

REPORT

SITE SERVICING REPORT 1546 SCOTT STREET

Project: 132902-7.03.04



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1 INTRODUCTION

1.1 Scope

The purpose of this report is to outline the required municipal services, including water supply, stormwater management and wastewater disposal, needed to support the redevelopment of the subject property. The property is approximately 0.253 hectares in area and is currently identified as 1546 Scott Street.

The site is bound by existing commercial and residential lands to the west and south (1560 Scott St, known as Holland Cross, with a current development application at the City of Ottawa for lands south of the subject site), Scott Street to the north, and undeveloped lands to the east. Please refer to Figure 1 – Existing Conditions in **Appendix A** for location information.

This Site Servicing Study, which also includes the Stormwater Management Plan, Watermain Analysis and Erosion and Sedimentation Control Plans, is being completed in support of the Site Plan Application.

1.2 Subject Site

Reid's Heritage Properties proposes to construct a 25-storey residential apartment building with 230 units. The proposed development also includes 4 levels of underground parking. 200 m^2 of commercial space is also proposed. Vehicular access to the site will be from both Scott Street to the north as well as through an existing shared access of Bullman St/Hamilton Ave. N intersection towards the south. Please refer to Figure 2 – Site Plan in **Appendix A** for more information.

The site currently consists of a commercial retail store (Beer Store). All existing structures within the subject property will be demolished to facilitate the proposed development.

1.3 Pre-consultation

A pre-consultation meeting with the City of Ottawa was held in May 2021 regarding the proposed development. Notes from this meeting may be found in **Appendix A**. No significant constraints relating to the site servicing or stormwater management for the subject lands were identified during the consultation.

2 WATER DISTRIBUTION

2.1 Existing Conditions

Adjacent to the site there is an existing 1067 mm diameter concrete watermain, located within the Scott Street right of way. At the eastern limit of the site there is also a 152mm diameter iron watermain This is a dead-end watermain which terminates at the east property limit of the subject lands and is located within the subject property. The existing building is thought to be serviced from this dead-end watermain. These watermains fall within the City of Ottawa's pressure zone 1W which will provide the water supply to the site. The existing building is serviced from Scott Street, although the exact location is unknown.

2.2 Design Criteria

2.2.1 Water Demands

The population for apartment buildings is assumed at 1.4 persons per 1-bedroom unit and 2.1 persons per 2-bedroom unit as found in Table 4.1 of the Design Guidelines. A watermain demand calculation sheet is included in **Appendix B** and the total water demands are summarized as follows:

	Subject Site
Average Day	1.35 l/s
Maximum Day	3.37 l/s
Peak Hour	7.41 l/s

2.2.2 System Pressure

The Ottawa Design Guidelines – Water Distribution (WDG001), July 2010, City of Ottawa, Clause 4.2.2.1 states that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 480 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in Clause 4.2.2 of the guidelines are as follows:

Minimum Pressure Minimum system pressure under peak hour demand conditions shall not

be less than 276 kPa (40 psi)

Fire Flow During the period of maximum day demand, the system pressure shall

not be less than 140 kPa (20 psi) during a fire flow event.

Maximum Pressure In accordance with the Ontario Building/Plumbing Code, the maximum

pressure should not exceed 552 kPa (80 psi). Pressure reduction controls will be required for buildings where it is not possible/feasible to

maintain the system pressure below 552 kPa.

2.2.3 Fire Flow Rates

A calculation using the Fire Underwriting Survey (FUS) method was conducted to determine the fire flow requirement for the site. The building is considered fire-resistive construction. Results of the analysis provides a maximum fire flow rate of 5,000 l/min or 83 l/s is required which is used in the hydraulic analysis. A copy of the FUS calculation is included in **Appendix B**.

2.3 Proposed Water Plan

The city has requested that the new building not be serviced from the 1067mm concrete watermain. It is therefore proposed that the existing dead-end 152mm watermain be extended to the intersection of Scott Street and Holland Avenue. Limited space within the ROW will result in removal of sidewalk to install the watermain with 3m of separation, however since Scott St is being redeveloped, a temporary asphalt sidewalk will be reinstated in its place to maintain pedestrian access until the completion of the redevelopment.

Twin 152mm dia water services are proposed to connect to this new watermain. A new valve chamber separating the twin services is also proposed, see site servicing plan 132902-C-001 in **Appendix E.** The proposed 152mm dia services will provide adequate supply to the building to meet demands while twining the service will provide service redundancy for this building.

All existing waster services will be located and abandoned per City of Ottawa specifications.

With 2 AA hydrants within 75m of the building the minimum number of hydrants needed to deliver the required fire flow to the structure is being provided in accordance with Technical Bulletin ISTB-2018-02 dated March 21, 2018. Furthermore, the fire dept. connection is located within 45m of a hydrant which is located on Scott Street at the eastern property line, as such a new hydrant is not needed.

BUILDING ID	FIRE FLOW DEMAND (L/MIN)	FIRE HYDRANT(S) WITHIN 75M (5,700 L/MIN)	FIRE HYDRANT(S) WITHIN 150M (3,800 L/MIN)	COMBINED FIRE FLOW (L/MIN)
1546 Scott	5,000	1	1	9,500

3 WASTEWATER

3.1 Existing Conditions

Adjacent to the site is a 300mm concrete sanitary sewer located in the Scott Street ROW draining eastward. This sewer will be the outlet for the subject development.

3.2 Design Criteria

The sanitary sewers for the subject site will be based on the City of Ottawa design criteria. It should be noted that the sanitary sewer design for this study incorporates the latest City of Ottawa design parameters identified in Technical Bulletin ISTB-2018-01. Some of the key criteria will include the following:

Commercial/Institutional flow 28,000 l/ha/d
 Residential flow 280 l/c/d

Peaking factor
 1.5 if ICI in contributing area >20%
 1.0 if ICI in contributing area <20%

Infiltration allowance 0.33 l/s/ha

• Velocities 0.60 m/s min. to 3.0 m/s max.

Given the above criteria, total wastewater flow from the proposed development will 4.66 l/s, the detailed sanitary sewer calculations are included in **Appendix C**. As noted during the City preconsult, City staff advised there are no capacity issues with the proposed sanitary outlet servicing the proposed development.

3.3 Recommended Wastewater Plan

A 200mm dia sanitary service lateral is proposed to connect to the existing sanitary sewer in Scott Street to service this site. Please refer to the site servicing plan 132902-C-001 in **Appendix E** for connection location details.

Existing sanitary service will be abandoned per City of Ottawa specifications.

4 STORMWATER SYSTEM

4.1 Existing Conditions

The site is currently serviced by a 1050mm concrete storm sewer located in the Scott Street ROW. This sewer serves as the current outlet for the major and minor flows generated from the current site.

4.2 Design Criteria

Criteria for the stormwater management of existing infill sites discharging to separated sewers within the City of Ottawa are as follows;

- Existing adjacent storm sewers were designed to a 2 year level of service
- Site to be designed to limit the 100 year post development flow to a maximum of the 2 year pre development flow
- Pre development flow to use a maximum C of 0.5 and a minimum TC of 10 min.

The stormwater system was designed following the principles of dual drainage, making accommodations for both major and minor flow.

Some of the key criteria include the following:

Design Storm	1:2 year return (Ottawa)				
	1:100 year return (External Areas)				
 Rational Method Sewer Sizing 					
Initial Time of Concentration	10 minutes				
Runoff Coefficients					
- Landscaped Areas	C = 0.30				
- Asphalt/Concrete	C = 0.90				
- Roof	C = 0.90				
Pipe Velocities	0.80 m/s to 6.0 m/s				
Minimum Pipe Size	250 mm diameter (200 mm CB Leads)				

4.3 Proposed Minor System

Drawing C-001 in **Appendix E** illustrates the proposed storm sewer service for the site. The majority of the site runoff will be captured and discharges into the municipal system through the service along with some uncontrolled surface drainage entering the Scott St ROW.

Using the above-noted criteria, the proposed storm sewer connection was sized accordingly. A detailed storm sewer design sheet and the associated storm sewer drainage area plan are included in **Appendix D**.

4.4 Stormwater Management

The subject site will be limited to a release rate established using the criteria described in section 4.2. This will be achieved through roof flow control devices and an inlet control device (ICD) at the outlet of the cistern.

Flows generated that are in excess of the site's allowable release rate will be stored within a cistern located at the parking garage structure.

At certain locations within the site, the opportunity to store runoff is limited due to grading constraints and building geometry. These locations are generally located at the perimeter of the site where it is necessary to tie into public boulevards and adjacent properties, and it is not always feasible to capture or store stormwater runoff.

In this case, a portion of the building frontage along Scott Street will discharge uncontrolled to the street CBs. This uncontrolled area, 0.006 hectares in total, have a C value of 0.9 (increased by 25% to a maximum of 1.00 for 100 year events). Based on 1:100 year storm uncontrolled flows, the uncontrolled areas generate 2.98 l/s runoff (refer to Section 4.5 for calculation). The cistern has been sized to control water generated during the 1:100-year event, with no overflow leaving the site. Please refer to the SWM calculations in **Appendix D**.

4.5 Inlet Controls

The allowable release rate for the 0.253 Ha site can be calculated as follows:

Q allowable	= $2.78 \times C \times i_{2yr} \times A$ where:
С	= 0.5 (pre-development C*)
l _{2yr}	= Intensity of 2-year storm event (mm/hr)
	= 732.951 x $(T_c + 6.199)^{0.81}$ = 76.81 mm/hr; where $T_c = 10$ minutes*
Α	= Area = 0.253 Ha
	= 27.01 L/s

^{*}based on pre development calculations, see Appendix C

As noted in Section 4.4, a portion of the site will be left to discharge to the surrounding boulevard at an uncontrolled rate.

Based on a 1:100 year event, the flow from the 0.006 Ha uncontrolled areas can be determined as:

```
 \begin{aligned} \textbf{Q}_{uncontrolled} &= \textbf{2.78} \times \textbf{C} \times \textbf{i}_{100yr} \times \textbf{A} & \text{where:} \\ \textbf{C} &= \text{Average runoff coefficient of uncontrolled area} = 1.00 \\ \textbf{i}_{100yr} &= \text{Intensity of 100-year storm event (mm/hr)} \\ &= 1735.688 \times (T_c + 6.014)^{0.820} = 178.56 \text{ mm/hr; where } T_c = 10 \text{ minutes} \\ \textbf{A} &= \text{Uncontrolled Area} = 0.006 \text{ Ha} \end{aligned}
```

Therefore, the uncontrolled release rate can be determined as:

```
Q<sub>uncontrolled</sub> = 2.78 \times C \times i_{100yr} \times A
= 2.78 \times 1.0 \times 178.56 \times 0.006
```

= 2.98 L/s

The maximum allowable release rate from the remainder of the site can then be determined as:

$$\mathbf{Q}_{\text{max allowable}}$$
 = $\mathbf{Q}_{\text{restricted}} - \mathbf{Q}_{\text{uncontrolled}}$
= 27.01 L/s - 2.98 L/s
= 24.03 L/s

4.6 On-Site Detention

As noted in section 4.4 any excess storm water up to the 100-year event is to be stored on-site within the building cistern in order to not surcharge the downstream municipal storm sewer system. As the cistern is located inside the building, coordination with the architect, structural and mechanical engineers will be needed to design the structure and associated inlet control device.

4.6.1 Site Inlet Control

The following Table summarizes the on-site storage requirements during both the 1:5-year and 1:100-year events.

ICD	TRIBUTARY AREA	AVAILABLE STORAGE (M³)	100-YEAF	RSTORM	5-YEAR STORM		
AREA			RESTRICTE D FLOW (L/S)	REQUIRED STORAGE (M³)	RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M³)	
Cistern	0.25	100	24	97.34	24	39.21	
Unrestricted	0.006						
TOTAL	0.25	100	24	97.34	24	39.21	

In all instances the required storage is met. The cistern will be fitted with a plug style ICD set at 24 litres/second, as such flow rates have been reduced by 50% when calculating the required storage volumes.

4.6.2 Overall Release Rate

As demonstrated above, the site uses an inlet control device to restrict the 100 year storm event to the criteria approved by the City of Ottawa. Restricted stormwater will be contained onsite by the building cistern. In the 100 year event, there will be no overflow off-site from restricted areas.

The sum of restrictions on the site is 24 l/s, which is less than the allowable release of 24.03 l/s noted in section 4.5.

5 SEDIMENT AND EROSION CONTROL PLAN

During construction, existing storm water conveyance systems can be exposed to significant sediment loadings. A number of construction techniques designed to reduce unnecessary construction sediment loadings may be used such as;

- Filter socks will remain on open surface structures such as manholes and catchbasins until these structures are commissioned and put into use;
- Installation of silt fence, where applicable, around the perimeter of the proposed work area.

During construction of the services, any trench dewatering using pumps will be fitted with a "filter sock." Thus, any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filter sock as needed including sediment removal and disposal.

All catchbasins, and to a lesser degree manholes, convey surface water to sewers. Consequently, until the surrounding surface has been completed these structures will be protected with a sediment capture filter sock to prevent sediment from entering the minor storm sewer system. These will stay in place and be maintained during construction and build-out until it is appropriate to remove them.

The Sediment and Erosion Control Plan 132902-C-010 is included in Appendix E.

6 CONCLUSIONS

Municipal water, wastewater and stormwater systems required to accommodate the proposed development are available to service the proposed development. Prior to construction, existing sewers are to be CCTV inspected to assess sewer condition.

This report has demonstrated sanitary and storm flows from and water supply to the subject site can be accommodated by the existing infrastructure. Also, the proposed servicing has been designed in accordance with MECP and City of Ottawa current level of service requirements.

The use of lot level controls, conveyance controls and end of pipe controls outlined in the report will result in effective treatment of surface stormwater runoff from the site. Adherence to the sediment and erosion control plan during construction will minimize harmful impacts on surface water.

Based on the information provided herein, the development can be serviced to meet City of Ottawa requirements.

Report prepared by:



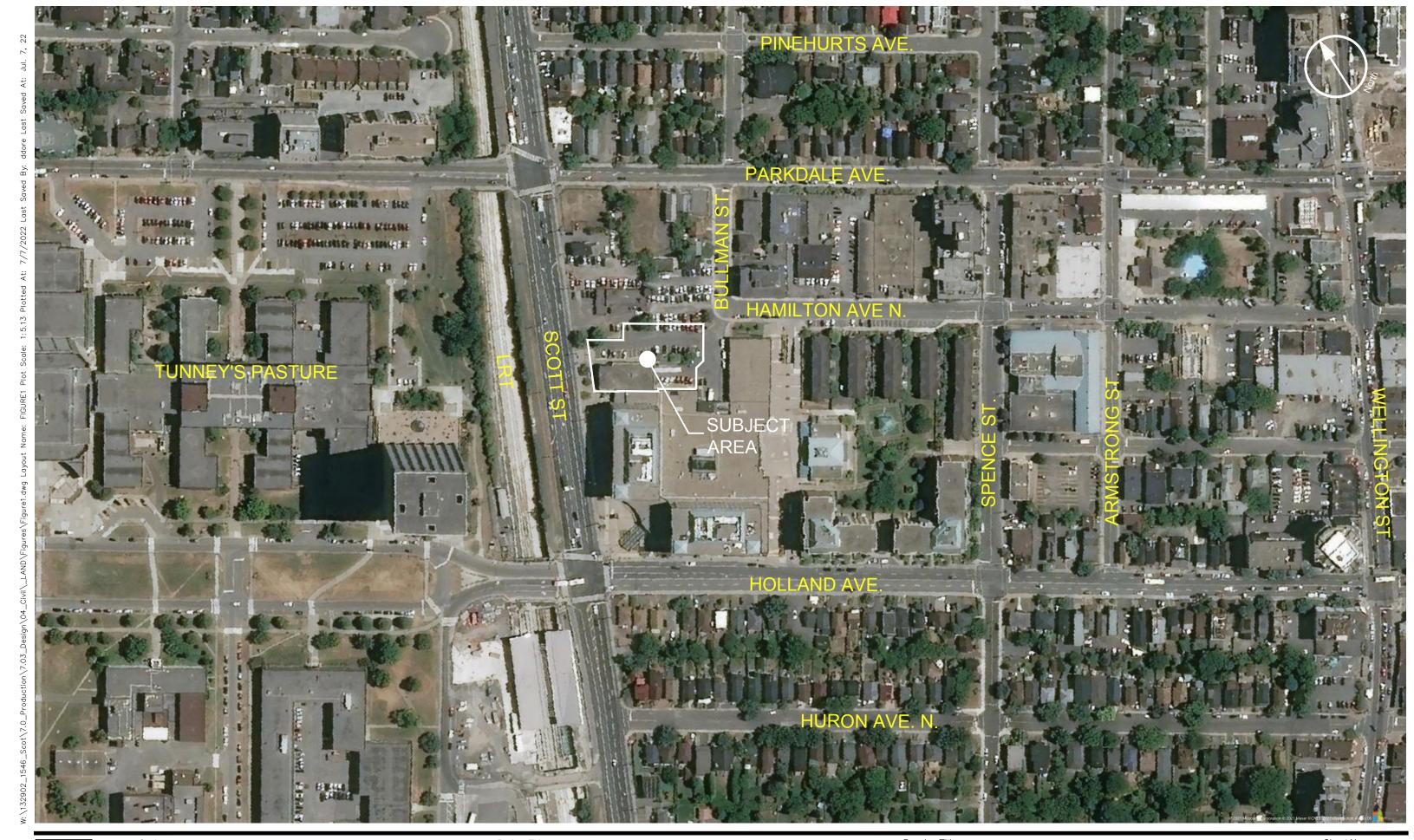
Demetrius Yannoulopoulos P. Eng. Director, Office Lead



S. E. Labadie, P.Eng Civil Engineer

APPENDIX A

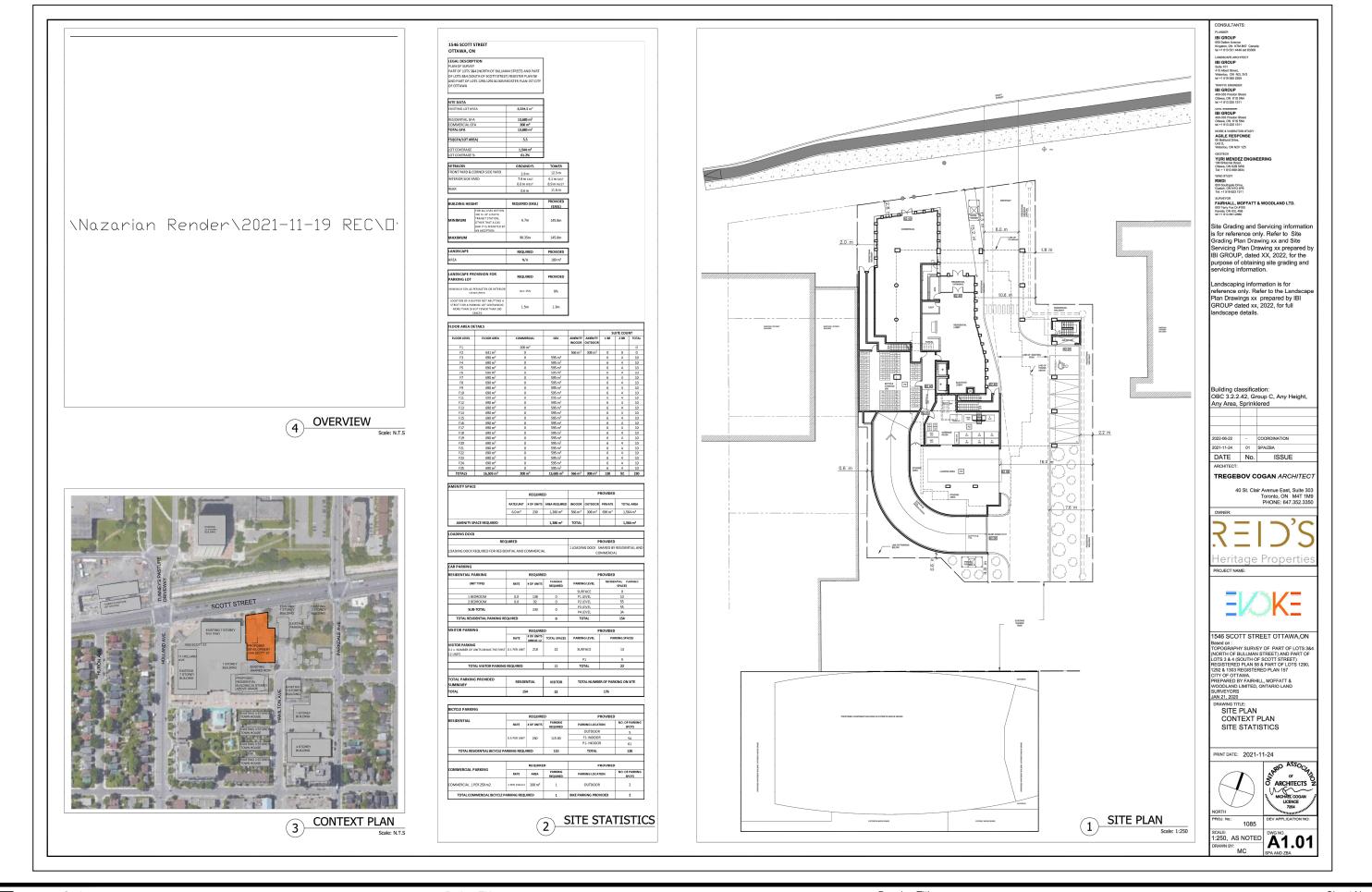
- Figure 1 Existing Conditions
 Figure 2 Site Plan
 City Pre-Consultation Meeting Notes (June 15, 2021)



[B]

Project Title Drawing Title Sheet No.

NTS 1546 SCOTT STREET EXISTING CONDITIONS FIGURE 1



В

Project Title Drawing Title Sheet No.

NTS 1546 SCOTT STREET SITE PLAN

Samantha Labadie

From: Tess Gilchrist

Sent: Wednesday, May 11, 2022 4:26 PM

To: Samantha Labadie

Subject: FW: Pre-consultation follow-up - 1546 Scott Street

Tess Gilchrist MCIP RPP

Associate - Manager, Planning

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650 Dalton Avenue Kingston ON K7M 8N7 Canada tel +1 613 531 4440 ext 63309











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From: Demetrius Yannoulopoulos <dyannoulopoulos@IBIGroup.com>

Sent: Tuesday, June 15, 2021 8:59 AM

To: Andrew Arklie <aarklie@reidsproperties.com>; Tess Gilchrist <tess.gilchrist@ibigroup.com>; Melissa MacGregor <mmacgregor@reidsproperties.com>

Cc: Scott Reid <scott@reidsproperties.com>; Victor Labreche <Victor.Labreche@ibigroup.com>; David Hook

<DHook@IBIGroup.com>

Subject: RE: Pre-consultation follow-up - 1546 Scott Street

ΑII

Had a call yesterday with Shawn Wessel who will be the engineering reviewer on this site, also joining us was Eric Tousignant who is a senior infrastructure manager.

Eric joined us as he is the model keeper for the sanitary system for the City.

Eric advised he did not anticipate any issues with the existing sanitary system accommodating the increase in density, he had reviewed this area in detail a while back and he would look in his files and provide some notes. Eric did note the City does not currently have a mechanism to allocate capacity in the sanitary system, should the development be delayed for a long period of time (years) and other redevelopments in the area receive approval there is always the chance of capacity being used up.

Shawn noted the site would be subject to the typical City infil requirement for Storm water, the site will have to restrict flow from the site such that the 1:100yr flow will be restricted to the equivalent of 1:2 yr event with C=0.5. the usual freeboards (0.3m from openings to max water levels) will be required as will sensitivity review of the extent of the 1:100+20% event.

Due to the proximity of a major watermain (1067Dia) in Scott street and anticipated excavation for underground parking an additional \$25M insurance policy will be required (in addition to the standard \$5M).

Also due to the proximity to the LRT, vibration analysis and monitoring will be required, strongly advise pre and post CCTV of all adjacent infrastructure to note condition of infrastructure in case there is future problems.

In addition to the servicing study, noise (road and stationary), and Wind will be required.

All transportation comments will be provided by Wally

Shaw will prepare formal notes and circulate through the City planner.

Thx D
Demetrius Yannoulopoulos P.ENG.
Director - Office Lead mob +1 613 447 0504
A Message from IBI Group's CEO on COVID-19: https://www.ibigroup.com/covid19-response
IBI GROUP 400-333 Preston Street Ottawa ON K1S 5N4 Canada tel +1 613 225 1311 ext 64001 fax +1 613 225 9868
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From: Andrew Arklie <aarklie@reidsproperties.com> Sent: Tuesday, June 15, 2021 7:37 AM To: Demetrius Yannoulopoulos <dyannoulopoulos@ibigroup.com>; Tess Gilchrist <tess.gilchrist@ibigroup.com>; Melissa MacGregor <mmacgregor@reidsproperties.com> Cc: Scott Reid <scott@reidsproperties.com>; Victor Labreche <victor.labreche@ibigroup.com>; David Hook <dhook@ibigroup.com> Subject: RE: Pre-consultation follow-up - 1546 Scott Street</dhook@ibigroup.com></victor.labreche@ibigroup.com></scott@reidsproperties.com></mmacgregor@reidsproperties.com></tess.gilchrist@ibigroup.com></dyannoulopoulos@ibigroup.com></aarklie@reidsproperties.com>
Hi Demetrius,
How was the call yesterday? Do you have an update for us?
Thanks,
Andrew
From: Demetrius Yannoulopoulos < <u>dyannoulopoulos@IBIGroup.com</u> > Sent: June 11, 2021 8:18 AM To: Andrew Arklie < <u>aarklie@reidsproperties.com</u> >; Tess Gilchrist < <u>tess.gilchrist@ibigroup.com</u> >; Melissa MacGregor < <u>mmacgregor@reidsproperties.com</u> > Cc: Scott Reid < <u>scott@reidsproperties.com</u> >; Victor Labreche < <u>Victor.Labreche@ibigroup.com</u> >; David Hook
<dhook@ibigroup.com> Subject: RF: Pre-consultation follow-up - 1546 Scott Street</dhook@ibigroup.com>

ΑII

City staff had to reschedule our Friday call to Monday.

Thx D

Demetrius Yannoulopoulos P.ENG.

APPENDIX B

- Watermain Demand Calculation Sheets
- FUS Calculation
- Boundary Conditions from the City of Ottawa

WATERMAIN DEMAND CALCULATION SHEET

IBI GROUP

333 PRESTON STREET
OTTAWA, ON
K1S 5N4

PROJECT : 1546 Scott Street LOCATION : City of Ottawa

FILE: 132902-6.4.4

DATE PRINTED: 2022-05-11

DESIGN: 2022-05-11

PAGE: 1 OF 1

	RESIDENTIAL		NON-RESIDENTIAL		AVERAGE DAILY		MAXIMUM DAILY		MAXIMUM HOURLY		FIRE						
NODE		2-BD 3-BD POP'N			INDTRL	COMM.	RETAIL		DEMAND	(l/s)	DI	EMAND (I	/s)	DI	EMAND (I	/s)	DEMAND
NODE	1-BD 2		POP'N	(ha.)	(m ²)	(m ²)	Res.	Non-res.	Total	Res.	Non-res.	Total	Res.	Non-res.	Total	(I/min)	
BUILDING	138	92		386		200		1.25	0.01	1.26	3.13	0.01	3.14	6.89	0.02	6.91	5,000

	ASSUMPTIONS					
RESIDENTIAL DENSITIES	AVG. DAILY DEN	MAND		MAX. HOURLY	DEMAN	<u>D</u>
Apartment (1 Bedroom) 1.4 p / p / u	Residential:**	280	I / cap / day	Residential:	1,540	I / cap / day
Apartment (2 Bedroom) 2.1 p / p / u	Industrial:		I / ha / day	Industrial:		I / ha / day
Apartment (3 Bedroom) p / p / u	Commercial:	2,800	I / 1000m ² / day	Commercial:	7,560	I / ha / day
	Retail:	2,500	I / 1000m ² / day	Retail:	6,750	I / 1000m ² / day
** Residential Daily Demand reduced to coincide with			•			
current waste water guidelines	MAX. DAILY DEM	MAND		FIRE FLO	<u>w</u>	
•	Residential:	700	I / cap / day	From FUS Calculation	5,000	I / min
	Industrial:		I / ha / day			
	Commercial:	4,200	I / ha / day			
	Retail:	3,750	I / 1000m ² / day			

Fire Flow Requirement from Fire Underwriters Survey

1546 Scott Street

-			
	Total Floor Area	4,765 m ²	
F = 220C√A			
С	0.6	C =	1.5 wood frame
Α	4,765 m ²		1.0 ordinary
	,		0.8 non-combustible
F	9,111 l/min		0.6 fire-resistive
use	9,000 l/min		

Floor	Area (m²)	Two Largerst Floors	Floors Above at 50%
3	966	966	
4	966	966	
5	660		330
6	715		358
7	715		358
8	715		358
9	715		358
10	715		358
11	715		358
12	715		358
Total	7597		4765

(<u>Note</u>: For fire-resistive buildings, consider two largest adjoining floors plus 50% of each of any floors immediately above them up to eight.)

Occupancy Adjustment -25% non-combustible -15% limited combustible

Use -15% 0% combustible +15% free burning

Adjustment -1350 l/min Fire flow 7,650 l/min

Sprinkler Adjustment

-30% system conforming to NFPA 13 -50% complete automatic system

+25% rapid burning

Use -30%

Adjustment -2295 l/min

Exposure Adjustment

Building	Separation	Adja	Exposure		
Face	(m)	Length	Stories	L*H Factor	Charge *
north		0%			
east		0%			
south		0%			
west		0%			

I/min

Total

Adjustment

Total adjustments	(2,295) I/min
Fire flow	5,355 l/min
Use	5,000 l/min
	83 l/s

0% (Note: According to Page G-104 in Tech bulletin ISTB-2018-02 Revisions to Ottawa Design Guidelines - Water Distribution, "If the exposing wall of the building being considered is taller than the exposed wall of the adjacent structure, no exposure charge applies".)

Samantha Labadie

From: Wessel, Shawn <shawn.wessel@ottawa.ca>

Sent: Tuesday, May 17, 2022 2:05 PM

To: Samantha Labadie
Cc: Jhamb, Nishant

Subject: 1546 Scott St - Boundary Condition Request

Attachments: 1546 Scott Street May 2022.pdf

Good afternoon, Sam

Please find boundary conditions for 1546 Scott St.:

I believe Nishant is the PM on this project.

The following are boundary conditions, HGL, for hydraulic analysis at 1546 Scott Street (zone 1W) assumed to be a dual connection to the proposed extension of the 203 mm watermain on Scott Street (see attached PDF for location).

Minimum HGL: 108.1 m

Maximum HGL: 115.1 m

Max Day + Fire Flow (83 L/s): 108.0 m

These are for current conditions and are based on computer model simulation.

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

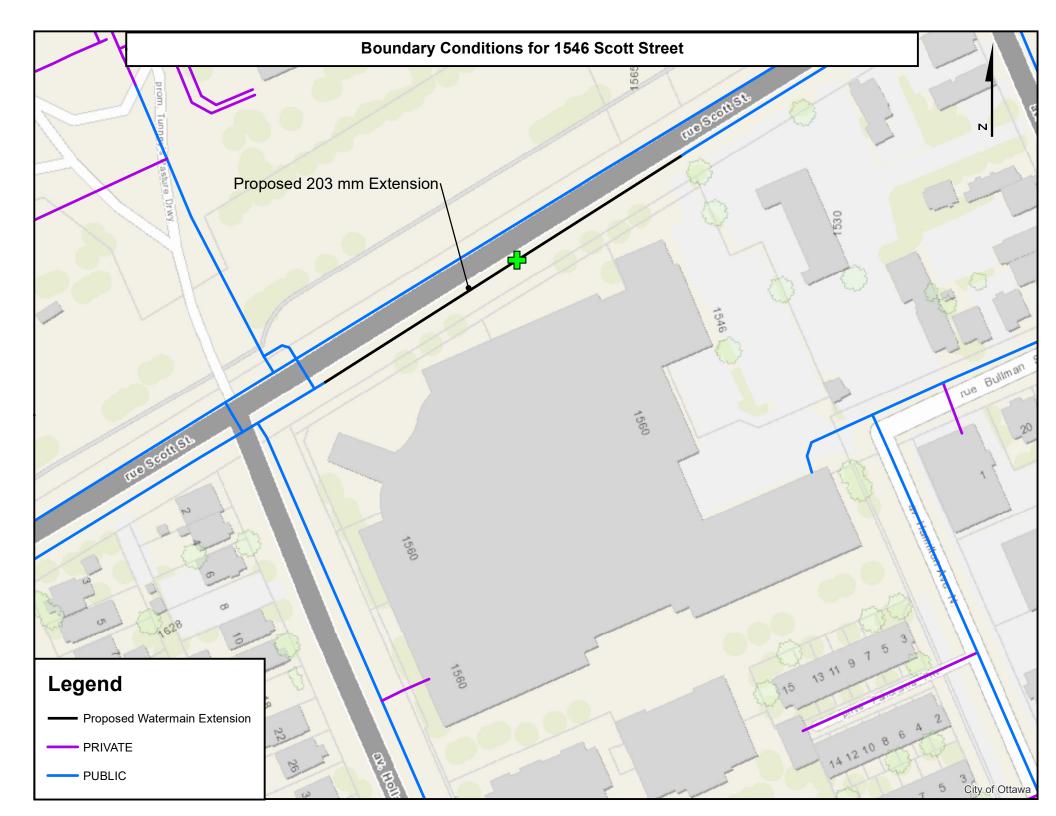
Regards,

Shawn Wessel, A.Sc.T.,rcji

Project Manager - Infrastructure Approvals

Gestionnaire de projet – Approbation des demandes d'infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale
Planning, Real Estate and Economic Development Department | Direction générale de la planification des biens immobiliers et du
développement économique
City of Ottawa | Ville d'Ottawa
110 Laurier Ave. W. | 110, avenue Laurier Ouest, Ottawa ON K1P 1J1
(613) 580 2424 Ext. | Poste 33017



APPENDIX C

Sanitary Sewer Design Sheet

SANITARY SEWER DESIGN SHEET

IBI GROUP

HISTOROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

STREET AREA ID 546 Scott Street	FROM MH MH1A	TO MH Main	AREA w/ Units (Ha)	SF	UNIT TYPES SD TH	H APT	AREA w/o Units (Ha)	POPU	CUM	RES PEAK	PEAK FLOW	INICTIT		AREA				ICI	PEAK	ADE	A (Ha)	FLOW	FIXED FL	LOVV (L/S)	FLOW	CAPACITY	LENGTH	DIA	SLOPE	VELOCITY	AVAI	LABLE
46 Scott Street	МН	МН	(Ha)	SF	SD TH			IND	СИМ		FLOW	INICTIT								AREA	1 (11a)											
546 Scott Street			()				(Ha)						TUTIONAL		RCIAL		STRIAL	PEAK	FLOW	IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(full)		ACITY
	MH1A	Main	0.25							FACTOR	(L/s)	IND	CUM	IND	CUM	IND	CUM	I FACTOR	(L/s)		- 2	(==)		- 5	(2.0)	(30)	17	\ <i>i</i>	(,,,)	(m/s)	L/s	(%
			1.20			230		414.0	414.0	3.41	4.58			0.02	0.02					0.25	0.25	0.08			4.66	34.22	11.32	200	1.00	1.055	29.56	86.38
														0.00																1		
ician Barametera:			Notes:	\longrightarrow						Designed:		JEB			No.							evision								Date		
esign Parameters:			1. Mannings c	coefficient (r	·/ -	0.013				Designeu.		JEB		ŀ	1	0.				Issued for Site Plan Application						2021-11-24						
Residential IC	ICI Areas		Demand (pe			280 L/day	200) L/day						ŀ	- 1.	+					100000 101 3	ite i iaii Applica	auon							2021-11-24		
SF 3.4 p/p/u	101711000		3. Infiltration a			0.33 L/s/Ha	200	Lauy		Checked:		DY																				
	00 L/Ha/day		4. Residential																													
	00 L/Ha/day				mula = 1+(14/(4+(P	P/1000)^0.5))0.8	3							ľ																•	•	
		MOE Chart			.8 Correction Factor					Dwg. Refer	rence:	132902-C	C-001													-				-		

APPENDIX D

- Storm Sewer Design Sheet
- Stormwater Management Calculations
 Drawing 132902 C-500 Storm Drainage Area Plan

STORM SEWER DESIGN SHEET



IBI GROUP
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ibigroup.com

1546 Scott Street City of Ottawa Reid's Heritage Properties

	LOCATION							ARE/	A (Ha)											RATIO	NAL DESIG	N FLOW										,	SEWER DAT	TA			
STREET	AREA ID	FROM	TO	C=	C=	C=	C=	C=	C= (C= C=	C=	C=	IND	CUM	INLET	TIME	TOTAL	i (2)	i (5)	i (10)	i (100)	2yr PEAK	5yr PEAK	10yr PEAI	100yr PEA	K FIXE	D FLOW	DESIGN	CAPACIT	LENGTH		PIPE SIZE (n	nm)	SLOPE	VELOCITY	AVAIL (CAP (2yr)
SIREEI	AREA ID	FROM	10	0.20	0.25	0.30	0.50	0.57	0.60 0	0.69 0.7	0.77	0.90	2.78AC	2.78AC	(min)	IN PIPE	(min)	(mm/hr)	(mm/hr)	(mm/hr)	(mm/hr)	FLOW (L/s	FLOW (L/s) FLOW (L/s) FLOW (L/s) IND	CUM	FLOW (L/s)	(L/s)	(m)	DIA	W	Н	(%)	(m/s)	(L/s)	(%)
1546 Scott Street	Cistern	MH1	Main									0.25	0.63	0.63	10.00	0.19	10.19	76.81	104.19	122.14	178.56	48.04	65.17	76.40	111.69	0.00	#REF!	48.04	62.04	14.12	250			1.00	1.224	14.00	22.56%
Definitions:				Notes:											Designed:		JEB				No.						Rev	ision							Date		
Q = 2.78CiA, where:				1. Mar	nings c	oefficien	nt (n) =	0.013													1.					Issued for	or Site Plan A	pplication							2021-11-24		
Q = Peak Flow in Litres	per Second (L/s)																																				
A = Area in Hectares (Ha	a)														Checked:		DY																				
i = Rainfall intensity in n	nillimeters per hour (n	nm/hr)																																			
[i = 732.951 / (TC+6.1	99)^0.810]	2 YEAR																																			
[i = 998.071 / (TC+6.0	53)^0.814]	5 YEAR													Dwg. Refer	ence:	132902.C-	500																			
[i = 1174.184 / (TC+6	.014)^0.816]	10 YEAR																				File Re	eference:					Date	9 :						Sheet No:		
[i = 1735.688 / (TC+6		100 YEAI	₹																			1329	902.6.04					2021-1	1-24						1 of 1		



PROJECT: 1546 Scott Street
DATE: 2022-05-13
FILE: 132902.6.04
REV#: 1
DESIGNED BY: SL
CHECKED BY: DY

STORMWATER MANAGEMENT

Formulas and Descriptions

$$\begin{split} &i_{2gr} = 1:2 \text{ year Intensity} = 732.951 \, / \, (T_c + 6.199)^{0.810} \\ &i_{5gr} = 1:5 \text{ year Intensity} = 998.071 \, / \, (T_c + 6.053)^{0.814} \\ &i_{100gr} = 1:100 \text{ year Intensity} = 1735.688 \, / \, (T_c + 6.014)^{0.820} \\ &T_c = \text{Time of Concentration (min)} \\ &C = \text{Average Runoff Coefficient} \\ &A = \text{Area (Ha)} \\ &Q = \text{Flow} = 2.78\text{CiA} \, (\text{L/s}) \end{split}$$

Maximum Allowable Release Rate

Flow Allocation

C =	0.5 (Pre-Development
$T_c =$	10 min
i _{2yr} =	76.81 mm/hr
A TOTAL =	0.25 Ha
Q TOTAL =	27 01 L/e

Uncontrolled Release (Q uncontrolled = 2.78*C*i 100yr *A uncontrolled)

С	= 1.0	0
Tc	= 1	0 min
i _{100yr}	= 178.5	6 mm/hr
A uncontrolled	= 0.00	6 Ha
0	= 20	R I /e

Maximum Allowable Release Rate (Q max allowable = Q restricted - Q uncontrolled)

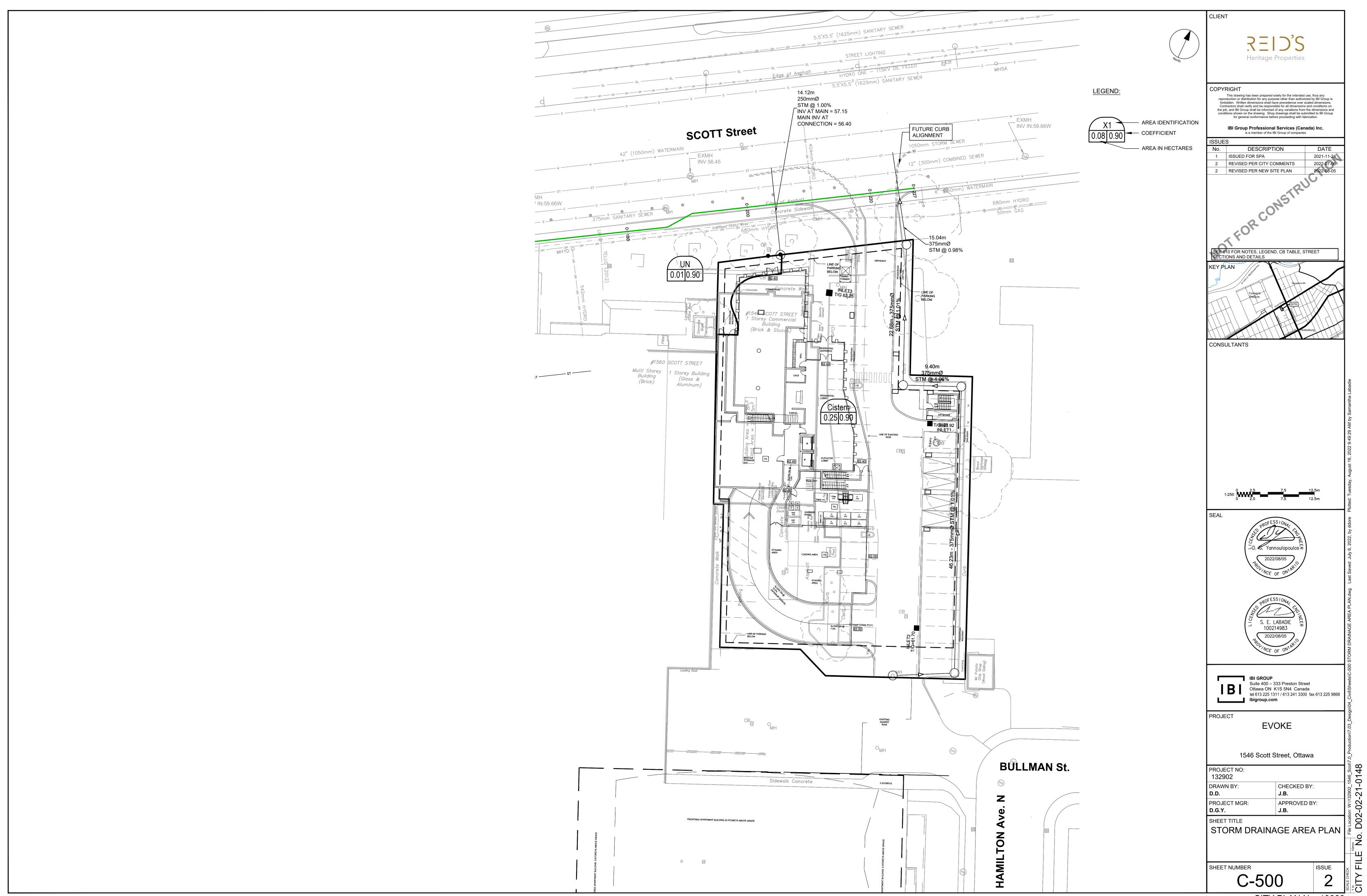
24.03 L/s

MODIFIED RATIONAL METHOD (100-Year & 5-YearPonding)

Drainage Area	Cistern				
Area (Ha)	0.250				
C =	1.00	Restricted Flow Q _r (I	_/s)=	24.00	Ī
		100-Year Pondir	ng		
T _c Variable	i _{100yr}	Peak Flow Q _p =2.78xCi _{100yr} A	Q,	Q _p -Q _r	Volume 100yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
46	67.96	47.23	12.00	35.23	97.24
48	65.89	45.79	12.00	33.79	97.32
49	64.91	45.11	12.00	33.11	97.34
50	63.95	44.45	12.00	32.45	97.34
52	62.14	43.19	12.00	31.19	97.31

Di ailiaye Area	Cisterii				
Area (Ha)	0.250				
C =	0.90	Restricted Flow Q _r (L/s	s)=	24.00	
		5-Year Ponding			
T _c Variable	i _{Syr}	Peak Flow Q _p =2.78xCi _{5yr} A	Q,	Q _p -Q _r	Volume 5yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
24	62.54	39.12	12.00	27.12	39.05
26	59.35	37.12	12.00	25.12	39.19
27	57.88	36.20	12.00	24.20	39.21
28	56.49	35.34	12.00	23.34	39.20
30	E2 02	22.72	12.00	24.72	20.12

	Sto	rage (m ³)				Sto	rage (m³)		
Overflow	Required	Roof	Cistern	Balance	Overflow	Required	Roof	Cistern	Balance
0.00	07.24	0.00	100.00	0.00	0.00	20.21	0.00	100.00	0.00



CITY PLAN No. 18666

APPENDIX E

- Drawing 132902 C-001 General Plan of Services
- Drawing 132902 C-200 Site Grading Plan
 Drawing 132902 C-900 Erosion and Sedimentation Control Plan

