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Lockhart I Subdivision

Functional Servicing Report

Lockhart Innisfil Investments Limited

October 2021

The Jones Consulting Group Ltd.
#1-229 Mapleview Drive East, Barrie ON L4N 0W5

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Functional Servicing Report

Lockhart Innisfil Investments Limited, Lockhart I Subdivision
South Halves of Lots 13 and 14, Concession 11, City of Barrie

1. Introduction

1.1. Appointment

The Jones Consulting Group Ltd. (TJCGL) has been retained by Lockhart Innisfil Investments Limited (Client) to provide engineering services for a proposed development referred to as the Lockhart I Subdivision (Site) located along the north side of Lockhart Road, west of Yonge Street and south of the proposed GG (9 Mile) Limited Subdivision, in the City of Barrie (City).

This Functional Servicing Report (FSR) has been prepared in support of the *Draft Plan of Subdivision* prepared by TJCGL (attached in Appendix A) and demonstrates how the site will be serviced by the surrounding municipal infrastructure. In particular, this report examines the properties servicing in relation to:

- Stormwater servicing
- Sanitary servicing
- Water servicing
- Grading and landform
- Transportation and parking
- Utility servicing

1.2. Property Description

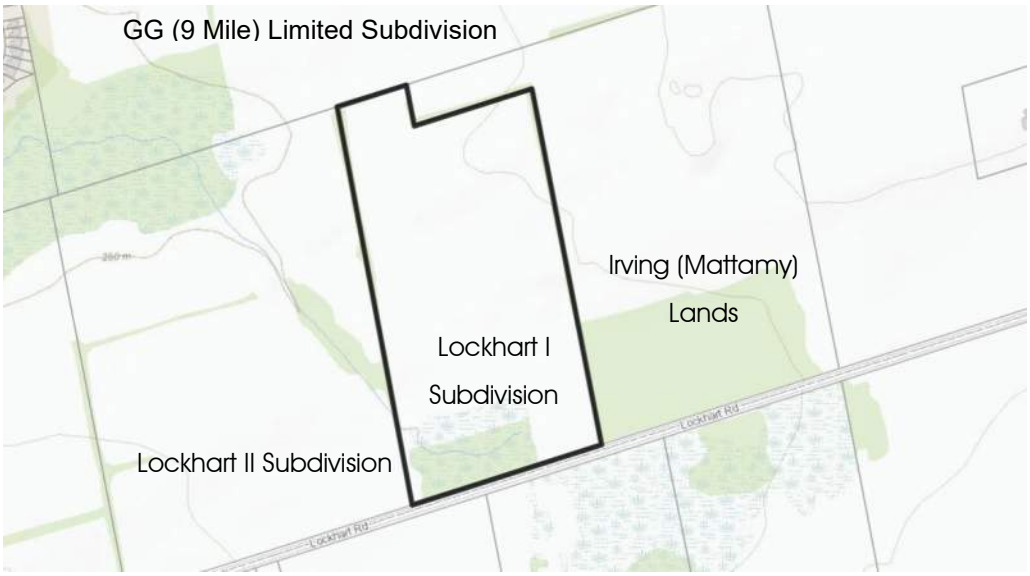
The site is generally L-shaped, bound to the north by the proposed GG (9 Mile) Limited Subdivision and a portion of the Irving Lands (currently known as the Mattamy Lands), to the east by the Irving (Mattamy) Lands, to the west by the future Lockhart II Subdivision and to the south by Lockhart Road. The property's total area is approximately 19.72 hectares (ha). The site is municipally known as 560 Lockhart Road and is legally described as Part of the South Halves of Lots 13 and 14, Concession 11, Geographic Township of Innisfil, now in the City of Barrie, County of Simcoe.

1.3. Current Site Conditions

The site currently consists of cropland with scattered clusters of trees and shrubs. A section of Lover's Creek runs north from Lockhart Road along the west property line before turning west into the Lockhart II lands. The site and surrounding lands existing uses are shown on the *Hewitt's Secondary Plan Area Subwatershed Impact Study Existing Land Use* figure (Figure No. FIG 2, Dated January 28, 2016, prepared by R.J. Burnside and Associates) attached in Appendix A.

The existing ground surface is rolling and generally drains from northeast to southwest. Elevations range from 251 metres along the northern limits to 264 metres at the south-west property limit with slopes from 0% to 10%. Topographical information for the site was obtained from surveys completed by Hunt Surveys Inc. with survey truthing completed by TJCGL. The location of the site is shown in **Figure 1**.

Figure 1: Site Location



Reference: Discover Barrie Interactive Maps

1.4. Proposed Land Use

Barrie-Innisfil Boundary Adjustment Act, 2009

The *Barrie-Innisfil Boundary Adjustment Act, 2009* (effective January 1, 2010) extended the southern boundary of Barrie to include approx. 2,335 hectares (5,770 acres) of land previously within the Town of Innisfil. In response to the Boundary Adjustment, the City of Barrie completed



a Master Planning Process for the Hewitt's Creek Secondary Plan (East Annexation Lands) which included Infrastructure Master Plans. These Master and Secondary Planning Documents along with the City's Growth Management Strategy have formed a framework for intensification and development activities taking place in the annexation lands. The framework ensures the future developments successful implementation while meeting the City's vision for growth.

Amendment No. 39 to the City of Barrie Official Plan – Hewitt's Secondary Plan

The *City's Amendment No. 39 to the City of Barrie Official Plan* (OP) – *Hewitt's Secondary Plan* (HSP)*, June 2014*, added the lands generally refer to as the 2010 Annex Lands East to the City's OP. The lands have an area of approximately 860 hectares (2,125 acres) and are bounded to the north by Big Bay Point Road and MVDE; 20th Sideroad to the east; Lockhart Road to the south and the former City boundary east of Huronia Road on the west. The Lockhart I lands are located in the western limit of the HSP. The HSP established a detailed planning framework for the future urban development to ensure that it conforms to the Provincial Growth Plan (PGP) and be consistent with the Provincial Policy Statement (PPS).

The HSP *Land Use (Schedule 9C)* shows the Lockhart I lands having residential, natural heritage system and stormwater management facility designations. The HSP *Development Phases (Schedule 9E)* shows the Lockhart I lands are located within the Phase 2 limits. Copies of the Land Use and Development Phases plans have been attached in Appendix A.

Amendment No. 40 to the City of Barrie Official Plan – General Growth Related Amendments

The *City's Amendment No. 40 to the City of Barrie OP – General Growth Related Amendments, June 2014*, refined the growth management policies to reflect the results of the City's Growth Management Strategy, the 2013 Infrastructure Master Plans, a Fiscal Impact Assessment, and other related plans and studies. The process included detailed background technical analyses as well as the consideration of land use options and the endorsement of a preferred Concept Plan by Council as a basis for the preparation of the Secondary Plans (HSP and the Salem Secondary Plan). The preparation of the general OP Amendments, Secondary Plans and Infrastructure Master Plans was conducted in accordance with both the Planning Act and Phases 1 and 2 of the Municipal Class Environmental Assessment (MCEA). The OP Amendment which incorporates general amendments to the Official Plan, together with the Official Plan Amendments which incorporate the Salem Secondary Plan for the 2010 Annexed Lands West

and the HSP for the 2010 Annexed Lands East, have been developed based on the results of a detailed evaluation including input from the public and stakeholders received as part of the public process and written submissions.

The City's *Schedule 1 to OP Amendment 40 - Land Use (Schedule A)* shows the Lockhart lands having a residential designation. A copy of the *Land Use* plan has been attached in Appendix A.

Hewitt's Creek Area Subwatershed Impact Study

The developable limits of the HSP were established by the Hewitt's Creek Area Subwatershed Impact Study (SIS) prepared by R.J. Burnside and Associates, dated September 2016 and the Addendum No. 1, dated November 2017, as well as regional flood lines and set back requirements established by the Lake Simcoe Region Conservation Authority. The Hewitt's Creek SIS has been utilized as a framework for developing a servicing strategy that is outlined in further detail in this report. As such, many of the assumptions noted in this FSR are based on the findings and recommendations of the HSP SIS.

West of Yonge Conformity Review Plan 1

The *West of Yonge Conformity Review Plan 1 (Conformity Plan)* (prepared by TJGCL, dated June 9, 2016, attached in Appendix A) (HSP west of Yonge Street) was developed concurrently with the SIS to establish a serviceable draft development plan that meets the City's OPA 39 and 40 requirements in terms of mixed-use growth. The *Conformity Plan* road and lot/block layout also assisted in determining the future developments water, sanitary and stormwater requirements. The Lockhart development is shown as one of eight (8) property owner participants. The *Conformity Plan* participating owners and preliminary development statistics are summarized in **Table 1.1**.

Table 1.1: Conformity Plan Land Use Statistics

Plan Reference	Property Owner (Development Name)	Residential Lot Breakdown	Area (ha)	Units
A	BEMP Holdings 2 Inc.	Single Family Residential		283.00
	(BEMP 2)	Medium Density - Street Townhomes		32.00
		High Density - Mixed Use		196.00
Sub-Total			**19.44**	**511.00**

Plan Reference	Property Owner (Development Name)	Residential Lot Breakdown	Area (ha)	Units
B	BEMP Holdings 1 Inc.	Single Family Residential		266.00
	(BEMP I/Sorbara)	Medium Density - Street Townhomes		37.00
		High Density - Mixed Use		72.00
Sub-Total			**36.59**	**375.00**
C	GG (9 Mile) Limited (GG)	Single Family Residential		763.00
	(formerly Lockmaple Subdivision)	Medium Density - Street Townhomes		337.50
		High Density - Mixed Use		
Sub-Total			**65.56**	**1,100.5**
D	Lockhart Innisfil Investments and Lockhart Innisfil Investments (II) Limited	Single Family Residential		392.80
	(Lockhart)	Medium Density - Street Townhomes / Back-to-back Townhomes		92.00
		High Density - Mixed Use		107.00
Sub-Total			**51.85**	**591.8**
E	Rainsong Land Development Ltd.	Single Family Residential		600.5
		Medium Density - Street Townhomes / Back-to-back Townhomes		154.00
		High Density - Mixed Use		
Sub-Total			**50.15**	**754.5**
F	Van Der Hayden – Lockhart	Single Family Residential		52.50
		Medium Density - Street Townhomes / Back-to-back Townhomes		
		High Density - Mixed Use		
Sub-Total			**3.18**	**52.50**
G	Sobey's Capital Incorporated	Single Family Residential		
		Medium Density - Street Townhomes / Back-to-back Townhomes		
		High Density - Mixed Use		
Sub-Total			**8.26**	**TBD**
Total			**235.03**	**3,385.3**

GG (9 Mile) Limited Draft Plan of Subdivision

The latest GG (9 Mile) Limited (GG) *Draft Plan of Subdivision* (previously Lockmaple Subdivision) prepared by TJCGL indicates that the property will be subdivided into various sized residential lots (singles, street townhomes), an institutional block, park block, stormwater management pond block, environmental protection area and rights-of-way (18.0 metre wide local roads, 24.0 metre wide minor collector, 27.0 metre major collector). The GG lands stormwater management block will be utilized as a group stormwater management facility that will collect and treat stormwater runoff from its own lands as well as developments outside of the site's boundary. The site's proposed land use statistics are summarized in **Table 1.2**. Refer to the *Draft Plan of Subdivision* attached in Appendix A for the location and orientation of the future lots, blocks and rights-of-way (ROW's).

Table 1.2: GG (9 Mile) Limited Draft Plan of Subdivision Land Use Statistics

Residential Lot Breakdown	**Area (ha)**	**Units**
11.6m Singles		215
10.1m Singles		405
15.0m Sem-Detached		210
Sub-Total	**25.00**	830
6.1m Street Townhomes	5.15	273
Future Lots	0.62	
Institutional	2.42	
Stormwater Management Pond	6.35	
Parks	2.79	
Environmental Protection	7.02	
Road Widening	0.07	
Roads	16.07	
Total	**65.49**	**1,114**

Lockhart Innisfil Investment (II) Limited Draft Plan of Subdivision

The latest Lockhart Innisfil Investments (II) Limited (Lockhart II) *Draft Plan of Subdivision* prepared by TJCGL indicates that the property will be subdivided into various sized residential lots (singles, street townhomes, and back-to-back townhomes), stormwater management blocks, environmental protection areas, and rights-of-way (16.0 and 18.0 metre wide local roads, 27.0 metre major collector). The Lockhart II lands stormwater management blocks will be utilized as a group stormwater management facility that will collect and treat stormwater runoff from its own lands as well as developments outside of the site's boundary. The site's proposed land use

statistics are summarized in **Table 1.2**. Refer to the *Draft Plan of Subdivision* attached in Appendix A for the location and orientation of the future lots, blocks and rights-of-way (ROW's).

Table 1.3: Lockhart Innisfil Investments (II) Limited Draft Plan of Subdivision Land Use Statistics

Residential Lot Breakdown	Area (ha)	Units
12.2m Singles	2.99	78
11.0m Singles	2.34	68
19.15m Singles	1.31	48
Sub-Total	**6.64**	**194**
6.0m Street Townhomes	0.47	20
6.4m Back-to-Back Townhomes	1.88	180
Future Lots and Blocks	0.02	1
Environmental Protection	12.43	
Stormwater Management	4.14	
Reserves and Widenings	0.58	
Roads	5.94	
Total	**32.10**	**395**

Lockhart Innisfil Investments I Limited Plan of Subdivision

In addition to being retained by GG and Lockhart II, TJCGL has been retained by Lockhart Innisfil Investments Limited to complete the preliminary engineering design for the Lockhart I Subdivision (Lockhart I). The Lockhart I lands include various sized residential lots, environmental protection, stormwater management blocks and local and major and minor collector road connections to the GG site, future residential lands to the east, the subject site to the west and to Lockhart Road to the south. The Lockhart I site's proposed land use statistics are summarized in **Table 1.3**.

Table 1.4: Lockhart I Draft Plan of Subdivision Land Use Statistics

Singles Residential Lot Breakdown	Area (ha)	Units
12.2m Singles	3.13	79
11.0m Singles	2.54	79
9.15m Singles	0.89	32
Sub-Total	**6.56**	**190**
Future Lots	0.38	8
Environmental Protection	3.96	
Stormwater Management	5.08	
Widening and Reserve	0.38	
Roads	3.29	
Future Roads	0.07	
Total	**19.72**	**198**

Refer to the Lockhart Innisfil Investments Limited *Draft Plan of Subdivision* attached in Appendix A for the location and orientation of the development's future lots, blocks and ROW's.

1.5. Overview of Municipal Infrastructure

1.5.1. Stormwater Servicing

Lake Simcoe Region Conservation Authority

The *Schedule 6 to OP Amendment 40 – Conservation Authority Limits (Schedule F)* shows that the site and surrounding lands are part of the Lover's Creek tributary within the Lake Simcoe watershed. A section of Lover's Creek flows from Lockhart Road north along the Lockhart I western property line before bending towards the west into the neighbouring Lockhart II lands. The Creek bends and exits Lockhart II's northern limit draining to the GG lands where the creek bend and exits the western limit and drains around the south and west limits of the existing LJ Mapleview Subdivision and eventually crosses Mapleview Drive East between Huronia Road and Country Lane.

The Lockhart I development is located within the Lake Simcoe Region Conservation Authority's (LSRCA) Regulated Limits and therefore the construction works will require an Application for Development, Interference with Wetlands and Alterations to Shorelines and Watercourse Permit.

A copy of the City's *Schedule F* and the LSRCA's on-line watershed mapping data has been attached in Appendix B.

Lockhart Road

Lockhart Road is an arterial ROW running along the site's southern boundary. The road is a two-lane paved road with open ditches on both sides. Currently, Lockhart Road does not contain any sanitary, storm or water infrastructure. The Development Credit study completed in 2019 indicates that Lockhart Road will be widened adjacent to the Lockhart 1 development area and water infrastructure will be installed within the next few years. The Design of Lockhart Road improvements will be completed by the City of Barrie.

Sub-Watershed Impact Study

As part of the HSP background studies a Sub-Watershed Impact Study (SIS) was undertaken by the Hewitt's Creek Landowners Group (HLOG); a consortium of 15 companies and individuals with land holdings totaling approximately 650 ha within the 860 ha Hewitt's Secondary Plan Area. The SIS was completed to establish a macro level of detail in the integration of land use, servicing, and stormwater management. Additional servicing details from the SIS and other supporting studies have been referenced throughout this FSR.

Lockhart Innisfil Investment Limited Subdivision

The Lockhart I Subdivision includes two (2) proposed municipal SWMP to provide for the HSP lands located generally west of Yonge Street with the necessary post stormwater quality and quantity controls. Additional SWMP details have been provided in this FSR and accompanying *Preliminary Stormwater Management Report,* provided under separate cover.

1.5.2. Sanitary Sewers

The City's *Sanitary Infrastructure Map* (revised January 2021) shows that the site is located south and east of the existing Painswick catchment boundary limits. The map shows a proposed trunk sewer within Madelaine Drive in the GG Subdivision running north, then west towards the LJ Mapleview Subdivision at Stunden Lane and eventually reaches the wastewater treatment plant (WWTP) located at Lakeshore Drive. A copy of the City's infrastructure map has been attached in Appendix C.

1.5.1. Watermains

The City's *Water Infrastructure Map* (revised January 2021) shows that the site is located outside of the existing distribution zone, just south and east of the Zone 2 limits. A copy of the City's infrastructure map has been attached in Appendix D. The site will be serviced through connections to the future GG Subdivision. Looping of the watermains for water quality purposes will be achieved through the new watermain to be installed in the Lockhart Road widening as well as through connections to the proposed Mattamy and Lockhart II subdivisions.

1.6. Soils Information

Soil Map of Simcoe County South Sheet Report No. 29

The *Soil Map of Simcoe County South Sheet Report No. 29* produced by the Canada Department of Agriculture shows the site being comprised of various types of loam soils including Alliston sandy loam (Ans), Smithfield silty clay loam (Smsc), Bondhead sandy loam (Bs) and Dundonald sandy loam (Ds). The Alliston sandy loam and Smithfield silty clay loam soils have imperfect drainage characteristics while the Bondhead sandy loam and Dundonald sandy loam soils have good drainage characteristics. These soils belong predominately to the Group B with Smithfield sandy clay loam being C of the SCS Hydrological Soils Group Classification System. A copy of the *Soil Survey* has been attached in Appendix B.

Lockhart Innisfil Investment Limited Geotechnical Investigation

An analysis of the site's subsurface soil and groundwater conditions was completed by Soil Engineers Ltd. in 2019 to provide geotechnical recommendations for the Lockhart Innisfil Investments limited and Lockhart Innisfil Investments (II) Limited site's construction requirements based on factual borehole and groundwater data. The investigation included the advancements of twenty-two (22) boreholes to a depth ranging from approx. 5.0 to 10.8 metres below the existing ground surface.

The borehole logs show that the site is covered in a layer of topsoil (250 – 380mm thick in some locations, Borehole 8 was recorded to have a 1.7 metre depth of topsoil mixed with organic peat, boreholes within the ploughed soil show a topsoil depth ranging from 0.7 to 1.0 metres) over layers of weathered soil, silty sand till, silty clay and silty clay till, and sand. Over the course of the investigations evidence of groundwater in fifteen (15) of the twenty-two (22) boreholes was

observed. Based on water level recordings, the stabilized ground water table seemed to reflect a subdued expression of the ground profile, with levels dropping towards the ditch. The site's groundwater elevations have been used to set the proposed roads, buildings and external SWMP elevations. A copy of the *Geotechnical Investigation for Proposed Residential Development, Lockhart Road,* (May 2021) has been attached in Appendix B for reference.

1.7. Road Network

The subject property is bound by future residential developments fronting onto Lockhart Road to the east and west, the stormwater management block for the GG (9 Mile) Limited Subdivision to the north and Lockhart Road to the south. Lockhart Road is shown as an existing arterial ROW on the *City's Schedule 1 to OP Amendment 40 – Road Plan (Schedule D).* A copy of the *Road Plan* has been attached in Appendix E.

2. Approval Agencies and Design Criteria

The development is subject to the policies and requirements of the City, LSRCA, and the Ministry of the Environment, Conservation and Parks (MECP) with respect to municipal servicing (water, wastewater, roads, street lighting and traffic signals), stormwater management (quantity, quality, erosion control and water balance) and utility servicing (gas, electricity, phone, cable and internet).

2.1. City of Barrie

The municipal services, roads, utilities, grading and stormwater drainage design must conform to the City's latest engineering standards, policies, guidelines, and master plan documents listed below:

- City of Barrie Stormwater Drainage and Stormwater Management Policies and Design Guidelines, Updated October 2020
- City of Barrie Sanitary Sewage Collection System Policies and Design Guidelines, 2017
- City of Barrie Water Transmission and Distribution Policies and Design Guidelines, 2021
- City of Barrie Lot Grading and Drainage Standards Design Manual, 2019
- City of Barrie Transportation Design Manual, 2020

- City of Barrie Water Storage and Distribution Master Plan, July 2019 (amec 2013)
- City of Barrie Wastewater Collection Master Plan, July 2019
- City of Barrie Transportation Master Plan, June 2018
- Hewitt's Secondary Plan Area Subwatershed Impact Study, Lover's, Hewitt's and Sandy Cove Creeks, R.J. Burnside & Associates Ltd., September 2016

2.2. Lake Simcoe Region Conservation Authority

The Study Area is located within the Lover's Creek watershed where any major development is required to comply with the policies and regulations enforced by the LSRCA. The LSRCA requires the site's stormwater management plan to adhere to the LSRCA's *Technical Guidelines for Stormwater Management Submissions* (September 2016) and the *Guidelines for the Development and Implementation of Comprehensive Stormwater Management Master Plans in the Lake Simcoe Watershed* (April 2011). Further, the LSRCA requires the incorporation of low-impact-development (LID) features into major developments in accordance with the *Credit Valley Conservation Authority & Toronto Region Conservation Authority, Low Impact Development Stormwater Management Planning and Design Guide* (2010).

2.3. Ministry of the Environment, Conservation and Parks

An Environmental Compliance Approval (ECA) will be required from the MECP for the proposed wastewater (sanitary) and stormwater management system (storm sewers). An ECA for Lockhart I's SWMF's will also be required. The future sanitary and stormwater infrastructure must generally be design in accordance with the following guidelines:

- Ministry of the Environment, Lake Simcoe Protection Plan, July 2009
- Ministry of the Environment, Stormwater Management Planning and Design Manual, March 2003
- Ministry of the Environment, Design Guidelines for Drinking-Water Systems, 2008
- Ministry of the Environment, Design Guidelines for Sewage Works, 2008

- Ministry of the Environment, Guidelines for the Design of Water Storage Facilities, Water Distribution Systems, Sanitary Sewage Systems and Storm Sewers, May 1979
- Ministry of Transportation, Drainage Management Manual, 1997

Once the detailed design for the site has been completed, this FSR and the accompanying PSWMR will be updated and submitted to the MECP in support of an application for the ECA's.

3. Stormwater Servicing

A *Preliminary Stormwater Management Report* (PSWMR) has been completed as part of the TJCGL appointment and scope of work for the development. The PSWMR has been submitted concurrently with this FSR and the following is a brief overview of the report.

The PSWMR has outlined a design for the site's future stormwater management system to meet the compulsory post-development quantity and quality requirements imposed by the City, LSRCA, MECP and the Hewitt's SIS. During the developments detailed design stage a (detailed) Stormwater Management Report (SWMR) will be completed in support of the storm system and facilities MECP ECA.

The City and the LSRCA require Level 1 (Enhanced) quality control for the stormwater runoff generated from this site. The proposed SWM facilities have been sized based on the combination of Level 1 quality control, quantity control of the 100 year post- to allowable development flows (unitary discharge rates) as determined in the SIS, and the extended detention (24 hour) for the 25mm storm event for erosion control. Sediment and erosion control measures will be investigated and recommended during the detailed design stage, taking into consideration the sensitivity of the receiving watercourse.

Additionally, where possible, the subject site is proposed to implement a variety of Low Impact Development (LID) measures consisting of soak-away pits, infiltration/filtration galleries, vegetated buffer strips, reduced lot grading, etc. The use of LID measures follows the recommendations of the Hewitt's SIS and will assist in reducing run-off volumes and the quantity of water to be treated by the stormwater management facilities while promoting at source filtration, infiltration, and groundwater recharge.

3.1. Existing Drainage Conditions

Lockhart I Subdivision

The site consists of approximately 19.72 hectares (48.73 acres) of land that is primarily used for agricultural purposes. The existing ground surface is rolling and generally drains from northeast to southwest. Elevations range from 251 metres along the northern limits to 264 metres at the south-west property limit with slopes from 0% to 10%. The site drains to the Lover's Creek tributary within the site.

The preliminary design confirms that the proposed lot drainage and elevations can be accommodated by the proposed stormwater management system. The **Existing Conditions Drainage Plan (FIG.5)** included in Appendix B, identify the pre-development storm drainage conditions.

3.2. Lover's Creek Crossing

In the SIS, Section 3.7 Floodplain Investigation, it is proposed that a crossing of Lover's Creek be installed at STA 1470.11 where the natural heritage system narrows. The crossing would involve low-profile box culverts spanning 15.0 m x 1.0 m high to convey the 25-year flow, as well as an upstream compensation cut to ensure the Regional event does not overtop the roadway.

The preliminary design for the subdivision proposes five (5) box culverts 2438x1219mm in size to provide the needed conveyance. The configuration and details of the floodplain compensation will be further reviewed during the Detailed Design stage.

3.3. Stormwater Management Plan

The stormwater management plan is intended to provide an environmentally sound approach to stormwater issues. The issues can be divided into four main categories: stormwater quality control, stormwater quantity control, water balance, and erosion and sediment control.

In order to provide the development with the required stormwater quality and quantity control measures it is proposed to utilize a combination of storm sewers (minor system), roadways (major system), low-impact-development (LID) features (where possible) and two extended detention SWM facilities located within the site's limits. Although not credited against SWM facilities

functions (quality or quantity) the on-site LID measures are proposed to compliment the SWM system by promoting at source filtration / infiltration and water balance. The Lover's Creek tributary will be the ultimate discharge location for the ponds' treated stormwater and for all other stormwater runoff from the site.

3.4. Proposed Drainage System

General

The proposed *Draft Plan of Subdivision* consists of various sized residential lots (singles) stormwater management pond block, environmental protection area, and rights-of-way (18.0m, 24.0m and 27.0m). All of the individual lots and blocks will be developed with buildings, parking and landscaped areas conforming to the City's *Draft HSP Zoning By-Law* for coverages and the *Lot Grading and Drainage Standards Design Manual* (2019) (excerpts attached in Appendix B). The lot and block grading will direct stormwater runoff to the internal road network, which will contain a storm sewer system to convey minor flows (5-year storm event) to the proposed SWM facilities. The roads will also convey the major flows (greater than the 5-year storm event) overland within the right-of-way to the SWM facilities. The proposed end-of-pipe SWM facilities are wetland facilities complete with forebays that will provide stormwater quantity and quality control for the site and neighboring developments. In accordance with current City of Barrie standards, Jellyfish units are provided upstream of the SWM facilities to provide pre-treatment and filtration of stormwater run-off. SWMF 3 will include drainage from the Lockhart I, Mattamy and Rainsong Lands. SWMF 4C will include drainage from the Lockhart I and Mattamy Lands.

Rights-of-Way

The City's ***Draft*** *Transportation Design Manual* (Dated 2020) provides draft ROW cross-sections (BSD-301 to BSD-314) used as the premises for the proposed roadway designs.

SIS and Low Impact Development Measures

Where possible the site will include LID measures to provide lot level at-source controls that reduce run-off volumes, promote groundwater recharge and aid in maintaining water balance. The *SIS* has identified LID measures suitable for implementation within the subject property that are intended to achieve the LSRCA and City targets for infiltration, filtration, water balance and total phosphorus removal.



As there are no park blocks, open space blocks or site plan blocks associated with the Lockhart Innisfil Investments II limited draft plan, the only available space for LIDs is within the proposed road right-of-way (ROW). LIDs within the ROW will be employed to meet infiltration targets, filtration targets and provide additional Phosphorus removal. The most effective LID within the ROW consists of a dry swale along one or both sides of the street with a subsurface infiltration trench. A plan view showing the proposed location of all proposed dry swales is included on Drawing **LID-1**, refer to Appendix G. It is important to recognize that the locations of the dry swales are limited to local roads in accordance with the City's LID screening process. In addition, due to driveway and other utility conflicts, the dry swale locations have been limited to side yards along other local roads. A typical 18.0m ROW plan view and cross-sections of proposed LIDs along with sizing calculations is provided on Drawings **LID-2** in Appendix G. Further design details regarding LID measures are provided in the *Preliminary Stormwater Management Report* submitted concurrently under separate cover.

Stormwater Management Facilities

The proposed stormwater management facilities (ponds) will be designed to achieve the quality and quantity requirements outlined in the *SIS*, along with those of the City of Barrie, LSRCA and MECP, before discharging to Lover's Creek. Further design details are on Drawings **PND-1** to **PND-6**, attached in **Appendix G**. In addition, reference should be made to the *Preliminary Stormwater Management Report* submitted in conjunction with this report under separate cover.

The General Servicing Plans (Drawing No. **G-1** and **G-2** attached in Appendix G) illustrates the proposed servicing scenario. The Storm Sewer Catchment Plans and the accompanying storm sewer design sheet (Drawing No. **STM-1, STM-2** and **DS-1** attached in Appendix G) confirms that the proposed sewer system is capable of conveying the 5-year storm event runoff to the proposed SWMPs' without surcharging. A copy of the storm sewer design sheet is also included in Appendix B.

3.5. Water Balance

The primary objective of the Lake Simcoe Region Conservation Authority's water balance target as outlined in the SIS, is to capture and manage annual rainfall on the development site to preserve pre-development hydrology (water balance) through a combination of infiltration,



evapotranspiration, landscaping, rainwater reuse and/or other low impact development practices.

Various site-specific characteristics contributed to the ability to achieve water balance. They include but are not limited to soil permeability, the ability to collect and direct drainage into the ground, groundwater table elevations and seasonal fluctuations. A site-specific water balance in accordance with the SIS recommendations will be required, and best efforts should be made via the SWM plan to maintain groundwater recharge while considering site specific characteristics. Preliminary water balance calculations are provided in the PSWMR. Detailed water balance calculations will be completed at the detailed design stage and included in the final Detailed Stormwater Management Report.

3.6. Erosion and Sediment Control

During construction, the majority of the Study Area's existing features will be removed and the topsoil stripped within the development area. The exposed surface will be susceptible to erosion, increasing the potential for sediment runoff. To minimize local and downstream impacts from erosion and sedimentation during construction, the following measures have been recommended:

- Excess earth and topsoil is to be stockpiled away from established drainage areas and/or removed from site. Stockpiles shall be seeded if left for periods of greater than 30 days;
- Temporary sediment control fencing should be erected around the perimeter of all grading activities;
- Temporary sediment fabric and stone filters should be installed on catchbasins until surface cover has been stabilized;
- Temporary rock flow check dams should be installed within drainage cut-off swales;
- A temporary construction access mud mat should be installed at the construction accesses to reduce the amount of materials that may be transported off site;
- Temporary erosion and sediment control basins are to be constructed, complete with a Hickenbottom outlet control structure and overflow weir. The basins' purpose is to detain runoff long enough to allow the majority of soil particles to settle out of suspension;



- Construction during drier months should be monitored for wind-borne transport of sediments. At the direction of the engineer, the contractor may be directed to water down exposed earth areas with an aqueous solution of calcium chloride;
- All disturbed areas not under immediate construction for 30 days should be stabilized with seeding, and;
- Phased removal of temporary sediment basins during building phase of the development to coincide with upstream stabilization (established vegetation) of catchment areas.

A detailed *Erosion and Sediment Control Plan* (ESC Plan) will be prepared and submitted at the detailed design stage to identify the location and details of the temporary devices. The design particulars will be provided within the *Detailed Stormwater Management Report* at that time.

4. Sanitary Servicing

4.1. External Sanitary Servicing Framework

The City's *Sanitary Infrastructure Map* (revised January 2021) shows that the site is located south and east of the existing Painswick catchment boundary limits. The map shows an existing trunk sewer within Huronia Road that drains north across MVDE into Country Lane and eventually reaches the wastewater treatment plant (WWTP) located at Lakeshore Drive. A copy of the City's infrastructure map has been attached in Appendix C.

The City's *Patrick Drive As-Built Plan and Profile 8* (Drawing No. PP8, Sta. 0+202 to Sta. 0+404.9, prepared by Richardson Engineering Ltd., Dated October 2008, City reference No. 2003-072-039, attached in Appendix A) identifies a 450mm diameter trunk sanitary sewer terminating at maintenance hole SAP09006A; the extension of Patrick Drive at BEMP 2 / GG within LJM (former Town of Innisfil and City of Barrie municipal boundary).

A 375mm diameter sanitary sewer is stubbed at the north end of Fenchurch Manor at Madelaine Drive. Refer to GG (9 Mile) Subdivision Madelaine Drive and Shepherd Drive plan and profile drawings, prepared by the Jones Consulting Group Ltd., included in Appendix C, for road sanitary more information.

4.2. Allocated and Projected Sanitary Flows

Allocated Sanitary Flow

The Patrick Drive 450mm diameter trunk sanitary sewer is shown on the LJM *External Catchment Areas* plan (Drawing No. 9139-ECA, prepared by Richardson Engineering Ltd., dated October 2007) and shows the GG (9 Mile) site draining into Patrick Drive as catchment area ID EXT 1 with a flow rate of **188 litres per second** (L/s); based on the design sheet this is a peak flow including the extraneous allowance.

SIS Municipal Servicing and Grading

The SIS Section 6.0 *Municipal Servicing and Grading* notes that the HSP study included an analysis of the City's existing water and wastewater servicing infrastructure, an evaluation of a number of servicing alternatives based on future land use options and the identification and detailing of future preferred options for the Hewitt's SPA. There are 11 existing gravity sanitary sewer connections for the HSP areas identified in the *Wastewater Collection Master Plan* (*WCMP*) (amec, dated October 2013), six (6) of which are on the west side of Yonge Street. The *Summary of Available Connection Points* (*Table 8.2A*) of the *WCMP* shows the potential connection locations (**Figure 4.1**). The connection points are shown on the SIS's *Proposed Sanitary Sewer Plan (1 to 3)* attached in Appendix C. The GG (9 Mile) and surrounding lands connection is referred to as *E3.*

***Figure 4.1*: WCMP Table 8.2A Summary of Available Connection Points**

Table 8.2A Summary of Available Connection Points

Connection Point	Location Description	Manhole Identification	Downstream Pipe Size (mm)	Invert Elev. (m)
Hewitt's Land				
E1	Fenchurch Manor and Bartor Boulevard	SAP09044	250	251.00[1]
E2	Thicketwood Ave. and Bartor Boulevard	SAP09067	300	241.70
E3	Patrick Dr. & Seline Cres.	SAP090006A	450	243.97
E4C	Mapleview Drive East and Dean Ave.	SAP25121	250	265.227
E4B	Mapleview Drive East and Goodwin Drive	SAP25122	250	263.18
E4A	Mapleview Drive East and St. Crescent	6940	250	259.793
E5	Royal Jubilee & Mapleview Drive	SAH08044[2]	825	237.86
E6	End of current Unicorn Lane	SAH09043	375	256.80
E7	End of current Regina Road	SAH08021	250	257.00
E8	Winchester Terrace and Empire Drive	SAH08063	300	253.87
E9	Winchester Terrace and Sovereigns Gate	SAH08066	250	255.40

The SIS *Proposed Sanitary Sewer Plan (1 of 3)* (dated 2017) shows that the Lockhart Innisfil Investments Limited lands are part of a 139.2 ha central catchment connecting to Patrick Drive at Seline Crescent. The SIS *Calculated Sewage Flows to Existing Connection Points* (*Table 39*) (**Figure 4.2**) provides the estimated sewage flow rates to each connection for 2031.

***Figure 4.2*: SIS Table 39 Calculated Sewage Flows to Existing Connection Points**

Point	Identification	Master Plan	SIS	Pipe Capacity
		Discharge Flow (L/s)	Discharge Flow (L/s)	(L/s)
E1	SAP09044	5	7.3	59.5
E2	SAP09067	77	20.8	96.0
E3	SAP09006A	66	79.8	156.2
E4A	6940	24	34.5	40.3
E4B	SAP25122	11	n/a	n/a
E4C	SAP25121	1	n/a	n/a
E5	SAH08044	129	157.7	1435.4
E6	SAH09043	2	2.3	229.3
E7	SAH08021	8	1.0	40.8
E8	SAH08063	16	14.6	53.0
E9	SAH08066	14	15.5	37.6

Based on the estimated flows rates, the total combined discharge flow for the land west of Yonge Street (E1 through E4) is **184 L/s**. Furthermore, the total combined discharge flow to drain to Patrick Drive is **102 L/s** (areas E3 through E4).

Sanitary Design Criteria

The *City's Sanitary Sewer Collection Policies and Design Guidelines* (2017) provides theoretical design criteria for future developments and their projected sanitary loading demands. Specifically, Section 3.3 *Design Flows* in the guidelines provide design criteria for residential, commercial, and institutional developments. The **Table 4.1** summarizes the sanitary design criteria for the proposed developments within the HSP lands west of Yonge Street.

Table 4.1: Sanitary Design Criteria

Development Type	Design Population	Sanitary Demand	City Reference
Single Family Residential	3.13 persons/unit	225 L/day/person peaking factor of 2 - 4	3.3.1.1
Medium Density - Street Townhomes	2.34 persons/unit		
High Density - Mixed Use	1.67 persons/unit		
Commercial / Institutional		28 cu.m/day/ha peaking factor of 2	3.3.2.1
Extraneous Flows		0.1 L/sec/ha of gross area	3.3.4

Projected Sanitary Design Population

The SIS *Proposed Sanitary Sewer Plan (1 of 3)* shows external lands draining through Lockhart I sudvision and into the GG / BEMP 2 subdivisions, ultimately connecting to the trunk sewer on Patrick Drive.

Applying the City's design standards with the proposed *Draft Plan of Subdivision* and *Conformity Plan* statistics, the total proposed design population that will drain to the City's existing sewer infrastructure at Patrick Drive is calculated in **Table 4.2**. Note that the Rainsong Land Development Subdivision populations are based on their conformity plans; all others are based on their latest *Draft Plans*.

Table 4.2: Design Population

Plan Reference	Property Owner (Development Name)	Residential Lot Breakdown	Area (ha)	Units
A	BEMP Holdings 2 Inc.	Single Family Residential		283.0
	(BEMP 2)	Medium Density - Street Townhomes		32.0
		High Density - Mixed Use		220.0
Sub-Total			**19.44**	**535.0**
C	GG (9 Mile) Limited Subdivision	Single Family Residential		772.0
	(GG, formerly Lockmaple Subdivision)	Medium Density - Street Townhomes		307.0
		High Density - Mixed Use		
Sub-Total			**65.49**	**1,079.0**
D	Lockhart Innisfil Investments (Lockhart I)	Single Family Residential		198.0
Sub-Total			**19.72**	**198.0**
E	Rainsong Land Development Ltd.	Single Family Residential		607.5
		Medium Density - Street Townhomes / Back-to-back Townhomes		154.0
		High Density - Mixed Use		
Sub-Total			**50.15**	**754.5**
-	Mattamy (Irving)	Single Family Residential		354.5
		Medium Density - Street Townhomes / Back-to-back Townhomes		250.9
		High Density - Mixed Use	0.36	0.0
Sub-Total			**27.90**	**605.4**
Total			**182.70**	**3,171.9**

Projected Sanitary Flows

To confirm that the existing 450mm diameter trunk sanitary sewer within Patrick Drive has the capacity to convey the site and surrounding lands future sanitary flows the peak projected sanitary flows have been calculated using the future design population with the *Peak Domestic Sewage Flow* equation and the *Harmon Formula* provided below.

Peak Domestic Sewage Flow $Q_p = P \times q \times M / 86.4 + I \times A$

Where: *Q_p = peak residential sanitary sewage flow, including extraneous flow (L/s) , P = design population, q = average domestic flow per capita (litres/day/person), M = Peaking factor (no less than 2 and not greater than 4), I = Peak extraneous flow (litres/second/hectare), A = tributary area (hectares)*

Harmon Formula $M = 1 + 14/(4 + P^{1/2})$

Where: *M = ratio of peak flow to average flow, P = tributary population in thousands*

Using the above equations with the development areas and land use types, the total peak sanitary flows have been summarized in **Table 4.3**.

Table 4.3: **Projected Sanitary Flows**

Conformity Plan Reference	Property Owner (Development Name)	Area (ha)	Design Pop.	M	Res. Flow (L/s)	Com. / Inst. Flow (L/s)	Extran. Flow (L/s)	Total Peak Flow (L/s)
A	BEMP Holdings 2 Inc. (BEMP 2)	19.44	1,328.1	3.7	12.86		1.94	14.80
C	GG (9 Mile) Limited Subdivision	63.05	3,134.7	3.4	27.97		6.31	34.27
	(GG, formerly Lockmaple Subdivision)	2.44		2.0		1.58	0.24	1.83
D	Lockhart Innisfil Investments Limited (Lockhart I)	19.72	619.7	3.9	6.33		1.97	8.31
E	Rainsong Land Development Ltd.	33.72	2,239.9	3.5	20.69		3.37	24.06
		2.43		2.0		1.58	0.24	1.82
-	Mattamy (Irving)	25.08	1696.7	3.6	16.08		2.51	18.59
	Mattamy (Irving)	0.36		2.0		0.23	0.04	0.27
Total		**166.24**	**8,719.1**		**83.93**	**3.39**	**16.62**	**103.95**

Based on the above information the HSP development lands west of Yonge Street draining to Patrick Drive will generate a peak sanitary flow of approximately **103.95 L/s**, which is 84.05 L/s less than the existing Patrick Drive allocated sewers capacity (188 – 103.95) and therefore we do not foresee any issues servicing the proposed developments.

4.3. Proposed Sanitary Servicing Scenario

External Sanitary Sewers

Gravity sanitary sewer network extends from the Patrick Drive through the GG (9 Mile) subdivision to the Lockhart I and Mattamy Subdivision boundary at Fenchurch Manor. The SIS proposed a trunk sanitary sewer route along Madelaine Drive which was followed in the GG (9 Mile) design. The trunk sanitary sewer locations and catchment areas are illustrated on the External Sanitary Drainage Area Plan (Drawing No. **SAN-3** and **SAN-5**, Project No. GOL-14134) attached in Appendix C. It is anticipated that all required downstream sewers will be constructed by the time Lockhart Innisfil Investments Limited subdivision proceeds to construction.

Local Sanitary Sewers

The future right-of-way local sewers will be installed a minimum 2.8 metres below the centre line of the road allowance. Refer to the preliminary Plan and Profiles (Drawing No. **PP-1** through **PP-10**) attached in Appendix G for the preliminary depth and location of the proposed sewers. The future lots/blocks will have individual services stubbed at the limit of the rights-of-way. The exact service locations will be confirmed during the detailed design when the subdivisions draft plans have been approved by the City.

The development's sanitary sewers will be constructed in accordance with the City's Engineering Standards and the MECP guidelines. The proposed local sewer networks will consist of PVC, DR35 pipe with a minimum diameter of 200mm. The design will ensure that the minimum and maximum velocities are maintained under full flow conditions. The internal sanitary sewer catchment areas are delineated on Drawing **SAN-1** and **SAN-2** attached in Appendix G. Sanitary sewer design calculations are provided on Drawing **DS-1** and in Appendix C.

5. Water Servicing

5.1. External Water Servicing

The City's *Water Infrastructure Map* (revised January 2021) shows that the site is located outside of the existing distribution zone, just south of the Zone 2 limits. Pressure *Zone 2 South* generally operates between elevations of 237m and 273m with variations in static pressure from 344 kPa (50psi) to 690 kPa (100psi). Elevations for the subject property vary from 265m to 245m, well within the *Zone 2 South* operating pressure range. A copy of the City's infrastructure map has been attached in Appendix D.

The proposed Madeline Drive extension through the GG Subdivision will connect to the Lockhart I Subdivision. Plan and Profile (Drawing PP-2, 1+600 – 1+920, prepared by The Jones Consulting Group Ltd., dated February 2021, attached in Appendix C), shows that there is a proposed 300mm diameter watermain stubbed onto Fenchurch Manor and connected to the 300mm diameter watermain in Madelaine Drive.

5.2. Water Storage and Distribution Master Plan

The *Water Storage and Distribution Master Plan* (*WSDMP*) (July 2019, amec October 2013) developed a preferred alternative option to meet the HSP's future water demands. The *WSDMP Draft Final* plan (Drawing No. 2 of 4, attached in Appendix D) shows the HSP proposed external trunk watermain upgrades in proximity the HSP area, and the internal trunk watermains and the associated connection locations. Furthermore, the *WSDMP Draft Final Annexed Area, East Land Use Option 1 - Alt-1* (Drawing No. 2 of 18, attached in Appendix D) shows that the internal future trunk mains will generally consist of 200mm and 300mm diameter watermains.

The *HSP SIS Proposed Water Distribution Plan* (Figure No. 12, dated January 28, 2016, attached in Appendix D) shows a similar watermain arrangement but with a more recent draft plan lotting and road layout. This plan also shows the HSPA Phase 1 and Phase 2 limits.

5.3. Proposed Watermain System

External Watermains

The *WSDMP Draft Final Annexed Area, East Land Use Option 1 - Alt-1* (Drawing No. 2 of 18) identifies that a 600mm trunk watermain (DC trunk watermain as per SIS Figure No. 12) will be installed along the northern boundary of the HSP lands west of Yonge Street. This plan also identifies future 300mm diameter watermains within Yonge Street, from MVDE to Lockhart Road, and within Lockhart Road, from Yonge Street to just east of Finsbury Street.

Internal HSP Watermains

The trunk watermains will loop through the HSP lands to provide the proposed developments with the necessary potable water and fire flow demands. Proposed 150mm, 200mm and 250mm diameter local watermains will connect to the trunk mains.

Water services connections will be installed at the limit of the right-of-way for each individual lot and block. The exact service locations will be confirmed during the detailed design when the subdivisions draft plan has been approved by the City. The mains will be installed at a minimum depth of 1.7 metre cover within the ROW and fire hydrants will be spaced in accordance with City standards (150 metres in residential areas, 90 metres in industrial, commercial, institutional and multi-family residential areas).

Refer to the General Servicing Plans (Drawing No. **G-1** and **G-2**) attached in Appendix G for the location of the existing external watermains, future connection points and internal layout.

5.4. Water System Analysis

The WSDMP assessed the City's existing municipal distribution system and provided recommendations for upgrades and new infrastructure necessary to service the HSP. The amec recommendations are reiterated in the HSP SIS and form the basis for which the detailed subdivision design will be prepared. Following the City's approval of the draft plan, the detailed design will be accompanied by a development specific water system analysis (WSA). The WSA will demonstrate how the development of the proposed draft plan will achieve the MECP, City and Ontario Building Code (OBC) guidelines for water distribution systems. The model will also examine the effect of the development's demands on the adjacent municipal system.

Based on the location of the development and the external watermain upgrades proposed by the City there should not be any issues meeting minimum potable and fire system standards for flow and pressure.

6. Grading and Landform

6.1. Existing Conditions

The surrounding municipal Landform was determined through site specific detailed topographical surveys completed by Hunt Surveys Inc., Joe Topo, MNT Consultants Ltd., and Rudy Mak Surveying Ltd. These surveys were compiled and field truthed by TJCGL for the Lockhart I lands.

6.2. Proposed Grading Scenario

The proposed grading scenario is based on the latest, Lockhart I *Draft Plan* as well as, Lockhart Road existing topography. Generally, the preliminary grading design has been completed in accordance with the City's ***Draft*** *Transportation Design Manual* (2020) and *Lot Grading and Drainage Standards and Design Manual* (2019), including the minimum and maximum road grades, minimum and maximum K values for sags and crests for the local and collector roads.

The road and subdivision lot and blocks grading is proposed to match into the existing site perimeter elevations along the north and west boundary. Beyond the draft plan limits temporary boundary sloping (3:1 max.) is proposed where necessary to match into existing grades.

The future road profiles center line elevations have taken into consideration the HSP area's sanitary and storm sewer servicing elevation crossing constraints. The HSP SIS established approximate drainage catchment areas (storm and sanitary) as guidance for design of site-specific development plans. Refer to the Grading Plan (Drawing No. **GP-1** to **GP-6**) and preliminary Plan and Profiles (Drawing No.'s **PP-1** through **PP-10**) attached in Appendix G for the proposed road and lot elevations. Constant collaboration with the Mattamy Subdivision Owner's and Consultant (RJ Burnside) have been undertaken to ensure grading works are fully coordinate between the two developments. It is anticipated that earthworks between the Lockhart 1 lands and Mattamy lands will be completed simultaneously.

7. Transportation

7.1. External Road Network

The subject property is bound by future residential lands the east and west, the GG (9 Mile) Limited Subdivision stormwater management block to the north and Lockhart Road to the south. Lockhart Road is identified as an existing arterial ROW on the *City's Schedule 1 to OP Amendment 40 – Road Plan (Schedule D, January 2018).* The *Schedule D* also identifies Yonge Street and Lockhart Drive as arterial roadways, Patrick Drive, Goodwin Drive and Dean Avenue as minor collectors, and Madeline Drive as a major collector. The *OPA 40 Road Widening Plan (Schedule E)* and *Schedule 9D-2* identifies arterial, major collector and minor collectors as consisting of a maximum ROW width of 41 metres, 27 metres and 24 metres, respectively. A copy of the *OPA 40* plans have been attached in Appendix E.

7.2. Lockhart Road Widening

Currently Lockhart Road from Huronia Road to Younge Street is a two-lane arterial road with open ditches on both sides. Development Credit project 2203 includes widening Lockhart Road from Bayview Drive to Yonge Street. This project is scheduled to occur in two phases, ultimately being completed by 2031.

7.3. Proposed Site Entrances and Internal Road Network

The latest *Draft Plan of Subdivision* illustrates that the property will be subdivided into various sized residential lots (singles), stormwater management pond blocks, environmental protection area and rights-of-way (18.0 metre wide local roads, 24.0m minor collector roads and 27.0 metre major collector roads). Entrance to the Lockhart I Subdivision will not be provided from the existing external ROW. The site will be accessible through the Lockhart II Subdivision to the west where there is one (1) access point to Lockhart Road. The site can also be reached through the GG (9 Mile) Subdivision. A minor collector connection is also proposed to the Irving Lands.

The *City's Schedule 1 to OP Amendment 40 – Road Plan (Schedule D)* shows that the proposed Patrick Drive, Dean Avenue and Goodwin Drive extensions will be minor collectors and the Madelaine Drive extension will be a major collector. These internal minor and major collectors

will loop through the HSP lands connecting the proposed local roads to the external arterial roads. The Lockhart I site's internal road pattern and connection locations can be seen on the *Draft Plan of Subdivision,* and the Hewitt's Secondary Plan Transportation Plan Schedule 9D-1 shows the overall HSP lands west of Yonge Street and associated internal road patterns and connections.

A Traffic Impact Study has been completed by JD Northcote Engineering Inc. and is provided under separate cover.

8. Utilities, Street Lighting and Traffic Signals

The Lockhart I Subdivision and surrounding development lands will be serviced by secondary utilities including hydro, gas, phone, cable, streetlights, and Canada Post for mail service. Generally, the macro HSP utility servicing requirements are being coordinated with the various utility providers by the HLOG. The proposed developments are to be serviced in accordance with the master servicing plans currently being established by the respective utility providers. At this time the macro servicing requirements are still being confirmed by the HLOG. The specific internal servicing requirements for the development will be determined during the project's detail design process following completion of the macro utility planning works. The following provides a summary for the existing utility provider's plant data, street lighting and traffic signals information surrounding the site.

8.1. Gas

The *Enbridge Atlas Tile Mapping* plans identifies existing mains within MVDE's southern boulevard, Lockhart Road's north and south boulevards, Yonge Street's east and west boulevards and along Seline Crescent's eastern boulevard. A copy of the mapping data has been included in Appendix F. Initial discussions between Enbridge and the HLOG indicate that sufficient gas supply won't be made available until construction of the external gas distribution mains has been completed. However, the macro analysis is still on-going.

New internal gas mains will connect to the proposed external upgrades at the development's entrances and loop through the future rights-of-way. The proposed internal and external main size will be determined during the detailed designs stage. A composite utility plan (CUP) will summarize all of the utility design and construction works for the Study Area.

8.2. Electricity

The future HSP development lands are within the InnPower (formerly Innisfil Hydro) servicing limits. The HSP will be serviced from InnPower's existing and new electric network by connecting to the grid at the future site entrances and installing underground cables and pad mounted transformers that will loop through the future ROW's. The primary and secondary power servicing specifics for the future lot and blocks will be determined at the detailed design stage, following InnPower's completion of their macro servicing design. Initial discussion between InnPower and the HLOG indicate that electricity will be provided and the macro plan will be forthcoming in the near future.

8.3. Rogers

Rogers was contacted to obtain their networks utility information surrounding the property, but it was not made available at the time of this report's preparation. However, correspondence has been provided from Rogers, confirming there will be no issues servicing the development. A joint utility trench is proposed throughout the development.

8.4. Bell

Bell currently has buried cable and conduit servicing the properties surrounding the site and HSP lands. There are existing services running along MVDE, Yonge Street and Lockhart Road. These services will be extended through the Study Area to service the individual lots and blocks. Confirmation from Bell has been received confirming there will be no issue servicing the development.

8.5. Street Lighting

Street lighting will be required in accordance with the *City's Roadway Illumination Policies and Design Guidelines* (June 2015). The street light design will be completed by the electrical consultant at the detailed design stage.

9. Conclusions

This Functional Servicing Report identifies the recommended servicing design for the proposed Lockhart I Subdivision. This Report outlines the proposed infrastructure required to service the site for water, wastewater, roads, stormwater management quality control, quantity control, water balance, erosion and sediment control, conventional utilities and street lighting. This Report has been prepared based on the recommendations provided in the HSPA SIS prepared by R. J. Burnside (November 2017). In particular, this Report has recommended the proposed development can be adequately serviced based on the following:

- The post-development stormwater runoff from the site and surrounding lands can be accommodated by the construction of the stormwater quality and quantity control facilities;
- The site's grading, landform and future road profile elevations can accommodate the sanitary and storm sewer servicing requirements;
- The City's existing and proposed downstream sanitary sewer infrastructure can accommodate the effluent from the site and surrounding lands full build-out;
- The City's planned external watermain upgrades with the internal trunk and local mains can accommodate the site and surrounding lands future potable water and fire flow demands;
- In accordance with the *Functional Design Review* prepared by Lea Consulting the site and HSP ultimate road network connections to the adjacent arterial and collector roadways can accommodate the developments traffic demands;
- The site's street lighting and boulevard features will be designed in accordance with the City's standards and guidelines during the detailed design stage, and
- Following the implementation of the external utility infrastructure upgrades currently being assessed by the various utility providers the hydro, gas, telephone and cable networks within the surrounding roadways will accommodate the site's future utility requirements.

It is recommended that this Report be accepted as demonstrating a preliminary functional servicing approach in support of the application for the Draft Plan.

All of which is respectfully submitted,

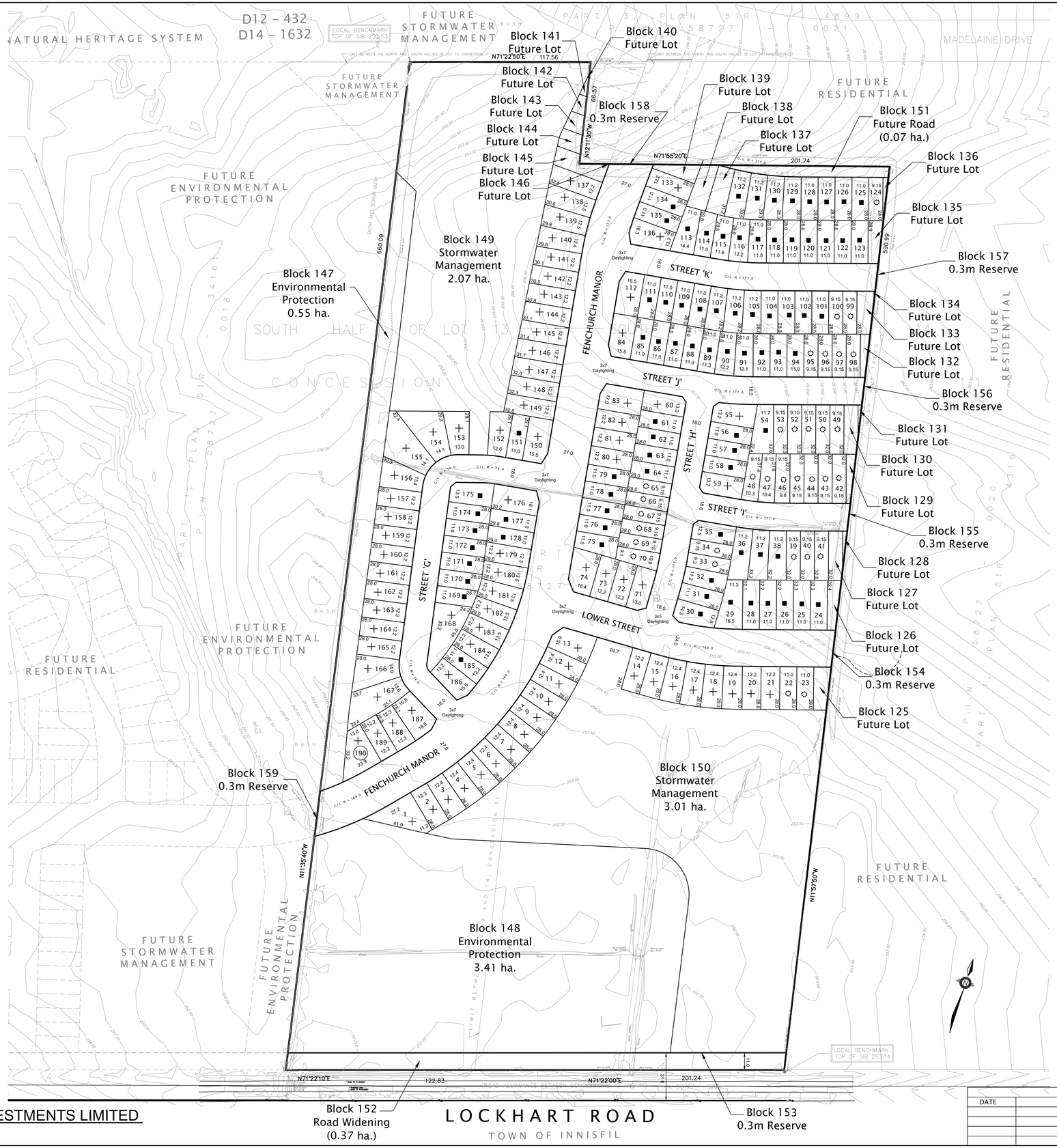
THE JONES CONSULTING GROUP LTD.

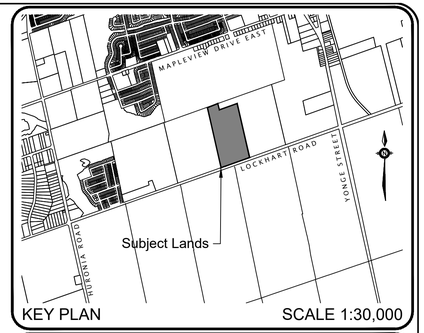


Jon Ingram, P.Eng.
Associate Partner, Project Engineer

Appendix A

External Reference Information





Draft Plan of Subdivision

Part of The South Halves of Lots 13 and 14, Concession 11
(Geographic Township of Innisfil)
City of Barrie
2021

OWNER'S CERTIFICATE

I, THE UNDERSIGNED, BEING THE REGISTERED OWNER OF THE SUBJECT LANDS, HEREBY AUTHORIZE THE JONES CONSULTING GROUP LTD. TO PREPARE THIS DRAFT PLAN OF SUBDIVISION AND TO SUBMIT SAME TO THE CITY OF BARRIE FOR APPROVAL.

July 16, 2021
DATE

LOCKHART INNISFIL INVESTMENTS LIMITED

SURVEYOR'S CERTIFICATE

I CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

JULY 16, 2021
DATE

J.D. BARNES LIMITED
ONTARIO LAND SURVEYORS

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

a) SHOWN ON DRAFT PLAN	g) SHOWN ON DRAFT PLAN
b) SHOWN ON DRAFT PLAN	h) MUNICIPAL PIPED WATER TO BE PROVIDED
c) SHOWN ON KEY PLAN	i) SANDY CLAY LOAM
d) RESIDENTIAL, SWM, EP	j) SHOWN ON DRAFT PLAN
e) SHOWN ON DRAFT PLAN	k) ALL MUNICIPAL SERVICES TO BE PROVIDED
f) SHOWN ON DRAFT PLAN	l) SHOWN ON DRAFT PLAN

STATISTICS	Area (ha.)	Units
+ 12.2m Singles (LOTS 1 - 21, 55, 59 & 60, 71 - 74, 80 - 84, 112, 133, 136 - 150, 152 - 168, 176, 179 - 183, & 186 - 190)	3.13 ha.	79 units
■ 11.0m Singles (LOTS 24 - 32, 35 - 38, 54, 56 - 58, 61 - 64, 75 - 79, 85 - 94, 101 - 111, 113 - 123, 125 - 132, 134 & 135, 151, 169 - 175, 177 & 178, 184 & 185)	2.54 ha.	79 units
☼ 9.15m Singles (LOTS 22 & 23, 33 & 34, 39 - 53, 65 - 70, 95 - 100, & 124)	0.89 ha.	32 units
Future Lots (LOTS 125 - 146)	0.38 ha.	8 units
Environmental Protection (BLOCKS 147 & 148)	3.96 ha.	
Stormwater Management (BLOCKS 149 & 150)	5.08 ha.	
Future Road (BLOCKS 151)	0.07 ha.	
Reserves & Widenings (BLOCK 152 - 159)	0.38 ha.	
Roads Major Collector - Fenchurch Manor Minor Collector - Lower Street Local Roads - Streets 'G', 'H', 'I', 'J', & 'K',	3.29 ha.	
TOTAL	19.72 ha.	198 units

0 10 50 100M
SCALE 1 : 1250 (A1)

Lockhart Innisfil Investments Limited

Draft Plan of Subdivision

Raymond J. Duhamel
REGISTERED PROFESSIONAL PLANNER
R.P.P.

Date Issued:	JULY 13, 2021
Checked By:	RD
Project No.:	GOL-14193
Drawn By:	m.c.r.
Drawing Name:	GOL-14193-PH-1-DP-3c-SIGNED

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Drive East, Unit 1, Barrie, Ontario, L4N 0W5
Phone: 705-734-2538 Fax: 705-734-1056
www.jonesconsulting.com

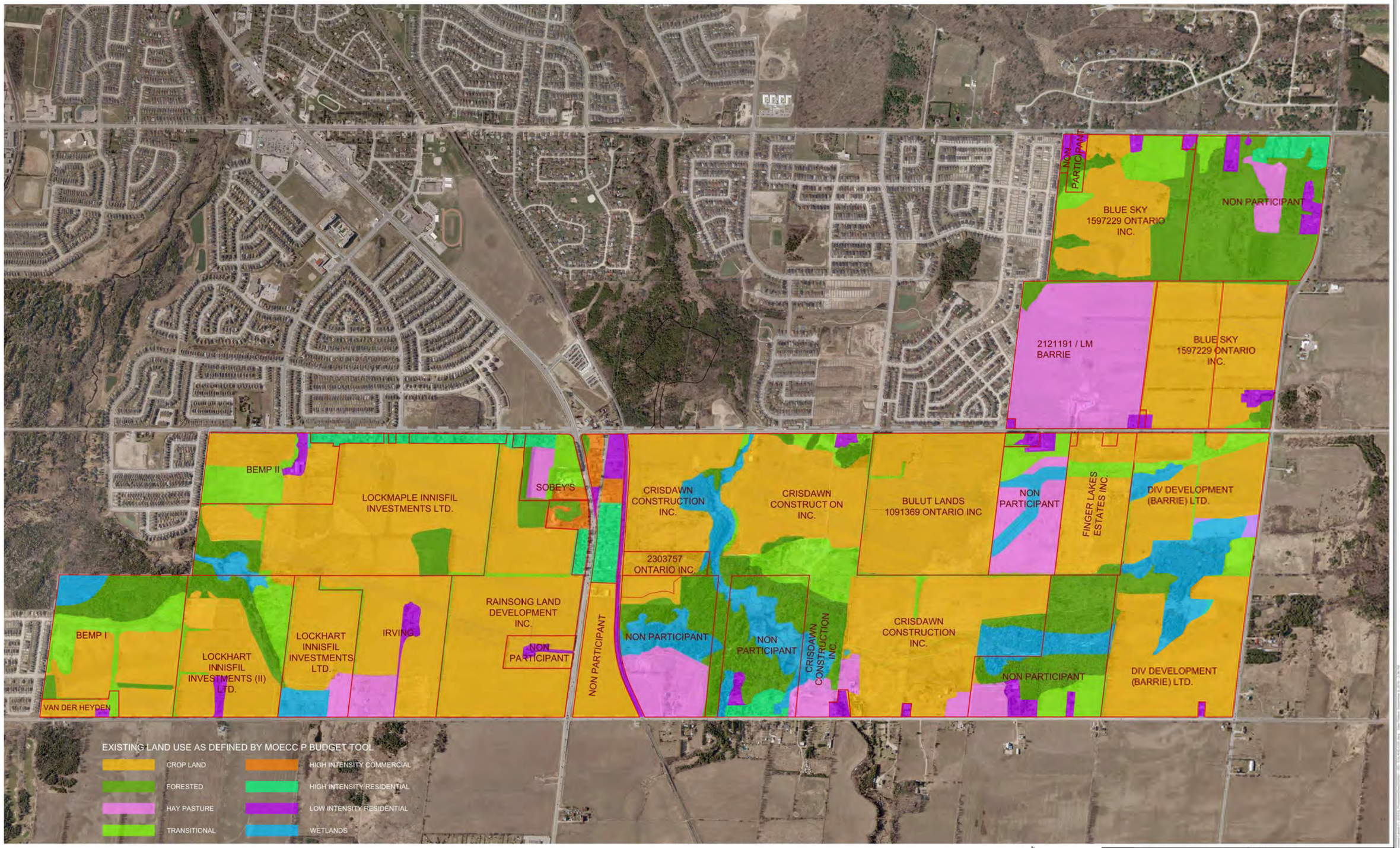
SCHEDULE OF REVISIONS

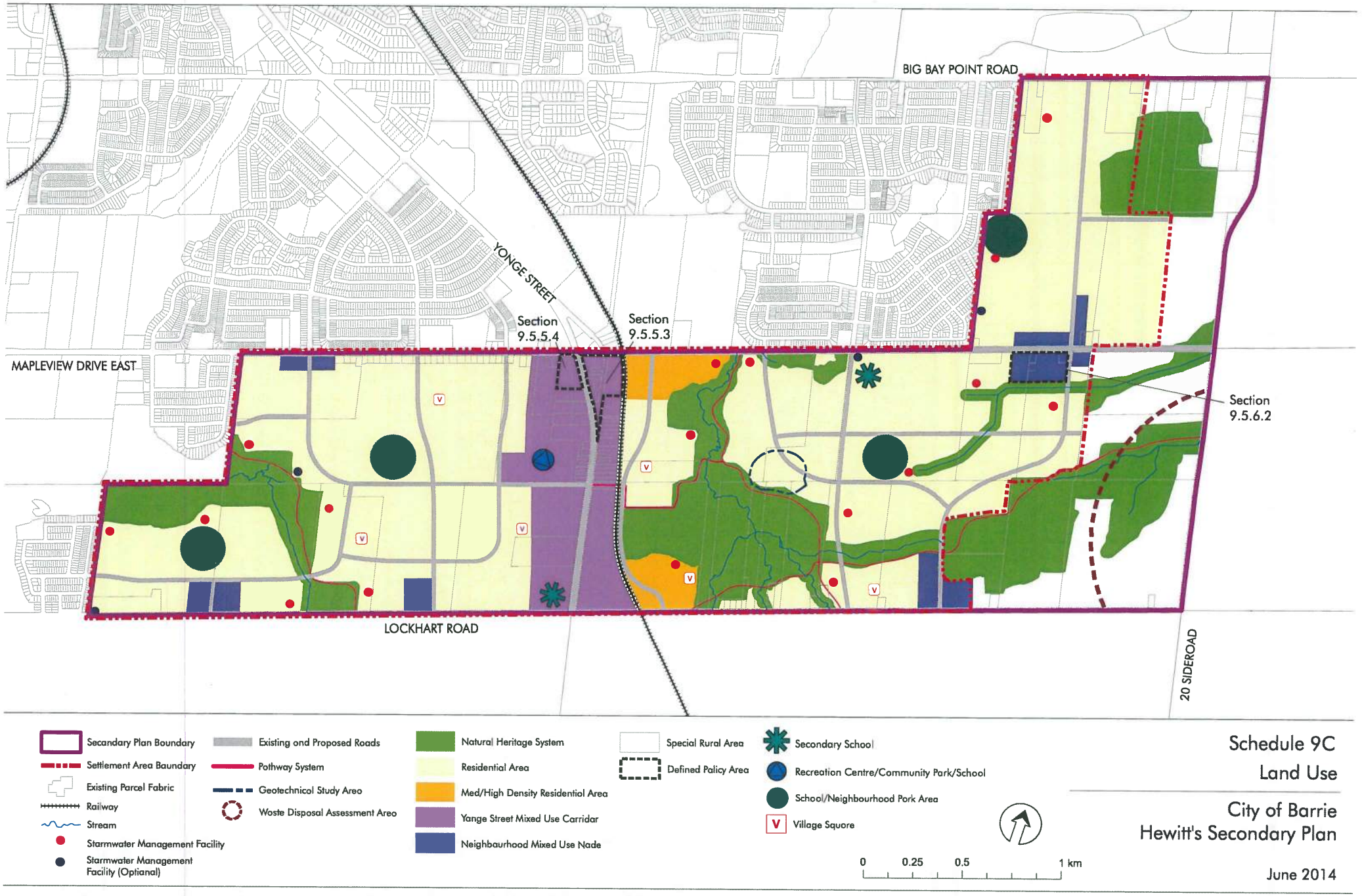
DATE	DESCRIPTION	DRAWN

LOCKHART INNISFIL INVESTMENTS LIMITED
CITY OF BARRIE

LOCKHART ROAD
TOWN OF INNISFIL

C:_TJCE\Planning Drawings\2021\July 2021\21-07-16\GOL-14193\GOL-14193-PH-1-DP-3c-SIGNED.dwg Layout:DP Plotted: Jul 16, 2021 @ 10:11am by mariohards The Jones Consulting Group Ltd.

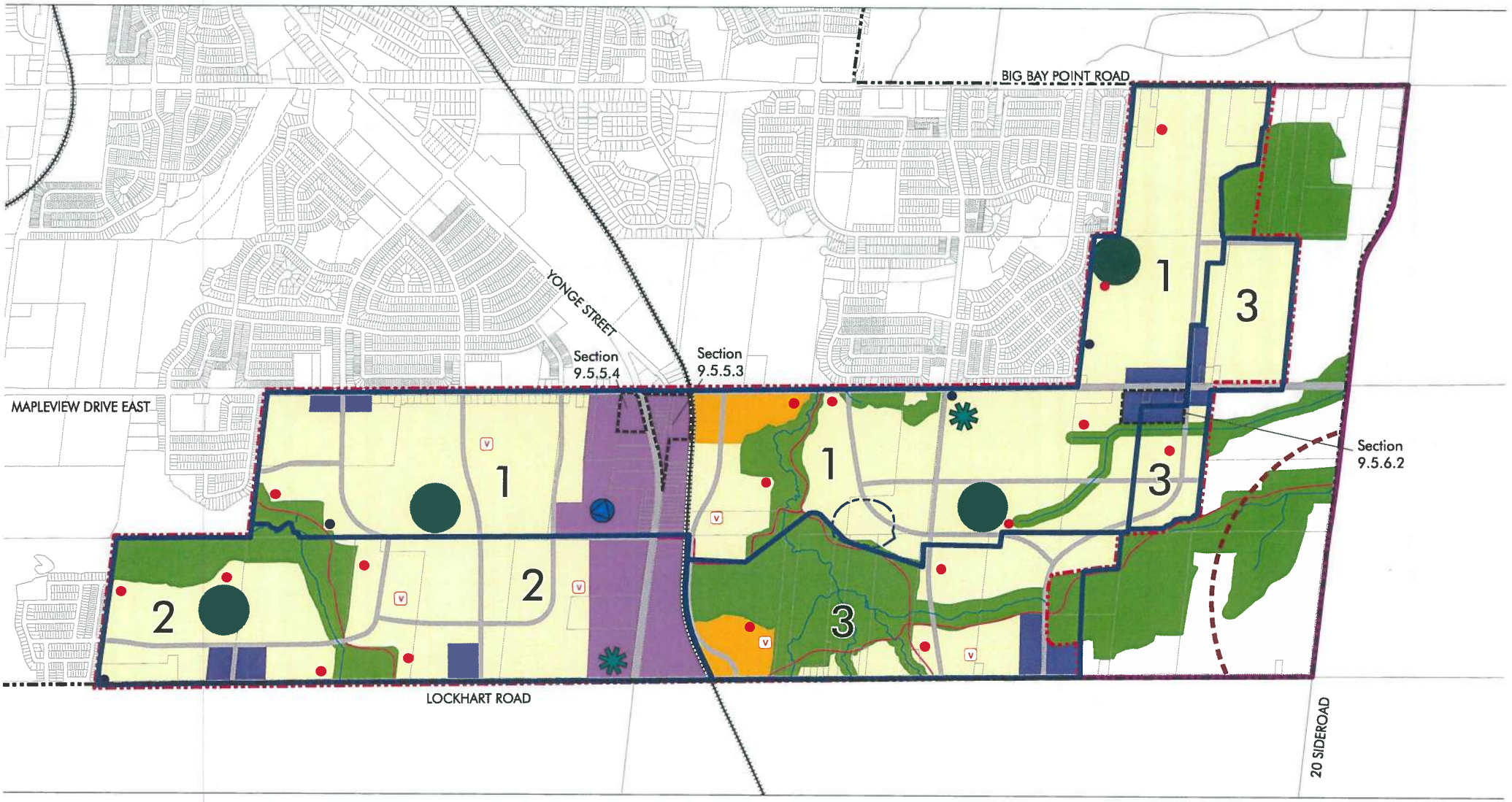

BEMP II
LOCKMAPLE INNISFIL INVESTMENTS LTD.
SOBEY'S
CRISDAWN CONSTRUCTION INC.
CRISDAWN CONSTRUCT ON INC.
BULUT LANDS 1091369 ONTARIO INC
NON PARTICIPANT
FINGER LAKES ESTATES INC.
DIV DEVELOPMENT (BARRIE) LTD.
BLUE SKY 1597229 ONTARIO INC.
NON PARTICIPANT
2121191 / LM BARRIE
BLUE SKY 1597229 ONTARIO INC.
2303757 ONTARIO INC.
BEMP I
LOCKHART INNISFIL INVESTMENTS (II) LTD.
LOCKHART INNISFIL INVESTMENTS LTD.
IRVING
RAINSONG LAND DEVELOPMENT INC.
NON PARTICIPANT
NON PARTICIPANT
NON PARTICIPANT
NON PARTICIPANT
CRISDAWN CONSTRUCTION INC.
CRISDAWN CONSTRUCTION INC.
NON PARTICIPANT
DIV DEVELOPMENT (BARRIE) LTD.
VAN DER HEYDEN
EXISTING LAND USE AS DEFINED BY MOECC P BUDGET TOOL
CROP LAND
FORESTED
HAY PASTURE
TRANSITIONAL
HIGH INTENSITY COMMERCIAL
HIGH INTENSITY RESIDENTIAL
LOW INTENSITY RESIDENTIAL
WETLANDS
0 100 200 400 600
Metres
NOTE: "SCALE ONLY VALID FOR 24" x 36" SIZED PLOTS"
BURNSIDE
HEWITT'S CREEK LANDOWNERS GROUP INC.
Figure Title
HEWITT'S SECONDARY PLAN AREA
SUBWATERSHED IMPACT STUDY
EXISTING LAND USE
Drawn BH
Checked CC
Date 26/06/07
Scale H 1:7,500
Project No. 300022880
FIG 2



Schedule 9C
Land Use

City of Barrie
Hewitt's Secondary Plan

June 2014



Schedule 9E
Development Phases

City of Barrie
Hewitt's Secondary Plan

June 2014

OFFICIAL PLAN

Schedule A
Land Use

Office Consolidation
January 2018

- Residential
- City Centre
- General Commercial
- Community Centre Commercial
- Regional Centre Commercial
- Mixed Use Nodes and Corridors
- Business Park
- Highway 400 Industrial
- General Industrial
- Restricted Industrial
- Institutional
- Educational Institutional
- Major Institutional
- Open Space
- Environmental Protection Area
- Special Rural Area
- Water Treatment Centre
- Waste Management Facility
- Future Urban
- Waste Disposal Assessment Area
- City Boundary
- Application Before the Ontario Municipal Board (OMB)
- SecondaryPlanBoundary
- Settlement Area Boundary

Barrie

1:20,000

0 0.5 1 2 km

N

The City of Barrie does not warrant the accuracy, completeness, content, or currency of the information provided.
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For information please contact Service Barrie at 705-726-4242 or ServiceBarrie@barrie.ca

GIS Branch 2/4/2020

SCALE = 1:2500 (AO)

A. BEMP HOLDINGS 2 INC.
B. BEMP HOLDINGS 1 INC.
C. LOCKMAPLE INNISFIL INVESTMENTS LTD.
D. LOCKHART INNISFIL INVESTMENTS LTD. & LOCKHART INNISFIL INVESTMENTS (II) LTD.
E. RAINSONG LAND DEVELOPMENT INC.
F. VAN DER HAYDEN
G. SOBEY'S CAPITAL INC.

WEST OF YONGE CONFORMITY REVIEW PLAN 1

Raymond J. Dunphy
REGISTERED PROFESSIONAL PLANNER
R.P.P.

Date Issued: June 9, 2016
Checked By: RD
Project No.: GOL-14134/LAW-06129
Drawn By: m.c.r.
Drawing Name: GOL-14134-(WOY)-CR1.dwg

KEY PLAN 1:40,000

JONES
CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Maplevew Drive East, Unit 1, Barrie, Ontario, L4N 0W5
Phone: 705-734-2538 Fax: 705-734-3356
www.jonesconsulting.com

A (Bemp Holdings 2 Inc.)

Calcs	# of units	% of total units
13.7m Single	28.5	6
11.5 Single	137.5	27
10.4 Single	75	15
9.0 Single	42	8
Street Townhome	32	6
Mixed Use Blocks	196	38
19.44 ha. Total Lands	511	100

B (Bemp Holdings 1 Inc.)

Calcs	# of units	% of total units
13.7m Single	56	15
11.5 Single	100.5	27
10.4 Single	73.5	20
9.0 Single	36	10
Street Townhome	37	10
Mixed Use Block	72	19
36.59 ha. Total Lands	375	100

C (Lockmaple Innisfil Investments Ltd.)

Calcs	# of units	% of total units
12.2m Single	87	8
11.0m Single	374	34
9.15m Single	302	27
Street Townhome	337.5	31
65.56 ha. Total Lands	1100.5	100

D (Lockhart Innisfil Investments Ltd.) (Lockhart Innisfil Investments (II) Ltd.)

Calcs	# of units	% of total units
12.2m Single	98.8	17
11.0m Single	142.5	24
9.15m Single	151.5	26
Street Townhome	54	9
Back to Back Townhomes	38	6
Mixed Use Block	107	18
51.85 ha. Total Lands	591.8	100

E (Rainsong Land Development Inc.)

Calcs	# of units	% of total units
12.2m Single	156.5	21
11.0m Single	224	30
Semi Detached Residential (7.5m/unit)	220	29
Back-to-Back Street Townhouse (6.4m/unit)	154	20
50.15 ha. Total Lands	754.5	100

F (Van Der Hayden - Lockhart)

Calcs	# of units	% of total units
11.5m Single	22.5	43
10.4m Single	19	36
9.0m Single	11	21
3.18 ha. Total Lands	52.5	100

G (Sobey's Capital Incorporated)

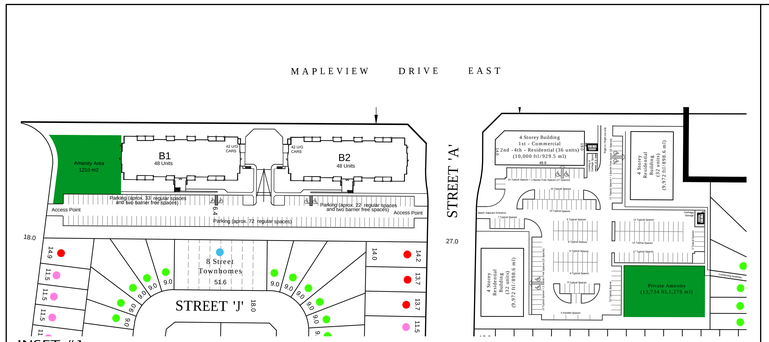
Calcs	# of units	% of total units
To Be Determined		
8.26 ha. Total Lands	0	0.00

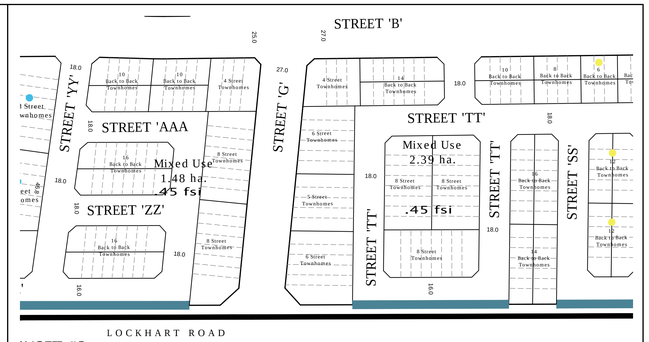
Unit Type	A+B+C+D+E+F+G		A (19.44 ha.)		B (36.59 ha.)		C (65.56 ha.)		D (51.85 ha.)		E (50.15 ha.)		F (3.18 ha.)		G (8.26 ha.)	
	%	Units	%	Units	%	Units	%	Units	%	Units	%	Units	%	Units	%	Units
13.7m Single	2	84.5	6	28.5	15	56.0	0	0.0	0	0.0	0	0.0	0	0.0		0
12.2m Single	10	342.3	0	0.0	0	0.0	8	87.0	17	98.8	21	156.5	0	0.0		0
11.5m Single	8	260.5	27	137.5	27	100.5	0	0.0	0	0.0	0	0.0	43	22.5		0
11.0m Single	22	740.5	0	0.0	0	0.0	34	374.0	24	142.5	30	224.0	0	0.0		0
10.4m Single	5	167.5	15	75.0	20	73.5	0	0.0	0	0.0	0	0.0	36	19.0		0
9.15m Single	13	453.5	0	0.0	0	0.0	27	302.0	26	151.5	0	0.0	0	0.0		0
9.0m Single	3	89.0	8	42.0	10	36.0	0	0.0	0	0.0	0	0.0	21	11.0		0
Semi Detached (7.5m/unit)	6	220.0	0	0.0	0	0.0	0	0.0	0	0.0	29	220.0	0	0.0		0
Street Townhome (6.0m/unit)	14	460.5	6	32.0	10	37.0	31	337.5	9	54.0	0	0.0	0	0.0		0
Back-to-Back Street Townhome	6	192.0	0	0.0	0	0.0	0	0.0	6	38.0	20	154.0	0	0.0		0
Mixed Use Blocks	11	375.0	38	196.0	19	72.0	0	0.0	18	107.0	0	0.0	0	0.0		0
Totals	**100**	**3385.3**	**100**	**511**	**100**	**375**	**100**	**1100.5**	**100**	**591.8**	**100**	**754.5**	**100**	**52.5**	**0**	**0**

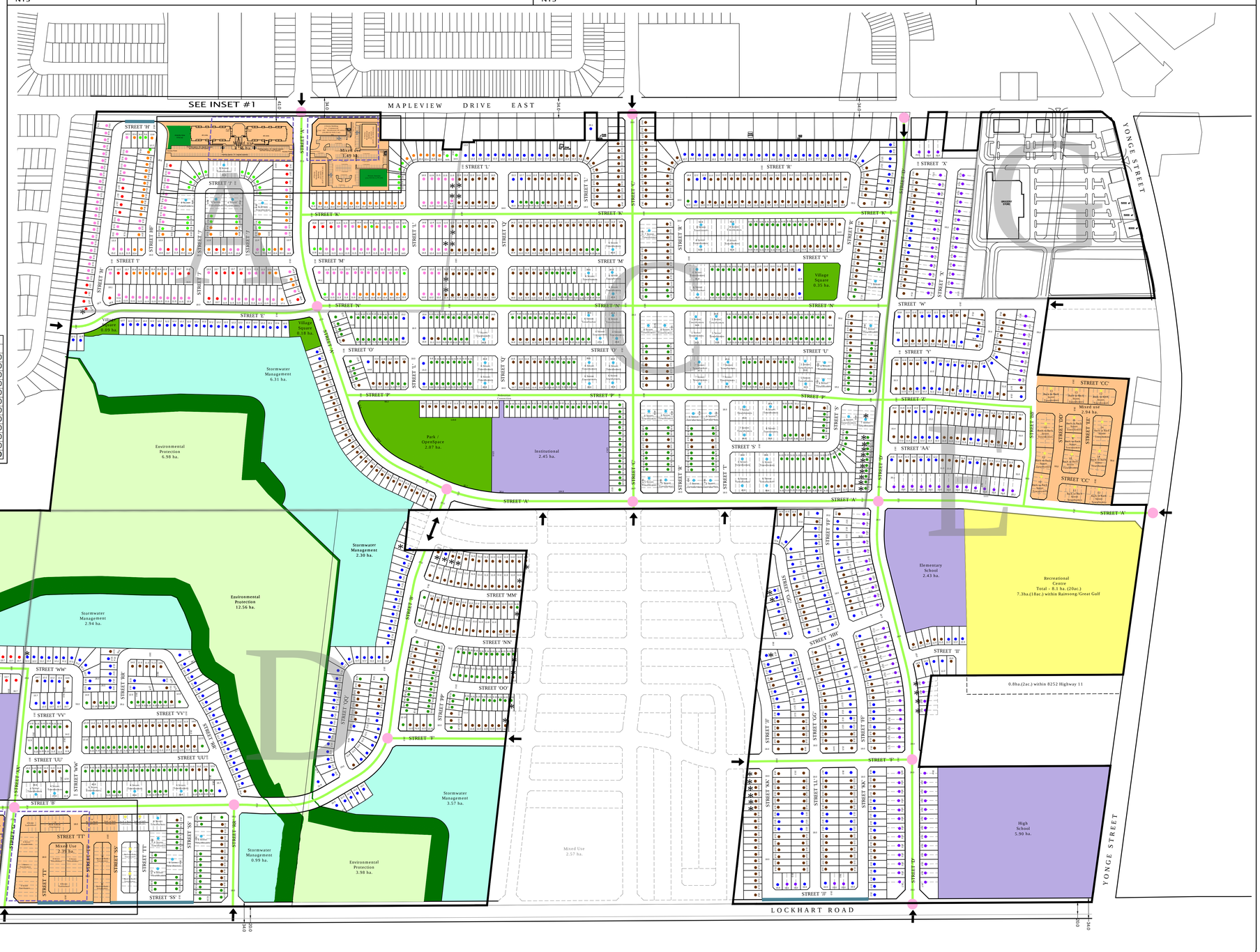
Subject Lands
- Gross Developable 235 ha
- Net Developable 198 ha

Entrance Location
Park/Open Space (5.37 ha.)
Institutional Land Use (13.37 ha.)
Mixed Use Proposed (9.3)
Recreational Centre (7.3 ha.)
Mixed Use as per City of Barrie Secondary Plan (5.5 ha.)
Stormwater Management Pond (16.12 ha.)
Natural Heritage Buffer (6.63 ha)
Natural Heritage Core Area (30.08 ha)
Enhanced Landscaping & Dual Sidewalks
Enhanced Window Streets
Key Intersections (Enhanced treatments)

* Lots with this symbol were counted as half lots only.





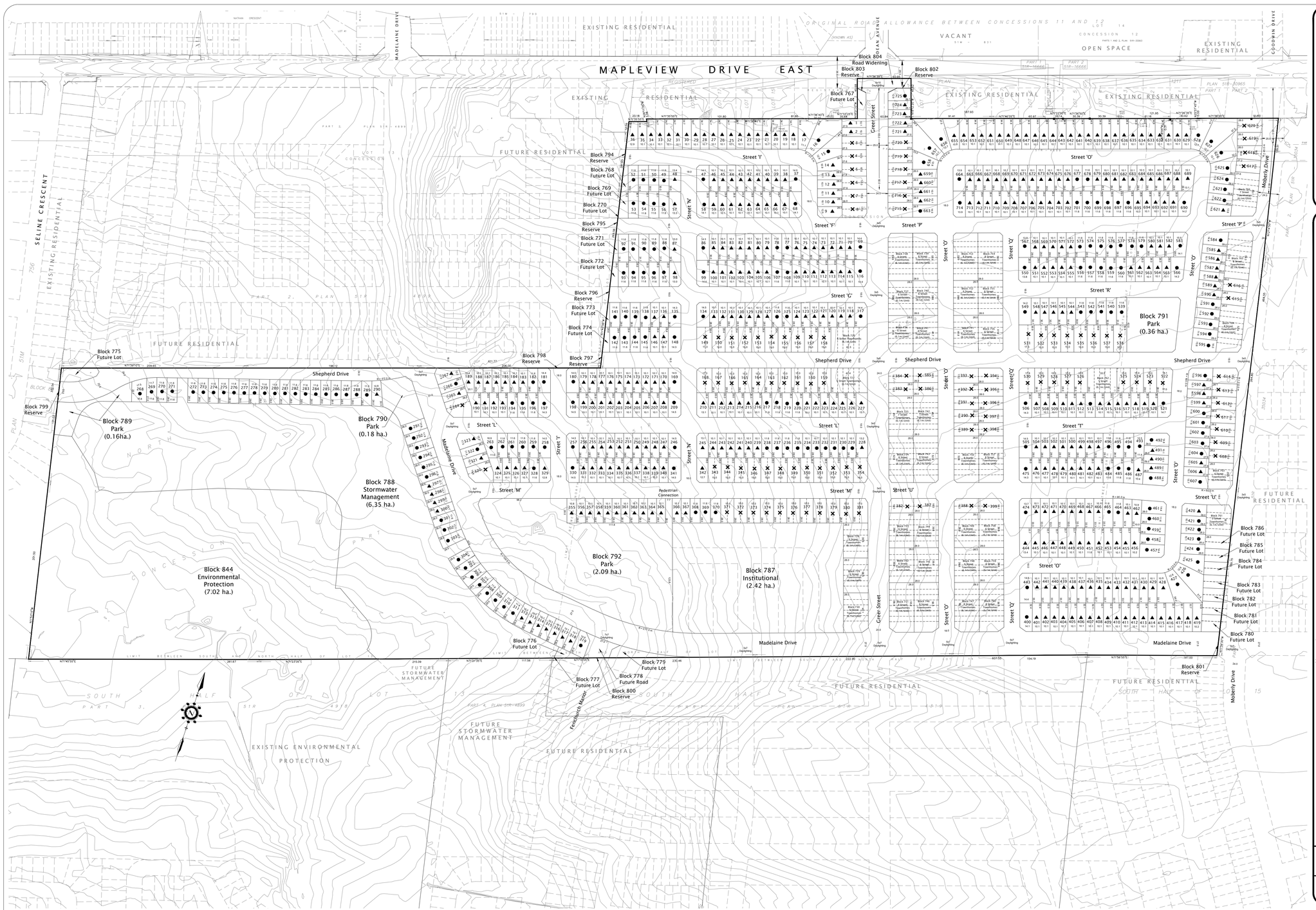


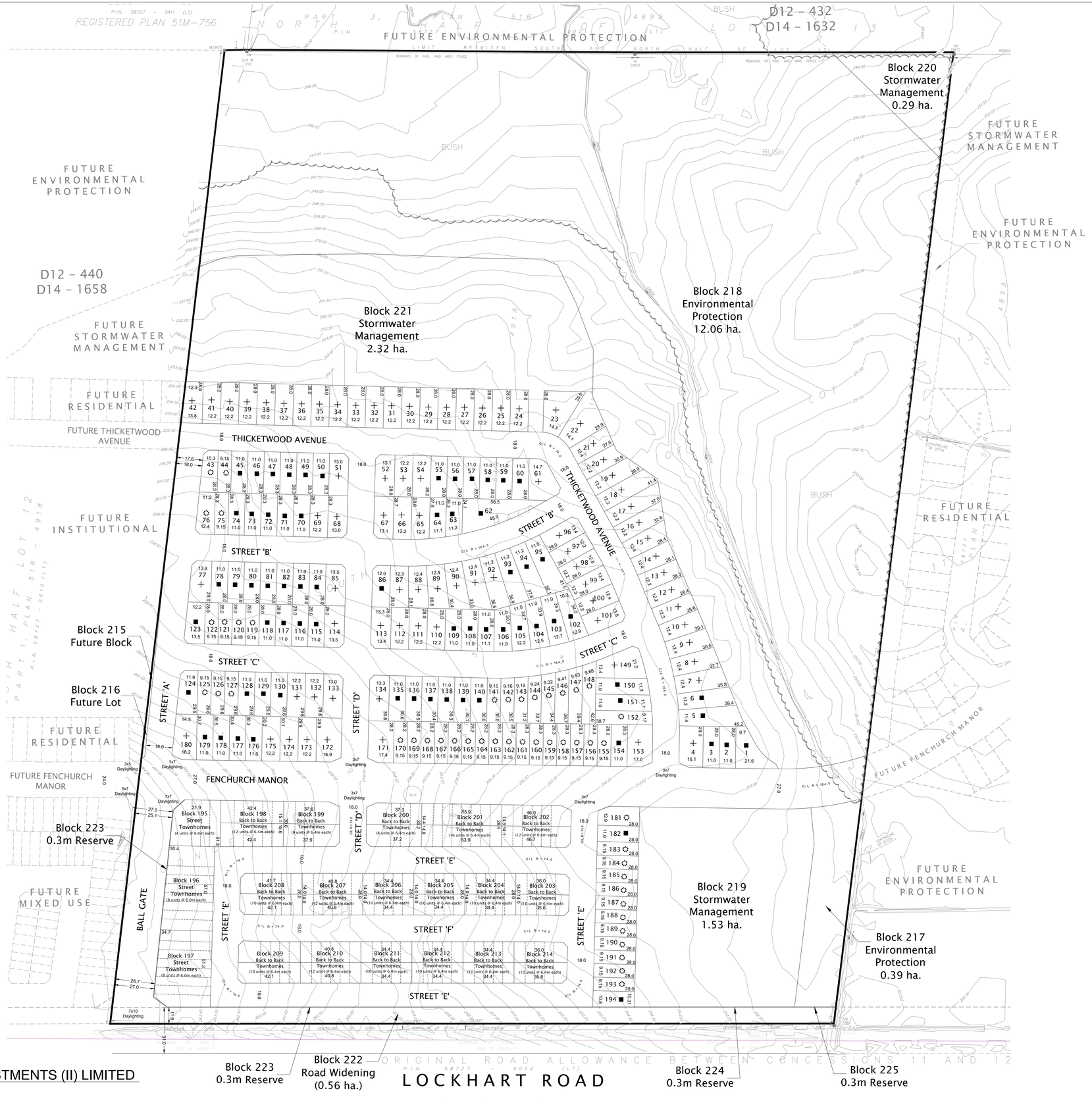
Hewitt's Secondary Plan
West of Yonge Conformity Review Plan 1

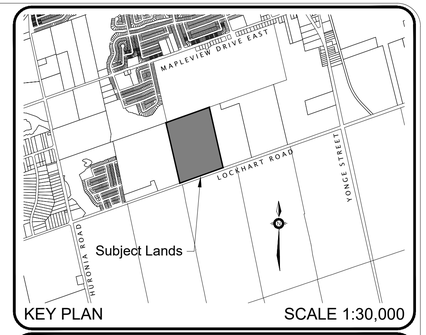
A. BEMP HOLDINGS 2 INC.
B. BEMP HOLDINGS 1 INC.
C. LOCKMAPLE INNISFIL INVESTMENTS LTD.
D. LOCKHART INNISIFL INVESTMENTS LTD. & LOCKHART INNISFIL INVESTMENTS (II) LTD.
E. RAINSONG LAND DEVELOPMENT INC.
F. VAN DER HAYDEN
G. SOBEY'S CAPITAL INC.

Submission to City of Barrie for conformity review
May 30, 2016

© \\Planning Drawings\GOL-14134\Gsdrive-Lockmaple\Live\Submitted\Conformity Review Plans\June 2016\GOL-14134-(WOY)-CR1.dwg Layout:Conformity Review Plan Plotted: Jun 09, 2016 @ 6:15pm by mandonis The Jones Consulting Group Ltd.


MAPLEVIEW DRIVE EAST
EXISTING RESIDENTIAL
VACANT
OPEN SPACE
FUTURE RESIDENTIAL
Block 804 Road Widening
Block 803 Reserve
Block 802 Reserve
Block 767 Future Lot
Block 794 Reserve
Block 768 Future Lot
Block 769 Future Lot
Block 770 Future Lot
Block 795 Reserve
Block 771 Future Lot
Block 772 Future Lot
Block 796 Reserve
Block 773 Future Lot
Block 774 Future Lot
Block 797 Reserve
Block 798 Reserve
Block 775 Future Lot
Block 799 Reserve
Block 789 Park (0.16ha.)
Block 790 Park (0.18 ha.)
Block 788 Stormwater Management (6.35 ha.)
Block 844 Environmental Protection (7.02 ha.)
Block 792 Park (2.09 ha.)
Block 787 Institutional (2.42 ha.)
Block 791 Park (0.36 ha.)
Block 786 Future Lot
Block 785 Future Lot
Block 784 Future Lot
Block 783 Future Lot
Block 782 Future Lot
Block 781 Future Lot
Block 780 Future Lot
Block 801 Reserve
Block 776 Future Lot
Block 777 Future Lot
Block 778 Future Road
Block 779 Future Lot
Block 800 Reserve
Street 'F'
Street 'L'
Street 'M'
Street 'N'
Street 'O'
Street 'P'
Street 'P' E
Street 'Q'
Street 'R'
Street 'S'
Street 'T'
Street 'U'
Street 'U' E
Green Street
Shepherd Drive
Madeline Drive
Madelaine Drive
Moberly Drive
Fenchurch Manor
Pedestrian Connection
SELINE CRESCENT
MADELAINE DRIVE
COODWIN DRIVE
EXISTING ENVIRONMENTAL PROTECTION
FUTURE STORMWATER MANAGEMENT
ORIGINAL ROAD ALLOWANCE BETWEEN CONCESSIONS 11 AND 12
CONCESSION 11
CONCESSION 12
LOT 13
LOT 14
PART 2, PLAN SIR-4899
PART 3, PLAN SIR-4899
PART 4, PLAN SIR-4899
PART 1, PLAN 51R-20865
PART 2, PLAN 51R-20865
PART 1, PLAN 51R-16666
PART 2, PLAN 51R-16666
PLAN 51M-793
PLAN 51M-804
PLAN 51M-1078
PLAN 51M-1079
PLAN 51M-1080
PLAN 51M-1081
PLAN 51M-1082
PLAN 51M-1083
PLAN 51M-1084
PLAN 51M-1085
PLAN 51M-1086
PLAN 51M-1087
PLAN 51M-1088
PLAN 51M-1089
PLAN 51M-1090
PLAN 51M-1091
PLAN 51M-1092
PLAN 51M-1093
PLAN 51M-1094
PLAN 51M-1095
PLAN 51M-1096
PLAN 51M-1097
PLAN





Draft Plan of Subdivision

South Half Lot 13, Concession 11
(Geographic Township of Innisfil)
City of Barrie
2021

OWNER'S CERTIFICATE

I, THE UNDERSIGNED, BEING THE REGISTERED OWNER OF THE SUBJECT LANDS, HEREBY AUTHORIZE THE JONES CONSULTING GROUP LTD., TO PREPARE THIS DRAFT PLAN OF SUBDIVISION AND TO SUBMIT SAME TO THE CITY OF BARRIE FOR APPROVAL.

July 16, 2021
DATE

LOCKHART INNISFIL INVESTMENTS (II) LIMITED

SURVEYOR'S CERTIFICATE

I CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

JULY 16, 2021
DATE

J. D. BARNES LIMITED
ONTARIO LAND SURVEYORS

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

a) SHOWN ON DRAFT PLAN
b) SHOWN ON DRAFT PLAN
c) SHOWN ON KEY PLAN
d) RESIDENTIAL, SWM, & EP
e) SHOWN ON DRAFT PLAN
f) SHOWN ON DRAFT PLAN
g) SHOWN ON DRAFT PLAN
h) MUNICIPAL PIPED WATER TO BE PROVIDED
i) SANDY CLAY LOAM
j) SHOWN ON DRAFT PLAN
k) ALL MUNICIPAL SERVICES TO BE PROVIDED
l) SHOWN ON DRAFT PLAN

STATISTICS	Area (ha.)	Units
+ 12.2m Singles (LOTS 4, 7 - 42, 51 - 54, 61, 65 - 69, 77, 85, 87 - 92, 96 - 101, 110 - 114, 131 - 134, 149, 153, 171 - 175 & 180)	2.99 ha.	78 units
■ 11.0m Singles (LOTS 1-3, 5 & 6, 45 -50, 55 - 60, 62 - 64, 70 - 74, 78 - 84, 86, 93 - 95, 102 - 109, 115 - 118, 123 & 124, 128 - 130, 135 - 140, 150 & 151, 154, 176 - 179, 182 & 194)	2.34 ha.	68 units
☼ 9.15m Singles (LOTS 43 & 44, 75 & 76, 119 - 122, 125 - 127, 141 - 148, 152, 155 - 170, 181, & 183 - 193)	1.31 ha.	48 units
Street Townhomes (6.0m/unit) (BLOCK 195 - 197)	0.47 ha.	20 units
Back to Back Townhomes (6.4m/unit) (BLOCKS 198 - 214)	1.88 ha.	180 units
Future Lots and Blocks (LOTS/BLOCKS 215 - 216)	0.02 ha.	1 units
Environmental Protection (BLOCKS 217 & 218)	12.43 ha.	
Stormwater Management (BLOCKS 219 - 221)	4.14 ha.	
Reserves & Widenings (BLOCKS 222 - 225)	0.58 ha.	
Roads Major Collector - Fenchurch Manor - Ball Gate Local Roads: Thicketwood Avenue, Streets 'A', 'B', 'C', 'D', 'E', & 'F'	5.94 ha.	
TOTAL	32.10 ha.	395 units

0 10 50 100M
SCALE 1 : 1250 (A1)

Lockhart Innisfil Investments (II) Limited

Draft Plan of Subdivision

Raymond J. Duhamel
REGISTERED PROFESSIONAL PLANNER
R.P.P.

Date Issued:	JULY 29, 2021
Checked By:	RD
Project No.:	GOL-20538
Drawn By:	m.c.r.
Drawing Name:	GOL-20538-DP-4b.dwg

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS

220 Maplevew Drive East, Unit 1, Barrie, Ontario, L4N 0W5
Phone: 705-734-2538 Fax: 705-734-1056
www.joneconsulting.com

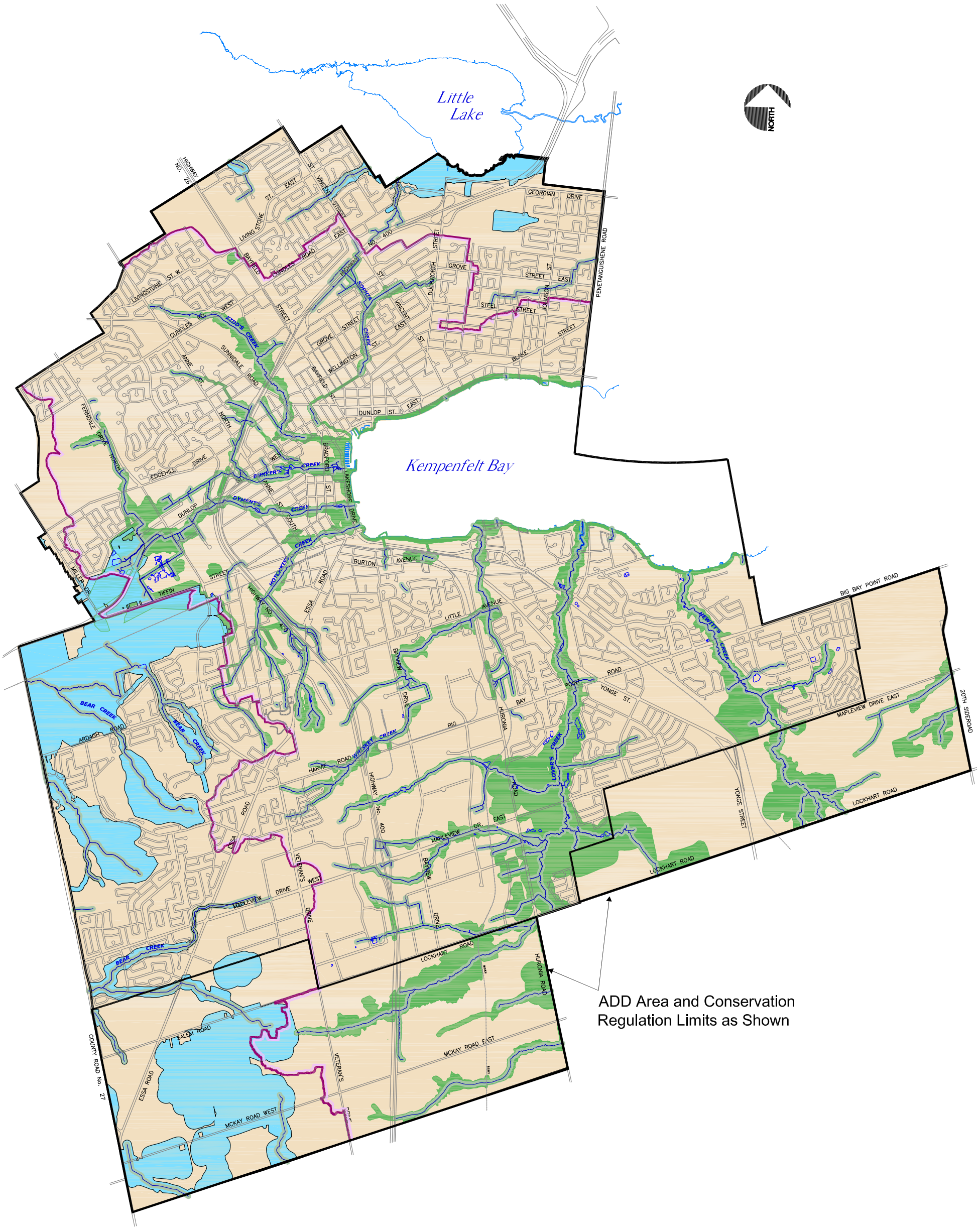
LOCKHART INNISFIL INVESTMENTS (II) LIMITED
CITY OF BARRIE

G:\Planning Drawings\GOL-20538\Submitted\July2021\GOL-20538-DP-4b.dwg Layout:DP Plotted Jul 29, 2021 @ 11:46am by mariohards The Jones Consulting Group Ltd.

Appendix B

Stormwater Management Information

This is Schedule 6 to OPA ___



ADD Area and Conservation Regulation Limits as Shown

NOTE:
The data layers are conceptually shown for illustrative purposes only and may not reflect the most up-to-date data. The LSRCA and the NVCA should be contacted to confirm the actual limits and to obtain the most up-to-date data.
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PLANNING SERVICES DEPARTMENT January 2010

The City of BARRIE

OFFICIAL PLAN

- WATERCOURSES
- 30 METRE WATERCOURSE SETBACK
- LAKE SIMCOE REGION CONSERVATION AUTHORITY BOUNDARY
- NOTTAWASAGA VALLEY CONSERVATION AUTHORITY BOUNDARY
- LAKE SIMCOE REGION CONSERVATION REGULATION LIMITS
- NOTTAWASAGA VALLEY CONSERVATION REGULATION LIMITS
- CITY BOUNDARY

Schedule F

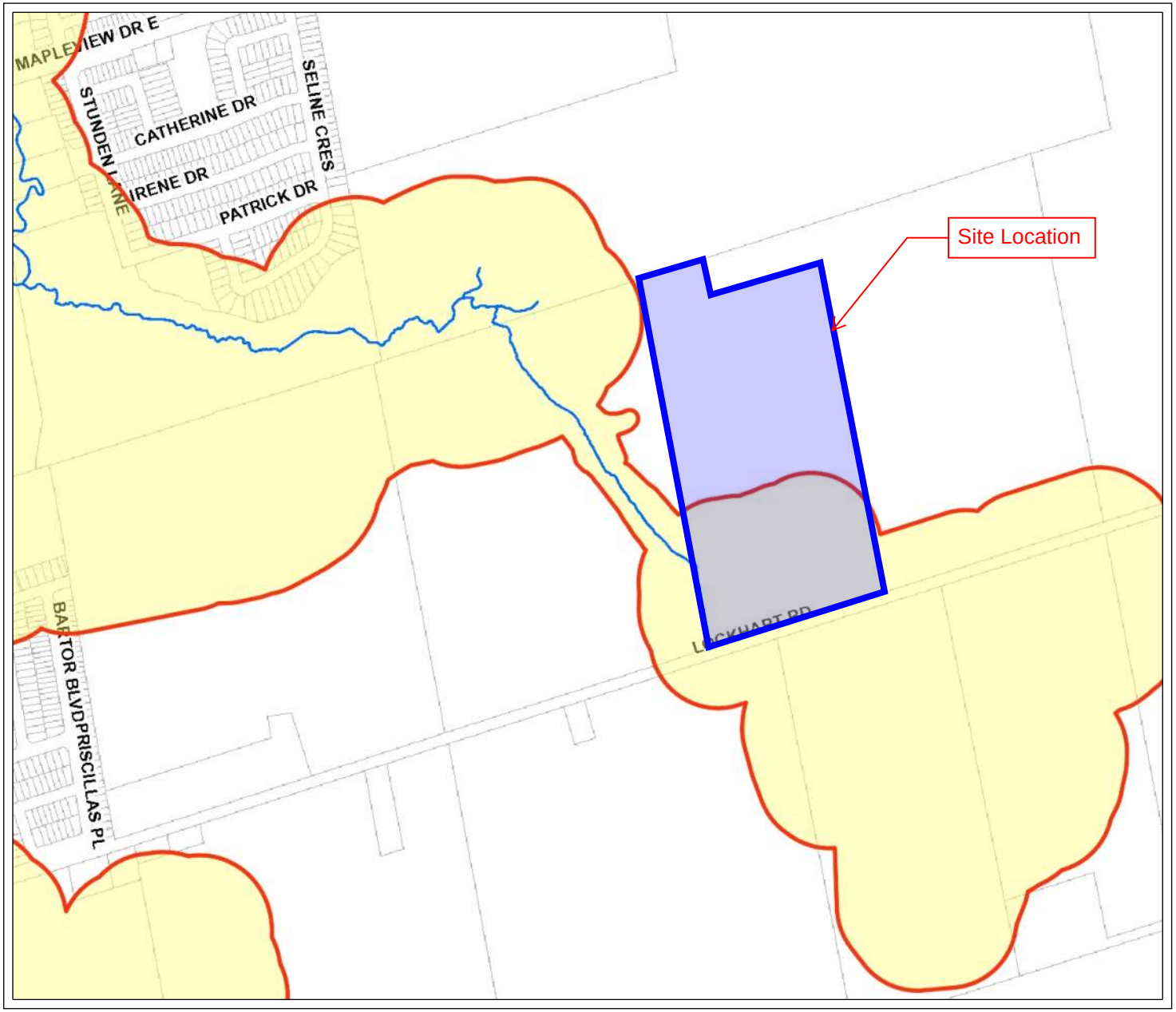
Watercourses

FEBRUARY 2013

Note: Office consolidation, please consult the Planning Services Department for an accurate reference. Not to be reporduced without permission from the City of Barrie Planning Services Department.

Lake Simcoe Region conservation authority

Lockhart Innisfil Investments (II) Limited



Features

- LSRCA Watershed Boundary
- Lake Simcoe
- Watercourse
- Regulated Area Boundary
- Regulated Area
- Road Labels
- Assessment Parcel

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WGS_1984_Web_Mercator_ Auxiliary_Sphere

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Scale 1: 10,692

Meters

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110 DRAINAGE AREA ID

DRAINAGE BOUNDARY

EXISTING CONTOURS

ELC BOUNDARIES

WATERSHED BOUNDARY

STAKED 2015 NHS LIMITS

STAKED NHS BUFFER LIMITS

COB GENERATED NHS BUFFER LIMITS (2013)

EXISTING 100yr STORM FLOOD LIMIT

EXISTING REGIONAL STORM FLOOD LIMIT

OVERLAND FLOW ROUTE

UNSTAKED 2015 NHS LIMITS

UNSTAKED NHS BUFFER LIMITS

DASHED FLOOD LINES ARE APPROXIMATE ONLY, BASED ON INTERPOLATED DATA BETWEEN FINGERLAKES AND 1091369 ONTARIO INC. DETAILED TOPOGRAPHIC DATA. FLOODLINES ARE SUBJECT TO CHANGE BASED ON ADDITION OF DETAILED TOPOGRAPHIC SURVEY.

N

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Metres

NOTE: *SCALE ONLY VALID FOR 24" x 36" SIZED PLOTS*

BURNSIDE

Figure Title
HEWITT'S SECONDARY PLAN AREA SUBWATERSHED IMPACT STUDY
EXISTING CONDITIONS DRAINAGE PLAN

Client
HEWITT'S CREEK LANDOWNERS GROUP INC.

Drawn	Checked	Date
BH	MZ	17/09/14
Scale		Project No.
H 1:7,500*		300032860

Figure No.
FIG 5

File: \\burnside\Shared Work Areas\300032860 - Watershed Limits\FIG 5 - Existing Conditions\300032860_STORM_EXIST.dwg Date Plotted: September 14, 2017 - 11:49 AM

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A REPORT TO
LOCKHART AND LOCKHART II

A GEOTECHNICAL INVESTIGATION FOR PROPOSED RESIDENTIAL DEVELOPMENT

LOCKHART AND LOCKHART II

LOCKHART ROAD
CITY OF BARRIE

REFERENCE NO. 1901-S077

MAY 2021

DISTRIBUTION

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1.0 INTRODUCTION

In accordance with authorization from Mr. Rick McConnell of Matson, McConell Ltd. dated January 26, 2019, a geotechnical investigation was carried out on a parcel of land located on the north side of Lockhart Road in the City of Barrie.

The purpose of the investigation was to reveal the subsurface conditions and to determine the engineering properties of the disclosed soils for the design and construction of a proposed residential development.

The findings and resulting geotechnical recommendations are presented in this Report.

2.0 SITE AND PROJECT DESCRIPTION

The City of Barrie is located within the periphery of Lake Simcoe basin where the glacial till has been partly eroded in places, by glacial Lake Algonquin and filled with lacustrine silts, sands and clay.

The subject property is almost rectangular in shape, comprising an approximate area of 50.6 hectares. It is located on the north side of Lockhart Road and approximately 1000 m west of Yonge Street in the City of Barrie. The property is currently a farm field with treed areas. The existing site gradient is undulating, dropping gently towards a ditch bisecting the property in the north-south direction.

We understand that the property will be developed into a residential subdivision of residential lots and townhouse blocks, with stormwater management facilities. The development will consist of municipal services and roadways meeting urban standards. The existing treed areas, however, will be preserved as a natural heritage system.

3.0 FIELD WORK

The field work, consisting of twenty-two (22) sampled boreholes extending to depths of 5.0 to 10.8 m from the prevailing ground surface, was performed between February 19 and March 5, 2019, at the locations shown on the Borehole Location Plan, Drawing No. 1.

The boreholes were advanced at intervals to the sampling depths by a track-mounted, continuous-flight power-auger machine equipped for soil sampling. Standard Penetration

Tests, using the procedures described on the enclosed "List of Abbreviations and Terms", were performed at the sampling depths. The test results are recorded as the Standard Penetration Resistance (or 'N' values) of the subsoil. The relative density of the granular strata and the consistency of the cohesive strata are inferred from the 'N' values. Split-spoon samples were recovered for soil classification and laboratory testing. The field work was supervised and the findings were recorded by a Geotechnical Technician.

Upon completion of drilling and sampling, groundwater monitoring wells were installed in six (6) selected boreholes to facilitate a hydrogeological assessment by R.J. Burnside & Associates Limited. The remaining boreholes were backfilled with auger cuttings to the ground level.

The location and ground elevation at each borehole or monitoring well location were provided and marked in the field by Jones Consulting Group Ltd., as shown on the Conceptual Borehole Location Plan dated July 10, 2018.

4.0 SUBSURFACE CONDITIONS

The investigation revealed that beneath the topsoil and ploughed soil, the site is underlain by strata of silty sand till and silty clay till, with intermittent layers of sand and silty clay.

Detailed descriptions of the encountered subsurface conditions are presented on the Logs of Boreholes, comprising Figures 1 to 22, inclusive. The revealed stratigraphy is plotted on the Subsurface Profile, Drawing Nos. 2, 3 and 4. The engineering properties of the disclosed soils are discussed herein.

4.1 Topsoil/Ploughed Soil (All Boreholes)

A layer of topsoil or ploughed soil was contacted at the ground surface. The thickness of topsoil ranges from 25 to 38 cm at Boreholes 4, 9, 19 and 21 locations. At the location of Borehole 8, topsoil mixed with organic peat was recorded at 1.7 m in thickness. In the farm field, the ploughed soil extends to a depth of 0.7 to 1.0 m from grade.

The thickness of topsoil and ploughed soil varies across the site. Thicker topsoil or ploughed soil may be contacted beyond the borehole location in the low-lying area.

The topsoil and ploughed soils are dark brown in color and permeated with roots and humus.

They are unstable and compressible, and should be removed for site development. They can only be reused in landscaped areas where future settlement has no consequence.

4.2 **Earth Fill** (Boreholes 2, 5, 7, 14, 16, 18, 19 and 20)

A layer of earth fill was contacted below the topsoil or ploughed soil. The fill extends to depths of 1.1 to 2.8 m from the prevailing ground surface. It consists of a mixture of sand and silt, with clay, gravel, occasional topsoil and organic inclusions.

4.3 **Silty Sand Till** (All Boreholes, except Borehole 9)

Native silty sand till deposit was predominant in the boreholes. It consists of a random mixture of soil particle sizes ranging from clay to gravel, with sand and silt being the predominant fraction. Grain size analyses were performed on 2 representative samples and the results are plotted on Figure 23.

The obtained 'N' values range from 4 to more than 100, with a median of 33 blows per 30 cm of penetration, indicating the relative density of the deposit is loose to very dense, being generally dense. The loose till generally occurs near the ground surface, representing the reworked till or the result of weathering.

Hard resistance to augering was encountered in places, showing cobbles and boulders in the till stratum. Boreholes 4 and 15 were terminated upon refusal to augering on suspected boulder at a depth of 6.9 m and 6.4 m from grade, respectively.

The natural water content of the till samples was determined, and the results are plotted on the Borehole Logs; the values range from 5% to 16%, with a median of 10%, showing moist to very moist conditions.

The engineering properties of the till deposit relating to the project are given below:

- High frost susceptibility with moderate soil-adfreezing potential.
- Moderately low water erodibility.
- Relatively low permeability, with an estimated coefficient of permeability of 10^{-5} to 10^{-6} cm/sec, a percolation rate of 35 to 60 minute/cm, and runoff coefficients of:

Slope	
0% - 2%	0.15

2% - 6%	0.20
6% +	0.28

- Frictional soil, the shear strength is derived from internal friction, thus being density dependent.
- The till will be stable in a relatively steep cut; however, prolonged exposure will allow the sand seams to slough, which may lead to localized sliding.
- A fair pavement-supportive material, with an estimated California Bearing Ratio (CBR) value of 8%.
- Moderately low corrosivity to buried metal, with an estimated electrical resistivity of 5000 ohm·cm.

4.4 **Silty Clay** (Boreholes 5, 6, 8, 9, 10 and 11) and **Silty Clay Till** (Borehole 9)

The silty clay deposit was contacted at various depths below the topsoil and peat, ploughed soil or earth fill. It is laminated with sand and silt seams, showing a lacustrine deposit. Grain size analyses were performed on 2 representative samples; the results are plotted on Figure 24.

A deposit of silty clay till was also contacted below the silty clay at Borehole 9 location, at a depth of 4.0 m from grade. The clay till consists of a random mixture of soils, with the clay fraction exerting the dominant influence on the soil properties.

The obtained 'N' values range from 3 to 16 blows per 30 cm of penetration, indicating the consistency of the silty clay is soft to very stiff and the clay till is generally stiff in consistency.

The Atterberg Limits of 2 representative samples of the silty clay were conducted and the results are summarized below:

Borehole No.	**Borehole 8**	**Borehole 9**
Depth	**4.6 m**	**2.3 m**
Liquid Limit	49%	50%
Plastic Limit	25%	25%
Plasticity Index	24%	25%

The above values show that the silty clay is cohesive with medium to high plasticity.
The natural water content of the clay samples were determined in the range of 16% to 37%.

The natural water content of the clay till samples were 11% and 18%. They were generally in moist conditions.

The soft clay stratum may undergo long-term settlement under excessive surcharge loading. Based on the Atterberg Limits and the recorded 'N' values in the soft clay, the Overconsolidation Ratio (OCR) is estimated at 2 to 3. The allowable surcharge at the vicinity of Boreholes 8 and 9 is recommended to limit at 30 kPa.

The following engineering properties of the silty clay and clay till are deduced:

- High frost susceptibility and high soil-adfreezing potential.
- Low water erodibility.

- The high plastic clay is sensitive to moisture changes. It expands or contracts markedly upon changes in water content.
- Very low permeability, with an estimated coefficient of permeability less than 10^{-7} cm/sec, a percolation rate of 80+ minutes/cm and runoff coefficients of:

Slope	
0% - 2%	0.15
2% - 6%	0.20
6% +	0.28

- Cohesive soils, the shear strength is derived from the consistency which is inversely related to the moisture content. The shear strength is also augmented by internal friction.
- In excavation, the clay and clay till will be relatively stable with steep slope.
- A poor pavement-supportive material, with an estimated CBR value of 3% to 6%.
- Moderately high corrosivity to buried metal, with an estimated electrical resistivity of 3000 ohm·cm.

4.5 **Sand** (Boreholes 1, 6, 7, 9, 12, 13, 16, 18, 19, 20 and 22)

The sand deposit was encountered intermittently within the silty sand till or in the lower stratigraphy of boreholes. Sample examinations show that the deposit is either well graded or fine to medium grained, with silt and gravel. Grain size analyses were performed on 2 representative samples; the results are plotted on Figures 25 and 26.

The natural water content values of the sand samples were determined at 5% to 25%. The

collected samples are generated saturated. Due to its perviousness, water could have drained from the samples as they were taken.

The obtained 'N' values range from 7 to 95, with a median of 33 blows per 30 cm of penetration, indicating loose to very dense, generally dense in relative density. The low 'N' values can represent the disturbance by the hydrostatic pressure at the time of drilling and sampling below the saturation level.

The following engineering properties of the sand deposit are deduced:

- High water erodibility.
- Pervious, with an estimated coefficient of permeability of 10^{-3} to 10^{-4} cm/sec, a percolation rate of 10 to 15 minutes/cm and runoff coefficients of:

Slope	
0% - 2%	0.05
2% - 6%	0.10
6% +	0.15

- A frictional soil, the shear strength is derived from its internal friction angle and is soil density dependent.
- In excavation, the sand will slough and run slowly with seepage bleeding from the cut face. It will boil with a piezometric head of 0.3 m.
- A fair pavement-supportive material, with an estimated CBR value of 15%.
- Moderately low corrosivity to buried metal, with an estimated electrical resistivity of 6000 ohm·cm.

4.6 **Compaction Characteristics of the Revealed Soils**

The obtainable degree of compaction is primarily dependent on the soil moisture and, to a lesser extent, on the type of compactor used and the effort applied. As a general guide, the typical water content values of the revealed soils for Standard Proctor compaction are presented in Table 1.

Table 1 - Estimated Water Content for Compaction

Soil Type	Determined Natural Water Content (%)	Water Content (%) for Standard Proctor Compaction	
		100% (optimum)	Range for 95% or +
Silty Sand Till	5 to 16 (median 10)	12	7 to 15
Silty Clay/Clay Till	11 to 37 (median 14)	24	20 to 30
Sand	5 to 125	10	5 to 13

Based on the above findings, the majority of the on-site material is suitable for 95% + Standard Proctor compaction. However, the saturated sand and part of the silty clay are generally on the wet side, which will require aeration prior to compaction. Aeration can be achieved by spreading the wet soil thinly on the ground during the dry and warm weather. Saturated sand can also be stockpiled on site to drain the excess water prior to placement and compaction.

In using the earth fill for structural backfill, or in pavement construction, it should be subexcavated, inspected, sorted free of topsoil inclusions and any deleterious materials, and aerated before compaction.

The till and silty clay should be compacted using a heavy-weight kneading-type roller. The sand can be compacted by a smooth drum roller, with or without vibration, depending on the water content of the soil being compacted. The lifts for compaction should be limited to 20 cm, or to a suitable thickness as assessed by test strips performed by the equipment which will be used at the time of construction.

If the compaction of the soils is carried out with the water content within the range for 95% Standard Proctor dry density but on the wet side of the optimum, the surface of the compacted soil mantle will roll under the dynamic compactive load. This is unsuitable for road construction since each component of the pavement structure is to be placed under dynamic conditions which will induce the rolling action of the subgrade surface and cause structural failure of the new pavement.

The foundations or bedding of the sewer and slab-on-grade will be placed on a subgrade which will not be subjected to impact loads. Therefore, the structurally compacted soil

mantle, with the water content on the wet side or dry side of the optimum, will provide an adequate subgrade for the construction.

The presence of boulders will prevent transmission of the compactive energy into the underlying material to be compacted. If an appreciable amount of boulders is mixed with the material, it must either be sorted or must not be used for construction of engineered fill and/or structural backfill.

5.0 GROUNDWATER CONDITIONS

The boreholes were checked for the presence of groundwater or the occurrence of cave-in during and upon completion of the field work. The records are summarized in Table 2.

Table 2 - Groundwater Record upon Completion

Borehole No.	Ground Elevation (m)	Groundwater/Cave-In* Upon Completion	
		Depth (m)	Elevation (m)
1	253.0	1.2/1.8*	251.8/251.2*
2 (MW)	259.6	Dry	below 248.8
3	262.8	4.0/4.6*	258.8/258.2*
4	258.5	6.1	252.4
5	254.9	7.0	247.9
6	253.3	2.4/2.6*	250.9/250.7*
7	252.6	3.0/3.3*	249.6/249.3*
8 (MW)	252.4	Dry	below 245.9
9	252.6	Dry	below 246.1
10 (MW)	252.1	Dry	below 247.1
11	252.1	4.3	247.8
12 (MW)	253.5	4.2	249.3
13	252.1	3.2	248.9
14	250.5	2.4	248.1
15 (MW)	251.5	Dry	below 245.1
16	256.2	3.7/4.3*	252.5/251.9*
17	254.9	2.9/3.0*	252.0/251.9*

Table 2 - Groundwater Record upon Completion (cont'd)

Borehole No.	Ground Elevation (m)	Groundwater/Cave-In* Upon Completion	
		Depth (m)	Elevation (m)
18	256.1	5.5	250.6
19 (MW)	261.2	2.4	258.8
20	264.6	Dry	below 259.6
21	259.5	Dry	below 254.5
22	254.4	1.5/4.3*	252.9/250.1*

Due to the undulation, most of the boreholes located in the high ground are recorded dry upon the completion of drilling.

Free groundwater and/or cave-in were recorded in Boreholes 1, 3 to 7, 11 to 14, 16 to 19, inclusive, and 22, between El. 247.8 m and 258.8 m upon completion of drilling. The groundwater levels appear to drop towards the ditch. It is subject to seasonal fluctuation.

6.0 DISCUSSION AND RECOMMENDATIONS

The investigation revealed that beneath the topsoil and ploughed soil, the site is underlain by strata of loose to very dense silty sand till or stiff silty clay till, with intermittent layers of loose to very dense sand and soft to very stiff silty clay.

Free groundwater and/or cave-in were recorded in most of the boreholes between El. 247.8 m and 258.8 m upon completion of drilling. The groundwater levels appear to drop towards the ditch. It is subject to seasonal fluctuation.

The property will be developed into a residential subdivision of residential lots and townhouse blocks, with stormwater management facilities. The subdivision will consist of municipal services and roadways meeting urban standards. The existing treed areas, however, will be preserved as a natural heritage system.

The geotechnical findings which warrant special consideration are presented below:

1. The topsoil and ploughed soil should be removed for site development. Thicker topsoil or ploughed soil may be contacted beyond the borehole locations in the low-lying area.

In order to prevent overstripping, a diligent control of the stripping operation will be required.

2. The topsoil and ploughed soil can only be used for landscaping and landscape contouring purposes where future settlement has no consequence.
3. The site gradient is undulating, dropping gently towards a ditch bisecting the property in the north-south direction. It is anticipated that the site will be regraded for development.
4. It will be more economical to place an engineered fill for normal footing, sewer and road construction. The site grading should also take into consideration of the high groundwater in the low-lying areas so that the proposed basement structures will not be below the saturation levels. In the vicinity of Boreholes 8 and 9, the additional surcharge should be limited to 1.5 m so that the clay stratum will not be overstressed and long-term settlement will not occur.
5. The native subsoil and the engineered fill are suitable for conventional footing construction. The footing subgrade must be inspected by a geotechnical engineer, or a geotechnical technician under the supervision of a geotechnical engineer.
6. Any excavation into the saturated soils will require vigorous pumping from closely spaced sump-wells or well points.
7. A Class 'B' bedding, consisting of compacted 20-mm Crusher-Run Limestone or equivalent, is recommended for the construction of the underground services. In water-bearing sand or in areas where dewatering is necessary, a Class 'A' concrete bedding should be used.

The recommendations appropriate for the project described in Section 2.0 are presented herein. One must be aware that the subsurface conditions may vary between boreholes. Should this become apparent during construction, a geotechnical engineer must be consulted to determine whether the following recommendations require revision.

6.1 **Site Preparation**

The site will be regraded for development. It is generally more economical to place an engineered fill for house footings, underground services and pavement construction.

The design of the site grading plan should consider the high groundwater in the low-lying areas so that the proposed basement structures are not below the saturation levels. In addition, any additional surcharge fill in the vicinity of Boreholes 8 and 9 should be limited to 1.5 m so that the clay stratum is not overstressed and long-term settlement will not occur.

The engineering requirements for a certifiable fill are presented below:

1. All topsoil, ploughed soil and earth fill must be removed and the subgrade must be inspected and proof-rolled prior to any fill placement. Badly weathered soils should also be subexcavated.
2. Inorganic soils must be used for the engineered fill. They must be uniformly compacted in lifts 20 cm thick to 98% or + of their maximum SPDD up to the proposed finished grade. The soil moisture must be properly controlled on the wet side of the optimum. If the foundations are to be built soon after the fill placement, the densification process for the engineered fill must be increased to 100% of the maximum SPDD.
3. If imported fill is to be used, it should be inorganic soils, free of any deleterious material with environmental issue (contamination). Any potential imported earth fill from off site must be reviewed for geotechnical and environmental quality by the appropriate personnel as authorized by the developer or agency, before it is hauled to the site.
4. In areas where significant engineered fill (fill more than 3.0 m) is to be placed, settlement plates must be installed and monitored on a weekly basis to assess any consolidation progress in the fill and the underlying strata. No construction of site services or house foundations can commence in these areas until the settlement records have confirmed that the settlement is reduced to a tolerable level and there is no risk of long-term settlement. Where the readings remain the same for a period of 3 consecutive months, no further monitoring will be required and there is no risk for long-term settlement. The settlement of the engineered fill is anticipated to be reduced to a tolerable limit of 25 mm.
5. If the engineered fill is to be left over the winter months, adequate earth cover, or equivalent, must be provided for protection against frost action.
6. The engineered fill must extend over the entire graded area; the engineered fill envelope and the finished elevations must be clearly and accurately defined in the field, and must be precisely documented by qualified surveyors.
7. The engineered fill must not be placed during the period from late November to early April, when freezing ambient temperatures occur either persistently or intermittently. This is to ensure that the fill is free of frozen soils, ice and snow.
8. Where the ground is wet due to subsurface water seepage, an appropriate subdrain scheme must be implemented prior to the fill placement, particularly if it is to be carried out on sloping ground.
9. Where the fill is to be placed on a bank steeper than 1 vertical (V):

3 horizontal (H) , the face of the bank must be flattened to 3+ so that it is suitable for safe operation of the compactor and the required compaction can be obtained.

10. The fill operation must be inspected on a full-time basis by a technician under the direction of a geotechnical engineer. In this case, the effect of long-term settlement is expected to be negligible as the fill material will be compacted to achieve an appropriate strength and capacity for structural support.
11. The footing and underground services subgrade must be inspected by the geotechnical consulting firm that inspected the engineered fill placement. This is to ensure that the foundations are placed within the engineered fill envelope, and the integrity of the fill has not been compromised by interim construction, environmental degradation and/or disturbance by the footing excavation.
12. Once the engineered fill is certified, any excavation carried out in the certified fill area must be reported to the geotechnical consultant who inspected the fill placement, in order to document the locations of excavation and/or to inspect reinstatement of the excavated areas to engineered fill status. If construction on the engineered fill does not commence within a period of 2 years from the date of certification, the status must be assessed for re-certification.
13. Despite stringent control in the placement of engineered fill, variations in soil type and density may occur in the engineered fill. Therefore, the strip footings and the upper section of the foundation walls constructed on the engineered fill may require continuous reinforcement with steel bars, depending on the uniformity of the soils in the engineered fill and the thickness of the engineered fill underlying the foundations. Should the footings and/or walls require reinforcement, the required number and size of reinforcing bars must be assessed by considering the uniformity as well as the thickness of the engineered fill beneath the foundations. In sewer construction, the engineered fill is considered to have the same structural proficiency as a natural inorganic soil.

6.2 **Foundations**

Conventional footings are recommended for the proposed structures. They should be placed onto the sound natural soils or engineered fill. The requirements for engineered fill construction are discussed in Section 6.1 above. The recommended soil bearing pressures for use in the design of conventional strip and spread footings, are given below:

- Maximum Allowable Bearing Pressure (SLS) = 100 kPa
- Factored Ultimate Bearing Pressure (ULS) = 150 kPa

The total and differential settlements of footings are estimated at 25 mm and 20 mm, respectively.

Higher design bearing pressures are available in some particular areas for special structures, if necessary. They can be reviewed individually by the geotechnical engineers once the design of the development is finalized. Additional boreholes may be required to verify the soil capacity for the design of these structures.

One must be aware that the recommended bearing pressures are given as a guide for foundation design and the footing subsoil must be confirmed by a geotechnical engineer at the time of construction.

If groundwater seepage is encountered during excavation, or where the subgrade of the footing is water bearing, the subgrade should be protected by a concrete mud-slab immediately after exposure. This will prevent construction disturbance and costly rectification.

Footings exposed to weathering, or in unheated areas, should have at least 1.5 m of earth cover for protection against frost action.

The building foundation must meet the requirements specified in the latest Ontario Building Code. As a guide, the structure should be designed to resist an earthquake force using Site Classification 'D' (stiff soil).

6.3 **Basement and Slab-On-Grade**

The basement floor should be at a depth at least 0.5 m above the highest groundwater level. The soil parameters outlined in Section 6.9 can be used for calculating the lateral earth pressure imposed on the basement walls.

In conventional design, perimeter subdrains and dampproofing of the foundation walls will be required in order to provide a dry basement. All the subdrains should be encased in a fabric filter to protect them against blockage by silting.

If the basement floor is less than 1.0 m above the highest detected groundwater elevation, underfloor subdrains should be provided in the granular bedding below the basement floor. The subdrains should be connected to the drainage or sump pits where water can be removed.

In addition, vapour barrier of 6 mil polyethylene sheet should be placed above the granular bedding to alleviate wetting of the basement floor due to moisture upfiltration. A typical design of the bedding and the under-floor weepers is provided in Drawing No. 5.

The slab should be constructed on a granular base of 20 cm thick, consisting of 20-mm Crusher-Run Limestone, or equivalent, compacted to 100% of its maximum SPDD. Where under-floor weepers are required, the thickness of bedding should be increased to 30 cm.

The subgrade for slab-on-grade must consist of sound natural soil or properly compacted inorganic engineered fill. The subgrade should be inspected and assessed by proof-rolling prior to slab-on-grade construction. Where the subgrade consists of soft or weathered soils, it should be subexcavated, sorted free of topsoil inclusions, if any, aerated and uniformly compacted to 98% or + of its maximum Standard Proctor dry density.

6.4 Underground Services

The subgrade for underground services should consist of natural soils or engineered fill. In areas where the subgrade consists of unsuitable material, it should be subexcavated and replaced with properly compacted inorganic soil and/or bedding material compacted to at least 95% + Standard Proctor dry density.

Excavation for service trenches must be carried out in accordance with Ontario Regulation 213/91. In areas where a vertical cut is necessary, the use of a trench box is necessary. The recommended lateral earth pressure coefficients presented in Section 6.9 can be used for the design of trench box or shoring.

A Class ‘B’ bedding is recommended for construction of the underground services. The bedding material should consist of compacted 20-mm Crusher-Run Limestone, or equivalent, as approved by a geotechnical engineer. Where saturated soils are present or extensive dewatering is required, a Class ‘A’ bedding will likely be required, and the pipe joints should be leak-proof or wrapped with a waterproof membrane.

In order to prevent pipe floatation when the sewer trench is deluged with water, a soil cover with a thickness equal to two times the diameter of the pipe should be in place at all times after completion of the pipe installation.

The pipes connecting into manholes and catch basins must be connected by leak-proof joints to prevent subgrade upfiltration through the joints. Openings to subdrains and catch basins should be shielded with a fabric filter to prevent blockage by silting.

The underground services should be protected against soil corrosion. For estimation of anode weight requirements, the estimated electrical resistivity of 4500 ohm·cm can be used. This should be confirmed by testing the soil along the water main alignment at the time of construction.

6.5 Backfilling in Trenches and Excavated Areas

The backfill in service trenches should be compacted to at least 95% of the maximum Standard Proctor dry density (SPDD). In the zone within 1.0 m below the road subgrade, the material should be compacted with the water content 2% to 3% drier than the optimum; and the compaction should be increased to 98% of the respective maximum SPDD to provide the required stiffness for road construction.

In normal construction practice, the problem areas of settlement largely occur adjacent to foundation walls, columns, manholes, catch basins and services crossings. In areas which are inaccessible to a heavy compactor, sand backfill should be used. Unless compaction of the backfill is carefully performed, settlement will occur. Often, the interface of the native soils and sand backfill will have to be flooded for a period of several days.

Narrow trenches for services crossings should be cut at 1V:2H, so that the backfill in the trenches can be effectively compacted. Otherwise, soil arching in the trenches will prevent the achievement of proper compaction. The lift of each backfill layer should be limited to a thickness of 20 cm.

One must be aware of possible consequences during trench backfilling and exercise caution as described below:

- When construction is carried out in freezing winter weather, allowance should be made for these following conditions. Despite stringent backfill monitoring, frozen soil layers may inadvertently be mixed with the structural trench backfill. Should the in situ soil have a water content on the dry side of the optimum, it would be impossible to wet the soil due to the freezing condition, rendering difficulties in obtaining uniform and proper compaction. Furthermore, the freezing condition will prevent flooding of the backfill

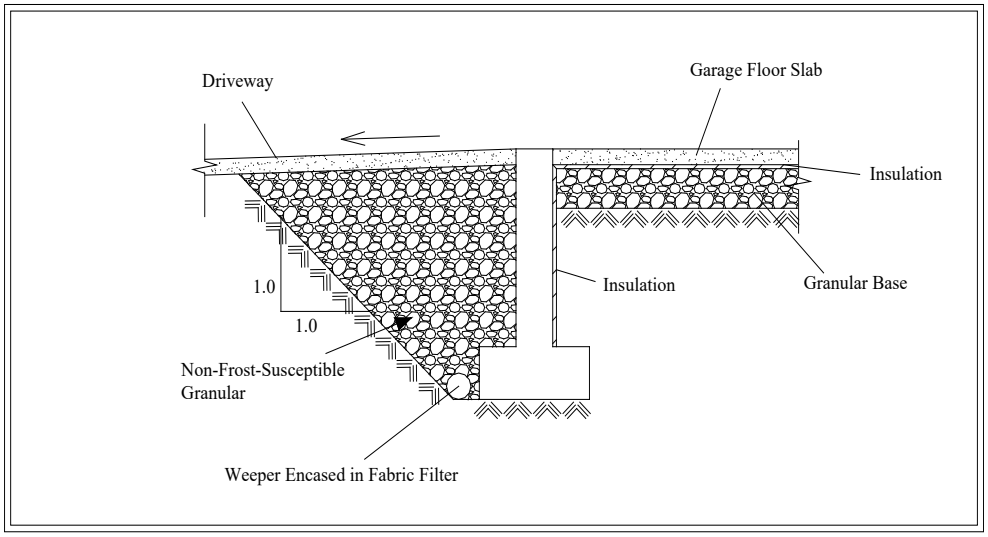
when it is required, such as when the trench box is removed. The above will invariably cause backfill settlement that may become evident within 1 to several years, depending on the depth of the trench which has been backfilled.

- In areas where the underground services construction is carried out during winter months, prolonged exposure of the trench walls will result in frost heave within the soil mantle of the walls. This may result in some settlement as the frost recedes, and repair costs will be incurred prior to final surfacing of the new pavement.
- To backfill a deep trench, one must be aware that future settlement is to be expected, unless the side of the cut is flattened to at least 1V:1.5+H, and the lifts of the fill and its moisture content are stringently controlled; i.e., lifts should be no more than 20 cm (or less if the backfilling conditions dictate) and uniformly compacted to achieve at least 95% of the maximum SPDD, with the moisture content on the wet side of the optimum.
- It is often difficult to achieve uniform compaction of the backfill in the lower vertical section of a trench which is an open cut or is stabilized by a trench box, particularly in the sector close to the trench walls or the sides of the box. These sectors must be backfilled with sand. In a trench stabilized by a trench box, the void left after the removal of the box will be filled by the backfill. It is necessary to backfill this sector with sand, and the compacted backfill must be flooded for 1 day, prior to the placement of the backfill above this sector, i.e., in the upper sloped trench section. This measure is necessary in order to prevent consolidation of inadvertent voids and loose backfill which will compromise the compaction of the backfill in the upper section. In areas where groundwater movement is expected in the sand fill mantle, anti-seepage collars should be provided.

6.6 **Garages, Driveways and Landscaping**

The subgrade soils can be frost susceptible. The ground is expected to heave during the freezing season. In order to minimize frost heaving, the driveway at the entrance to the garage should be backfilled with non-frost-susceptible granular material, with a frost taper at a slope of 1V:1H. The garage floors and the interior of the foundation walls should be insulated by 50-mm Styrofoam (or its equivalent), or a Granular ‘B’ backfill should be used for the garage construction. The recommended scheme is illustrated in Diagram 1.

Diagram 1 - Frost Protection Measures (Garage)



The slab-on-grade or sidewalk in open areas should be designed to tolerate frost heave. The grading around the slab-on-grade and house structures must be such that it directs runoff away from the structures. In areas where ground movement due to frost heave cannot be tolerated, the slab-on-grade or sidewalks must be constructed on a free-draining granular base, 0.3 to 1.5 m thick, depending on the degree of tolerance for settlement. These measures, with proper drainage, will prevent water from accumulating in the granular base. Alternatively, they can be insulated with 50-mm Styrofoam, or equivalent.

6.7 Pavement Design

The recommended pavement design for local roads and collectors is presented in Table 3.

Table 3 - Pavement Design

Course	Thickness (mm)	OPS Specifications
Asphalt Surface	40	HL-3
Asphalt Binder Local Roads Collectors	 50 65	HL-8
Granular Base	150	OPSS Granular 'A' or equivalent
Granular Sub-base Local Roads Collectors	 300 400	OPSS Granular 'B' or equivalent

In preparation of road subgrade, the topsoil, ploughed soil and compressible earth fill must be removed. Any new fill should consist of organic free material, compacted to 95% + Standard Proctor dry density. In the zone within 1.0 m below the pavement subgrade, the backfill should be compacted to at least 98% of the Standard Proctor dry density, with the water content 2% to 3% drier than the optimum. The final subgrade should be inspected and proof-rolled. Any soft spots should be subexcavated, and replaced by properly compacted inorganic earth fill.

All the granular bases should be compacted to the maximum Standard Proctor dry density.

The pavement subgrade will suffer a strength regression if water is allowed to infiltrate prior to paving. The following measures should therefore be incorporated into the construction and road design:

- If road construction does not immediately follow the trench backfilling, the subgrade should be properly crowned and smooth-rolled to allow interim precipitation to be properly drained.
- Lot areas adjacent to the road structure should be properly graded to prevent the ponding of large amounts of water during the interim construction period.
- If the road is to be constructed during the wet seasons and extremely soft subgrade occurs, the granular sub-base may require thickening. This can be further assessed during construction.
- Fabric filter-encased curb subdrains are required to meet the Municipal road requirements.

6.8 **Stormwater Management Facilities** (Boreholes 1, 7, 8, 9, 10, 11, 14 and 15)

Stormwater management facilities are considered at various locations. In areas where permeable sand layers are evident, an imperable liner will be required. Any hydrostatic pressure below the pond liner should also be established to design the thickness of liner to overcome any basal heaving at the time the pond is emptied for maintenance.

The presence of soft and firm clay stratum in the vicinity of Boreholes 8 and 9 will have no significant adverse impact to the performance of the pond.

For the construction of earth berm and access road, topsoil must be removed and the subgrade must be proof-rolled. Inorganic on-site material can be used, compacted to at least

98% of the Standard Proctor dry density. A 300 mm granular course, consisting of 50-mm Crusher-Run Limestone, topped with 50 mm of limestone screening, should be provided on the access road.

The preparation of bearing subsoil and the design soil capacities listed in Sections 6.1 and 6.2 can be used for the design of control structures. The inlet and outlet of the pond must be lined with gabion mats for protection against scouring.

6.9 Soil Parameters

The recommended soil parameters for the project design are given in Table 4.

Table 4 - Soil Parameters

Unit Weight and Bulk Factor	**Unit Weight (kN/m^3)**		**Estimated Bulk Factor**	
	Bulk	**Submerged**	**Loose**	**Compacted**
Sound Tills	22.0	12.0	1.33	1.05
Silty Clay	21.0	11.0	1.30	1.00
Sand	20.5	12.5	1.25	1.05
Lateral Earth Pressure Coefficients		**Active K_a**	**At Rest K_o**	**Passive K_p**
Sound Tills/Sand		0.35	0.50	3.00
Silty Clay		0.40	0.60	2.50
Coefficients of Friction				
Between Concrete and Granular Base			0.50	
Between Concrete and Sound Native Soils			0.35	

6.10 Excavation

Excavation should be carried out in accordance with Ontario Regulation 213/91. For excavation purposes, the types of soils are classified in Table 5.

Table 5 - Classification of Soils for Excavation

Material	Type
Sound Till and Clay	2
Drained Sand and Silt	3
Saturated Soils	4

Free groundwater and/or cave-in were recorded in Boreholes 1, 3 to 7, 11 to 14, 16 to 19, inclusive, and 22, between El. 247.8 m and 258.8 m upon completion of drilling. The groundwater levels appear to drop towards the ditch. It is subject to seasonal fluctuation.

In excavation, groundwater yield from the till and clay will be slow in rate and limited in quantity. Where the excavation extends into saturated sand layers, the possibility of flowing sides dictates that the ground should be predrained by vigorous pumping from closely spaced sump wells, or if necessary, by a well point dewatering system.

Prospective contractors can be asked to assess the in situ subsurface conditions for soil cuts by digging test pits to at least 0.5 m below the sewer subgrade. These test pits should be allowed to remain open for a period of at least 4 hours to assess the trenching conditions.

7.0 LIMITATIONS OF REPORT

This report was prepared by Soil Engineers Ltd. for the account of Lockhart and Lockhart II, for review by the designated consultants, financial institutions and government agencies. Use of this report is subject to the conditions and limitations of the contractual agreement.

The material in the report reflects the judgment of Nislin Andani, B.Eng., and Bennett Sun, P.Eng., in light of the information available to it at the time of preparation. Any use which a Third Party makes of this report, or any reliance on decisions to be made based on it, are the responsibility of such Third Parties. Soil Engineers Ltd. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

SOIL ENGINEERS LTD.

Nislin Andani, B.Eng.

Bennett Sun, P.Eng.
NA/BL:dd



LIST OF ABBREVIATIONS AND DESCRIPTION OF TERMS

The abbreviations and terms commonly employed on the borehole logs and figures, and in the text of the report, are as follows:

SAMPLE TYPES

AS Auger sample
CS Chunk sample
DO Drive open (split spoon)
DS Denison type sample
FS Foil sample
RC Rock core (with size and percentage recovery)
ST Slotted tube
TO Thin-walled, open
TP Thin-walled, piston
WS Wash sample

PENETRATION RESISTANCE

Dynamic Cone Penetration Resistance:

A continuous profile showing the number of blows for each foot of penetration of a 2-inch diameter, 90° point cone driven by a 140-pound hammer falling 30 inches.

Plotted as '—●—'

Standard Penetration Resistance or 'N' Value:

The number of blows of a 140-pound hammer falling 30 inches required to advance a 2-inch O.D. drive open sampler one foot into undisturbed soil.

Plotted as '○'

WH Sampler advanced by static weight
PH Sampler advanced by hydraulic pressure
PM Sampler advanced by manual pressure
NP No penetration

SOIL DESCRIPTION

Cohesionless Soils:

'N' (blows/ft)	Relative Density
0 to 4	very loose
4 to 10	loose
10 to 30	compact
30 to 50	dense
over 50	very dense

Cohesive Soils:

Undrained Shear Strength (ksf)	'N' (blows/ft)	Consistency
less than 0.25	0 to 2	very soft
0.25 to 0.50	2 to 4	soft
0.50 to 1.0	4 to 8	firm
1.0 to 2.0	8 to 16	stiff
2.0 to 4.0	16 to 32	very stiff
over 4.0	over 32	hard

Method of Determination of Undrained Shear Strength of Cohesive Soils:

x 0.0 Field vane test in borehole; the number denotes the sensitivity to remoulding

△ Laboratory vane test

☐ Compression test in laboratory

For a saturated cohesive soil, the undrained shear strength is taken as one half of the undrained compressive strength

METRIC CONVERSION FACTORS

1 ft = 0.3048 metres
1lb = 0.454 kg
1 inch = 25.4 mm
1ksf = 47.88 kPa

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 1 **FIGURE NO.:** 1

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: March 4, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
253.0	Ground Surface							
0.0	**PLOUGHED SOIL**	1A 1B	DO	18	0		31, 27	
252.3	brown sandy silt with topsoil inclusions Frost							
0.7	Brown, loose to compact							
	SILTY SAND TILL	2	DO	5	1		11	
	some clay, trace of gravel							
	occ. sand seams and layers, cobbles and boulders	3	DO	20	2		12	
		4	DO	29			8	
250.1								
2.9	Brown, loose to dense				3			
	SAND	5	DO	8			15	
	well graded							
	some gravel, some to silty				4			
	occ. silt and clay seams below 6 m	6	DO	32			11	
					5			
					6			
		7	DO	12			12	
245.8					7			
7.2	Brown, compact							
	SILTY SAND TILL	8	DO	18	8		10	
	some clay, trace gravel							
	occ. cobbles and boulders				9			
		9	DO	17			12	
243.5								
9.5	**END OF BOREHOLE**				10			
					11			
					12			

W.L @ EL. 251.8 m on completion
Cave-in @ El. 251.2 m

Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: BH/MW 2 **FIGURE NO.:** 2

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: March 1, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
259.6	Ground Surface				
0.0	**PLOUGHED SOIL**	1A 1B	DO	27	0
258.9	brown sandy silt with topsoil inclusions — Frost				
0.7	**EARTH FILL**	2	DO	6	1
	brown sandy silt some clay and gravel, some organic inclusions	3	DO	5	2
257.4					
2.2	Very dense	4		50/NP	
	SILTY SAND TILL trace to some clay, trace gravel occ. cobbles and boulders	5	DO	68	3
	— brown grey	6	DO	50/15	4 5
		7	DO	41	6
		8	DO	50/15	7 8
	Installed 50mm Ø monitoring well to 10.7 m 3.0 m screen from 7.6 to 10.7 m Sand backfill from 7.0 to 10.7 m Bentonite seal from 0.0 to 7.0 m Provided with a 4x4 steel casing	9	DO	53	9 10
248.8		10	DO	50/15	
10.8	**END OF BOREHOLE**				11 12

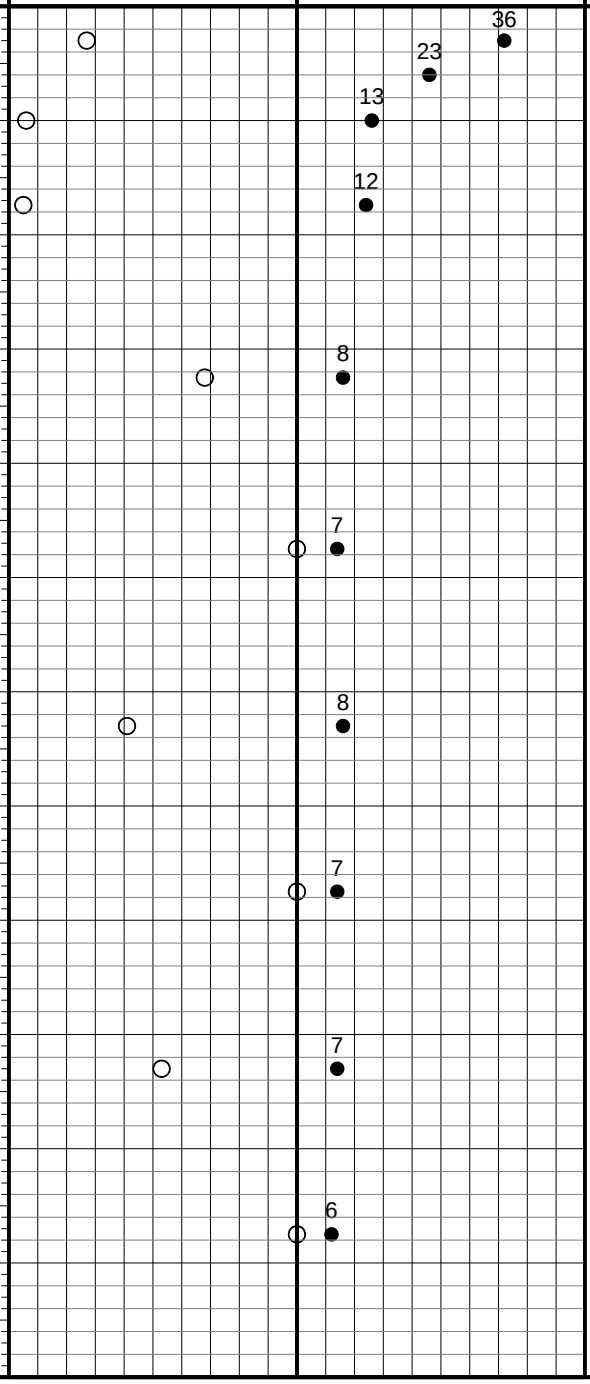
Dynamic Cone (blows/30 cm) 10 30 50 70 90

Shear Strength (kN/m²) 50 100 150 200

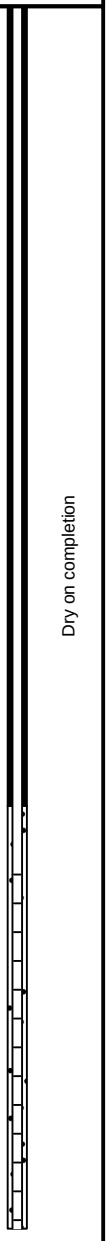
Penetration Resistance (blows/30 cm) 10 30 50 70 90

Atterberg Limits PL LL

Moisture Content (%) 10 20 30 40



WATER LEVEL



Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 3 **FIGURE NO.:** 3

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: March 4, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
262.8	Ground Surface				
0.0	**PLOUGHED SOIL**	1A 1B	DO	35	0
262.1	brown sandy silt with topsoil inclusions Frost				
0.7	Brown, loose to very dense	2	DO	8	1
	SILTY SAND TILL trace of clay and gravel occ. sand and clay layers, cobbles and boulders	3	DO	16	2
		4A 4B	DO	28	
		5	DO	43	3
		6	DO	48	4 5
		7	DO	50/15	6
255.8		8	DO	60/15	7
7.0	**END OF BOREHOLE**				8 9 10 11 12

Dynamic Cone (blows/30 cm) 10 30 50 70 90

Shear Strength (kN/m²) 50 100 150 200

Penetration Resistance (blows/30 cm) 10 30 50 70 90

Atterberg Limits PL LL

Moisture Content (%) 10 20 30 40

31 18 10 12 12 16 8 11 11 9

WATER LEVEL

W.L @ EL. 258.8 m on completion
Cave-in @ El. 258.2 m

Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 4 **FIGURE NO.:** 4

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: March 4, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
258.5	Ground Surface							
0.0	**38 cm TOPSOIL**	1A 1B	DO	15	0		37	
	Compact to very dense — Frost						13	
	SILTY SAND TILL trace to some clay, trace gravel occ. cobbles and boulders	2	DO	11	1		11	
		3	DO	29	2		10	
	brown grey	4	DO	33	3		7	
		5	DO	73	4		6	
		6	DO	50/15	5		6	
		7	DO	72	6		7	
251.6					7			
6.9	**END OF BOREHOLE** **Refusal to augering on propable boulder**				8			
					9			
					10			
					11			
					12			

W.L @ EL. 252.4 m on completion

Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 5 **FIGURE NO.:** 5

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: March 5, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value
254.9	Ground Surface			
0.0	**PLOUGHED SOIL**	1A 1B	DO	32
254.2	brown silty sand — Frost			
0.7				
253.7	**EARTH FILL**	2	DO	22
1.2	brown sand and clay scattered topsoil Brown, stiff	3	DO	12
	SILTY CLAY occ. sand seams	4	DO	12
		5	DO	15
251.4				
3.5	Grey, compact to dense **SILTY SAND TILL** trace to some clay, trace gravel occ. cobbles and boulders	6	DO	14
		7	DO	35
246.8		8	DO	20
8.1	**END OF BOREHOLE**			

Depth Scale (m): 0 1 2 3 4 5 6 7 8 9 10 11 12

Dynamic Cone (blows/30 cm) 10 30 50 70 90

Shear Strength (kN/m²) 50 100 150 200

Penetration Resistance (blows/30 cm) 10 30 50 70 90

Atterberg Limits PL LL

Moisture Content (%) 10 20 30 40

Moisture Content values: 50, 29, 19, 29, 32, 29, 9, 7, 9

WATER LEVEL: W.L @ EL. 247.9 m on completion

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JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 6 **FIGURE NO.:** 6

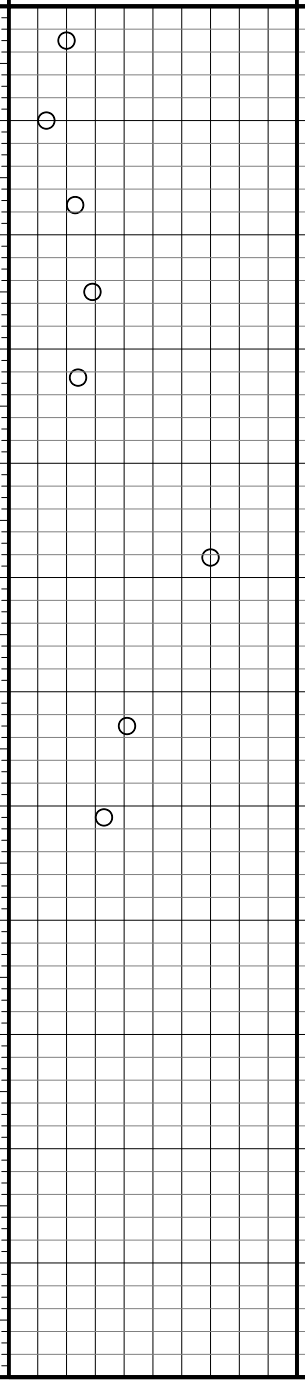
PROJECT DESCRIPTION: Proposed Residential Development

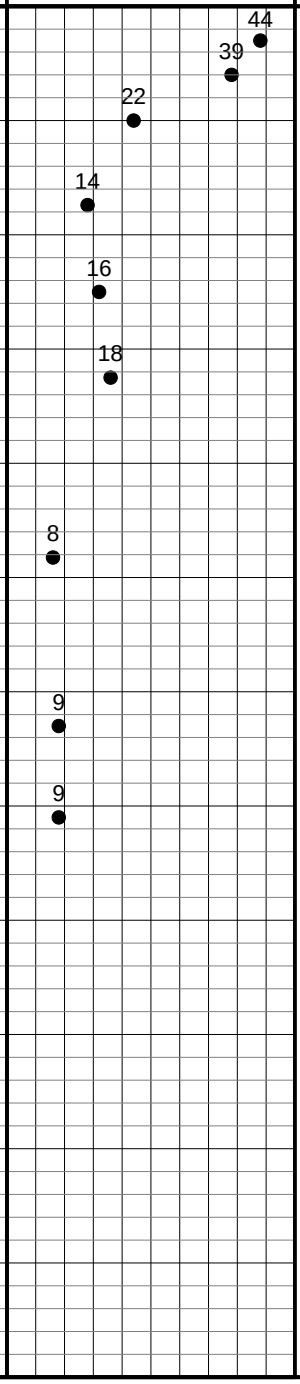
METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: March 5, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
253.3	Ground Surface				
0.0	**PLOUGHED SOIL**	1A 1B	DO	20	0
252.6 / 0.7	brown sandy silty with topsoil inclusions Frost Brown, stiff	2	DO	13	1
251.9 / 1.4	**SILTY CLAY** occ. sand seams Brown, compact	3	DO	23	2
251.1 / 2.2	**SILTY SAND TILL** trace of clay and gravel occ. sand layers, cobbles and boulders Brown, compact	4	DO	29	
	SAND fine to medium grained, some silt trace of fine gravel	5	DO	24	3
249.3 / 4.0	Dense to very dense				4
	SILTY SAND TILL trace of clay and gravel occ. cobbles and boulders	6	DO	70	5
	brown / grey	7	DO	41	6
246.0 / 7.3	**END OF BOREHOLE**	8	DO	33	7
					8
					9
					10
					11
					12





WATER LEVEL

W.L @ EL. 250.9 m on completion
Cave-in @ El. 250.7 m

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 7 **FIGURE NO.:** 7

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 28, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
252.6	Ground Surface							
0.0 / 251.9	**PLOUGHED SOIL** brown silty sand with topsoil inclusions Frost	1A 1B	DO	21	0		37	
0.7	**EARTH FILL** brown to grey silty clay some sand and gravel trace organics	2	DO	8	1		16 14	
		3	DO	13	2		10	
249.8		4	DO	7			12	
2.8	Brown, compact **SILTY SAND TILL** trace to some clay, trace gravel occ. sand seams and layers, cobbles and boulders	5	DO	24	3		7	W.L @ EL. 249.6 m on completion Cave-in @ El. 249.3 m
		6	DO	30	4 5		12	
245.9		7	DO	20	6		10	
6.7	Grey, compact							
245.3	**SAND** fine to medium grained trace of gravel and clay	8	DO	18	7		12	
7.3	**END OF BOREHOLE**				8 9 10 11 12			

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JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: BH/MW 8 **FIGURE NO.:** 8

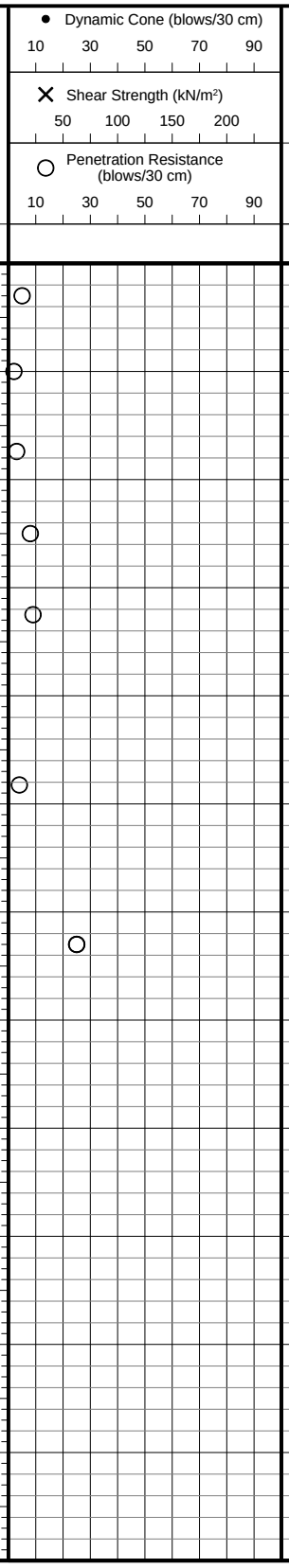
PROJECT DESCRIPTION: Proposed Residential Development

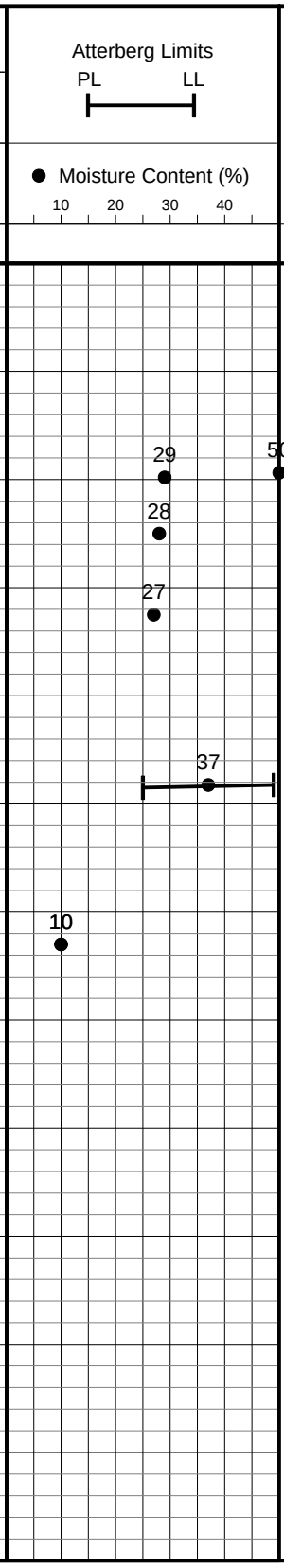
METHOD OF BORING: Flight-Auger Hollow Stem

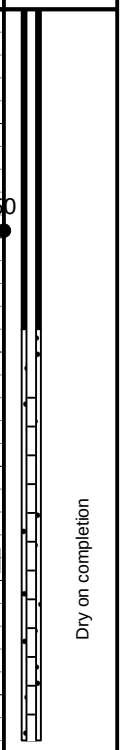
PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: March 5, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
252.4	Ground Surface				
0.0	**TOPSOIL AND PEAT** occ. wood chips	1	DO	5	0
		2	DO	2	1
250.7 1.7	Grey, soft to stiff **SILTY CLAY** occ. sand seams and layers	3A 3B	DO	3	2
		4	DO	8	
		5	DO	9	3
					4
		6	DO	4	5
246.4 6.0	Grey, compact	7	DO	25	6
245.9 6.5	**SILTY SAND TILL** trace clay and gravel occ. cobbles and boulders				7
	END OF BOREHOLE				8
	Installed 50mm Ø monitoring well to 6.4 m 3.0 m screen from 3.4 to 6.4 m Sand backfill from 2.8 to 6.4 m Bentonite seal from 0.0 to 2.8 m Provided with a 4x4 steel casing				9
					10
					11
					12







Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 9 **FIGURE NO.:** 9

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: March 5, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
252.6	Ground Surface							
0.0	**30 cm TOPSOIL**	1A 1B	DO	8	0		50	
	Brown, loose						25	
251.7	**SAND**						19	
0.9	weathered	2A 2B	DO	10	1		16	
	fine grained, some silt							
	Firm to stiff	3	DO	6			19	
	SILTY CLAY				2			
	occ. sand seams and layers — brown / grey	4	DO	5			34	
		5	DO	5	3		17	
248.6								
4.0	Grey, stiff				4			
	SILTY CLAY TILL							
	trace of gravel	6	DO	9	5		18	
	occ. sand seams and layers, cobbles and boulders							
					6			
		7	DO	12			11	
246.1								
6.5	**END OF BOREHOLE**				7			
					8			
					9			
					10			
					11			
					12			

WATER LEVEL: Dry on completion



Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: BH/MW 10 **FIGURE NO.:** 10

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 26, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
252.1	Ground Surface							
0.0	**PLOUGHED SOIL** brown sand and silt with topsoil inclusions — Frost	1A 1B	DO	22	0			
251.2								
0.9	Brown, very stiff	2A 2B	DO	9	1			
	SILTY CLAY occ. sand seams and layers	3	DO	16	2			
250.0								
2.1	Grey, compact to very dense	4	DO	12				
	SILTY SAND TILL trace to some clay, trace gravel occ. cobbles and boulders	5	DO	13	3			
					4			
247.1		6	DO	54	5			
5.0	**END OF BOREHOLE** Installed 50mm Ø monitoring well to 4.6 m 3.0 m screen from 1.6 to 4.6 m Sand backfill from 1.0 to 4.6 m Bentonite seal from 0.0 to 1.0 m Provided with a 4x4 steel casing				6 7 8 9 10 11 12			Dry on completion



Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 11 **FIGURE NO.:** 11

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 26, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
252.1	Ground Surface				
0.0	**PLOUGHED SOIL**	1A 1B	DO	20	0
251.4	brown silty sand with topsoil inclusions Frost				
0.7	Brown, compact	2	DO	10	1
	SILTY CLAY occ. sand seams and layers				
250.3		3A 3B	DO	6	2
1.8	Grey, loose to dense				
	SILTY SAND TILL trace of gravel, some clay occ. sand seams and layers, cobbles and boulders	4	DO	18	3
		5	DO	20	4
		6	DO	29	5
	boulder	7	DO	30/NP	6
244.8		8	DO	42	7
7.3	**END OF BOREHOLE**				8
					9
					10
					11
					12

Dynamic Cone (blows/30 cm) 10 30 50 70 90

Shear Strength (kN/m²) 50 100 150 200

Penetration Resistance (blows/30 cm) 10 30 50 70 90

Atterberg Limits PL LL

Moisture Content (%) 10 20 30 40

Moisture Content values: 40, 42, 28, 25, 14, 12, 8, 11, 9, 8

WATER LEVEL: W.L @ EL. 247.8 m on completion

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: BH/MW 12 **FIGURE NO.:** 12

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 27, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
253.5 / 0.0	Ground Surface				0
	PLOUGHED SOIL brown silty sand with topsoil inclusions _Frost_	1A 1B	DO	45	
252.5 / 1.0	Brown, loose to compact	2A 2B	DO	8	1
	SILTY SAND TILL trace of clay, some gravel occ. sand layers, cobbles and boulders	3	DO	17	2
		4A 4B	DO	26	
		5	DO	26	3
249.5 / 4.0	Brown, compact				4
	SAND fine to medium grained, some silt to silty	6	DO	26	
248.5 / 5.0	**END OF BOREHOLE** Installed 50mm Ø monitoring well to 4.6 m 3.0 m screen from 1.6 to 4.6 m Sand backfill from 1.0 to 4.6 m Bentonite seal from 0.0 to 1.0 m Provided with a 4x4 steel casing				5
					6
					7
					8
					9
					10
					11
					12

Dynamic Cone (blows/30 cm) 10 30 50 70 90

Shear Strength (kN/m²) 50 100 150 200

Penetration Resistance (blows/30 cm) 10 30 50 70 90

Atterberg Limits PL LL

Moisture Content (%) 10 20 30 40

30 30 15 5 11 13 10 11 17

WATER LEVEL

W.L @ EL. 249.3 m on completion

Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 13 **FIGURE NO.:** 13

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 27, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
252.1	Ground Surface							
0.0	**PLOUGHED SOIL**	1A 1B	DO	22	0		23 23	
251.4	brown silty sand — Frost							
0.7	Brown, loose to dense	2	DO	9	1		10	
	SILTY SAND TILL trace of clay and gravel occ. sand layers, cobbles and boulders	3	DO	22	2		8	
249.6		4	DO	38			10	
2.5	Brown, compact							
	SAND fine to medium grained trace of gravel occ. cobbles	5	DO	16	3		19	▽ W.L @ EL. 248.9 m on completion
248.3					4			
3.8	Brown, dense							
	SILTY SAND TILL trace of clay and gravel occ. cobbles and boulders	6	DO	39	5		8	
247.1					6			
5.0	**END OF BOREHOLE**				7			
					8			
					9			
					10			
					11			
					12			

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 14 **FIGURE NO.:** 14

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 27, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
250.5	Ground Surface				
0.0	**PLOUGHED SOIL**	1A 1B	DO	20	0
249.8	brown silty sand — Frost				
0.7	**EARTH FILL**	2	DO	4	1
	brown sand and clay				
	scattered topsoil	3	DO	4	2
248.4					
2.1	Brown, dense to very dense				
	SILTY SAND TILL	4	DO	36	
	trace to some clay, trace gravel				3
	occ. sand layers, cobbles and boulders	5	DO	30	
					4
		6	DO	85	5
					6
		7	DO	50/15	
					7
242.6		8	DO	55/15	
7.9	**END OF BOREHOLE**				8
					9
					10
					11
					12

Dynamic Cone (blows/30 cm) 10 30 50 70 90

Shear Strength (kN/m²) 50 100 150 200

Penetration Resistance (blows/30 cm) 10 30 50 70 90

Atterberg Limits PL LL

Moisture Content (%) 10 20 30 40

32 31 19 18 9 9 11 9 8

WATER LEVEL

W.L @ EL. 248.1 m on completion

Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: BH/MW 15 **FIGURE NO.:** 15

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 28, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
251.5	Ground Surface							
0.0	**PLOUGHED SOIL**	1A 1B	DO	19	0		47	
250.8	brown silty sand Frost						12	
0.7	Brown, dense to very dense	2	DO	4	1		12	
	SILTY SAND TILL trace of clay and gravel occ. cobbles and boulders	3	DO	5	2		13	
		4	DO	10			13	
		5	DO	13	3		14	
		6	DO	38	4		8	
		7	DO	50/NP	5			
245.1					6			
6.4	**END OF BOREHOLE** **Refusal to augering on probable boulder**				7			
	Installed 50mm Ø monitoring well to 6.0 m 3.0 m screen from 3.0 to 6.0 m Sand backfill from 2.4 to 6.0 m Bentonite seal from 0.0 to 2.4 m Provided with a 4x4 steel casing				8			Dry on completion
					9			
					10			
					11			
					12			

Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 16 **FIGURE NO.:** 16

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 28, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
256.2	Ground Surface							
0.0	**PLOUGHED SOIL**	1A 1B	DO	16	0		33	
255.5	brown silty sand — Frost						18	
0.7	**EARTH FILL**	2	DO	7	1		12	
	brown sand and clay							
	scattered topsoil							
254.5		3	DO	11			10	
1.7	Brown, compact to very dense				2			
	SILTY SAND TILL	4	DO	24			8	
	trace of clay and gravel							
	occ. cobbles and boulders	5	DO	50/15	3		7	
252.3								
3.9	Brown, very dense				4			
	SAND							
	fine to medium grained	6	DO	73			13	
	trace of gravel				5			
	occ. cobbles							
					6			
		7	DO	55			17	
249.2								
7.0	Brown, very dense				7			
	SILTY SAND TILL							
	trace of clay and gravel	8	DO	70			8	
	occ. cobbles and boulders				8			
248.1								
8.1	**END OF BOREHOLE**				9			
					10			
					11			
					12			

W.L @ EL. 252.5 m on completion
Cave-in @ El. 251.9 m

Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 17 **FIGURE NO.:** 17

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 28, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
254.9 / 0.0	Ground Surface							
254.2 / 0.7	**PLOUGHED SOIL** brown silty sand Frost	1A 1B	DO	22	0		40	
	Brown, loose to very dense						23	
	SILTY SAND TILL trace of clay and gravel occ. sand layers, cobbles and boulders	2	DO	8	1		12	
		3	DO	12	2		12	
		4	DO	28			9	
		5	DO	24	3		10	
					4			
250.0 / 4.9		6	DO	50/15	5		8	
	END OF BOREHOLE				6			
					7			
					8			
					9			
					10			
					11			
					12			

W.L @ EL. 252 m on completion
Cave-in @ El. 251.9 m

Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 18 **FIGURE NO.:** 18

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 26, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
256.1	Ground Surface				
0.0	**PLOUGHED SOIL**	1A 1B	DO	37	0
255.4 / 0.7	brown silty sand — Frost				
	EARTH FILL	2	DO	10	1
	brown sand and clay scattered topsoil	3	DO	9	2
254.0 / 2.1	Brown, compact to very dense				
	SILTY SAND TILL	4	DO	22	3
	trace of clay and gravel occ. cobbles and boulders	5	DO	45	4
		6	DO	50/15	5
250.6 / 5.5	Brown, very dense				6
	SAND well graded, some silt trace of gravel	7	DO	83	7
249.6 / 6.5	**END OF BOREHOLE**				8
					9
					10
					11
					12

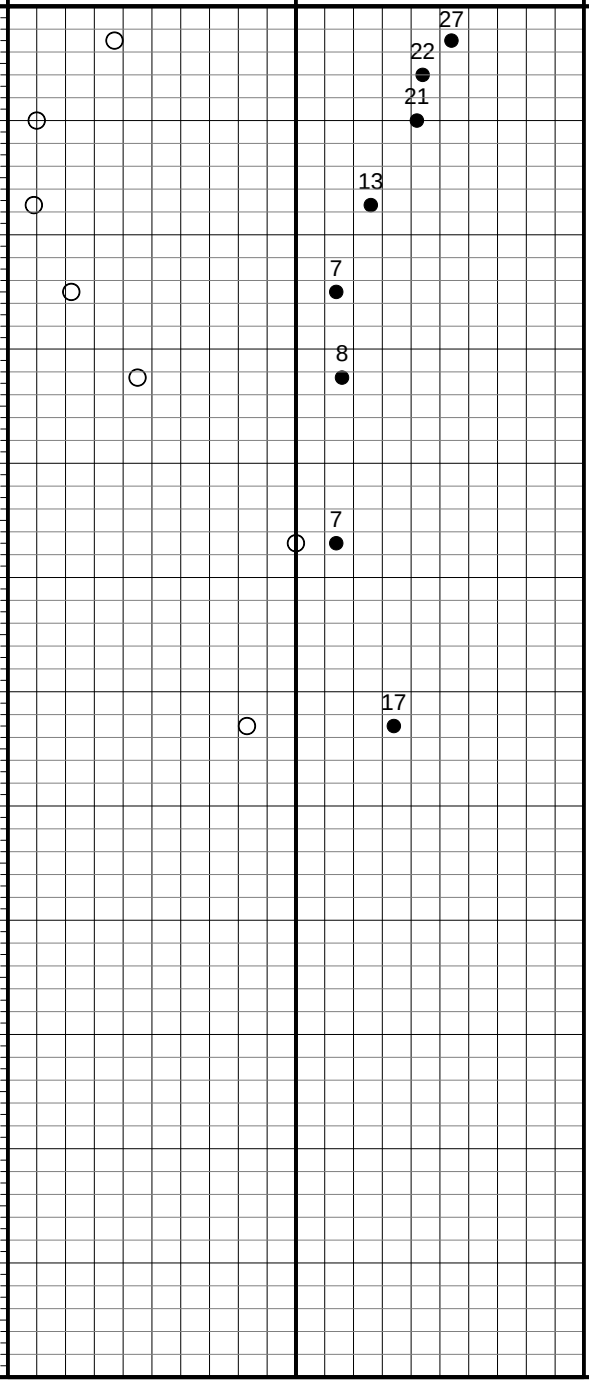
Dynamic Cone (blows/30 cm) 10 30 50 70 90

Shear Strength (kN/m²) 50 100 150 200

Penetration Resistance (blows/30 cm) 10 30 50 70 90

Atterberg Limits PL LL

Moisture Content (%) 10 20 30 40



WATER LEVEL

W.L @ EL. 250.6 m on completion

Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: BH/MW 19 **FIGURE NO.:** 19

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 26, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
261.2	Ground Surface							
0.0	**35 cm TOPSOIL**	1A 1B	DO	25	0		26	
	Frost						11	
	EARTH FILL brown sand and clay scattered topsoil						11	
260.1 / 1.1	Brown, compact to very dense	2	DO	19	1			
	SILTY SAND TILL trace of clay, some gravel occ. sand layers, cobbles and boulders	3	DO	23	2		7	
		4	DO	53			7	
		5	DO	50/15	3		7	
		6	DO	70/15	4		6	
		7	DO	50/10	5		6	
254.2 / 7.0	Brown, very dense				6			
	SAND fine to medium grained trace of gravel, some silt	8	DO	78	7		14	
251.8		9	DO	50/15	8		9	
9.4	**END OF BOREHOLE**				9			
	Installed 50mm Ø monitoring well to 9.1 m 3.0 m screen from 6.1 to 9.1 m Sand backfill from 5.5 to 9.1 m Bentonite seal from 0.0 to 5.5 m Provided with a 4x4 steel casing				10			
					11			
					12			

W.L @ EL. 258.8 m on completion

Soil Engineers Ltd.

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 20 **FIGURE NO.:** 20

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 19, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
264.6	Ground Surface							
0.0	**PLOUGHED SOIL**	1A 1B	DO	19	0		25	
263.9	brown silty sand — Frost						18	
0.7	**EARTH FILL**	2	DO	16	1		10	
263.2	brown sandy silt, some clay							
1.4	occ. organic inclusions	3	DO	13	2		11	
	Brown, compact to dense							
	SILTY SAND TILL							
	trace of clay and gravel	4	DO	17			10	
	occ. pockets of sand, cobbles and boulders				3			
		5	DO	43			10	
260.6					4			
4.0	Brown, very dense							
	SAND							
	well graded	6	DO	95			5	
259.6	some silt and gravel				5			
5.0	occ. cobbles							
	END OF BOREHOLE				6			
					7			
					8			
					9			
					10			
					11			
					12			

WATER LEVEL: Dry on completion

JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 21 **FIGURE NO.:** 21

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 19, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
259.5	Ground Surface							
0.0	**25 cm TOPSOIL**	1A 1B	DO	31	0		23	
	Brown, compact to dense						15	
	Frost						9	
	SILTY SAND TILL	2	DO	16	1			
	trace clay and gravel						9	
	occ. cobbles and boulders	3	DO	26	2			
							9	
		4	DO	25				
					3		8	
		5	DO	34				
					4			
254.5		6	DO	44			8	
5.0	**END OF BOREHOLE**				5			Dry on completion
					6			
					7			
					8			
					9			
					10			
					11			
					12			

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JOB NO.: 1901-S077 # LOG OF BOREHOLE NO.: 22 **FIGURE NO.:** 22

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight-Auger Hollow Stem

PROJECT LOCATION: Lockhart Road, City of Barrie

DRILLING DATE: February 26, 2019

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
254.4	Ground Surface				
0.0	**PLOUGHED SOIL**	1A 1B	DO	27	0
253.7	brown silty sand — Frost				
0.7	Brown, loose to dense	2	DO	8	1
	SILTY SAND TILL trace to some clay occ. cobbles and boulders	3	DO	6	2
		4	DO	22	
		5	DO	34	3
250.2					4
4.2	Brown, loose				
	SAND (disturbed) fine to medium grained, some silt	6	DO	7	5
248.9					
5.5	Brown, very dense				6
	SILTY SAND TILL trace of clay and gravel occ. cobbles and boulders	7	DO	50/15	
248.0					
6.4	**END OF BOREHOLE**				7
					8
					9
					10
					11
					12

Dynamic Cone (blows/30 cm) 10 30 50 70 90

Shear Strength (kN/m²) 50 100 150 200

Penetration Resistance (blows/30 cm) 10 30 50 70 90

Atterberg Limits PL LL

Moisture Content (%) 10 20 30 40

47 25 13 12 13 8 18 8

WATER LEVEL

W.L @ EL. 252.9 m on completion

Cave-in @ El. 250.1 m

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GRAIN SIZE DISTRIBUTION

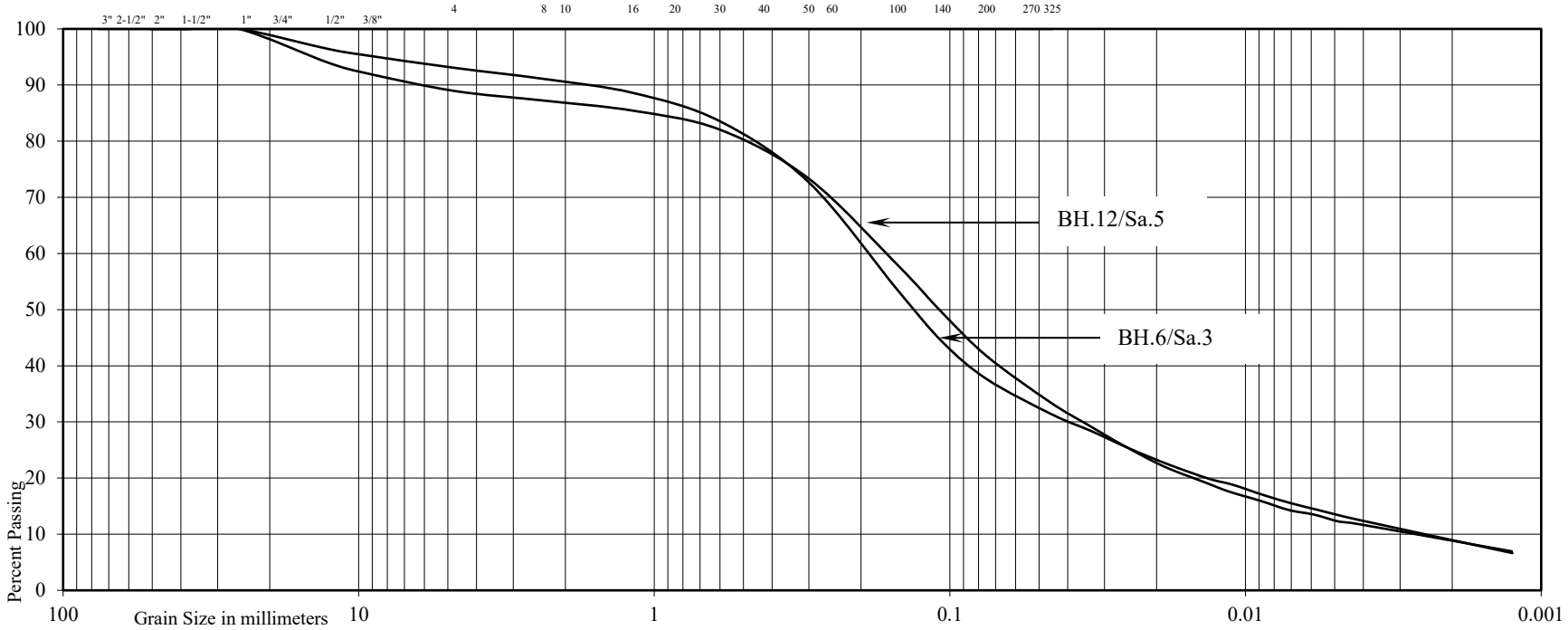
Reference No: 1901-S077

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project:	Proposed Residential Development	
Location:	Lockhart Road, City of Barrie	
Borehole No:	6	12
Sample No:	3	5
Depth (m):	1.7	3.3
Elevation (m):	251.6	250.2

BH./Sa.	6/3	12/5
Liquid Limit (%) =	-	-
Plastic Limit (%) =	-	-
Plasticity Index (%) =	-	-
Moisture Content (%) =	14	11
Estimated Permeability (cm./sec.) =	10^{-6}	10^{-3}

Classification of Sample [& Group Symbol]: SILTY SAND TILL, a trace to some gravel, a trace of clay

Figure: 23

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

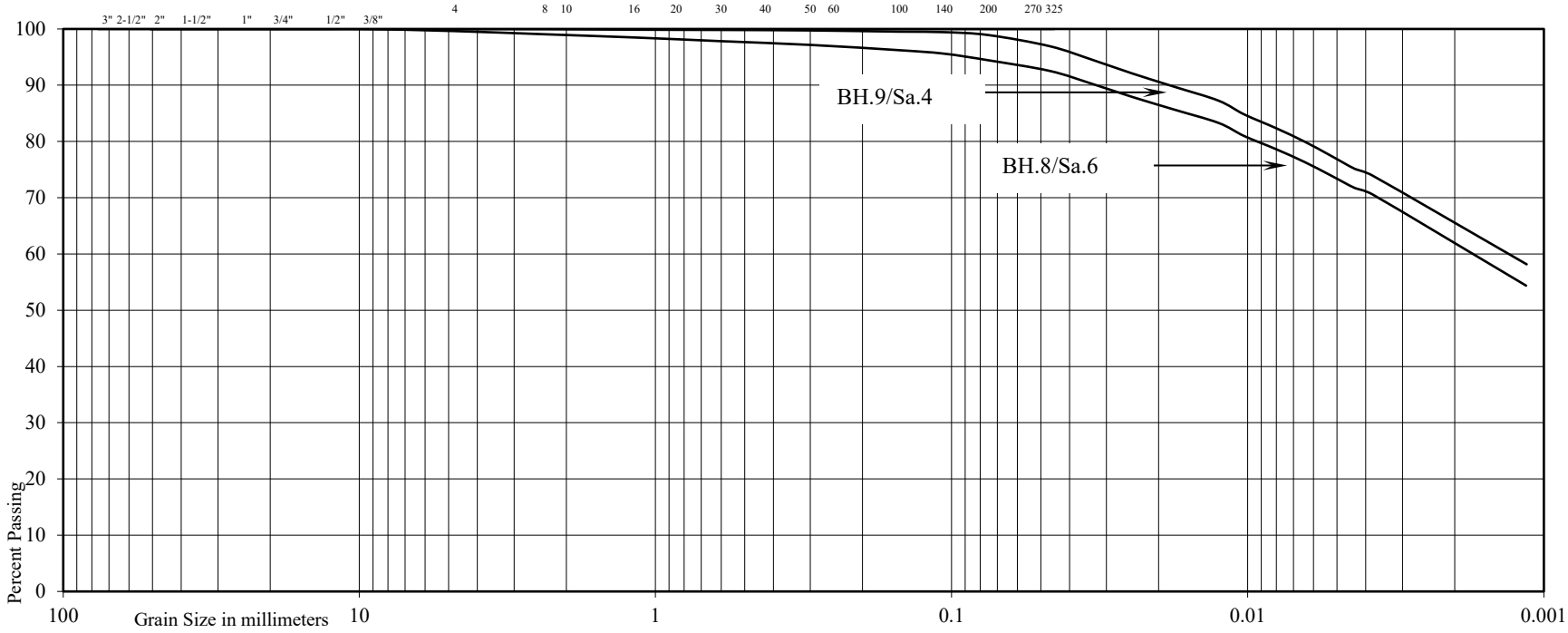
Reference No: 1901-S077

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Proposed Residential Development

Location: Lockhart Road, City of Barrie

Borehole No:	8	9
Sample No:	6	4
Depth (m):	4.8	2.5
Elevation (m):	247.6	250.1

BH./Sa.	8/6	12/5
Liquid Limit (%) =	49	-
Plastic Limit (%) =	25	-
Plasticity Index (%) =	24	-
Moisture Content (%) =	37	11
Estimated Permeability (cm./sec.) =	$>10^{-7}$	$>10^{-7}$

Classification of Sample [& Group Symbol]: SILTY CLAY, traces of sand and fine sand

Figure: 24

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

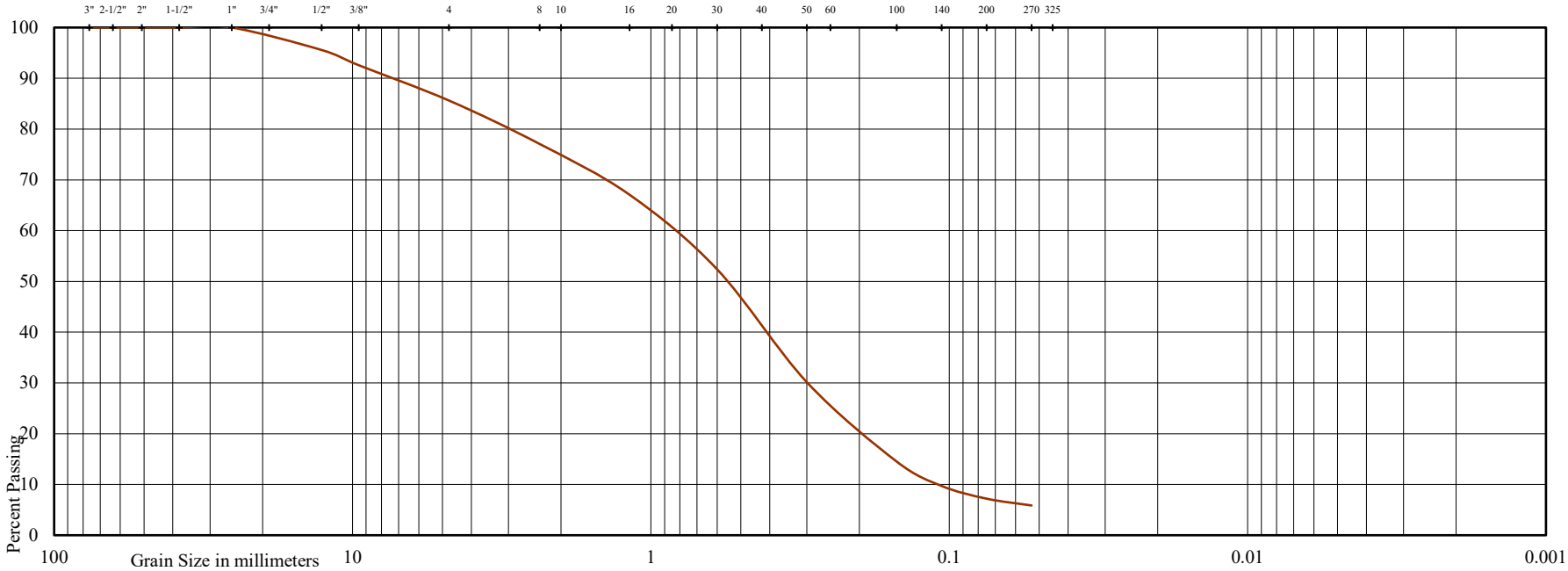
Reference No: 1901-S077

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Proposed Residential Development

Location: Lockhart Road, City of Barrie

Borehole No: 1

Sample No: 5

Depth (m): 3.3

Elevation (m): 249.7

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = 15

Estimated Permeability (cm./sec.) = 10^{-3}

Classification of Sample [& Group Symbol]: SAND, well graded, some gravel and a trace of silt

Figure: 25

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

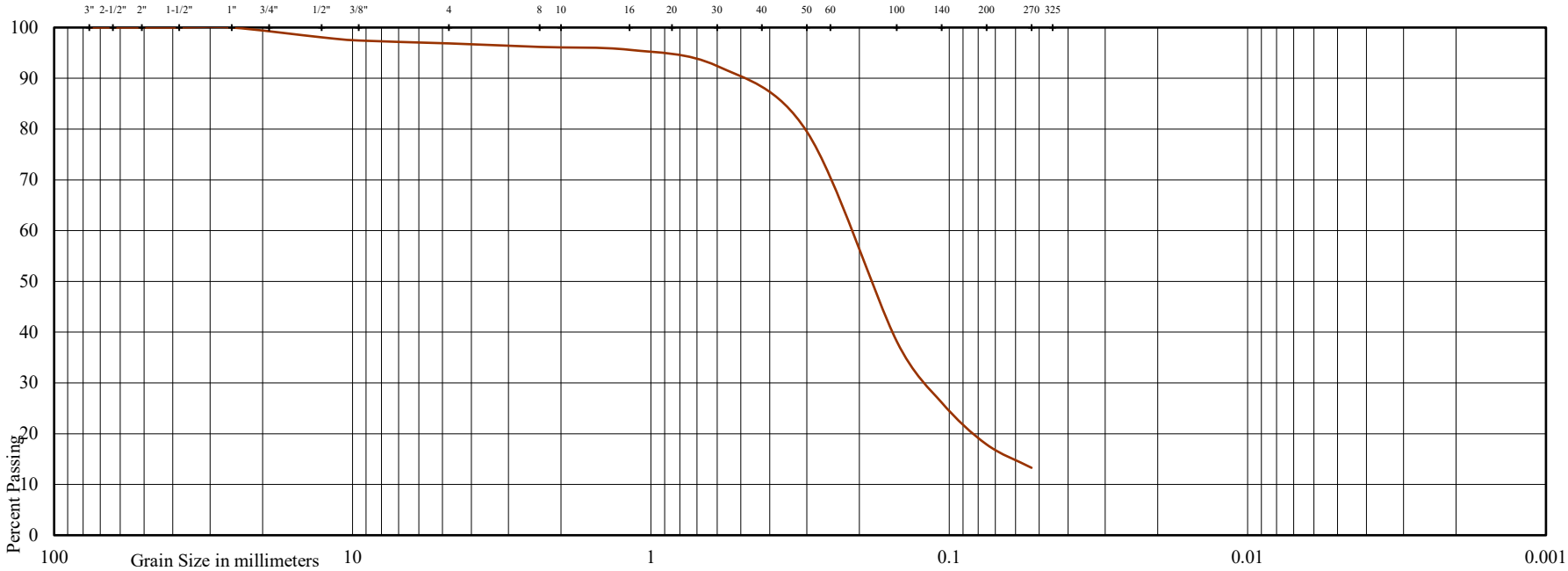
Reference No: 1901-S077

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Proposed Residential Development

Location: Lockhart Road, City of Barrie

Borehole No: 19

Sample No: 8

Depth (m): 7.8

Elevation (m): 253.4

Liquid Limit (%) = -

Plastic Limit (%) = -

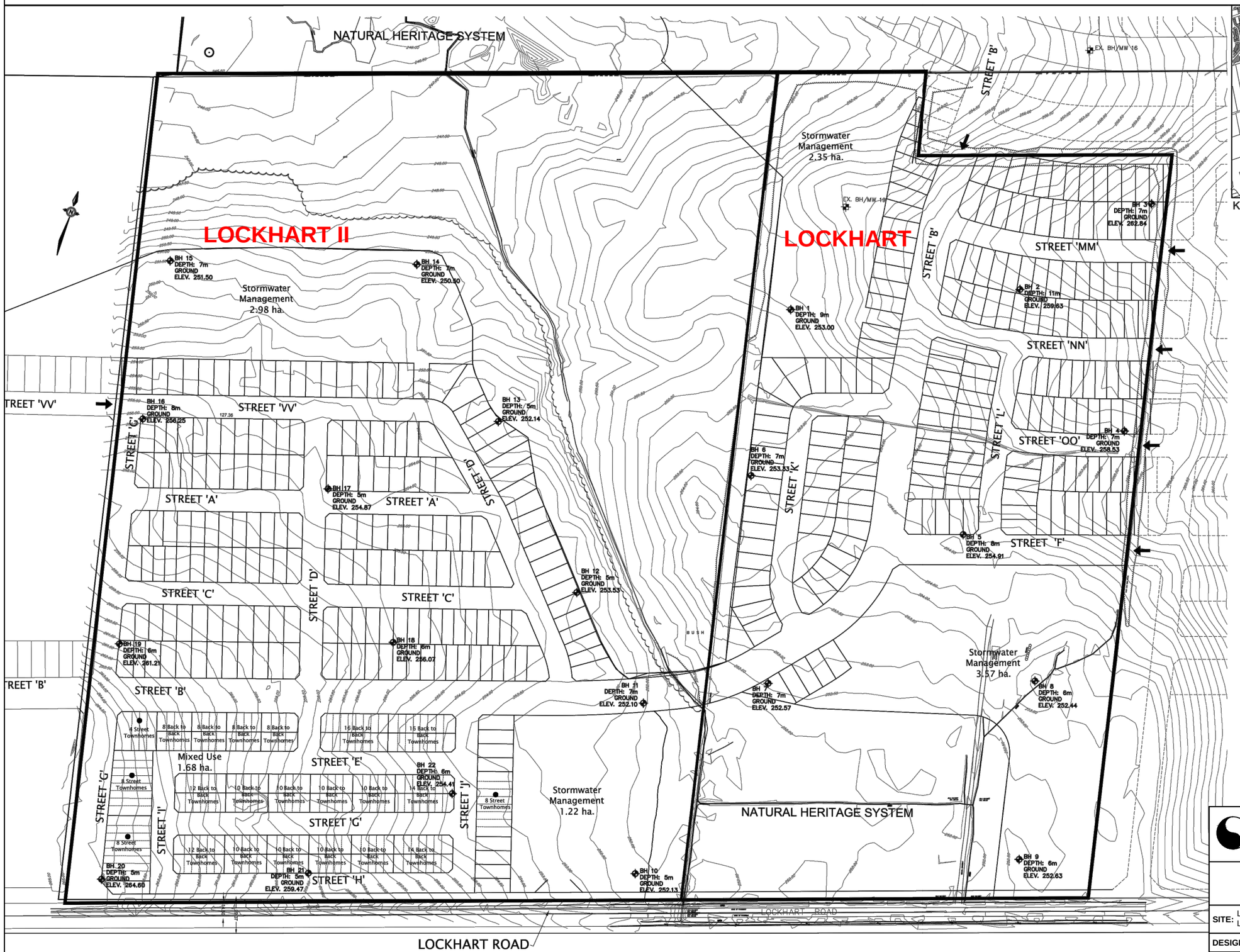
Plasticity Index (%) = -

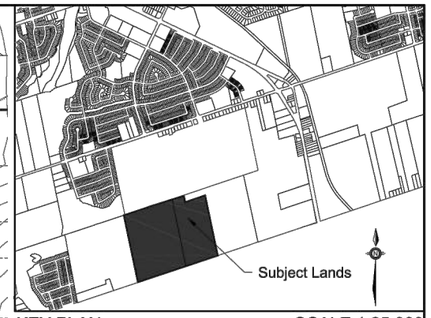
Moisture Content (%) = 14

Estimated Permeability (cm./sec.) = 10^{-4}

Classification of Sample [& Group Symbol]: FINE TO MEDIUM SAND, some silt

Figure: 26





KEY PLAN SCALE 1:25,000

LEGEND

STUDY AREA

EX. BH/MW 1 — EXISTING LOCKMAPLE BORE HOLE/MONITOR WELL (SOIL ENGINEERS LTD.)

BH 15 DEPTH: 7m GROUND ELEV. 251.50 — PROPOSED BOREHOLE

Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | HYDROGEOLOGICAL | BUILDING SCIENCE
90 WEST BEAVER CREEK, SUITE #100, RICHMOND HILL, ONTARIO L4B 1E7 · TEL: (416) 754-8515 · FAX: (905) 881-8335

BOREHOLE LOCATION PLAN

SITE: Lockhart II and Lockhart Lockhart Road, City of Barrie			
DESIGNED BY: N.A	**CHECKED BY:** B.L	**DWG NO.:** 1	
SCALE: 1:3000	**REF. NO.:** 1901-S077	**DATE:** May 2021	**REV** -

Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | HYDROGEOLOGICAL | BUILDING SCIENCE

SUBSURFACE PROFILE
DRAWING NO. 2
SCALE: AS SHOWN

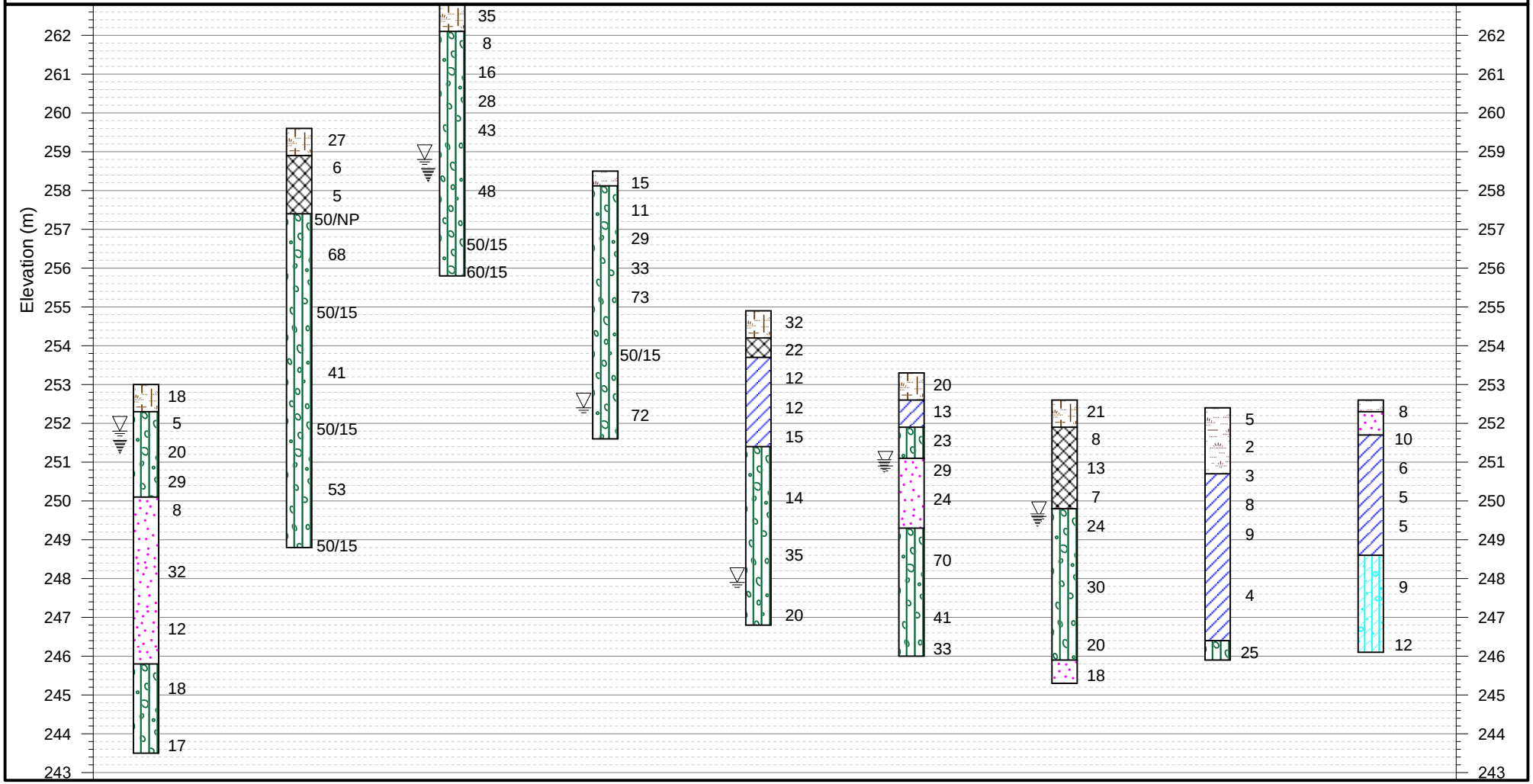
JOB NO.: 1901-S077
REPORT DATE: May 2021
PROJECT DESCRIPTION: Proposed Residential Development

PROJECT LOCATION: Lockhart and Lockhart II
Lockhart Road, City of Barrie

LEGEND

TOPSOIL | FILL | SILTY SAND TILL | SILTY CLAY TILL
PLOUGHED SOIL | SAND | SILTY CLAY

WATER LEVEL (END OF DRILLING) | CAVE-IN



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SUBSURFACE PROFILE
DRAWING NO. 3
SCALE: AS SHOWN

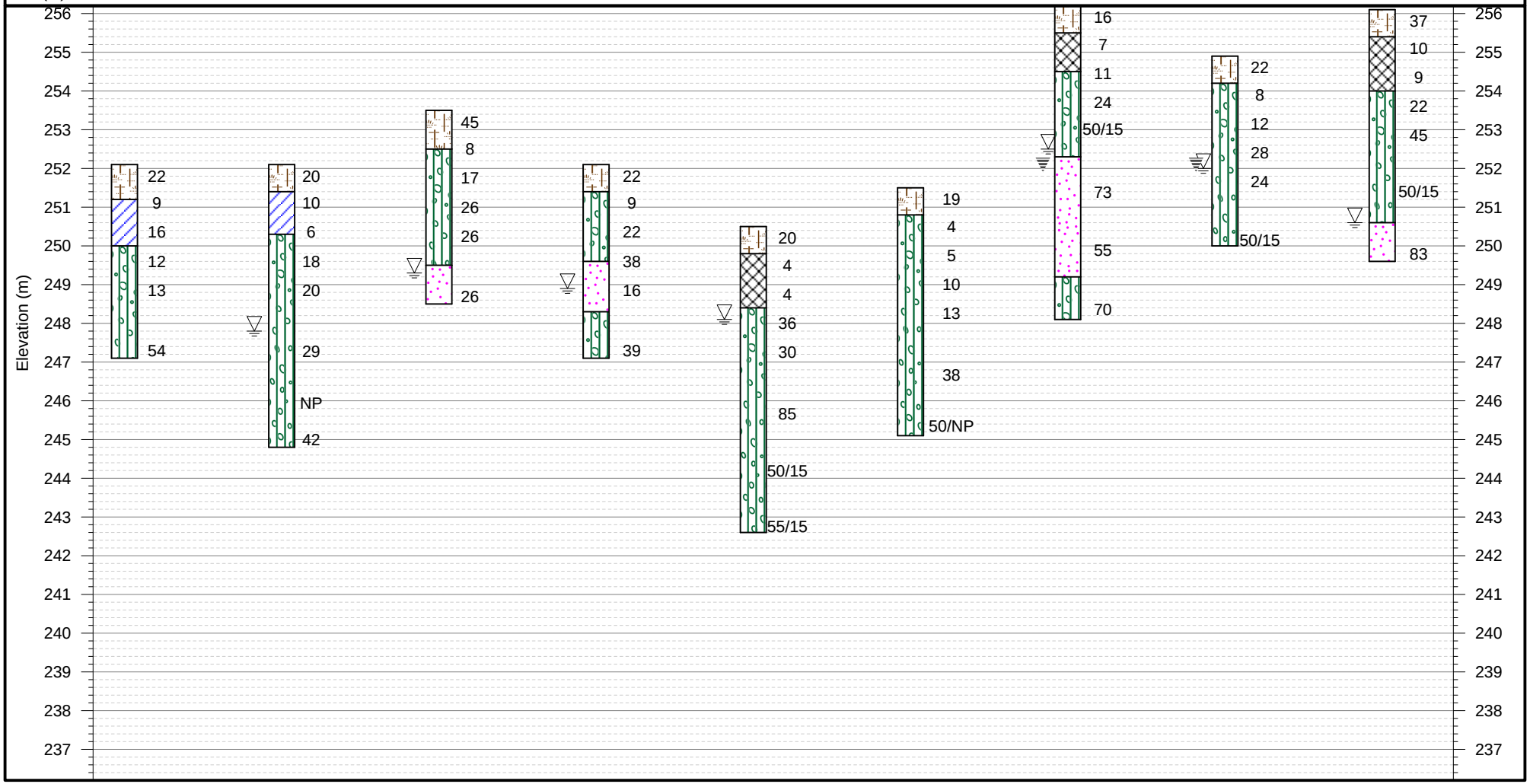
JOB NO.: 1901-S077
REPORT DATE: May 2021
PROJECT DESCRIPTION: Proposed Residential Development

PROJECT LOCATION: Lockhart and Lockhart II
Lockhart Road, City of Barrie

LEGEND

PLOUGHED SOIL | SAND | SILTY SAND TILL | SILTY CLAY | FILL

WATER LEVEL (END OF DRILLING) | CAVE-IN



Soil Engineers Ltd.
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GEOTECHNICAL | ENVIRONMENTAL | HYDROGEOLOGICAL | BUILDING SCIENCE

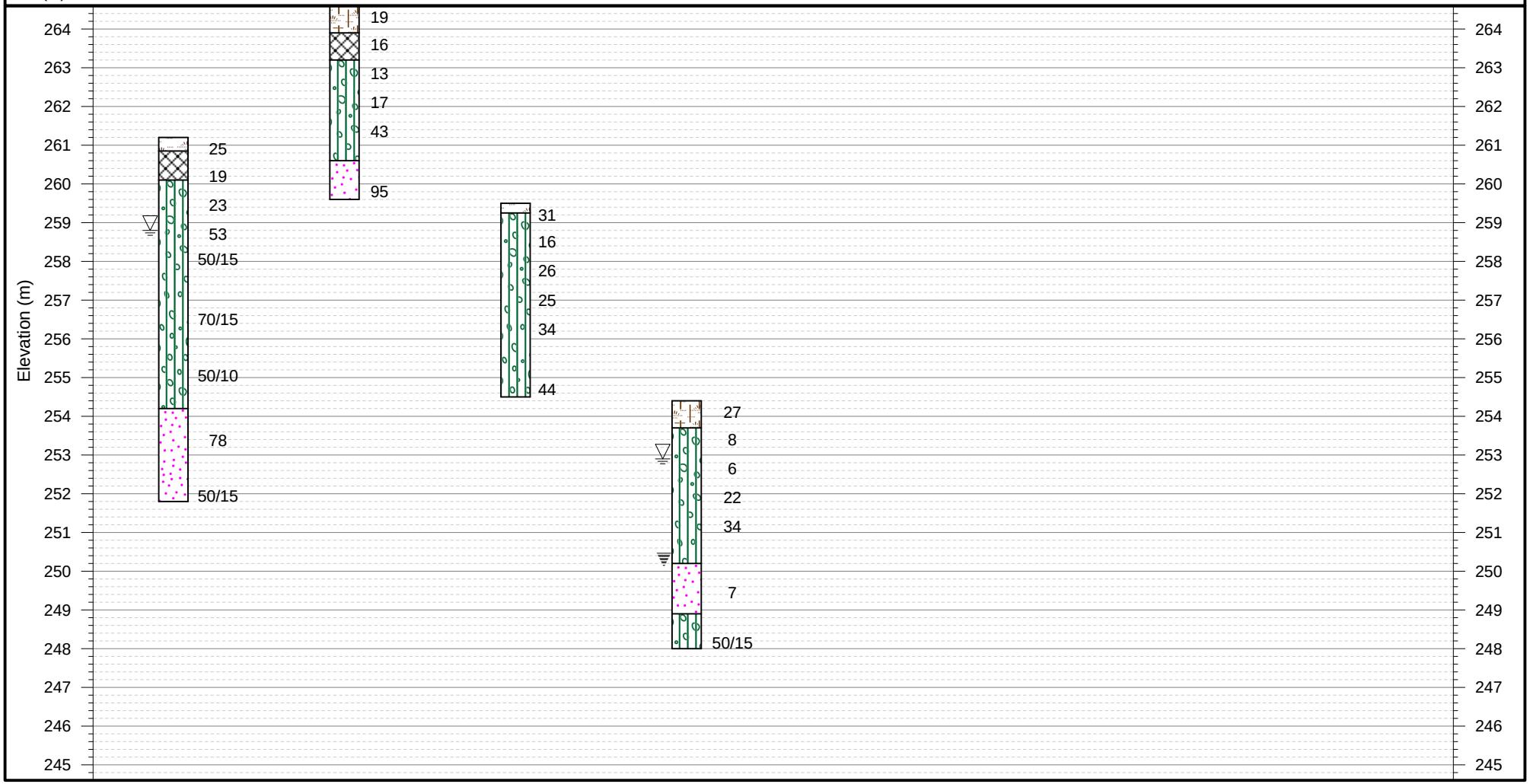
SUBSURFACE PROFILE
DRAWING NO. 4
SCALE: AS SHOWN

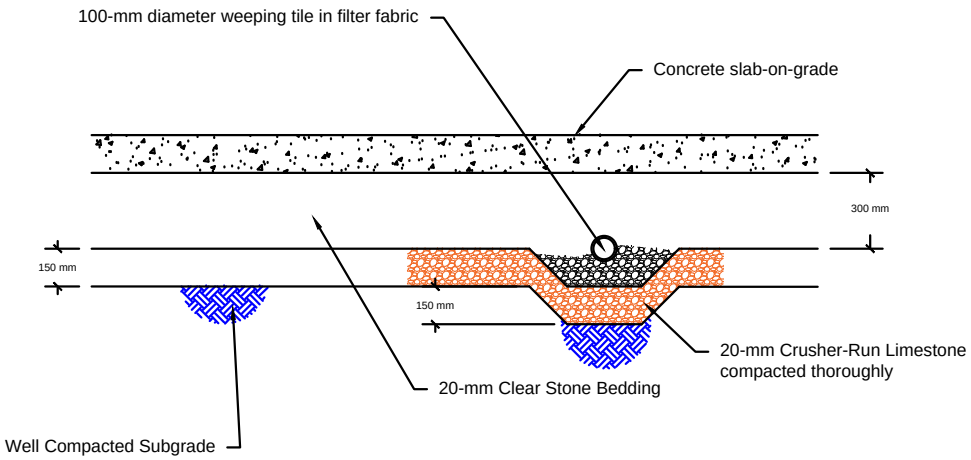
JOB NO.: 1901-S077
REPORT DATE: May 2021
PROJECT DESCRIPTION: Proposed Residential Development

PROJECT LOCATION: Lockhart and Lockhart II
Lockhart Road, City of Barrie

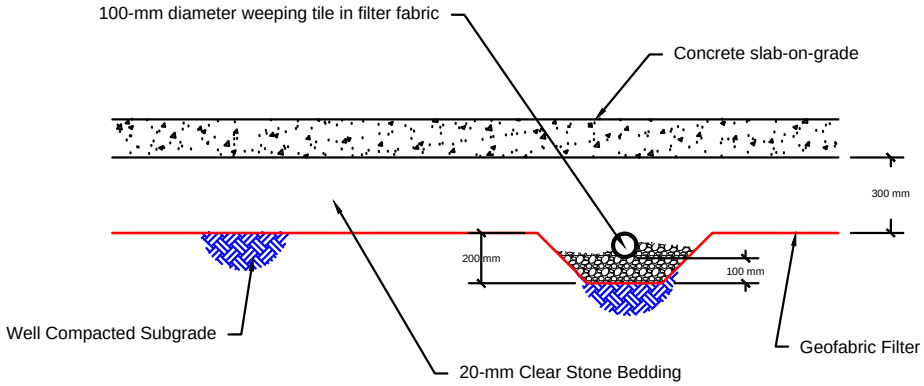
LEGEND
TOPSOIL | FILL | SAND | SILTY SAND TILL | PLOUGHED SOIL

WATER LEVEL (END OF DRILLING) | CAVE-IN

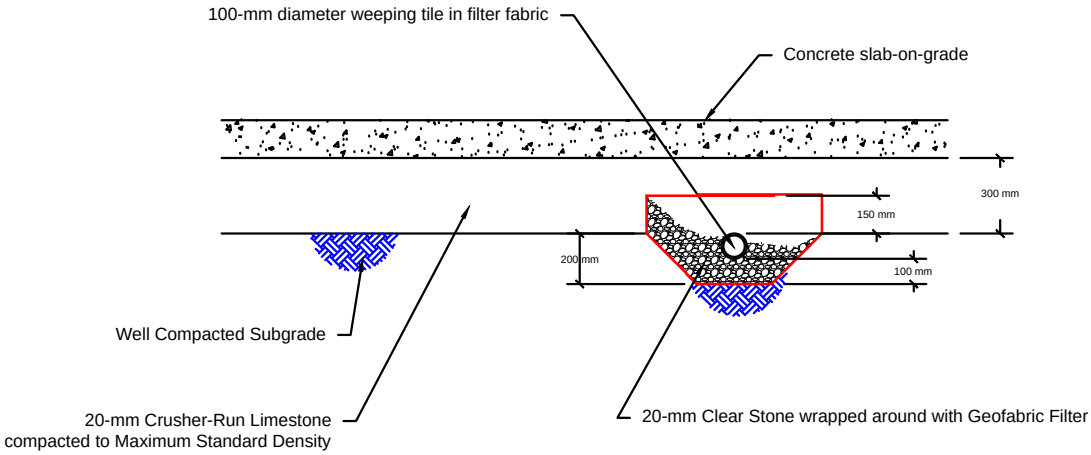




Option 'A'



Option 'B'



Option 'C'

Note:

1. Weepers should be placed in 5 m grids, draining in a positive gradient towards an outlet or a sump pit for removal by pumping.
2. A 6-mil polyethylene sheet should be specified between the gravel bedding and concrete slab.

Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | HYDROGEOLOGICAL | BUILDING SCIENCE
100 NUGGET AVENUE, TORONTO, ONTARIO M1S 3A7 · TEL: (416) 754-8515 · FAX: (416) 754-8516

Details of Under-Floor Weepers

SITE: Lockhart II and Lockhart Lockhart Road, City of Barrie			
DESIGNED BY: N.A	**CHECKED BY:** B.L	**DWG NO.:** 5	
SCALE: N.T.S.	**REF. NO.:** 1901-S077	**DATE:** May 2021	**REV** -

GOL-14193 Lockhart I

5 Year Storm Sewer Sizing

October 2021

AREAS	Street	MANHOLE		LENGTH	INCREMENT			TOTAL	FLOW TIME (min)		I	TOTAL Q	S	D	Q FULL	V FULL	% FULL
		FROM	TO	(m)	C	A	CA	CA	TO	IN	(mm/h)	(cms)	(%)	(mm)	(cms)	(m/s)	
From Mattamy to GG 9 Mile ↓									450mmØ shown in GG (9 Mile)								
101	Street 'D'	STM 22	STM DDLV5555	85.5	0.65	1.17	0.76	0.76	10.00	0.93	109	0.230	0.60	525	0.333	1.5	***69.0***
From Mattamy to GG 9 Mile ↓																	
102	Street 'E'	STM 23	STM 24	55.2	0.65	0.49	0.32	0.32	10.00	0.46	109	0.097	2.10	300	0.140	2.0	***69.2***
103	Street 'E'	STM 24	STM 25	79.1	0.65	0.68	0.44	0.76	10.46	0.48	106	0.224	3.00	375	0.304	2.7	***73.9***
104	Fenchurch Manor	STM 25	STM DDLV5563	84.8	0.65	0.52	0.34	1.10	10.94	0.85	104	0.318	0.70	525	0.360	1.7	***88.3***
From Mattamy to Lockhart ↓																	
105	Street 'K'	STM 10	STM 11		0.65	1.85	1.20										
106	Street 'K'	STM 10	STM 11	77.5	0.65	0.11	0.07	1.28	10.00	0.48	109	0.386	1.80	525	0.577	2.7	***66.9***
107	Street 'K'	STM 11	STM 12	62.5	0.65	0.19	0.12	1.40	10.48	0.39	106	0.413	1.80	525	0.577	2.7	***71.6***
108	Street 'K'	STM 12	STM 13	80.5	0.65	0.37	0.24	1.64	10.88	0.38	104	0.475	3.20	525	0.769	3.6	***61.7***
109	Fenchurch Manor	STM 13	STM 9	75.0	0.65	0.21	0.14	1.78	11.25	0.47	102	0.506	1.80	525	0.577	2.7	***87.7***
110	Street 'J'	STM 6	STM 7	84.5	0.65	1.32	0.86	0.86	10.00	0.44	109	0.259	4.00	375	0.351	3.2	***73.8***
111	Street 'J'	STM 7	STM 8	69.7	0.65	0.75	0.49	1.34	10.44	0.46	106	0.397	1.60	525	0.544	2.5	***73.0***
112	Street 'H'	STM DCB	STM 8	9.8	0.65	0.32	0.20	0.20	10.00	0.08	109	0.062	2.00	300	0.137	1.9	***45.4***
113	Street 'J'	STM 8	STM 9	78.5	0.65	0.53	0.35	1.89	10.91	0.49	104	0.547	1.50	600	0.752	2.7	***72.8***
114	Fenchurch Manor	STM 9	STM 5	74.1	0.65	0.71	0.46	4.14	11.72	0.35	100	1.150	2.20	675	1.247	3.5	***92.3***
115	Street 'I'	STM 1	STM 2	63.2	0.65	1.10	0.72	0.72	10.00	0.49	109	0.217	1.80	375	0.235	2.1	***92.3***
116	Street 'H'	STM 2	STM 3	87.4	0.65	0.39	0.25	0.97	10.49	0.82	106	0.286	0.80	525	0.385	1.8	***74.4***
117	Lower Street	STM 30	STM 3	66.3	0.65	0.69	0.45	0.45	10.00	0.49	109	0.135	2.00	375	0.248	2.2	***54.6***
118	Lower Street	STM 3	STM 4	75.2	0.65	0.32	0.21	1.63	11.31	0.65	102	0.461	0.80	600	0.549	1.9	***84.0***
119	Fenchurch Manor	STM 4	STM 5	82.1	0.65	0.39	0.25	1.88	11.96	0.63	99	0.517	1.00	600	0.614	2.2	***84.2***
	*Street 'G'	STM 5	STM 14	59.4				6.02	12.59	0.44	96	1.609	0.50	1050	1.931	2.2	***83.3***
120	Street 'G'	STM 15	STM 16	51.3	0.65	0.80	0.52	0.52	10.00	0.67	109	0.158	0.50	450	0.202	1.3	***78.3***
121	Street 'G'	STM 16	STM 17	70.4	0.65	0.41	0.27	0.79	10.67	0.84	105	0.231	0.50	525	0.304	1.4	***75.8***
	Street 'G'	STM 17	STM 18	56.4				0.79	11.51	0.67	101	0.221	0.50	525	0.304	1.4	***72.8***
	Street 'G'	STM 18	STM 19	12.6				0.79	12.18	0.15	98	0.215	0.50	525	0.304	1.4	***70.6***
	Street 'G'	STM 19	STM 14	10.9				0.79	12.33	0.13	97	0.213	0.50	525	0.304	1.4	***70.1***
122	**EASEMENT	STM 14	STM 20	45.9	0.65	0.78	0.51	7.32	13.03	0.41	94	1.917	**0.30**	1200	2.135	1.9	***89.8***
	**SWMF4	STM 20	STM HW 21	14.0				7.32	13.44	0.12	93	1.884	**0.30**	1200	2.135	1.9	***88.2***
Areas and runoff coefficients taken from PF PCSWMM modeling ↓																	
3-EXT					0.56	1.28	0.71										
3	***SWMF3	STM 43 (B.O.)	STM HW 38 (B.O.)	6.5	0.67	35.20	23.71	24.42	15.00	0.04	87	5.903	**0.50**	1650	6.445	3.0	***91.6***
Q= 0.0028*C*I*A (cms);					C=RUNOFF COEFFICIENT;				I-RAINFALL INTENSITY (5 Year) =853.608/(T.C. + 4.699)^0.766;						A=AREA (ha)		

Note: * Circular pipe diameter matches an equivalent area of 865 x 1345mm elliptical pipe. (DECAST Reinforced Concrete Elliptical Pipe)
** Circular pipe diameter matches an equivalent area of 965 x 1525mm elliptical pipe. (DECAST Reinforced Concrete Elliptical Pipe)
*** Circular pipe diameter matches an equivalent area of 1829x 1219mm box culvert. (DECAST Precast Box Culvert)

Appendix C

Sanitary Servicing Information

Sanitary Map

January 2021

1:20,000

1 cm = 200 meters

0 0.5 1 2 km

N

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For information please contact Service Barrie at 705-726-4242 or ServiceBarrie@barrie.ca

Updated: 1/18/2021

Little Lake

Kempenfelt Bay

Township Of Springwater

Township Of Oro-Medonte

Town Of Innisfil

Township Of Essa

PS1 PS2 PS4 PS5 PS6 PS7 PS8 PS9 PS11 PS12 PS13 PS14 PS15 PS17 PS18 PS20 PS21

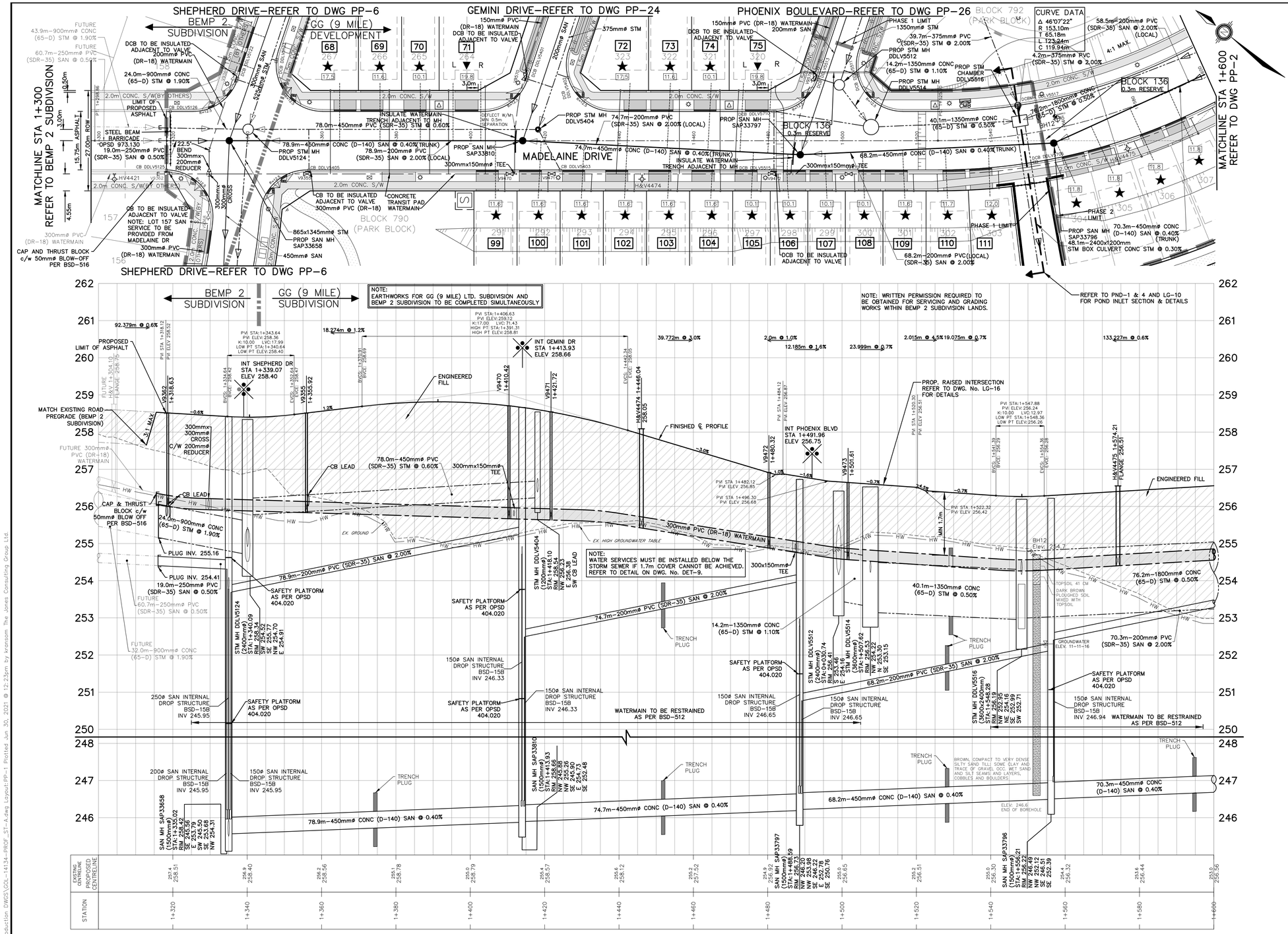
Catchment Area

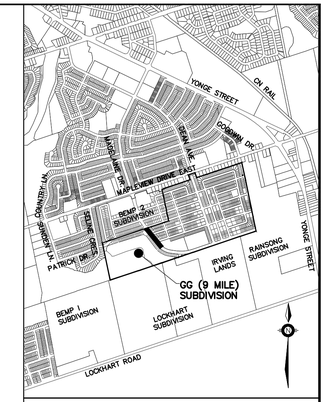
- Bayview
- Cundles
- Essa
- Hewitts
- Industrial
- Lakeshore
- North
- Paddison Farms
- Painswick

- Sanitary Pumping Stations
- Maintenance
- Force
- Local
- Trunk
- Major Roads
- Local Roads
- Highway
- Unassumed Roads

- Township Boundary
- Railway
- City Boundary
- GORE
- NATURAL AREA
- PARK
- Pump Drainage Zone
- Sub-Catchment

20 Sideroad N9-10-11
Aconley Crt I4
Adam St H5, I5
Addison Trail I4
Adelaide St F9
Agnes St E5-6, F5
Aikens Cres E11
Alaskan Heights C14
Albert St F6, G6
Aldergrove Cir E4
Aleda St D6
Alexander Ave I5
Alfred St E9
Algonquin Trail I6
Alliance Blvd F4-5, G4
Allsop Cres C12, D12
Alva St D9
Ambler Bay I4
Amelia St F6, G6
Andean Lane C14
Anne St N C4-5-6, D6-7, E7
Anne St S E7-8-9, F9
Arbour Trail I8
Arch Brown Crt D4, E4
Archer St D10
Ardagh Rd B11, C11, D10-11, E10
Argyle Rd D5, E5
Armstrong Blvd G9
Army, Navy And Air Force Dr E8
Arthur Ave H5, I5
Ashdale Crt E4
Ashford Dr J10
Aspen Dr E4
Assiniboine Dr C14
Athabaska Rd C14, D14
Atwood Crt D6
Auburn Crt C10, C11
Austen Lane C6, D6
Autumn Lane G9
Bailey Crt F9
Baker Cres E5
Baldwin Lane F9
Balliston Rd C5
Balmoral Pl L9
Balsam Trail C13
Baltimore Rd E4, F4
Barre Dr I10
Barrett Cres C6
Barrie View Dr F12, F13
Bartor Blvd I13
Barwick Dr C5
Basswood Dr D12
Bates Crt H9
Batteaux St B11
Bay Lane H8-9
Bayfield St D3-4, E4-5-6, F6-7
Bayshore Blvd I9, J9
Bayview Dr F8-9-10, G10-11-12-13-14
Beach Crt H10, I10
Beacon Rd E11
Bear Creek Dr B13, C13
Beatrice Lane L10
Bedford Estates Cres J10
Beechcroft Cir E4
Beecroft Gate F5, G5
Belcourt Ave G5
Bell Farm Rd F4-5, G4
Bell St C11, D11
Bellevue Cres G4-5
Benjamin Lane I11
Bennet Rd F5
Benson Dr B6-7
Bentley Cres E12
Berard Crt C11
Berczy St F6, G6-7
Bernick Dr G4
Berry Crt C11
Bertha Ave J10
Bethune Pl D6
Bibby Crt D12
Big Bay Point Rd F11, G11, H10-11, I10, J10, K9-10, L9, M9, N9
Bingham Crt H8
Birchshire Dr E10-11
Birchwood Dr E3-4
Bird St C8
Birkhall Pl K10-9, L9
Bishop Dr D10
Black Ash Trail B11-12
Black Cherry Cres C13
Black Willow Dr B13-14
Blackbird Lane E12
Blair Cres I5
Blake St G6, H6, I5-6
Bloom Cres D11
Bloxham Pl J9
Blue Mound Dr G5
Blueberry Lane E12
Bluegrass Dr D12
Bluejay Dr F4
Bluewater Trail J9
Boag Crt E12
Boorman Crt D13
Booth Lane I11
Bothwell Cres F5
Boulton Crt C9
Bourbon Cir L10
Bowman Ave H6
Boyd St I10
Boys St N E7
Boys St S E7
Bradford St F7-8
Brennan Ave H8-9
Briar Rd G9
Brighton Rd H4, I4
Bristow Crt G9
Britannic Lane K9
Broadfoot Rd C7, D7
Broadmoor Ave F9, G10-9
Brock St D9, E8-9, F8
Bronte Cres C6
Brookdale Dr D6, E6
Brookfield Cres I9, J9
Brooks St F9
Brookwood Dr E12
Brown St D11-12, E11-12
Brown Bear St C14
Brown Wood Dr E3, F3
Browning Trail C6-7
Bruce Cres I9
Brucker Rd D13
Brunton Cres I9
Brushwood Cres J10
Bryne Dr E10, F10-11-12-13-14
Buchanan St I5
Buggs Gate I4
Buman Crt I9
Burbank Pl F5, G5
Burke Dr D4-5
Burns Cir C6
Burton Ave F8-9, G8-9
Butternut Dr C13
Byron Cres G10-9
Callaghan Dr D6-7
Callaway Crt D3
Camelot Sq J9, K9
Campbell Ave E9
Campfire Crt H6, I6
Canary Reed Crt C13, D13
Capilano Crt F4, G3-4
Caplan Ave E12-13, F12
Capps Dr J9
Cardinal St E4, F4
Caribou Crt C14
Carley Cres I11
Carlton Rd E5
Carman Crt C7
Carol Rd F10-9
Caroline St E9, F9
Carr Dr C7
Carruthers Cres I5
Carter Rd I10-9
Cartwright Dr E4
Cassandra Dr E3
Castle Dr D6
Catherine Dr I12
Cedar Cres J10, K10
Cedar Pointe Dr D7-8
Celeste Dr E4
Centre St E9, F9
Chalmers Dr H11, I10-11
Chamboro Crt L10
Chantal St I10-11
Charlbrook Ave E5
Charlemagne Ave L10-9
Charles Crt F9
Charleson Dr C13, D13
Charlotte Crt C6
Chase Mceachern Way F7
Chaucer Cres C6, D6
Checkley St F7
Cheltenham Rd H4, I4
Cherry Crt J10
Chestnut Crt E5
Chieftain Cres F10
Chippawa Crt I6
Christie Cres C6
Churchill Dr G11-12, H11
Churchland Dr C13, D13
Cityview Cir E11
Claire Dr I13
Clapperton St E6, F6-7
Clarence Crt G4
Claudio Cres E12
Clearwater Crt I9, J9
Cliff Rd H8
Cloughley Dr B6-7
Clover Ave G9
Clute Cres D12
Codrington St F6, G6, H6
Coleman Dr B8, C8
Coles St D5
Colleen Ave H5
College Cres H4-5
Collete Cres E4-5, F4
Collier St F6, G6
Collingwood St G6, H6
Columbia Rd C14, D14
Commerce Park Dr E14, F13-14
Commonwealth Rd L10
Concert Way F12, G12
Connaught Lane L9
Consort Dr L10
Cook St G5-6, H4-5-6
Copeman Cres H10
Corbett Dr H4
Coronation Pky L10
Corrinhall St I5
Cottage Lane H8
Coughlin Rd D12
Coulter St D5, E5-6
Counsellor Terr L10, M10
Country Lane I11-12, J11
County Road 27 B14-15, C15-16-17
Couples Crt D3, E3
Courtney Cres J11
Cox Mill Rd I8-9-10
Craig Cres D5
Cranberry Lane E12
Crawford St D10-9, E10
Crestwood Dr I6
Creswick Crt F5
Crew Court B12
Crimson Ridge Rd J9
Crompton Dr F3
Cross St D9
Cumberland St F8, G8
Cumming Dr C11-12, D11-12
Cundles Rd E E4-5, F4, G4
Cundles Rd W B6,C6,D5-6,E5
Cunningham Dr C10, D10
Currie St F5
Curtiss Crt H5
Cuthbert St D10
Cynthia Crt F4-5, G4-5
Cypress Point St B12
Dalton St E6
D'Ambrosio Dr H10, I10
Danielle Cres I12
Daphne Cres E5, F4-5
Darcel Cres E3-4
Davidson St F5-6
Davies Cres G5
Dean Ave I10-11, J11
Deborah Way I10, J10
Debra Cres F9
Deerpark Dr E4
Delaney Cres B6
Diana Way L10, M10
Dickens Dr C6
Dixon Crt I9
Dock Rd I9, J8-9
Dodson Rd I9-10, J10
Donald St E7
Doris Dr G9
Douglas Dr H5, I5
Dove Cres D10, E10-11
Downing Cres C13
Downsview Dr H5-6
Doyle Dr C7
Drake Dr H11
Draper Cres H10
Drury Lane E6, F6
Duckworth St G3-4-5-6
Dufferin St E8
Dundonald St F6, G6
Dunlop St E F7, G6-7
Dunlop St W A10, B9-10, C8-9, D7-8, E7, F7
Dunn St D14
Dunnett Dr C11
Dunsmore Lane H4, I4
Duval Dr D3
Dyer Blvd D14
Dykstra Dr C13
Dyment Rd D8-9, E9
Eaglestone Lane C11, D11
East Gate H4
East St F6
Eccles St N E6-7
Eccles St S E7
Eden Dr D7
Edge Water Dr J9
Edgehill Dr B8, C7-8, D7
Edwards Dr J9-10, K9-10
Eileen Dr F10
Elizabeth St D9-10
Ellen St F7-8
Elliott Ave D8
Ellis Dr G11, H11
Elm St F5, G5
Elmbrook Dr E12
Emily Crt C6
Emms Dr D11-12-13
Empire Dr L10, M9-10
Engel Cres D7
Epsom Rd I4
Essa Rd C14-15-16, D12-13-14, E9-10-11-12, F8-9
Esther Dr I11, J11
Etherington Cres C5
Eugenia St F6, G6
Evergreen Crt E10-11
Fairview Rd E9-10, F10-11
Falcon Cres L10
Falling Brook Dr J9-10
Farmingdale Cres E4
Farmstead Cres C13, D12-13
Fawn Cres D11, E11
Felt Cres I9
Fenchurch Manor I13
Ferguson Dr C6
Ferndale Dr N B6-7,C7-8,D8-9
Ferndale Dr S D9-10-11, E11
Ferndale Industrial Dr C8
Ferris Lane E5, F4-5
Finlay Rd C4, D4
Finsbury St I13
Firman Dr H9
Fitzgerald Lane C7
Fitzroy Terr F9
Fleming Cres D5
Fletcher Dr H5
Florence Park Rd E10
Florence St E7
Ford St C5, D5
Forest Dale Dr E3, F3
Forestview Pl E5
Forestwood Lane I8
Forsyth Cres C4, D4
Foster Dr H9
Fox Run C7, D7
Frances St N E7
Frances St S E7
Franklin Trail C14-15
Frank's Way G9
Fraser Crt E9
Fred Grant St F7
Frederick St E8
Frost Trail C6, D6
Gable's Way H8-9
Gadwall Ave H11
Gallie Crt H3-4
Garden Dr G9
Garibaldi Dr C14
Garrett Cres I6
Garson St H9
Gaskin Crt D7
Geddes Cres C5-6
George St D8, E8
Georgian Dr G4, H3-4, I4
Gibbon Dr D7
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Glen Crt G9
Glen Oak Crt E3
Glenecho Dr H4,5
Glenhill Dr I13
Glenridge Rd F9
Glenwood Dr E5
Gloria St D5
Gloucester St I10
Golden Eagle Way F4
Golden Meadow Rd I9, J10-9
Golds Cres D13
Golfdale Rd D5, E5
Goodwin Dr J11, K11
Gordon Crt C5
Gore Dr C10, D10
Gosney Cres H9
Governor'S Dr G4
Gowan St F8
Grace Cres I10-11
Graihawk Dr C10
Grand Forest Dr J9-10
Grand Pl G9
Grant's Way C11
Granville St F9
Grasett Cres C5
Gray Lane I8
Greenfield Ave G9
Greenwich St C10, D10
Gregory Crt I11
Griffin Gate L10
Gross Dr B8, C8
Grouse Glen D11
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Grove St W E6
Gunn St F5-6, G5
Gwendolyn St I12
Hadden Cres E4, F4
Hailey Hollow C7
Hambly Crt G9
Hamilton Rd G10, H10
Hanmer St E D3-4, E3
Hanmer St W D4-5, D4
Harding Ave E5
Harrison Cres C5
Harrogate Crt I4
Hart Dr D7-8, E7
Harvie Rd D12, E11-12, F11
Harwood Dr H9
Hawkins Dr C10-11
Hawthorne Cres D11
Hazel Ave E4
Heath St E5
Heather St D4-5
Hemingway Cres C7
Hemlock Crt D12
Henry St D7, E7
Heritage Crt I11-12
Herrell Ave H10-9
Hersey Cres D13
Hewitt Pl I4
Hickling Trail H4-5, I4-5
Hickory Lane K10
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Highcroft Rd F9, G9
Highland Ave G6, H6
Highview Rd G5
Hilderbrand Crt D5
Hill Crt J9
Hillcrest Rd F9, G9
Hodgson Dr B6
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Holgate St F9, G9
Holly Meadow Rd C13
Hollyholme Farm Rd D13, E13
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Hook Crt D4
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Hopkins Rd I5
Horsfield Dr B6
Howard Cres G5
Hubbert Cres B13
Huitema Crt D13
Humber St B12
Hunter Rd E12
Huntington Dr B6
Huron St I5-6
Huronia Rd G9, H9-10-11-12-13-14, I14-15
Hurst Dr H8-9, I9, J9-10, K10
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Indian Arrow Rd H6, I6
Ingram Crt H9
Innisfil St E7-8, F8-9
Irene Dr I12
Irish Lane H5
Irwin Dr C5-6
Isobel St H5-6
Jackson St D12
Jacobs Terr E8-9, F8
Jagges Dr C8
James St D10
Jane Cres F9-10
Janice Dr C5
Janine St E4-5, F5
JC Massie Way G3-4
Jean St I8-9
Jeffrey St H5
Jessica Dr J11
Jewel House Lane K9
Jill's Crt H5
Joanne Crt F9
John St D8, E8, F8
Johnson St H6, I4-5-6
Jonathan Crt F5
Jones Dr H5
Joseph Cres J11
Kearsey Crt D6
Keats Dr C6-7, D7
Kell Pl J9-10
Kelly Pl G9
Kelsey Cres C11
Kemp St E11
Kempenfelt Dr G6-7, H6
Kempview Lane H8
Kenneth Ave J10
Kenny Cres D7
Kensington Trail K10
Kenwell Cres C13
Kestrel Crt F4
Kierland Rd C10
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Kingsridge Rd I9
Kinzie Lane I5
Kipling Pl C6, D6
Knicely Rd H9-10
Knupp Rd B8-9
Koda St C14
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Kozlov St C4, D4-5, E5
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Laidlaw Dr C4-5
Lake Cres E12
Lakeshore Dr F7-8, G8, H8
Lakeshore Mews F7
Lakeside Terr G3-4, H4
Lakeview Cres G6
Lakewoods Crt I11
Lamont Cres B11
Lampman Lane C6
Lancaster Crt M10
Lang Dr B6
Larkin Dr I4
Laurelwood Lane C11
Laurie Cres F5
Lawrence Rd F9
Lay St G5
Layton Cres D7
Leacock Dr C5-6-7, D7
Lee Cres C13
Leece Rd C4
Leggott Ave H10
Lennox Dr C8, D8
Leslie Ave D12
Letitia St C6-7, D6
Lewis Lane C7
Libra Rd F10
Lillian Cres C5, D5
Lindsay Crt E4
Lion's Gate Blvd F3-4, G3-4
Lisa Jane Crt E3, F3
Lismer Blvd H8
Lister Dr D12-13
Little Ave F10, G9-10, H9, I9
Little Lake Dr G3, H3
Live Eight Way G12
Livia Herman Way E3-4
Livingstone St E D4,E3-4,F3-4
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Lockhart Rd G14, H13-14, I13, J13, K12-13, L12, M12, N11-12
Logan Crt B14, C14
Loggers Run E10-11
Longman Dr C6
Lonsdale Pl H4-5
Looker Dr D11, E11
Loon Ave H10-11, I11
Lorena St E8
Lougheed Rd B14, C14
Lount St E6
Lovers Crt I8
Lowry Court B8
Loyalist Crt K9
Lucas Ave C13-14
Lyfytt Cres D4
Mabern St C14
MacAllister Crt C7
MacLaren Ave H9
MacMillan Cres H9, I9
Madelaine Dr J10-11
Magna Carta Rd M10
Mailey Lane C8
Maitland Dr H4-5, I5
Majesty Blvd L10-11
Mall St E5
Manor Gate I9
Maple Ave E6, F6-7
Maple Crown Terr L10, M10
Maplehurst Cres E4
Mapleton Ave B11-12, C12, D12, E12
Mapleview Dr E F12-13, G12, H12, I11-12, J11, K11, L10-11, M10, N10
Mapleview Dr W B14, C13-14, D13, E13, F13
Marcus St E9
Margaret Dr E3
Marion Cres F5, G5
Marjoy Ave F3
Marsellus Dr C13-14, D12-13
Marshall St F10-9
Marta Cres C10
Marwendy Dr G5
Mary Anne Dr I9-10
Mary St E6, F6-7
Masters Dr E3
Maw Crt B6
Max Ave J11
Mayes Crt G10, H10
Mayfair Dr E10
Mayor Lane I5
McAvoy Dr B9, C8-9
McCarthy Crt C7
McCausland Crt E11
McConkey Pl G9, H9
McCron Cres C6
McCuaig Crt H5
McCullough Crt H8
McCutcheon Crt B6
McDonald St F6
McDougall Dr D4-5
McIntyre Dr B11
McKay Rd E F15,G15,H15,I15
McKay Rd W C16-17, D16, E16, F15-16
McKenzie Cres C10, D10
McVeigh Dr B6, C6
McWatt St C11
Meadow Lane E11
Meadowland Ave F9, G9
Meadowlark Rd E4, F4
Megan Cres E12, F12
Melinda Cres G8-9
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Merrett Dr H9
Meyer Ave E3-4
Michael Cres E3-4
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Miller Dr B8-9, C9
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Moir Cres H10
Mollard Crt F10, G10
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Monique Cres E3
Montgomery Dr J10
Montserrand St E11
Moon Dr E9-10
Moore Pl C7
Morrow Rd E9-10
Morton Cres C4
Mountbatten Cres G6
Mountbatten Rd G6
Mowat Cres C6
Muir Dr C11
Muirfield Dr B12
Mulberry Crt I9
Mulcaster St F6-7
Mulholland St E7
Murray St F9
Nakiska Crt C13-14
Napier St G5, H5-6
Nathan Cres I11-12, J11
Neelands St C5
Nelson Sq E H6
Nelson Sq W H6
Nelson St H4-5-6
Neva Rd C11
Newberry Crt I11
Newton St F5-6
Nicholson Dr C10, D10
Nicklaus Dr D3, E3
Nicole Marie Ave E3-4
Nightingale Cres I10-11
Nina Rd I10
Noam Dr D5
Norman Dr M10
Norris Dr F13-14
North Lane H8
North St E6, F5-6
North Village Way F12, G12
Northpark Rd F5
Northview Cres A6, B6
Nugent Crt C5
Oak St F5-6
Oakley Park Sq F5
Oakridge Dr D5-6
Oakside Crt C12
Oates Lane C7
Oliver St I5
Olympic Gate C14
Orchard Dr G6
Oren Blvd D5
Oriole Crt E4
Orleans Ave M9
Orok Lane H5
Orsi Crt C11
Orwell Cres C7
O'Shaughnessy Cres E12
Osprey Ridge Rd F3-4
Ottaway Ave E5, F5
Owen St F5-6-7
Pacific Ave F4
Paddington Grove C14-15
Pae Dr H10, I10
Palling Lane H5
Palmer Dr D3, E3
Parisian Cres L10
Park Place Blvd G12
Park St E7
Parkdale Cres F5-6
Parker Crt D6
Parkside Dr E6-7
Parkway Pl E4
Partridge Rd E11
Pass Crt C10, D10-11
Patricia Ave E5
Patrick Dr I12
Patterson Pl D10, E10
Patterson Rd D9, E9-10-11
Patton Rd H10
Peacock Lane F9-10
Pearcey Cres D4
Peartree Crt G9
Peck St H9, I9
Peel St F5-6
Penetang St F6, G5-6
Penetanguishene Rd I4-5-6
Penton Dr C5
Pennell Dr C11
Penvill Trail B11-12
Pepin Crt L10
Pepler Pl D5
Peregrine Rd F4
Perry St E7
Peter St C10, D10
Pheasant Trail E10-11
Phillips St D9
Pickett Cres H10
Pine Dr J10, K10
Pinecliff Cres C12
Pinsent Crt D7
Pioneer Trail K9
Player Dr E3
Plunkett Crt J8-9
Poolton Lane H9, I9
Poplar Dr K10
Porcupine Cir D11, E11
Porritt St D10
Porter Cres H5
Powell Dr D6
Poyntz St F6-7
Pratt Rd G5
President's Dr G4
Primrose Cres C11
Prince Edward Pl L10
Prince George Cres K9-10, L9-10
Prince Of Wales Dr K9
Prince William Way L9-10-11
Princess Margaret Gate K9
Pringle Dr B8-9, C8-9
Priscilla's Pl I13
Puget St H5-6
Purbrook Crt B11
Purt Crt J9, K9
Quail Cres E10
Quance St E12
Quarry Ridge H4
Queen Elizabeth Pwy K9
Queen St F6, G5-6
Quinlan Rd I4
Radenhurst Cres I5
Ramblewood Dr E12
Raquel St I10-11
Rawson Ave H13
Raymond Cres J10-11
Rebecca Crt J11
Red Oak Dr B13-14, C13-14
Redfern Ave D13-14
Redpath Rd E5
Redwood Crt H4
Regalia Way L10
Regina Rd M10
Reid Dr E13-14
Residence Rd H4
Revelstoke Crt C14
Reynolds Lane B8, C8
Richler Cres D6-7
Ridgeway Ave G9
Ridwell St C8
Ring Rd N G4, H4
Ring Rd S G4
River Ridge Rd J9-10
Riverwood Crt D5
Robert St E7-8
Robin Crt F4
Robinson St G9
Rodney St G5-6
Roiston Dr F4
Rose St E5, F5, G4-5
Rosedale Pl E4-5
Rosenfeld Dr I4-5
Roslyn Rd G4-5
Ross St E6, F6
Round Leaf Crt C14
Royal Jubilee Dr L11
Royal Oak Dr I8-9
Royal Park Blvd J9
Royal Parkside Dr K9
Ruffet Dr B8, C8
Rundle Cres C14
Russell Hill Dr I10-11
Ryan Crt F3
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Sandalwood Crt J9
Sandringham Dr K10-9, L10
Sanford St E7-8, F8
Sarjeant Dr D8
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Sawmill Rd E10-11
Saxon Rd M10
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Seaforth St E8
Sedgewood Way D11
Seline Cres I12
Selkirk Cres B14, C14
Serena Lane J10-11
Seymour Cres C14
Shadowood Rd E11
Shaina Crt I11
Shakespeare Cres C7
Shalom Way I13
Shamrock Lane L10
Shannon St G5
Shanty Bay Rd H6, I6
Shaw Cres C7
Sheila Way F3
Shelley Lane D6
Sherwood Crt B6
Shirley Ave D6-7, E6
Shoreview Dr I6
Short St F8
Shortreed Crt D4
Silver Maple Cres C12
Silver Trail B11-12
Silvercreek Cres B11, C11
Simcoe St F7
Simmons Cres C4
Simpson St E4
Sinclair Crt C5
Snelgrove Cres C4, D4
Snowden Ave L10
Snowshoe Trail D10
Snowy Owl Cres F3-4
Sophia St E F6
Sophia St W E6-7, F6
South Village Way F12, G12
Southview Rd H8
Southwoods Cres E12
Sovereign's Gate K10, L9-10, M9
Spearin Crt G5
Speirs Rd D12
Spencer Dr L10
Sperling Dr F4
Springdale Dr E4-5
Springhome Rd F9, G9
Springwood Crt C12
Sproule Dr B8-9, C8
Spruce Cres J10, K10
Srigley St D12
St Bruno's Cir D11
St Paul's Cres K11
St Vincent Sq G6
St Vincent St E3, F3-4-5, G5-6
Stanley St D3-4, E4
Stapleton Pl D11-12
Steel St G5, H5, I5
Stephanie Lane J11
Stollar Blvd F3
Stoneybrook Cres C10, C11
Strabane Ave G5, H5
Strathmore Pl K10
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Summerset Dr C10-11, D10
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Sutton Dr I5
Sydenham Wells I4
Sydney Lane E12
Sylvia St G4-5
Tamarack Trail J9
Tara Rd F9
Tascona Crt F3-4
Taylor Dr I9, J9
Teal Pl H11
Teck Rd C11
Templeton Cres D7
Thackeray Cres D7
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The Queensway L9-10, M10
Theresa St F6, G6
Thicketwood Ave I13
Thomson St E6-7
Thorncrest Rd F9-10
Thrushwood Dr E11-12, F12
Tiffin St C9, D9, E8-9, F8
Timothy Lane C13
Todd Dr J9-10
Tollendal Mill Rd H9, I8-9
Tomlin Crt H9, I9
Toronto St E6-7, F7
Touchette Dr E12
Tower Cres F9, G9
Town Line A10, B10-11-12-13-14
Trask Dr C10, D10
Trevino Cir D3-4
Trillium Cres G9
Trotter Crt B12
Truman Rd G10, H10
Tudor Cres L9
Tunbridge Rd H4, I4
Turner Dr J9
Twiss Dr D13
Tyndale Rd I8-9
Tynhead Rd J8
Unicorn Lane M10
Valley Dr D6
Valley View Crt J9
Vancouver St H5-6
Vansittart Crt B6
Varden Ave H5-6
Varden Cres H6
Versailles Cres L9, M9
Vespra St D8, E7-8, F7
Veteran's Dr E11-12-13-14, F14-15-16
Veteran's Lane E11
Victoria St E7-8, F7
Victorway Dr C13
Villers St C8
Vine Cres D6
Vine St D6
Violet St C13-14
Virgilwood Cres E4
Waddington Cres C14
Wall Crt E5
Wallace Dr C6
Wallwin's Way H8-9
Walnut Cres K10
Ward Dr I10-11
Warner Rd E12
Warnica Rd I10, J10
Watson Dr E3
Weatherup Cres C5
Webb St H10
Weldon Cres H6
Weldon St H5-6
Welham Rd G10-11, H11-12-13
Wellington St E F5-6, G5
Wellington St W D7, E6-7, F6
Wells Cres D5
Wesley St D6
Wessenger Dr D13
West Gate G4, H4
Westminster Cir L9
Weymouth Rd I4
Whispering Pine Pl J9
White Cres E12
White Elm Rd C12
White Oaks Rd G8, H8
White Pine Pl G6
Whitehorn Cres C14
Whitty Lane H8
Wice Rd D12, D13
Widgeon St H11
Wilde Pl C6
Wildflower Crt C11
Wildwood Trail D10-11, E11
William Paddison Dr I4
William St F8-9
Willow Dr C12
Willow Fern Dr B11, C11
Wilson Crt G9-10
Winchester Terr M9-10
Windsor Cres K10
Wiseman Crt C6
Wismer Ave B6
Wood St E9
Woodcrest Rd G9
Woodfern Crt C13
Woodgrove Crt E4
Worsley St F6
Wright Dr C10-11
Wynes Rd H9
Yeates Ave H9
Yonge St G9, H9-10, I10, J10-11, K11-12





KEY PLAN

NTS

LEGEND

- SUBDIVISION BOUNDARY
- PHASE LIMIT
- EX. SANITARY MAINTENANCE HOLE
- EX. STORM MAINTENANCE HOLE
- EX. CATCHBASIN
- EX. DOUBLE CATCHBASIN
- EX. VALVE & BOX
- EX. HYDRANT & VALVE
- EX. BELL PEDESTAL
- EX. HYDRO POLE
- EX. SIGN
- EXISTING LIGHT STANDARD
- HYDRANT AND VALVE
- VALVE AND BOX
- BELL VAULT
- CABLE VAULT
- SANITARY MAINTENANCE HOLE
- STORM MAINTENANCE HOLE
- CATCH BASIN
- DOUBLE CATCH BASIN
- DROPPED CURB
- TRANSFORMER
- SWITCHGEAR
- PULLING CHAMBER
- LIGHT STANDARD
- LIGHT STANDARD PEDESTAL
- COMMUNITY MAILBOX
- TACTILE WARNING PLATES
- BOREHOLE WITH ID#
- SANITARY SERVICE
- WATER SERVICE AND VALVE
- EXISTING WATERMAIN
- PROPOSED WATERMAIN
- EXISTING SANITARY SEWER AND DIRECTION OF FLOW
- PROPOSED SANITARY SEWER AND DIRECTION OF FLOW
- EXISTING STORM SEWER AND DIRECTION OF FLOW
- PROPOSED STORM SEWER AND DIRECTION OF FLOW
- PHASE 1 REGISTERED PLAN LOT NUMBER
- DRAFTPLAN LOT NUMBER
- FRONT LOT DIMENSION (m)
- LOT TYPE (SINGLE)
- LOT TYPE (TOWNHOME)
- LOT TYPE (SEMI DETACHED)
- ENGINEERED FILL

NOTE: SHOP DRAWINGS TO BE PROVIDED FOR ALL SANITARY & STORM STRUCTURES. BUOYANCY CALCULATIONS TO BE PROVIDED FOR ALL STRUCTURES LOCATED BELOW THE SEASONALLY HIGH GROUNDWATER TABLE.

CAUTION: REFER TO DWGS PH1-1 TO PH1-5 FOR PHASE 1 REGISTRATION LOT AND BLOCK NUMBERS

REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES

REFER TO PHASE 1 REGISTRATION PHASING PLANS (DRAWINGS PH1–1 TO PH1–5) FOR THE LIMITS OF PHASE 1 REGISTRATION AND CONSTRUCTION. ALL PROPOSED WORKS OUTSIDE OF THE PHASE 1 REGISTRATION ARE SHOWN FOR INFORMATION PURPOSES ONLY AND WILL BE APPROVED AND CONSTRUCTED IN SUBSEQUENT REGISTRATIONS

BENCHMARK:

BENCHMARK NO: 001931U460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH–EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.0m SOUTH–EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH–EAST END OF BRIDGE, 19m BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.933

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
4.	PHASE 1 REGISTRATION	JUN 2021	JWI
3.	THIRD SUBMISSION – GG (9 MILE) LTD.	FEB 2021	JWI
2.	SECOND SUBMISSION	JUN 2020	JWI
1.	FIRST SUBMISSION	MAY 2019	JWI

LICENCED PROFESSIONAL ENGINEER J. W. INGRAM 100143779 21-06-30 PROVINCE OF ONTARIO

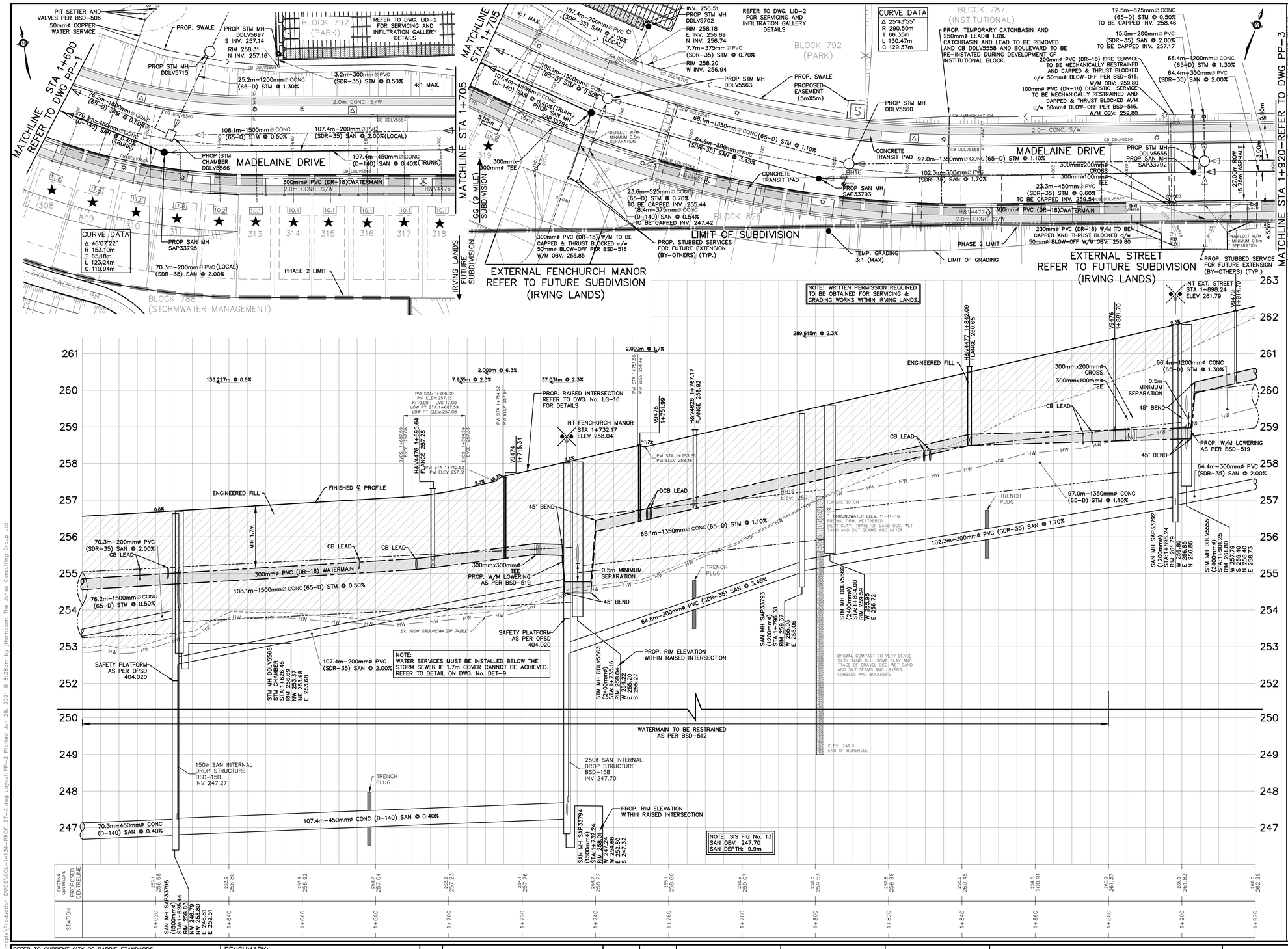
GG (9 MILE) LTD. SUBDIVISION
CITY OF BARRIE

PLAN AND PROFILE
MADELAINE DRIVE
STA 1+300 TO 1+600

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VS/JT	SCALE: H 1:500 V 1:50	DATE FEB 2019
DRAWN	VS/JT	PROJECT GOL–14134	DWG. Nº PP–1
CHECKED	JWI		

G:\Eng_30\GOL-14134_Lockmaple\Production DWGS\GOL-14134-PROF_ST-A.dwg Layout:PP-1 Plotted: Jun 30, 2021 @ 12:23pm by kronsom The Jones Consulting Group Ltd.



KEY PLAN

NTS

LEGEND

- SUBDIVISION BOUNDARY
- PHASE LIMIT
- EX. SANITARY MAINTENANCE HOLE
- EX. STORM MAINTENANCE HOLE
- EX. CATCHBASIN
- EX. DOUBLE CATCHBASIN
- EX. VALVE & BOX
- EX. HYDRANT & VALVE
- EX. BELL PEDESTAL
- EX. HYDRO POLE
- EX. SIGN
- EXISTING LIGHT STANDARD
- HYDRANT AND VALVE
- VALVE AND BOX
- BELL VAULT
- CABLE VAULT
- SANITARY MAINTENANCE HOLE
- STORM MAINTENANCE HOLE
- CATCH BASIN
- DOUBLE CATCH BASIN
- DROPPED CURB
- TRANSFORMER
- SWITCHGEAR
- PULLING CHAMBER
- LIGHT STANDARD
- LIGHT STANDARD PEDESTAL
- COMMUNITY MAILBOX
- TACTILE WARNING PLATES
- BOREHOLE WITH ID#
- SANITARY SERVICE
- WATER SERVICE AND VALVE
- EXISTING WATERMAIN
- PROPOSED WATERMAIN
- EXISTING SANITARY SEWER AND DIRECTION OF FLOW
- PROPOSED SANITARY SEWER AND DIRECTION OF FLOW
- EXISTING STORM SEWER AND DIRECTION OF FLOW
- PROPOSED STORM SEWER AND DIRECTION OF FLOW
- PHASE 1 REGISTERED PLAN LOT NUMBER
- DRAFTPLAN LOT NUMBER
- FRONT LOT DIMENSION (m)
- LOT TYPE (SINGLE)
- LOT TYPE (TOWNHOME)
- LOT TYPE (SEMI DETACHED)
- ENGINEERED FILL

NOTE: SHOP DRAWINGS TO BE PROVIDED FOR ALL SANITARY & STORM STRUCTURES. BUOYANCY CALCULATIONS TO BE PROVIDED FOR ALL STRUCTURES LOCATED BELOW THE

CAUTION: REFER TO DWGS PH-1-1 TO PH1-5 FOR PHASE 1 REGISTRATION LOT AND BLOCK NUMBERS

REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES

REFER TO PHASE 1 REGISTRATION PHASING PLANS (DRAWINGS PH1-1 TO PH1-5) FOR THE LIMITS OF PHASE 1 REGISTRATION AND CONSTRUCTION. ALL PROPOSED WORKS OUTSIDE OF THE PHASE 1 REGISTRATION ARE SHOWN FOR INFORMATION PURPOSES ONLY AND WILL BE APPROVED AND CONSTRUCTED IN SUBSEQUENT REGISTRATIONS

BENCHMARK:

BENCHMARK NO: 001193U4605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH–EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 8.2m SOUTH–EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BROK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28m WEST OF THE NORTH–EAST END OF BRIDGE. 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK No. 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.491189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
4.	PHASE 1 REGISTRATION	JUN 2021	JWI
3.	THIRD SUBMISSION – GG (9 MILE) LTD.	FEB 2021	JWI
2.	SECOND SUBMISSION	JUN 2020	JWI
1.	FIRST SUBMISSION	MAY 2019	JWI

LICENCED PROFESSIONAL ENGINEER J. W. INGRAM 100143779 21-06-30 PROVINCE OF ONTARIO

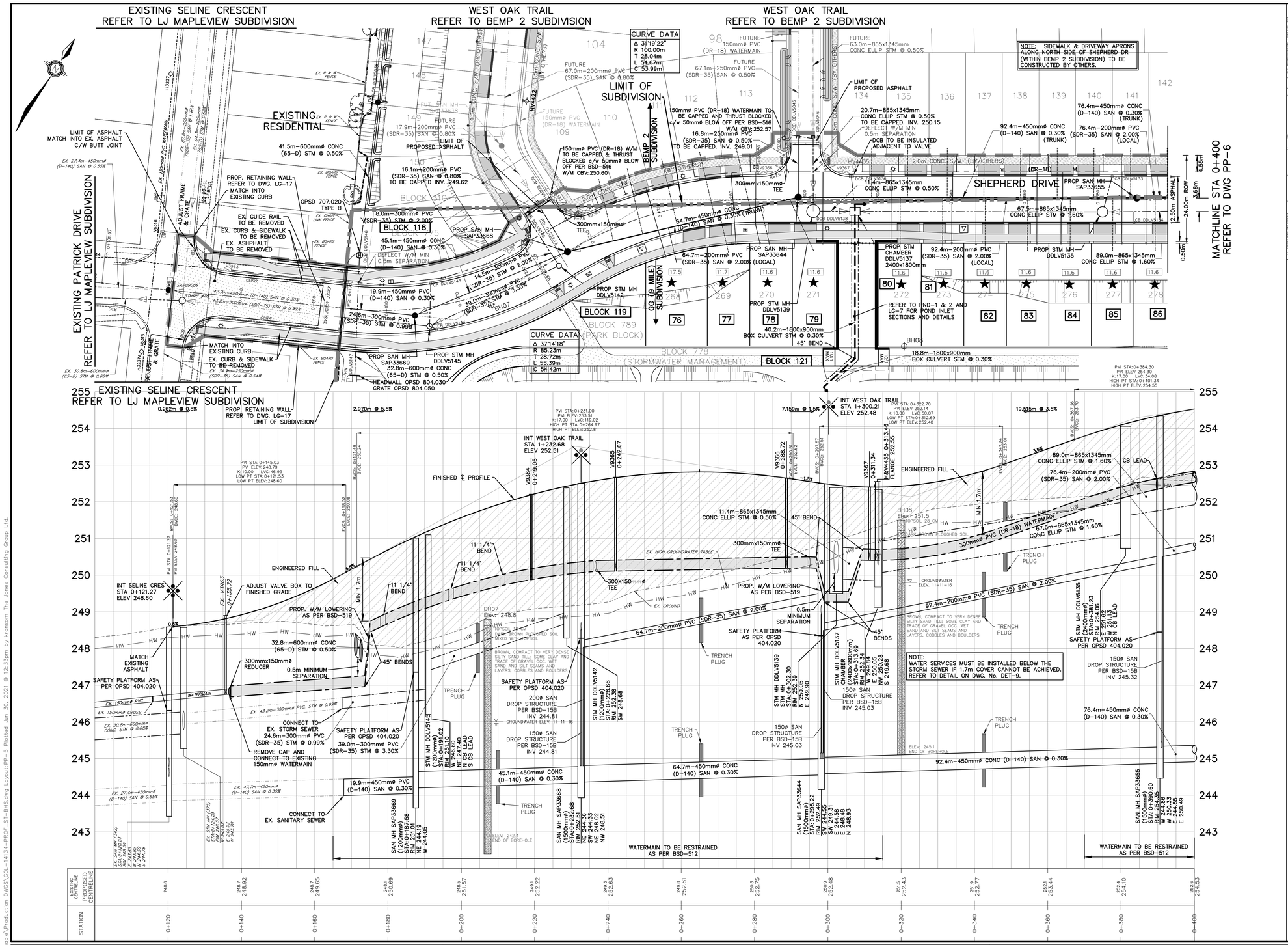
GG (9 MILE) LTD. SUBDIVISION
CITY OF BARRIE
PLAN AND PROFILE MADELAINE DRIVE STA 1+600 TO 1+920

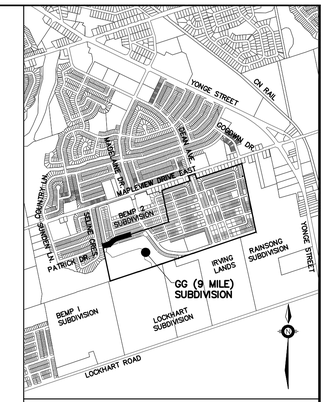
JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VS/JT	SCALE: H 1:500	V 1:50
DRAWN	VS/JT	PROJECT	DWG. Nº
CHECKED	JWI	GOL–14134	PP–2

DATE FEB 2019

G:\Eng_3D\GOL–14134_Lockempton\Production DWGS\GOL–14134–PROF_ST–A.dwg, Layout: PP–2, Plotted: Jun 29, 2021 @ 8:28am by: JThompson The Jones Consulting Group Ltd.





KEY PLAN
NTS

LEGEND

- SUBDIVISION BOUNDARY
- PHASE LIMIT
- EX. SANITARY MAINTENANCE HOLE
- EX. STORM MAINTENANCE HOLE
- EX. CATCHBASIN
- EX. DOUBLE CATCHBASIN
- EX. VALVE & BOX
- EX. HYDRANT & VALVE
- EX. BELL PEDESTAL
- EX. HYDRO POLE
- EX. SIGN
- EXISTING LIGHT STANDARD
- HYDRANT AND VALVE
- VALVE AND BOX
- BELL VAULT
- CABLE VAULT
- SANITARY MAINTENANCE HOLE
- STORM MAINTENANCE HOLE
- CATCH BASIN
- DOUBLE CATCH BASIN
- DROPPED CURB
- TRANSFORMER
- SWITCHGEAR
- PULLING CHAMBER
- LIGHT STANDARD
- LIGHT STANDARD PEDESTAL
- COMMUNITY MAILBOX
- TACTILE WARNING PLATES
- BOREHOLE WITH ID#
- SANITARY SERVICE
- WATER SERVICE AND VALVE
- EXISTING WATERMAIN
- PROPOSED WATERMAIN
- EXISTING SANITARY SEWER AND DIRECTION OF FLOW
- PROPOSED SANITARY SEWER AND DIRECTION OF FLOW
- EXISTING STORM SEWER AND DIRECTION OF FLOW
- PROPOSED STORM SEWER AND DIRECTION OF FLOW
- PHASE 1 REGISTERED PLAN LOT NUMBER
- DRAFTPLAN LOT NUMBER
- FRONT LOT DIMENSION (m)
- LOT TYPE (SINGLE)
- LOT TYPE (TOWNHOME)
- LOT TYPE (SEMI DETACHED)
- ENGINEERED FILL

NOTE: SHOP DRAWINGS TO BE PROVIDED FOR ALL SANITARY & STORM STRUCTURES. BUOYANCY CALCULATIONS TO BE PROVIDED FOR ALL STRUCTURES LOCATED BELOW THE

CAUTION: REFER TO DWGS PH-1-1 TO PH1-5 FOR PHASE 1 REGISTRATION LOT AND BLOCK NUMBERS

REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES

REFER TO PHASE 1 REGISTRATION PHASING PLANS (DRAWINGS PH1-1 TO PH1-5) FOR THE LIMITS OF PHASE 1 REGISTRATION AND CONSTRUCTION. ALL PROPOSED WORKS OUTSIDE OF THE PHASE 1 REGISTRATION ARE SHOWN FOR INFORMATION PURPOSES ONLY AND WILL BE APPROVED AND CONSTRUCTED IN SUBSEQUENT REGISTRATIONS.

BENCHMARK:

BENCHMARK NO: 0011931U460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD.

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET.

NO.	REVISIONS	DATE	INITIAL
4.	PHASE 1 REGISTRATION	JUN 2021	JWI
3.	THIRD SUBMISSION – GG (9 MILE) LTD.	FEB 2021	JWI
2.	SECOND SUBMISSION	JUN 2020	JWI
1.	FIRST SUBMISSION	MAY 2019	JWI

LICENCED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-06-30
PROVINCE OF ONTARIO

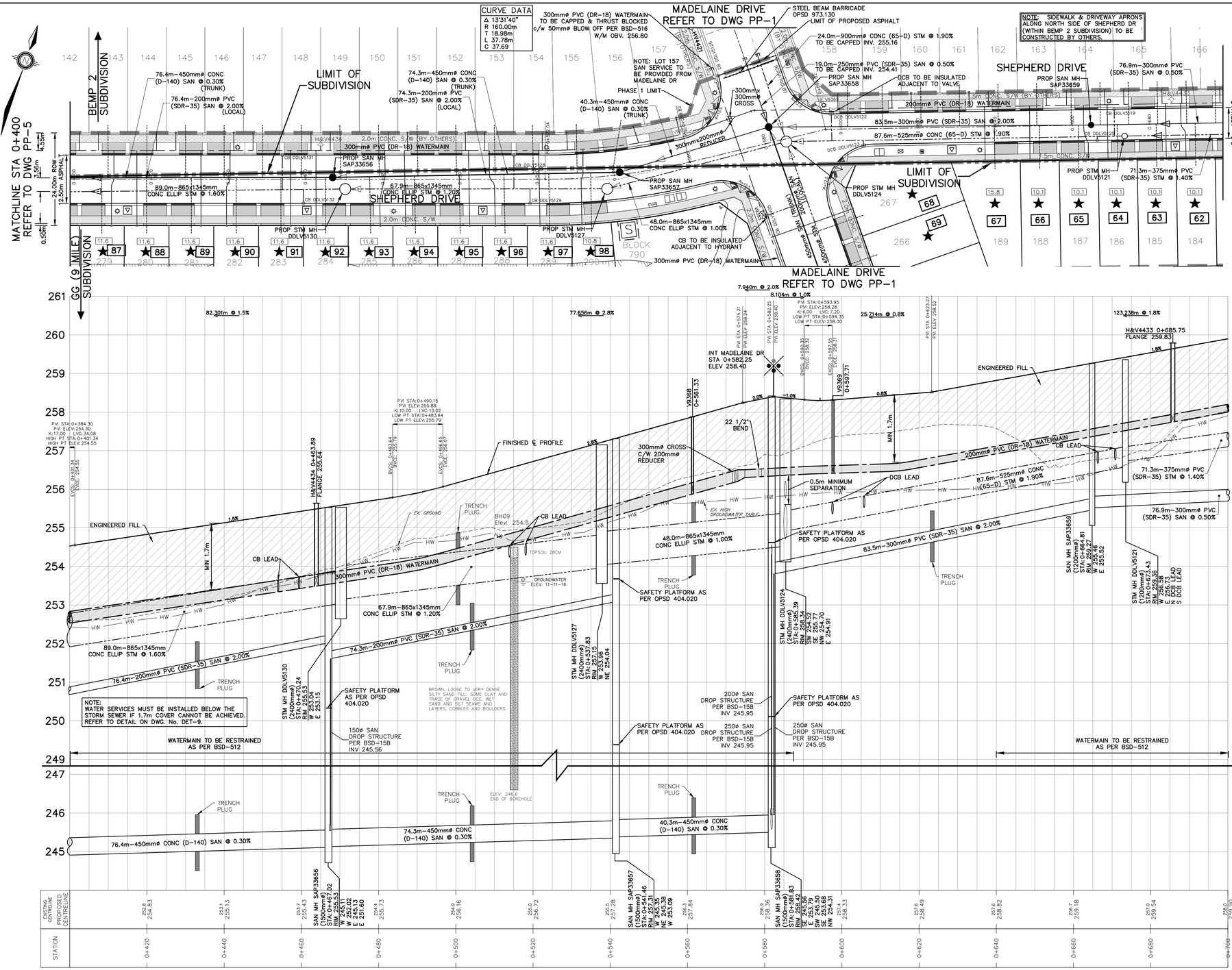
GG (9 MILE) LTD. SUBDIVISION
CITY OF BARRIE

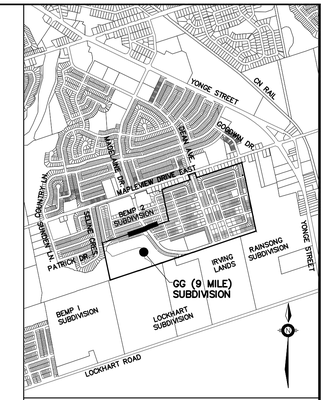
PLAN AND PROFILE
SHEPHERD DRIVE
STA 0+100 TO 0+400

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VS/JT	SCALE: H 1:500 V 1:50	DATE FEB 2019
DRAWN	VS/JT	PROJECT GOL-14134	DWG. Nº PP-5
CHECKED	JWI		

G:\Eng_3D\GOL-14134_Lorkemanie\Production DWGS\GOL-14134-PROF_ST-BHS.dwg Layout:PP-5 Plotted: Jun 30, 2021 @ 12:33pm by kronsom The Jones Consulting Group Ltd.





KEY PLAN
NTS

LEGEND

- SUBDIVISION BOUNDARY
- PHASE LIMIT
- EX. SANITARY MAINTENANCE HOLE
- EX. STORM MAINTENANCE HOLE
- EX. CATCHBASIN
- EX. DOUBLE CATCHBASIN
- EX. VALVE & BOX
- EX. HYDRANT & VALVE
- EX. BELL PEDESTAL
- EX. HYDRO POLE
- EX. SIGN
- EXISTING LIGHT STANDARD
- HYDRANT AND VALVE
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- BELL VAULT
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- BOREHOLE WITH ID#
- SANITARY SERVICE
- WATER SERVICE AND VALVE
- EXISTING WATERMAIN
- PROPOSED WATERMAIN
- EXISTING SANITARY SEWER AND DIRECTION OF FLOW
- PROPOSED SANITARY SEWER AND DIRECTION OF FLOW
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- PROPOSED STORM SEWER AND DIRECTION OF FLOW
- PHASE 1 REGISTERED PLAN LOT NUMBER
- DRAFTPLAN LOT NUMBER
- FRONT LOT DIMENSION (m)
- LOT TYPE (SINGLE)
- LOT TYPE (TOWNHOME)
- LOT TYPE (SEMI DETACHED)
- ENGINEERED FILL

NOTE: SHOP DRAWINGS TO BE PROVIDED FOR ALL SANITARY & STORM STRUCTURES. BUOYANCY CALCULATIONS TO BE PROVIDED FOR ALL STRUCTURES LOCATED BELOW THE SEASONALLY HIGH GROUNDWATER TABLE.

CAUTION: REFER TO DWGS PH-1-1 TO PH1-5 FOR PHASE 1 REGISTRATION LOT AND BLOCK NUMBERS

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REFER TO PHASE 1 REGISTRATION PHASING PLANS (DRAWINGS PH1-1 TO PH1-5) FOR THE LIMITS OF PHASE 1 REGISTRATION AND CONSTRUCTION. ALL PROPOSED WORKS OUTSIDE OF THE PHASE 1 REGISTRATION ARE SHOWN FOR INFORMATION PURPOSES ONLY AND WILL BE APPROVED AND CONSTRUCTED IN SUBSEQUENT REGISTRATIONS.

BENCHMARK:

BENCHMARK NO: 001193IU460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD.

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET.

NO.	REVISIONS	DATE	INITIAL
4.	PHASE 1 REGISTRATION	JUN 2021	JWI
3.	THIRD SUBMISSION – GG (9 MILE) LTD.	FEB 2021	JWI
2.	SECOND SUBMISSION	JUN 2020	JWI
1.	FIRST SUBMISSION	MAY 2019	JWI

LICENCED PROFESSIONAL ENGINEER J. W. INGRAM 100143779 21-06-30 PROVINCE OF ONTARIO

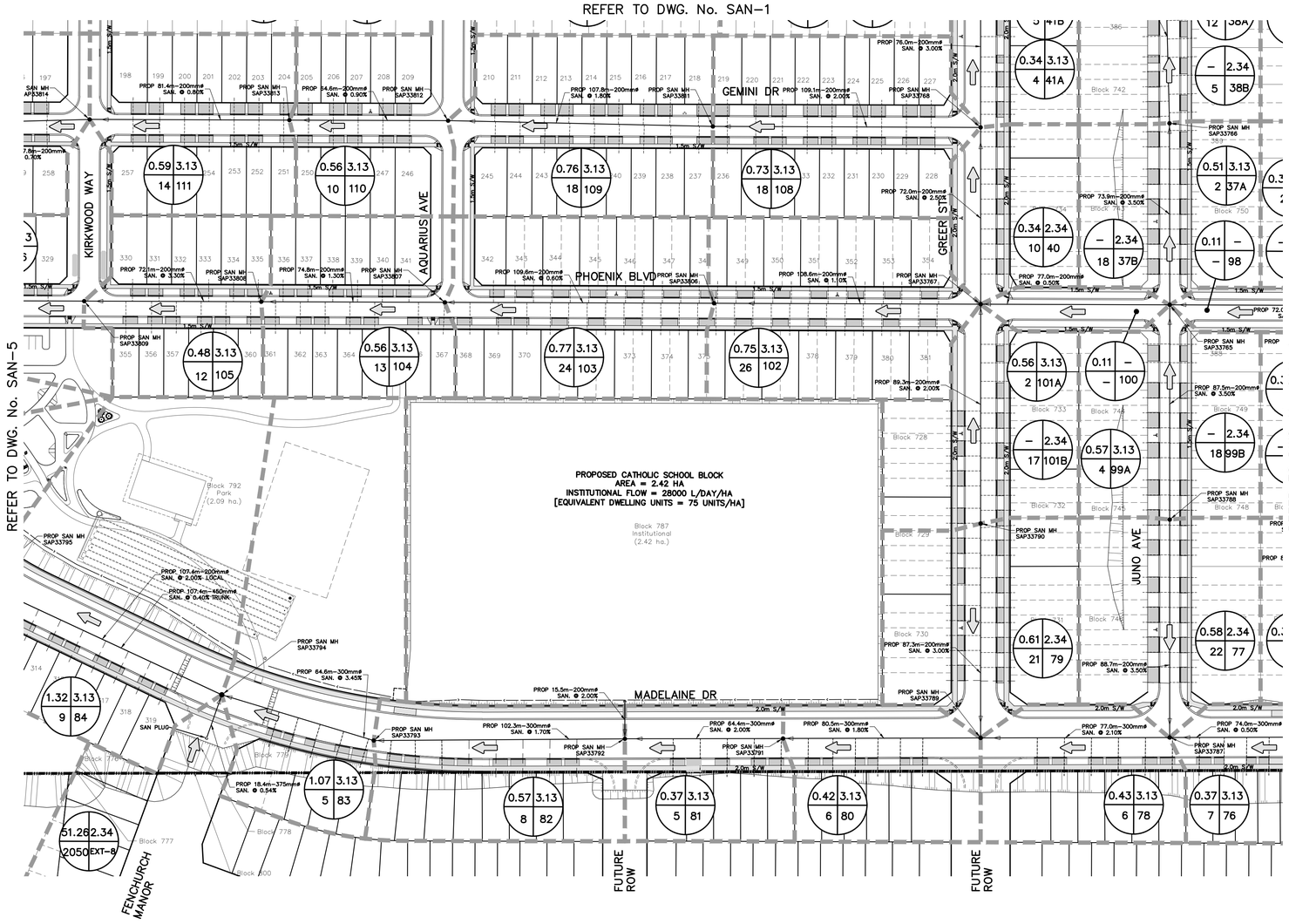
GG (9 MILE) LTD. SUBDIVISION
CITY OF BARRIE

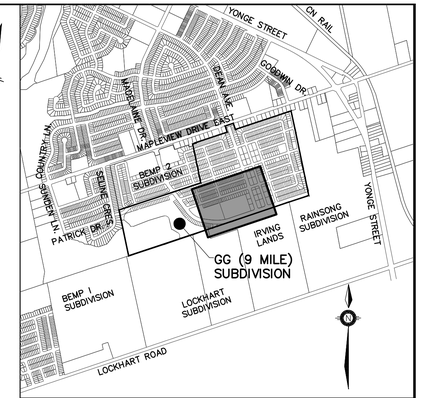
PLAN AND PROFILE
SHEPHERD DRIVE
STA 0+400 TO 0+700

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VS/JT	SCALE: H 1:500 V 1:50	DATE FEB 2019
DRAWN	VS/JT	PROJECT GOL-14134	DWG. Nº PP-6
CHECKED	JWI		

G:\Eng. 3D\GOL-14134 Lockhart\Production DWGS\GOL-14134-PROF_ST-BHS.dwg Layout:PP-6 Plotted Jun 30, 2021 @ 1:21pm by kronsom The Jones Consulting Group Ltd.





KEY PLAN
NTS

LEGEND

- MH89A — SANITARY MAINTENANCE HOLE
- PROP. SANITARY SEWER & DIRECTION OF FLOW
- SANITARY SERVICE
- SUB CATCHMENT BOUNDARY
- DIRECTION OF FLOW
- AREA (ha.) / PERSONS PER UNIT / No. OF UNITS / CATCHMENT AREA ID NUMBER (e.g. 0.42 | 3.13 | 10 | 13)

CAUTION: REFER TO DWGS PH2-1 TO PH2-6 FOR PHASE 2 REGISTRATION LOT AND BLOCK NUMBERS

REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES

REFER TO PHASE 2 REGISTRATION PHASING PLANS (DRAWINGS PH2–1 TO PH2–6) FOR THE LIMITS OF PHASE 2 REGISTRATION AND CONSTRUCTION. ALL PROPOSED WORKS OUTSIDE OF THE PHASE 2 REGISTRATION ARE SHOWN FOR INFORMATION PURPOSES ONLY AND WILL BE APPROVED AND CONSTRUCTED IN SUBSEQUENT REGISTRATIONS.

BENCHMARK:

BENCHMARK NO: 001931U460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH–EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH–EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH–EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD.

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET.

NO.	REVISIONS	DATE	INITIAL
5.	PHASE 2 REGISTRATION	AUG 2021	JWI
4.	PHASE 1 REGISTRATION	JUN 2021	JWI
3.	THIRD SUBMISSION – GG (9 MILE) LTD.	FEB 2021	JWI
2.	SECOND SUBMISSION	JUN 2020	JWI
1.	FIRST SUBMISSION	MAY 2019	JWI

PROFESSIONAL ENGINEER — J. W. INGRAM — 100143779 — 21-08-13 — PROVINCE OF ONTARIO

GG (9 MILE) LTD. SUBDIVISION
CITY OF BARRIE

INTERNAL SANITARY DRAINAGE AREA PLAN

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

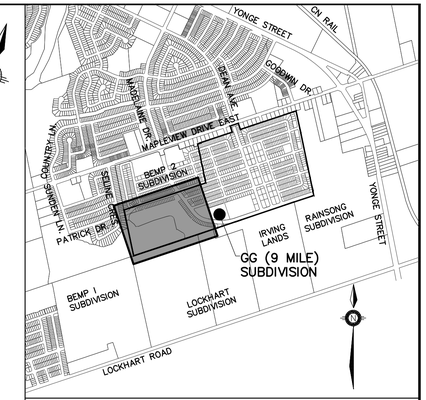
DESIGN	JWI	SCALE: 1:1000	DATE JAN 2019
DRAWN	VBS	PROJECT GOL–14134	DWG. Nº SAN–3
CHECKED	JWI		

G:\Eng. 3D\GOL–14134 Lockmanek\Production DWGS\GOL–14134–SANITARY DRAINAGE–R1.dwg Layout: SAN–3 Plotted Aug 14, 2021 @ 12:29pm by kranson The Jones Consulting Group Ltd.

REFER TO DWG. No. SAN–6

REFER TO DWG. No. SAN–3

SELINE CRESCENT
WEST OAK TRAIL
SHEPHERD DR
MADELAINE DR
KIRKWOOD WAY
GEMINI DR
PHOENIX BLVD
SWM FACILITY 4A
SWM FACILITY 4B
Block 788 Stormwater Management
Block 844 Environmental Protection (7.02 ha.)
Block 785 Park
Block 790 SWM
Block 799
Block 772
BEMP 2 SUBDIVISION
GG (9 MILE) SUBDIVISION



KEY PLAN
NTS

LEGEND

- MH89A — SANITARY MAINTENANCE HOLE
- PROP. SANITARY SEWER & DIRECTION OF FLOW
- SANITARY SERVICE
- SUB CATCHMENT BOUNDARY
- DIRECTION OF FLOW

AREA (ha.) — PERSONS PER UNIT
No. OF UNITS — CATCHMENT AREA ID NUMBER

CAUTION: REFER TO DWGS PH2-1 TO PH2-6 FOR PHASE 2 REGISTRATION LOT AND BLOCK NUMBERS

REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES

REFER TO PHASE 2 REGISTRATION PHASING PLANS (DRAWINGS PH2–1 TO PH2–6) FOR THE LIMITS OF PHASE 2 REGISTRATION AND CONSTRUCTION. ALL PROPOSED WORKS OUTSIDE OF THE PHASE 2 REGISTRATION ARE SHOWN FOR INFORMATION PURPOSES ONLY AND WILL BE APPROVED AND CONSTRUCTED IN SUBSEQUENT REGISTRATIONS.

BENCHMARK:

BENCHMARK NO: 010193U1460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH–EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH–EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 010198654S4 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.63m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH–EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 010198604O7 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD.

BENCHMARK NO: 010198604O4 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET.

NO.	REVISIONS	DATE	INITIAL
5.	PHASE 2 REGISTRATION	AUG 2021	JWI
4.	PHASE 1 REGISTRATION	JUN 2021	JWI
3.	THIRD SUBMISSION – GG (9 MILE) LTD.	FEB 2021	JWI
2.	SECOND SUBMISSION	JUN 2020	JWI
1.	FIRST SUBMISSION	MAY 2019	JWI

LICENCED PROFESSIONAL ENGINEER — J. W. INGRAM 100143779 — 21-08-13 — PROVINCE OF ONTARIO

GG (9 MILE) LTD. SUBDIVISION
CITY OF BARRIE

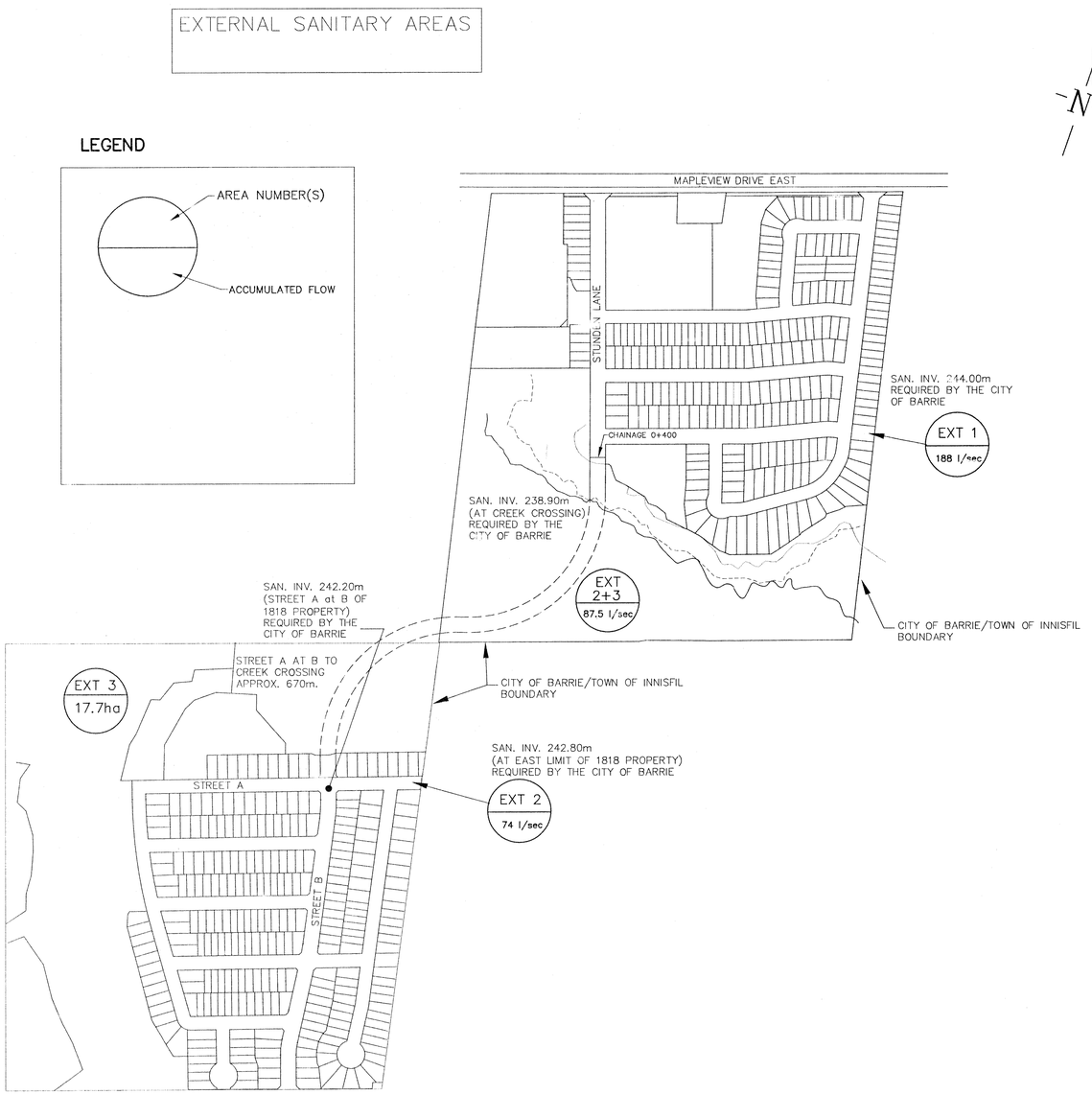
INTERNAL SANITARY DRAINAGE AREA PLAN

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

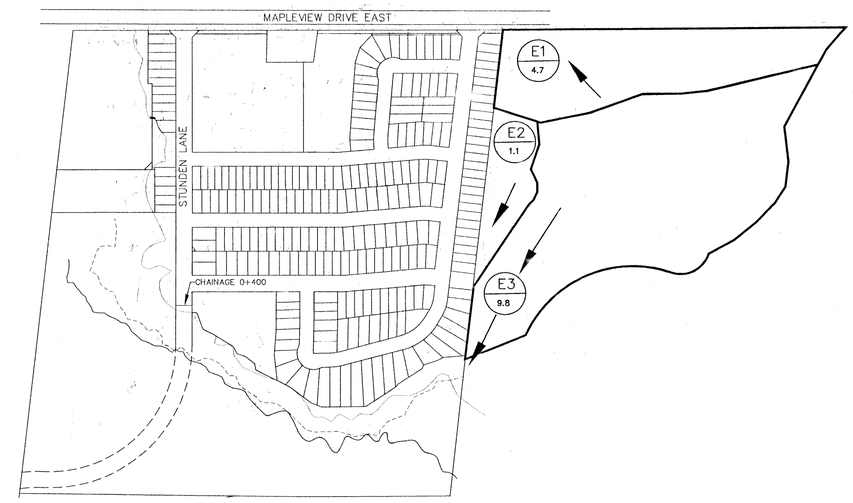
DESIGN	JWI	SCALE: 1:1000	DATE JAN 2019
DRAWN	VBS	PROJECT GOL–14134	DWG. Nº SAN–5
CHECKED	JWI		

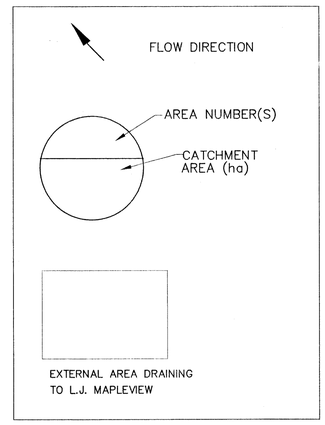
G:\Eng...3\YCOL–14134–Lockempie\Production DWGS\COL–14134–SANITARY DRAINAGE–R1.dwg, Layout: SAN–5, Plotted: Aug 14, 2021 @ 12:26pm, by kvenson, The Jones Consulting Group Ltd.

EXTERNAL SANITARY AREAS



EXTERNAL STORM AREAS





GENERAL NOTES:

1. SEE DRAWING 0441-GN FOR NOTES.
2. FLOWS AND REQUIRED INVERT ELEVATIONS FOR EXT 1 AND 2 PROVIDED TO CITY OF BARRIE STAFF, MARCH 21, 2003.

BENCH MARK V010865453
ELEVATION 245.946
CONCRETE BRIDGE CARRYING LOCKHART ROAD OVER LOVERS CREEK, 0.25km EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE WEST FACE OF COPING AT THE WEST END OF BRIDGE, 6.95m SOUTH OF CENTRELINE ROAD, 18cm BELOW TOP OF COPING.

CITY OF BARRIE
APPROVED

DATE . . . . . .

. . . . . .

DIRECTOR OF ENGINEERING

No.	REVISION	DATE	APPROVED
1.	AS CONSTRUCTED	OCT.07	B.R.

B. RICHARDSON
DATE

RICHARDSON ENGINEERING LTD
CONSULTING ENGINEERS
Unit D, 4 Cedar Pointe Drive
Barrie, Ontario L4N 5R7
Tel. (705) 728-0009
Fax (705) 727-7774
E-mail: engineer@richardson.on.ca

LJ MAPLEVIEW SUBDIVISION

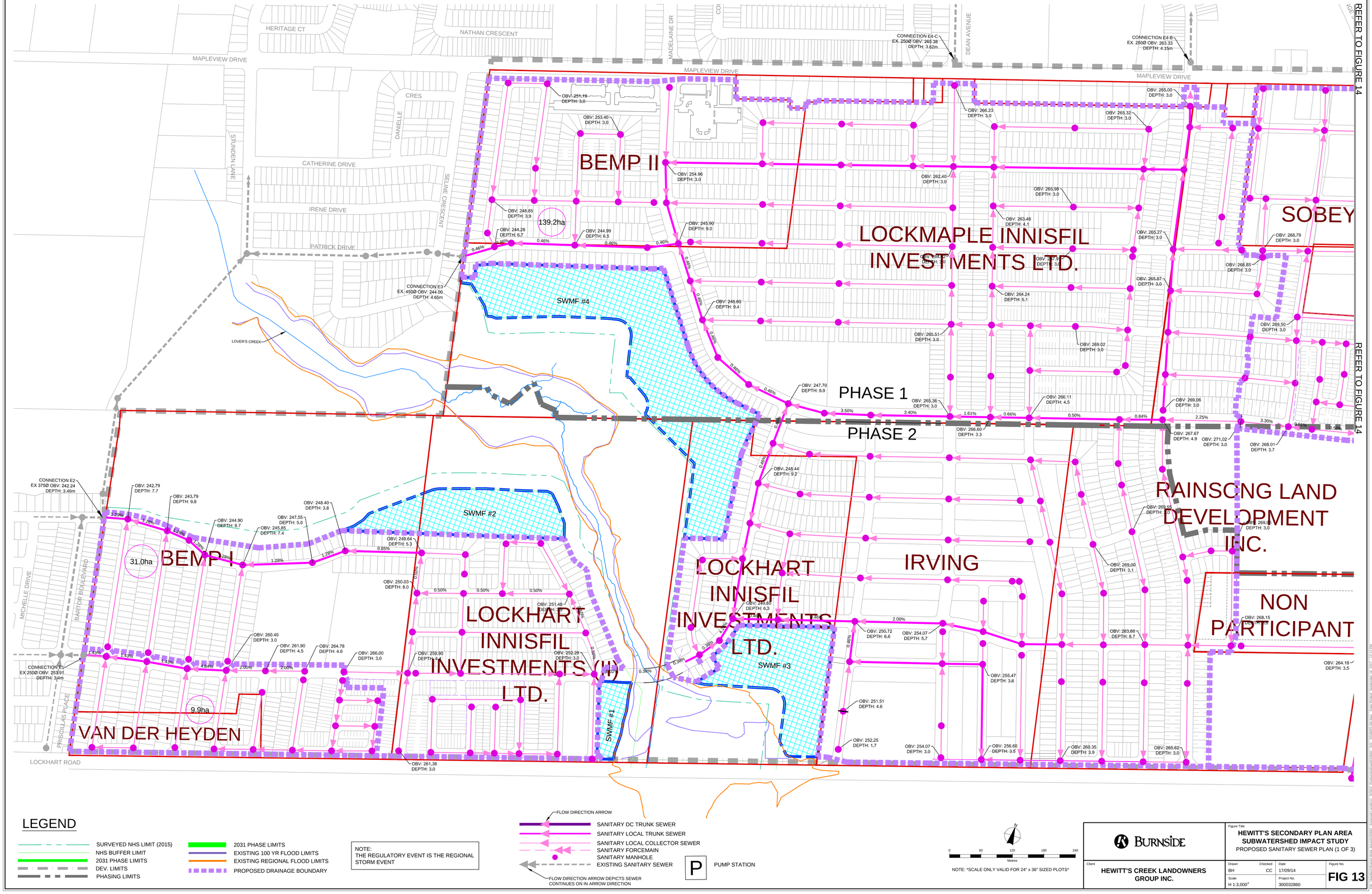
EXTERNAL CATCHMENT AREAS

CITY OF BARRIE
ENGINEERING DEPARTMENT

D12-314

DESIGN S.F.	SCALE HOR. 1:4000	VERT.	
DRAWN C.M.	REVIEWED B. RICHARDSON	DRAWING No.	9139-ECA
DATE MAR. 17, 2003	SHEET No. 07 OF 42		
MMA No. 43T-98507			

2003-072-023



LEGEND

- SURVEYED NHS LIMIT (2015)
- NHS BUFFER LIMIT
- 2031 PHASE LIMITS
- DEV. LIMITS
- PHASING LIMITS
- 2031 PHASE LIMITS
- EXISTING 100 YR FLOOD LIMITS
- EXISTING REGIONAL FLOOD LIMITS
- PROPOSED DRAINAGE BOUNDARY

NOTE:
THE REGULATORY EVENT IS THE REGIONAL STORM EVENT

- FLOW DIRECTION ARROW
- SANITARY DC TRUNK SEWER
- SANITARY LOCAL TRUNK SEWER
- SANITARY LOCAL COLLECTOR SEWER
- SANITARY FORCEMAIN
- SANITARY MANHOLE
- EXISTING SANITARY SEWER
- FLOW DIRECTION ARROW DEPICTS SEWER CONTINUES ON IN ARROW DIRECTION
- P PUMP STATION

0 60 120 180 240
Metres

NOTE: *SCALE ONLY VALID FOR 24" x 36" SIZED PLOTS*

BURNSIDE

Client: HEWITT'S CREEK LANDOWNERS GROUP INC.

Figure Title: **HEWITT'S SECONDARY PLAN AREA SUBWATERSHED IMPACT STUDY**
PROPOSED SANITARY SEWER PLAN (1 OF 3)

Drawn	Checked	Date
BH	CC	17/09/14

Scale: H 1:3,000*
Project No.: 300032860
Figure No.: **FIG 13**

N:\Active\Current Work\300032860 - Hewitt's Creek\13 - SWM\2 Preliminary\Drawings\300032860 - SWM - Sanitary.dwg, Sanitary Plan, September 24, 2014 1:51:13 PM

REFER TO DETAIL A ON FIGURE 15

REFER TO FIGURE 15

REFER TO FIGURE 13

REFER TO FIGURE 13

REFER TO FIGURE 15

CONNECTION E4-A
EX. 250Ø OBV: 260.04
DEPTH: 3.0

MAPLEVIEW DRIVE

SUN KING CRESCENT

SUCCESSION CRESCENT

CONNECTION E6
INV: 256.81

OBV: 260.64
DEPTH: 5.0

30.8ha

OBV: 261.09
DEPTH: 6.2

OBV: 261.71
DEPTH: 6.3

SOBEY'S

OBV: 268.79
DEPTH: 3.0

OBV: 268.85
DEPTH: 3.0

OBV: 262.14
DEPTH: 6.5

OBV: 269.50
DEPTH: 3.0

OBV: 262.80
DEPTH: 6.4

69.06
3.0

2.25%

3.30%

9.61%

0.50%

0.50%

7.67
4.9

OBV: 271.02
DEPTH: 3.0

OBV: 268.01
DEPTH: 3.7

OBV: 263.72
DEPTH: 6.3

OBV: 269.93
DEPTH: 3.0

NSCNG LAND
:VELOPMENT
INC.

NON
PARTICIPANT

OBV: 268.15
DEPTH: 3.0

OBV: 264.18
DEPTH: 3.5

OBV: 266.69
DEPTH: 3.0

1.92%

1.00%

NON PARTICIPANT

PHASE 2

GO TRANSIT RAIL

YONGE STREET

LOCKHART ROAD

OBV: 263.00
DEPTH: 4.0

OBV: 263.50
DEPTH: 3.4

OBV: 263.50

OBV: 248.56
DEPTH: 5.8

60.8ha

SWMF #7

SWMF #10

OBV: 241.75
DEPTH: 6.3

OBV: 242.03
DEPTH: 8.0

CRISDAWN
CONSTRUCTION
INC.

2303757
ONTARIO INC.

OBV: 249.81
DEPTH: 3.0

SWMF #6

OBV: 251.37
DEPTH: 3.0

OBV: 254.54
DEPTH: 3.9

OBV: 254.99
DEPTH: 6.4

OBV: 255.40
DEPTH: 7.4

PHASE 1
PHASE 3

PHASE 3

NON PARTICIPANT

OBV: 256.03
DEPTH: 6.3

OBV: 255.68
DEPTH: 7.0

SWMF #5

HEWITT'S CREEK TRIBUTARY

OBV: 260.50
DEPTH: 3.7

OBV: 256.72
DEPTH: 4.0

FILL REQUIRED TO
ACHIEVE SERVICING

OBV: 251.57
DEPTH: 7.5

OBV: 250.95
DEPTH: 7.3

HEWITT'S CREEK

85.7ha

OBV: 249.18
DEPTH: 3.0

CRISDAWN
CONSTRUCTION
INC.

NON
PARTICIPANT

CRISDAWN
CONSTRUCTION
INC.

SWMF #9

OBV: 260.13
DEPTH: 3.0

OBV: 247.36
DEPTH: 8.9

OBV: 248.59
DEPTH: 7.5

CREEK CROSSING DEPTH @ 2.5m

CREEK CROSSING DEPTH @ 2m

OBV: 249.99
DEPTH: 7.1

9.8ha

OBV: 248.95
DEPTH: 6.9

OBV: 250.25
DEPTH: 8.5

OBV: 251.35
DEPTH: 7.6

24.4ha

OBV: 253.83
DEPTH: 5.8

BULUT LANDS
1091369 ONTARIO INC

OBV: 260.39
DEPTH: 4.2

OBV: 253.30
DEPTH: 3.0

SWMF #11

OBV: 257.06
DEPTH: 3.8

OBV: 257.00
DEPTH: 3.2

OBV: 258.78
DEPTH: 3.0

NON
PARTICIPA

1.00%

1.00%

CRISDAWN
CONSTRUCTION
INC.

OBV: 253.87
DEPTH: 6.9

OBV: 255.87
DEPTH: 3.0

OBV: 255.71
DEPTH: 3.0

OBV: 251.23
DEPTH: 3.0

NON PARTI

LEGEND

- SURVEYED NHS LIMIT (2015)
- NHS BUFFER LIMIT
- 2031 PHASE LIMITS
- DEV. LIMITS
- PHASING LIMITS
- 2031 PHASE LIMITS
- PROPOSED 100 YR FLOOD LIMITS
- PROPOSED REGIONAL FLOOD LIMITS
- PROPOSED DRAINAGE BOUNDARY

DASHED FLOOD LINES ARE APPROXIMATE ONLY, BASED ON INTERPOLATED DATA BETWEEN FINGERLAKES AND 1091369 ONTARIO INC. DETAILED TOPOGRAPHIC DATA. FLOODLINES ARE SUBJECT TO CHANGE BASED ON ADDITION OF DETAILED TOPOGRAPHIC SURVEY.

- FLOW DIRECTION ARROW
- SANITARY DC TRUNK SEWER
- SANITARY LOCAL TRUNK SEWER
- SANITARY LOCAL COLLECTOR SEWER
- SANITARY FORCEMAIN
- SANITARY MANHOLE
- EXISTING SANITARY SEWER
- FLOW DIRECTION ARROW DEPICTS SEWER CONTINUES ON IN ARROW DIRECTION

P PUMP STATION

NOTE:
THE REGULATORY EVENT IS THE REGIONAL STORM EVENT

N

0 60 120 180 240
Metres

NOTE: *SCALE ONLY VALID FOR 24" x 36" SIZED PLOTS*

BURNSIDE

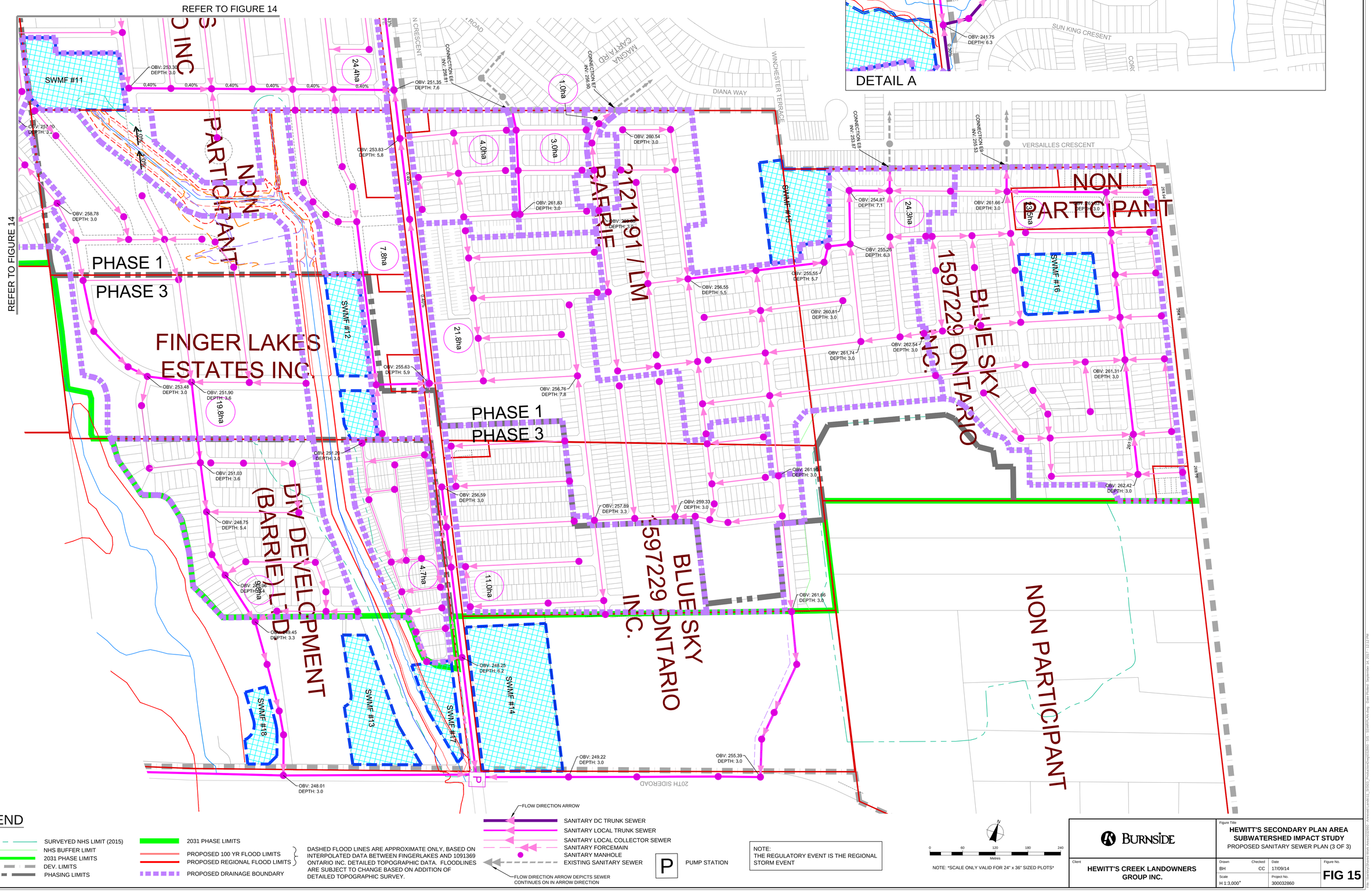
Client
HEWITT'S CREEK LANDOWNERS GROUP INC.

Figure Title
HEWITT'S SECONDARY PLAN AREA SUBWATERSHED IMPACT STUDY
PROPOSED SANITARY SEWER PLAN (2 OF 3)

Drawn	Checked	Date
BH	CC	17/09/14

Scale: H 1:3,000*
Project No.: 300032860
Figure No.: FIG 14

C:\Users\bhamilton\Documents\Projects\300032860_Hewitts Creek\Drawings\Sanitary\300032860_SAN_SSWMP_Fig14.dwg, Plotted: September 18, 2014 - 11:21 AM



BURNSIDE

Figure Title
HEWITT'S SECONDARY PLAN AREA SUBWATERSHED IMPACT STUDY
PROPOSED SANITARY SEWER PLAN (3 OF 3)

Client
HEWITT'S CREEK LANDOWNERS GROUP INC.

Drawn	Checked	Date
BH	CC	17/09/14
Scale		Project No.
H 1:3,000*		300032860

Figure No.
FIG 15

M:\Barrie\Projects\300032860 - Hewitts\Design\Drawings\Sanitary\Sanitary Figures\300032860_SAN_SCHEME_SANITARY_Figure 15 - Sanitary Plan (3 of 3).dwg Date Plotted: September 17, 2014 - 11:21 AM

SANITARY SEWER DESIGN - LOCAL SEWER

Development Details Basis

DESIGN SHEET 1 of 1
FILE NO GOL-14193
CONTRACT / PROJECT

n ≥ 0.013
M = 5/P^0.2 Babbit
M=1+[14/(4+P^0.5)] Harmon
Q_p = P*q*M/86.4
Q_i = I*A
$Q_{tot} = Q_p + Q_i$

Numbers in blue or text in red are equations
(Harmon or Babbitt peaking factor where; M ≥ 2), the greater of the two is used in the spreadsheet. Please refer to Section 3.3.1.1 of the Barrie Sanitary Design Guidelines for additional guidance on which peaking factor to use.

(Peak population flow where; q = 225 L/day/person; P = population in thousands)

225 litres/person/day

(Peak extraneous flow: I= 0.1L/s/ha over development area)
(Total peak flow as the sum of peak population flow and peak extraneous flow)

STREET	AREA	MAINTENANCE HOLE		DWELL UNITS	DWELL (ACC) UNITS	DENSITY P.P.U.	POP. (P)	POP. (ACC)	M PEAKING FACTOR BABBIT	M PEAKING FACTOR HARMON	Max PEAKING FACTOR	Q_p (l/s)	AREA (ha)	AREA (ACC) (ha)	Q_i (l/s)	Q_{tot} (l/s)	L (m)	D (mm)	S (%)	Qf FULL (l/s)	d/D[2]	d/D[3] >0.5 or >0.7	Velocity FULL (m/s)	Velocity Partial[1] (m/s)	Velocity[4] > 0.6 (m/s)
		FROM	TO																						
Fenchurch Manor	1	1A	2A	9	9	3.25	29	29	10.133	4.356	10.133	0.772	0.66	0.66	0.066	0.838	71.9	200	2.00	46.384	0.093	Ok	1.476	0.550	Check
Fenchurch Manor	2	2A	31A	7	16	3.25	23	52	9.032	4.311	9.032	1.223	0.38	1.04	0.104	1.327	48.8	200	1.80	44.004	0.119	Ok	1.401	0.610	Ok
Fenchurch Manor	3	31A	3A	7	23	3.25	23	75	8.399	4.276	8.399	1.635	0.40	1.44	0.144	1.779	48.3	200	1.40	38.808	0.145	Ok	1.235	0.609	Ok
Lower Street	EXT1		12A	280		3.25	910																		
Lower Street	EXT1		12A	408		2.57	1049						24.05	24.05											
Lower Street	5 (Trunk)	12A	13A		688			1959	4.371	3.593	4.371	22.294	0.79	24.84	2.484	24.778	110.0	375	0.50	123.977	0.303	Ok	1.123	0.850	Ok
Lower Street	5A (Local)	12A	13A	13		3.25	42																		
Lower Street	5B (Local)	12A	13A	5	18	2.57	13	55	8.928	4.306	8.928	1.281		0.79	0.079	1.360	110.0	200	1.70	42.764	0.122	Ok	1.361	0.606	Ok
Lower Street	6 (Trunk)	13A	14A		706			2014	4.347	3.583	4.347	22.794	0.50	25.34	2.534	25.328	75.8	375	0.50	123.977	0.306	Ok	1.123	0.855	Ok
Lower Street	6 (Local)	13A	14A	9	9	3.25	29	29	10.133	4.356	10.133	0.772		0.50	0.050	0.822	75.8	200	2.00	46.384	0.092	Ok	1.476	0.550	Check
Street I	7	15A	16A	16	16	3.25	52	52	9.032	4.311	9.032	1.223	0.68	0.68	0.068	1.291	104.4	200	1.80	44.004	0.117	Ok	1.401	0.610	Ok
Street I	8	16A	17A	5	21	3.25	16	68	8.554	4.285	8.554	1.520	0.28	0.96	0.096	1.616	62.5	200	1.50	40.170	0.136	Ok	1.279	0.611	Ok
Street H	9	17A	14A	11	32	3.25	36	104	7.863	4.239	7.863	2.129	0.47	1.43	0.143	2.272	87.0	200	1.10	34.399	0.174	Ok	1.095	0.606	Ok
Lower Street	10 (Trunk)	14A	3A		747			2147	4.291	3.562	4.291	23.993	0.35	27.12	2.712	26.705	75.4	375	0.50	123.977	0.315	Ok	1.123	0.868	Ok
Lower Street	10 (Local)	14A	3A	5	5	3.25	16	16	11.397	4.392	11.397	0.482		0.35	0.035	0.517	75.4	200	2.00	46.384	0.074	Ok	1.476	0.476	Check
Fenchurch Manor	11 (Trunk)	3A	4A		775			2238	4.256	3.547	4.256	24.803	0.51	29.07	2.907	27.710	81.5	375	0.50	123.977	0.321	Ok	1.123	0.876	Ok
Fenchurch Manor	11 (Local)	3A	4A	9	9	3.25	29	29	10.133	4.356	10.133	0.772		0.51	0.051	0.823	81.5	200	2.00	46.384	0.092	Ok	1.476	0.550	Check
Street G	4	9A	8A	10	10	3.25	33	33	9.922	4.349	9.922	0.840	0.62	0.62	0.062	0.902	74.3	200	2.00	46.384	0.096	Ok	1.476	0.566	Check
Street G	12	8A	10A	10	20	3.25	33	65	8.637	4.290	8.637	1.462	0.45	1.07	0.107	1.569	56.9	200	1.50	40.170	0.134	Ok	1.279	0.605	Ok
Street G	13	10A	11A	2	22	3.25	7	72	8.474	4.281	8.474	1.578	0.16	1.23	0.123	1.701	18.0	200	1.40	38.808	0.142	Ok	1.235	0.604	Ok
Street G	14	11A	4A	4	26	3.25	13	85	8.196	4.263	8.196	1.804	0.31	1.54	0.154	1.958	65.4	200	1.30	37.396	0.155	Ok	1.190	0.613	Ok
Fenchurch Manor	15 (Trunk)	4A	5A		810			2352	4.214	3.530	4.214	25.807	0.48	31.1	3.109	28.916	74.4	375	0.50	123.977	0.328	Ok	1.123	0.885	Ok
Fenchurch Manor	15 (Local)	4A	5A	8	8	3.25	26	26	10.375	4.364	10.375	0.702		0.48	0.048	0.750	74.4	200	2.00	46.384	0.088	Ok	1.476	0.534	Check
Street J	16	18A	19A	2	2	3.25	7	7	13.689	4.431	13.689	0.232	0.15	0.15	0.015	0.247	50.3	200	4.00	65.597	0.044	Ok	2.088	0.486	Check
Street J	17	19A	20A	16	18	3.25	52	59	8.821	4.300	8.821	1.344	0.65	0.80	0.080	1.424	103.5	200	2.70	53.893	0.111	Ok	1.715	0.722	Ok
Street H	18	17A	20A	11	11	3.25	36	36	9.735	4.342	9.735	0.906	0.49	0.49	0.049	0.955	77.5	200	2.00	46.384	0.099	Ok	1.476	0.577	Check
Street J	19	20A	5A	6	35	3.25	20	114	7.723	4.228	7.723	2.288	0.33	1.62	0.162	2.450	78.5	200	1.10	34.399	0.180	Ok	1.095	0.619	Ok
Fenchurch Manor	20 (Trunk)	5A	6A		853			2491	4.166	3.510	4.166	27.027	0.41	33.12	3.312	30.339	76.0	375	0.50	123.977	0.336	Ok	1.123	0.898	Ok
Fenchurch Manor	20 (Local)	5A	6A	6	6	3.25	20	20	10.989	4.382	10.989	0.558		0.41	0.041	0.599	76.0	200	2.00	46.384	0.079	Ok	1.476	0.501	Check
Street K	21	4A	22A	18	18	3.25	59	59	8.821	4.300	8.821	1.344	0.78	0.78	0.078	1.422	93.6	200	2.20	48.648	0.117	Ok	1.549	0.675	Ok
Street K	22	22A	6A	9	27	3.25	29	88	8.134	4.259	8.134	1.859	0.44	1.22	0.122	1.981	84.3	200	3.20	58.672	0.125	Ok	1.868	0.849	Ok
Fenchurch Manor	23 (Trunk)	6A	7A		886			2599	4.131	3.495	4.131	27.954	0.76	35.10	3.510	31.464	86.7	375	0.50	123.977	0.343	Ok	1.123	0.905	Ok
Fenchurch Manor	23 (Local)	6A	7A	13	13	3.25	42	42	9.415	4.329	9.415	1.036		0.76	0.076	1.112	86.7	200	2.00	46.384	0.106	Ok	1.476	0.603	Ok
Street D	EXT.2			24		3.25	78						1.29												
Street D	EXT.3			74		3.25	241						3.43												
Street D	EXT.4			50		3.25	163						2.30												
Street E	EXT.5			87		3.25	283						3.71												
Street E	24	23A	24A	17	252	3.25	55	819	5.204	3.854	5.204	11.099	0.70	11.43	1.143	12.242	110.0	200	0.60	25.406	0.489	Ok	0.809	0.781	Ok
Street E	25	24A	7A	9	261	3.25	29	848	5.167	3.845	5.167	11.415	0.46	11.89	1.189	12.604	84.9	200	1.70	42.764	0.371	Ok	1.361	1.151	Ok
Fenchurch Manor	26 (Trunk)	7A	SAP33794		1160			3489	3.894	3.386	3.894	35.385	0.28	47.27	4.727	40.112	77.4	375	0.50	123.977	0.391	Ok	1.123	0.967	Ok
Fenchurch Manor	26 (Local)	7A	SAP33794	3	3	3.25	10	10	12.623	4.416	12.623	0.321		0.28	0.028	0.349	77.4	200	3.00	56.809	0.056	Ok	1.808	0.482	Check

Appendix D

Water Servicing Information

Water Infrastructure Map

January 2021

1:20,000
1 cm = 200 meters

0 0.5 1 2 km

The City of Barrie does not warrant the accuracy, completeness, content, or currency of the information provided.
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For information please contact Service Barrie at 705-726-4242 or ServiceBarrie@barrie.ca

Updated: 1/18/2021

D06-02

N

Little Lake

Kempenfelt Bay

Township Of Springwater

Township Of Oro-Medonte

Town Of Innisfil

Township Of Essa

Bear Creek

Willow Creek

Sophia Creek

Hewitt's Creek

Oro Station

Lockhart Rd

Dunlop St W

Salem Rd

McKay Rd E

McKay Rd W

County Road 27

Veteran's Dr

Lover's Creek

Concert Way

Wellington St E

Wellington St W

Dunsmore Lane

Duval Dr

Dyer Blvd

Dykstra Dr

Dyment Rd

Eaglestone Lane

East Gate

East St

Eccles St N

Eccles St S

Eden Dr

Edge Water Dr

Edgehill Dr

Edwards Dr

Eileen Dr

Elizabeth St

Ellen St

Elliott Ave

Ellis Dr

Elm St

Elmbrook Dr

Emily Crt

Emms Dr

Empire Dr

Engel Cres

Epsom Rd

Essa Rd

Esther Dr

Etherington Cres

Eugenia St

Evergreen Crt

Fairview Rd

Falcon Cres

Falling Brook Dr

Farmingdale Cres

Farmstead Cres

Fawn Cres

Felt Cres

Fenchurch Manor

Ferguson Dr

Ferndale Dr N

Ferndale Dr S

Ferndale Industrial Dr

Ferris Lane

Finlay Rd

Finsbury St

Firman Dr

Fitzgerald Lane

Fitzroy Terr

Fleming Cres

Fletcher Dr

Florence Park Rd

Florence St

Ford St

Forest Dale Dr

Forestview Pl

Forestwood Lane

Forsyth Cres

Foster Dr

Fox Run Crt

Frances St N

Frances St S

Franklin Trail

Frank's Way

Fraser Crt

Fred Grant St

Frederick St

Frost Trail

Gable's Way

Gadwall Ave

Gallie Crt

Garden Dr

Garibaldi Dr

Garrett Cres

Garson St

Gaskin Crt

Geddes Cres

George St

Georgian Dr

Gibbon Dr

Ginger Dr

Girdwood Dr

Glen Crt

Glen Oak Crt

Glenecho Dr

Glenhill Dr

Glenridge Rd

Glenwood Dr

Gloria St

Gloucester St

Golden Eagle Way

Golden Meadow Rd

Golds Cres

Golfdale Rd

Goodwin Dr

Gordon Crt

Gore Dr

Gosney Cres

Governor'S Dr

Gowan St

Grace Cres

Graihawk Dr

Grand Forest Dr

Grand Pl

Grant's Way

Granville St

Grasett Cres

Gray Lane

Greenfield Ave

Greenwich St

Gregory Crt

Griffin Gate

Gross Dr

Grouse Glen Dr

Grove St E

Grove St W

Gunn St

Gwendolyn St

Hadden Cres

Hailey Hollow

Hambly Crt

Hamilton Rd

Hanmer St E

Hanmer St W

Harding Ave

Harrison Cres

Harrogate Crt

Hart Dr

Harvie Rd

Harwood Dr

Hawkins Dr

Hawthorne Cres

Hazel Ave

Heath St

Heather St

Hemingway Cres

Hemlock Crt

Henry St

Heritage Crt

Herrell Ave

Hersey Cres

Hewitt Pl

Hickling Trail

Hickory Lane

Higgin Crt

High St

Highcroft Rd

Highland Ave

Highview Rd

Hilderbrand Crt

Hill Crt

Hillcrest Rd

Hodgson Dr

Hogan Crt

Holgate St

Holly Meadow Rd

Hollyholme Farm Rd

Honey Cres

Hook Crt

Hooper Rd

Hopkins Rd

Horsfield Dr

Howard Cres

Hubbert Cres

Huitema Crt

Humber St

Hunter Rd

Huntington Dr

Huron St

Huronia Rd

Hurst Dr

Imperial Crown Lane

Indian Arrow Rd

Ingram Crt

Innisfil St

Irene Dr

Irish Lane

Irwin Dr

Isobel St

Jackson St

Jacobs Terr

Jagges Dr

James St

Jane Cres

Janice Dr

Janine St

JC Massie Way

Jean St

Jeffrey St

Jessica Dr

Jewel House Lane

Jill's Crt

Joanne Crt

John St

Johnson St

Jonathan Crt

Jones Dr

Joseph Cres

Kearsey Crt

Keats Dr

Kell Pl

Kelly Pl

Kelsey Cres

Kemp St

Kempenfelt Dr

Kempview Lane

Kenneth Ave

Kenny Cres

Kensington Trail

Kenwell Cres

Kestrel Crt

Kierland Rd

King St

Kingsridge Rd

Kinzie Lane

Kipling Pl

Knicely Rd

Knupp Rd

Koda St

Kodiak Terr

Kozlov St

Kraus Rd

Laidlaw Dr

Lake Cres

Lakeshore Dr

Lakeshore Mews

Lakeside Terr

Lakeview Cres

Lakewoods Crt

Lamont Cres

Lampman Lane

Lancaster Crt

Lang Dr

Larkin Dr

Laurelwood Lane

Laurie Cres

Lawrence Rd

Lay St

Layton Cres

Leacock Dr

Lee Cres

Leece Rd

Leggott Ave

Lennox Dr

Leslie Ave

Letitia St

Lewis Lane

Libra Rd

Lillian Cres

Lindsay Crt

Lion's Gate Blvd

Lisa Jane Crt

Lismer Blvd

Lister Dr

Little Ave

Little Lake Dr

Live Eight Way

Livia Herman Way

Livingstone St E

Livingstone St W

Lockhart Rd

Logan Crt

Loggers Run

Longman Dr

Lonsdale Pl

Looker Dr

Loon Ave

Lorena St

Lougheed Rd

Lount St

Lovers Crt

Lowry Court

Loyalist Crt

Lucas Ave

Lyfytt Cres

Mabern St

MacAllister Crt

MacLaren Ave

MacMillan Cres

Madelaine Dr

Magna Carta Rd

Mailey Lane

Maitland Dr

Majesty Blvd

Mall St

Manor Gate

Maple Ave

Maple Crown Terr

Maplehurst Cres

Mapleton Ave

Mapleview Dr E

Mapleview Dr W

Marcus St

Margaret Dr

Marion Cres

Marjoy Ave

Marsellus Dr

Marshall St

Marta Cres

Marwendy Dr

Mary Anne Dr

Mary St

Masters Dr

Maw Crt

Max Ave

Mayes Crt

Mayfair Dr

Mayor Lane

McAvoy Dr

McCarthy Crt

McCausland Crt

McConkey Pl

McCron Cres

McCuaig Crt

McCullough Crt

McCutcheon Crt

McDonald St

McDougall Dr

McIntyre Dr

McKay Rd E

McKay Rd W

McKenzie Cres

McVeigh Dr

McWatt St

Meadow Lane

Meadowland Ave

Meadowlark Rd

Megan Cres

Melinda Cres

Melrose Ave

Merganser Crt

Merrett Dr

Meyer Ave

Michael Cres

Michelle Dr

Milburn St

Miller Dr

Mills Rd

Milne Crt

Minet's Point Rd

Moir Cres

Mollard Crt

Monarchy St

Monique Cres

Montgomery Dr

Montserrand St

Moon Dr

Moore Pl

Morrow Rd

Morton Cres

Mountbatten Cres

Mountbatten Rd

Mowat Cres

Muir Dr

Muirfield Dr

Mulberry Crt

Mulcaster St

Mulholland St

Murray St

Nakiska Crt

Napier St

Nathan Cres

Neelands St

Nelson Sq E

Nelson Sq W

Nelson St

Neva Rd

Newberry Crt

Newton St

Nicholson Dr

Nicklaus Dr

Nicole Marie Ave

Nightingale Cres

Nina Rd

Noam Dr

Norman Dr

Norris Dr

North Lane

North St

North Village Way

Northpark Rd

Northview Cres

Nugent Crt

Oak St

Oakley Park Sq

Oakridge Dr

Oakside Crt

Oates Lane

Oliver St

Olympic Gate

Orchard Dr

Oren Blvd

Oriole Crt

Orleans Ave

Orok Lane

Orsi Crt

Orwell Cres

O'Shaughnessy Cres

Osprey Ridge Rd

Ottaway Ave

Owen St

Pacific Ave

Paddington Grove

Pae Dr

Palling Lane

Palmer Dr

Parisian Cres

Park Place Blvd

Park St

Parkdale Cres

Parker Crt

Parkside Dr

Parkway Pl

Partridge Rd

Pass Crt

Patricia Ave

Patrick Dr

Patterson Pl

Patterson Rd

Patton Rd

Peacock Lane

Pearcey Cres

Peartree Crt

Peck St

Peel St

Penetang St

Penetanguishene Rd

Penton Dr

Pennell Dr

Penvill Trail

Pepin Crt

Pepler Pl

Peregrine Rd

Perry St

Peter St

Pheasant Trail

Phillips St

Pickett Cres

Pine Dr

Pinecliff Cres

Pinsent Crt

Pioneer Trail

Player Dr

Plunkett Crt

Poolton Lane

Poplar Dr

Porcupine Cir

Porritt St

Porter Cres

Powell Dr

Poyntz St

Pratt Rd

President's Dr

Primrose Cres

Prince Edward Pl

Prince George Cres

Prince Of Wales Dr

Prince William Way

Princess Margaret Gate

Pringle Dr

Priscilla's Pl

Puget St

Purbrook Crt

Purt Crt

Quail Cres

Quance St

Quarry Ridge Hwy

Queen Elizabeth Pwy

Queen St

Quinlan Rd

Radenhurst Cres

Ramblewood Dr

Raquel St

Rawson Ave

Raymond Cres

Rebecca Crt

Red Oak Dr

Redfern Ave

Redpath Rd

Redwood Crt

Regalia Way

Regina Rd

Reid Dr

Residence Rd

Revelstoke Crt

Reynolds Lane

Richler Cres

Ridgeway Ave

Ridwell St

Ring Rd N

Ring Rd S

River Ridge Rd

Riverwood Crt

Robert St

Robin Crt

Robinson St

Rodney St

Rolston Dr

Rose St

Rosedale Pl

Rosenfeld Dr

Roslyn Rd

Ross St

Round Leaf Crt

Royal Jubilee Dr

Royal Oak Dr

Royal Park Blvd

Royal Parkside Dr

Ruffet Dr

Rundle Cres

Russell Hill Dr

Ryan Crt

Salem Rd

Saltbox Crt

Sampson St

Sandalwood Crt

Sandringham Dr

Sanford St

Sarjeant Dr

Saunders Rd

Sawmill Rd

Saxon Rd

Scott Cres

Seaforth St

Sedgewood Way

Seline Cres

Selkirk Cres

Serena Lane

Seymour Cres

Shadowood Rd

Shaina Crt

Shakespeare Cres

Shalom Way

Shamrock Lane

Shannon St

Shanty Bay Rd

Shaw Cres

Sheila Way

Shelley Lane

Sherwood Crt

Shirley Ave

Shoreview Dr

Short St

Shortreed Crt

Silver Maple Cres

Silver Trail

Silvercreek Cres

Simcoe St

Simmons Cres

Simpson St

Sinclair Crt

Snelgrove Cres

Snowden Ave

Snowshoe Trail

Snowy Owl Cres

Sophia St E

Sophia St W

South Village Way

Southview Rd

Southwoods Cres

Sovereign's Gate

Spearin Crt

Speirs Rd

Spencer Dr

Sperling Dr

Springdale Dr

Springhome Rd

Springwood Crt

Sproule Dr

Spruce Cres

Srigley St

St Bruno's Cir

St Paul's Cres

St Vincent Sq

St Vincent St

Stanley St

Stapleton Pl

Steel St

Stephanie Lane

Stollar Blvd

Stoneybrook Cres

Strabane Ave

Strathmore Pl

Stroud Pl

Stuart Ave

Stunden Lane

Succession Cres

Sumac St

Summerset Dr

Sun King Cres

Sundew Dr

Sunnidale Rd

Sunset Pl

Surrey Dr

Susan Pl

Sutherland Trail

Sutton Dr

Sydenham Wells

Sydney Lane

Sylvia St

Tamarack Trail

Tara Rd

Tascona Crt

Taylor Dr

Teal Pl

Teck Rd

Templeton Cres

Thackeray Cres

The Boulevard

The Queensway

Theresa St

Thicketwood Ave

Thomson St

Thorncrest Rd

Thrushwood Dr

Tiffin St

Timothy Lane

Todd Dr

Tollendal Mill Rd

Tomlin Crt

Toronto St

Touchette Dr

Tower Cres

Town Line

Trevino Cir

Trillium Cres

Trotter Crt

Truman Rd

Tudor Cres

Tunbridge Rd

Turner Dr

Twiss Dr

Tyndale Rd

Tynhead Rd

Unicorn Lane

Valley Dr

Valley View Crt

Vancouver St

Vansittart Crt

Varden Ave

Varden Cres

Versailles Cres

Vespra St

Veteran's Dr

Victoria St

Victorway Dr

Villers St

Vine Cres

Vine St

Violet St

Virgilwood Cres

Waddington Cres

Wall Crt

Wallace Dr

Wallwin's Way

Walnut Cres

Ward Dr

Warner Rd

Warnica Rd

Watson Dr

Weatherup Cres

Webb St

Weldon Cres

Weldon St

Welham Rd

Wellington St E

Wellington St W

Wells Cres

Wesley St

Wessenger Dr

West Gate

Westminster Cir

Weymouth Rd

Whispering Pine Pl

White Cres

White Elm Rd

White Oaks Rd

White Pine Pl

Whitehorn Cres

Whitty Lane

Wice Rd

Widgeon St

Wilde Pl

Wildflower Crt

Wildwood Trail

William Paddison Dr

William St

Willow Dr

Willow Fern Dr

Wilson Crt

Winchester Terr

Windsor Cres

Wiseman Crt

Wismer Ave

Wood St

Woodcrest Rd

Woodfern Crt

Woodgrove Crt

Worsley St

Wright Dr

Wynes Rd

Yeates Ave

Yonge St

- WATER VALVE CHAMBER
- WATER HYDRANT

Water Structure

Water Structure Type

- BPSTA
- PUMPING STATION
- RESERVOIR
- SWTP
- WELL
- WATER TOWER
- Transmission Watermain
- Chlorine Contact Watermain

Water Main

- OTHER MATERIALS (PRIVATE)

Watermain material, Watermain size (mm)

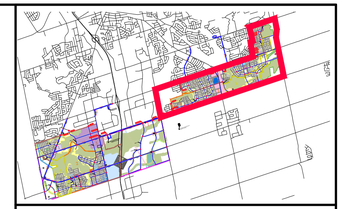
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- CONCRETE, 500
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- CONCRETE, 750
- CONCRETE, 900
- CONCRETE, 1050
- CONCRETE, 1200
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- GALVANIZED, 37
- GALVANIZED, 38
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- HIGH DENSITY POLYETHYLENE, 250
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- POLYVINYL CHLORIDE, 250
- POLYVINYL CHLORIDE, 300
- POLYVINYL CHLORIDE, 400
- POLYVINYL CHLORIDE, 600

Water Zones

Zone Name

- Chieftain (Decreased)
- Zone 1
- Zone 2 North
- Zone 2 North (Reduced)
- Zone 2S (Reduced)
- Zone 3 North
- Zone 3 North (Reduced)
- Zone 3 South (Reduced)
- Zone 3 South (Reduced)
- Major Roads
- Local Roads
- Highway
- Unassumed Roads
- River/Stream/Creek
- Township Boundary
- Railway
- City Boundary

PUBLIC



KEY PLAN

PROPOSED 600mmØ WATERMAIN TO CONNECT TO EXISTING 1200mmØ TRUNK WATERMAIN AT ASHFORD DRIVE & BIG BAY POINT

SWTP

ID 12100 900mm

ID 11150 600mm

ID 11152 750mm

ID 11232 750mm

ID 11231 750mm

ID 11151 600mm

ID 12110 400mm

ID 12115 400mm

ID 12401 400mm

2S435

2S444

2S442

2S620

2S523

2S514

2S488

2S518

2S481

2S576

2S430

2S425

2S02-0004

2S637

2S633

2S619

2S607

2S057

B40

STREET N

STREET M

STREET P

20 SIDEROAD

1

2

3

PROPOSED CONNECTIONS REFER TO DWG 1 OF 4

Natural Heritage System
Secondary School
Recreation Centre
Community Park
Existing Non-developable
Industrial/Business Park
Low/Med Density
Med/High Density
Essa/Salem Mixed-Use
Yonge Corridor Mixed-Use
Neighborhood Mixed-Use
TransCanada Pipeline Easement
Hydro Corridor
Future Interchange
School/Park Block
Village Square
Pressure Reducing Valve (PRV)
Pumping Station
Reservoir
Proposed Local Watermain
Proposed Trunk Watermain
ID 11230 Watermain ID
2S121 Connection Points ID
Connection Points to Existing System

No.	DATE	BY	REVISIONS	MAN	CAD
2	10/11/13	P.D	REVISED PER CITY COMMENTS		X
1	07/12/13	P.D	REVISED PER CITY COMMENTS		X

APPROVALS

Municipal

Engineer

Date

Design	T.R.W.	Checked	P.D.S.
Drawn	P.D	Checked	T.R.W.

Scale N.T.S.

Date OCTOBER 2013

WATER STORAGE & DISTRIBUTION MASTER PLAN
DRAFT FINAL
HEWITT'S SECONDARY PLAN

The City of BARRIE

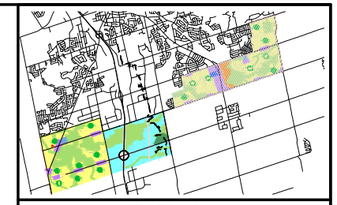
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Contract No. 2011-29

Consultant File No. 110135

Drawing No. SHEET 2 OF 4

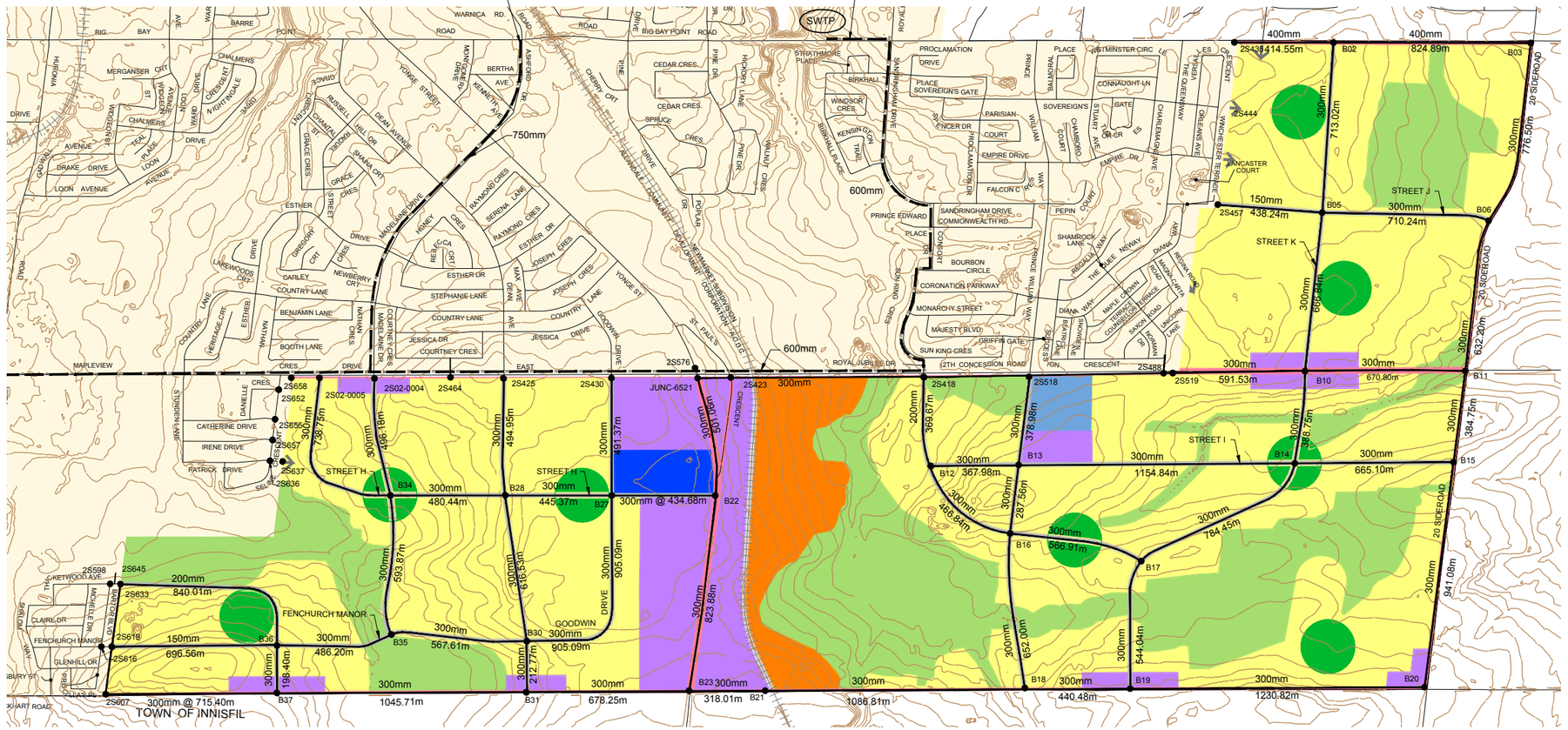
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PROPOSED 750mmØ WATERMAIN TO CONNECT TO EXISTING 1200mmØ TRUNK WATERMAIN AT ASHFORD DRIVE & BIG BAY POINT

PRESSURE ZONE 2 SOUTH

PROPOSED 600mmØ WATERMAIN TO CONNECT TO EXISTING SWTP



Natural Heritage System
Community Park
School/Park Block
High School
Recreation Centre
Industrial/Business Park
Proposed Collector Right-of-Way
Existing Arterial/Collector Right-of-Way
Low/Medium Density Residential
Medium/High Density Residential
Mixed-Use
Village Square
Proposed Local Road Connection
Major Gateway
Secondary Gateway
Inactive Landfill Site
TransCanada Pipeline Easement
Future Interchange
Pressure Zone 3 South
Pressure Zone 2 South
Pressure Reducing Valve (PRV)
Pumping Station
Reservoir
A23 Node ID

P:\Work\110135\Hwy\dwg\Contract\WATER\First_Submission\Water_Opt-1_Alt1.dwg

No.	DATE	BY	REVISIONS	MAN	CAD

APPROVALS

Municipal

Engineer

Date

Design	T.R.W.	Checked	L.J.
Drawn	J.M.	Checked	T.R.W.

Scale N.T.S.

Date OCTOBER 2013

WATER STORAGE & DISTRIBUTION MASTER PLAN
DRAFT FINAL
ANNEXED AREA
EAST LAND USE OPTION 1-ALT 1

The City of BARRIE

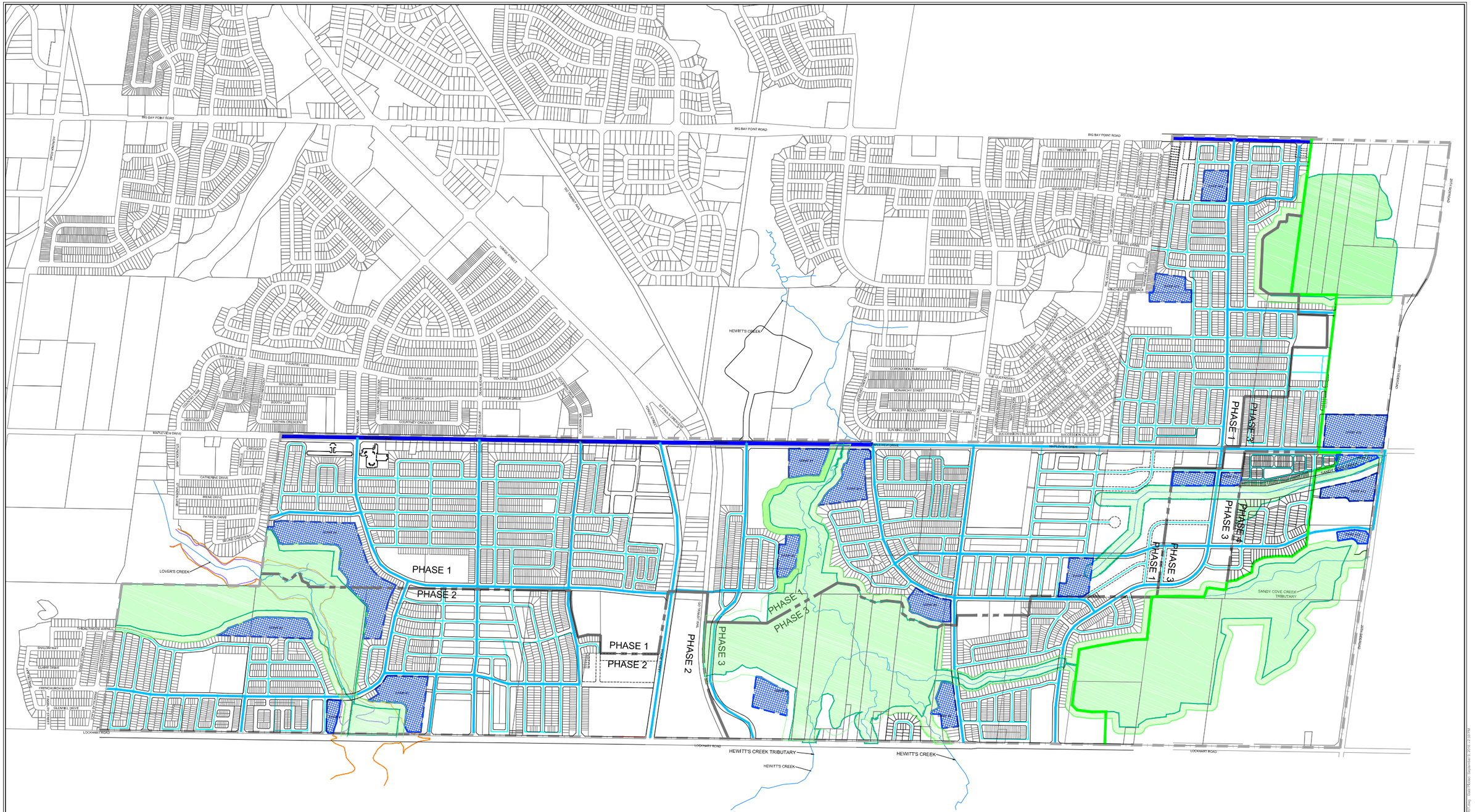
amec

Contract No. 2011-29

Consultant File No. 110135

Drawing No.

SHEET 2 OF 18



LEGEND

- DC TRUNK WATERMAIN
- LOCAL TRUNK WATERMAIN
- LOCAL WATERMAIN
- SURVEYED NHS LIMITS (2015)
- NHS BUFFER LIMITS
- 2031 PHASE LINE
- PHASING LIMITS
- LIMIT OF HEWITT'S CREEK SECONDARY PLAN
- STAKED 2015 NHS LIMITS
- NHS BUFFER LIMITS

N

0 100 200 400 600
Metres

NOTE: "SCALE ONLY VALID FOR 24" x 36" SIZED PLOTS"

BURNSIDE

Figure Title
HEWITT'S SECONDARY PLAN AREA SUBWATERSHED IMPACT STUDY
PROPOSED WATER DISTRIBUTION PLAN

Client
HEWITT'S CREEK LANDOWNERS GROUP INC.

Drawn	Checked	Date
AO	BH	16/01/28

Scale: H 1:4,000"
Project No.: 300032860
Figure No.: **FIG 12**

Appendix E

Traffic Information

OFFICIAL PLAN

Schedule D
Roads Plan

Office Consolidation
January 2018

Provincial Highway
Arterial
Major Collector
Minor Collector
Parkway
Local
FUTURE ARTERIAL
Future Collector
Railway

Barrie

1:20,000

0 0.5 1 2 km

N

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For information please contact Service Barrie at 705-726-4242 or ServiceBarrie@barrie.ca

GIS Branch 4/27/2018

Township Of Springwater

Township Of Oro-Medonte

Township Of Essa

Town Of Innisfil

Little Lake

Kempenfelt Bay

11

400

Livingstone St E
Georgian Dr
Cundles Rd E
St Vincent St
Grove St E
Duckworth St
Johnson St
Penetanguishene Rd
Livingstone St W
Cundles Rd W
Bayfield St
Blake St
Sunnidale Rd
Anne St N
Iroquois St
Dunlop St E
Bradford St
Edgehill Dr
Dunlop St W
Ferndale Dr N
Anne St S
Lakeshore Dr
Miller Dr
Tiffin St
Burton Ave
Essa Rd
Hurst Dr
Little Ave
Ferndale Dr S
Patterson Rd
Fairview Rd
Big Bay Point Rd
Prince William Way
20 Sideroad
Ardagh Rd
Yonge St
Madelaine Dr
Bayview Dr
Wellham Rd
Huronia Rd
Harvie Rd
Mapleview Dr E
Mapleton Ave
Marsellus Dr
Essa Rd
Mapleview Dr W
Veteran's Dr
Lockhart Rd
Salem Rd
McKay Rd E
McKay Rd W
County Road 27

Refer to the Hewitt's Secondary Plan and associated schedules in Section 9 of this Plan

Refer to the Salem Secondary Plan and associated schedules in Section 8 of this Plan

OFFICIAL PLAN

Schedule E
Road Widening Plan

Office Consolidation
January 2018

Road Right of Way Width

20m	25m	29m	33m	Other Streets
22m	26m	30m	34m	Railway
23m	27m	31m	37m	
24m	28m	32m	41m	

Barrie

1:20,000

0 0.5 1 2 km

N

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For information please contact Service Barrie at 705-726-4242 or ServiceBarrie@barrie.ca

GIS Branch 4/27/2018

BIG BAY POINT ROAD

YONGE STREET

Defined Policy Area 1
Section 9.3.3.2 c

MAPLEVIEW DRIVE EAST

Defined Policy Area 3
Section 9.3.3.2 e

LOCKHART ROAD

Defined Policy Area 2
Section 9.3.3.2 d

Defined Policy Area 4
Section 9.3.3.2 f

20 SIDEROAD

Secondary Plan Boundary
Existing Parcel Fabric
Railway
Stream

Arterial
Major Collector
Minor Collector
Pathway System

Potential Grade Separation

Natural Heritage System
Defined Policy Area

0 0.25 0.5 1 km

Schedule 9D-1
Transportation Plan

City of Barrie
Hewitt's Secondary Plan

May 2016

BIG BAY POINT ROAD

YONGE STREET

Defined Policy Area 1
Section 9.3.3.2 c

MAPLEVIEW DRIVE EAST

Defined Policy Area 3
Section 9.3.3.2 e

LOCKHART ROAD

Defined Policy Area 2
Section 9.3.3.2 d

Defined Policy Area 4
Section 9.3.3.2 f

20 SIDEROAD

Secondary Plan Boundary

Existing Parcel Fabric

Railway

Stream

Arterial

Major Collector

Minor Collector

Pathway System

Maximum Width (m)
41
27
24

Potential Grade Separation

Natural Heritage System

Defined Policy Area

0 0.25 0.5 1 km

Schedule 9D-2

Street Widening Plan

City of Barrie
Hewitt's Secondary Plan

May 2016

Appendix F

Utility Information

Enbridge Gas Distribution Inc.
500 Consumers Rd.
North York, ON, M2J 1P8
Canada
www.enbridge.com/gas

Mark-ups@enbridge.com

EGD File Number: 12576120

Re: GOL-14134 service area markups

- By law utility locates must be obtained prior to starting any excavation or ground disturbance activity, such as pile driving, boring, auguring or digging.
- Contact Ontario One Call at 1-800-400-2255 or www.on1call.com at least 5 business days before beginning work to obtain utility locates.
- Please refer to the **"Third Party Requirements In the Vicinity of Natural Gas Facilities"** for requirements and precautions for working safely in the vicinity of natural gas pipelines. The most recent version of this document is available at: https://www.enbridgegas.com/gas-safety/pipeline-safety.aspx
- Enbridge's responses are based on the information available and are valid for a period of 6 months from issue.

☐ **VITAL MAIN**

- You are working within 3m of a Vital Main Pipeline. In order to accommodate Enbridge vital main standby requirements, our Damage Prevention department must be contacted a minimum of three business days prior to commencing any excavation at 1-866-922-3622 to schedule a site meeting.

☐ **NEB PERMIT REQUIRED**

- When crossing or working within 30m of the right-off-way of an NEB regulated natural gas pipeline, a permit must be obtained from the pipeline company (attached).
- Completed permit applications may be submitted to the Enbridge Gas Distribution Inc. Engineering Dept. at alexander.hadjis@enbridge.com.

☐ **CONFLICT**

- We have an **OBJECTION** to your proposed plant as indicated. Please refer to the attached drawings for information on our existing or proposed gas plant.
- You must submit a revised design for our approval that meets the requirements detailed in the Third Party Requirement book before proceeding.
- If relocation of our plant is required, please contact:

☐	Toronto Region	Tara Kuuskman	416-254-7813	tara.kuuskman@enbridge.com
☐	Central Region West	Paul Giovannetti	905-458-2103	paul.giovannetti@enbridge.com
☐	Central Region East	Neerajah Raviraj	905-927-3156	neerajah.raviraj@enbridge.com
☐	Niagara Region	Dennis Stolfi	905-641-4815	dennis.stolfi@enbridge.com
☐	Eastern Region Ottawa	Sonia Padamadan	613-748-6861	sonia.padamadan@enbridge.com
☐	Proposed work is crossing an Enbridge easement. Please contact Anissa Trenholm in our Land Department at 416-753-6937			

☐ **NO-CONFLICT**

- We have **NO OBJECTION** to your proposed plant as indicated. Please refer to the attached drawings for information on our existing and/or proposed gas plant. GAS MAINS MUST BE FIELD LOCATED. Before digging, please call ONTARIO ONE CALL at 1-800-400-2255 for free gas locates.

☒ **GENERAL LOCATION**

- Refer to the attached drawings for information on our existing and/or proposed gas plant within the road allowance.
- The information provided is for **GENERAL LOCATION ONLY** and is not an approval. Detailed plans must be submitted for our review before an approval will be granted.

Kind Regards,

C. Kishore

kishore RMSI
2016.07.19 14:19:28
+05'30'



Network Numbers and Pressure Types:
5320 - IP, 5543 - IP, 5381 - XHP

ENBRIDGE

Atlas Plate Record

Plotted By: gisadmin	Date of Last Revision: 2015 Feb 06	Date Plotted: 2015 May 26
Scale: 2400	Reviewed By: matelav	Plate Number: IN74
	Region: Area 50 - Barrie	



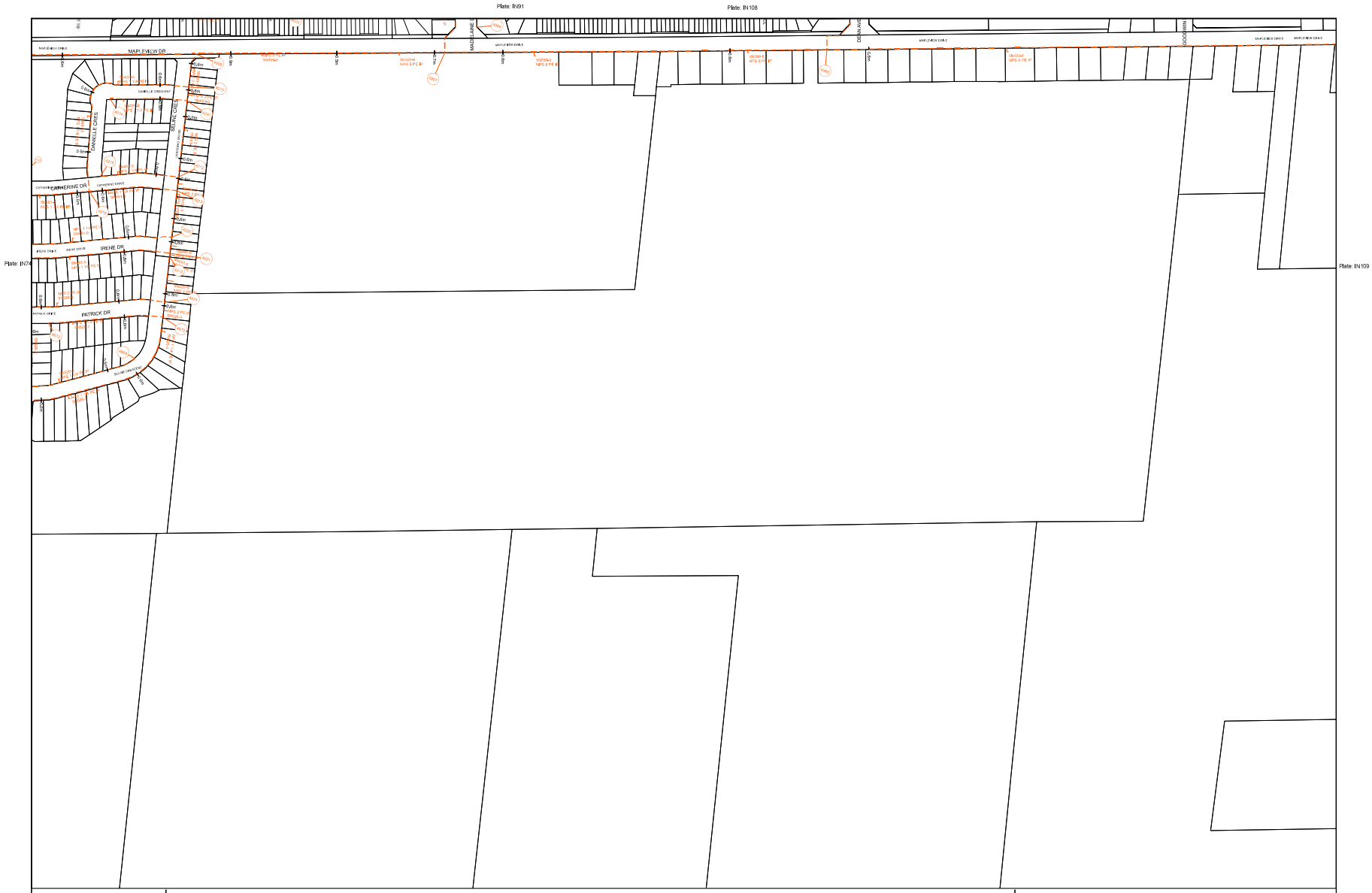
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Network Numbers and Pressure Types:
5381 - XHP, 5543 - IP, 5320 - IP

ENBRIDGE

Atlas Plate Record

Plotted By: gisadmin	Date of Last Revision: 2015 Feb 06	Date Plotted: 2015 Jun 01
Scale: 2400	Reviewed By: matelav	Plate Number: IN75
	Region: Area 50 - Barrie	



N

Network Numbers and Pressure Types:
5320 - IP

ENBRIDGE

Atlas Plate Record

Plotted By: gisadmin	Date of Last Revision: 2015 Feb 06	Date Plotted: 2015 Feb 19
Scale: 2400	Reviewed By: matelav	Plate Number: IN92
	Region: Area 50 - Barrie	



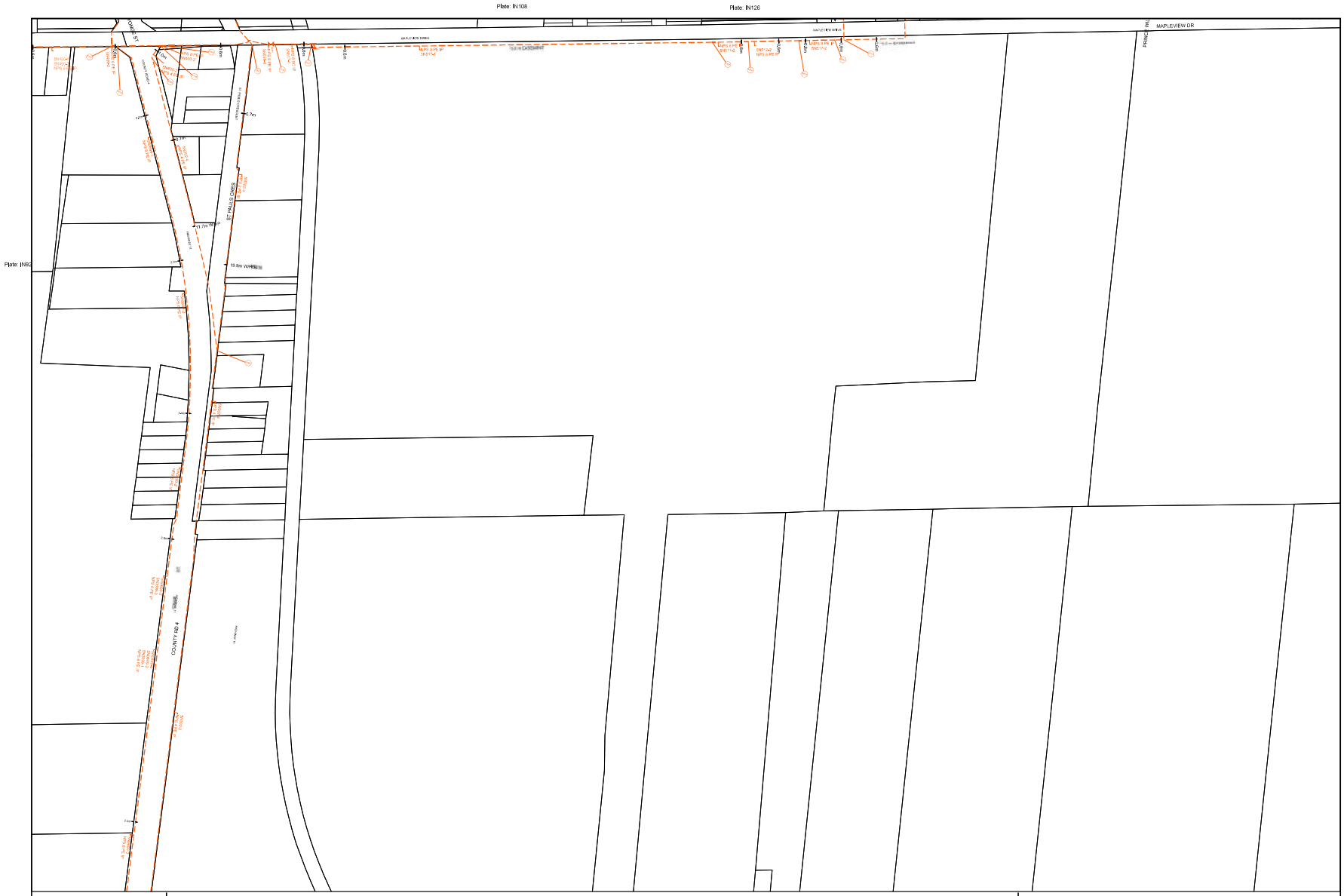
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Network Numbers and Pressure Types:
5371 - IP, 5381 - XHP

ENBRIDGE

Atlas Plate Record

Plotted By: gisadmin	Date of Last Revision: 2013 Apr 23	Date Plotted: 2013 Jun 26
Scale: 2400	Reviewed By: dasgups1	Plate Number: IN93
	Region: Area 50 - Barrie	



N

Network Numbers and Pressure Types:
5320 - IP

ENBRIDGE

Atlas Plate Record

Plotted By: gisadmin	Date of Last Revision: 2011 Mar 30	Date Plotted: 2015 May 22
Scale: 2400	Reviewed By: morihovh	Plate Number: IN109
	Region: Area 50 - Barrie	


Plate: IN109
Plate: IN93
Plate: IN128
Plate: IN111
LOCKHART RD
NELSON CRES
LYNN ST
NORTHGATE STREET
NEWMARKET CRESCENT
NEWMARKET CRESCENT
NELSON CRESCENT
NELSON CRESCENT

Jon Ingram

From: Kate Coppin
Sent: Monday, September 27, 2021 9:48 AM
To: Jon Ingram
Subject: FW: Lockhart Subdivisions Enbridge

Kate Coppin, E.I.T.
Junior Engineering Designer
The Jones Consulting Group Ltd.
229 Mapleview Drive East, Unit 1 Barrie, ON L4N 0W5
Phone (705) 734-2538 ext 242 Fax (705) 734-1056
Email kcoppin@jonesconsulting.com
www.jonesconsulting.com



From: Xinyi Wang <Xinyi.Wang@rci.rogers.com>
Sent: Monday, September 27, 2021 9:47 AM
To: Kate Coppin <KCoppin@jonesconsulting.com>
Subject: RE: Lockhart Subdivisions Enbridge

Hi Kate,

No issue with the draft plan.

Regards,

Xinyi Wang
System Planner Outside Plant Engineering
xinyi.wang@rci.rogers.com



From: Kate Coppin <KCoppin@jonesconsulting.com>
Sent: June 9, 2021 2:38 PM
To: Xinyi Wang <Xinyi.Wang@rci.rogers.com>
Subject: Lockhart Subdivisions Enbridge

Good Afternoon,

The Jones Consulting Group Ltd., has 2 new residential subdivisions proposed for the north side of Lockhart Road in Barrie. I have attached the draft plan of subdivisions, could you let me know if you have any concerns or conflicts with servicing these developments? Let me know if you have any questions or need any further information.

Thank you,

Kate Coppin, E.I.T.
Junior Engineering Designer
The Jones Consulting Group Ltd.
229 Mapleview Drive East, Unit 1 Barrie, ON L4N 0W5
Phone (705) 734-2538 ext 242 Fax (705) 734-1056
Email kcoppin@jonesconsulting.com
www.jonesconsulting.com

Please note that The Jones Consulting Group will be blocking all emails containing compressed attachments with file extensions such as .zip or .rar. When sending a .zip file please rename the extension to .zi_ or use an FTP site.

RESTRICTED ACCESS BUSINESS OPERATIONS

As the health and safety of our clients, suppliers, staff and families is our top priority during this period of uncertainty, commencing April 5th 2020, and until further notice, the Jones Consulting Group Ltd. office will be closed.

We are closely monitoring the situation and are following the practices recommended by local and international authorities to minimize the risk of exposure to the novel coronavirus (COVID-19) while doing everything in our power to ensure that our services continue uninterrupted.

Therefore, please note, until further notice, the Jones Consulting Group staff will be working remotely and will respond by e-mail and/or phone only. The office access will be closed.

We remain committed to providing the service you have come to expect from us, however, during this time, the Jones Consulting Group Ltd. may be rescheduling non-essential or non-urgent services as deemed appropriate in order to reduce exposure to the virus and protect everyone's health.

This communication is confidential. We only send and receive email on the basis of the terms set out at www.rogers.com/web/content/emailnotice

Ce message est confidentiel. Notre transmission et réception de courriels se fait strictement suivant les modalités énoncées dans l'avis publié à www.rogers.com/aviscourriel

---

Jon Ingram

From: Kate Coppin
Sent: Thursday, October 7, 2021 4:22 PM
To: Jon Ingram
Subject: FW: Lockhart Subdivisions Enbridge
Attachments: Request For Information Form Feb 2019 .xlsx

Kate Coppin, E.I.T.
Junior Engineering Designer
The Jones Consulting Group Ltd.
229 Mapleview Drive East, Unit 1 Barrie, ON L4N 0W5
Phone (705) 734-2538 ext 242 Fax (705) 734-1056
Email kcoppin@jonesconsulting.com
www.jonesconsulting.com

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS

From: Fournier, Andrew <andrew.fournier@bell.ca>
Sent: Thursday, June 10, 2021 2:17 PM
To: Phil Kuurstra <pkuurstra@rtgsystems.com>; Kate Coppin <KCoppin@jonesconsulting.com>
Cc: Elliott, Brandon <brandon.elliott@bell.ca>
Subject: RE: Lockhart Subdivisions Enbridge

Thanks Phil

Kate, I do not see a problem servicing these developments. Once the sites move forward please complete the attached RFI and provide phasing plans/Hydro Design and I will submit to our Greenfield Governance team that will review and provide an official serve.

Thank you

Bell
Andrew Fournier
Implementation Manager, Network Provisioning
136 Bayfield St, Flr 2. Barrie, ON L4M 3B1
T: 705-797-9977 M: 705-627-0897

From: Phil Kuurstra <pkuurstra@rtgsystems.com>
Sent: June-09-21 4:44 PM
To: Fournier, Andrew <andrew.fournier@bell.ca>; Kate Coppin <KCoppin@jonesconsulting.com>
Cc: Elliott, Brandon <brandon.elliott@bell.ca>
Subject: [EXT]RE: Lockhart Subdivisions Enbridge

Sorry Andrew,
As requested.

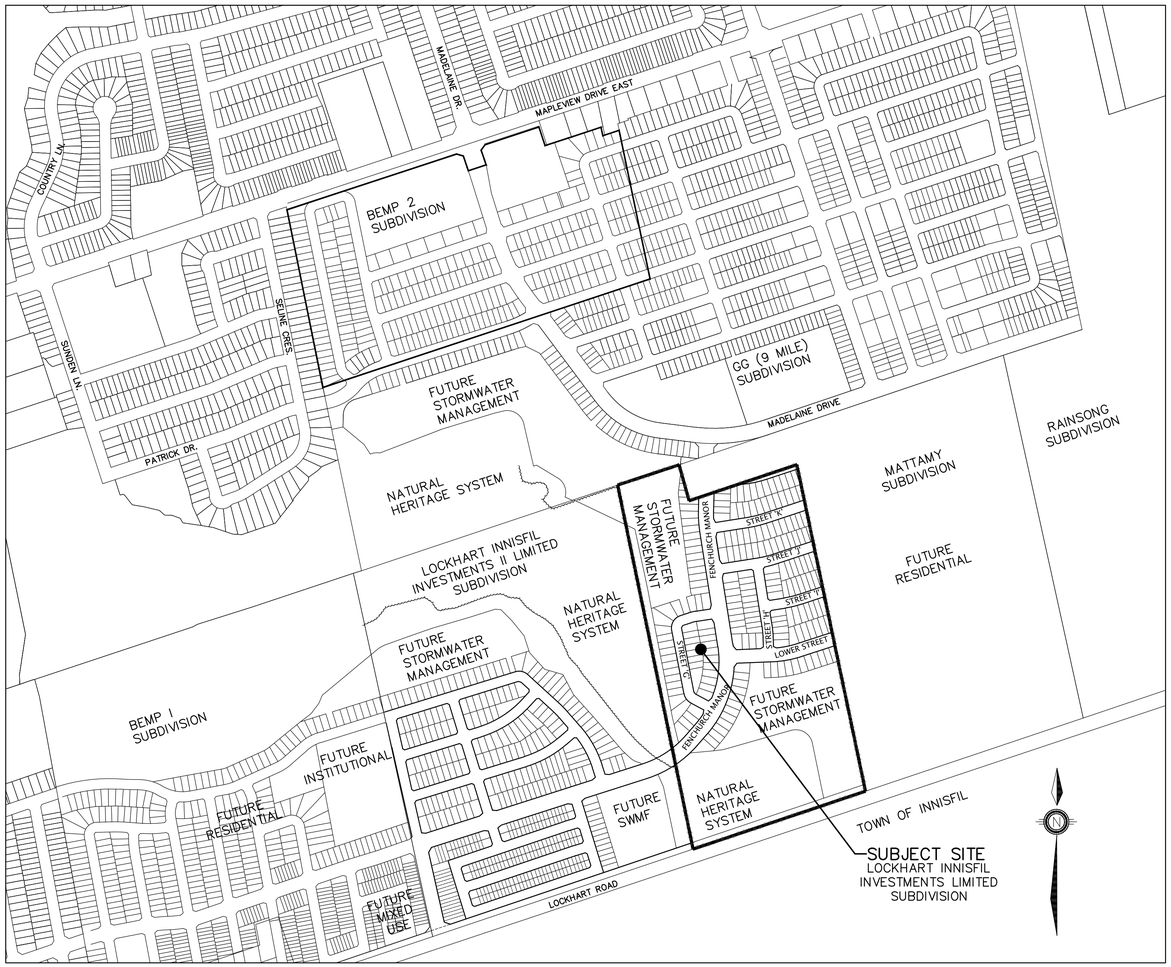
Appendix G

Reduced Engineering Submission Drawings

LOCKHART INNISFIL INVESTMENTS LIMITED.
560 LOCKHART ROAD, CITY OF BARRIE
CITY FILE: D28-023-2020

DRAWING LEGEND

TITLE	TITLE PAGE
G-1	GENERAL SERVICING PLAN
G-2	GENERAL SERVICING PLAN
GP-1	GRADING PLAN
GP-2	GRADING PLAN
GP-3	GRADING PLAN
GP-4	GRADING PLAN
GP-5	GRADING PLAN
GP-6	GRADING PLAN
STM-1	STORM SEWER SUB-CATCHMENT PLAN
STM-2	STORM SEWER SUB-CATCHMENT PLAN
SWM-1	POST-DEVELOPMENT DRAINAGE AREA PLAN SWM FACILITIES 3 & 4C
LID-1	LID SUB-CATCHMENT PLAN
LID-2	LID SECTIONS AND DETAILS DRY SWALES
SAN-1	SANITARY DRAINAGE AREA PLAN
SAN-2	SANITARY DRAINAGE AREA PLAN
DS-1	DESIGN SHEETS
PND-1	SWM FACILITY NO. 4C PLAN VIEW
PND-2	SWM FACILITY NO. 4C SECTIONS
PND-3	SWM FACILITY NO. 4C DETAILS
PND-4	SWM FACILITY NO. 3 PLAN VIEW
PND-5	SWM FACILITY NO. 3 SECTIONS
PND-6	SWM FACILITY NO. 3 DETAILS
PP-1	PLAN AND PROFILE FENCHURCH MANOR STA 1+540 TO 1+740
PP-2	PLAN AND PROFILE FENCHURCH MANOR STA 1+740 TO 1+980
PP-3	PLAN AND PROFILE FENCHURCH MANOR STA 1+980 TO 2+212
PP-4	PLAN AND PROFILE LOWER STREET STA 0+000 TO 0+280
PP-5	PLAN AND PROFILE STREET 'G' STA 0+000 TO 0+274
PP-6	PLAN AND PROFILE STREET 'H' STA 0+000 TO 0+174
PP-7	PLAN AND PROFILE STREET 'I' STA 0+000 TO 0+200
PP-8	PLAN AND PROFILE STREET 'J' STA 0+000 TO 0+260
PP-9	PLAN AND PROFILE STREET 'K' STA 0+000 TO 0+240
PP-10	PLAN AND PROFILE EXTERNAL STREET 'E' STA 0+000 TO 0+220



MUNICIPALITY:

CITY OF BARRIE
70 COLLIER STREET (BOX 400)
BARRIE, ON L4M 4T5
PH. 705.726.4242
FAX 705.739.4243

CLIENT:

LOCKHART INNISFIL INVESTMENTS LIMITED

DEVELOPER'S ENGINEER:

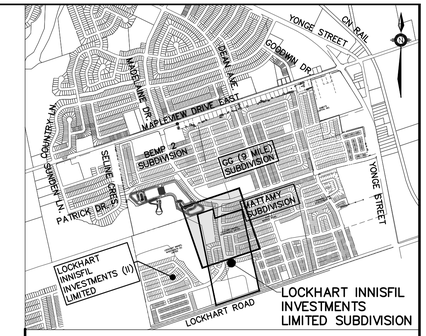
JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

TJCG PROJECT # GOL-14193

SUBMISSION FOR DRAFT PLAN APPROVAL - OCTOBER 2021

G:\Eng_3D\GOL-14193-E\Production DWGS\GOL-14193-COVER PAGE.dwg Layout: Title Plotted Oct 06, 2021 @ 8:22am by jhermann The Jones Consulting Group Ltd.





KEY PLAN
NTS

LEGEND

- SANITARY MAINTENANCE HOLE (B.O.)
- SANITARY SEWER & DIRECTION OF FLOW (B.O.)
- STORM MAINTENANCE HOLE (B.O.)
- STORM SEWER & DIRECTION OF FLOW (B.O.)
- HYDRANT AND VALVE
- VALVE AND BOX
- WATER SERVICE
- PROPOSED WATERMAIN
- SANITARY MAINTENANCE HOLE
- SANITARY SERVICE
- SANITARY SEWER & DIRECTION OF FLOW
- STORM MAINTENANCE HOLE
- CATCH BASIN
- DOUBLE CATCH BASIN
- STORM SEWER & DIRECTION OF FLOW
- DEPRESSED CURB
- BOREHOLE
- LIMIT OF SUBDIVISION

BENCHMARK:

BENCHMARK NO: 001193IU460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER J. W. INGRAM 100143779 21-10-06 PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

GENERAL SERVICING PLAN

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VBS	SCALE: 1:1000	DATE JULY 2021
DRAWN	VBS	PROJECT GOL-14193	DWG. Nº G-1
CHECKED	JWI		

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REFER TO DRAWING G-1

LOCKHART INNISFIL INVESTMENTS (II) LIMITED SUBDIVISION

Block 218
Environmental Protection
12.06 ha.

MATTAMY SUBDIVISION

STREET 'F'

STREET 'D'

STREET 'G'

LOWER STREET

FENCHURCH MANOR

SWM FACILITY 3

Block 131

Block 155
0.3m Reserve
Block 128

Block 154
0.3m Reserve

Block 150
Stormwater Management
3.01 ha.

Block 159
0.3m Reserve

Block 148
Environmental Protection
3.41 ha.

Block 217
Environmental Protection
0.39 ha.

Block 152
Road Widening (0.37 ha.)

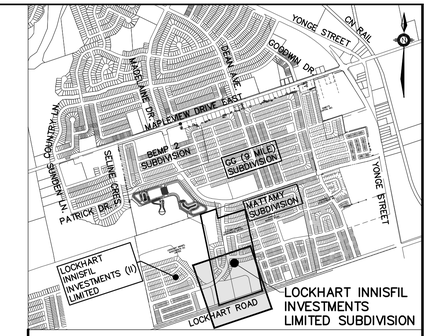
Block 153
0.3m Reserve

BLOCK 225
0.3m RESERVE

LOCKHART ROAD

300mm# WATERMAIN TO BE INSTALLED VIA JACK AND BORE MINIMUM 2.5m BELOW EX. CREEK

NOTE: ALL WORKS WITHIN ENVIRONMENTAL PROTECTION BLOCKS WILL REQUIRE OFFSETTING THROUGH LSRCA FOR ENCROACHMENT WITHIN NATURAL HERITAGE SYSTEM.



KEY PLAN
NTS

LEGEND

- SAN 01A (B.O.) — SANITARY MAINTENANCE HOLE (B.O.)
- SANITARY SEWER & DIRECTION OF FLOW (B.O.)
- STM 01 (B.O.) — STORM MAINTENANCE HOLE (B.O.)
- STORM SEWER & DIRECTION OF FLOW (B.O.)
- H&V — HYDRANT AND VALVE
- VB — VALVE AND BOX
- WATER SERVICE
- PROPOSED WATERMAIN
- SAN 10A — SANITARY MAINTENANCE HOLE
- SANITARY SERVICE
- SANITARY SEWER & DIRECTION OF FLOW
- STM 25 — STORM MAINTENANCE HOLE
- CB — CATCH BASIN
- DCB — DOUBLE CATCH BASIN
- STORM SEWER & DIRECTION OF FLOW
- DEPRESSED CURB
- BH 2 252.68 — BOREHOLE
- LIMIT OF SUBDIVISION

BENCHMARK:

BENCHMARK NO: 001193IU460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "Y" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD, TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

GENERAL SERVICING PLAN

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VBS	SCALE: 1:1000	DATE JULY 2021
DRAWN	VBS	PROJECT GOL-14193	DWG. Nº G-2
CHECKED	JWI		

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FUTURE SWMF

FUTURE GG (9 MILE) DEVELOPMENT

FUTURE GG (9 MILE) DEVELOPMENT

DEVELOPMENT BOUNDARY

Block 220 Stormwater Management 0.29 ha.

STM 37

STM 33

STM 36

STM 35

REFER TO DWG. PND-1 FOR POND 4C GRADING DESIGN

Block 149 Stormwater Management 2.07 ha.

Block 140

Block 141

Block 142

Block 143

Block 144

Block 145

Block 146

Block 147

Block 158 0.3m Reserve

Block 139

Block 218 Environmental Protection 12.06 ha.

Block 147 Environmental Protection 0.55 ha.

LOCKHART INNISFIL INVESTMENTS (II) LIMITED DEVELOPMENT

DEVELOPMENT BOUNDARY

MADELAINE DRIVE

FENCHURCH MANOR

FUTURE MATTAMY DEVELOPMENT

NOTE: EARTHWORKS FOR MATTAMY AND LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISIONS TO BE COMPLETED SIMULTANEOUSL

FUTURE STREET 'E'

STREET 'J'

STREET 'K'

SAN 07A (B.O.)

STM 25 (B.O.)

SAN 24A (B.O.)

STM 24 (B.O.)

SAN 06A

STM 13

SAN 22A

STM 12

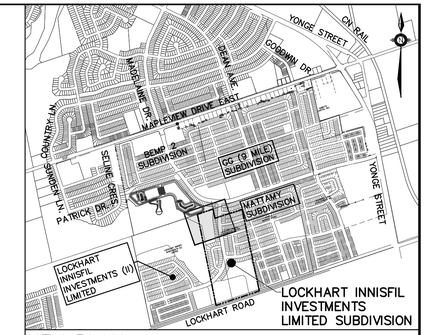
SAN 05A

STM 9

DMBH19

REFER TO DRAWING GP-2

REFER TO DRAWING GP-3

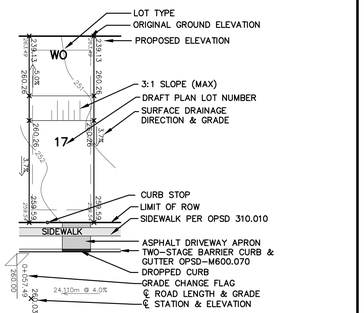


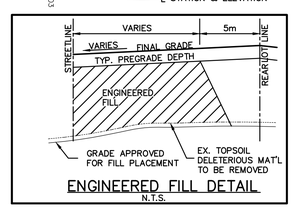
KEY PLAN

NTS

LEGEND

- LIMIT OF SUBDIVISION
- LSRCA REGULATED BOUNDARY
- EX. CONTOUR
- EX. VEGETATION
- EX. DITCH
- SANITARY MANHOLE — SAN 5A
- STORM MANHOLE — STM 8
- DOUBLE DITCH INLET — DDI
- CATCHBASIN — CB
- DOUBLE CATCHBASIN — DCB
- TREE PRESERVATION FENCE
- SLOPE (3:1 MAX.)
- HYDRANT AND VALVE — H&V
- VALVE — V
- CURB STOP
- SIDEWALK TACTILE PLATES
- EX. BOREHOLE LOCATION ID# & GROUNDWATER ELEVATION — BH7 254.60
- TRANSFORMER
- SWITCHGEAR — S
- LIGHT STANDARD
- BELL/ROGERS — BPED
- MAJOR OVERLAND FLOW ROUTE
- LID DRY SWALE
- SPLIT DRAINAGE LOT — SD
- WALK OUT LOT — WO
- LOOK OUT LOT — LO
- FRONT DRAINING LOT — FD
- TRANSITION LOT — TR





ENGINEERED FILL DETAIL

N.T.S.

BENCHMARK:

BENCHMARK NO: 001193IU4605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV. 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608813.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENSED PROFESSIONAL ENGINEER J. W. INGRAM 100143779 21-10-06 PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTIMENTS LIMITED SUBDIVISION

GRADING PLAN

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VBS	SCALE: 1:500	DATE JULY 2021
DRAWN	VBS	PROJECT GOL-14193	DWG. Nº GP-1
CHECKED	JWI		

G:\Eng_3D\GOL-14193-EV\Production DWGS\GOL-14193-GRADING.dwg Layout: GP-1 Plotted: Oct 05, 2021 @ 2:10pm by jhemmann The Jones Consulting Group Ltd.

FUTURE GG (9 MILE) DEVELOPMENT

FUTURE GG (9 MILE) DEVELOPMENT

FUTURE MATTAMY DEVELOPMENT

NOTE: EARTHWORKS FOR MATTAMY AND LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISIONS TO BE COMPLETED SIMULTANEOUSL

NOTE: EARTHWORKS FOR MATTAMY AND LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISIONS TO BE COMPLETED SIMULTANEOUSLY

MADELAINE DRIVE

FENCHURCH MANOR

FUTURE STREET 'E'

STREET 'K'

STREET 'J'

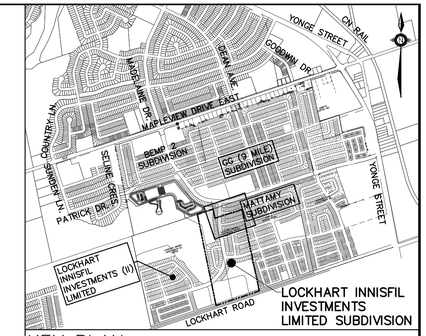
FUTURE MATTAMY DEVELOPMENT - FUTURE STREET 'D'

DEVELOPMENT BOUNDARY

Block 140
Block 141
Block 142
Block 143
Block 144
Block 145
Block 146
Block 147
Block 149 Stormwater Management 2.07 ha.
Block 158 0.3m Reserve
Block 151 Future Road (0.07 ha.)
Block 136
Block 157 0.3m Reserve
Block 134
Block 135
Block 132
Block 133

REFER TO DRAWING GP-1

REFER TO DRAWING GP-4

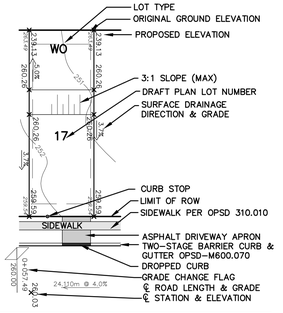


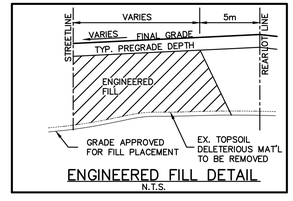
KEY PLAN

NTS

LEGEND

- LIMIT OF SUBDIVISION
- LSRCA REGULATED BOUNDARY
- EX. CONTOUR
- EX. VEGETATION
- EX. DITCH
- SANITARY MANHOLE — SAN 5A
- STORM MANHOLE — STM 8
- DOUBLE DITCH INLET — DDI
- CATCHBASIN — CB
- DOUBLE CATCHBASIN — DCB
- TREE PRESERVATION FENCE
- SLOPE (3:1 MAX.)
- HYDRANT AND VALVE — H&V
- VALVE
- CURB STOP
- SIDEWALK TACTILE PLATES
- EX. BOREHOLE LOCATION ID# & GROUNDWATER ELEVATION — BH7 254.60
- TRANSFORMER
- SWITCHGEAR — S
- LIGHT STANDARD
- BELL/ROGERS — BPED
- MAJOR OVERLAND FLOW ROUTE
- LID DRY SWALE
- SPLIT DRAINAGE LOT — SD
- WALK OUT LOT — WO
- LOOK OUT LOT — LO
- FRONT DRAINING LOT — FD
- TRANSITION LOT — TR





ENGINEERED FILL DETAIL

N.T.S.

BENCHMARK:

BENCHMARK NO: 001193104605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65km EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
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LICENCED PROFESSIONAL ENGINEER — J. W. INGRAM — 100143779 — 21-10-06 — PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTIMENTS LIMITED SUBDIVISION

GRADING PLAN

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1066

DESIGN	VBS	SCALE: 1:500	DATE JULY 2021
DRAWN	VBS	PROJECT GOL-14193	DWG. Nº GP-2
CHECKED	JWI		

G:\Eng_3D\GOL-14193-EV\Production DWGS\GOL-14193-GRADING.dwg Layout: GP-2 Plotted: Oct 05, 2021 @ 3:35pm by jhermann The Jones Consulting Group Ltd.

REFER TO DRAWING GP-1

REFER TO DRAWING GP-4

REFER TO DRAWING GP-5

Block 218
Environmental
Protection
12.06 ha.

LOCKHART INNISFIL INVESTMENTS
(II) LIMITED DEVELOPMENT

Block 147
Environmental Protection
0.55 ha.

DEVELOPMENT BOUNDARY

Block 150
Stormwater
Management
3.01 ha.

REFER TO DWG. PND-1 FOR
POND 3 GRADING DESIGN

STREET 'G'

STREET 'H'

STREET 'I'

STREET 'J'

FENCHURCH MANOR

LOWER STREET

EASEMENT BLOCK

ROAD ACCESS

ENTRANCE ACCESS

SIDEWALK

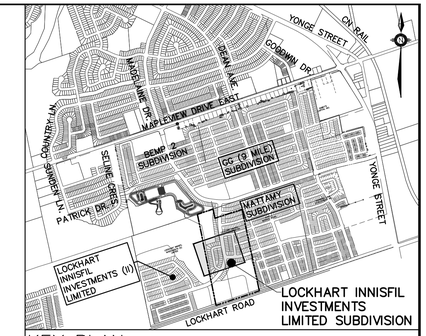
DCB

CB

SAN 10A
SAN 11A
SAN 04A
SAN 17A
SAN 16A
SAN 20A
SAN 08A
SAN 09A
SAN 03A
SAN 02A
SAN 31A
SAN 14A
SAN 13A

STM 19
STM 14
STM 5
STM 2
STM 1
STM 8
STM 17
STM 16
STM 4
STM 15
STM 3
STM 30

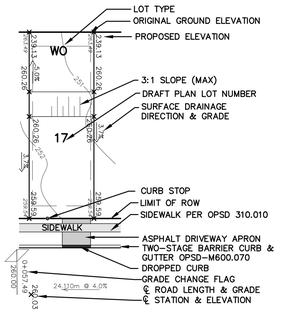
STM 18
STM 21
STM 20

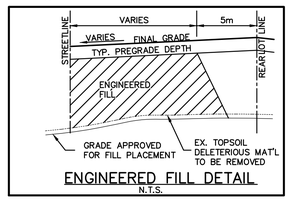


KEY PLAN
NTS

LEGEND

LIMIT OF SUBDIVISION	
LSRCA REGULATED BOUNDARY	
EX. CONTOUR	260.00
EX. VEGETATION	
EX. DITCH	
SANITARY MANHOLE	SAN 5A
STORM MANHOLE	STM 8
DOUBLE DITCH INLET	DDI
CATCHBASIN	CB
DOUBLE CATCHBASIN	DCB
TREE PRESERVATION FENCE	
SLOPE (3:1 MAX.)	H&V
HYDRANT AND VALVE	
VALVE	
CURB STOP	
SIDEWALK TACTILE PLATES	
EX. BOREHOLE LOCATION ID# & GROUNDWATER ELEVATION	BH7 254.60
TRANSFORMER	
SWITCHGEAR	S
LIGHT STANDARD	
BELL/ROGERS	BPED
MAJOR OVERLAND FLOW ROUTE	
LID DRY SWALE	
SPLIT DRAINAGE LOT	SD
WALK OUT LOT	WO
LOOK OUT LOT	LO
FRONT DRAINING LOT	FD
TRANSITION LOT	TR





ENGINEERED FILL DETAIL
N.T.S.

BENCHMARK:

BENCHMARK NO: 0011931U4605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.63km EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.491199.897 E.608513.316

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LICENCED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTIMENTS LIMITED SUBDIVISION

GRADING PLAN

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VBS	SCALE: 1:500	DATE JULY 2021
DRAWN	VBS	PROJECT GOL-14193	DWG. Nº GP-3
CHECKED	JWI		

G:\Eng_3D\GOL-14193-E\Production DWGS\GOL-14193-GRADING.dwg Layout:GP-3 Plotted: Oct 05, 2021 @ 3:38pm by jhemmon The Jones Consulting Group Ltd.

REFER TO DRAWING GP-2

REFER TO DRAWING GP-3

REFER TO DRAWING GP-6

STREET 'G'

STREET 'H'

STREET 'I'

STREET 'J'

LOWER STREET

FENCHURCH MANOR

FUTURE STREET 'D'

FUTURE MATTAMY DEVELOPMENT

FUTURE STREET 'D'

FUGURE STREET 'L'

HWY#400 INTERCHANGE DEVELOPMENT

Block 156
0.3m Reserve
Block 131

Block 155
0.3m Reserve
Block 128

Block 154
0.3m Reserve

Block 150
Stormwater
Management
3.01 ha.

Block 130 SD

Block 129 FD

Block 127 FD

Block 126

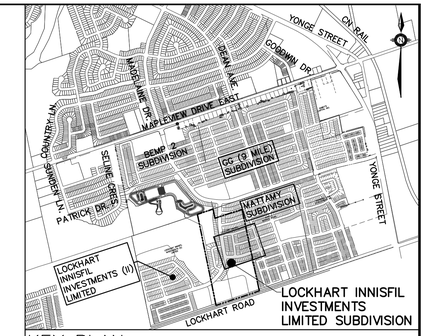
Block 125 WO

EASEMENT BLOCK

POND ROAD ACCESS
ENTRANCE 25.65%

REFER TO DWG. PND-1 FOR
POND 3 GRADING DESIGN

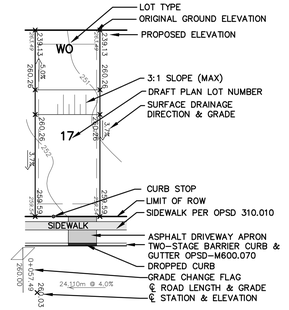
NOTE: EARTHWORKS FOR MATTAMY AND LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISIONS TO BE COMPLETED SIMULTANEOUSL

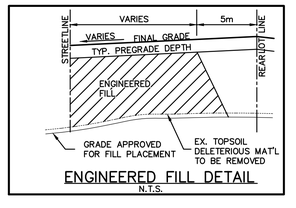


KEY PLAN
NTS

LEGEND

- LIMIT OF SUBDIVISION
- LSRCA REGULATED BOUNDARY
- EX. CONTOUR
- EX. VEGETATION
- EX. DITCH
- SANITARY MANHOLE — SAN 5A
- STORM MANHOLE — STM 8
- DOUBLE DITCH INLET — DDI
- CATCHBASIN — CB
- DOUBLE CATCHBASIN — DCB
- TREE PRESERVATION FENCE
- SLOPE (3:1 MAX.)
- HYDRANT AND VALVE — H&V
- VALVE
- CURB STOP
- SIDEWALK TACTILE PLATES
- EX. BOREHOLE LOCATION ID# & GROUNDWATER ELEVATION — BH7 254.60
- TRANSFORMER
- SWITCHGEAR — S
- LIGHT STANDARD
- BELL/ROGERS — BPED
- MAJOR OVERLAND FLOW ROUTE
- LID DRY SWALE
- SPLIT DRAINAGE LOT — SD
- WALK OUT LOT — WO
- LOOK OUT LOT — LO
- FRONT DRAINING LOT — FD
- TRANSITION LOT — TR





ENGINEERED FILL DETAIL
N.T.S.

BENCHMARK:

BENCHMARK NO: 001193IU460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 0.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65km EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE. 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911169.897 E.608513.316

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INVESTIMENTS LIMITED
SUBDIVISION

GRADING PLAN

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DESIGN	VBS	SCALE: 1:500	DATE JULY 2021
DRAWN	VBS	PROJECT GOL-14193	DWG. Nº GP-4
CHECKED	JWI		

G:\Eng_3D\COL-14193-EV\Production DWGS\COL-14193-GRADING.dwg Layout: GP-4 Plotted: Oct 05, 2021 @ 3:40pm by Jhermon The Jones Consulting Group Ltd.

REFER TO DRAWING GP-3

REFER TO DWG. PND-1 FOR POND 3 GRADING DESIGN

Block 218
Environmental Protection
12.03 ha.

Block 150
Stormwater Management
3.01 ha.

Block 159
0.3m Reserve

Block 148
Environmental Protection
3.41 ha.

Block 217
Environmental Protection
0.39 ha.

Block 152
Road Widening (0.37 ha.)

Block 153
0.3m Reserve

LOCKHART INNISFIL INVESTMENTS (II) LIMITED DEVELOPMENT

DEVELOPMENT BOUNDARY

FENCHURCH MANOR

LOCKHART ROAD

NOTE: ALL WORKS WITHIN ENVIRONMENTAL PROTECTION BLOCKS WILL REQUIRE OFFSETTING THROUGH LSRCA FOR ENCROACHMENT WITHIN NATURAL HERITAGE SYSTEM.

REFER TO DRAWING GP-6

BLK 225
0.3m RESERVE

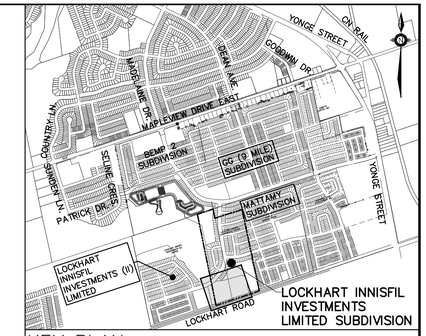
SAN 01A

MW12
252.14

PZ3
251.41

STM 32
STM 34
STM 39
STM 40

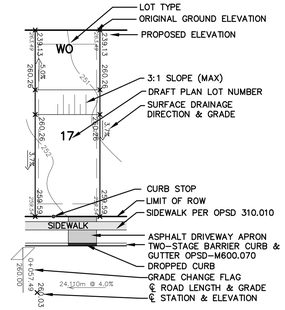
WO 189
WO 190
7 SD
6 SD
5 SD
4 TR
3 LO
2 TR
1 WO

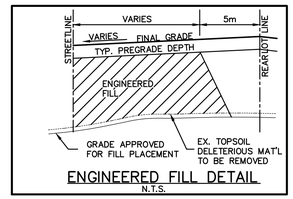


KEY PLAN
NTS

LEGEND

- LIMIT OF SUBDIVISION
- LSRCA REGULATED BOUNDARY
- EX. CONTOUR
- EX. VEGETATION
- EX. DITCH
- SANITARY MANHOLE — SAN 5A
- STORM MANHOLE — STM 8
- DOUBLE DITCH INLET — DDI
- CATCHBASIN — CB
- DOUBLE CATCHBASIN — DCB
- TREE PRESERVATION FENCE
- SLOPE (3:1 MAX.)
- HYDRANT AND VALVE — H&V
- VALVE — V
- CURB STOP
- SIDEWALK TACTILE PLATES
- EX. BOREHOLE LOCATION ID# & GROUNDWATER ELEVATION — BH7 254.60
- TRANSFORMER
- SWITCHGEAR — S
- LIGHT STANDARD
- BELL/ROGERS — BPED
- MAJOR OVERLAND FLOW ROUTE
- LID DRY SWALE
- SPLIT DRAINAGE LOT — SD
- WALK OUT LOT — WO
- LOOK OUT LOT — LO
- FRONT DRAINING LOT — FD
- TRANSITION LOT — TR





ENGINEERED FILL DETAIL
N.T.S.

BENCHMARK:

BENCHMARK NO: 001931U460G SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.0m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

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DRAWN	VBS	PROJECT GOL-14193	DWG. Nº GP-5
CHECKED	JWI		

G:\Eng_3D\GOL-14193-E\Production DWGS\GOL-14193-GRADING.dwg, Layout: GP-5, Plotted: Oct 05, 2021 @ 3:42pm by jhermann, The Jones Consulting Group Ltd.

REFER TO DRAWING GP-4

REFER TO DRAWING GP-5

REFER TO DWG. PND-1 FOR POND 3 GRADING DESIGN

FENCHURCH MANOR

7 SD

6 SD

5 SD

4 TR

3 LO

2 TR

Block 150
Stormwater Management
3.01 ha.

Block 148
Environmental Protection
3.41 ha.

Block 152
Road Widening (0.37 ha.)

Block 153
0.3m Reserve

NOTE: ALL WORKS WITHIN ENVIRONMENTAL PROTECTION BLOCKS WILL REQUIRE OFFSETTING THROUGH LSRCA FOR ENCROACHMENT WITHIN NATURAL HERITAGE SYSTEM.

NOTE: EARTHWORKS FOR MATTAMY AND LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISIONS TO BE COMPLETED SIMULTANEOUSL

FUTURE MATTAMY DEVELOPMENT

FUTURE STREET 'M'

DEVELOPMENT BOUNDARY

LOCKHART ROAD

STM 31 (B.O.)

STM 38 (B.O.)

STM 43 (B.O.)

STM 34

STM 39

STM 40

STM 32

BH8
252.69

REMOVE STOCK PONDING

CEDARS

DITCH

GRAVEL DRIVEWAY

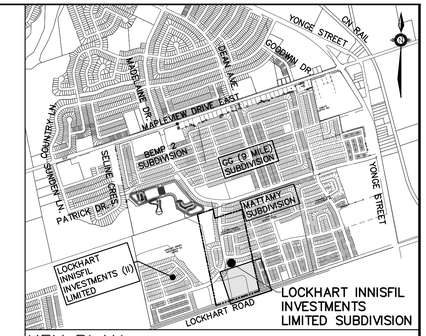
FENCE

Ø0.4 CULVERT INV. 251.84

Ø0.4 CULVERT INV. 251.87

Ø0.5 CULVERT

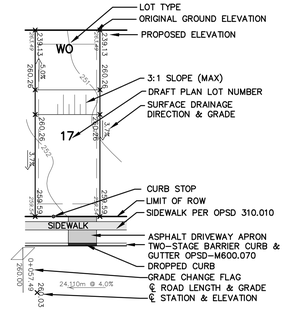
Road Wic

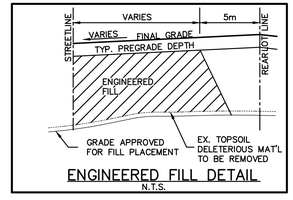


KEY PLAN
NTS

LEGEND

- LIMIT OF SUBDIVISION
- LSRCA REGULATED BOUNDARY
- EX. CONTOUR
- EX. VEGETATION
- EX. DITCH
- SANITARY MANHOLE — SAN 5A
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- TREE PRESERVATION FENCE
- SLOPE (3:1 MAX.) — H&V
- HYDRANT AND VALVE
- VALVE
- CURB STOP
- SIDEWALK TACTILE PLATES
- EX. BOREHOLE LOCATION ID# & GROUNDWATER ELEVATION — BH7 254.60
- TRANSFORMER
- SWITCHGEAR — S
- LIGHT STANDARD
- BELL/ROGERS — BPED
- MAJOR OVERLAND FLOW ROUTE
- LID DRY SWALE
- SPLIT DRAINAGE LOT — SD
- WALK OUT LOT — WO
- LOOK OUT LOT — LO
- FRONT DRAINING LOT — FD
- TRANSITION LOT — TR





ENGINEERED FILL DETAIL
N.T.S.

BENCHMARK:

BENCHMARK NO: 001193IU4605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BROK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.588 E.607083.531

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTIMENTS LIMITED SUBDIVISION

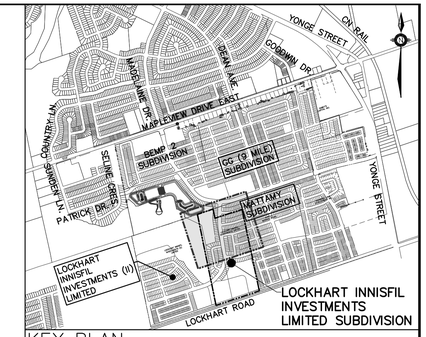
GRADING PLAN

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VBS	SCALE: 1:500	DATE JULY 2021
DRAWN	VBS	PROJECT GOL-14193	DWG. Nº GP-6
CHECKED	JWI		

G:\Eng_JOY\GOL-14193-E\Production DWGS\GOL-14193-GRADING.dwg Layout:GP-6 Plotted: Oct 05, 2021 @ 3:44pm by jhermann The Jones Consulting Group Ltd





KEY PLAN
NTS

LEGEND

- STM 01 ○ — STORM MAINTENANCE HOLE
- CB □ — STORM DOUBLE CATCHBASIN
- DCB □ — STORM CATCHBASIN
- PROP. STORM SEWER & DIRECTION OF FLOW
- STM 01 (B.O.) ○ — STORM MAINTENANCE HOLE (BY OTHERS)
- PROP. STORM SEWER & DIRECTION OF FLOW (BY OTHERS)
- CATCHMENT BOUNDARY
- CATCHMENT AREA ID NUMBER
- RUN–OFF COEFFICIENT
- AREA (ha.)
- DIRECTION OF POST DEVELOPMENT 100 YEAR STORM EVENT OVERLAND FLOW
- DIRECTION OF EXTERNAL POST DEVELOPMENT 100 YEAR STORM EVENT OVERLAND FLOW
- EXISTING CONTOUR AND ELEVATION
- LIMIT OF SUBDIVISION
- LID CATCHMENT BOUNDARY
- LID DRY SWALE

BENCHMARK:

BENCHMARK NO: 001193104605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH–EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH–EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 010198654S4 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28m WEST OF THE NORTH–EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 010198604O7 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 010198604O4 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER — J. W. INGRAM — 100143779 — 21-10-06 — PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

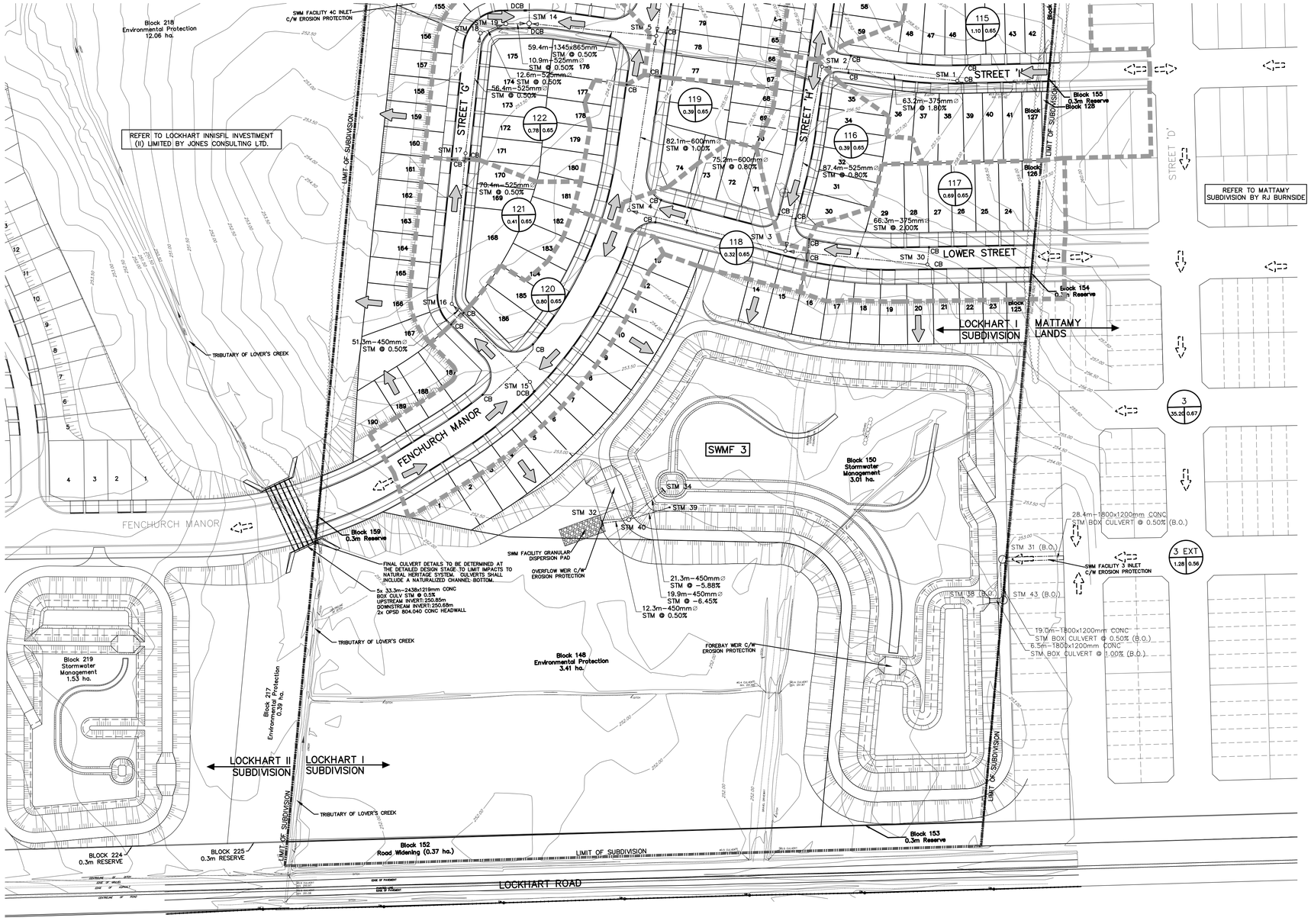
STORM SEWER SUB–CATCHMENT PLAN

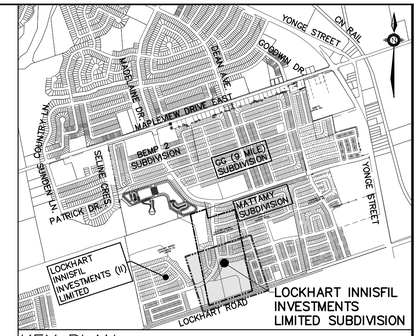
JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN VS	SCALE: 1:1000	DATE JULY 2021	
DRAWN KC/VS	PROJECT GOL–14193	DWG. Nº STM–1	
CHECKED JI			

G:\Eng_3D\GOL–14193–C\Production DWGS\GOL–14193–STORM DRAINAGE.dwg, Layout:STM–1 Plotted: Oct 06, 2021 @ 8:34am by Jeremson The Jones Consulting Group Ltd

REFER TO DRAWING STM-1





KEY PLAN
NTS

LEGEND

- STM 01 ○ — STORM MAINTENANCE HOLE
- CB □ — STORM DOUBLE CATCHBASIN
- DCB □ — STORM CATCHBASIN
- PROP. STORM SEWER & DIRECTION OF FLOW
- STM 01 (B.O.) ○ — STORM MAINTENANCE HOLE (BY OTHERS)
- PROP. STORM SEWER & DIRECTION OF FLOW (BY OTHERS)
- CATCHMENT BOUNDARY
- 109 / 0.22 / 0.65 — CATCHMENT AREA ID NUMBER; RUN-OFF COEFFICIENT; AREA (ha.)
- DIRECTION OF POST DEVELOPMENT 100 YEAR STORM EVENT OVERLAND FLOW
- DIRECTION OF EXTERNAL POST DEVELOPMENT 100 YEAR STORM EVENT OVERLAND FLOW
- 253.00 — EXISTING CONTOUR AND ELEVATION
- LIMIT OF SUBDIVISION
- LID CATCHMENT BOUNDARY
- LID DRY SWALE

BENCHMARK:

BENCHMARK NO: 001931U460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENSED PROFESSIONAL ENGINEER J. W. INGRAM 100143779 21-10-06 PROVINCE OF ONTARIO

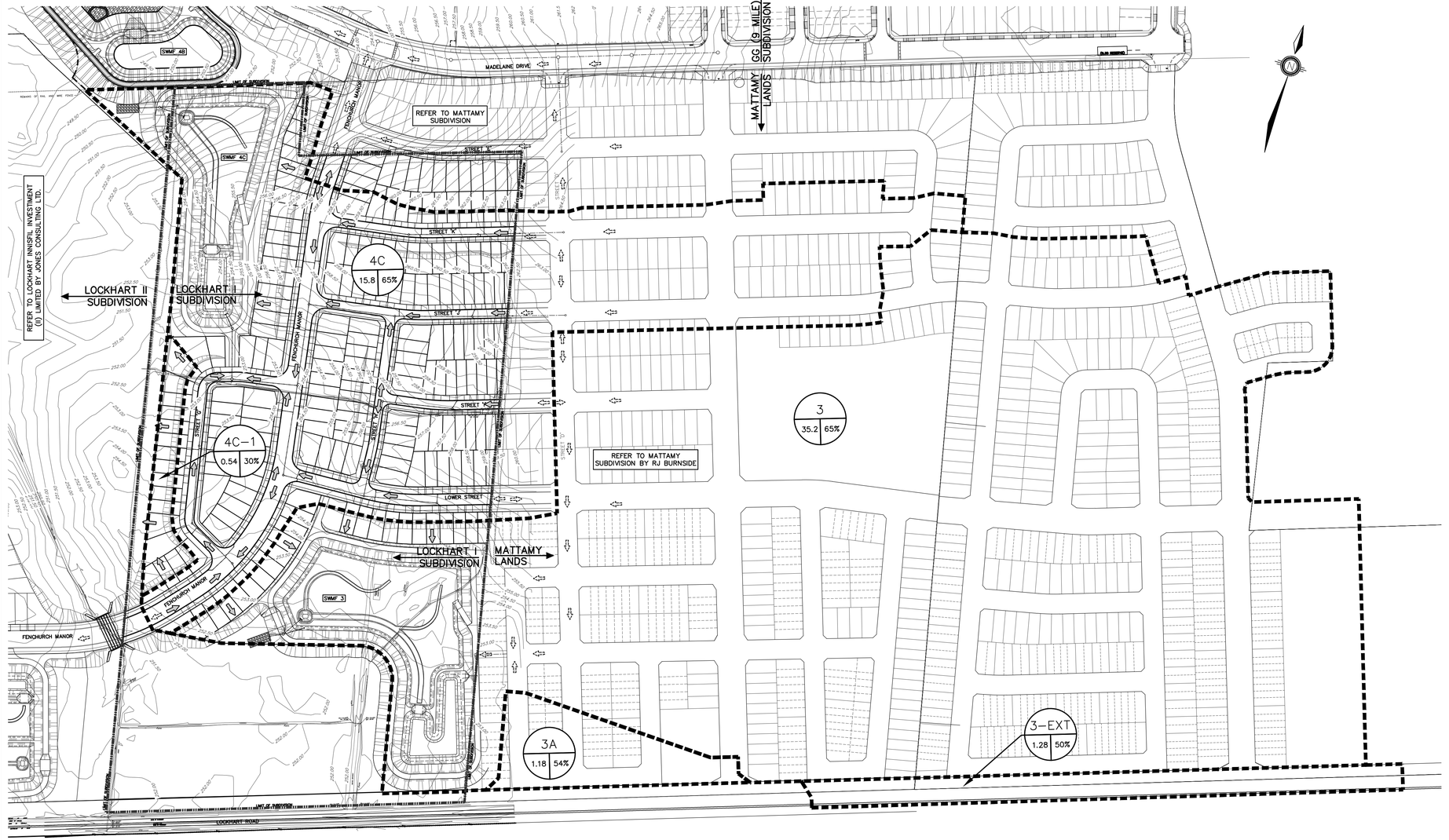
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

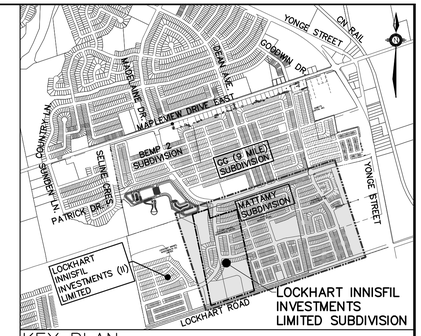
STORM SEWER SUB-CATCHMENT PLAN

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN VI	SCALE: 1:1000	DATE JULY 2021	
DRAWN KC/VS	PROJECT GOL-14193	DWG. Nº STM-2	
CHECKED JI			

G:\Eng_3D\GOL-14193-EV\Production DWGS\GOL-14193-STORM DRAINAGE.dwg Layout:STM-2 Plotted Oct 07, 2021 @ 10:55am by jhermann The Jones Consulting Group Ltd.





KEY PLAN
NTS

LEGEND

- STM 01 — STORM MAINTENANCE HOLE
- CB — STORM DOUBLE CATCHBASIN
- DCB — STORM CATCHBASIN
- PROP. STORM SEWER & DIRECTION OF FLOW
- STM 01 (B.O.) — STORM MAINTENANCE HOLE (BY OTHERS)
- PROP. STORM SEWER & DIRECTION OF FLOW (BY OTHERS)
- CATCHMENT BOUNDARY
- CATCHMENT AREA ID NUMBER
- RUN-OFF COEFFICIENT
- AREA (ha.)
- DIRECTION OF POST DEVELOPMENT 100 YEAR STORM EVENT OVERLAND FLOW
- DIRECTION OF EXTERNAL POST DEVELOPMENT 100 YEAR STORM EVENT OVERLAND FLOW
- 253.00 — EXISTING CONTOUR AND ELEVATION
- LIMIT OF SUBDIVISION

BENCHMARK:

BENCHMARK NO: 0011931U460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.69m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.588 E.607083.531

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

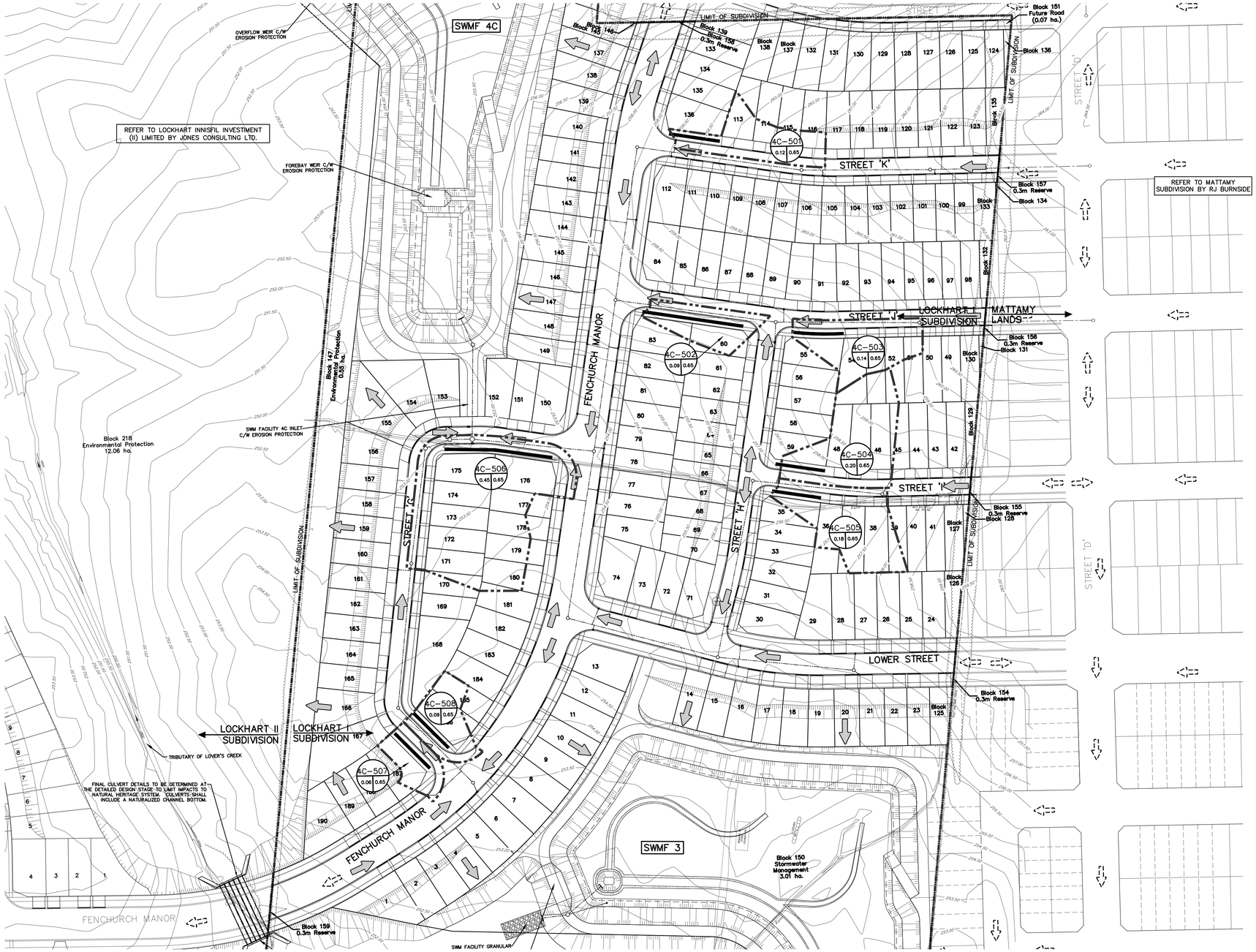
POST-DEVELOPMENT DRAINAGE AREA PLAN SWM FACILITIES 3 & 4C

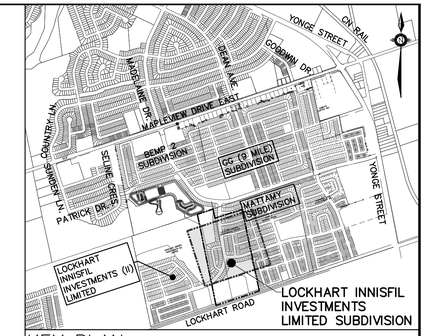
JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VS	SCALE: 1:2000	DATE AUGUST 2021
DRAWN	KC/VS	PROJECT GOL-14193	DWG. Nº SWM-1
CHECKED	JI		

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REFER TO DRAWING STM-1





KEY PLAN
NTS

LEGEND

- STM 01 — STORM MAINTENANCE HOLE
- CB — STORM DOUBLE CATCHBASIN
- DCB — STORM CATCHBASIN
- PROP. STORM SEWER & DIRECTION OF FLOW
- STM 01 (B.O.) — STORM MAINTENANCE HOLE (BY OTHERS)
- PROP. STORM SEWER & DIRECTION OF FLOW (BY OTHERS)
- CATCHMENT BOUNDARY
- CATCHMENT AREA ID NUMBER
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- AREA (ha.)
- DIRECTION OF POST DEVELOPMENT 100 YEAR STORM EVENT OVERLAND FLOW
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- EXISTING CONTOUR AND ELEVATION
- LIMIT OF SUBDIVISION
- LID CATCHMENT BOUNDARY
- LID DRY SWALE

BENCHMARK:

BENCHMARK NO: 001193IU460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK.

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65km EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911169.897 E.606513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENSED PROFESSIONAL ENGINEER — J. W. INGRAM — 100143779 — 21-10-06 — PROVINCE OF ONTARIO

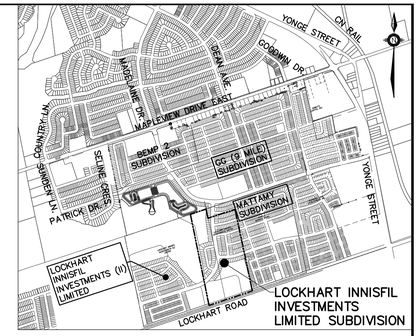
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

LID SUB-CATCHMENT PLAN

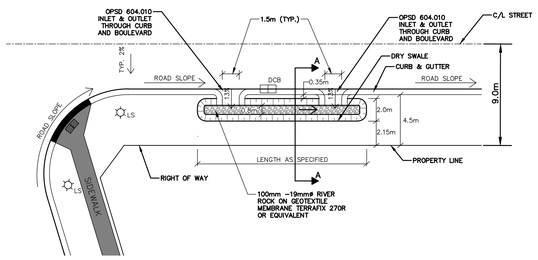
JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VI	SCALE: 1:1000	DATE JULY 2021
DRAWN	KC/VS	PROJECT GOL-14193	DWG. Nº LID-1
CHECKED	JI		

G:\Eng_3D\GOL-14193-EV\Production DWGS\GOL-14193-STORM DRAINAGE.dwg, Layout:LID-1 Plotted: Oct 06, 2021 @ 9:06am by Jhermann The Jones Consulting Group Ltd.

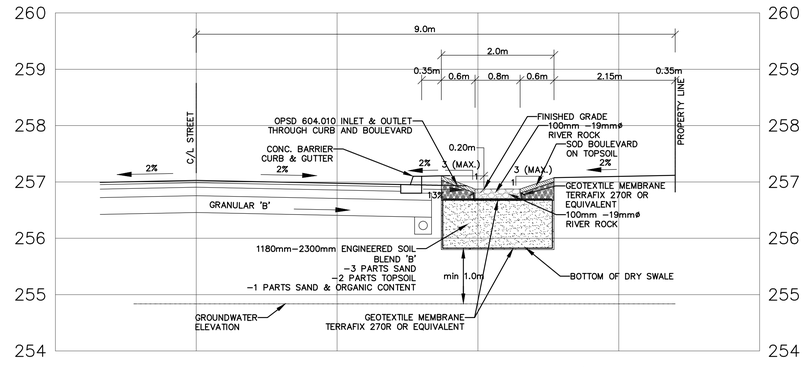


								North/West End			South/East End		
Location	Catchment ID	Area (ha)	Infiltration Rate (mm/hr)	Percent Impervious	Length (m)	Width (m)	Total Depth (m)	Ground Elevation	Water Table Elevation	Distance from Bottom of Swale to Water Table Elevation	Ground Elevation	Water Table Elevation	Distance from Bottom of Swale to Water Table Elevation
Street E	4C-501	0.12	13	65%	23.00	2.00	1.30	260.36	257.69	1.36	260.80	258.49	1.00
Street J	4C-502	0.09	13	65%	50.00	2.00	1.30	260.36	257.69	1.36	260.80	258.49	1.00
Street J	4C-503	0.14	13	65%	25.00	2.00	1.18	259.25	257.07	1.00	259.73	257.29	1.26
Street I	4C-504	0.20	13	65%	25.00	2.00	1.30	258.99	256.66	1.01	259.30	256.98	1.00
Street I	4C-505	0.18	13	65%	25.00	2.00	2.00	258.99	255.97	1.00	259.30	256.20	1.08
Street G	4C-506	0.45	13	65%	50.00	2.00	2.20	255.97	252.44	1.32	256.22	253.01	1.00
Street G	4C-507	0.06	13	65%	25.30	2.00	2.30	256.85	253.53	1.00	257.00	253.31	1.37
Street G	4C-508	0.09	13	65%	25.00	2.00	1.93	256.85	253.91	1.00	257.14	253.76	1.44



NO SIDEWALK – PLAN VIEW

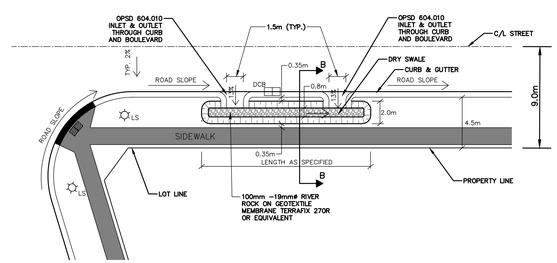
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SECTION A–A

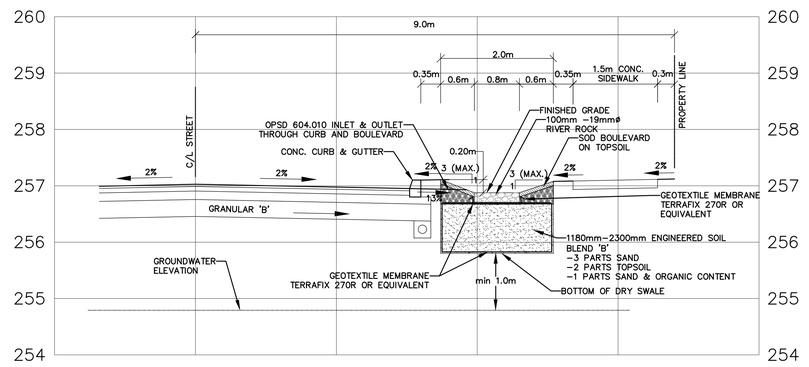
1:50

NOTE: ENGINEERED SOIL DEPTH VARIES TO MEET LID'S TOTAL DEPTH OUTLINED IN THE TABLE BELOW



SIDEWALK – PLAN VIEW

1:250



SECTION B–B

1:50

NOTE: ENGINEERED SOIL DEPTH VARIES TO MEET LID'S TOTAL DEPTH OUTLINED IN THE TABLE BELOW

BENCHMARK:

BENCHMARK NO: 0011931U4605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BROK. ELEV 263.480

BENCHMARK NO: 0101986S454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO. 0101986O407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 0101986O404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER J. W. INGRAM 100143779 21-10-06 PROVINCE OF ONTARIO

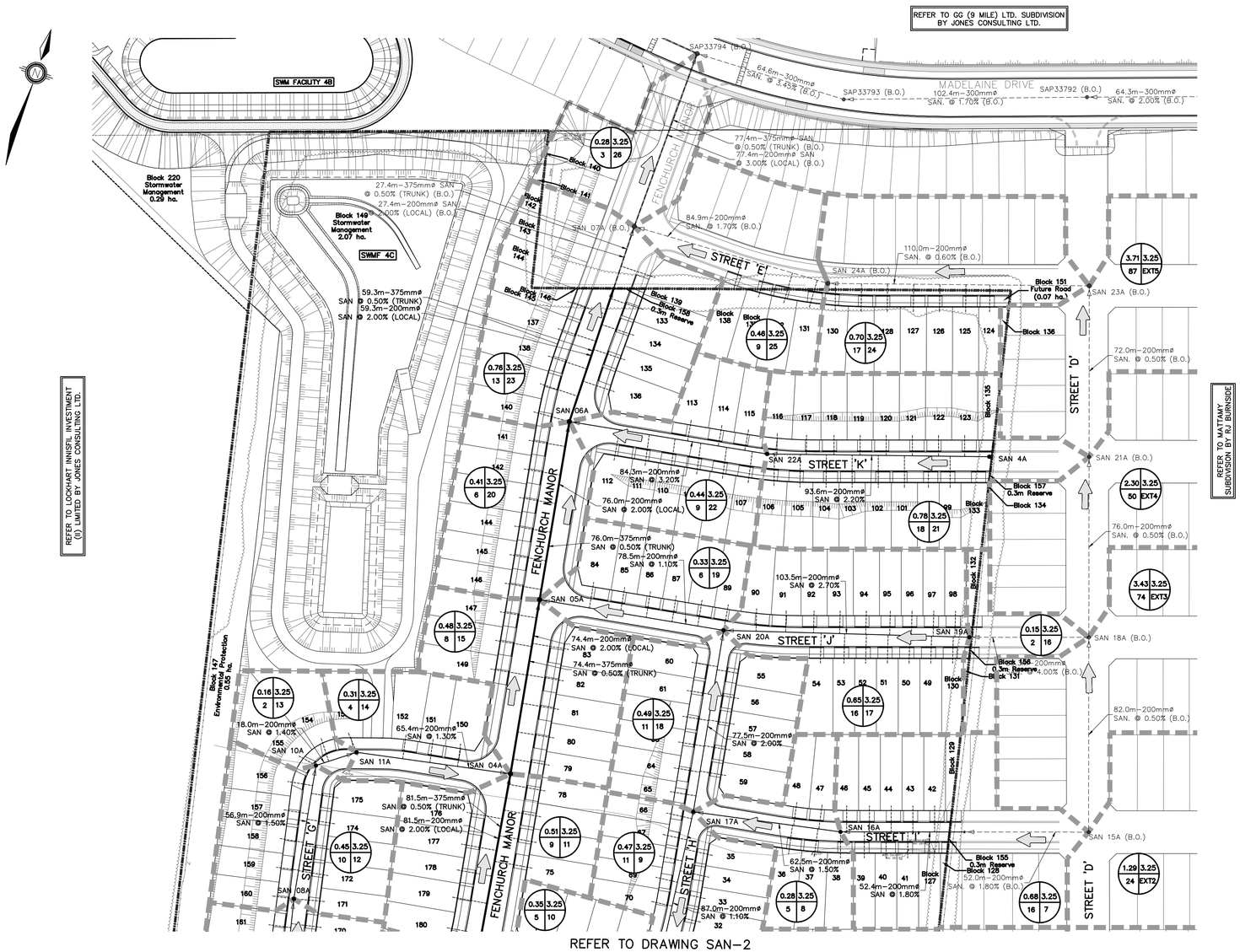
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

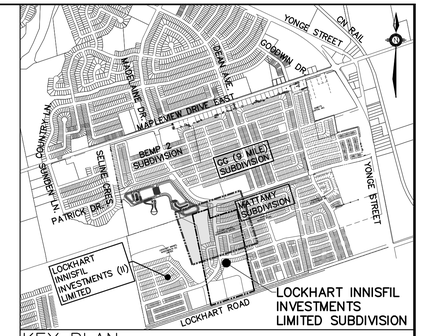
LID SECTIONS AND DETAILS DRY SWALES

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	VI	SCALE: 1:1000	DATE JULY 2021
DRAWN	KC/VS	PROJECT GOL-14193	DWG. Nº LID-1
CHECKED	JI		

G:\Eng_3D\GOL-14193-C\Production DWGS\GOL-14193-STORM DRAINAGE.dwg, Layout:LID-2, Plotted: Oct 06, 2021 @ 9:46am by jhermann The Jones Consulting Group Ltd.





KEY PLAN
NTS

LEGEND

- MH89A — SANITARY MAINTENANCE HOLE
- MH89A — SANITARY SEWER & DIRECTION OF FLOW
- SANITARY SERVICE
- SAN 54A (B.O.) — SANITARY SEWER DIRECTION OF FLOW (BY OTHERS)
- SAN 54A (B.O.) — SANITARY MAINTENANCE HOLE (BY OTHERS)
- SUB CATCHMENT BOUNDARY
- LIMIT OF SUBDIVISION
- DIRECTION OF FLOW
- AREA (ha.) / PERSONS PER UNIT / No. OF UNITS / CATCHMENT AREA ID NUMBER (e.g. 0.42 | 3.13 | 10 | 13)

BENCHMARK:

BENCHMARK NO: 001193U4605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BROK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER — J. W. INGRAM — 100143779 — 21-10-06 — PROVINCE OF ONTARIO

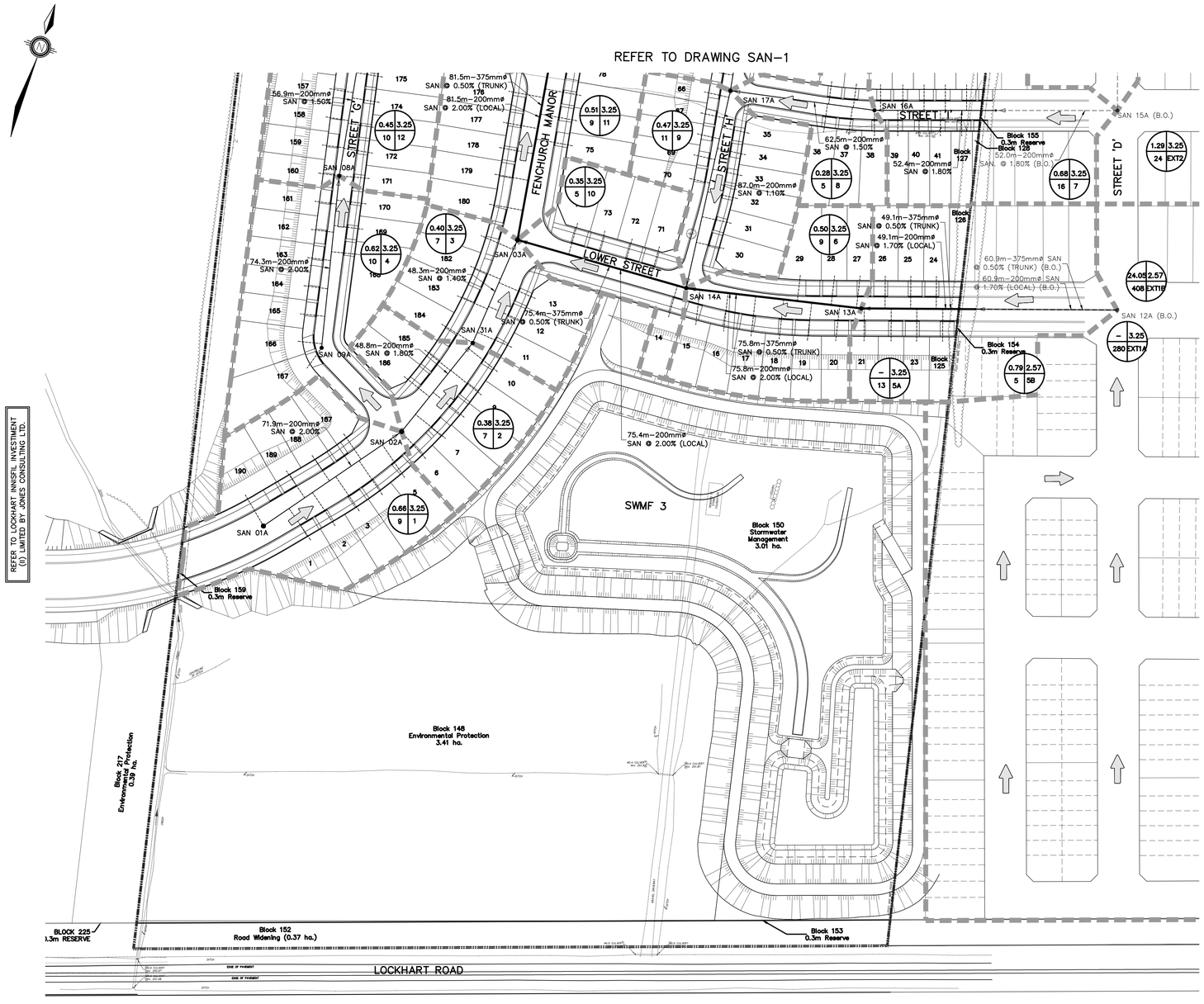
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

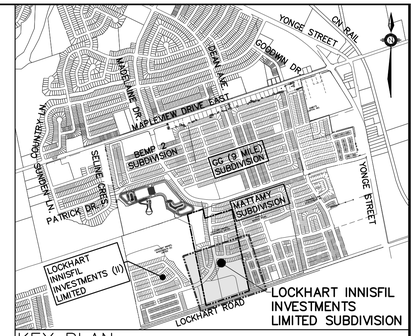
SANITARY DRAINAGE AREA PLAN

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	KC	SCALE: 1:1000	DATE MAY 2021
DRAWN	KC	PROJECT GOL-14193	DWG. Nº SAN-1
CHECKED	JI		

G:\Eng_3D\GOL-14193-E\Production DWGS\GOL-14193-SANITARY DRAINAGE.dwg, Layout: SAN-1 Plotted: Oct 05, 2021 @ 3:44pm by Jeermann The Jones Consulting Group Ltd.





KEY PLAN

NTS

LEGEND

- SANITARY MAINTENANCE HOLE
- SANITARY SEWER & DIRECTION OF FLOW
- SANITARY SERVICE
- SANITARY SEWER DIRECTION OF FLOW (BY OTHERS)
- SANITARY MAINTENANCE HOLE (BY OTHERS)
- SUB CATCHMENT BOUNDARY
- LIMIT OF SUBDIVISION
- DIRECTION OF FLOW
- AREA (ha.) / PERSONS PER UNIT / No. OF UNITS / CATCHMENT AREA ID NUMBER

BENCHMARK:

BENCHMARK NO: 001193104605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

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LICENCED PROFESSIONAL ENGINEER — J. W. INGRAM — 100143779 — 21-10-06 — PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

SANITARY DRAINAGE AREA PLAN

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
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P. 705.734.2538
F. 705.734.1066

DESIGN	KC	SCALE: 1:1000	DATE MAY 2021
DRAWN	KC	PROJECT GOL-14193	DWG. Nº SAN-2
CHECKED	JI		

G:\Eng_3D\GOL-14193-EV\Production DWGS\GOL-14193-SANITARY DRAINAGE.dwg Layout:SAN-2 Plotted: Oct 05, 2021 @ 3:43pm by jhermann The Jones Consulting Group Ltd.

SANITARY SEWER DESIGN - LOCAL SEWER

Development Details Basis

DESIGN SHEET 1 of 1
FILE NO GOL-14193
CONTRACT / PROJECT

n ≥ 0.013
M = 5/P^0.2 Babbit
M=1+[14/(4+P^0.5)] Harmon
Q_p = P*q*M/86.4
Q_i = I*A
$Q_{tot} = Q_p + Q_i$

Numbers in blue or text in red are equations
(Harmon or Babbitt peaking factor where; M ≥ 2), the greater of the two is used in the spreadsheet. Please refer to Section 3.3.1.1 of the Barrie Sanitary Design Guidelines for additional guidance on which peaking factor to use.

(Peak population flow where; q = 225 L/day/person; P = population in thousands) 225 litres/person/day
(Peak extraneous flow: I= 0.1L/s/ha over development area)
(Total peak flow as the sum of peak population flow and peak extraneous flow)

STREET	AREA	MAINTENANCE HOLE FROM	MAINTENANCE HOLE TO	DWELL UNITS	DWELL (ACC) UNITS	DENSITY P.P.U.	POP. (P)	POP. (ACC)	M PEAKING FACTOR BABBIT	M PEAKING FACTOR HARMON	Max PEAKING FACTOR	Q_p (l/s)	AREA (ha)	AREA (ACC) (ha)	Q_i (l/s)	Q_{tot} (l/s)	L (m)	D (mm)	S (%)	Qf FULL (l/s)	d/D[2]	d/D[3] >0.5 or >0.7	Velocity FULL (m/s)	Velocity Partial[1] (m/s)	Velocity[4] > 0.6 (m/s)
Fenchurch Manor	1	1A	2A	9	9	3.25	29	29	10.133	4.356	10.133	0.772	0.66	0.66	0.066	0.838	71.9	200	2.00	46.384	0.093	Ok	1.476	0.550	Check
Fenchurch Manor	2	2A	31A	7	16	3.25	23	52	9.032	4.311	9.032	1.223	0.38	1.04	0.104	1.327	48.8	200	1.80	44.004	0.119	Ok	1.401	0.610	Ok
Fenchurch Manor	3	31A	3A	7	23	3.25	23	75	8.399	4.276	8.399	1.635	0.40	1.44	0.144	1.779	48.3	200	1.40	38.808	0.145	Ok	1.235	0.609	Ok
Lower Street	EXT1		12A	280		3.25	910																		
Lower Street	EXT1		12A	408		2.57	1049						24.05	24.05											
Lower Street	5 (Trunk)	12A	13A		688			1959	4.371	3.593	4.371	22.294	0.79	24.84	2.484	24.778	110.0	375	0.50	123.977	0.303	Ok	1.123	0.850	Ok
Lower Street	5A (Local)	12A	13A	13		3.25	42																		
Lower Street	5B (Local)	12A	13A	5	18	2.57	13	55	8.928	4.306	8.928	1.281		0.79	0.079	1.360	110.0	200	1.70	42.764	0.122	Ok	1.361	0.606	Ok
Lower Street	6 (Trunk)	13A	14A		706			2014	4.347	3.583	4.347	22.794	0.50	25.34	2.534	25.328	75.8	375	0.50	123.977	0.306	Ok	1.123	0.855	Ok
Lower Street	6 (Local)	13A	14A	9	9	3.25	29	29	10.133	4.356	10.133	0.772		0.50	0.050	0.822	75.8	200	2.00	46.384	0.092	Ok	1.476	0.550	Check
Street I	7	15A	16A	16	16	3.25	52	52	9.032	4.311	9.032	1.223	0.68	0.68	0.068	1.291	104.4	200	1.80	44.004	0.117	Ok	1.401	0.610	Ok
Street I	8	16A	17A	5	21	3.25	16	68	8.554	4.285	8.554	1.520	0.28	0.96	0.096	1.616	62.5	200	1.50	40.170	0.136	Ok	1.279	0.611	Ok
Street H	9	17A	14A	11	32	3.25	36	104	7.863	4.239	7.863	2.129	0.47	1.43	0.143	2.272	87.0	200	1.10	34.399	0.174	Ok	1.095	0.606	Ok
Lower Street	10 (Trunk)	14A	3A		747			2147	4.291	3.562	4.291	23.993	0.35	27.12	2.712	26.705	75.4	375	0.50	123.977	0.315	Ok	1.123	0.868	Ok
Lower Street	10 (Local)	14A	3A	5	5	3.25	16	16	11.397	4.392	11.397	0.482		0.35	0.035	0.517	75.4	200	2.00	46.384	0.074	Ok	1.476	0.476	Check
Fenchurch Manor	11 (Trunk)	3A	4A		775			2238	4.256	3.547	4.256	24.803	0.51	29.07	2.907	27.710	81.5	375	0.50	123.977	0.321	Ok	1.123	0.878	Ok
Fenchurch Manor	11 (Local)	3A	4A	9	9	3.25	29	29	10.133	4.356	10.133	0.772		0.51	0.051	0.823	81.5	200	2.00	46.384	0.092	Ok	1.476	0.550	Check
Street G	4	9A	8A	10	10	3.25	33	33	9.922	4.349	9.922	0.840	0.62	0.62	0.062	0.902	74.3	200	2.00	46.384	0.096	Ok	1.476	0.566	Check
Street G	12	8A	10A	10	20	3.25	33	65	8.637	4.290	8.637	1.462	0.45	1.07	0.107	1.569	56.9	200	1.50	40.170	0.134	Ok	1.279	0.605	Ok
Street G	13	10A	11A	2	22	3.25	7	72	8.474	4.281	8.474	1.578	0.16	1.23	0.123	1.701	18.0	200	1.40	38.808	0.142	Ok	1.235	0.604	Ok
Street G	14	11A	4A	4	26	3.25	13	85	8.196	4.263	8.196	1.804	0.31	1.54	0.154	1.958	65.4	200	1.30	37.396	0.155	Ok	1.190	0.613	Ok
Fenchurch Manor	15 (Trunk)	4A	5A		810			2352	4.214	3.530	4.214	25.807	0.48	31.1	3.109	28.916	74.4	375	0.50	123.977	0.328	Ok	1.123	0.885	Ok
Fenchurch Manor	15 (Local)	4A	5A	8	8	3.25	26	26	10.375	4.364	10.375	0.702		0.48	0.048	0.750	74.4	200	2.00	46.384	0.088	Ok	1.476	0.534	Check
Street J	16	18A	19A	2	2	3.25	7	7	13.689	4.431	13.689	0.232	0.15	0.15	0.015	0.247	50.3	200	4.00	65.597	0.044	Ok	2.088	0.488	Check
Street J	17	19A	20A	16	18	3.25	52	59	8.821	4.300	8.821	1.344	0.65	0.80	0.080	1.424	103.5	200	2.70	53.883	0.111	Ok	1.715	0.722	Ok
Street H	18	17A	20A	11	11	3.25	36	36	9.735	4.342	9.735	0.906	0.49	0.49	0.049	0.955	77.5	200	2.00	46.384	0.099	Ok	1.476	0.577	Check
Street J	19	20A	5A	6	35	3.25	20	114	7.723	4.228	7.723	2.288	0.33	1.62	0.162	2.450	78.5	200	1.10	34.399	0.180	Ok	1.095	0.619	Ok
Fenchurch Manor	20 (Trunk)	5A	6A		853			2491	4.166	3.510	4.166	27.027	0.41	33.12	3.312	30.339	76.0	375	0.50	123.977	0.336	Ok	1.123	0.898	Ok
Fenchurch Manor	20 (Local)	5A	6A	6	6	3.25	20	20	10.989	4.382	10.989	0.558		0.41	0.041	0.599	76.0	200	2.00	46.384	0.079	Ok	1.476	0.501	Check
Street K	21	4A	22A	18	18	3.25	59	59	8.821	4.300	8.821	1.344	0.78	0.78	0.078	1.422	93.6	200	2.20	48.648	0.117	Ok	1.549	0.675	Ok
Street K	22	22A	6A	9	27	3.25	29	88	8.134	4.259	8.134	1.859	0.44	1.22	0.122	1.981	84.3	200	3.20	58.672	0.125	Ok	1.868	0.849	Ok
Fenchurch Manor	23 (Trunk)	6A	7A		886			2599	4.131	3.495	4.131	27.954	0.76	35.10	3.510	31.464	86.7	375	0.50	123.977	0.343	Ok	1.123	0.905	Ok
Fenchurch Manor	23 (Local)	6A	7A	13	13	3.25	42	42	9.415	4.329	9.415	1.036		0.76	0.076	1.112	86.7	200	2.00	46.384	0.106	Ok	1.476	0.603	Ok
Street D	EXT.2			24		3.25	78						1.29												
Street D	EXT.3			74		3.25	241						3.43												
Street D	EXT.4			50		3.25	163						2.30												
Street E	EXT.5			87		3.25	283						3.71												
Street E	24	23A	24A	17	252	3.25	55	819	5.204	3.854	5.204	11.099	0.70	11.43	1.143	12.242	110.0	200	0.60	25.406	0.489	Ok	0.809	0.781	Ok
Street E	25	24A	7A	9	261	3.25	29	848	5.167	3.845	5.167	11.415	0.46	11.89	1.189	12.604	84.9	200	1.70	42.764	0.371	Ok	1.361	1.151	Ok
Fenchurch Manor	26 (Trunk)	7A	SAP33794		1160			3489	3.894	3.386	3.894	35.385	0.28	47.27	4.727	40.112	77.4	375	0.50	123.977	0.391	Ok	1.123	0.967	Ok
Fenchurch Manor	26 (Local)	7A	SAP33794	3	3	3.25	10	10	12.623	4.416	12.623	0.321		0.28	0.028	0.349	77.4	200	3.00	56.809	0.056	Ok	1.808	0.482	Check

GOL-14193 Lockhart I
5 Year Storm Sewer Sizing
October 2021

AREAS	Street	MANHOLE FROM	MANHOLE TO	LENGTH (m)	INCREMENT C	INCREMENT A	INCREMENT CA	TOTAL CA	FLOW TIME (min) TO	FLOW TIME (min) IN	I (mm/h)	TOTAL Q (cms)	S (%)	D (mm)	Q FULL (cms)	V FULL (m/s)	% FULL
From Mattamy to GG 9 Mile ↓													450mmØ shown in GG (9 Mile)				
101	Street 'D'	STM 22	STM DDLV5555	85.5	0.65	1.17	0.76	0.76	10.00	0.93	109	0.230	0.60	525	0.333	1.5	***69.0***
From Mattamy to GG 9 Mile ↓																	
102	Street 'E'	STM 23	STM 24	55.2	0.65	0.49	0.32	0.32	10.00	0.46	109	0.097	2.10	300	0.140	2.0	***69.2***
103	Street 'E'	STM 24	STM 25	79.1	0.65	0.68	0.44	0.76	10.46	0.48	106	0.224	3.00	375	0.304	2.7	***73.9***
104	Fenchurch Manor	STM 25	STM DDLV5563	84.8	0.65	0.52	0.34	1.10	10.94	0.85	104	0.318	0.70	525	0.360	1.7	***88.3***
From Mattamy to Lockhart ↓																	
105	Street 'K'	STM 10	STM 11		0.65	1.85	1.20										
106	Street 'K'	STM 10	STM 11	77.5	0.65	0.11	0.07	1.28	10.00	0.48	109	0.386	1.80	525	0.577	2.7	***66.9***
107	Street 'K'	STM 11	STM 12	62.5	0.65	0.19	0.12	1.40	10.48	0.39	106	0.413	1.80	525	0.577	2.7	***71.6***
108	Street 'K'	STM 12	STM 13	80.5	0.65	0.37	0.24	1.64	10.88	0.38	104	0.475	3.20	525	0.769	3.6	***61.7***
109	Fenchurch Manor	STM 13	STM 9	75.0	0.65	0.21	0.14	1.78	11.25	0.47	102	0.506	1.80	525	0.577	2.7	***87.7***
110	Street 'J'	STM 6	STM 7	84.5	0.65	1.32	0.86	0.86	10.00	0.44	109	0.259	4.00	375	0.351	3.2	***73.8***
111	Street 'J'	STM 7	STM 8	69.7	0.65	0.75	0.49	1.34	10.44	0.46	106	0.397	1.60	525	0.544	2.5	***73.0***
112	Street 'H'	STM DCB	STM 8	9.8	0.65	0.32	0.20	0.20	10.00	0.08	109	0.062	2.00	300	0.137	1.9	***45.4***
113	Street 'J'	STM 8	STM 9	78.5	0.65	0.53	0.35	1.89	10.91	0.49	104	0.547	1.50	600	0.752	2.7	***72.8***
114	Fenchurch Manor	STM 9	STM 5	74.1	0.65	0.71	0.46	4.14	11.72	0.35	100	1.150	2.20	675	1.247	3.5	***92.3***
115	Street 'I'	STM 1	STM 2	63.2	0.65	1.10	0.72	0.72	10.00	0.49	109	0.217	1.80	375	0.235	2.1	***92.3***
116	Street 'H'	STM 2	STM 3	87.4	0.65	0.39	0.25	0.97	10.49	0.82	106	0.286	0.80	525	0.385	1.8	***74.4***
117	Lower Street	STM 30	STM 3	66.3	0.65	0.69	0.45	0.45	10.00	0.49	109	0.135	2.00	375	0.248	2.2	***54.6***
118	Lower Street	STM 3	STM 4	75.2	0.65	0.32	0.21	1.63	11.31	0.65	102	0.461	0.80	600	0.549	1.9	***84.0***
119	Fenchurch Manor	STM 4	STM 5	82.1	0.65	0.39	0.25	1.88	11.96	0.63	99	0.517	1.00	600	0.614	2.2	***84.2***
	*Street 'G'	STM 5	STM 14	59.4				6.02	12.59	0.44	96	1.609	0.50	1050	1.931	2.2	***83.3***
120	Street 'G'	STM 15	STM 16	51.3	0.65	0.80	0.52	0.52	10.00	0.67	109	0.158	0.50	450	0.202	1.3	***78.3***
121	Street 'G'	STM 16	STM 17	70.4	0.65	0.41	0.27	0.79	10.67	0.84	105	0.231	0.50	525	0.304	1.4	***75.8***
	Street 'G'	STM 17	STM 18	56.4				0.79	11.51	0.67	101	0.221	0.50	525	0.304	1.4	***72.8***
	Street 'G'	STM 18	STM 19	12.6				0.79	12.18	0.15	98	0.215	0.50	525	0.304	1.4	***70.6***
	Street 'G'	STM 19	STM 14	10.9				0.79	12.33	0.13	97	0.213	0.50	525	0.304	1.4	***70.1***
122	**EASEMENT	STM 14	STM 20	45.9	0.65	0.78	0.51	7.32	13.03	0.41	94	1.917	**0.30**	1200	2.135	1.9	***89.8***
	**SWMF4	STM 20	STM HW 21	14.0				7.32	13.44	0.12	93	1.884	**0.30**	1200	2.135	1.9	***88.2***
Areas and runoff coefficients taken from PF PCSWMM modeling ↓																	
3-EXT					0.56	1.28	0.71										
3	***SWMF3	STM 43 (B.O.)	STM HW 38 (B.O.)	6.5	0.67	35.20	23.71	24.42	15.00	0.04	87	5.903	**0.50**	1650	6.445	3.0	***91.6***

Q= 0.0028*C*I*A (cms); C=RUNOFF COEFFICIENT; I-RAINFALL INTENSITY (5 Year) =853.608/(T.C. + 4.699)^0.766; A=AREA (ha)

Note: * Circular pipe diameter matches an equivalent area of 865 x 1345mm elliptical pipe. (DECAST Reinforced Concrete Elliptical Pipe)
** Circular pipe diameter matches an equivalent area of 965 x 1525mm elliptical pipe. (DECAST Reinforced Concrete Elliptical Pipe)
*** Circular pipe diameter matches an equivalent area of 1829x 1219mm box culvert. (DECAST Precast Box Culvert)

BENCHMARK:

BENCHMARK NO: 001193IU460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 0.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

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1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER J. W. INGRAM 100143779 21-10-06 PROVINCE OF ONTARIO

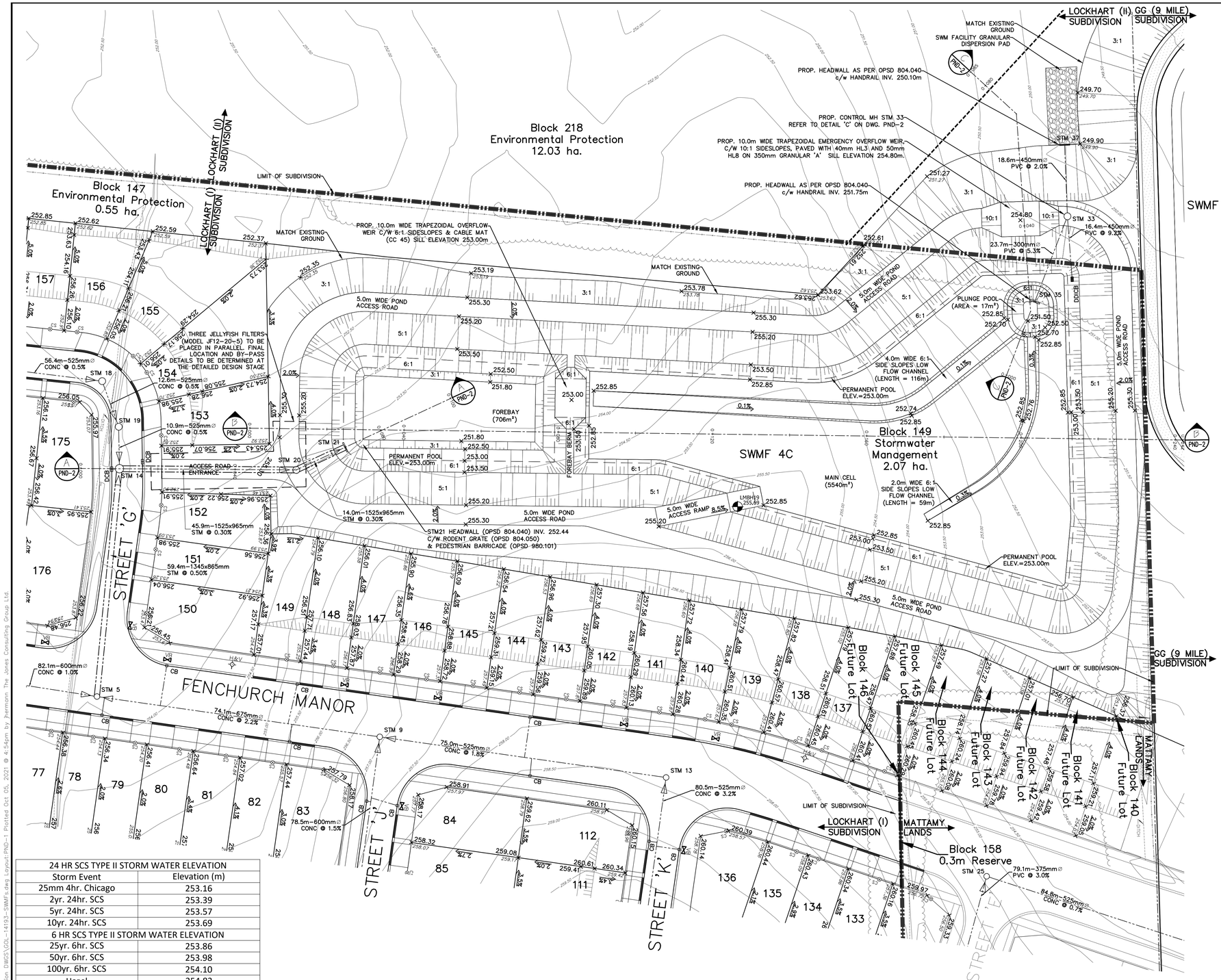
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

DESIGN SHEETS

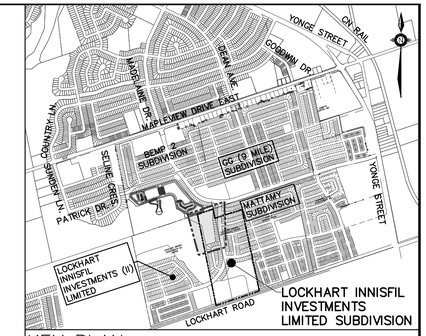
JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	KC/VBS	SCALE: NTS	DATE JULY 2021
DRAWN	KC	PROJECT GOL-14193	DWG. Nº DS-1
CHECKED	JI		

G:\Eng_3D\GOL-14193-EV\Production DWGS\GOL-14193-SANITARY DRAINAGE.dwg, Layout: DS-1, Plotted: Oct 06, 2021 @ 2:30pm by jhermann, The Jones Consulting Group Ltd



24 HR SCS TYPE II STORM WATER ELEVATION	
Storm Event	Elevation (m)
25mm 4hr. Chicago	253.16
2yr. 24hr. SCS	253.39
5yr. 24hr. SCS	253.57
10yr. 24hr. SCS	253.69
6 HR SCS TYPE II STORM WATER ELEVATION	
25yr. 6hr. SCS	253.86
50yr. 6hr. SCS	253.98
100yr. 6hr. SCS	254.10
Hazel	254.83



KEY PLAN
NTS

LEGEND

- STM MH — STORM MAINTENANCE HOLE
- DCB — STORM DOUBLE CATCHBASIN
- DI.CB — DOUBLE DITCH INLET CATCHBASIN
- CB — STORM CATCHBASIN
- PROP. STORM SEWER & DIRECTION OF FLOW
- LIMIT OF SUBDIVISION
- 253.00 — EXISTING CONTOUR AND ELEVATION

BENCHMARK:

BENCHMARK NO: 001193IU460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "Y" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 010198654S4 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65km EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE. 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 010198604O7 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 010198604O4 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911169.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER — J. W. INGRAM — 100143779 — 21-10-06 — PROVINCE OF ONTARIO

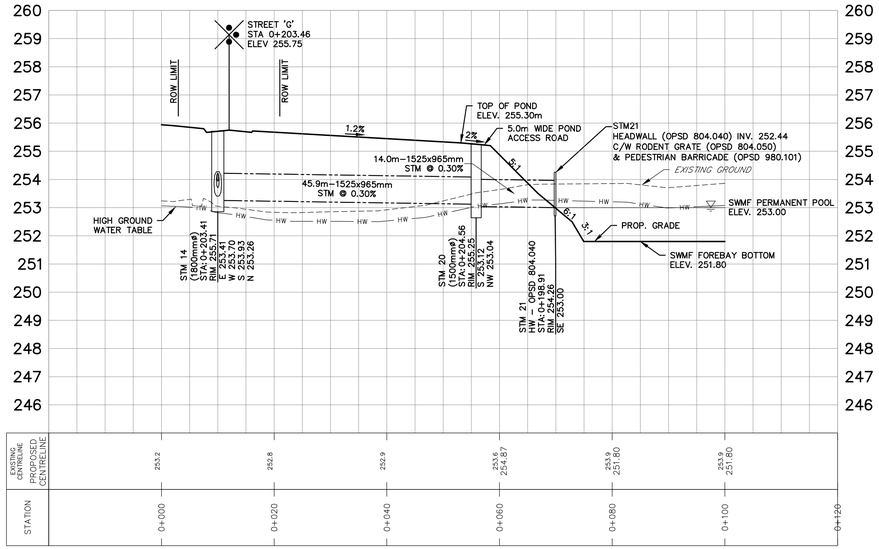
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

SWM FACILITY No. 4C PLAN VIEW

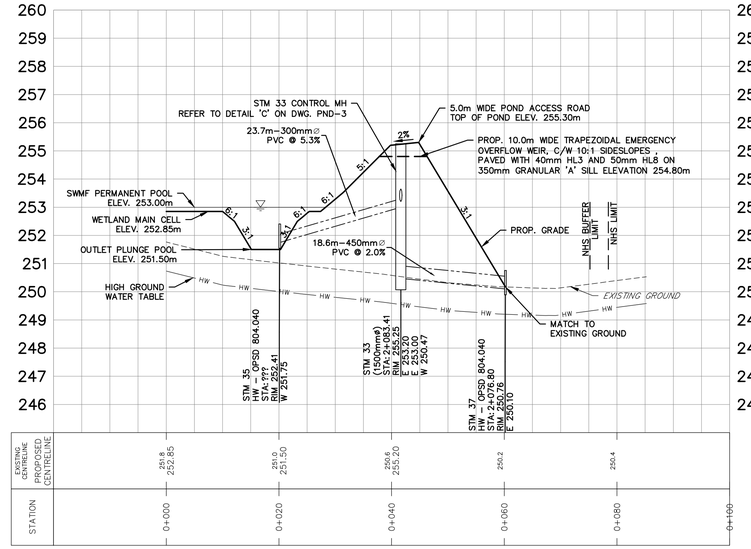
JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	MG	SCALE: 1:500	DATE JUNE 2021
DRAWN	MG/VBS	PROJECT GOL-14193	DWG. Nº PND-1
CHECKED	JI		

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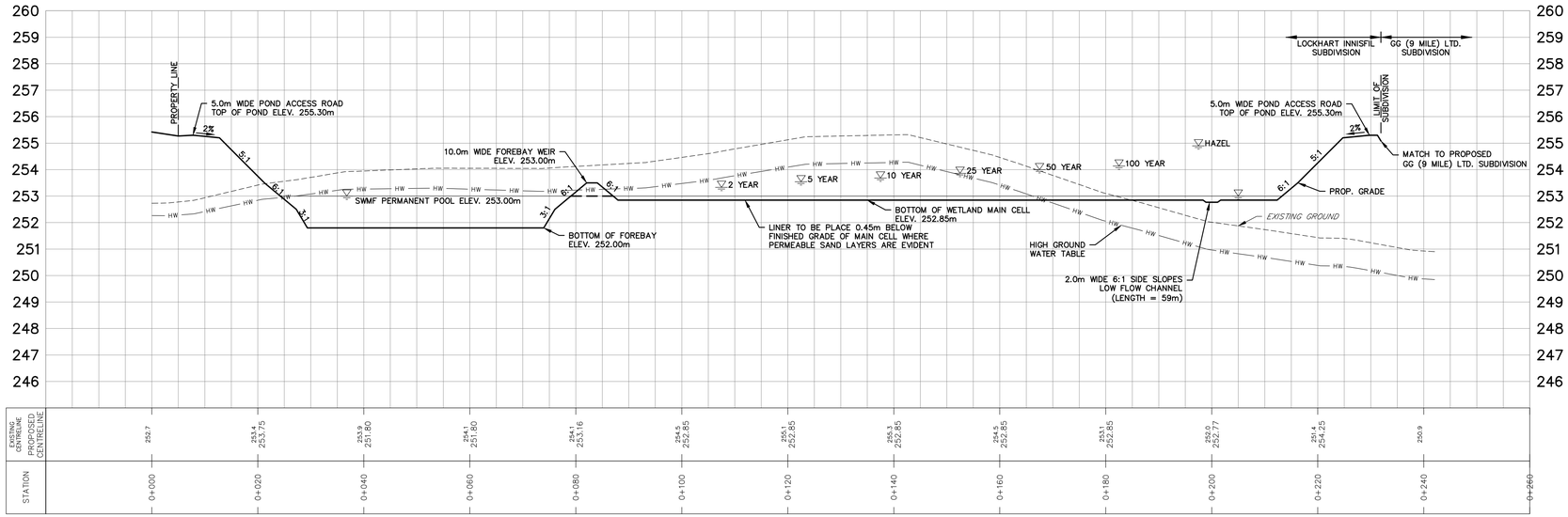


PND-1 SECTION A–A
HOR. 1:500
VERT. 1:100



PND-1 SECTION C–C
HOR. 1:500
VERT. 1:100

24 HR SCS TYPE II STORM WATER ELEVATION	
Storm Event	Elevation (m)
25mm 4hr. Chicago	253.16
2yr. 24hr. SCS	253.39
5yr. 24hr. SCS	253.57
10yr. 24hr. SCS	253.69
6 HR SCS TYPE II STORM WATER ELEVATION	
25yr. 6hr. SCS	253.86
50yr. 6hr. SCS	253.98
100yr. 6hr. SCS	254.10
Hazel	254.83



PND-1 SECTION B–B
HOR. 1:500
VERT. 1:100

BENCHMARK:

BENCHMARK NO: 001193IU460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH–EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH–EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65km EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH–EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENSED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

SWM FACILITY No. 4C SECTIONS

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

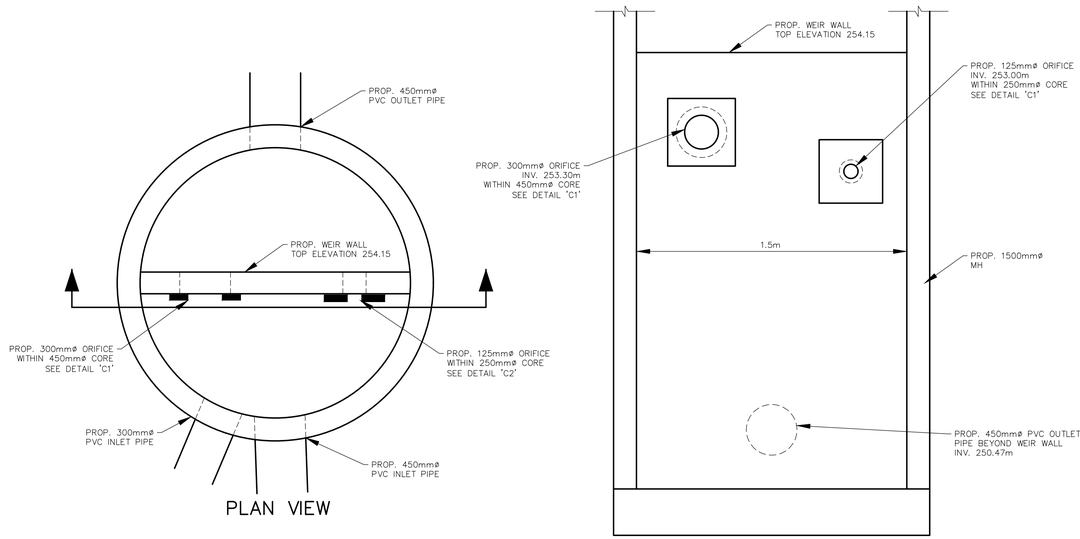
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DRAWN	MG/VBS	PROJECT GOL–14193	DWG. Nº PND–2
CHECKED	JI		

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DETAIL 'C'

1500mm⌀ CONTROL MANHOLE 33

N.T.S.

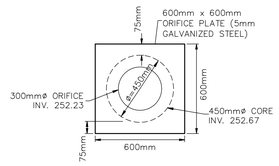


DETAIL 'C1'

300mmø ORIFICE PLATE

BOLTED TO THE WEST SIDE OF WEIR WALL

N.T.S.

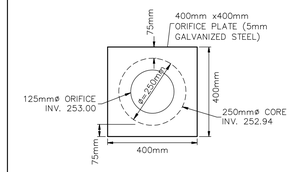


DETAIL 'C2'

100mmø ORIFICE PLATE

BOLTED TO THE WEST SIDE OF WEIR WALL

N.T.S.



BENCHMARK:

BENCHMARK NO: 001193104605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65km EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENSED PROFESSIONAL ENGINEER J. W. INGRAM 100143779 21-10-06 PROVINCE OF ONTARIO

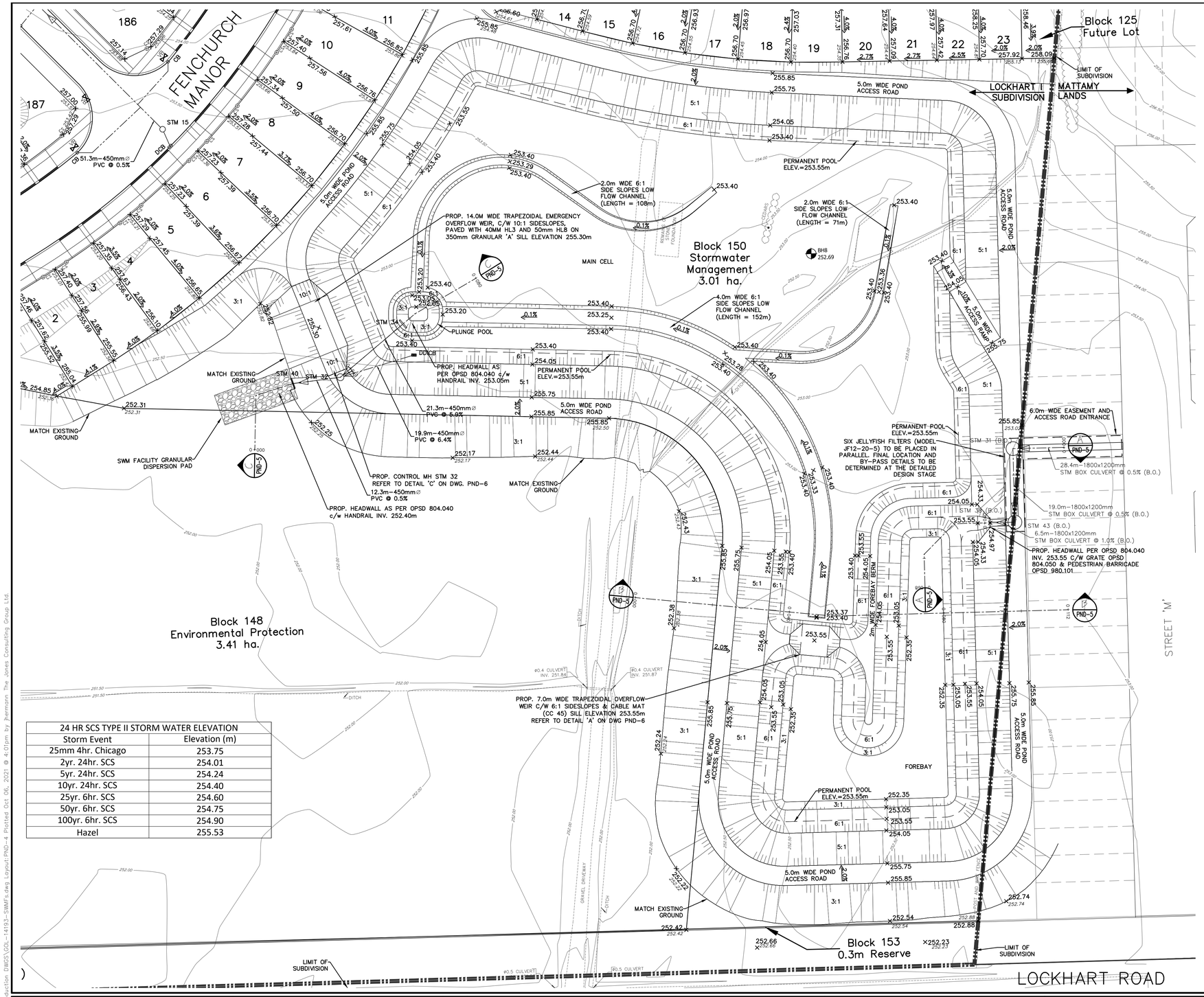
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

SWM FACILITY No. 4C DETAILS

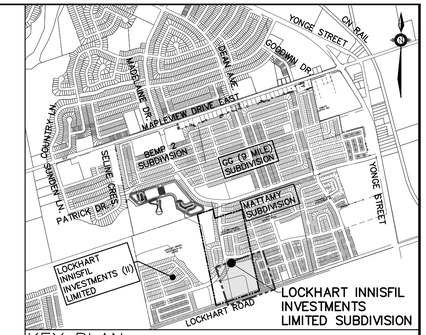
JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN MG	SCALE: 1:500	DATE JUNE 2021	
DRAWN MG	PROJECT GOL-14193	DWG. Nº PND-3	
CHECKED JI			

G:\Eng_3D\GOL-14193-EV\Production DWGS\GOL-14193-SWMFs.dwg Layout:PND-3 Plotted: Oct 07, 2021 @ 10:43am by jhermann The Jones Consulting Group Ltd.



24 HR SCS TYPE II STORM WATER ELEVATION	
Storm Event	Elevation (m)
25mm 4hr. Chicago	253.75
2yr. 24hr. SCS	254.01
5yr. 24hr. SCS	254.24
10yr. 24hr. SCS	254.40
25yr. 6hr. SCS	254.60
50yr. 6hr. SCS	254.75
100yr. 6hr. SCS	254.90
Hazel	255.53



KEY PLAN
NTS

LEGEND

- STM MH — STORM MAINTENANCE HOLE
- DCB — STORM DOUBLE CATCHBASIN
- DI.CB — DOUBLE DITCH INLET CATCHBASIN
- CB — STORM CATCHBASIN
- PROP. STORM SEWER & DIRECTION OF FLOW
- LIMIT OF SUBDIVISION
- 253.00 — EXISTING CONTOUR AND ELEVATION

BENCHMARK:

BENCHMARK NO: 001193U460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET. TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

J. W. INGRAM 100143779 21-10-06 — LICENCE PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

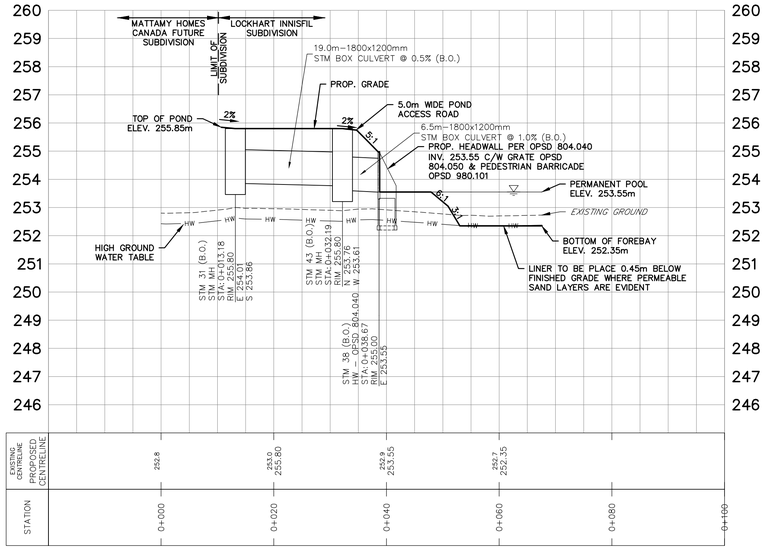
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

SWM FACILITY No. 3 PLAN VIEW

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

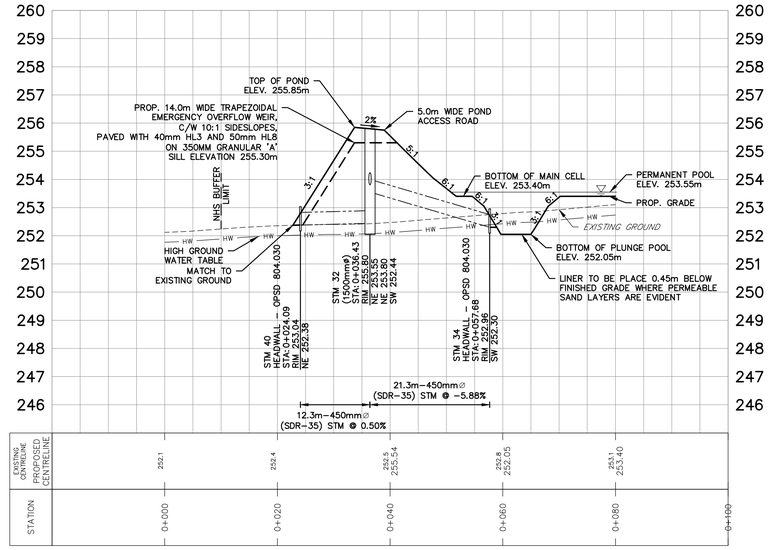
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DRAWN	MG	PROJECT GOL-14193	DWG. Nº PND-4
CHECKED	JI		

C:\Eng_3D\GOL-14193-E\Production DWGS\GOL-14193-SWMFs.dwg Layout: PND-4 Plotted Oct 06, 2021 @ 4:01pm by jhermann The Jones Consulting Group Ltd.



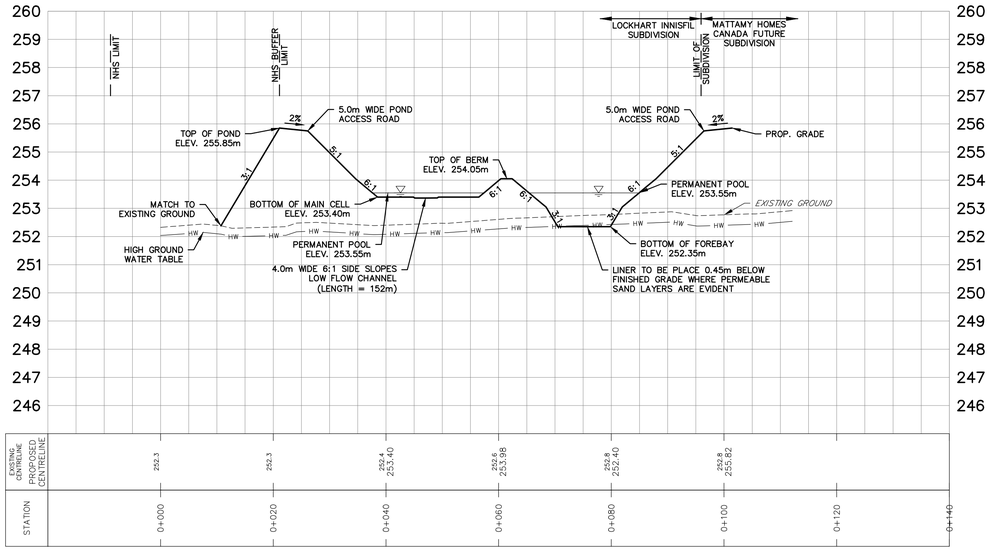
SECTION A–A

HOR. 1:500
VERT. 1:100



SECTION C–C

HOR. 1:500
VERT. 1:100



SECTION B–B

HOR. 1:500
VERT. 1:100

24 HR SCS TYPE II STORM WATER ELEVATION	
Storm Event	Elevation (m)
25mm 4hr. Chicago	253.75
2yr. 24hr. SCS	254.01
5yr. 24hr. SCS	254.24
10yr. 24hr. SCS	254.40
25yr. 6hr. SCS	254.60
50yr. 6hr. SCS	254.75
100yr. 6hr. SCS	254.90
Hazel	255.53

BENCHMARK:

BENCHMARK NO: 001931U460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 253.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER J. W. INGRAM 100143779 21-10-06 PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

SWM FACILITY No. 3 SECTIONS

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	MG	SCALE: 1:500	DATE JUNE 2021
DRAWN	MG	PROJECT GOL-14193	DWG. Nº PND-5
CHECKED	JI		

G:\Eng_3D\GOL-14193-E\Production DWGS\GOL-14193-SWM's.dwg Layout:PND-5 Plotted Oct 06, 2021 @ 4:50pm by Jhermann The Jones Consulting Group Ltd.

DETAIL 'C1'

300mmø ORIFICE PLATE

BOLTED TO THE WEST SIDE OF WEIR WALL N.T.S.

DETAIL 'C2'

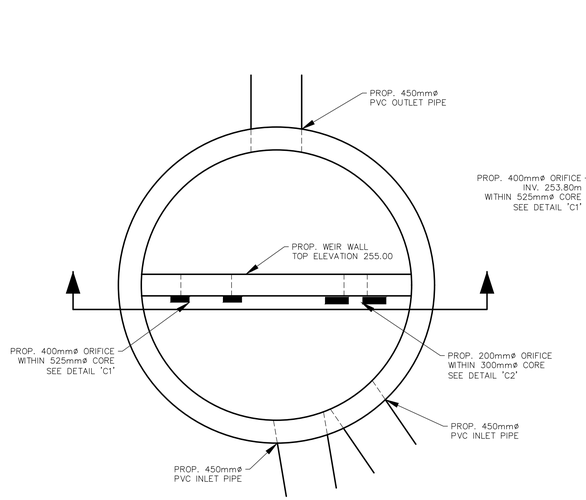
100mmø ORIFICE PLATE

BOLTED TO THE WEST SIDE OF WEIR WALL N.T.S.

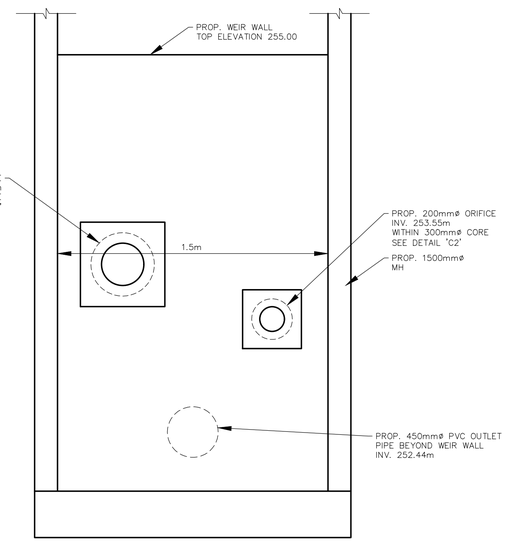
DETAIL 'C'

1500mm∅ CONTROL MANHOLE 32

N.T.S.



PLAN VIEW



SECTION VIEW

G:\Eng_3D\GOL-14193-E\Production DWGS\GOL-14193-SWMFs.dwg Layout:PND-6 Plotted Oct 07, 2021 @ 10:42pm by jhermann The Jones Consulting Group Ltd.

BENCHMARK:

BENCHMARK NO: 01019310460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.63m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

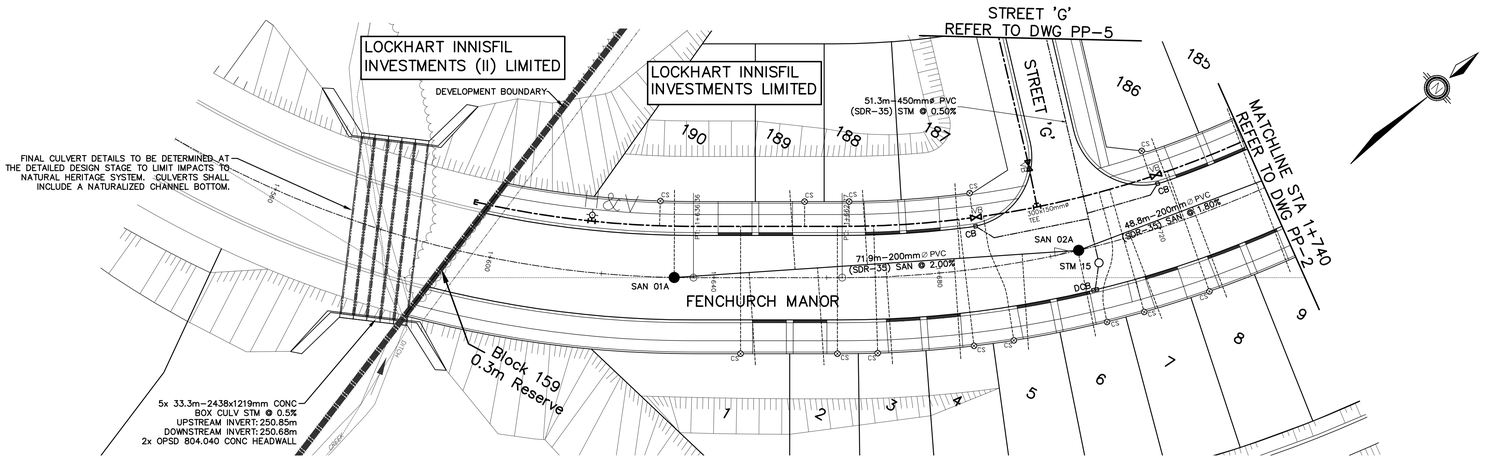
LICENCED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

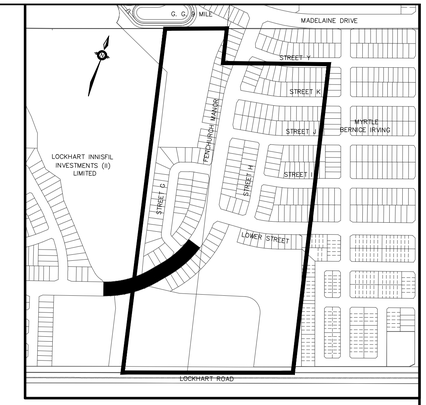
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

SWM FACILITY No. 3 DETAILS

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	MG	SCALE: 1:500	DATE JULY 2021
DRAWN	MG/VBS	PROJECT GOL-14193	DWG. Nº PND-6
CHECKED	JI		

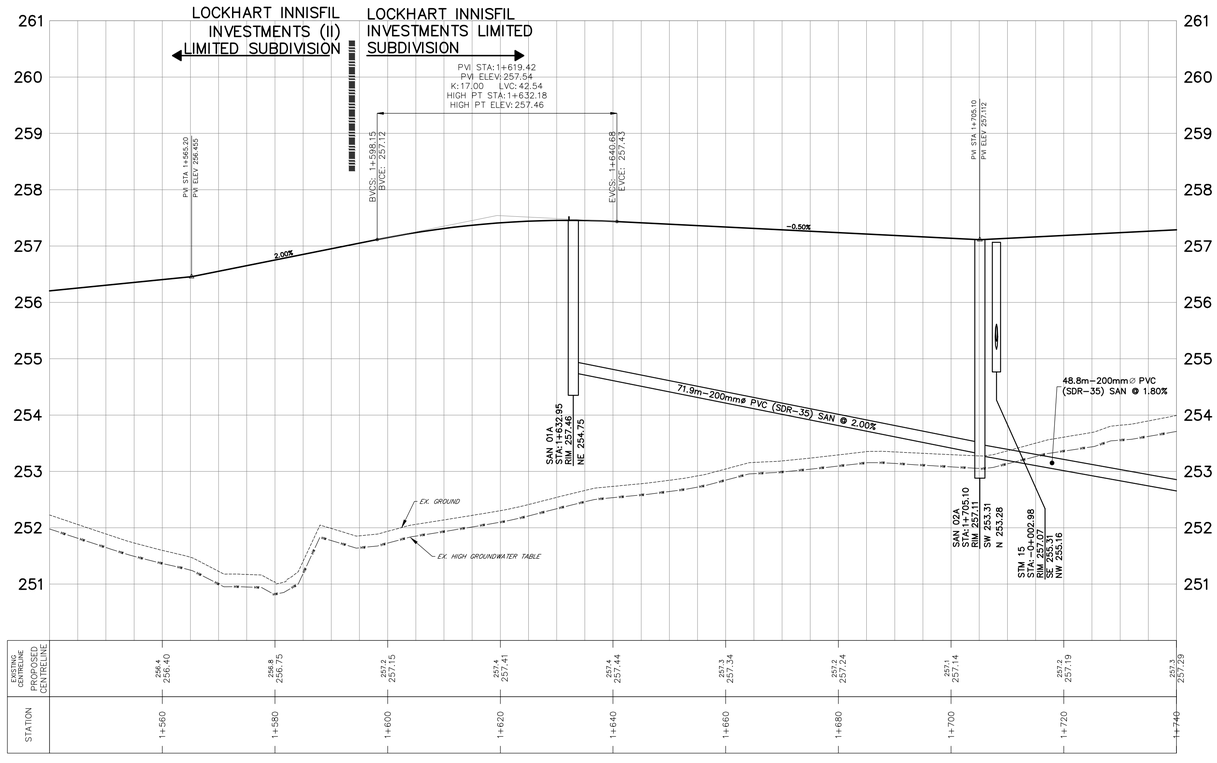




KEY PLAN
NTS

LEGEND

SAP.33921 ●	SANITARY MAINTENANCE HOLE (BY OTHERS)
GDLV5979 ○	STORM MAINTENANCE HOLE (BY OTHERS)
CB □	CATCHBASIN (BY OTHERS)
DCB ▭	DOUBLE CATCHBASIN (BY OTHERS)
VB(B.O.) ⋈	VALVE & BOX (BY OTHERS)
H&V(B.O.) ◇	HYDRANT & VALVE (BY OTHERS)
SAN 23A ●	SANITARY MAINTENANCE HOLE
STM 24 ○	STORM MAINTENANCE HOLE
□	CATCH BASIN
▭	DOUBLE CATCH BASIN
H&V ◇ VB ⋈	HYDRANT AND VALVE
	VALVE AND BOX
---------	SANITARY SERVICE



BENCHMARK:

BENCHMARK NO: 001193111460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD, TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911159.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENSED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

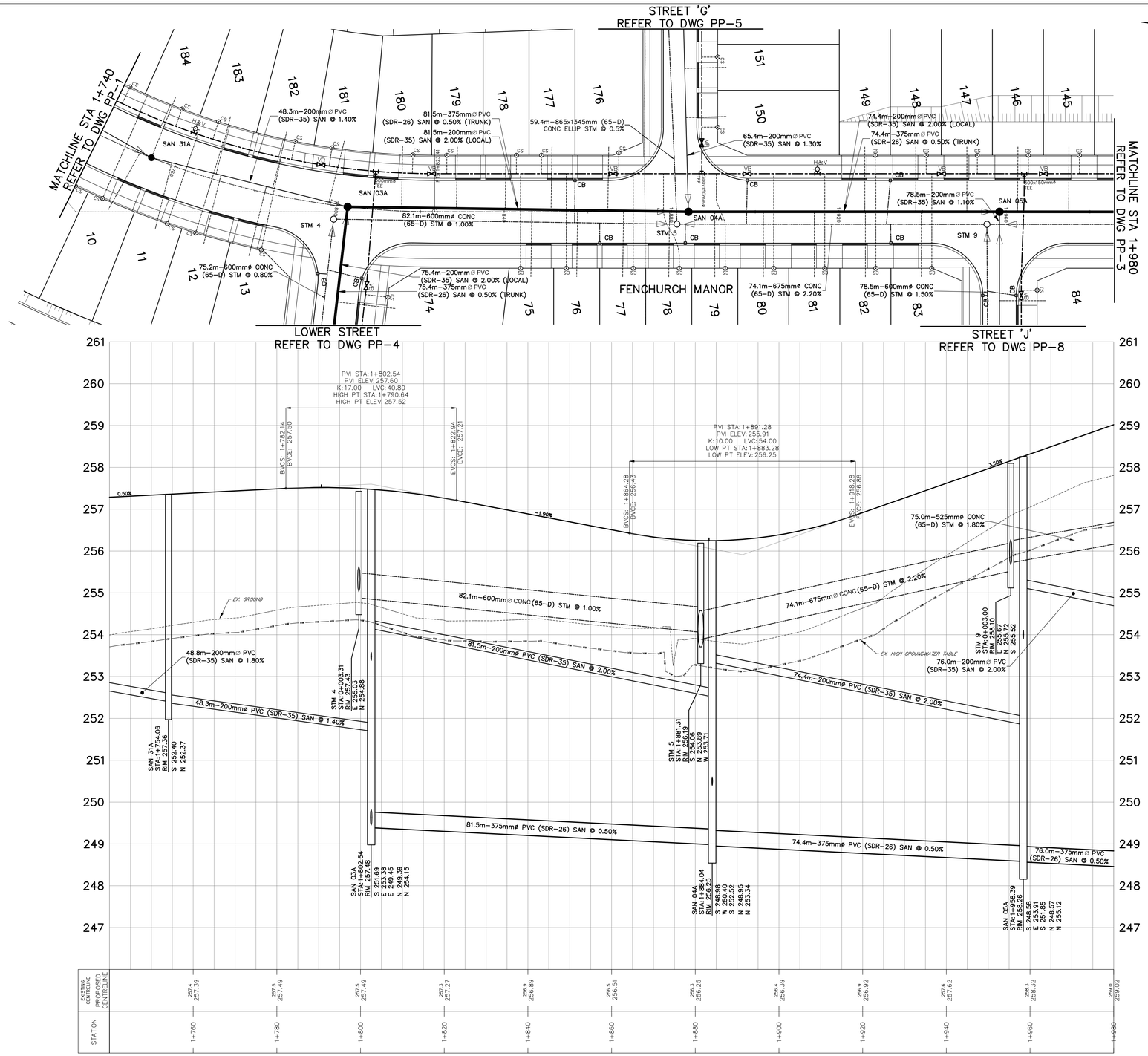
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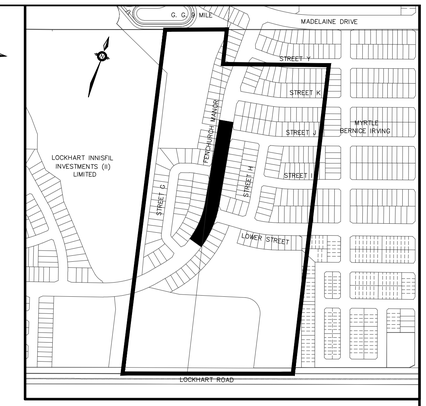
PLAN AND PROFILE FENCHURCH MANOR STA. 1+540 TO 1+740

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	JJH	SCALE: 1:500	DATE JUNE 2021
DRAWN	JJH	PROJECT GOL-14193	DWG. Nº PP-1
CHECKED	JWI		

G:\Eng_3D\GOL-14193-E\Production DWGS\GOL-14193-PP_Fenchurch.dwg, Layout: PP-1 Plotted: Oct 05, 2021 @ 5:01pm by jhermon The Jones Consulting Group Ltd





KEY PLAN
NTS

LEGEND

- SAP.33921 — SANITARY MAINTENANCE HOLE (BY OTHERS)
- GDLV5979 — STORM MAINTENANCE HOLE (BY OTHERS)
- CB — CATCHBASIN (BY OTHERS)
- DCB — DOUBLE CATCHBASIN (BY OTHERS)
- V&V(B.O.) — VALVE & BOX (BY OTHERS)
- H&V(B.O.) — HYDRANT & VALVE (BY OTHERS)
- SAN 23A — SANITARY MAINTENANCE HOLE
- STM 24 — STORM MAINTENANCE HOLE
- CATCH BASIN
- DOUBLE CATCH BASIN
- H&V — HYDRANT AND VALVE
- VB — VALVE AND BOX
- SANITARY SERVICE

BENCHMARK:

BENCHMARK NO: 001193IU460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD, TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK No. 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER — J. W. INGRAM — 100143779 — 21-10-06 — PROVINCE OF ONTARIO

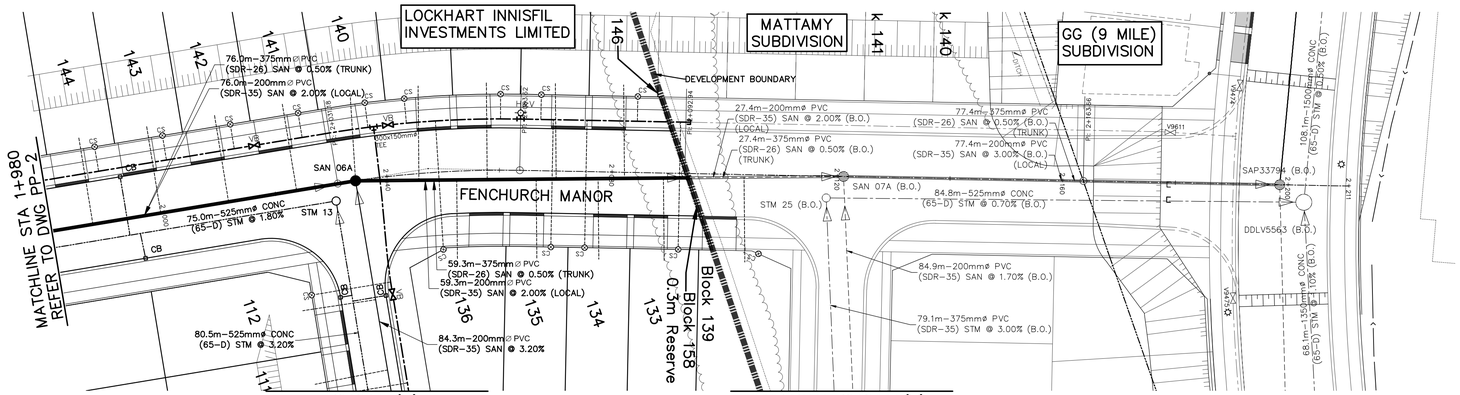
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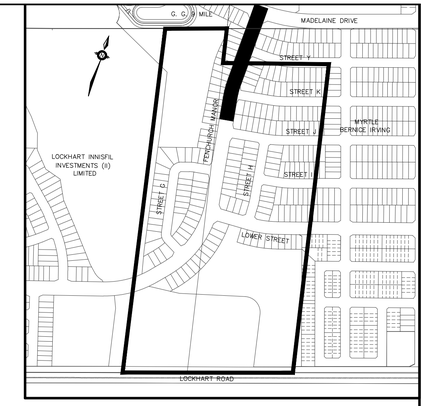
PLAN AND PROFILE
FENCHURCH MANOR
STA. 1+740 TO 1+980

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	JJH	SCALE: 1:500	DATE JUNE 2021
DRAWN	JJH	PROJECT GOL-14193	DWG. Nº PP-2
CHECKED	JWI		

G:\Eng_3D\GOL-14193-E\Production DWGS\GOL-14193_PP_Fenchurch.dwg Layout:PP-2 Plotted Oct 05, 2021 @ 5:09pm by jhermann The Jones Consulting Group Ltd.

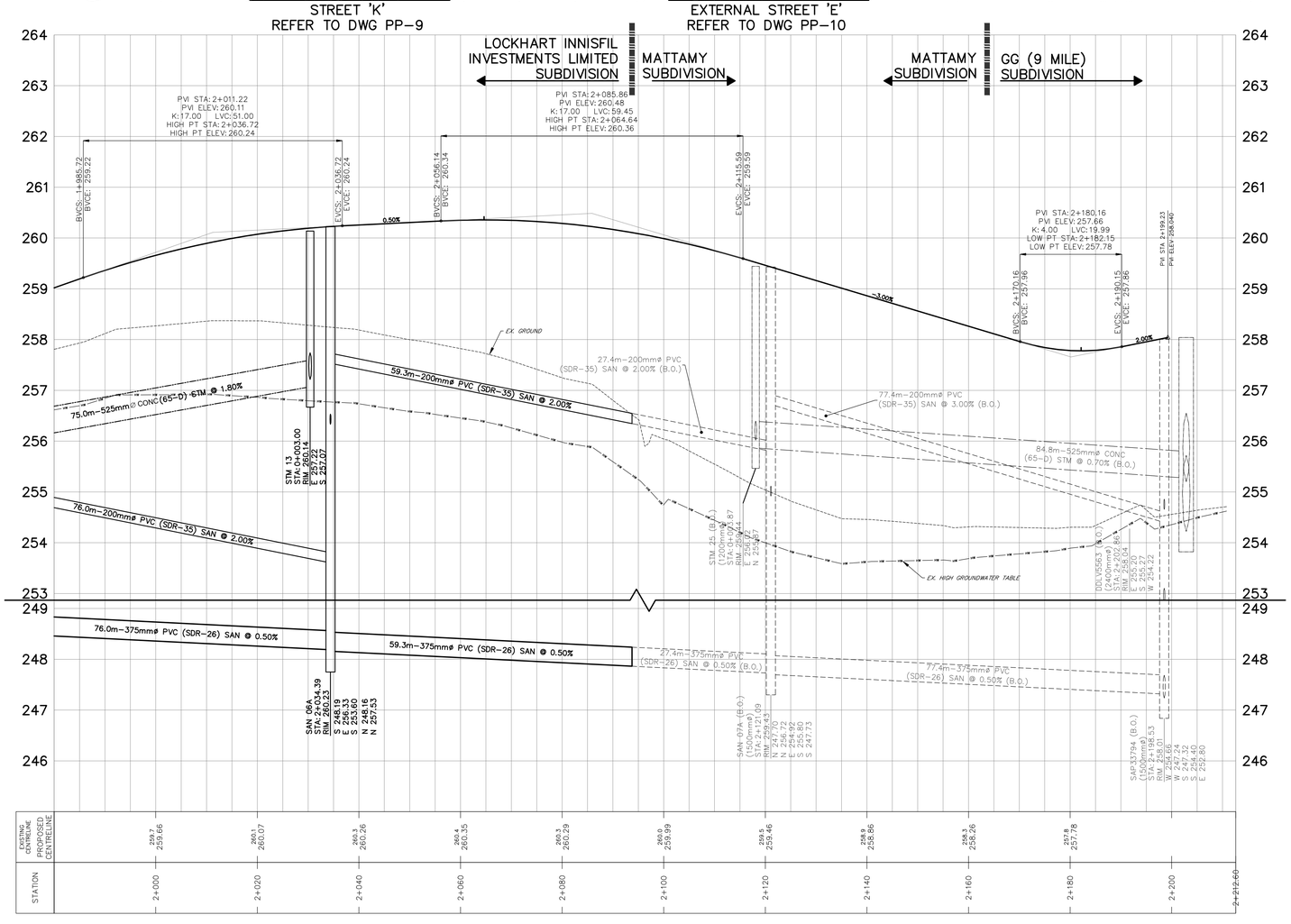




KEY PLAN
NTS

LEGEND

SAP33921 ●	SANITARY MAINTENANCE HOLE (BY OTHERS)
DDLV5979 ○	STORM MAINTENANCE HOLE (BY OTHERS)
CB □	CATCHBASIN (BY OTHERS)
DCB ▭	DOUBLE CATCHBASIN (BY OTHERS)
VB(B.O.) ⋈	VALVE & BOX (BY OTHERS)
H&V(B.O.) ◇	HYDRANT & VALVE (BY OTHERS)
SAN 23A ●	SANITARY MAINTENANCE HOLE
STM 24 ○	STORM MAINTENANCE HOLE
□	CATCH BASIN
▭	DOUBLE CATCH BASIN
H&V ◇	HYDRANT AND VALVE
VB ⋈	VALVE AND BOX
----------	SANITARY SERVICE



BENCHMARK:

BENCHMARK NO: 001193IU460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE, EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD, TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER J. W. INGRAM 100143779 21-10-06 PROVINCE OF ONTARIO

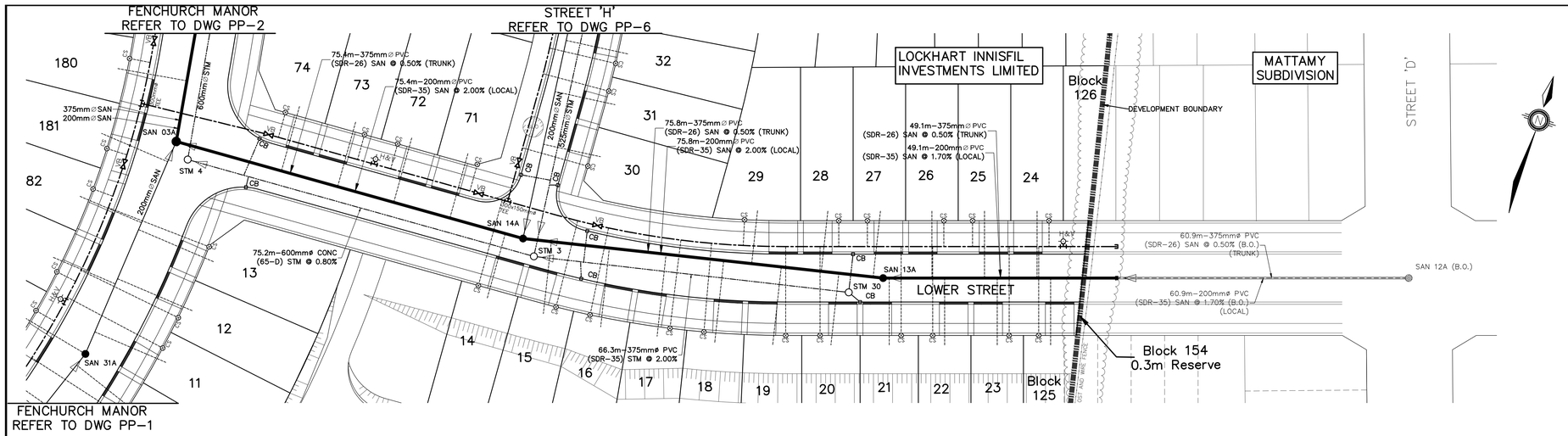
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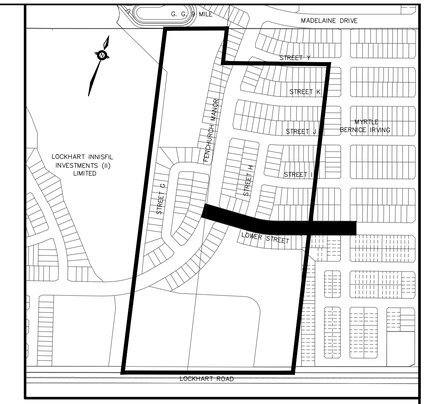
PLAN AND PROFILE FENCHURCH MANOR STA. 1+980 TO 2+212.6

JONES CONSULTING GROUP LTD. PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	JJH	SCALE: 1:500	DATE JUNE 2021
DRAWN	JJH	PROJECT GOL-14193	DWG. Nº PP-3
CHECKED	JWI		

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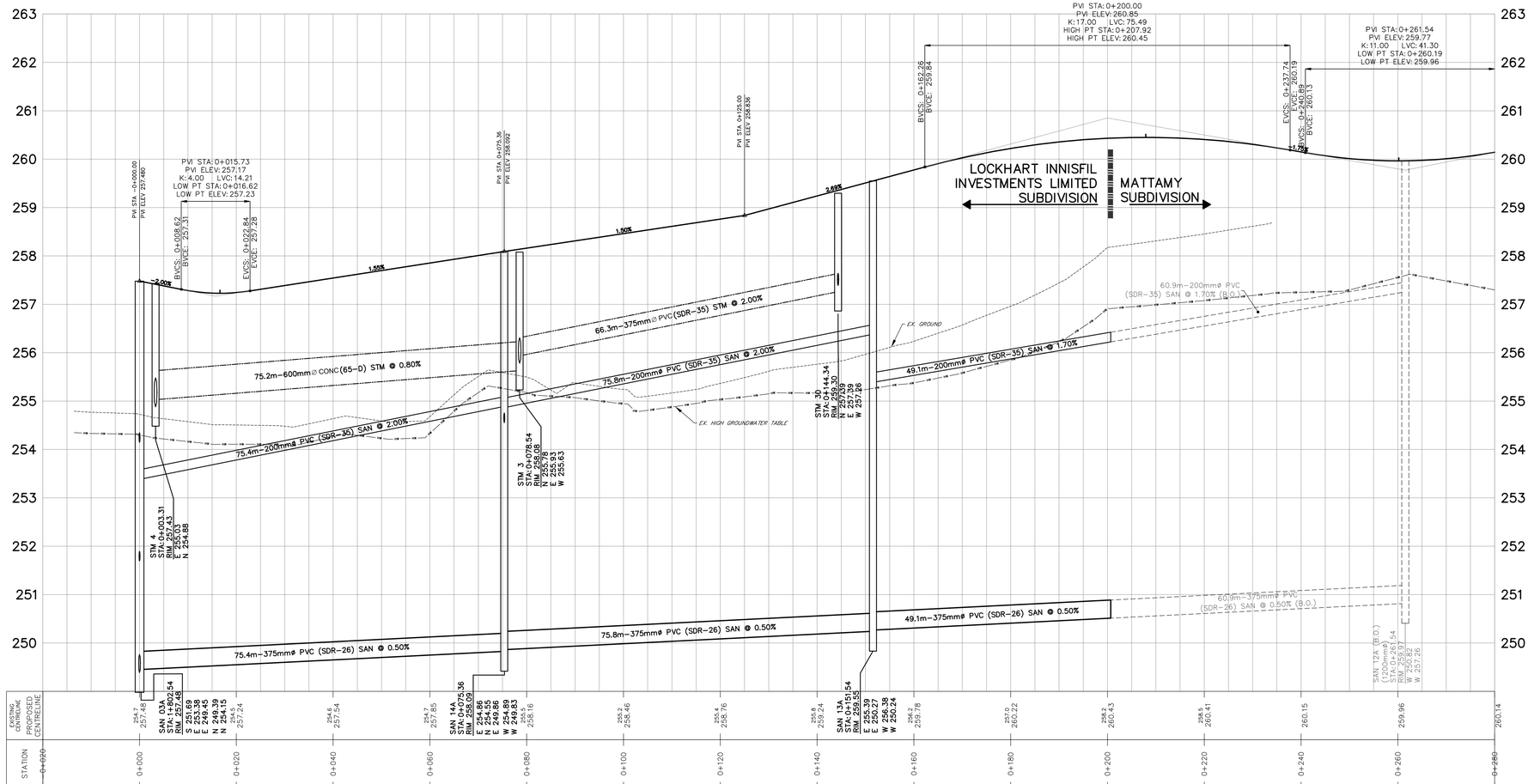




KEY PLAN
NTS

LEGEND

SAP.13921 ●	SANITARY MAINTENANCE HOLE (BY OTHERS)
GDLV5979 ○	STORM MAINTENANCE HOLE (BY OTHERS)
CB	CATCHBASIN (BY OTHERS)
DCB	DOUBLE CATCHBASIN (BY OTHERS)
V&V(B.O.)	VALVE & BOX (BY OTHERS)
H&V(B.O.)	HYDRANT & VALVE (BY OTHERS)
SAN 23A ●	SANITARY MAINTENANCE HOLE
STM 24 ○	STORM MAINTENANCE HOLE
	CATCH BASIN
	DOUBLE CATCH BASIN
H&V	HYDRANT AND VALVE
V&B	VALVE AND BOX
	SANITARY SERVICE



BENCHMARK:

BENCHMARK NO: 001193IU4605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.659m EAST OF HURONIA ROAD, TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

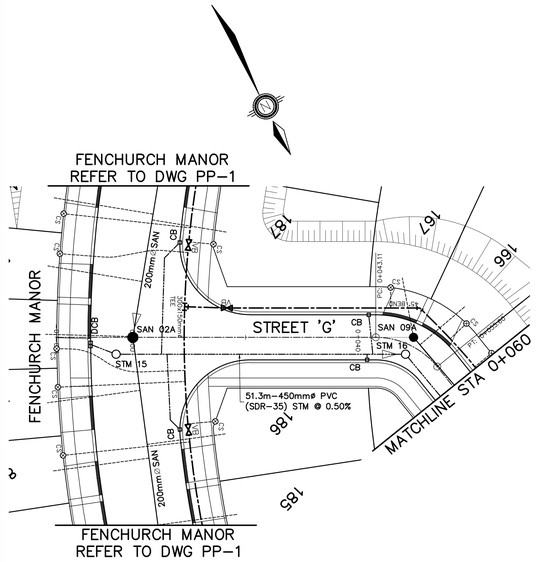
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

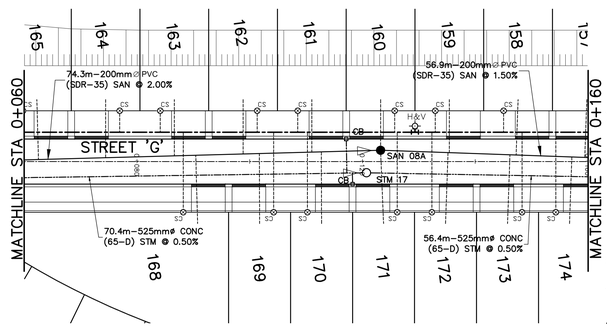
PLAN AND PROFILE LOWER STREET STA. -0+014 TO 0+280

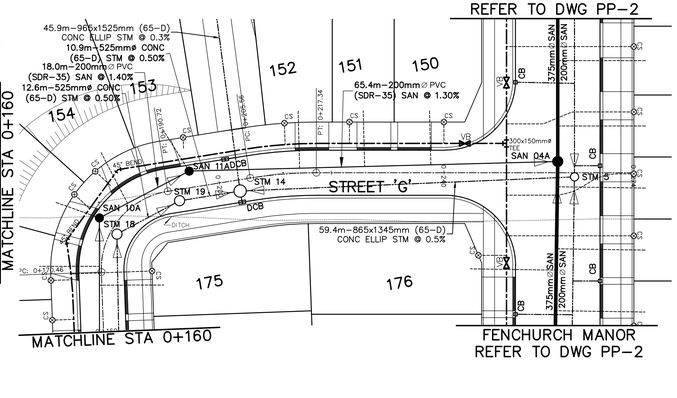
JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

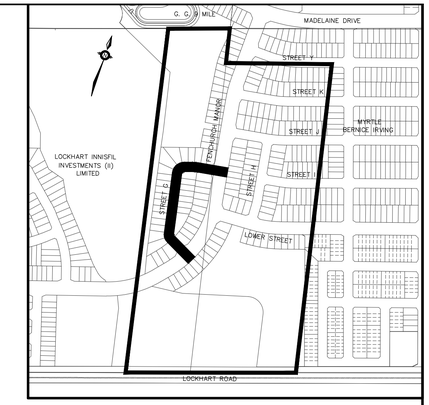
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DRAWN	JJH	PROJECT GOL-14193	DWG. Nº PP-4
CHECKED	JWI		

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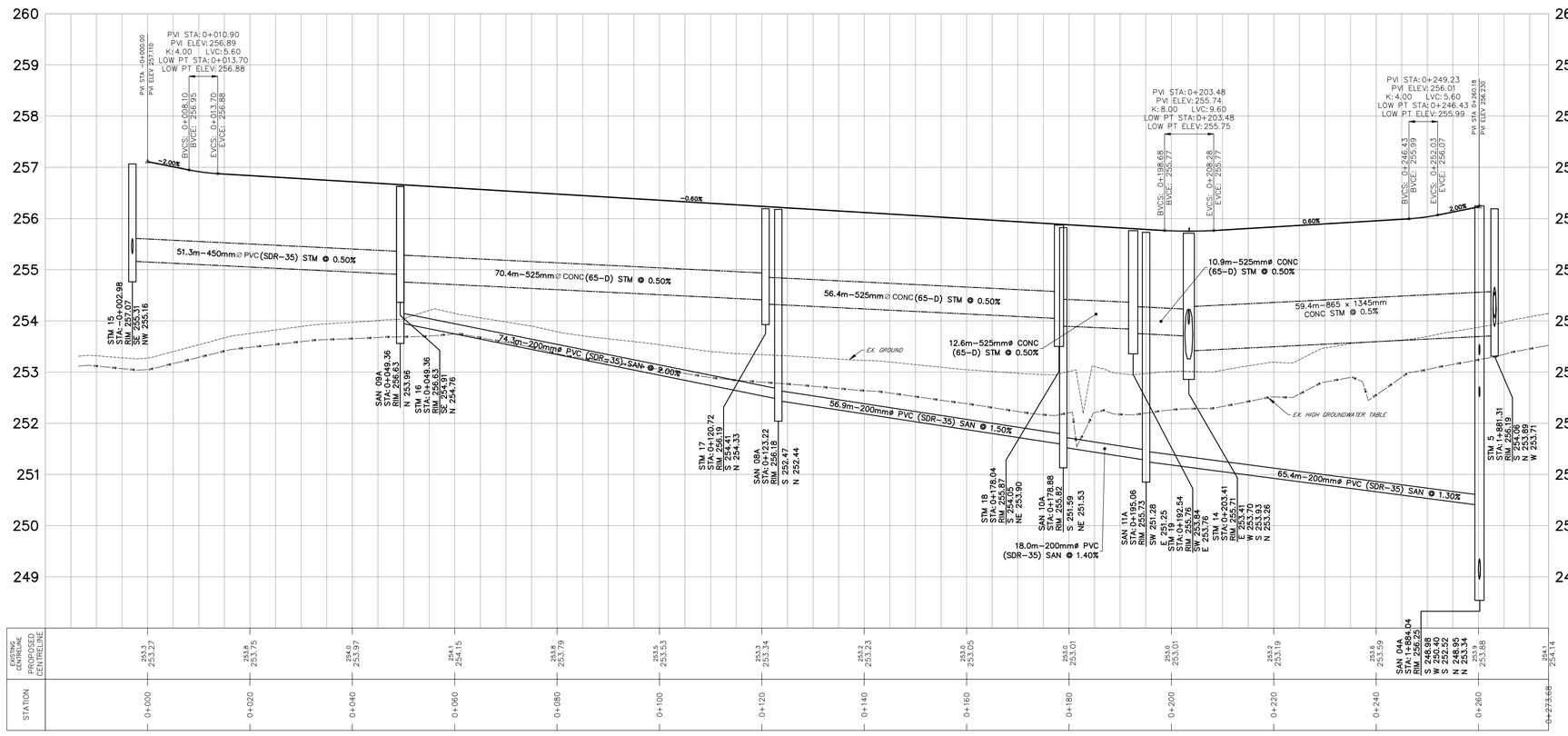




KEY PLAN
NTS

LEGEND

SAP_13921 ●	SANITARY MAINTENANCE HOLE (BY OTHERS)
GDLV5979 ○	STORM MAINTENANCE HOLE (BY OTHERS)
CB	CATCHBASIN (BY OTHERS)
DCB	DOUBLE CATCHBASIN (BY OTHERS)
VB(S.O.)	VALVE & BOX (BY OTHERS)
H&V(S.O.)	HYDRANT & VALVE (BY OTHERS)
SAN 23A ●	SANITARY MAINTENANCE HOLE
STM 24 ○	STORM MAINTENANCE HOLE
	CATCH BASIN
	DOUBLE CATCH BASIN
H&V	HYDRANT AND VALVE
VB	VALVE AND BOX
	SANITARY SERVICE



BENCHMARK:

BENCHMARK NO. 001931U460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "Y" IN TWIN BIRCH TREES 15cm BELOW BROK. ELEV 263.480

BENCHMARK NO. 01019855454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD, TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO. 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO. 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

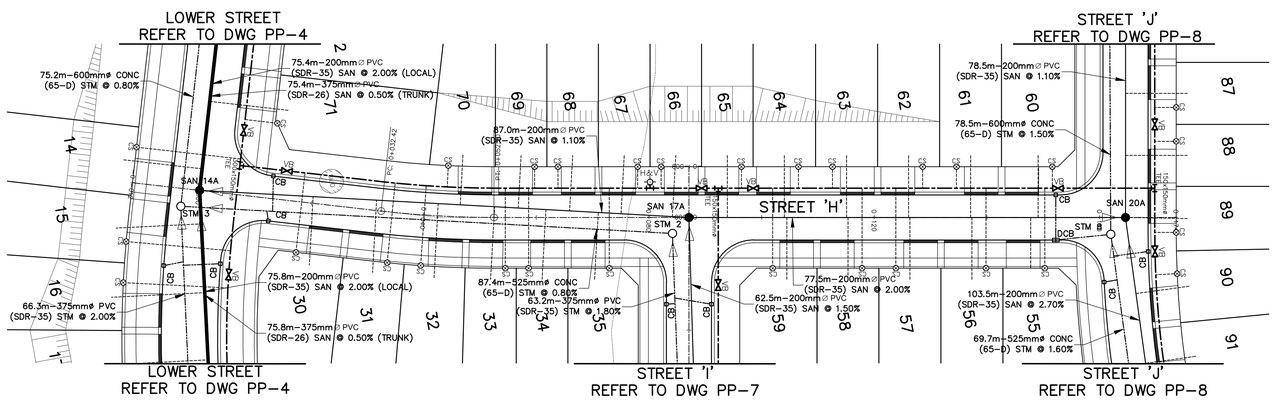
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

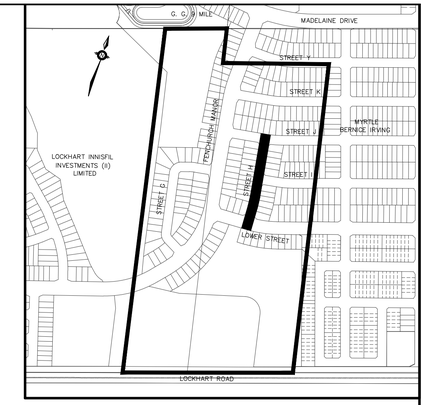
PLAN AND PROFILE STREET 'G' STA. -0+014 TO 0+273.68

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	JJH	SCALE: 1:500	DATE JUNE 2021
DRAWN	JJH	PROJECT GOL-14193	DWG. Nº PP-5
CHECKED	JWI		

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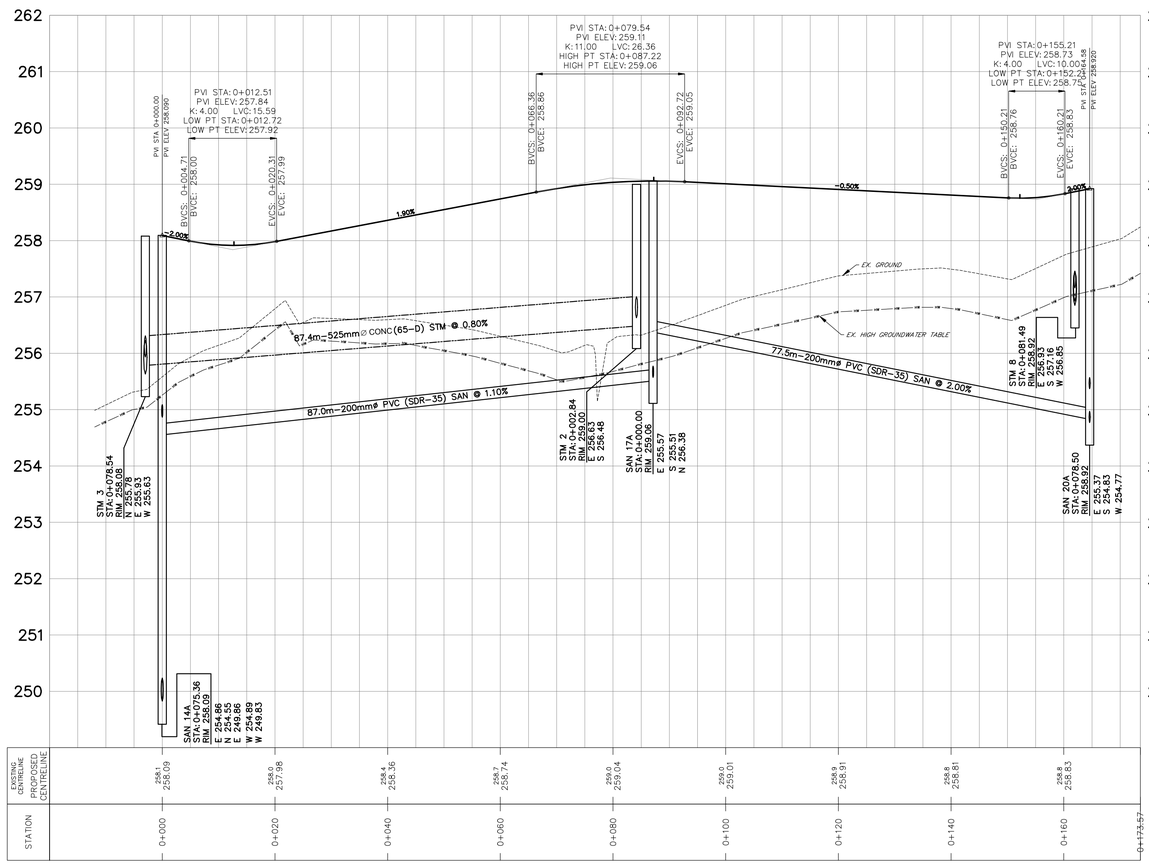




KEY PLAN
NTS

LEGEND

SAP.33921 ●	SANITARY MAINTENANCE HOLE (BY OTHERS)
GDLV5979 ○	STORM MAINTENANCE HOLE (BY OTHERS)
CB □	CATCHBASIN (BY OTHERS)
DCB □□	DOUBLE CATCHBASIN (BY OTHERS)
V&V(B.O.)	VALVE & BOX (BY OTHERS)
H&V(B.O.)	HYDRANT & VALVE (BY OTHERS)
SAN 23A ●	SANITARY MAINTENANCE HOLE
STM 24 ○	STORM MAINTENANCE HOLE
□	CATCH BASIN
□□	DOUBLE CATCH BASIN
H&V	HYDRANT AND VALVE
	VALVE AND BOX
---------	SANITARY SERVICE



BENCHMARK:

BENCHMARK NO: 001193114605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "Y" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65km EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

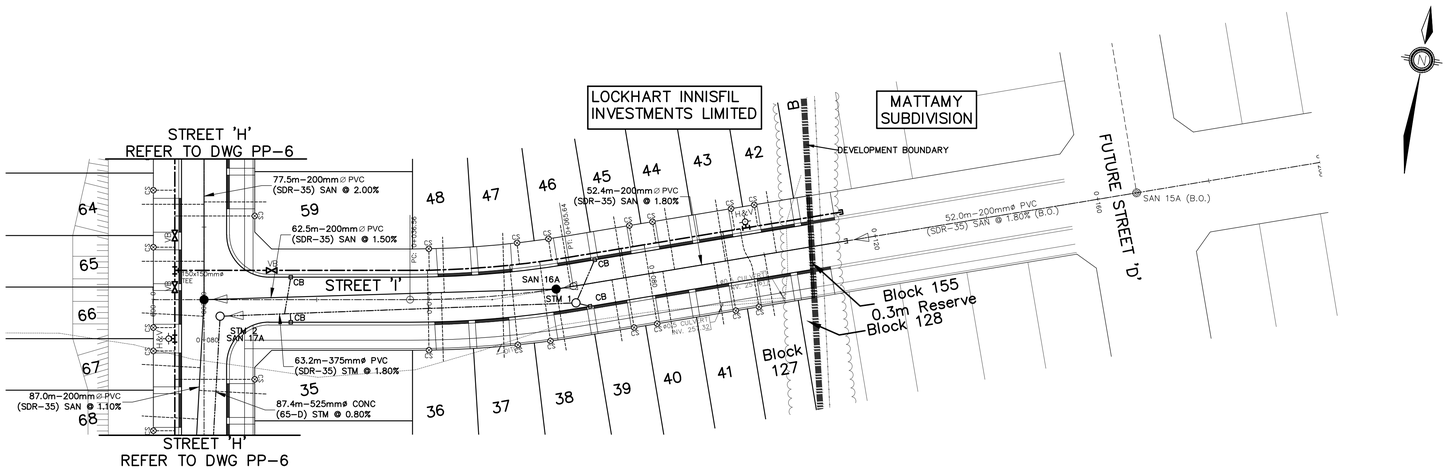
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

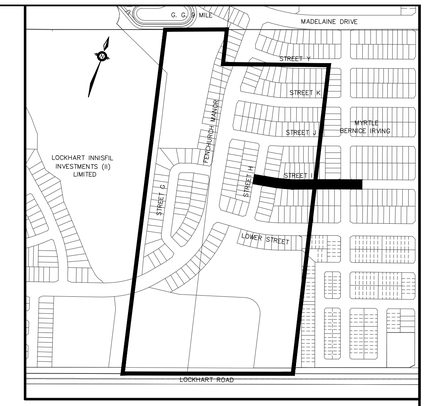
PLAN AND PROFILE
STREET 'H'
STA. -0+020 TO 0+173.57

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	JJH	SCALE: 1:500	DATE JUNE 2021
DRAWN	JJH	PROJECT GOL-14193	DWG. Nº PP-6
CHECKED	JWI		

G:\Eng_3D\GOL-14193-JL\Production DWGS\GOL-14193-PP_H-Layout.PP-6 Plotted Oct 06, 2021 @ 4:10pm by jhermann The Jones Consulting Group Ltd.





KEY PLAN
NTS

LEGEND

SAP.33921 ●	SANITARY MAINTENANCE HOLE (BY OTHERS)
GDLV5979 ○	STORM MAINTENANCE HOLE (BY OTHERS)
CB □	CATCHBASIN (BY OTHERS)
DCB ⊟	DOUBLE CATCHBASIN (BY OTHERS)
VB(B.O.) ⋈	VALVE & BOX (BY OTHERS)
H&V(B.O.) ◇	HYDRANT & VALVE (BY OTHERS)
SAN 23A ●	SANITARY MAINTENANCE HOLE
STM 24 ○	STORM MAINTENANCE HOLE
□	CATCH BASIN
⊟	DOUBLE CATCH BASIN
H&V ◇	HYDRANT AND VALVE
VB ⋈	VALVE AND BOX
---------	SANITARY SERVICE

BENCHMARK:

BENCHMARK NO: 001103IU460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.69km EAST OF HURONIA ROAD, TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

J. W. INGRAM
100143779
21-10-06
MCENEELY PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

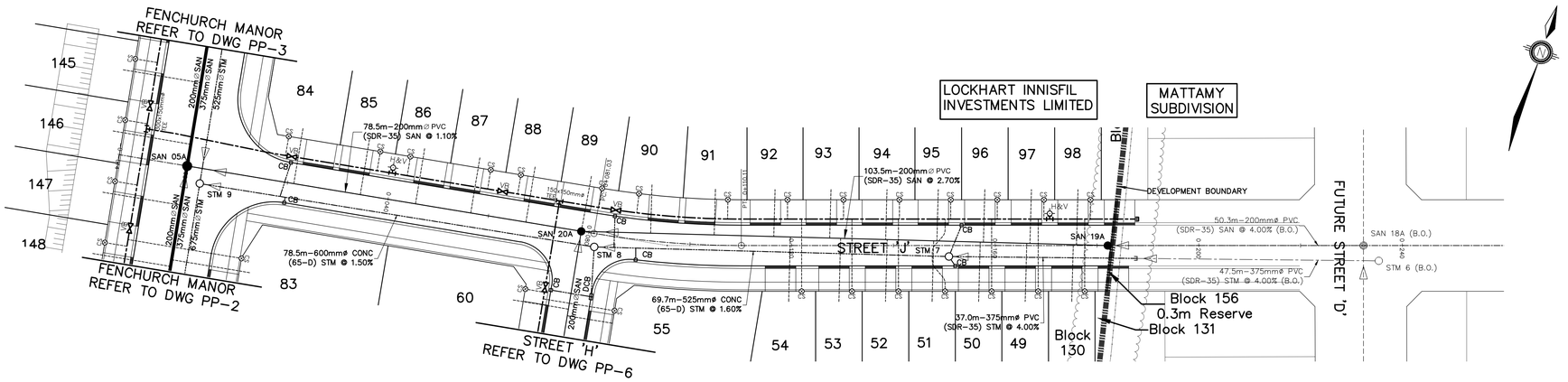
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

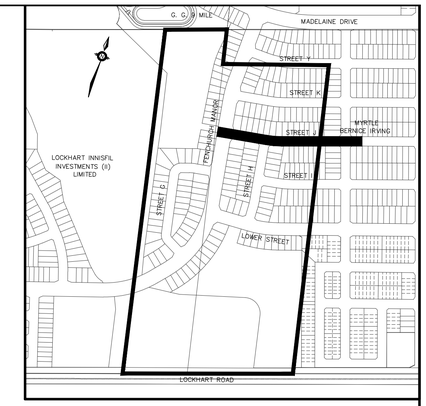
PLAN AND PROFILE STREET 'I' STA. -0+020 TO 0+200

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
Barrie, ON L4N 0W5
P. 705.734.2538
F. 705.734.1056

DESIGN	JJH	SCALE: 1:500	DATE JUNE 2021
DRAWN	JJH	PROJECT GOL-14193	DWG. Nº PP-7
CHECKED	JWI		

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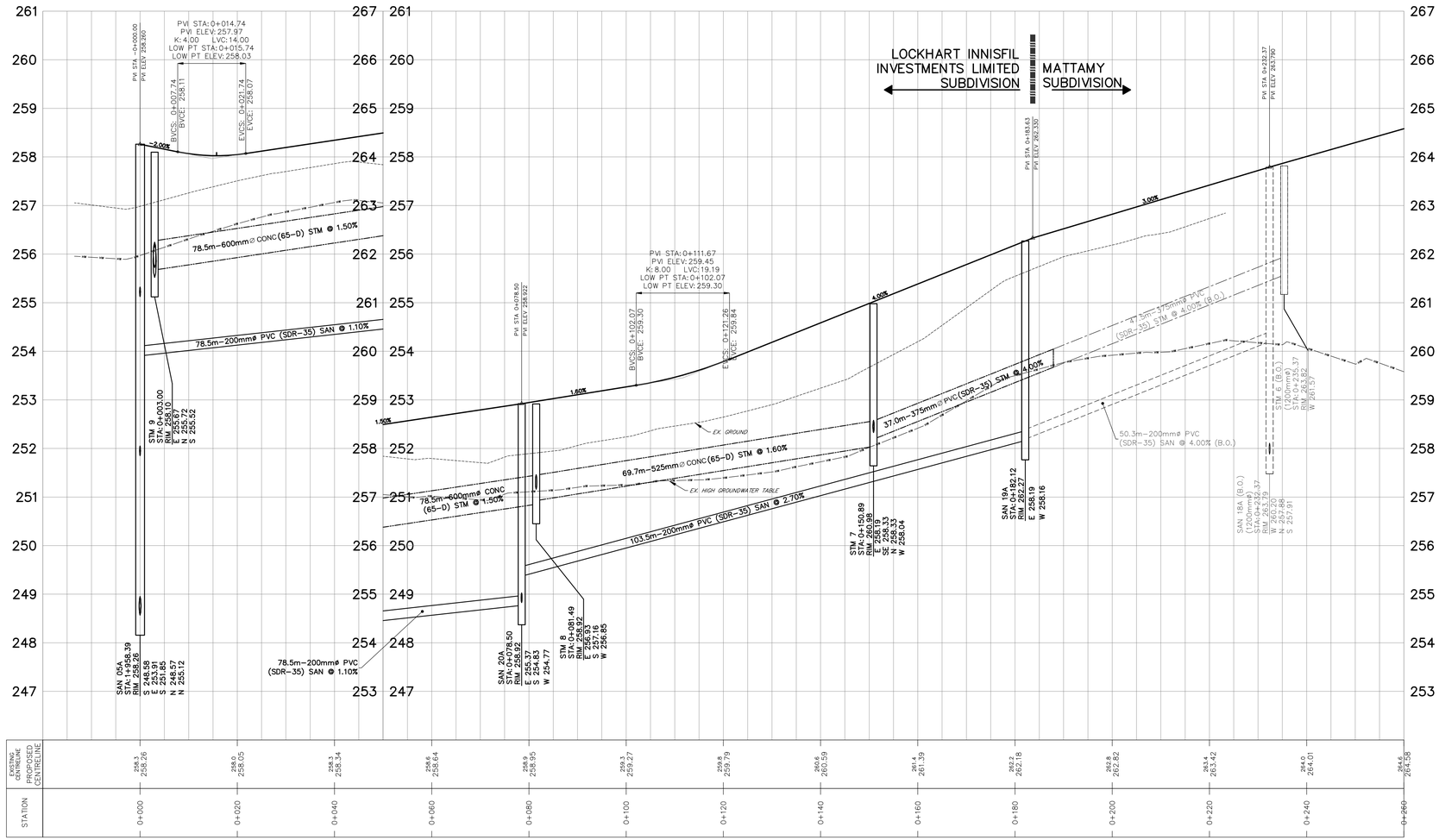




KEY PLAN
NTS

LEGEND

SAP.33921 ●	SANITARY MAINTENANCE HOLE (BY OTHERS)
GDLV5979 ○	STORM MAINTENANCE HOLE (BY OTHERS)
CB	CATCHBASIN (BY OTHERS)
DCB	DOUBLE CATCHBASIN (BY OTHERS)
VB(B.O.)	VALVE & BOX (BY OTHERS)
H&V(B.O.)	HYDRANT & VALVE (BY OTHERS)
SAN 23A ●	SANITARY MAINTENANCE HOLE
STM 24 ○	STORM MAINTENANCE HOLE
	CATCH BASIN
	DOUBLE CATCH BASIN
H&V	HYDRANT AND VALVE
VB	VALVE AND BOX
	SANITARY SERVICE



BENCHMARK:			
BENCHMARK NO: 001931U4605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480			
BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.65m EAST OF HURONIA ROAD, TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862			
BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931			
BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316			

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

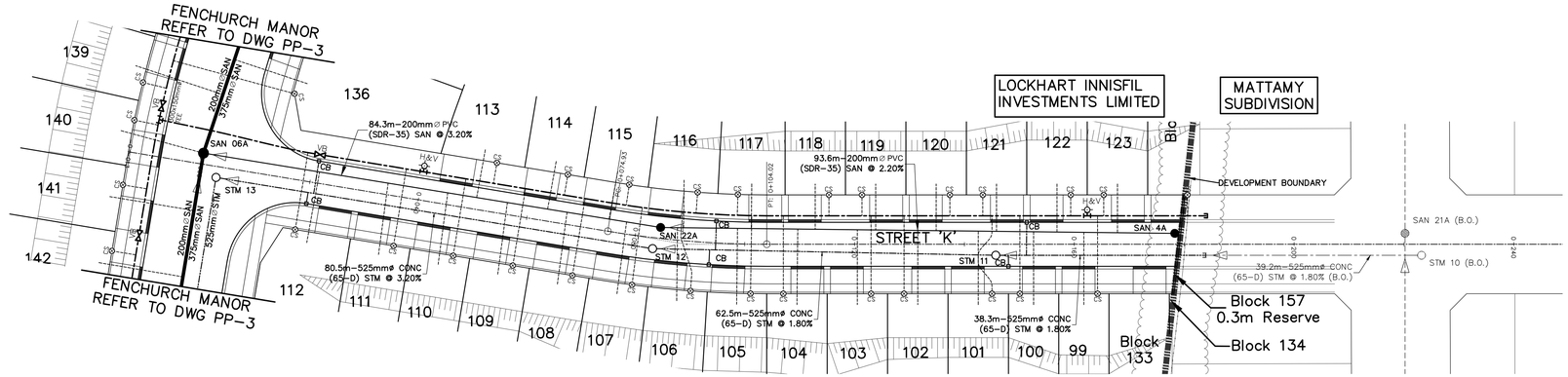
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

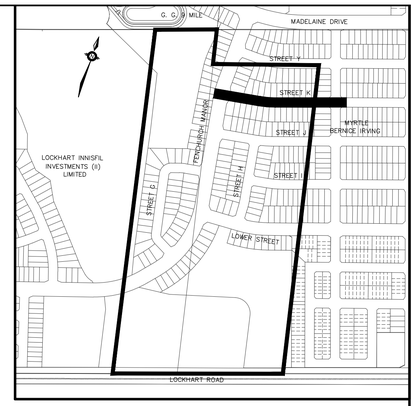
PLAN AND PROFILE STREET 'J' STA. -0+020 TO 0+260

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
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F. 705.734.1056

DESIGN	JJH	SCALE: 1:500	DATE JUNE 2021
DRAWN	JJH	PROJECT GOL-14193	DWG. Nº PP-8
CHECKED	JWI		

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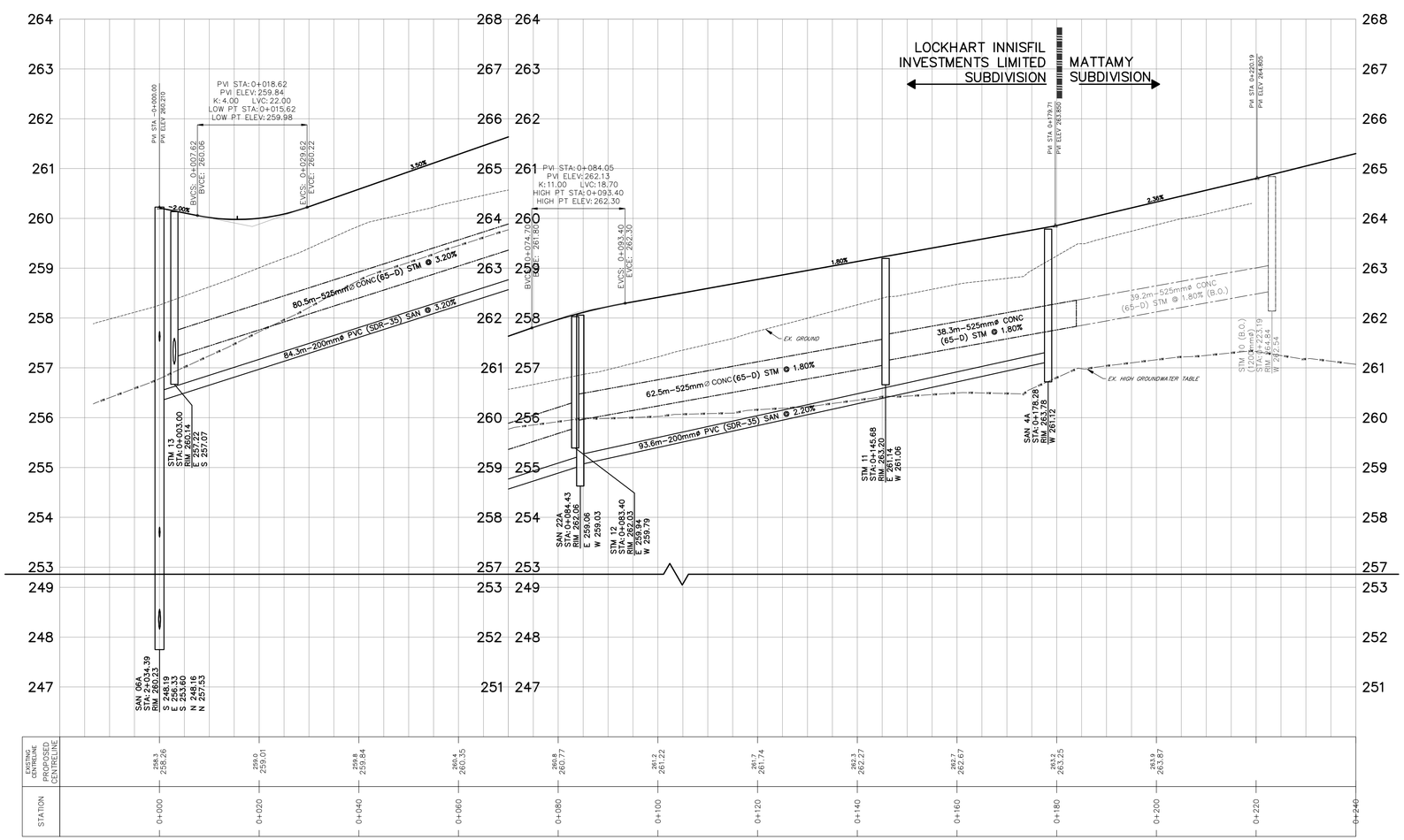




KEY PLAN
NTS

LEGEND

SAP.13921	SANITARY MAINTENANCE HOLE (BY OTHERS)
GDLV5979	STORM MAINTENANCE HOLE (BY OTHERS)
CB	CATCHBASIN (BY OTHERS)
DCB	DOUBLE CATCHBASIN (BY OTHERS)
V&V(B.O.)	VALVE & BOX (BY OTHERS)
H&V(B.O.)	HYDRANT & VALVE (BY OTHERS)
SAN 23A	SANITARY MAINTENANCE HOLE
STM 24	STORM MAINTENANCE HOLE
	CATCH BASIN
	DOUBLE CATCH BASIN
H&V	HYDRANT AND VALVE
V&B	VALVE AND BOX
	SANITARY SERVICE



BENCHMARK:

BENCHMARK NO. 001931U460S SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 263.480

BENCHMARK NO: 01019855454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.659m EAST OF HURONIA ROAD, TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENCED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

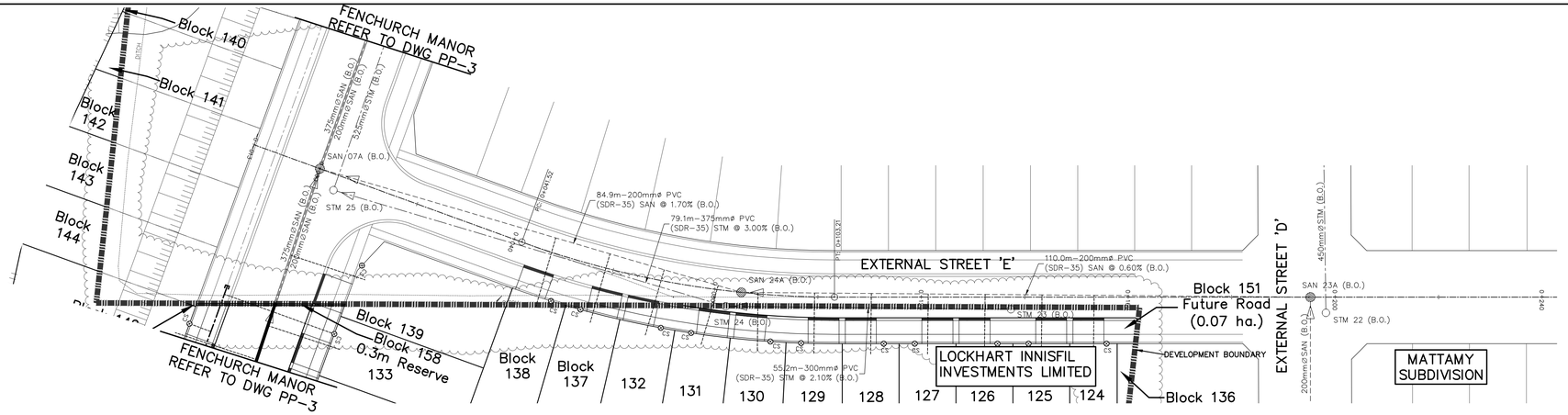
LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

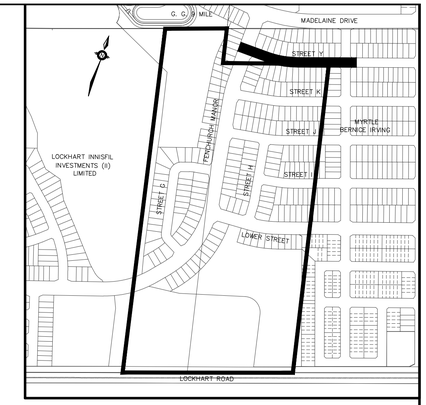
PLAN AND PROFILE STREET 'K' STA. -0+020 TO 0+240

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
229 Mapleview Dr. E, Unit 1
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DESIGN	JJH	SCALE: 1:500	DATE JUNE 2021
DRAWN	JJH	PROJECT GOL-14193	DWG. Nº PP-9
CHECKED	JWI		

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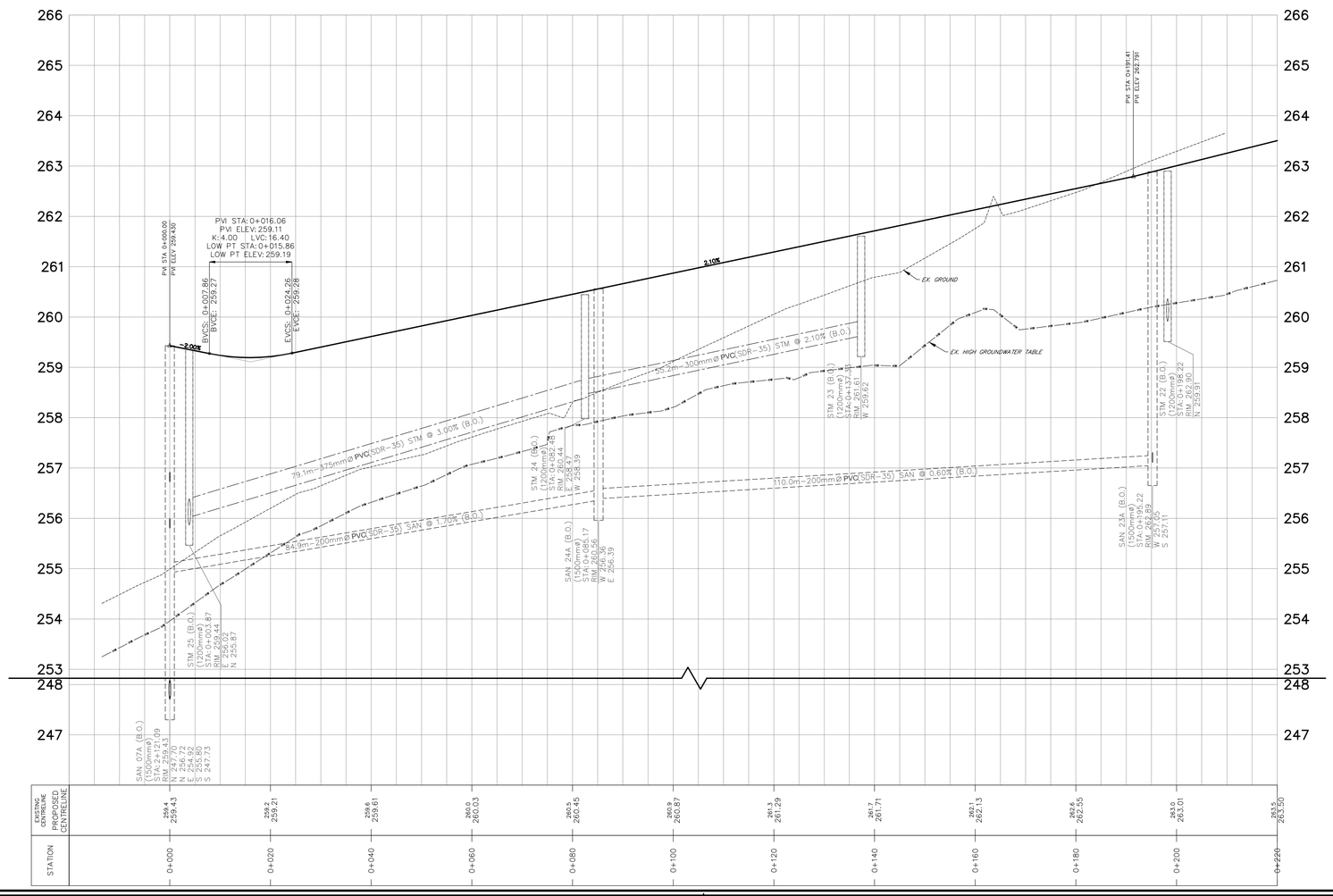




KEY PLAN
NTS

LEGEND

SAP.33921 ●	SANITARY MAINTENANCE HOLE (BY OTHERS)
GDLV5979 ○	STORM MAINTENANCE HOLE (BY OTHERS)
CB	CATCHBASIN (BY OTHERS)
DCB	DOUBLE CATCHBASIN (BY OTHERS)
VB(B.O.)	VALVE & BOX (BY OTHERS)
H&V(B.O.)	HYDRANT & VALVE (BY OTHERS)
SAN 23A ●	SANITARY MAINTENANCE HOLE
STM 24 ○	STORM MAINTENANCE HOLE
	CATCH BASIN
	DOUBLE CATCH BASIN
H&V	HYDRANT AND VALVE
VB	VALVE AND BOX
	SANITARY SERVICE



BENCHMARK:

BENCHMARK NO: 001193IU4605 SOUTHWEST CORNER OF ST. PAUL'S CRESCENT AND YONGE STREET, TABLET SET HORIZONTALLY IN NORTH FACE OF CONCRETE FOUNDATION OF ST. PAUL'S ANGLICAN CHURCH, AT NORTH-EAST CORNER (TOWER) 15.2m WEST OF BELL POLE AND 9.2m SOUTH-EAST OF "V" IN TWIN BIRCH TREES 15cm BELOW BRICK. ELEV 283.480

BENCHMARK NO: 01019865454 CONCRETE BRIDGE CARRYING MAPLEVIEW DRIVE EAST OVER LOVERS CREEK, 0.659m EAST OF HURONIA ROAD. TABLET IS SET HORIZONTALLY IN THE NORTH FACE, 5.45m NORTH OF CENTRELINE OF ROAD, 28cm WEST OF THE NORTH-EAST END OF BRIDGE, 19cm BELOW TOP OF COPING. ELEV. 241.862

BENCHMARK NO: 01019860407 LOCATED ON THE NORTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 500m EAST OF HURONIA ROAD. N.4910727.688 E.607083.931

BENCHMARK NO: 01019860404 LOCATED ON THE SOUTH SIDE OF MAPLEVIEW DRIVE APPROXIMATELY 930m WEST OF YONGE STREET. N.4911189.897 E.608513.316

NO.	REVISIONS	DATE	INITIAL
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	OCT 2021	JWI

LICENSED PROFESSIONAL ENGINEER
J. W. INGRAM
100143779
21-10-06
PROVINCE OF ONTARIO

LOCKHART INNISFIL INVESTMENTS LIMITED SUBDIVISION

PLAN AND PROFILE EXTERNAL STREET 'E' STA. -0+020 TO 0+220

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
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DESIGN	JJH	SCALE: 1:500	DATE JUNE 2021
DRAWN	JJH	PROJECT GOL-14193	DWG. Nº PP-10
CHECKED	JWI		

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