some clay, trace gravel, crushed stone and asphalt		1	SS 2	43	3-10-50-/ 60/0.25						89
1.68m [89.05m]			SS 3	48	50-/-/-/ 50/0.15						
End of Borehole		2									88
Practical refusal to augering at 1.63 m depth		3									87
		4									86
		5									85
		6									84
		7									83
		8									82
		9									81
		10									80
		11									79
		12									78
		13									77
		14									

SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379084.55 **NORTHING:** 5019060.27 **ELEVATION:** 90.64

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 2, 2025

FILE NO. : PG7567

HOLE NO. : BH 3A-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE: TYPE AND NO.	SAMPLE: RECOVERY (%)	SAMPLE: N OR RQD	SAMPLE: WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80	REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80	PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE		0									90
0.94m [89.70m]		1									89
End of Borehole		2									88
Practical refusal to augering at 0.94 m depth		3									87
		4									86
		5									85
		6									84
		7									83
		8									82
		9									81
		10									80
		11									79
		12									78
		13									77
		14									

SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379087.71 **NORTHING:** 5019059.84 **ELEVATION:** 90.80

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 2, 2025

FILE NO. : PG7567

HOLE NO. : BH 3B-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	ELEVATION (m)
GROUND SURFACE							90.80
Overburden							
1.52m [89.28m]							
FILL: Crushed stone, with concrete 1.83m [88.97m]			SS 1	17	24-25-7-12 32		
FILL: Stiff, brown silty clay, some sand and gravel, trace asphalt			SS 2	29	9-2-2-2 4		
2.97m [87.83m]							
FILL: Loose, brown silty sand, with rock fragments, trace clay 3.73m [87.07m]			SS 3	17	1-2-4-12 6		
FILL: Stiff, brown silty clay, some sand, trace gravel and crushed stone 4.50m [86.30m]			SS 4	12	1-7-2-3 9		
FILL: Loose, brown silty sand, with gravel 5.26m [85.54m]			SS 5	25	9-3-3-3 6		
FILL: Compact to dense, grey silty sand, with gravel, cobbles and boulders, trace clay			SS 6	8	1-9-22-25 31		
6.78m [84.02m]			SS 7	33	3-6-4-4 10		
FILL: Stiff, grey silty clay, some topsoil and organics, trace sand 7.54m [83.26m]			SS 8	33	27-9-3-4 12		
FILL: Very stiff, brown , silty clay			SS 9	50	5-4-4-6 8		
8.53m [82.27m]			SS 10	62	3-2-2-2 4		
FILL: Stiff, brown clayey silt, trace sand - Trace gravel by 9.6 m depth			SS 11	62	2-4-4-5 8		
10.21m [80.59m]			SS 12	50	7-4-1-1 5		
GLACIAL TILL: Stiff, grey silty clay, with gravel, cobbles and boulders, some sand			SS 13	42	P		
11.40m [79.40m]							
End of Borehole Practical refusal to augering at 11.40 m depth (GWL at 3.31 m depth - June 5, 2025)							

PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80

△ REMOULDED SHEAR STRENGTH (kPa)

▲ UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80

PL (%) WATER CONTENT (%) LL (%) 20 40 60 80

△12 ▲68 242

MONITORING WELL CONSTRUCTION

3.31 m 2025-06-05

4.57m

6.10m

SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379135.75 **NORTHING:** 5019162.49 **ELEVATION:** 92.18

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 3, 2025

FILE NO. : PG7567

HOLE NO. : BH 4-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	WATER CONTENT (%)	ELEVATION (m)
GROUND SURFACE							92
FILL: Stiff brown silty clay, some gravel, trace sand - trace organics to 0.08 m depth			AU 1				
1.22m [90.96m]		1	SS 2	33	3-5-5-25 10		
FILL: Compact, brown silty sand, with gravel, trace topsoil and organics			SS 3	75	11-13-11-11 24		91
2.21m [89.97m]		2					
FILL: Stiff, brown silty clay, with gravel, some crushed stone and sand			SS 4	25	2-5-2-3 7		90
2.97m [89.21m]		3					
FILL: Loose, brown silty sand, some clay, trace wood and topsoil			SS 5	42	1-4-4-4 8		89
3.73m [88.45m]							
FILL: Firm, brown silty clay, with gravel, some sand and crushed stone		4	SS 6	12	1-2-2-4 4		88
- Trace asphalt to 5.18 m depth			SS 7	31	2-2-50-/ 52/0.25		
6.02m [86.16m]		5					87
FILL: Firm, grey silty clay, with gravel, cobbles and boulders, trace crushed stone and asphalt			SS 8	25	1-2-2-2 4		
		6	SS 9	29	1-2-4-4 6		86
		7	SS 10	46	1-2-1-1 3		85
		8	SS 11	58	1-3-2-2 5		84
8.69m [83.49m]			SS 12	71	1-2-2-6 4		
TOPSOIL and organics		9					83
8.99m [83.19m]			SS 13	62	5-11-8-/ 19		
Compact, grey **SILTY SAND** to **SANDY SILT**		10	SS 14	83	1-1-1-1 2		82
9.45m [82.73m]							
GLACIAL TILL: Firm to stiff, brown clayey silt, trace gravel and sand		11	SS 15	100	1-1-1-2 2		81
			SS 16	83	0-0-0-0 0		
- Clay content increasing by 12.2 m depth		12	SS 17	100	P		80
		13	SS 18	100	1-2-3-1 5		79
		14	SS 19				

PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) — 20 40 60 80

REMOULDED SHEAR STRENGTH (kPa)

UNDRAINED SHEAR STRENGTH (kPa) — 20 40 60 80

PL (%) WATER CONTENT (%) LL (%) — 20 40 60 80

242

242

242

MONITORING WELL CONSTRUCTION

6.15m

7.54 m 2025-06-05

7.67m

SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379135.75 **NORTHING:** 5019162.49 **ELEVATION:** 92.18

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 3, 2025

FILE NO. : PG7567

HOLE NO. : BH 4-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80	REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80	PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	MONITORING WELL CONSTRUCTION	ELEVATION (m)
14.33m [77.85m]		14	SS 19	83	1-2-4-4 6		■ 11				78
Dynamic cone penetration test commenced at 14.33 m depth		15									77
15.42m [76.76m]		16					■ 100				76
End of Borehole		17									75
Practical refusal to DCPT at 15.42 m depth		18									74
DCPT Pushed from 14.33 m to 15.01 m depth		19									73
(GWL at 7.54 m depth - June 5, 2025)		20									72
		21									71
		22									70
		23									69
		24									68
		25									67
		26									66
		27									65
		28									

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Part of 5123 Hawthorne Road - Part 1
Ottawa, Ontario

DATUM Ground surface elevations provided R. W. Tomlinson Limited.

FILE NO. PE4621

REMARKS

HOLE NO. BH 1

BORINGS BY CME 55 Power Auger **DATE** 2019 May 14

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	91.80
		AU	1				
FILL: Brown to black mixture of silt, clay, sand and gravel with asphalt, concrete and limestone						1	90.80
		SS	1	50			
		SS	2	10		2	89.80
		SS	3	60		3	88.80
3.96		SS	4	50			
		SS	5	60		4	87.80
Very stiff, grey **CLAYEY SILT/SILTY CLAY**		SS	6	60		5	86.80
6.00		SS	7	70			
		SS	8	70		6	85.80
Brown **SILTY FINE SAND,** some gravel		SS	9	30		7	84.80
		SS	10	30		8	83.80
8.35							
End of Borehole							
Practical refusal to augering at 8.35m depth							
(GWL @ 2.92m - May 28, 2019)							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Part of 5123 Hawthorne Road - Part 1
Ottawa, Ontario

DATUM Ground surface elevations provided R. W. Tomlinson Limited.

FILE NO. PE4621

REMARKS

HOLE NO. BH 2

BORINGS BY CME 55 Power Auger **DATE** 2019 May 15

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	92.38
FILL: Dark brown clayey sand		AU	1				
0.91						1	91.38
FILL: Dark grey gravelly clay, some shale		SS	1	70			
1.52						2	90.38
FILL: Dark grey gravelly silty sandy clay with shale and cobbles		SS	2	70			
2.30						3	89.38
		SS	3	90			
		SS	4	90			
Stiff to firm, grey **SILTY CLAY**						4	88.38
		SS	5				
		SS	6			5	87.38
5.30							
End of Borehole							
Practical refusal to augering at 5.30m depth							
(GWL @ 3.82m - May 28, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Part of 5123 Hawthorne Road - Part 1
Ottawa, Ontario

DATUM Ground surface elevations provided R. W. Tomlinson Limited.

FILE NO. PE4621

REMARKS

HOLE NO. BH 3

BORINGS BY CME 55 Power Auger **DATE** 2019 May 14

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	91.00
FILL: Dark grey-brown gravelly sandy clay with shale		AU	1				
0.76							
		SS	1	50		1	90.00
		SS	2	50		2	89.00
		SS	3	50			
FILL: Dark grey mixture of clay, silt, sand and gravel with concrete, asphalt and shaley limestone		SS	4	60		3	88.00
		SS	5	50		4	87.00
		SS	6	60		5	86.00
5.79		SS	7	60			
						6	85.00
		SS	8	40		7	84.00
Grey **SILTY SAND**		SS	9	50		8	83.00
		SS	10	0			
9.45		SS	11			9	82.00
Light grey **SANDY SILT** with clay and gravel		SS	12			10	81.00
10.67							
End of Borehole							
Practical refusal to augering at 10.67m depth							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

REFERENCE No.: 11231101 ENCLOSURE No.:

BOREHOLE No.: BH1-21

ELEVATION: 91.07 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.

PROJECT: ConFastfrate, New Warehouse & Offices

LOCATION: Somme Street, Ottawa, ON

DESCRIBED BY: J. Scott CHECKED BY: Leandro Ramos

DATE (START): 26 July 2021 DATE (FINISH): 27 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
metres	91.07		GROUND SURFACE			%		N	
	90.99		**TOPSOIL** (75 mm)						
			FILL - SILTY SAND, trace gravel, trace clay, dark grey, moist, compact		SS1	96	7-15-10-9	25	
					SS2A	71	9-6-3-4	9	
1.0	90.20		**FILL** - SAND, trace silt, trace gravel, brown, moist, loose Gravel - 17%, Sand - 60%, Silt - 19%, Clay - 4%		SS2B		--		
	89.54		**FILL** - SILTY SAND, with clay, trace gravel, dark grey, moist, dense cobble encountered at 1.83 mbgs		SS3	71	7-13-33-40	46	
2.0					SS4	42	5-2-3-50/76 mm	5	
3.0					SS5A	67	8-8-5-3	13	
			with organics and wood fragments		SS5B		--		>>
					SS6	0	50/51 mm	50/51 mm	
4.0			augers grinding at 3.96 mbgs, inferred boulders or construction debri						
	86.49		**SILTY SAND** - trace gravel, trace clay, brown, moist, dense to very dense		SS7	83	10-21-37 -50/127 mm	58	
5.0					SS8A	100	43-31-36-47	67	
6.0	85.27		grey, very moist, augers grinding at 9.85 mbgs, inferred boulder		SS8B		--		
					SS9	83	24-23-18-26	41	
7.0			cobble encoutered at 6.86 mbgs		SS10	75	13-11-15-12	26	
8.0					SS11	71	6-4-12-23	16	
					SS12	67	50-15-15-18	30	
9.0					SS13	67	13-17-19-17	36	
			Gravel - 16%, Sand - 32%, Silt - 36%, Clay - 16%						
10.0	81.21		**LIMESTONE** - interbedded sandstone, grey, poor to excellent quality based on RQD - highly weatherd from 9.86 mbgs to 9.93 mbgs		RC1	58	38	38	
11.0			silty sand seam at 10.92 mbgs						

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\11231101\WORKSHARE\FIELD\GINT LOG\11231101 LOGS.GPJ Library File: 11231101 GHD_GEOTECH_V10.GLB Report: 11231101 BOREHOLE LOG Date: 12/8/21

BOREHOLE No.: BH1-21
ELEVATION: 91.07 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.
PROJECT: ConFastfrate, New Warehouse & Offices
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: J. Scott CHECKED BY: Leandro Ramos
DATE (START): 26 July 2021 DATE (FINISH): 27 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
metres	91.07		GROUND SURFACE			%		N	
			vertical fracture at 11.58 mbgs		RC2	98	95	95	
12.0									
13.0					RC3	95	58	58	
14.0	77.25		Borehole terminated at 13.82 mbgs Note: Borehole Coordinate - UTM Zone 18 - Northing: 5017223.9 - Easting: 456487.2						
15.0									
16.0									
17.0									
18.0									
19.0									
20.0									
21.0									
22.0									

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

REFERENCE No.: 11231101 ENCLOSURE No.:

BOREHOLE No.: BH2-21

ELEVATION: 90.79 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.

PROJECT: ConFastfrate, New Warehouse & Offices

LOCATION: Somme Street, Ottawa, ON

DESCRIBED BY: J. Scott CHECKED BY: Leandro Ramos

DATE (START): 27 July 2021 DATE (FINISH): 27 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
metres	90.79		GROUND SURFACE			%		N	
	90.71		**TOPSOIL** (75 mm)		SS1A	92	3-12-11-15	23	
			FILL - SILTY SAND, trace clay, trace bricks, trace asphalt, brown to black, moist, compact		SS1B		--		
	90.33		**FILL** - SAND AND GRAVEL, trace silt, brown, moist, compact		SS2	88	6-14-17-15	31	
1.0	90.03		**FILL** - SILTY SAND, with gravel, trace clay, brown to grey, moist, dense		SS3A	46	7-9-6-6	15	
			with clay at 1.65 mbgs		SS3B		--		
2.0			trace clay at 2.89 mbgs		SS4	67	28-13-12-38	25	
3.0			asphalt at 3.35 mbgs		SS5	63	8-7-5-12	12	
					SS6A	67	3-1-1-1	2	
4.0	86.93		**ORGANIC**		SS6B		--		
			FILL - SILTY SAND, trace gravel, trace clay, brown, wet, loose		SS6C		--		
	86.88		with topsoil at 4.57 mbgs		SS7A	88	2-3-7-8	10	
5.0			with clay, bricks fragments at 4.72 mbgs		SS7B		--		
	85.45		**SILTY SAND** - with clay, trace gravel, brown, moist to wet, compact to dense		SS8	83	8-19-22-40	41	
6.0			grey at 6.10 mbgs		SS9	54	9-14-12-13	26	
7.0					SS10	79	5-3-5-6	8	
8.0					SS11	75	5-7-8-10	15	
			Gravel - 20%, Sand - 38%, Silt - 33%, Clay - 9%		SS12	63	6-10-11-17	21	
9.0			wet at 9.14 mbgs		SS13	71	11-18-18-21	36	
10.0			augers grinding at 10.08 mbgs, inferred boulder		SS14	71	19-50/25 mm	50/25 mm	
11.0					SS15	25	11-14-15-21	29	

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\11231101\WORKSHARE\FIELD\GINT LOG\11231101 LOGS.GPJ Library File: 11231101 GHD_GEOTECH_V10.GLB Report: 11231101 BOREHOLE LOG Date: 12/8/21

BOREHOLE No.: BH2-21
ELEVATION: 90.79 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.
PROJECT: ConFastfrate, New Warehouse & Offices
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: J. Scott CHECKED BY: L. Ramos
DATE (START): 27 July 2021 DATE (FINISH): 27 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
metres	90.79		GROUND SURFACE			%		N	
	79.36		**SAND** - trace silt, grey, wet, dense		SS16A	92	11-15-18-31	23	
12.0	79.23		**SILTY CLAY** - with sand, trace gravel reddish brown, moist, hard		SS16B		–		
					SS17	0	21-31-31-40	62	
13.0					SS18	100	9-21-38-50/127 mm	59	
14.0					SS19	100	17-26-48-50/127 mm	59	
15.0	76.01		**LIMESTONE** - interbedded sandstone, grey, good quality based on RQD UCS = 139.1 MPa		RC1	100	78	78	
16.0									
					RC2	98	76	76	
17.0									
18.0					RC3	100	89	89	
19.0	71.92		Borehole terminated at 18.87 mbgs Note: Borehole Coordinates - UTM Zone 18N - Northing: 5017221.2 - Easting: 456581.5						
20.0									
21.0									
22.0									

NOTES:
m bgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH3-21
ELEVATION: 90.55 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.
PROJECT: ConFastfrate, New Warehouse & Offices
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: J. Scott CHECKED BY: L. Ramos
DATE (START): 26 July 2021 DATE (FINISH): 26 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
metres	90.55		GROUND SURFACE			%		N	10 20 30 40 50 60 70 80 90
	90.48		**TOPSOIL** (75 mm)						
			FILL - SILTY SAND, with gravel, trace clay, brown, moist, compact		SS1	71	2-6-4-10	10	
					SS2A	42	5-5-7-14	12	
1.0	89.64		with presence of organics/topsoil		SS2B		–		
					SS3	33	5-5-6-15	11	
2.0									
			with to trace clay at 2.5 m bgs		SS4	42	7-6-4-3	10	
3.0			grey at 3.0 m bgs		SS5	86	2-2-8-27	10	
			moist						
	87.20		**ASPHALT**						
4.0	87.15		**FILL** - SANDY GRAVEL, dark grey, wet, compact		SS6	46	12-12-5-7	17	
	86.74		**SILTY SAND** - trace gravel, some clay, brown, moist, compact						
5.0			loose at 4.75 m bgs		SS7	0	3-2-3-4	5	
			compact to very dense at 5.5 m bgs Gravel - 19%, Sand - 49%, Silt - 26%, Clay - 6%		SS8	73	10-16-21-46	37	H
6.0	WL6.2				SS9	100	13-26-27-41	53	
	2021-07-26								
7.0					SS10A	100	9-11-11-15	22	
	83.54		with clay, trace gravel, trace cobbles, grey, moist, compact		SS10B		–		
8.0					SS11	71	8-13-20-28	33	
					SS12	79	5-10-16-36	26	
9.0			wet at 9.14 m bgs		SS13	80	18-50/102 mm	100+	
	81.11		Borehole terminated due to auger refusal at 9.45 mbgs. Bedrock or boulder inferred						
10.0			Noted: Borehole Location - UTM Zone 18N - Northing: 5017286.1 - Easting: 456612.6						
11.0									

NOTES:
m bgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH4-21
ELEVATION: 90.23 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.
PROJECT: ConFastfrate, New Warehouse & Offices
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: J. Scott CHECKED BY: L. Ramos
DATE (START): 8 July 2021 DATE (FINISH): 28 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
metres	90.23		GROUND SURFACE			%		N	10 20 30 40 50 60 70 80 90
	90.16		**TOPSOIL** (75 mm)						
			FILL - SILTY SAND, with clay, trace rootlets, brown to grey, moist, stiff		SS1	43	1-2-7-4	9	
1.0			asphalt at 0.8 m bgs cobble at 0.9 m bgs		SS2	54	7-8-4-9	12	
			cobble at 1.5 m bgs		SS3	21	9-10-7-5	17	
2.0					SS4	0	4-2-1-2	3	
3.0	87.19		**FILL** - very loose fill mixed with organics/top soil and wood fragments - dark brown, moist		SS5	67	2-1-1-4	2	
4.0					SS6	13	5-1-0-1	1	
5.0					SS7	17	2-1-1-2	2	
					SS8	42	2-1-2-2	3	
6.0 ▼	WL6.1 2021-07-26				SS9A	83	1-3-2-3	5	
	83.68		**SILTY SAND** - with clay, trace rootlets, brown, moist		SS9B		–		
7.0			wet at 6.86 mbgs trace gravel, rootlets stopped at 7.01 mbgs		SS10	42	4-11-11-15	22	
8.0			brown with grey mottling, moist at 7.62 m bgs		SS11	83	5-10-12-11	22	
			wet at 8.69 mbgs		SS12	100	21-27-31-30	58	
9.0					SS13	0	22-22-19-36	41	
10.0					SS14	71	8-21-20-31	41	
11.0			moist at 10.82 mbgs		SS15	67	20-16-25-25	41	

NOTES:
m bgs: meters below ground surface
RQD: Rock Quality Designation

REFERENCE No.: 11231101 ENCLOSURE No.:

BOREHOLE No.: BH4-21

ELEVATION: 90.23 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.

PROJECT: ConFastfrate, New Warehouse & Offices

LOCATION: Somme Street, Ottawa, ON

DESCRIBED BY: J. Scott CHECKED BY: Leandro Ramos

DATE (START): 8 July 2021 DATE (FINISH): 28 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
metres	90.23		GROUND SURFACE			%		N	10 20 30 40 50 60 70 80 90
	78.80		**SILTY CLAY** - with sand, trace gravel, reddish brown, moist, hard		SS16	100	13-24-26-22	50	
12.0	78.19		Borehole terminated due to auger refusal at 12.04 mbgs. Bedrock or boulder inferred Note: Borehole Coordinate - UTM 18 Zone - Northing: 5017343.6 - Easting: 456673.6						
13.0									
14.0									
15.0									
16.0									
17.0									
18.0									
19.0									
20.0									
21.0									
22.0									

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH5-21
ELEVATION: 90.39 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.
PROJECT: ConFastfrate, New Warehouse & Offices
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: J. Scott CHECKED BY: Leandro Ramos
DATE (START): 26 July 2021 DATE (FINISH): 26 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
metres	90.39		GROUND SURFACE			%		N	10 20 30 40 50 60 70 80 90
	90.32		**TOPSOIL** (75 mm)						
			FILL - SILTY CLAY, trace sand, grey, moist, very soft		SS1	21	1-0-0-1	0	
					SS2A	24	2-5-6-7	11	
1.0	89.48		**FILL** - SANDY SILT, trace clay, trace gravel, dark brown, moist, compact		SS2B		--		
			loose at 1.52 mbgs		SS3	24	12-5-4-6	9	
2.0			Gravel - 25%, Sand - 38%, Silt - 29%, Clay - 8%						
			with clay, some gravel at 2.29 mbgs		SS4	24	5-4-2-5-6	6	
3.0									
			shale cobble at 3.2 mbgs		SS5	24	4-3-6-7	9	
4.0					SS6	24	4-3-3-5	6	
	85.82		**SILTY SAND** - trace clay, trace gravel, brown, moist, compact to very dense		SS7	24	3-5-8-9	13	
5.0			Gravel - 10%, Sand - 38%, Silt - 41%, Clay - 11% wet at 5.03 mbgs						
			moist, containing cobbles at 5.33 mbgs		SS8	24	14-20-42-42	62	
6.0			grey at 6.1 mbgs		SS9	24	8-16-20-20	36	
7.0			wet, with clay at 6.86 mbgs		SS10	16	15-34-50/102 mm	84/254 mm	
			moist at 7.62		SS11A	15	23-40-50/76 mm	90/229 mm	
8.0	82.52		**SANDY SILT** - trace clay, grey, moist, very loose		SS11B		--		
	82.39		Borehole terminated due to auger refusal at 8.0 mbgs. Bedrock or boulder inferred						
			Note: Borehole Coordinate - UTM 18 Zone - Northing: 5017293.2 - Easting: 456532.1						
9.0									
10.0									
11.0									

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH1
ELEVATION: 90.21 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 6 August 2020 DATE (FINISH): 6 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
meters	90.21		GROUND SURFACE	1.01			%	ppm	N	10 20 30 40 50 60 70 80 90
	90.1		TOPSOIL (75 mm thickness)							
0.5			FILL - Silty sand, trace gravel, loose, brown, damp			SS1	50		5	
	89.4									
1.0			FILL - Gravel, trace sand, possible cobble/boulder, compact to dense, grey, damp			SS2	50		47	
1.5	88.7			Riser						
			FILL - Silty sand, some clay, trace gravel, compact, brown and grey, damp			SS3	42		20	
2.0				Cuttings						
2.5						SS4	58		19	
3.0	87.2									
			FILL - Silty clay, some sand, trace gravel, very stiff, brown and grey, damp			SS5	33		10	
3.5			becoming sandy at 3.8 mbgs							
	86.3									
4.0			FILL - Clayey silty sand, compact, grey and brown, moist	WL 3.99		SS6	58		14	
4.5				4.57						
				Bentonite		SS7	21		14	
5.0				5.18						
5.5				5.49		SS8	46		12	
	84.3									
6.0			SILTY SAND- some clay, trace to some gravel, compact, brown and grey, moist	Sand						
				Screen		SS9	54		12	
6.5										

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH1
ELEVATION: 90.21 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 6 August 2020 DATE (FINISH): 6 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
meters	90.21		GROUND SURFACE				%	ppm	N	10 20 30 40 50 60 70 80 90
			Refusal encountered at 7.2 mbgs Cobbles and boulders encountered from 7.3 to 8.2 mbgs	7.01		SS10	71		50+	
7.5										
8.0						RC1	49			
	82.0		LIMESTONE- interbedded sandstone, grey, fair becoming good quality with depth based on RQD							
8.5										
9.0						RC2	94		73	
9.5										
10.0						RC3	100		82	
10.5										
11.0						RC4	100		90	
	78.9		Borehole terminated at 11.3 mbgs							
11.5										
12.0										
12.5										
13.0										
13.5										

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH2
ELEVATION: 89.80 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 6 August 2020 DATE (FINISH): 6 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	89.80		GROUND SURFACE			%	ppm	N	
	89.7		TOPSOIL (75 mm thickness)						
			FILL - Silty clay, firm to stiff, grey, moist		SS1	58		2	
0.5									
1.0					SS2	100		2	
1.5									
2.0					SS3	100		1	
2.5					SS4	100		WH	
3.0									
3.5					FV5				
	86.0		FILL - Clayey sand, some gravel, organics, loose, grey and brown, moist						
4.0					SS6	75		5	
4.5	85.2		FILL - Gravelly sandy silt, compact to very dense, brown and grey, saturated						
5.0					SS7	83		33	
5.5					SS8	63		70	
6.0	83.7		SILTY SAND- some gravel, compact to very dense, grey, moist to saturated						
6.5					SS9	100		27	

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH2
ELEVATION: 89.80 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 6 August 2020 DATE (FINISH): 6 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	89.80		GROUND SURFACE			%	ppm	N	
					SS10	83		57	
7.5									
					SS11	91		70	
8.0									
			Cobbles and boulders encountered from 8.4 to 9.3 mbgs		SS12	100		50+	
8.5									
9.0			Refusal encountered at 9.3 mbgs		SS13	100		50+	
	80.5		LIMESTONE- interbedded sandstone, grey, fair to good quality based on RQD						
9.5					RC1	100		85	
10.0									
10.5									
					RC2	100		83	
11.0									
11.5									
					RC3	100		52	
12.0									
	77.6		Borehole terminated at 12.2 mbgs						
12.5									
13.0									
13.5									

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH3
ELEVATION: 90.88 m

BOREHOLE LOG

Page: 1 of 3

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.88		GROUND SURFACE			%	ppm	N	
	90.8		TOPSOIL (125 mm thickness)						
0.5			FILL - Clayey silty sand, trace to some gravel, compact, brown and grey, damp		SS1	63		11	
1.0	90.0		FILL - Crushed limestone, asphalt, compact, grey and black, damp		SS2	58		42	
1.5	89.4		FILL - Sand, trace gravel, clay pockets, asphalt, compact, grey and black, damp to moist		SS3	38		15	
2.0									
2.5	88.6		FILL - Silty sand, some gravel, trace clay, possible cobbles/boulders, compact , grey, moist		SS4	33		54	
3.0	87.8		FILL - Clayey sand, asphalt, loose to compact, grey and brown, moist		SS5	33		22	
3.5									
4.0					SS6	4		8	
4.5	86.3		FILL - Silty sand, trace gravel, trace to some clay, dense to very dense, brown and grey, damp to moist, possible cobbles/boulders		SS7	50		54	
5.0									
5.5					SS8	33		44	
6.0	84.8		SANDY SILT- some gravel, compact to very dense, grey, damp						
6.5					SS9	83		31	

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH3
ELEVATION: 90.88 m

BOREHOLE LOG

Page: 2 of 3

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- ○ Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.88		GROUND SURFACE			%	ppm	N	
					SS10	83		28	
7.5			Possible cobbles/boulders encountered from 7.6 to 9.1 mbgs						
8.0					SS11	83		24	
8.5					SS12	25		80	
9.0									
9.5					SS13	100		42	
			Refusal encountered at 10 mbgs						
10.0			Cobbles and boulders encountered from 10.0 to 11.9 mbgs						
10.5									
11.0					RC1	32			
11.5									
	79.0								
12.0			LIMESTONE- interbedded sandstone, grey, poor to fair quality based on RQD						
12.5					RC2	100		57	
13.0									
13.5			Rock core mechanical breaks during coring from 13.4 to 14.9 mbgs						

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH3
ELEVATION: 90.88 m

BOREHOLE LOG

Page: 3 of 3

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- ○ Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.88		GROUND SURFACE			%	ppm	N	
					RC3	92		37	
14.5									
15.0	75.9		Borehole terminated at 14.9 mbgs						
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									
19.0									
19.5									
20.0									
20.5									

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH4
ELEVATION: 90.44 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.44		GROUND SURFACE			%	ppm	N	
	90.3		TOPSOIL (125 mm thickness)						
0.5			FILL - Gravelly sand, compact, grey, damp		SS1	63		33	
	89.7		FILL - Sand and gravel, compact, grey, damp						
1.0					SS2	50		17	
1.5			Asphalt encountered at 1.5 mbgs						
2.0					SS3	54		27	
2.5					SS4	58		28	
3.0	87.4		FILL - Silty sand, trace clay, trace to some gravel, possible cobbles/boulders, brown and grey, damp to moist		SS5	100		50+	
3.5									
			Wood encountered at 3.8 mbgs						
4.0					SS6	17		19	
4.5									
5.0					SS7	0		4	
5.5					SS8	75		29	
6.0	84.3		SILTY SAND- trace to some gravel, trace clay, compact to dense, grey and brown, moist						
6.5					SS9	79		49	

NOTES:
mbgs: meters below ground surface

BOREHOLE No.: BH4
ELEVATION: 90.44 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.44		GROUND SURFACE			%	ppm	N	
					SS10	4		32	
7.5									
8.0					SS11	58		18	
8.5					SS12	58		44	
9.0									
9.5					SS13	67		50	
10.0									
10.5									
11.0	79.3		Borehole terminated at refusal at 11.1 mbgs		SS14	88		50+	
11.5									
12.0									
12.5									
13.0									
13.5									

NOTES:
mbgs: meters below ground surface

BOREHOLE No.: DCPT5
ELEVATION: 90.76 m

BOREHOLE LOG

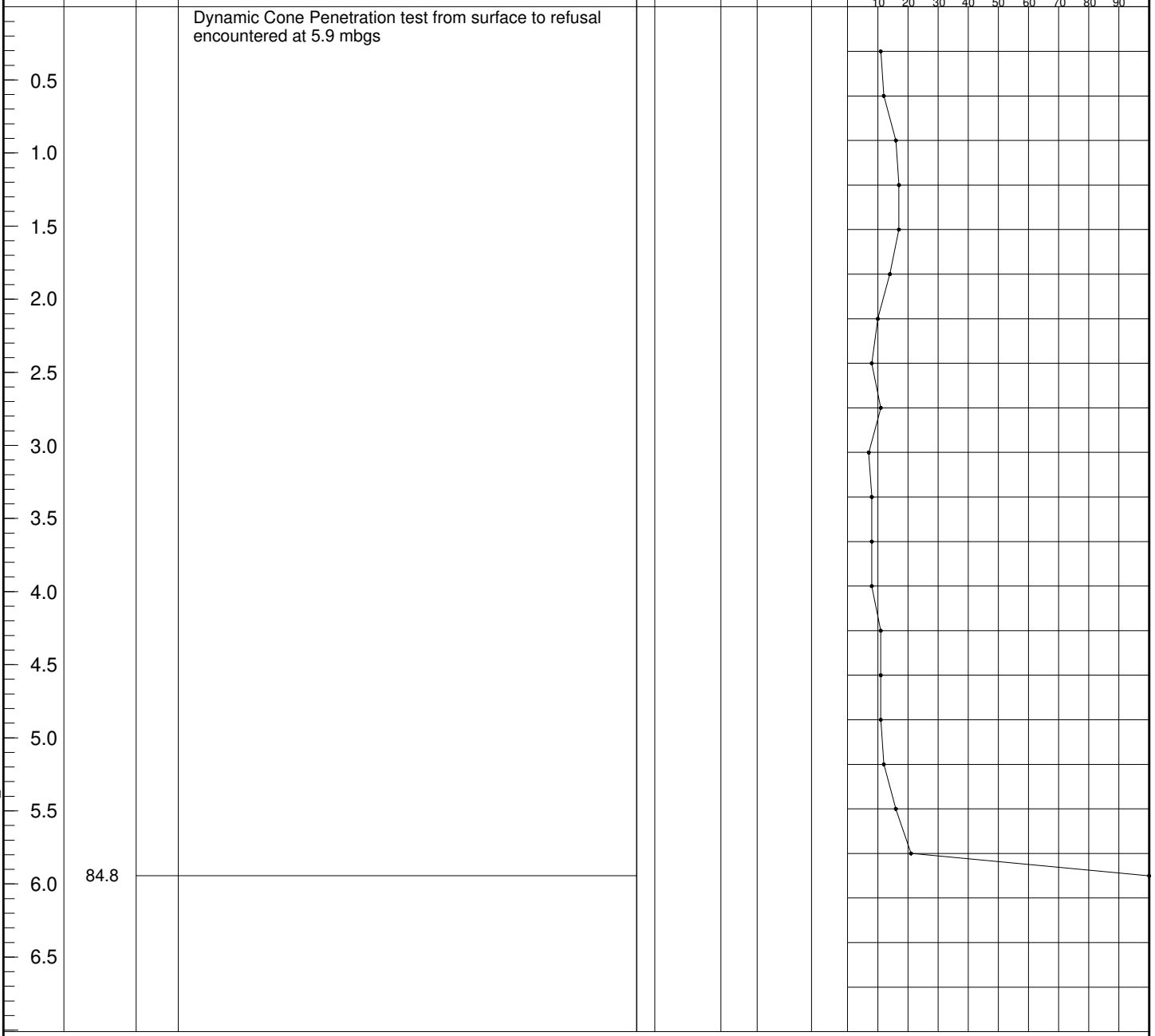
Page: 1 of 1

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA				
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD
meters	90.76		GROUND SURFACE			%	ppm	N
			Dynamic Cone Penetration test from surface to refusal encountered at 5.9 mbgs					
	84.8							

SCALE FOR TEST RESULTS
50kPa 100kPa 150kPa 200kPa
10 20 30 40 50 60 70 80 90



NOTES:
mbgs: meters below ground surface

INSPEC-SOL

BOREHOLE No.: B5-1
ELEVATION: 90.48 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: R.W.Tomlinson Ltd.
PROJECT: Geotechnical Investigation
LOCATION: Lot 26 and 27, concession 6, Ottawa, Ontario
DESCRIBED BY: B.Beveridge CHECKED BY: J.Bennett
DATE (START): October 30, 2008 DATE (FINISH): October 30, 2008

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- o Water content (%)
- Atterberg limits (%)
- • N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA				
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	Organic Vapour ppm or %LEL	Penetration Index / RQD
meters	90.48		GROUND SURFACE	91.70 91.60			%	ppm	N
1.0			FILL - silty clay, some sand, gravel, concrete, asphalt and organics, loose to dense, green/brown/grey, moist			SS1	46		6
2.0						SS2	25		10
3.0						SS3	50		4
4.0						SS4	50		9
5.0						SS5	75		50+
6.0	85.15		SANDY SILT- some sand, gravel, trace oxidation, very stiff, greenish brown, moist			SS6	59		10
7.0	83.62		SANDY CLAY- some gravel, trace oxidation, very soft, red / green / grey, moist	6.98 7.29		SS7	67		50+
8.0	83.16		SILTY CLAY- some gravel, very stiff, grey, moist	WL 7.63		SS8	25		50+
9.0				8.81		SS9	42		50+
10.0	80.45		End of Borehole Auger Refusal Assumed Bedrock	10.03		SS10	0		R
11.0						SS11	50		R
12.0						SS12	46		R
13.0						SS13	17		R

SCALE FOR TEST RESULTS
50kPa 100kPa 150kPa 200kPa
10 20 30 40 50 60 70 80 90

NOTES:

BOREHOLE LOG T020556-A1-BH(OCT-31-08).GPJ INSPEC_SOL.GDT 5/12/09

INSPEC-SOL

BOREHOLE No.: B5-2
ELEVATION: 90.78 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: R.W.Tomlinson Ltd.
PROJECT: Geotechnical Investigation
LOCATION: Lot 26 and 27, concession 6, Ottawa, Ontario
DESCRIBED BY: B.Beveridge CHECKED BY: J.Bennett
DATE (START): October 23, 2008 DATE (FINISH): October 23, 2008

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Organic Vapour ppm or %LEL	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.78		GROUND SURFACE			%	ppm	N	
			FILL - silty clay, some asphalt, sand and gravel, trace organics, compact to dense, brown/black, moist						
1.0					SS1	92		49	
2.0					SS2	55		12	
					SS3	75		50+	
3.0					SS4	63		17	
4.0					SS5	71		32	
	86.21		SILTY CLAY - some gravel, trace oxidation, firm to stiff, brown/grey, moist to wet		SS6	38		2	
5.0					SS7	100		7	
6.0					SS8	84		R	
	84.07		End of Borehole						
7.0									
8.0									
9.0									
10.0									
11.0									
12.0									
13.0									

NOTES:

BOREHOLE LOG T020556-A1-BH(OCT-31-08).GPJ INSPEC_SOL.GDT 5/12/09

INSPEC•SOL

BOREHOLE No.: B5-3

ELEVATION: 90.51 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: R.W.Tomlinson Ltd.

PROJECT: Geotechnical Investigation

LOCATION: Lot 26 and 27, concession 6, Ottawa, Ontario

DESCRIBED BY: B.Beveridge CHECKED BY: J.Bennett

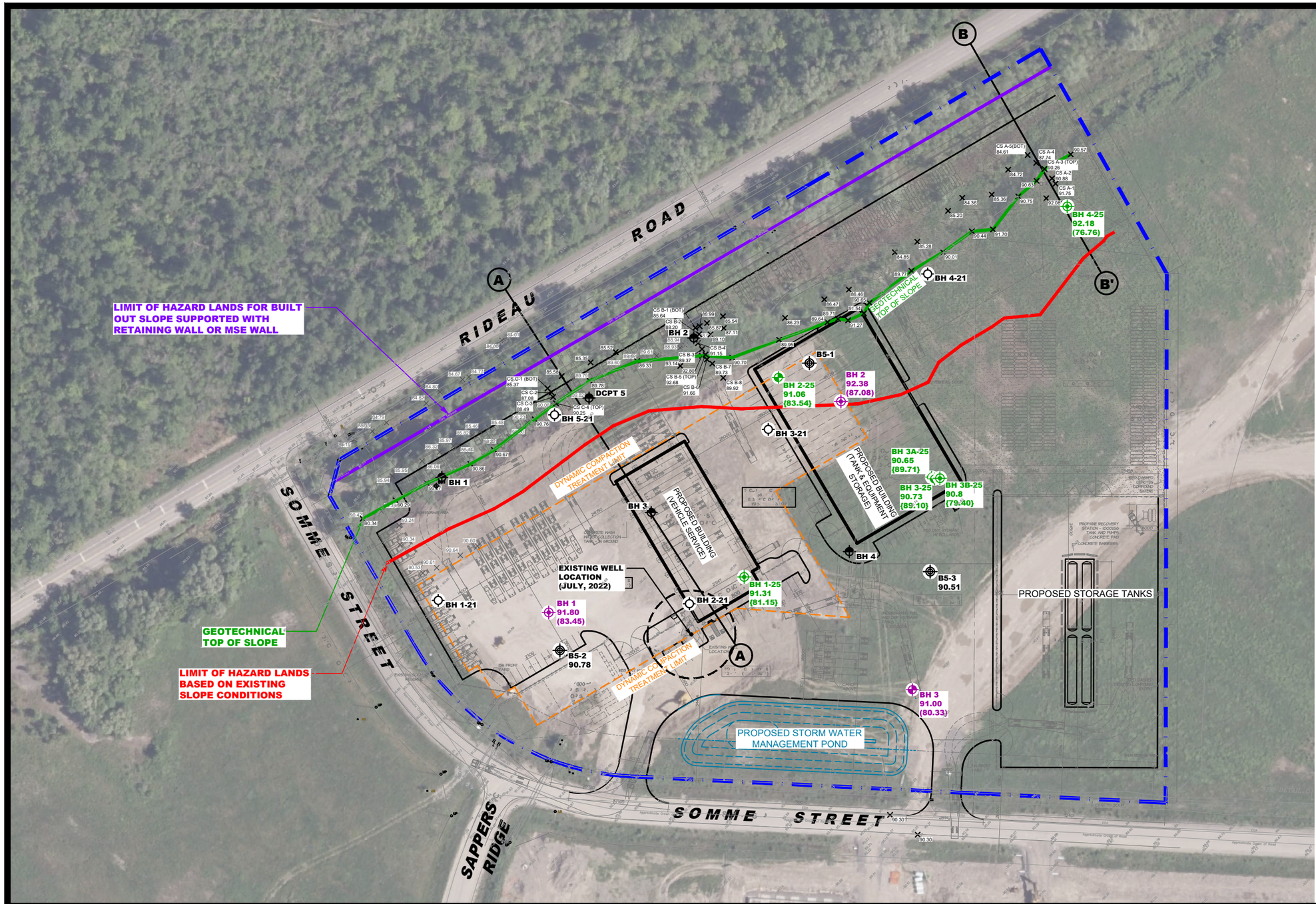
DATE (START): October 23, 2008 DATE (FINISH): October 23, 2008

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- o Water content (%)
- Atterberg limits (%)
- • N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Organic Vapour ppm or %LEL	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.51		GROUND SURFACE			%	ppm	N	
			FILL- concrete and asphalt fragments, some sand, trace organics						
1.0	89.75		FILL- silty clay, some gravel, trace oxidation, stiff, brown, moist		SS1	42		50+	
2.0	88.99		FILL- sandy silt, some gravel, trace clay, organics, very stiff, brownish green, moist		SS2	58		15	
3.0	88.22		FILL- silty clay, some asphalt, gravel and sand, trace organics, hard, brown, moist		SS3	50		38	
					SS4	59		13	
4.0	86.70		FILL- silty clay, trace organics, oxidation, gravel, sand, hard, moist		SS5	21		17	
5.0			-becoming trace to some gravel		SS6	84		32	
			-becoming more asphalt fragments, hard to very stiff		SS7	71		22	
6.0	84.41		SILTY CLAY- some sand, trace organics, firm, grey, moist		SS8	25		7	
7.0			-becoming very stiff		SS9	59		39	
	82.89		End of Borehole						
8.0									
9.0									
10.0									
11.0									
12.0									
13.0									

NOTES:



LEGEND:

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- BOREHOLE LOCATION (PATERSON GROUP REPORT: PE4621, MAY 2019)
- BOREHOLE WITH MONITORING WELL LOCATION (PATERSON GROUP REPORT: PE4621, MAY 2019)
- BOREHOLE LOCATION (GHD, JULY 2021)
- BOREHOLE LOCATION (GHD, AUGUST 2020)
- BOREHOLE LOCATION (INSPECSOL, 2008)
- 85.48 SURVEY SHOT LOCATION (DECEMBER 8, 2023)
- 85.48 SURVEY SHOTS LOCATION (JUNE 3, 2025)
- A—A' SLOPE STABILITY CROSS SECTION
- 92.85 GROUND SURFACE ELEVATION (m)
- {79.40} PRACTICAL REFUSAL TO AUGERING ELEVATION (m)
- (89.90) PRACTICAL DCPT REFUSAL ELEVATION (m)

CONCEPTUAL PLAN PREPARED BY HOBIN ARCHITECTURE

GROUND SURFACE ELEVATION AT PATERSON 2019 BOREHOLE LOCATIONS WERE PROVIDED BY R.W. TOMLINSON LIMITED.

SCALE: 1:1500

0 25 50 75 100m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DD/MM/YYYY	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	14/08/2025	SD

W.O. STINSON & SON LTD.
GEOTECHNICAL INVESTIGATION
PROPOSED COMMERCIAL DEVELOPMENT
301 SOMME STREET
OTTAWA, ONTARIO

Title:
TEST HOLE LOCATION PLAN

Scale: 1:1500	Date: 07/2025
Drawn by: ZS	Report No.: PG7567-1
Checked by: PB	Dwg. No.: PG7567-1
Approved by: SD	Revision No.: 1

p:\autocad drawings\geotechnical\pg75xx\pg7567\pg7567-1-test hole location plan (rev.01).dwg

11x17

APPENDIX 3

BASELINE WELL SAMPLING RESULTS

CARDLOCK REGULATIONS & DESIGN REQUIREMENTS

347 Pido Road, Unit 29
Peterborough, Ontario K0J 6X7
Canada
www.ghd.com

Our ref: 12576381-04

21 July 2022

Keefe Primett, Senior Project Manager
Consolidated Fastrate (Ottawa)
c/o CBRE Limited | Project Management Canada
333 Preston Street, 7th Floor, Preston Square, Tower 1
Ottawa, ON K1S 5N4
Canada

Hydrogeological Impact Assessment: Pre-Construction Private Supply Well Monitoring & Baseline Data – 301 Somme St., Ottawa, ON. Fastfrate Ottawa Holdings Warehouse

Dear Mr. Primett:

1. Introduction

GHD Limited (GHD) is pleased to present the following report to Consolidated Fastrate (the Client) providing the pre-construction water well monitoring data and baseline information. GHD was requested to provide a baseline assessment of neighbouring water supply wells prior to ground improvement activities related to the construction of the Fastfrate Ottawa Holdings warehouse at the above captioned location (the Site). GHD reviewed private supply wells within approximately 600 m of the Site.

The proposed warehouse is located at the municipal address 301 Somme Street in Ottawa, Ontario as shown on the **Site Location Plan, Figure 1**. The Site encompasses an area on the order of 4.0 hectares (ha) and will support a new warehouse and office building that will be privately serviced with a septic system and potable water well. The locations of the private supply water wells that were assessed by GHD are illustrated on the **Well Location Plan, Figure 2.**

The purpose of the pre-construction monitoring is to establish a baseline of groundwater levels and water quality from private supply wells that are proximal to the Site and collect the data in advance of the commencement of the construction activities. The following scope of work was completed:

1. GHD contacted each of the residents and commercial properties within approximately 600 m of the Site as part of the baseline well survey and requested if residents or commercial properties wanted to participate in the groundwater monitoring program.
2. Each resident and commercial property participated, for which GHD conducted well inspections of the private water supply wells and collected water samples for a general suite of groundwater parameters. The properties that were included in the well monitoring program were 4885 and 5213 Hawthorne Road and 3500 Rideau Road.
3. Compiled and reviewed the private supply well monitoring data collected as summarized in this letter.

2. Summary of Private Supply Well Monitoring Program

2.1 Baseline Water Well Survey

Prior to the well survey GHD reviewed municipal servicing mapping which indicated that municipal water services are provided for Power Road (to the west of Hawthorne Road and the Tomlinson Rideau Quarry & Plant). Municipal services are not provided in close proximity of the Site to the north, east and south.

The water well survey consisted of contacting the neighbouring residential and commercial properties within approximately 600 m of the Site on June 3, 2022. The properties that were contacted included 4885 and 5213 Hawthorne Road and 3500 Rideau Road. Each location agreed to participate in the well monitoring program. The furthest private well that participated is located about 580 m from the Site.

The following information was gathered during the baseline survey:

4885 Hawthorne Road

- This location is a residential property located approximately 450 m north of the Site.
- This property is serviced by a drilled well with no Ministry of the Environment, Conservation and Parks (MECP) tag affixed to the casing. The depth to the bottom of the well was measured to be 10.9 metres below ground surface (mbgs).
- The well casing extended above the existing grade by 0.1 m and was outfitted with a well cap.
- The measured water level on June 3, 2022 was 1.1 mbgs.
- The well was outfitted with a submersible pump.
- A raw water sample was collected and submitted to Caduceon Environmental (Caduceon) for analysis for a general suite of groundwater chemistry parameters.

3500 Rideau Road

- This location is a commercial property identified as the Tomlinson Rideau Quarry and Plant and is located approximately 365 m west of the Site.
- This property is serviced by a drilled bedrock well with MECP well number 1514733. Based upon the well record, the well was constructed in 1975.
- Well depth is approximately 35 m. The well record indicates that the water bearing zone provided clear, fresh water from within limestone bedrock encountered at 34 m. Bedrock was encountered at 3 m.
- The well casing extended above the existing grade by 0.3 m and was outfitted with a well cap.
- The measured water level on June 3, 2022 was 11.7 mbgs.
- The well was outfitted with a submersible pump.
- A raw water sample was collected and submitted to Caduceon for analysis for a general suite of groundwater chemistry parameters.

5213 Hawthorne Road

- This location is a commercial property identified as the Renewi Canada Limited and is located approximately 580 m south-west of the Site.
- This property is serviced by a drilled well with MECP well number A342260. A well record could not be found in the MECP database for this well. The well was reportedly recently drilled.
- The well casing extended above the existing grade by 0.7 m and was outfitted with a well cap.
- The measured water level on June 3, 2022 was 10.8 mbgs.
- The well was outfitted with a submersible pump.
- A raw water sample was collected and submitted to Caduceon for analysis for a general suite of groundwater chemistry parameters.

2.2 Analytical Data

A raw water sample was obtained from each of the private supply wells for the purpose of evaluating the background analytical concentrations prior to the commencement of construction activities. The Certificates of Analyses of the testing are presented in **Appendix A**. The data was compared with the Ontario Drinking Water Standards (ODWS) and is summarized below in **Table 1**.

Table 1 Background Groundwater Quality

Parameter	Sample Identification			Ontario Drinking Water Standards	
	4885 (4885 Hawthorne Rd)	1514733 (3500 Rideau Rd)	RENEW (Blue) (5213 Hawthorne Rd)	Maximum Acceptable Concentration (MAC)	Aesthetic Objective /Operational Guideline (AO/OG)
	Sample Date: June 3, 2022				
Hardness	**876**	**870**	**1020**	---	80-100
Alkalinity	292	357	281	---	30-500
pH (no unit)	8.01	8.08	7.94	---	6.5-8.5
Conductivity (uS/cm)	1.66	2.02	1.80	---	---
Colour (TCU)	< 2	< 2	< 2	---	5
Turbidity (NTU)	**297**	**158**	**115**	1	5
Fluoride	< 0.1	< 0.1	< 0.1	1.5	---
Chloride	89.4	**263**	106	---	250
Nitrite (as N)	< 0.1	< 0.1	< 0.1	1	---
Nitrate (as N)	< 0.1	< 0.1	< 0.1	10	---
Sulphate	< 1	409	< 1	---	500
Calcium (dissolved)	212	213	237	---	---
Magnesium (dissolved)	84.1	82.1	105	---	---
Sodium (dissolved)	**57.1**	**120**	**43.5**	20	200
Potassium (dissolved)	8.2	8.7	2.8	---	---
Copper (dissolved)	< 0.002	< 0.002	< 0.002	---	1
Iron (dissolved)	< 0.005	0.008	< 0.005	---	0.3
Manganese (dissolved)	**0.334**	**1.93**	**0.285**	---	0.05
Silica (dissolved)	9.95	6.95	12.8		
Zinc (dissolved)	< 0.005	< 0.005	< 0.005	---	5
Ammonia+Ammonium (N)	0.08	0.77	0.28	---	---
Total Kjeldahl Nitrogen (N)	0.4	0.9	0.8	---	---
Organic Nitrogen	**0.3**	< 0.1	**0.5**	---	0.15
Tannins and Lignins	< 0.5	0.6	< 0.5	---	---
Dissolved Organic Carbon	2.3	2.3	1.3	---	5
Total Coliform (cfu/100 mL)	**7**	0	0	0	---
E. Coli (cfu/100 mL)	0	0	0	0	---
Background (cfu/100 mL)	58	5	31	---	---
Sodium Adsorption Ratio	0.84	1.77	0.591	---	---
Total Dissolved Solids	**1197**	**1311**	**1298**	---	500
Langelier Index	1.29	1.45	1.25	---	---

Notes: All units are parts per million (mg/L) unless otherwise stated; (<) indicates levels that are below the detectable limits; **Bolded** values exceed their applicable ODWS; -- indicates no standard or guideline.

Although the majority of the parameters tested are within the ODWS, the following parameters exceeded their respective ODWS:

- Hardness, turbidity, sodium, manganese and total dissolved solids (TDS) were elevated in each of the samples above the ODWS;
- Organic nitrogen exceeded the ODWS at 4885 Hawthorne Rd and 5213 Hawthorne Rd wells;
- Chloride was elevated within the 3500 Rideau Rd well; and

- Total coliform was elevated in the 4885 Hawthorne Rd well. The resident was contacted and informed of the result.

3. Conclusions and Recommendations

Upon completion of the construction activities, GHD recommends that the private supply wells are re-sampled for comparison with the pre-construction baseline data. A letter will be prepared to assess if there were hydrogeological impacts from a water level and groundwater quality perspective due to the completed construction.

We trust that this letter meets with your immediate requirements. Should you have any questions or concerns regarding any aspect of this letter or should you require any further assistance, please do not hesitate to contact our office.

Regards

Jonathan Scott, B.E.Sc., CISEC.
Environmental Scientist

Robert Neck, P.Geo. (Limited)
Senior Geoscientist

July 21/22
PROFESSIONAL GEOSCIENTIST
LIMITED MEMBER
ROBERT W. NECK
2262 RN
ONTARIO

Steve Gagné, H.B.Sc.
Associate, Project Director

Figure 1: Site Location Plan
Figure 2: Well Location Plan
Appendix A: Certificate of Analysis

Figures

Data Disclaimer

Produced by GHD Limited under Licence with Ontario Northern Development, Natural Resources and Forestry © Queen's Printer for Ontario, 2022.

Paper Size ANSI A

0 70 140 210 280

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 18N

N

GHD

CONSOLIDATED FASTFRATE
RIDEAU ROAD & SOMME STREET, OTTAWA, ON
PT LOT 26, CON 6 FROM RIDEAU RIVER
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
CITY OF OTTAWA

WELL ASSESSMENT

SITE LOCATION PLAN

Project No. **12576381**
Revision No.
Date **Jun 30, 2022**

FIGURE 1

Q:\GIS\PROJECTS\12576000s\12576381\Layouts\202206_RPT001\12576381_RPT001_GIS001 - Site Location Plan.mxd
Print date: 30 Jun 2022 - 12:19

Imagery source: © City of Ottawa, 2019.

Data Disclaimer

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Paper Size ANSI A

0 50 100 150 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 18N

N

GHD

CONSOLIDATED FASTFRATE
RIDEAU ROAD & SOMME STREET, OTTAWA, ON
PT LOT 26, CON 6 FROM RIDEAU RIVER
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
CITY OF OTTAWA

WELL ASSESSMENT

SUPPLY WELL LOCATIONS

Project No. **12576381**
Revision No.
Date **Jul 12, 2022**

FIGURE 2

Q:\GIS\PROJECTS\12576000s\12576381\Layouts\202206_RPT001\12576381_202206_RPT001_GIS002 - Supply Well Locations.mxd
Print date: 12 Jul 2022 - 09:11

Imagery source: © City of Ottawa, 2019.

Appendices

Appendix A

Certificate of Analysis

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: DW 119829 **REPORT No. B22-16822**

Report To:

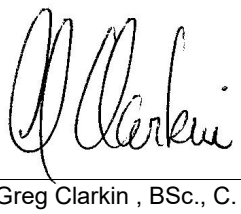
GHD Limited
455 Phillip Street,
Waterloo Ontario N2L 3X2 Canada
Attention: Robert Neck

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 03-Jun-22
DATE REPORTED: 15-Jun-22
SAMPLE MATRIX: Drinking Water

JOB/PROJECT NO.: 12576381-04
P.O. NUMBER: 762-001491
WATERWORKS NO.

			Client I.D.		1514733	4885	RENEW (Blue)	
			Sample I.D.		B22-16822-1	B22-16822-2	B22-16822-3	
			Date Collected		03-Jun-22	03-Jun-22	03-Jun-22	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Hardness (as CaCO3)	mg/L	1	SM 3120	08-Jun-22/O	870	876	1020	
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	08-Jun-22/O	357	292	281	
pH @25°C	pH Units		SM 4500H	08-Jun-22/O	8.08	8.01	7.94	
Conductivity @25°C	µmho/cm	1	SM 2510B	08-Jun-22/O	2020	1660	1800	
Colour	TCU	2	SM 2120C	06-Jun-22/O	< 2	< 2	< 2	
Turbidity	NTU	0.1	SM 2130	06-Jun-22/O	158	297	115	
Fluoride	mg/L	0.1	SM4110C	06-Jun-22/O	< 0.1	< 0.1	< 0.1	
Chloride	mg/L	0.5	SM4110C	06-Jun-22/O	263	89.4	106	
Nitrite (N)	mg/L	0.1	SM4110C	06-Jun-22/O	< 0.1	< 0.1	< 0.1	
Nitrate (N)	mg/L	0.1	SM4110C	06-Jun-22/O	< 0.1	< 0.1	< 0.1	
Sulphate	mg/L	1	SM4110C	06-Jun-22/O	409	< 1	< 1	
Calcium	mg/L	0.02	SM 3120	08-Jun-22/O	213 *1*	212 *1*	237 *1*	
Magnesium	mg/L	0.02	SM 3120	08-Jun-22/O	82.1	84.1	105	
Sodium	mg/L	0.2	SM 3120	08-Jun-22/O	120	57.1	43.5	
Potassium	mg/L	0.1	SM 3120	08-Jun-22/O	8.7	8.2	2.8	
Copper	mg/L	0.002	SM 3120	08-Jun-22/O	< 0.002	< 0.002	< 0.002	
Iron	mg/L	0.005	SM 3120	08-Jun-22/O	0.008	< 0.005	< 0.005	
Manganese	mg/L	0.001	SM 3120	08-Jun-22/O	1.93	0.334	0.285	
Silica	mg/L	0.02	SM 3120	08-Jun-22/O	6.95	9.95	12.8	
Zinc	mg/L	0.005	SM 3120	08-Jun-22/O	< 0.005	< 0.005	< 0.005	
Ammonia + Ammonium (N)	mg/L	0.01	SM4500-NH3-H	07-Jun-22/K	0.77	0.08	0.28	
Total Kjeldahl Nitrogen	mg/L	0.1	E3516.2	07-Jun-22/K	0.9	0.4	0.8	
Organic Nitrogen (Calculation)	mg/L	0.1	E3516.2	14-Jun-22/K	< 0.1	0.3	0.5	
Tannins and Lignins	mg/L	0.5	SM5500B	07-Jun-22/K	0.6	< 0.5	< 0.5	
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	09-Jun-22/O	2.3	2.3	1.3	



Greg Clarkin , BSc., C. Chem
Lab Manager - Ottawa District

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: DW 119829 **REPORT No. B22-16822**

Report To:

GHD Limited
455 Phillip Street,
Waterloo Ontario N2L 3X2 Canada
Attention: Robert Neck

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 03-Jun-22
DATE REPORTED: 15-Jun-22
SAMPLE MATRIX: Drinking Water

JOB/PROJECT NO.: 12576381-04
P.O. NUMBER: 762-001491
WATERWORKS NO.

			Client I.D.		1514733	4885	RENEW (Blue)	
			Sample I.D.		B22-16822-1	B22-16822-2	B22-16822-3	
			Date Collected		03-Jun-22	03-Jun-22	03-Jun-22	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Total Coliform	cfu/100mL	1	MOE E3407	04-Jun-22/O	0	7	0	
E coli	cfu/100mL	1	MOE E3407	04-Jun-22/O	0	0	0	
Background	cfu/100mL	1	MOE E3407	04-Jun-22/O	5	58	31	
Anion Sum	meq/L		Calc.	09-Jun-22/O	23.1	20.2	21.8	
Cation Sum	meq/L		Calc.	09-Jun-22/O	23.0	20.2	22.5	
% Difference	%		Calc.	09-Jun-22/O	0.198	0.0385	1.43	
Ion Ratio	AS/CS		Calc.	09-Jun-22/O	1.00	1.00	0.972	
Sodium Adsorption Ratio	-		Calc.	09-Jun-22/O	1.77	0.840	0.591	
TDS(ion sum calc.)	mg/L	1	Calc.	09-Jun-22/O	1311	1197	1298	
Conductivity (calc.)	µmho/cm		Calc.	09-Jun-22/O	2007	1739	1859	
TDS(calc.)/EC(actual)	-		Calc.	09-Jun-22/O	0.649	0.719	0.722	
EC(calc.)/EC(actual)	-		Calc.	09-Jun-22/O	0.994	1.05	1.03	
Langelier Index(25°C)	S.I.		Calc.	09-Jun-22/O	1.45	1.29	1.25	

1 Metals Filtered and Acidified from unpreserved General Chemistry Bottle prior to analysis

Greg Clarkin , BSc., C. Chem
Lab Manager - Ottawa District

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

ghd.com → The Power of Commitment

CLAYBAR CONTRACTING INC.

Date: September 2nd, 2025

Attention: City of Ottawa, Planning & Development
Regarding: Cardlock Regulations & Design Requirements

Claybar Contracting Inc. is pleased to provide the following memo for the design of the proposed cardlock fueling facility to be constructed, proposed site plan at 301 & 331 Somme St, Ottawa, ON.

The memo is prepared to ensure the design and construction of the proposed cardlock and fuel storage system satisfy the requirements as outlined in the specifications of the current edition of O. Reg 217/01 and the Liquid Fuels Handling Code 2017.

The following regulations were considered for the proposed cardlock and fuel storage layout, as per LFHC 2017:

- **Approved Storage Tanks:**

2. UNDERGROUND STORAGE TANKS

2.1. Acceptable Tanks

2.1.1. Approved specifications

2.1.1.1. Only underground storage tanks that have 360° double-wall containment and that are certified in accordance with approved standards shall be installed.

2.1.1.2. Fibre-reinforced plastic tanks manufactured prior to December 31, 1978, shall not be used for the handling of products containing ethanol or methanol.

2.1.1.3. Underground steel storage tanks installed prior to May 1, 1974, and upgraded in accordance with Clause 7 (52)(b), (c), or (d) of Regulation 532 under the Gasoline Handling Act shall be removed unless
(a) permanent monitoring wells and impressed current cathodic protection have been installed;
(b) the tanks are provided with the equipment specified in Clauses 2.2.2.1(c), 4.2.1.2, and 4.2.1.6 of this Code; and
(c) the equipment required by Clause 4.6.6 of this Code is provided for the pump islands.

2.1.1.4. The authorization holder shall not use an underground storage tank system installed after May 1, 1974, in accordance with the requirements of Regulation 532 under the Gasoline Handling Act, unless the tank is provided with the equipment specified in Clauses 2.2.2.1(c), 4.2.1.2, 4.2.1.6, and 4.6.6.

- **Underground Tank Layout:**

2.2. Installation

2.2.1. Location of tanks

An underground storage tank shall not be installed
(a) inside or under any building;
(b) less than 1 m from a building;
(c) less than 1.5 m from a property line;
(d) less than 60 cm from an adjacent underground storage tank;
(e) less than 15 m from drilled water wells;
(f) less than 30 m from a dug water well or waterway; and
(g) where the loads carried by a building foundation or supports could be transmitted to the tank.

4.2.1. Underground storage tanks

4.2.1.1. The fill pipe for an underground storage tank shall not be located
(a) inside or under any building; or
(b) less than 1.5 m, measured horizontally, from any building opening or fire escape.

4.2.1.2. The fill pipe for an underground storage tank shall be
(a) equipped with an approved spill containment device;
(b) equipped with a vapour-tight closure;
(c) fitted with a drop tube
  (i) cut at a 45° angle at the bottom of the tube; and
  (ii) of a length that permits the bottom of the tube to terminate within 150 mm of the bottom of the tank; and
(d) kept securely closed except while the tank is being filled or dipped for measurement.

4.2.1.3. Double-wall containment and leak detection are required for fill pipes that are offset from the fill point on the tank (remote fills).

4.2.1.4. Approved spill containment shall be provided at all manual dip openings into a storage tank.

4.2.1.5. Where the direct riser is connected to a remote fill, the direct riser shall have a vapour-tight cap and a check valve to prevent backflow.

4.2.1.6. Where the fill pipe for an underground storage tank is above grade level, the fill pipe shall be provided with protection against vehicle impact.

4.2.1.7. Where the measurement of the contents of an underground storage tank is done through a pipe separate from the fill pipe, that pipe shall be installed in accordance with the requirements of Clauses 4.2.1.1 and 4.2.1.2.

4.2.1.8. All fill pipes shall be permanently marked in accordance with Clause 3.2.3.2.

- **Cardlock & Dispensing Layout:**

5. FACILITY DESIGN

5.1. General

5.1.1. Product at a facility shall be dispensed by pumping, and the dispensing equipment shall be located not less than
(a) 3 m from a property line;
(b) 3 m from any highway as defined in the Highway Traffic Act;
(c) 4.5 m from any opening in a building; and
(d) 1 m from a building.

5.1.2. The distance between storage tank vents and dispensing equipment shall be in accordance with Table 2 of this Code.

5.2. Full-Serve and Self-Serve Facilities

5.2.1. No person under the age of 15 shall operate dispensing equipment at a self-serve facility.

Table 2
Horizontal distance between storage tanks, vents, and dispensing equipment and distance from water wells to storage tanks at facilities, in metres

	NG	NGD	PS	PD	GD	GV	LFAS
NGS	-	2.5 or 4*	6	4.5	4.5	0	6
NGD	2.5 or 4*	-	3	3	1.5	7.5	3
PS	6	3	-	-	6	0	6
PD	4.5	3	-	-	3	7.5	3
GD	4.5	1.5	6	3	-	3†	†
GV	0	7.5	0	7.5	3†	-	0
LFAS	6	3	6	3	†	0	-

Legend:
NGS — natural gas storage
NGD — natural gas dispenser
PS — propane storage
PD — propane dispenser
GD — gasoline/diesel dispenser
GV — gasoline tank vent
LFAS — liquid fuel aboveground storage (excluding propane)‡§

**For 0 to 4000 L, the distance shall be 2.5 m, and for 4001 to 10 000 L, the distance shall be 4 m.*
†Not applicable to aboveground storage tanks.
‡The distance from drilled water wells to storage tanks at any facility shall not be less than 15 m.
§The distance from a dug water well to a storage tank at any facility shall not be less than 30 m. Except for marinas, the distance from a waterway to a storage tank at any facility shall not be less than 30 m.

5.4. Cardlocks/Keylocks

5.4.1. Dispensing equipment at a cardlock/keylock shall be installed to stop automatically after dispensing 200 L of Class I product and after dispensing 1000 L of Class II product.

5.4.2. At cardlock/keylock facilities, the minimum distance between a gasoline and diesel dispenser shall be 6 m, unless the facility is interlocked to prevent simultaneous operation of the gasoline and diesel dispensers.

5.4.3. All cardlocks/keylocks shall be designed with an oil/water separator, acceptable to the Ministry of the Environment and Climate Change.

5.4.4. Dispensing equipment shall be installed so that no fuel can be dispensed to any vehicle on a highway.

5.4.5. At cardlock/keylock facilities, there shall be
(a) automatically controlled lighting to illuminate the dispensing facilities sufficiently at all times to permit the safe dispensing of product; and
(b) signage that complies with Clauses 6.1.4.1 and 6.2.

5.4.6. The cardlock/keylock shall be equipped with two single-action emergency shut-offs, one located near the pumps/dispensers and the other located remote from the dispensing area.

5.4.7. Only an authorized person shall be able to reset the emergency shut-off specified in Clause 5.4.6.

5.4.8. Under dispenser fire suppression shall be provided at all dispensers.

5.4.9. Nozzles used on high-speed pumps shall be truck nozzles equipped with a device to prevent the nozzle from falling out of the fill neck.

6.1.4. Dispensing operations — Card/keylock

6.1.4.1. In addition to the requirements of Clause 6.2, the authorization holder of a cardlock/keylock facility shall post signs that specify safe operating practice and emergency telephone numbers.

6.1.4.2. The authorization holder shall ensure, on an annual basis that card/key users are provided with detailed training on the requirements of this Code, including safe operating and emergency procedures. The authorization holder shall maintain a record of the training.

6.1.4.3. Persons dispensing fuel from a cardlock/keylock dispenser shall
(a) be trained in the requirements specified in Clause 6.1.4.2; and
(b) remain in constant attendance at the vehicle being refueled.

6.1.4.4. The authorization holder shall conduct a daily inspection of the cardlock/keylock for spillage. Where spillage is found, the authorization holder shall comply with the requirements of Clause 8.

6.1.4.5. The authorization holder shall conduct a daily inspection of the cardlock/keylock to ensure the safe operation of all equipment.

The final proposed cardlock fueling system and layout will be designed by a P. Eng. and submitted to the TSSA for approval, as outlined in the LFHC 2017, and regulations noted above.

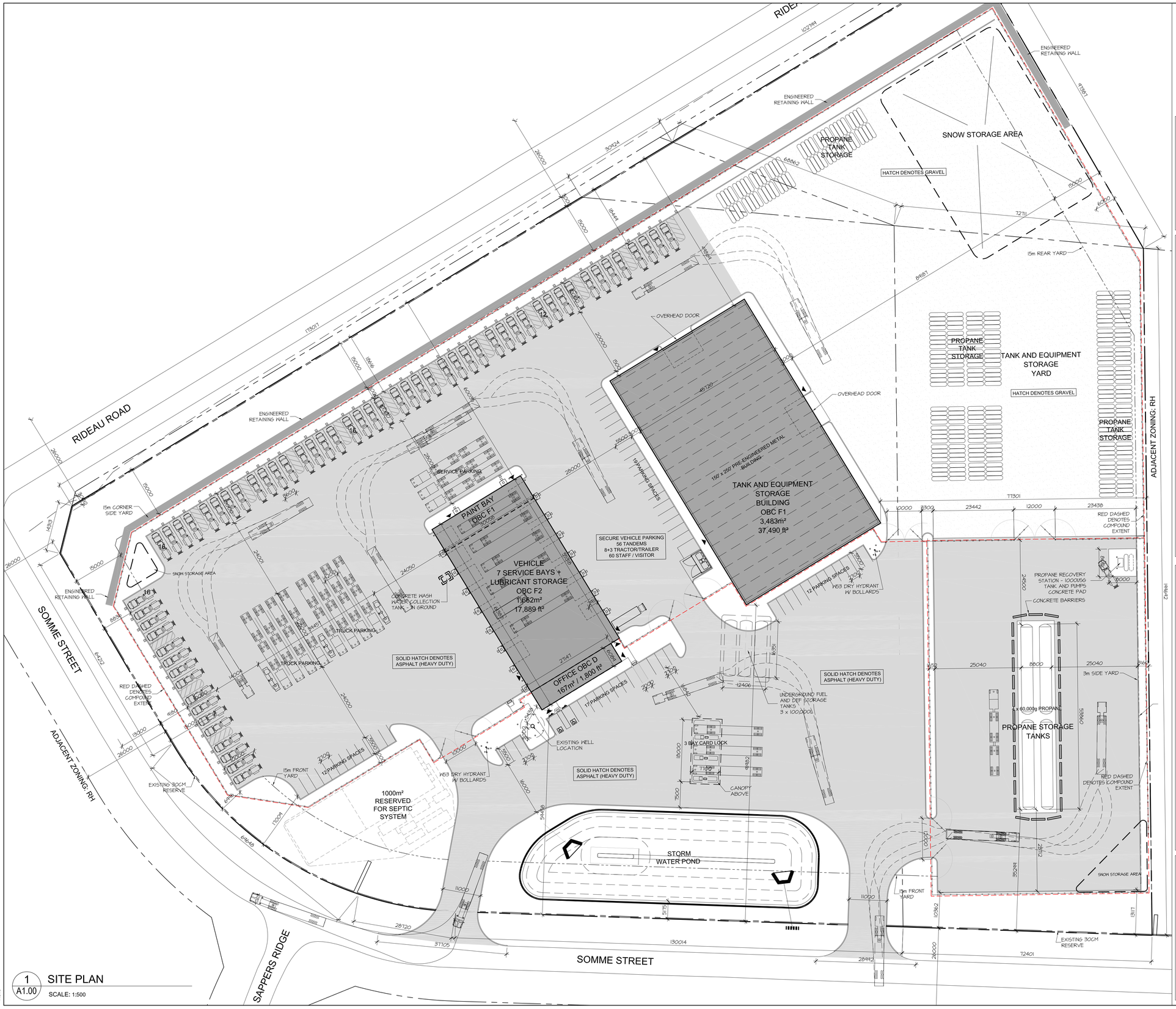
Respectfully,

Andy Ferland

Andy Ferland
Claybar Contracting Inc
(416) 984-2778

APPENDIX 4

HOBIN ARCHITECTURE – SITE PLAN



1 A1.00 SITE PLAN

SCALE: 1:500

None
None

W.O. STINSON & SON LTD.

LEGAL DESCRIPTION:

PART OF LOT 26; CONCESSION 6 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
and PARK OF BLOCKS 5 AND 14, REGISTERED PLAN 4M-1388
CITY OF OTTAWA

CIVIL ADDRESS:

301 SOMME STREET, OTTAWA

ZONING NOTES:

OFFICIAL PLAN DESIGNATION: RURAL
ZONING - RH - RURAL HEAVY INDUSTRIAL
ABUTTING - RH - RURAL HEAVY INDUSTRIAL

Owner
W. O. STINSON & SON LTD.
4728 Bank Street, Ottawa, ON K1T 3W7
Attn: Scott Stinson - 613 822-7400

Architect/Agent
HOBIN ARCHITECTURE INC.
63 Pamilla Street, Ottawa, ON, K1S 3K7
Attn: Doug van den Ham - 613-238-1200 x 115

Survey
ANNIS O'SULLIVAN VOLLEBEKK LTD
113 Prescott Street, Box 1340, Kemptville, Ontario K0G1J0
Attn: Emmett Ketchum - 613-258-1717

Civil
STANTEC OTTAWA
300 - 1331 Clyde Avenue Ottawa ON K2C 3G4
ATTn: Peter Moroz P.Eng - 613-244-2851

Structural
NOT YET CONTRACTED

Electrical
NOT YET CONTRACTED

Landscape
NOT YET CONTRACTED

Traffic
NOT YET CONTRACTED

ZONE: RH	REQUIRED	PROVIDED
PERMITTED USE (AMONG OTHERS)	AUTOMOBILE SERVICE STATION, DRIVE-THROUGH FACILITY, GAS BAR,PARKING LOT, SERVICE & REPAIR SHOP, STORAGE YARD, WAREHOUSE	ALL PERMITTED USES
MIN. LOT AREA	8,000 sq.m.	60,893sq.m.
MIN. LOT WIDTH	50m	00m
MIN. FRONT YARD SETBACK	15 m	15 m
MIN. REAR YARD SETBACK	15 m	15 m
MIN. INTERIOR SIDE YARD SETBACK (i) ABUTTING INDUSTRIAL ZONE (ii) OTHER	3m 10m	3m 10m
MIN. CORNER SIDE YARD SETBACK	15m	15m
MAX. PRINCIPAL BUILDING HEIGHT	15m	15m
MAX. LOT COVERAGE (%)	50%	8.7%
PARKING SPACES (STAFF)	00 / 100 = 00	60
BICYCLE PARKING	1 / 1500 = 2	2 PROVIDED INDOORS
OUTDOOR STORAGE	NOT PERMITTED IN ANY REQUIRED FRONT OR CORNER SIDE YARD, MUST BE SCREENED FROM ADJACENT RESIDENTIAL OR PUBLIC ROADS BY A 1.8M HIGH OPAQUE SCREEN	

LEGEND:

B.F. PARKING STALL c/w BF. SIGNAGE	3400, 5650
DEPRESSED CURB c/w TW51	
150mm DIA., 6mm THK, GALV. STEEL BOLLARD (MIN. 1.5m HIGH & 1.5m BELOW GRADE)	*BOL
300mm DIA., 6mm THK, GALV. STEEL BOLLARD (MIN. 1.5m HIGH & 1.5m BELOW GRADE)	*BOL-2
PRECAST CONCRETE PAVING	
CAST IN PLACE CONCRETE SIDEWALK/ REFER TO GEOTECH. REPORT	
HEAVY DUTY ASPHALT	
ASPHALT SIDEWALK	
PAINTED LINE STOP BAR	
ROLLED CONCRETE CURB	RC
SITE SIGNAGE	
PAINTED LINES	
BIKE RACK	
EXTERIOR LIGHTING/ REFER TO ELEC. DWGS. FOR TYPES	A5
CHAIN LINK FENCE	
FIRE ROUTE SIGNAGE	FRS

no.	date	revision
6	JULY 1 7, 2025	ISSUED FOR COORDINATION
6	JULY 16, 2025	ISSUED FOR CONCEPT REVIEW
5	MAY 28, 2025	SITEPLAN – EXISTING WELL
4	APR 15, 2025	SITEPLAN PRE-CONSULTATION
3	MAR 20, 2025	ISSUED FOR CONCEPT REVIEW
2	MAR 06, 2025	ISSUED FOR CONCEPT REVIEW
1	FEB 27, 2025	ISSUED FOR CONCEPT REVIEW

Hobin Architecture Incorporated
63 Pamilla Street
Ottawa, Ontario
Canada K1S 3K7
T: 613-238-7200
F: 613-235-2005
E: mail@hobinarc.com
hobinarc.com

HOBIN ARCHITECTURE

PROJECT/LOCATION:
W.O. Stinson & Son Ltd.
Somme Street Truck Yard
301 Somme Street

DRAWING TITLE:
VEHICLE SERVICE & STORAGE YARD SITE PLAN

DRAWN BY:	DATE:	SCALE:
DV	FEB 2025	AS NOTED

PROJECT: 2502

DRAWING NO.: A1.00

REVISION NO.: