GeoPro Project: 17-1780H14 October 18, 2023

Client: Blackthorn Development Corp.

RE: Preliminary Nitrate Impact Assessment
Parts of Lot 3 and 4, Concession 5, Pickering, Ontario

1.0 INTRODUCTION

GeoPro Consulting Limited ("GeoPro") was retained by Blackthorn Development Corp. (the "Client") to conduct a preliminary nitrate impact assessment on Parts of Lot 3 and 4, Concession 5, Pickering, Ontario (the "Site").

It should be noted that this letter was prepared based on the preliminary design information provided at the time of preparing the report. In the event the design information is modified or updated, this letter should be reviewed by GeoPro and further recommendations will be provided as needed.

1.1 Previous Investigations and Reports

A hydrogeological report entitled "Preliminary Hydrogeological Site Assessment, Proposed Residential Developments, Parts of Lots 3 and 4, Concession 5, Pickering, Ontario" dated May 30, 2017, and a geotechnical report entitled "Geotechnical Investigation, Proposed Residential Developments, Parts of Lots 3 and 4, Concession 5, Pickering, Ontario" dated April 30, 2017, were prepared by GeoPro for the Site. The investigations consisted of the advancement of seven (7) boreholes (BH1 to BH7) drilled to the depths ranging from 6.5 to 29.6 meters below ground surface ("mBGS"), and the installation of seven (7) monitoring wells in the advanced boreholes.

The physical settings, as well as the soil and groundwater conditions at the Site, are further described in the above-mentioned reports.

The information and data obtained from GeoPro's reports have been incorporated in this preliminary nitrate impact assessment report. The approximate borehole and monitoring well locations are shown on Drawing No. 1, and the Borehole Logs are included in Appendix A.

2.0 FIELDWORK

The fieldwork activities for the preliminary nitrate assessment were carried out on December 7, 2021, which included groundwater level monitoring and sampling.

2.1 Groundwater Levels

Groundwater levels were measured in all existing monitoring wells (BH1 to BH7) on December 7, 2021. The monitoring well construction details and the measured groundwater levels are recorded on the appended Borehole Logs and summarized in the following table.

Monitoring Well ID	Screen Interval (mBGS)	Groundwater Level (mBGS)
		December 7, 2021
BH1	5.2 ~ 6.7	2.53
BH2	2.2 ~ 6.7	1.33
BH3	1.2 ~ 6.7	0.99
BH4	3.1 ~ 6.1	1.43
BH5	3.1 ~ 6.1	0.54*
BH6	3.1 ~ 6.1	1.66
BH7	28.1 ~ 29.6	Artesian

Note:*=monitoring well was damaged

2.2 Groundwater Quality

Groundwater sampling was conducted by GeoPro in all the on-site monitoring wells, except BH5, on December 7, 2021. The collected samples were submitted to ALS Environmental ("ALS") in Waterloo to analyze the nitrate concentrations in the groundwater.

A guideline limit of 9.9 mg/L ("regional guideline") was provided by the client via email which is more stringent than the 10 mg/L limit defined by the Ontario Drinking Water Quality Standards ("ODWQS"), therefore, the regional guideline was used for this preliminary assessment.

All the samples were analyzed for the parameter nitrate (as nitrogen). No exceedances of the regional guideline were measured in the analyzed samples. The results are summarized in the table below.

Sample ID	Parameter	Concentration (mg/L)	Regional Guideline (mg/L)
BH1	Nitrate (as N)	0.124	9.9
BH2	Nitrate (as N)	0.112	9.9
BH3	Nitrate (as N)	0.432	9.9
BH4	Nitrate (as N)	0.109	9.9
BH6	Nitrate (as N)	0.342	9.9
BH7	Nitrate (as N)	<0.020	9.9

The analytical results of the above-mentioned sample are included in Appendix B.

3.0 PRELIMINARY SITE WATER BALANCE ASSESSMENT

3.1 Site Water Balance Method

A water balance equation is a simplified accounting of the hydrologic cycle within a specified scale and boundary. A Site Water Balance is typically used to assess the hydrological impacts to a project site resulting from development and to assess the need for any mitigation measures. The water balance equation can be stated as:

$$P = ET + WS + \Delta S$$

$$WS = R + I$$

Where:

P = Precipitation (mm/year)

WS = Water Surplus (mm/year)

ET = Evapotranspiration (mm/year)

R = Runoff (mm/year)

I = Infiltration (mm/year)

ΔS = Change in groundwater storage (mm/year) (taken as zero)

The potential evapotranspiration ("PET") for the Site was estimated using local weather data acquired from the Canadian Climate Normals database and the monthly soil moisture balance model developed by Thornthwaite and Mather (1957). The annual water surplus was determined by subtracting the PET from the average annual precipitation. Note that this preliminary assessment does not include calculations for actual evapotranspiration or a detailed site water balance assessment using post-development geographical blocks, best management practices, or low-impact developments.

3.2 Site Climate Data

The climatic data for the Site was obtained from the Canada Climate Normals database maintained by Environment and Climate Change Canada. The 1981-2010 Climate Normals and Averages were acquired from the OSHAWA weather station (ID: 6155878). The average monthly precipitation and temperature values used for the model are shown in Appendix D.

3.3 Post-Development Water Surplus

As shown in Appendix D, the PET for the Site was estimated to be approximately 589 mm/year using the Thornthwaite and Mather monthly soil moisture balance model; thus the annual net water surplus at the Site was estimated to be approximately 320 mm/year. The infiltration at the Site was assumed to be 320 mm/year (0.32 m/year) for the nitrate dilution calculations.

4.0 PRELIMINARY ASSESSMENT OF POTENTIAL NITRATE IMPACTS

4.1 Background Nitrate Concentration

As discussed, the parameter nitrate was analyzed in the groundwater samples taken from monitoring wells BH1 to BH4, BH6, and BH7. The background nitrate concentration in the groundwater at the Site was estimated to be 0.19 mg/L based on the average of the measured nitrate concentrations in the monitoring wells. It should be noted that the nitrate concentration of BH7 was below the detection limit of 0.020 mg/L, therefore, the concentration of BH7 was conservatively assumed to be 0.020 mg/L.

4.2 Nitrate Dilution – On-Site Water Quality Impact Risk Assessment

The nitrate dilution calculations for proposed developments with private on-site servicing presented below were completed per the methods outlined in the MECP Procedure D-5-4: Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment (Ministry of Environment, 1996).

The following assumptions were considered in the calculation as per the Concept Plan provided by the client:

- Number of Proposed Lots (P) 13
- Daily Effluent Flow /Lot (F) 1,000 L/day
- Development Area (A) *74,900 m^2
- Infiltration Rate (Ir) 0.32 m/year
- Nitrate Loading/Dwelling (N) 40 g/day
- Assumed Impervious Surface (S) 30%

Note:*= Development area included open space buffer based on Proposed Draft Plan of Subdivision dated July 11, 2023 prepared by Blackthorn Development Corp.

No detailed designs were provided, as such the percent imperviousness was assumed to be 30%. A copy of the Concept Plan is included in Appendix C.

The following equations were used to calculate the resultant nitrate concentration at the Site boundary:

$$\text{Resultant Nitrate Concentration at the Site Boundary} = L / R$$

Where:

L = Nitrate Loading [mg/day] = $N \times P$

R = On-Site Recharge [L/day] = $A \times (1-S) \times Ir + P \times F$

Based on the calculations and assumptions noted above, the estimated on-site recharge is 58,966 L/day and the estimated total daily nitrate load for the proposed development lots is

520,000 mg/day, which is equivalent to a nitrate concentration of 8.82 mg/L in the groundwater.

It should be noted that the assumptions used for the above estimation are based on our understanding of the proposed development determined from the preliminary information provided by the Client. Should there be any modifications to the design, this office should be further consulted and the calculation will need to be revised accordingly. It should also be noted that the above calculations do not apply to non-standard individual on-site systems that are designed to lower nitrate loadings below the standard assumptions in the equation. If such systems are proposed, the regional MECP office should be contacted for further consultation.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Groundwater sampling and analysis of the parameter nitrate was conducted in six (6) monitoring wells at the Site.

- No exceedances of the regional nitrate guideline were observed in the analyzed groundwater samples at the Site during this assessment
- The Site background nitrate concentration was estimated to be 0.19 mg/L

Based on the proposed development at the Site, nitrate is anticipated to be added to the groundwater system. Off-site nitrate impacts at the Site boundary were assessed based on the MECP Water Quality Impact Risk Assessment as well as the preliminary design information provided by the client and the estimated background nitrate concentration in the groundwater.

- Based on the MECP Water Quality Impact Risk Assessment for the proposed development, 8.82 mg/L of nitrate is anticipated to be added to the groundwater system, which meets the regional guideline and ODWQSs
- Off-site groundwater contamination due to nitrate loading caused by the proposed 13 lot development may not be anticipated at this time
    - Lots and individual on-site sewage systems should be designed in accordance with MECP procedures, Regional Policies and Guidelines, and the Ontario Building Code
    - An additional investigation should be considered to meet the minimum requirements of the Durham Region Drilled Wells and Lot Sizing Policies

It should be noted that this assessment was conducted using previously installed monitoring wells and a single round of groundwater sampling. The installation of additional monitoring wells should be considered to provide coverage of each of the proposed vacant lots. In addition, supplementary groundwater level monitoring and quality sampling and analysis should be conducted to capture seasonal water level and nitrate variations.

We trust that the above information meets the requirements at this moment. Should you require any clarifications, please feel free to contact our office.

Sincerely,

GeoPro Consulting Limited

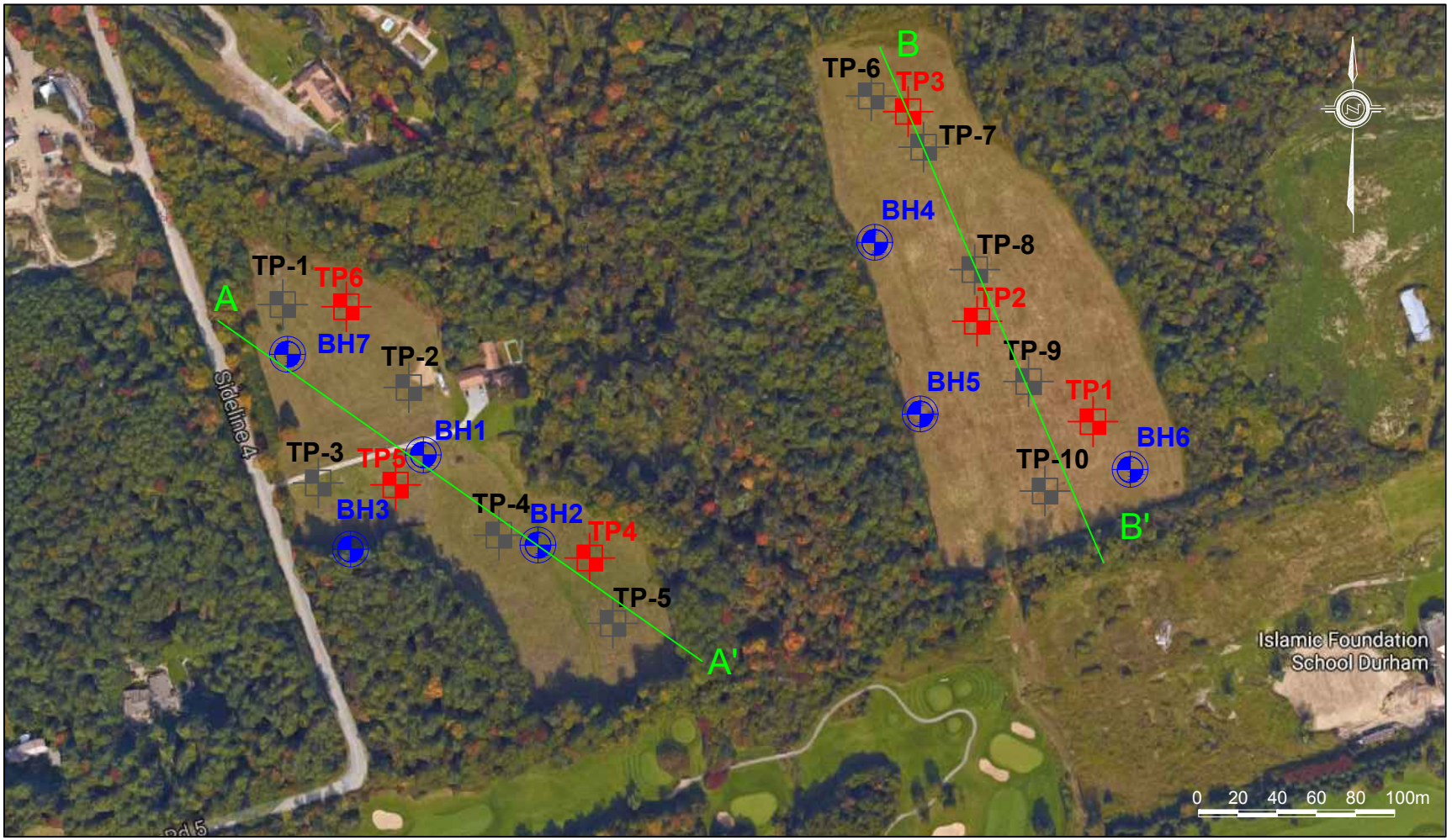
Geotechnical - Hydrogeology - Environmental - Materials Testing – Inspection

Nick Lan

David B. Liu, P.Eng., Principal

Attachments:
Drawing No. 1: Borehole Location Plan
Appendix A: Borehole Logs
Appendix B: Groundwater Analytical Results
Appendix C: Design Drawings
Appendix D: Water Balance Assessment
Limitations of the Report

DRAWINGS



Legend:

- Monitoring Well Location (by GeoPro)
- Test Pit Location Location (by GeoPro)
- Test Pit Location Location (by V.A. Wood)
- A - A' Cross Section Baseline

Client:	**JFC Development Ltd.**			Project No.: **17-1780H**	Drawing No.: **1**
Drawn: **WG**		Approved: **BG**		Title:	**Borehole/Monitoring Well and Test Pit Location Plan**
Date: **May 2017**		Scale: **As Shown**		Project:	**Preliminary Hydrogeological Site Assessment** **Proposed Residential Development** **Parts of Lots 3 and 4,Concession 5, Pickering, Ontario**
Original Size: **Letter**		Rev: **BG**			*GeoPro* Consulting Limited

APPENDIX A

ENCLOSURES

Enclosure 1A: Notes on Sample Descriptions

1. Each soil stratum is described according to the *Modified Unified Soil Classification System*. The compactness condition of cohesionless soils (SPT) and the consistency of cohesive soils (undrained shear strength) are defined according to Canadian Foundation Engineering Manual, 4th Edition. Different soil classification systems may be used by others. Please note that a description of the soil stratums is based on visual and tactile examination of the samples augmented with field and laboratory test results, such as a grain size analysis and/or Atterberg Limits testing. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.

2. Fill: Where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc., none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional preliminary geotechnical site investigation.

3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

GeoPro Consulting Limited

Geotechnical-Hydrogeology-Environmental-Materials-Inspection

Enclosure 1B: Explanation of Terms Used in the Record of Boreholes

Sample Type

AS	Auger sample
BS	Block sample
CS	Chunk sample
DO	Drive open
DS	Dimension type sample
FS	Foil sample
NR	No recovery
RC	Rock core
SC	Soil core
SS	Spoon sample
SH	Shelby tube Sample
ST	Slotted tube
TO	Thin-walled, open
TP	Thin-walled, piston
WS	Wash sample

Penetration Resistance

Standard Penetration Resistance (SPT), N:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in) required to drive a 50 mm (2 in) drive open sampler for a distance of 300 mm (12 in).

PM – Samples advanced by manual pressure
WR – Samples advanced by weight of sampler and rod
WH – Samples advanced by static weight of hammer

Dynamic Cone Penetration Resistance, N_d:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in) to drive uncased a 50 mm (2 in) diameter, 60° cone attached to "A" size drill rods for a distance of 300 mm (12 in).

Piezo-Cone Penetration Test (CPT):

An electronic cone penetrometer with a 60 degree conical tip and a projected end area of 10 cm² pushed through ground at a penetration rate of 2 cm/s. Measurement of tip resistance (Q_t), porewater pressure (PWP) and friction along a sleeve are recorded electronically at 25 mm penetration intervals.

Textural Classification of Soils (ASTM D2487)

Classification	Particle Size
Boulders	> 300 mm
Cobbles	75 mm - 300 mm
Gravel	4.75 mm - 75 mm
Sand	0.075 mm – 4.75 mm
Silt	0.002 mm-0.075 mm
Clay	<0.002 mm(*)

(*) Canadian Foundation Engineering Manual (4th Edition)

Coarse Grain Soil Description (50% greater than 0.075 mm)

Terminology	Proportion
Trace	0-10%
Some	10-20%
Adjective (e.g. silty or sandy)	20-35%
And (e.g. sand and gravel)	> 35%

Soil Description

a) Cohesive Soils(*)

Consistency Value	Undrained Shear Strength (kPa)	SPT "N"
Very soft	<12	0-2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very stiff	100-200	15-30
Hard	>200	>30

(*) Hierarchy of Shear Strength prediction

1. Lab triaxial test
2. Field vane shear test
3. Lab. vane shear test
4. SPT "N" value
5. Pocket penetrometer

b) Cohesionless Soils

Density Index (Relative Density)	SPT "N" Value
Very loose	<4
Loose	4-10
Compact	10-30
Dense	30-50
Very dense	>50

Soil Tests

w	Water content
w_p	Plastic limit
w_l	Liquid limit
C	Consolidation (oedometer) test
CID	Consolidated isotropically drained triaxial test
CIU	consolidated isotropically undrained triaxial test with porewater pressure measurement
D_R	Relative density (specific gravity, Gs)
DS	Direct shear test
ENV	Environmental/ chemical analysis
M	Sieve analysis for particle size
MH	Combined sieve and hydrometer (H) analysis
MPC	Modified proctor compaction test
SPC	Standard proctor compaction test
OC	Organic content test
U	Unconsolidated Undrained Triaxial Test
V	Field vane (LV-laboratory vane test)
γ	Unit weight

LOG OF BOREHOLE BH1

PROJECT: Geotechnical Investigation for Proposed Residential Development
CLIENT: JFC Developments Ltd.
PROJECT LOCATION: Parts of Lots 3 and 4, Concession 5, Pickering, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Continuous Flight Auger- Auto Hammer
Diameter: 155/205 mm
Date: Apr/10/2017

REF. NO.: 17-1780GHE
ENCL NO.: 2

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
135.3												
135.0 / 0.0	**TOPSOIL:** (180 mm)						Concrete					
0.2	**REWORKED SILTY FINE SAND:** trace organics, trace rootlets, brown, moist, loose		1	SS	4		135					
134.2			2	SS	4							
1.1	**SILTY FINE SAND:** trace organics, trace rootlets, brown, wet, loose to compact						134					
			3	SS	23							
133.2												
2.1	**FINE SAND AND SILT TO FINE SANDY SILT:** trace clay, brown to grey, wet, dense to very dense		4	SS	37		133					
							Bentonite					
			5	SS	55		132					
	--- grey		6	SS	82		131					
							130					
							Sand					
							Screen					
			7	SS	50 / 150 mm		129					
							Natural Pack					
127.4			8	SS	50 / 150 mm							
7.9	**END OF BOREHOLE**											

Notes:
1) Water encountered at a depth of 1.5 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 3.0 mBGS upon completion of drilling.
3) Borehole caved at a depth of 3.0 mBGS upon completion of drilling.
4) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling.

Water Level Reading

Date	W.L. Depth (mBGS)
April 28, 2017	1.72
May 9, 2017	1.35

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH2

PROJECT: Geotechnical Investigation for Proposed Residential Development

CLIENT: JFC Developments Ltd.

PROJECT LOCATION: Parts of Lots 3 and 4, Concession 5, Pickering, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

Method: Continuous Flight Auger- Auto Hammer

Diameter: 155/205 mm

Date: Apr/10/2017

REF. NO.: 17-1780GHE

ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
133.0												
0.0 / 132.7	**TOPSOIL:** (250 mm)											
0.3 / 132.3	**REWORKED SILTY FINE SAND:** trace clay, trace organics, trace rootlets, brown, moist, loose		1	SS	5		Concrete					
0.7 / 131.6	**NO RECOVERY:** likely silty fine sand, loose		2	NR	6		Bentonite					
1.4	**FINE SAND AND SILT:** trace clay, trace organics, seams of clayey silt, brown to grey, wet, compact to very dense		3	SS	18		131					
	--- grey		4	SS	30		Sand Screen					
			5	SS	32		129					
			6	SS	46		128					
125.9			7	SS	53		127					
7.1 / 124.3	**CLAYEY SILT:** some fine sand, seams of sand, grey, wet, stiff		8	SS	10		126 125 Natural Pack					
8.6	**CLAYEY SILT (TILL LIKE):** trace to some sand, trace gravel, containing cobbles and boulders, grey, wet, stiff		9	SS	10		124					
							123					

Continued Next Page

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH2

PROJECT: Geotechnical Investigation for Proposed Residential Development

CLIENT: JFC Developments Ltd.

PROJECT LOCATION: Parts of Lots 3 and 4, Concession 5, Pickering, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

Method: Continuous Flight Auger- Auto Hammer

Diameter: 155/205 mm

Date: Apr/10/2017

REF. NO.: 17-1780GHE

ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
122.8												
10.1	**CLAYEY SILT TILL TO SILTY CLAY TILL:** trace sand, trace gravel, containing cobbles and boulders, grey, moist, hard											
11			10	SS	80		122		○			
12							121					
120.3			11	SS	90/ 280 mm				○			
12.6	**END OF BOREHOLE**											

Notes:
1) Water encountered at a depth of 1.5 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 2.1 mBGS upon completion of drilling.
3) Borehole caved at a depth of 2.1 mBGS upon completion of drilling.
4) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling.

Water Level Reading

Date W.L.	Depth (mBGS)
April 28, 2017	1.05
May 9, 2017	0.70

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ $^{\varepsilon_f}$=3% Strain at Failure

LOG OF BOREHOLE BH3

PROJECT: Geotechnical Investigation for Proposed Residential Development

CLIENT: JFC Developments Ltd.

PROJECT LOCATION: Parts of Lots 3 and 4, Concession 5, Pickering, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

Method: Continuous Flight Auger- Auto Hammer

Diameter: 155/205 mm

Date: Apr/10/2017

REF. NO.: 17-1780GHE

ENCL NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
133.6							
133.4 0.2	**TOPSOIL:** (180 mm) **REWORKED SILTY FINE SAND:** trace organics, trace rootlets, dark brown to brown, moist, loose to compact		1	SS	4	Concrete Bentonite	133
132.5 1.1			2	SS	23		
132.2 1.4	**SILTY FINE SAND:** trace clay, trace rootlets, brown, wet, compact **FINE SAND AND SILT TO FINE SANDY SILT:** trace clay, brown to grey, wet, compact to dense		3	SS	26	Sand Screen	132
2			4	SS	48		131
3	--- grey		5	SS	43		
129.5 4.0	**SILT:** some fine sand, trace clay, layers of fine sand and silt, grey, wet, dense		6	SS	39		130 129
5						Natural Pack	
128.0 5.6	**FINE SAND AND SILT:** trace clay, grey, wet, very dense		7	SS	50/ 150 mm		128
6							127
126.6 7.0	**SILT:** some fine sand, trace to some clay, seams of fine sand, grey, wet, compact		8	SS	30		126
125.5 8.1	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 0.8 m below ground surface (mBGS) during drilling.
2) Borehole caved at a depth of 1.8 mBGS upon completion of drilling.
3) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling.

Water Level Reading

Date W.L.	Depth (mBGS)
April 28, 2017	0.76
May 9, 2017	0.57

DYNAMIC CONE PENETRATION RESISTANCE PLOT — 20 40 60 80 100

SHEAR STRENGTH (kPa) — ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE — 20 40 60 80 100

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

WATER CONTENT (%) — 10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR SA SI CL

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ $^{\varepsilon}$=3% Strain at Failure

LOG OF BOREHOLE BH4

PROJECT: Geotechnical Investigation for Proposed Residential Development

CLIENT: JFC Developments Ltd.

PROJECT LOCATION: Parts of Lots 3 and 4, Concession 5, Pickering, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

Method: Continuous Flight Auger- Auto Hammer

Diameter: 155/205 mm

Date: Apr/05/2017

REF. NO.: 17-1780GHE

ENCL NO.: 5

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
136.1 / 0.0	**TOPSOIL:** (200 mm)					Concrete	
0.2	**REWORKED SAND AND SILT:** some clay, some gravel, trace organics, trace rootlets, brown, moist, very loose to dense		1	SS	3		
135.0 / 1.1	**SANDY SILT TILL TO SAND AND SILT TILL:** some clay, trace gravel, layers of silty sand, containing cobbles and boulders, brown to grey, moist to wet, dense to very dense ---cobbles and boulders --- grey		2	SS	40		135
			3	SS	50/ 150 mm	Bentonite	
			4	SS	67		134
			5	SS	73		133
132.1 / 4.0	**SILTY SAND:** some gravel, containing cobbles and boulders, grey, wet, very dense					Sand	132
			6	SS	68	Screen	
130.5 / 5.6	**CLAYEY SILT TILL:** some sand to sandy, trace gravel, containing cobbles and boulders, grey, moist, hard						131
			7	SS	50 / 150 mm		130
129.1 / 7.0	**CLAYEY SILT:** trace sand, trace gravel, grey, moist, hard					Natural Pack	129
128.3 / 7.8	**END OF BOREHOLE**		8	SS	50 / 130 mm		

Notes:
1) Water encountered at a depth of 1.8 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.5 mBGS upon completion of drilling.
3) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling.

Water Level Reading

Date	W.L. Depth (mBGS)
April 28, 2017	0.39
May 9, 2017	0.27

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ε_f=3% Strain at Failure

LOG OF BOREHOLE BH5

PROJECT: Geotechnical Investigation for Proposed Residential Development

CLIENT: JFC Developments Ltd.

PROJECT LOCATION: Parts of Lots 3 and 4, Concession 5, Pickering, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

Method: Continuous Flight Auger- Auto Hammer

Diameter: 155/205 mm

Date: Apr/05/2017

REF. NO.: 17-1780GHE

ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
135.5							
135.3 0.0	**TOPSOIL:** (200 mm)					Concrete	
0.2 134.8	**FILL:** silty fine sand, trace organics, trace rootlets, dark brown to brown, moist, loose		1	SS	4		135
0.7 1	**SANDY SILT TILL:** trace to some clay, trace gravel, pockets of sand, containing cobbles and boulders, brown to grey, moist, very dense		2	SS	76 / 280 mm	Bentonite	
2			3	SS	87		134
	--- grey		4	SS	94		133
132.6 3 2.9	**FINE SANDY SILT:** trace clay, trace gravel, grey, wet, very dense		5	SS	50 / 80 mm		132
131.6 4 3.9	**CLAYEY SILT TILL:** some sand to sandy, trace gravel, containing cobbles and boulders, grey, moist, hard					Sand	
5			6	SS	50 / 130 mm	Screen	
130.0 5.5 6	**SANDY SILT TILL:** trace to some clay, trace gravel, containing cobbles and boulders, grey, moist, very dense ---cobbles and boulders		7	SS	50 / 80 mm		130 129
128.6 7 6.9	**GRAVELLY SAND:** trace silt, pockets of silt, containing cobbles and boulders, grey, wet, very dense					Natural Pack	128
8 127.4			8	SS	59		
8.1	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 0.8 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 0.3 mBGS upon completion of drilling.
3) Borehole caved at a depth of 6.7 mBGS upon completion of drilling.
4) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling.

Water Level Reading

Date	W.L. Depth (mBGS)
April 28, 2017	0.76
May 9, 2017	0.49

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
○ ε_f=3% Strain at Failure

LOG OF BOREHOLE BH6

PROJECT: Geotechnical Investigation for Proposed Residential Development

CLIENT: JFC Developments Ltd.

PROJECT LOCATION: Parts of Lots 3 and 4, Concession 5, Pickering, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

Method: Continuous Flight Auger- Auto Hammer

Diameter: 155/205 mm

Date: Apr/05/2017

REF. NO.: 17-1780GHE

ENCL NO.: 7

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
136.7							
0.0 / 136.1	**TOPSOIL:** (530 mm)		1	SS	4	Concrete	
136.0	**REWORKED SAND AND SILT:**						
0.7	trace to some clay, trace organics, trace rootlets, dark brown, wet, very loose		2	SS	14		136
	SANDY SILT TILL: trace clay, trace gravel, pockets of sand, layers of silty sand, containing cobbles and boulders, brown to grey, moist to wet, compact to very dense		3	SS	44	Bentonite	135
			4	SS	68		134
	--- grey		5	SS	45		133
	--- containing shale fragments		6	SS	45	Sand / Screen	132
131.1							
5.6	**SILTY SAND TILL:** some gravel, trace clay, layers of silty sand, containing cobbles and boulders, grey, moist to wet, very dense		7	SS	91/ 280 mm	Natural Pack	131
130.1							
6.5	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 1.5 m below ground surface (mBGS) during drilling.
2) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling.

Water Level Reading

Date	W.L. Depth (mBGS)
April 28, 2017	1.62
May 9, 2017	1.31

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH7

PROJECT: Geotechnical Investigation for Proposed Residential Development

CLIENT: JFC Developments Ltd.

PROJECT LOCATION: Parts of Lots 3 and 4, Concession 5, Pickering, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

Method: Continuous Flight Auger- Auto Hammer

Diameter: 155/205 mm

Date: Apr/13/2017

REF. NO.: 17-1780GHE

ENCL NO.: 8

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
136.1							
0.0 / 135.9	**TOPSOIL:** (220 mm)						Concrete
0.2	**REWORKED SILTY FINE SAND:** trace organics, trace rootlets, brown, moist, very loose		1	SS	2		
1 / 135.1			2	SS	3		135
1.1	**SILTY FINE SAND:** trace organics, trace rootlets, brown, moist to wet, very loose to dense		3	SS	14		
2 / 133.4			4	SS	40		134
2.7	**FINE SAND AND SILT:** trace clay, grey, wet to saturated, very dense		5	SS	52		133
4 / 132.1							
4.0	**SILTY FINE SAND:** trace clay, grey, wet to saturated, dense		6	SS	46		132
5 / 130.6							131
5.6	**FINE SAND AND SILT:** trace clay, layers of silty fine sand, seams of clayey silt, grey, wet, very dense		7	SS	55		130
7 / 129.0							129
7.1	**SILTY FINE SAND:** trace clay, grey, wet, very dense		8	SS	50 / 100 mm		
8 / 127.5							128
8.6	**SILT TO FINE SANDY SILT:** trace to some clay, grey, wet, compact		9	SS	12		127
10							

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

$+^3$, $\times^3$: Numbers refer to Sensitivity

○ $^{\varepsilon}$=3% Strain at Failure

LOG OF BOREHOLE BH7

PROJECT: Geotechnical Investigation for Proposed Residential Development

CLIENT: JFC Developments Ltd.

PROJECT LOCATION: Parts of Lots 3 and 4, Concession 5, Pickering, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

Method: Continuous Flight Auger- Auto Hammer

Diameter: 155/205 mm

Date: Apr/13/2017

REF. NO.: 17-1780GHE

ENCL NO.: 8

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SILT TO FINE SANDY SILT: trace to some clay, grey, wet, compact(Continued)						126					
11			10	SS	28		125					
124.5												
11.7 12	**SILTY CLAY TILL:** trace to some sand, trace gravel, grey, moist to wet, very stiff		11	SS	20		124					
13 122.9							123					
13.2	**SANDY SILT TILL:** trace clay, trace gravel, containing cobbles and boulders, grey, moist to wet, very dense											
122.3	---cobbles and boulders		12	SS	50 / 80 mm		Bentonite					
14 13.9	**SAND AND SILT TILL:** some clay, trace to some gravel, zones of silty sand, containing cobbles and boulders, grey, wet, dense to very dense						122					
15	--- auger grinding						121					
			13	SS	50							
16							120					
17	---cobbles and boulders		14	SS	50/ 100 mm		119					
118.4												
17.8 18	**CLAYEY SILT TILL:** some sand to sandy, trace gravel, grey, moist, hard						118					
			15	SS	100 / 250 mm							
19							117					
20												

Continued Next Page

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

$+^3$, $\times^3$: Numbers refer to Sensitivity

○ $^{\varepsilon}$=3% Strain at Failure

LOG OF BOREHOLE BH7

PROJECT: Geotechnical Investigation for Proposed Residential Development
CLIENT: JFC Developments Ltd.
PROJECT LOCATION: Parts of Lots 3 and 4, Concession 5, Pickering, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Continuous Flight Auger- Auto Hammer
Diameter: 155/205 mm
Date: Apr/13/2017

REF. NO.: 17-1780GHE
ENCL NO.: 8

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	CLAYEY SILT TILL: some sand to sandy, trace gravel, grey, moist, hard(Continued)		16	SS	78		116					
115.3												
20.8	**SANDY SILT TILL:** trace to some clay, trace gravel, grey, moist to wet, very dense						115					
			17	SS	71							
							114					
			18	SS	61		113					
							112					
			19	SS	66							
							111					
			20	SS	58		110					
							109					
			21	SS	53							
107.8							108					
28.4	**PROBABLE WEATHERED SHALE:** grey, moist						Sand					
							Screen					
			22	SS	50/ 100 mm		107					
106.6												
29.6	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of											

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH7

PROJECT: Geotechnical Investigation for Proposed Residential Development

CLIENT: JFC Developments Ltd.

PROJECT LOCATION: Parts of Lots 3 and 4, Concession 5, Pickering, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

Method: Continuous Flight Auger- Auto Hammer

Diameter: 155/205 mm

Date: Apr/13/2017

REF. NO.: 17-1780GHE

ENCL NO.: 8

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT / WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m							GR SA SI CL
	1.5 m below ground surface (mBGS) during drilling. 2) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling. Water Level Reading Date W.L. Depth (mBGS) April 28, 2017 -0.65 May 9, 2017 -0.63											

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity; $\circ^{\varepsilon_f=3\%}$ Strain at Failure

APPENDIX B

GeoPro Consulting Limited (Richmond Hill)
ATTN: Skyler Cheng
40 Vogell Road
Unit 57
Richmond Hill ON L4B 3N6

Date Received: 08-DEC-21
Report Date: 13-DEC-21 15:12 (MT)
Version: FINAL

Client Phone: 905-237-8336

Certificate of Analysis

Lab Work Order #: L2670660

Project P.O. #: NOT SUBMITTED
Job Reference: 17-1780H
C of C Numbers:
Legal Site Desc:

Costas Farassoglou
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2670660-1 BH1 Sampled By: CLIENT on 07-DEC-21 Matrix: WATER **Anions and Nutrients**							
Nitrate (as N)	0.124		0.020	mg/L		10-DEC-21	R5676677
L2670660-2 BH2 Sampled By: CLIENT on 07-DEC-21 Matrix: WATER **Anions and Nutrients**							
Nitrate (as N)	0.112		0.020	mg/L		10-DEC-21	R5676677
L2670660-3 BH3 Sampled By: CLIENT on 07-DEC-21 Matrix: WATER **Anions and Nutrients**							
Nitrate (as N)	0.432		0.020	mg/L		10-DEC-21	R5676677
L2670660-4 BH4 Sampled By: CLIENT on 07-DEC-21 Matrix: WATER **Anions and Nutrients**							
Nitrate (as N)	0.109		0.020	mg/L		10-DEC-21	R5676677
L2670660-5 BH6 Sampled By: CLIENT on 07-DEC-21 Matrix: WATER **Anions and Nutrients**							
Nitrate (as N)	0.342		0.020	mg/L		10-DEC-21	R5676677
L2670660-6 BH7 Sampled By: CLIENT on 07-DEC-21 Matrix: WATER **Anions and Nutrients**							
Nitrate (as N)	<0.020		0.020	mg/L		10-DEC-21	R5676677

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2670660 Report Date: 13-DEC-21

Client: GeoPro Consulting Limited (Richmond Hill)
40 Vogell Road Unit 57
Richmond Hill ON L4B 3N6
Contact: Skyler Cheng

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-WT	**Water**							
Batch R5676677								
WG3672673-9 DUP		**WG3672673-8**						
Nitrate (as N)		0.111	0.107		mg/L	4.3	20	10-DEC-21
WG3672673-7 LCS								
Nitrate (as N)			102.5		%		90-110	10-DEC-21
WG3672673-6 MB								
Nitrate (as N)			<0.020		mg/L		0.02	10-DEC-21
WG3672673-10 MS		**WG3672673-8**						
Nitrate (as N)			98.8		%		75-125	10-DEC-21

Quality Control Report

Workorder: L2670660 Report Date: 13-DEC-21

Client: GeoPro Consulting Limited (Richmond Hill)
40 Vogell Road Unit 57
Richmond Hill ON L4B 3N6
Contact: Skyler Cheng

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

COC Number: 17-1780H

Page of

Affix ALS barcode label here (preferred)

Canada Toll Free:

www.alsglobal.com

L2670668-COFC

Report To	Contact and company name below will appear on the final report	Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply
Company:	GeoPro Consulting Ltd	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Skyler Cheng	(Business Days) 4 day [P4] ☐ 3 day [P3] ☐ 2 day [P2] ☐ — EMERGENCY 1 Business day [E1] ☐ Same Day, Weekend or Statutory holiday [E0] ☐
Phone:	416-209-5668	Quali…
	Company address below will appear on the final report	☑ Compare Results to Criteria … Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Street:	40 Vogell Rd, Unit 57	Email 1 or Fax skylerc@geoproconsulting.ca
City/Province:	Richmond Hill, ON	Email 2 hyg@geoproconsulting.ca
Postal Code:	L4B 3N6	Email 3 elab@geoproconsulting.ca
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Distribution
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☑ FAX
Company:		Email 1 or Fax elab@geoproconsulting.ca
Contact:		Email 2 office@geoproconsulting.ca

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	25458/Q80680	AFE/Cost Center:	PO#
Job #:	17-1780H	Major/Minor Code:	Routing Code: 1
PO / AFE:		Requisitioner:	
LSD:	JD	Location:	

ALS Lab Work Order # (lab use only): L2670668

ALS Contact: COSTAS FARASSOGLOU

Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Nitrate	Number of Containers
	BH1	7-Dec-21	AM	WATER	R	
	BH2	7-Dec-21	AM	WATER	R	
	BH3	7-Dec-21	AM	WATER	R	
	BH4	7-Dec-21	AM	WATER	R	
	BH6	7-Dec-21	AM	WATER	R	
	BH7	7-Dec-21	AM	WATER	R	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Nitrate

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☒ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			-0.5		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by: HDJ	Date: 12/8	Time: 12

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System please submit using an Authorized DW COC form

APPENDIX C

PROPOSED DRAFT PLAN OF SUBDIVISION
PART OF LOTS 3 AND 4 CONCESSION 5
(Geographic Township of Pickering)
Now in the City of Pickering
REGIONAL MUNICIPALITY
of DURHAM

BLOCK 1
OPEN SPACE
1.17 ha

BLOCK 2
RESIDENTIAL
2.62 ha

BLOCK 3
OPEN SPACE
BUFFER
0.76 ha

BLOCK 4
OPEN SPACE
9.24 ha

BLOCK 5
OPEN SPACE
BUFFER
0.77 ha

BLOCK 6
RESIDENTIAL
3.35 ha

PRIVATE PARK

VACANT

BALSAM ROAD

CARRUTHERS CREEK

PART 1, PLAN 40R-29444

FEATURE LIMIT STAKED JUNE 11, 2013

10 Metre Buffer – The Buffer is over compensated in certain areas as a result of the placement of the road.

5th CONCESSION ROAD
ROAD ALLOWANCE BETWEEN CONCESSIONS 4 AND 5

CONCESSION 5

CONCESSION 4

GOLF COURSE

REGISTERED PLAN 40M-1577

REGISTERED PLAN 40M-1578

LOT 65

LOT 64

LOT 1,

LOT 3

BLOCK 33

BLOCK 32

STREET A

0 m 25 m 50 m

KEYMAP

Subject Property

0 km 1 km 2 km

LEGEND

Subject Site Boundary

10 m Buffer from Staked Limit

AREA TABLE

Residential Blocks	Blocks 2 & 6	5.97	ha.
Open Space	Blocks 1 & 4	10.41	ha.
Open Space 10 m Buffer	Blocks 3 & 5	1.53	ha.
	TOTAL	17.91	ha.

ADDITIONAL INFORMATION REQUIRED UNDER THE PLANNING ACT

C. The applicant is not interested in any additional land adjacent to the proposed subdivision.
D. Residential single-detached, open space and R.O.W easement.
H. Piped water to be provided.
I. Clay loam and sandy soil.
K. Sanitary and storm sewers to be provided

SURVEYOR'S CERTIFICATE

I hereby certify that the boundaries of the land to be subdivided as shown on this plan, and their relationship to the adjacent lands are accurately and correctly shown.

Gabriel C. Laframbaise – O.L.S. J.D. Barnes Ltd. Signature Day Month Year

OWNERS AUTHORIZATION

I, 869547 Ontario Inc. here by authorize Maurizio Rogato to prepare and submit a draft plan of subdivision for approval.

Mr. Paul Bigoni (Officer of 869547 Ontario Inc.) Signature Day Month Year

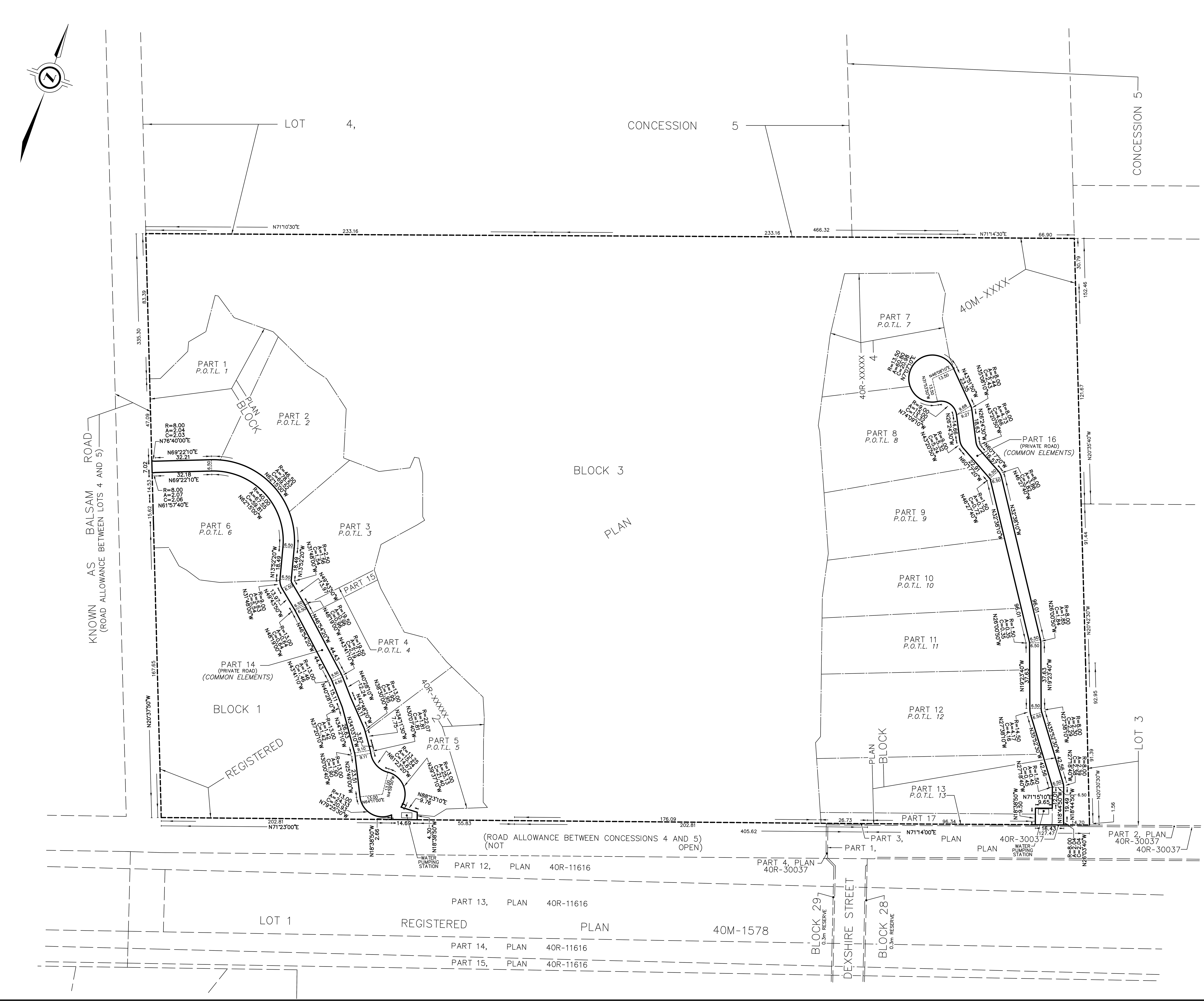
APPROVED UNDER SECTION 51 OF THE PLANNING ACT, R.S.O. 1990, c.P.13,
THIS _____ DAY OF _____, 20___

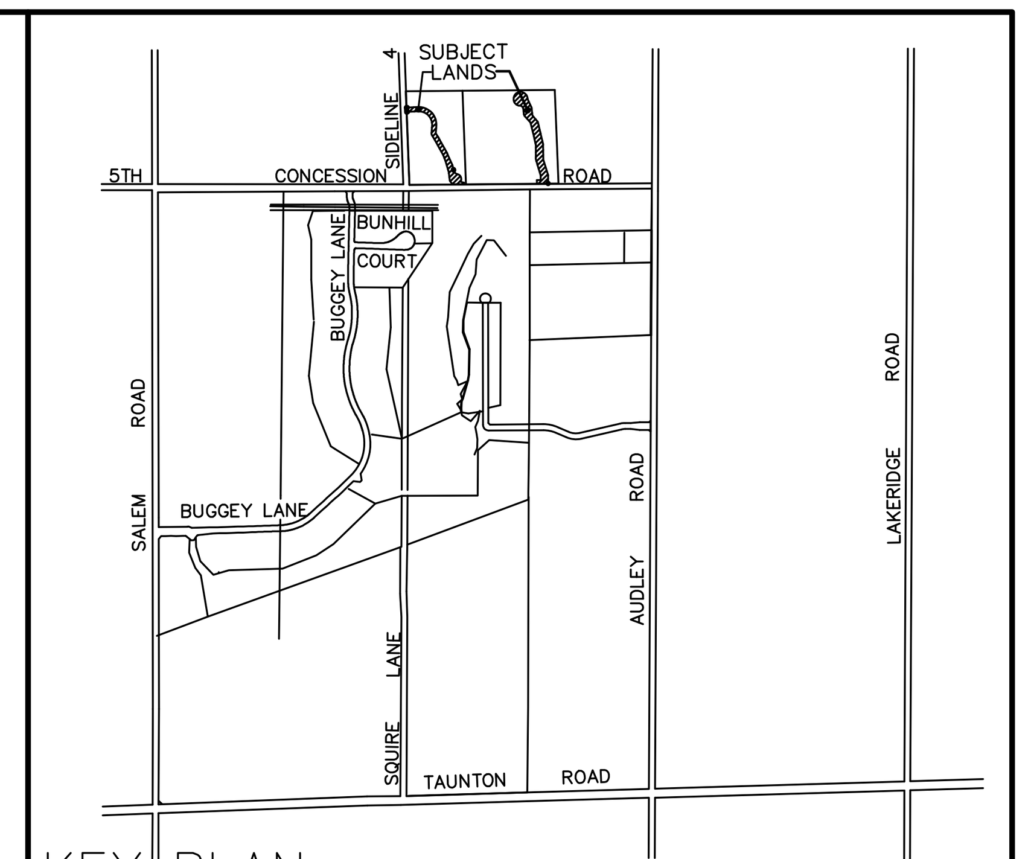
DIRECTOR, CITY DEVELOPMENT & CBO CITY OF PICKERING
(AUTHORITY GRANTED BY BY-LAW 7306/13)

BLACKTHORN Development Corp.

Land Development | Land Use Planning | Project Management | Government Relations

1:1000	Sept 13th /2023	21226-16			RW
Scale	Date	Drawing Number	Rev.	Drawn	Design





KEY PLAN (NOT TO SCALE)

DRAFT PLAN OF COMMON ELEMENTS CONDOMINIUM

PART OF BLOCKS 2 AND 4
REGISTERED PLAN 40M-XXXX

CITY OF PICKERING

REGIONAL MUNICIPALITY OF DURHAM

SCALE 1 : 1000

20 0 20 40 60 metres

J. D. BARNES LIMITED

© COPYRIGHT 2023

METRIC DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51 (17) OF THE PLANNING ACT.

FOR A, B, C, E, F, G AND J SEE DRAFT PLAN AND KEY PLAN

D PARTS 1 TO 13 (BOTH INCLUSIVE) ON PROPOSED REFERENCE PLAN WILL BE PARCELS OF TIED LAND WITH A COMMON INTEREST IN THE COMMON ELEMENTS CONDOMINIUM.

H PIPED WATER WILL BE PROVIDED

I CLAY LOAM

K SANITARY AND STORM TO BE PROVIDED

L ALL EASEMENTS AFFECTING THE SUBJECT SITE ARE SHOWN ON THE FACE OF THIS PLAN.

SITE STATISTICS

LAND USE	LOT/BLOCK	AREA
ESTATE RESIDENTIAL LOTS	1-13	5.01 ha.
6.5m PRIVATE ROADS	14 AND 16	0.48 ha.
TOTAL		

FACILITIES AND SERVICES INCLUDED IN THE COMMON ELEMENTS:

- ASPHALT LANEWAY
- CONCRETE CURBS/SIDEWALKS
- STREET LIGHTS
- LANDSCAPING
- UTILITIES
- MAILBOXES
- WATER PUMPING STATIONS

NOTES

BEARINGS ARE GRID AND ARE REFERRED TO UTM ZONE 17, NAD83 (ORIGINAL).

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.9999013.

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE DEVELOPED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE ___________

G.C. LAFRAMBOISE
ONTARIO LAND SURVEYOR

OWNER'S CERTIFICATE

I HEREBY CONSENT TO THE SUBMISSION OF THIS PLAN FOR APPROVAL.

869547 ONTARIO INC.

DATE ___________

– PRESIDENT
"I HAVE AUTHORITY TO BIND THE CORPORATION"

ZONING:

J.D.BARNES LIMITED
SURVEYING MAPPING GIS
LAND INFORMATION SPECIALISTS
110 SCOTIA COURT, #38, WHITBY, ON L1N 8Y7
T: (905) 723-1212 F: (905) 723-4234 www.jdbarnes.com

DRAWN BY: N.M.	CHECKED BY: G.C.L.	REFERENCE NO.: 17-25-315-04
FILE: g:/17-25-315/04/dp_17-25-315-04.dgn		DATED: 09/12/2023

PLOTTED: 9/12/2023

SEWAGE SYSTEM LOT ANALYSIS ONLY

Gunnell Engineering Ltd.
1110 Stellar Drive, Unit 106
Newmarket, ON L3Y 7B7
bus: 905-868-9400
www.septicdesign.ca

Septic Area
Soil Percolation Time (T) = 20 min/cm to 30 min/cm (30 min/cm used)
Loading Rate = 8 L/m²/day
Daily Sewage Flow (Q) = 3,000 L/day (min. required)
Area (prime + reserve) = 750 m² (min.) [3,000 / 8 x 2 areas]

*Based on Durham Region Health Department Lot Sizing Policy document, dated Oct. 2010

Note: Maximum 4:1 slopes when grading off the edge of filter bed - TYP. all sides.

Note: Filter beds to be orientated such that the mantle is oriented in the direction of effluent flow.

BALSAM ROAD

PROPOSED ROAD

5th Concession Road

LOT 1 0.41 ha
LOT 2 0.4 ha
LOT 3 0.40 ha
LOT 4 0.37 ha
LOT 5 0.39 ha
LOT 6 0.40 ha
LOT 7 0.4 ha
LOT 8 0.4 ha
LOT 9 0.4 ha
LOT10 0.4 ha
LOT 11 0.4 ha
LOT 12 0.59 ha
LOT 13 0.51 ha

Reserve Area (378 m²)

BLOCK 14 PRIVATE ROAD 0.23ha

BLOCK 15 OPEN SPACE 9.24ha

BLOCK 16 OPEN SPACE 1.17ha

BLOCK 17 OPEN SPACE BUFFER 0.77ha

BLOCK 18 OPEN SPACE BUFFER 0.77ha

BLOCK 19 PRIVATE ROAD 0.24ha

BLOCK 20 WATER PUMPING STATION 0.01ha

BLOCK 21 WATER PUMPING STATION 0.01ha

Wetland 30m Buffer

MBW+30

MBW2

Conventional Filter Bed: Preliminary Design

Q = 3,000 L/day (min. required)

Septic Tank: 2 x daily flow = 2 x Q = 2 x 3,000 L = 6,000 L
Provide two compartment septic tank = 6,800 L (1,500 gal.) with gravity flow to Pump Station.

Pump Station:Provide 3,600 L pump tank to time dose to filter bed.

Soil Percolation: T = 30 min/cm (worst case scenario)

Filter Area: Maximum loading = 75 L/sm/day (i.e.: Q ≤ 3,000 L/day); 3,000 / 75 = 40.0 sm.
Provide Filter Medium Area = 48.0 sm. (12.0m x 4.0m)

Base of Filter Medium, extending 300 mm thickness, over area = Q x T / 850 = 3,000 x 30 / 850 = 105.9 sm. Provide extended base contact area = 14.0m x 8.0m = 112.0 sm.

Loading Requirements - Reference: Table 8.7.4.1.A, & based on a loading rate of 8 L/sm/day (i.e. 20 < T ≤ 35), Loading Rate = Q / Bed Area = 3,000 L / 8 = 375.0 sm.
Provide loading area = 378.0 sm (14.0m x 27.0m)

Mantle - Extending 21.5m from centreline of distribution piping.

LEGEND

Primary Filter Bed

Reserve Filter Bed Area

All Distribution Piping is to be a minimum of:
- 16.7m from drilled wells
- 31.7m from dug wells
- 4.7m from property lines
- 6.7m from residence

Note: Filter Bed system raised 0.85m above finished grade, therefore increase setbacks by 1.7m.

Proposed Residential Development
City of Pickering
Region of Durham

Overall Subdivision Plan (13 Lots) - Typical Sewage Layouts

Scale: 1:1,750	Designed By: ZS
Date: 13-JULY-2023	Drawn By: ZS
Project No.: D3534	Checked By: EG
	Drawing No.: SP-1

File: Z:\Gunnell Engineering AutoCAD\D3500 - PROJECTS\D3534 - 3225 Con 5 Rd - Pickering\CAD\ -CA- CONCEPT LAYOUTS (LOT 1,5,7,11)\D3534CA-SP1.dwg
Plotted On: Thu, 27 Jul 2023 - 10:45am

SEWAGE SYSTEM LOT ANALYSIS ONLY

DATUM ELEVATIONS: FILTER BED	
Existing Grade = 0.00m (Datum)	
Base Cut (1):	-0.40m
Top of Filter Medium (0.75m filter sand):	+0.35m
Top of Stone Layer (0.30m stone layer):	+0.65m
Top of Landscaping (0.20m topsoil):	+0.85m

Note (1): All topsoil to be excavated

All Distribution Piping is to be a minimum of:
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- 4.7m from property lines
- 6.7m from residence

Note: Filter Bed system raised 0.85m above finished grade, therefore increase setbacks by 1.7m.

Septic Area

Soil Percolation Time (T)	= 30 min/cm
Loading Rate	= 8 L/m²/day
Daily Sewage Flow (Q)	= 3,000 L/day (min. required)
Area (prime + reserve)	= 750 m² (min.) [3,000 / 8 x 2 areas]

*Based on Durham Region Health Department Lot Sizing Policy document, dated Oct. 2010

Conventional Filter Bed: Preliminary Design

Q = 3,000 L/day (min. required)

Septic Tank: 2 x daily flow = 2 x Q = 2 x 3,000 L = 6,000 L
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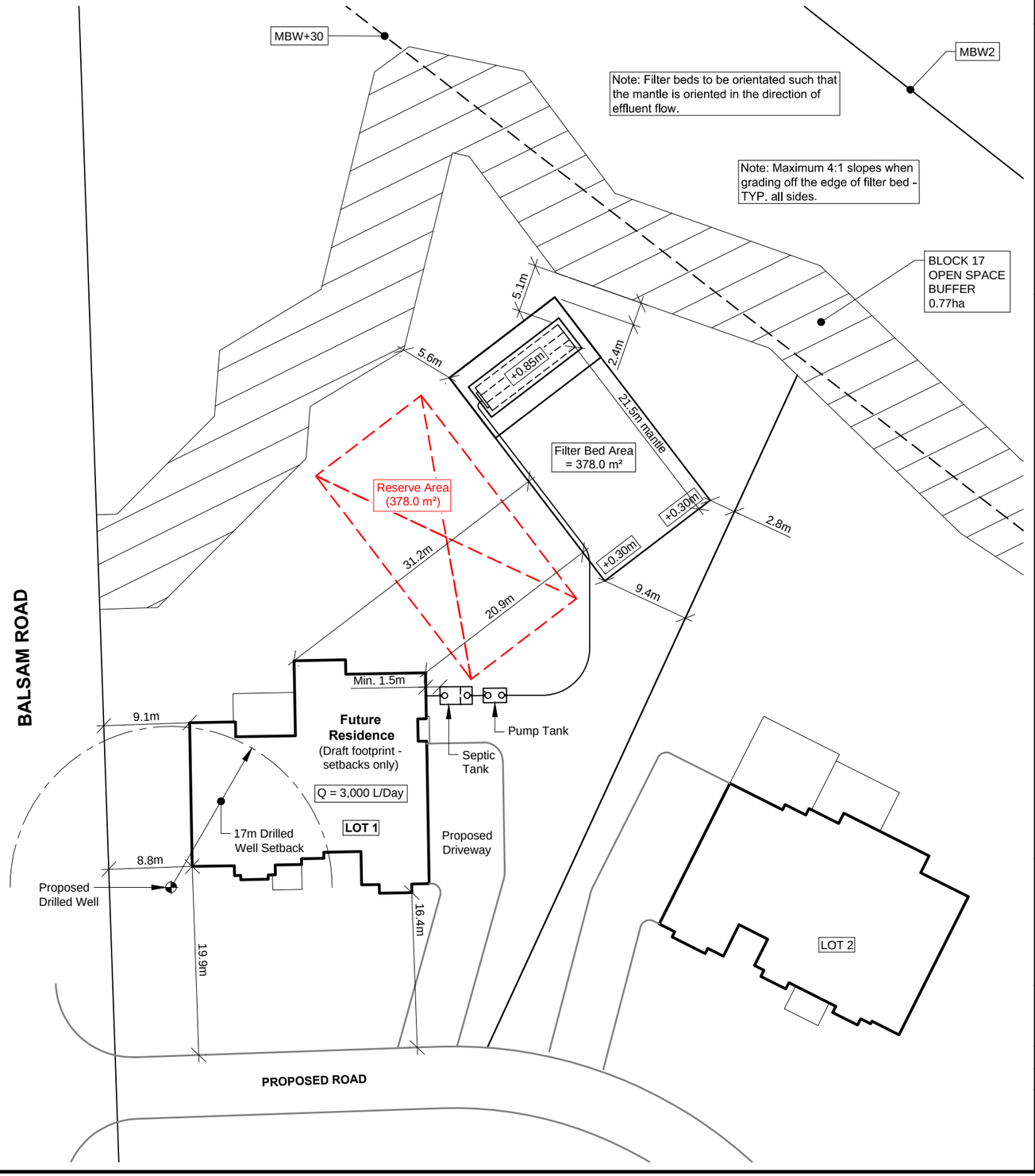

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1110 Stellar Drive, Unit 106
Newmarket, ON L3Y 7B7
bus: 905-868-9400
www.septicdesign.ca

Proposed Residential Development
City of Pickering
Region of Durham

Typical Lot Layout (Lot 1)
Proposed Sewage System

Scale: 1:500	Designed By: ZS
Date: 13-JULY-2023	Drawn By: ZS
Project No.: D3534	Checked By: EG
	Drawing No.: SP-2

File: Z:\Gunnell Engineering AutoCAD\D3500 - PROJECTS\D3534 - 3225 Con 5 Rd - Pickering\CAD\-CA- CONCEPT LAYOUTS (LOT 1,5,7,11)\D3534CA-SP2.dwg
Plotted On: Thu, 27 Jul 2023 - 10:45am

SEWAGE SYSTEM LOT ANALYSIS ONLY

DATUM ELEVATIONS: FILTER BED	
Existing Grade = 0.00m (Datum)	
Base Cut (1):	-0.40m
Top of Filter Medium (0.75m filter sand):	+0.35m
Top of Stone Layer (0.30m stone layer):	+0.65m
Top of Landscaping (0.20m topsoil):	+0.85m

Note (1): All topsoil to be excavated

All Distribution Piping is to be a minimum of:
- 16.7m from drilled wells
- 31.7m from dug wells
- 4.7m from property lines
- 6.7m from residence

Note: Filter Bed system raised 0.85m above finished grade, therefore increase setbacks by 1.7m.

Septic Area
Soil Percolation Time (T) = 30 min/cm
Loading Rate = 8 L/m²/day
Daily Sewage Flow (Q) = 3,000 L/day (min. required)
Area (prime + reserve) = 750 m² (min.) [3,000 / 8 x 2 areas]

*Based on Durham Region Health Department Lot Sizing Policy document, dated Oct. 2010

Conventional Filter Bed: Preliminary Design

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Septic Tank: 2 x daily flow = 2 x Q = 2 x 3,000 L = 6,000 L
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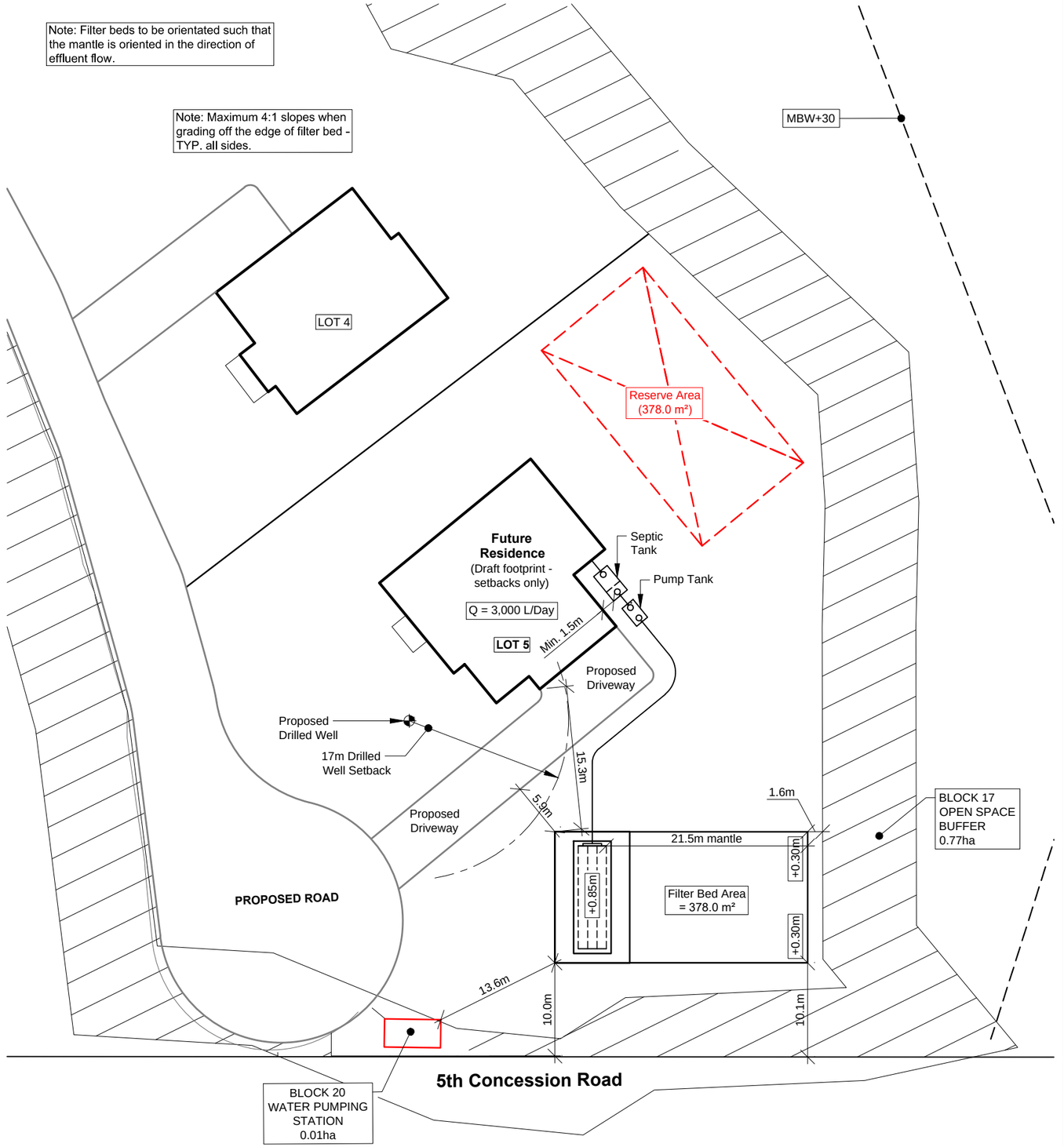

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www.septicdesign.ca

Proposed Residential Development
City of Pickering
Region of Durham

Typical Lot Layout (Lot 5)
Proposed Sewage System

Scale: 1:500	Designed By: ZS
Date: 13-JULY-2023	Drawn By: ZS
Project No.: D3534	Checked By: EG
	Drawing No.: SP-3

File: Z:\Gunnell Engineering AutoCAD\D3500 - PROJECTS\D3534 - 3225 Con 5 Rd - Pickering\CAD\~CA~ CONCEPT LAYOUTS (LOT 1,5,7,11)\D3534CA~SP3.dwg
Plotted On: Thu, 27 Jul 2023 - 10:45am

SEWAGE SYSTEM LOT ANALYSIS ONLY

DATUM ELEVATIONS: FILTER BED	
Existing Grade = 0.00m (Datum)	
Base Cut (1):	-0.40m
Top of Filter Medium (0.75m filter sand):	+0.35m
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Septic Area

Soil Percolation Time (T)	= 30 min/cm
Loading Rate	= 8 L/m²/day
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Area (prime + reserve)	= 750 m² (min.) [3,000 / 8 x 2 areas]

*Based on Durham Region Health Department Lot Sizing Policy document, dated Oct. 2010

Conventional Filter Bed: Preliminary Design

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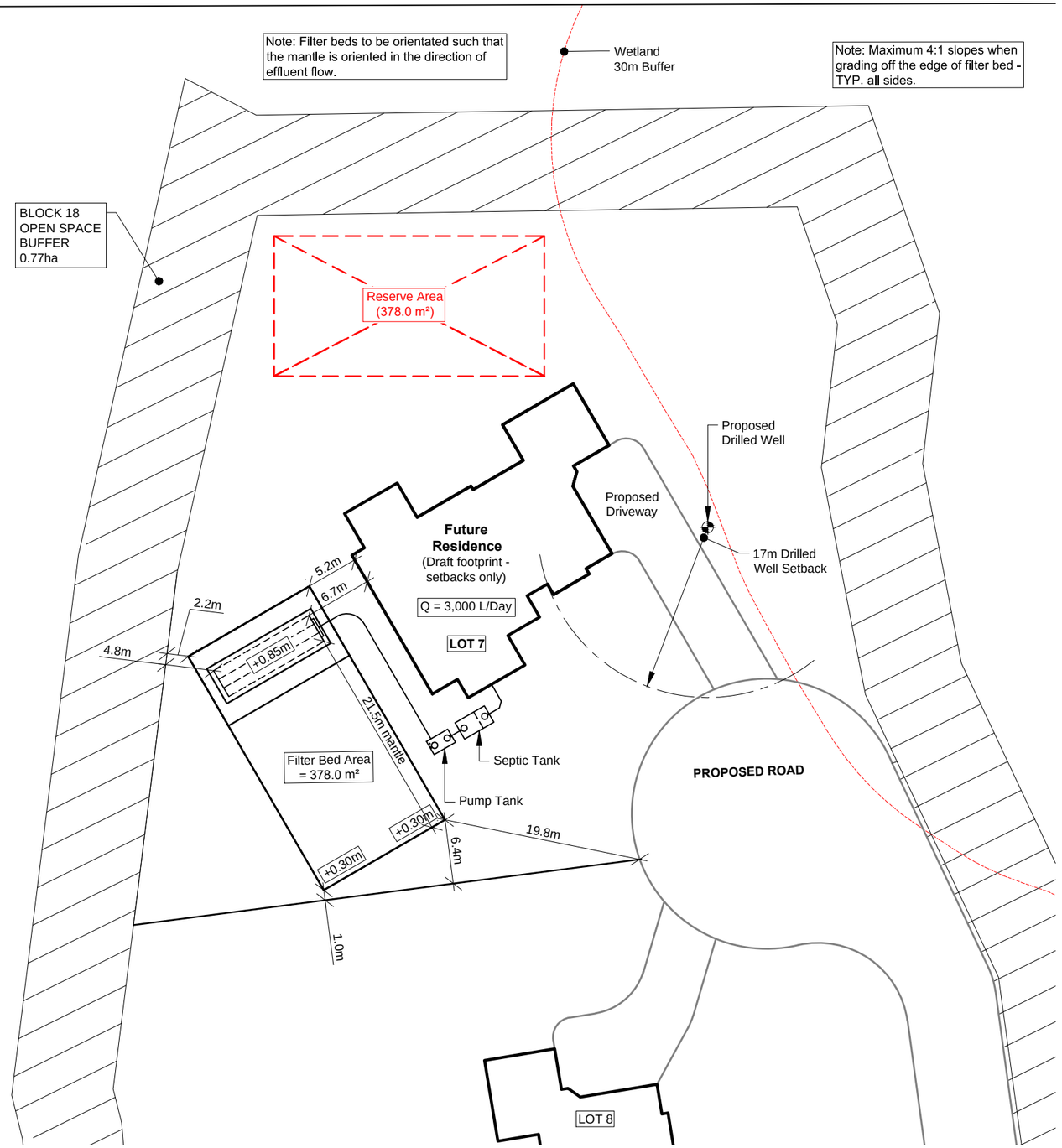

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www.septicdesign.ca

Proposed Residential Development
City of Pickering
Region of Durham

Typical Lot Layout (Lot 7)
Proposed Sewage System

Scale: 1:500	Designed By: ZS
Date: 13-JULY-2023	Drawn By: ZS
Project No.: D3534	Checked By: EG
	Drawing No.: SP-4

File: Z:\Gunnell Engineering AutoCAD\D3500 - PROJECTS\D3534 - 3225 Con 5 Rd - Pickering\CAD\~CA~ CONCEPT LAYOUTS (LOT 1,5,7,11)\D3534CA-SP4.dwg
Plotted On: Thu, 27 Jul 2023 - 10:46am

SEWAGE SYSTEM LOT ANALYSIS ONLY

Conventional Filter Bed: Preliminary Design

Q = 3,000 L/day (min. required)

Septic Tank: 2 x daily flow = 2 x Q = 2 x 3,000 L = 6,000 L
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Soil Percolation: T = 30 min/cm (worst case scenario)

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Mantle - Extending 21.5m from centreline of distribution piping.

Septic Area
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Loading Rate = 8 L/m²/day
Daily Sewage Flow (Q) = 3,000 L/day (min. required)
Area (prime + reserve) = 750 m² (min.) [3,000 / 8 x 2 areas]

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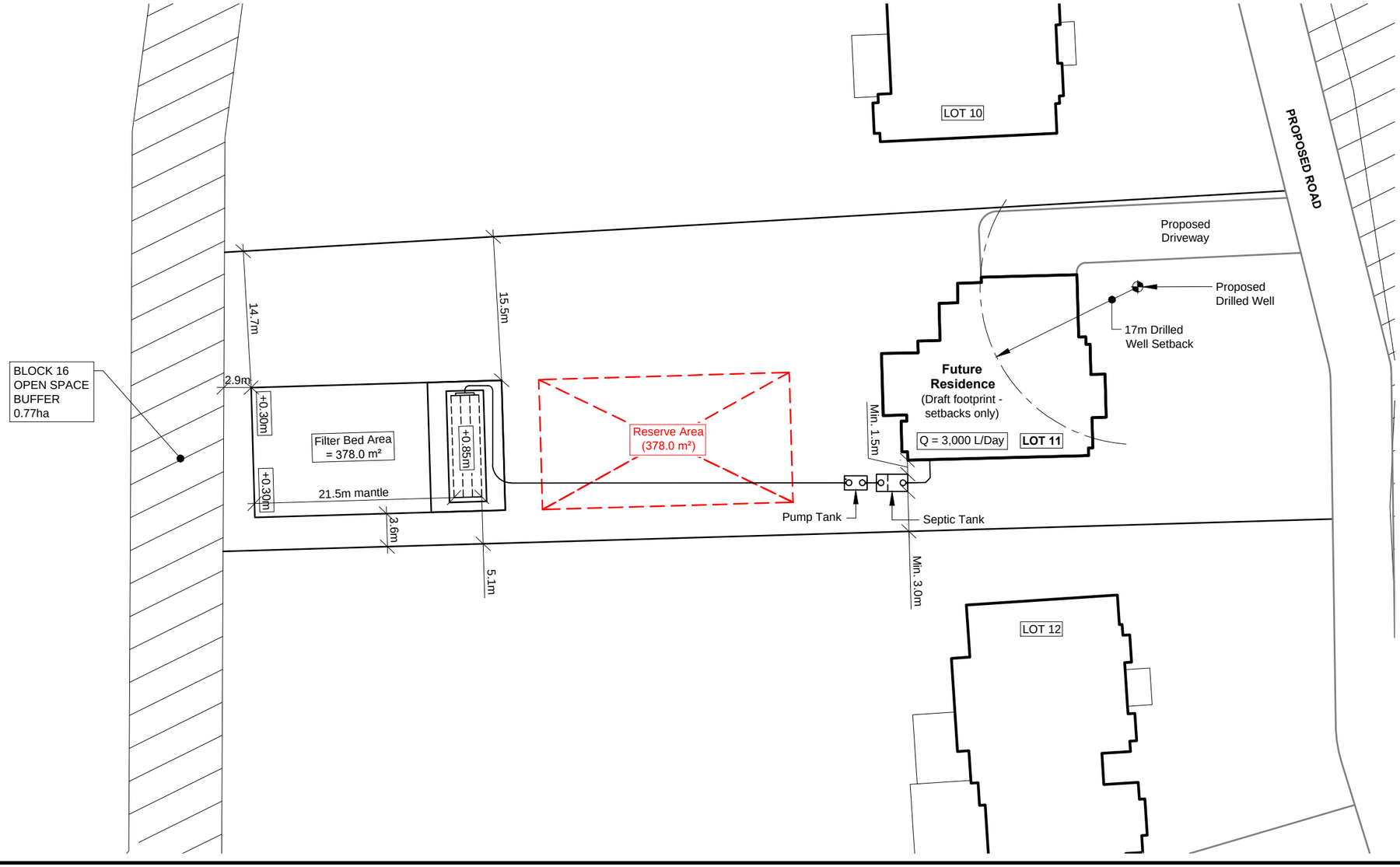
Note: Filter beds to be orientated such that the mantle is oriented in the direction of effluent flow.

Note: Maximum 4:1 slopes when grading off the edge of filter bed - TYP. all sides.



DATUM ELEVATIONS: FILTER BED

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Note: Filter Bed system raised 0.85m above finished grade, therefore increase setbacks by 1.7m.

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Proposed Residential Development
City of Pickering
Region of Durham

Typical Lot Layout (Lot 11)
Proposed Sewage System

Scale: 1:500	Designed By: ZS
Date: 13-JULY-2023	Drawn By: ZS
Project No.: D3534	Checked By: EG
	Drawing No.: SP-5

File: Z:\Gunnell Engineering Auto\240\D3500 - PROJECTS\D3534 - 3225 Con 5 Rd - Pickering\CAD\-CA- CONCEPT LAYOUTS (LOT 1,5,7,11)\D3534CA-SP5.dwg
Plotted On: Thu, 27 Jul 2023 - 10:46am

APPENDIX D

Monthly Water Balance

Post-Development

Pervious Surface Area

GeoPro Consulting Limited

Geotechnical-Hydrogeology-Environmental-Materials-Inspection

Climate Data	**Jan**	**Feb**	**March**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Annual**
Daily Average Temperature (°C) *Source: ECCC Climate Normals 1997-2011*	-4.8	-3.6	0.4	6.6	12.3	17.6	20.6	20	15.9	9.5	4.2	-1.2	8.1
Precipitation (mm) *Source: ECCC Climate Normals 1997-2011*	65.6	56.6	54.2	72.7	78.9	73.9	73.1	77.4	94.0	70.1	84.8	70.7	872.0
Adjusted Potential Evapotranspiration (PET) *Source: Calculated using Thornthwaite and Mather (1957)*	0.0	0.0	24.9	42.8	67.5	97.8	114.3	102.0	71.7	42.1	26.1	0.0	589.2
Water Surplus (WS = P - PET)													
Potential Water Surplus (mm)*	65.6	56.6	29.4	29.9	11.4	0.0	0.0	0.0	0.0	0.0	56.7	70.7	320.3

Geographical Block Information		**Source**
Latitude (degrees)	43.87	ECCC Climate Normals and Averages

* Total water surplus does not incorporate any delay in the transmission of water available for runoff

LIMITATIONS TO THE REPORT

This report is intended solely for the Client named. The report is prepared based on the work has been undertaken in accordance with normally accepted geotechnical engineering practices in Ontario.

The comments and recommendations given in this report are based on information determined at the limited number of the test hole and test pit locations. Subsurface and groundwater conditions between and beyond the test holes and test pit may differ significantly from those encountered at the test hole and test pit locations. The benchmark and elevations used in this report are primarily to establish relative elevation differences between the test hole and test pit locations and should not be used for other purposes, such as grading, excavating, planning, development, etc.

The report reflects our best judgment based on the information available to GeoPro Consulting Limited at the time of preparation. Unless otherwise agreed in writing by GeoPro Consulting Limited, it shall not be used to express or imply warranty as to any other purposes. No portion of this report shall be used as a separate entity, it is written to be read in its entirety. The information contained herein in no way reflects on the environment aspects of the project, unless otherwise stated.

The design recommendations given in this report are applicable only to the project designed and constructed completely in accordance with the details stated in this report.

Should any comments and recommendations provided in this report be made on any construction related issues, they are intended only for the guidance of the designers. The number of test holes and test pits may not be sufficient to determine all the factors that may affect construction activities, methods and costs. Such as, the thickness of surficial topsoil or fill layers may vary significantly and unpredictably; the amount of the cobbles and boulders may vary significantly than what described in the report; unexpected water bearing zones/layers with various thickness and extent may be encountered in the fill and native soils. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and make their own conclusions as to how the subsurface conditions may affect their work and determine the proper construction methods.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. GeoPro Consulting Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.