

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
d.gray@dbgrayengineering.com

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES

320 CHAPEL STREET
OTTAWA, ONTARIO

REPORT No. 26060

AUGUST 26, 2026

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1.0 INTRODUCTION

This report has been prepared in support of the Zoning By-law Amendment application for 320 Chapel Street in Ottawa, Ontario. The Zoning By-law Amendment would permit a number of non-residential uses including office, medical facility, instructional facility, personal service business, office, and artist studio.

2.0 WATER SERVICING

2.1 WATER SUPPLY FOR FIREFIGHTING

When calculating the required fire flow on private property in urban areas, the Ontario Building Code Method is to be used. Using the Ontario Building Code Method, the required fire flow is calculated to be 5,400 L/min (90 L/s). Refer to calculations in Appendix A.

The boundary conditions in the 300 mm Chapel Street municipal watermain provided by the City of Ottawa at the subject property indicate a hydraulic grade line (HGL) of 107.5 m for the 90 L/s fire flow. Refer to Appendix A. This HGL calculates to 371 kPa (54 psi). Since the pressure is above the Ontario Building Code's minimum required pressure of 140 kPa (20 psi), there is an adequate water supply for firefighting from the existing municipal water distribution system.

The aggregate flow of all contributing fire hydrants within 150 m of the building shall not be less than the required fire flow. There is an existing municipal Class AA fire hydrant located between 326 Chapel Street and 328 Chapel Street. It can contribute 5,700 L/min (95 L/s), which is greater than the required fire flow of 5,400 L/min (90 L/s).

2.2 DOMESTIC WATER SUPPLY

The average daily demand is calculated to be 0.04 L/s, the maximum daily demand is calculated to be 0.05 L/s and the maximum hourly demand is calculated to be 0.10 L/s. Refer to calculations in Appendix A.

The boundary conditions in the 300 mm Chapel Street municipal watermain provided by the City of Ottawa at the subject property indicate a minimum HGL of 107.0 m and a maximum HGL of 114.8 m. Refer to Appendix A. Based on these boundary conditions, the pressure at the water meter is calculated to vary between 364 kPa (53 psi) and 440 kPa (64 psi). This is an acceptable range for the proposed development.

3.0 SANITARY SERVICING

The post-development sanitary flow rate is calculated to be 0.09 L/s. A 150 mm sanitary sewer service at the minimum 1% slope (15.23 L/s capacity) could service the proposed development. At the design flow rate the sanitary sewer service would only be at 1% capacity. The 150 mm sanitary sewer service would connect to the existing 250 mm Chapel Street municipal sanitary sewer, which at 0.4% slope has a capacity of 37.61 L/s. The pre-development sanitary flow rate is calculated to be 0.07 L/s. Refer to calculations in Appendix B. The 0.02 L/s post-development increase in flow is expected to have an acceptable impact on the 250 mm Chapel Street municipal sanitary sewer.

4.0 CONCLUSIONS

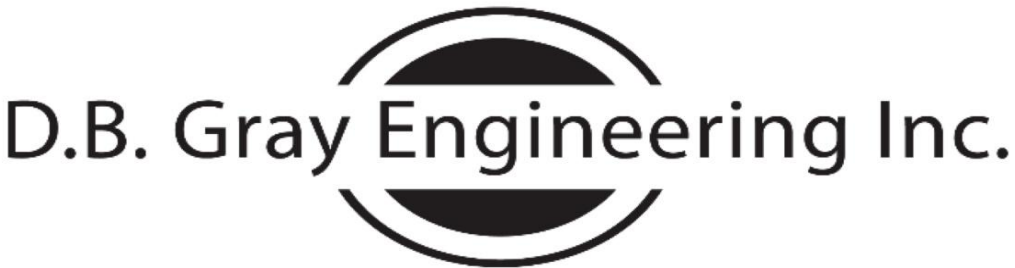
1. There is an adequate water supply for firefighting from the existing municipal water distribution system.
2. There is an acceptable range of water pressures in the existing municipal water distribution system.
3. The post-development sanitary flow rate will be adequately handled by the proposed sanitary sewer service.
4. The post-development increase in sanitary flow is expected to have an acceptable impact on the existing municipal sanitary sewer.

Prepared by D.B. Gray Engineering Inc.



APPENDIX A

WATER SERVICING



Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
d.gray@dbgrayengineering.com

August 21, 2026

320 Chapel Street
3-Storey Mixed-Use Building
Ottawa, Ontario

FIRE FLOW CALCULATIONS
OBC Method

Q = Required water supply in litres
= KVS_{Total}

K = Water supply coefficient as per OBC A-3.2.5.7. Table 1
= 23 Building is of combustible construction with fire
separations without fire resistance ratings.

V = Building volume in cubic meters

	Floor Area (sq.m)	Height (m)	Volume (cu.m)
3rd Floor:	300	3	900
2nd Floor:	300	3	900
1st Floor:	300	3	900
Basement:	300	3	900
			3,600

S_{Total} = Total of spatial coefficients from exposure distances
= 1.0 + S_{Side 1} + S_{Side 2} + S_{Side 3} + S_{Side 4}

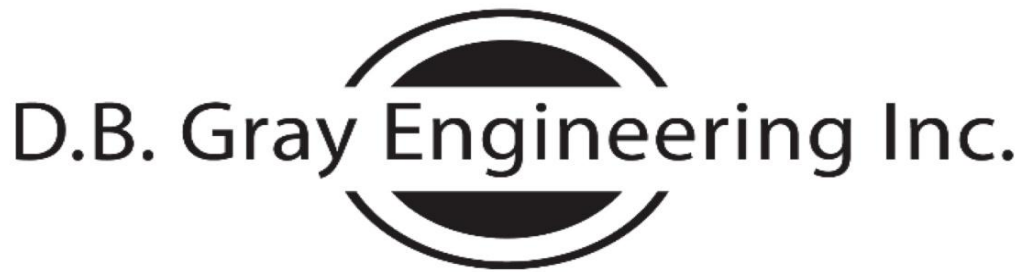
	Spatial Coefficient	Exposure Distance (m)	
S _{Side 1}	0.5	1.4	(to NW property line)
S _{Side 2}	0.0	15	(to centerline of road)
S _{Side 3}	0.5	0.6	(to SE property line)
S _{Side 4}	0.2	7.6	(to SW property line)
S _{Total}	2.2	Need not exceed 2.0	

Q = 165,600 L
= 5,400 L/min as per OBC A-3.2.5.7. Table 2
= 90 L/s

90 L/s Fire Flow HGL: 107.5 m

Elevation at Fire Hydrant: 69.7 m

Static Pressure at Fire Hydrant: 37.8 m 371 kPa 54 psi



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August 21, 2026

320 Chapel Street
3-Storey Mixed-Use Building
Ottawa, Ontario

WATER DEMAND CALCULATIONS

Average Daily Demand:	0.113	ha				
	28,000	L/ha/day				
	3,164	L/day				
	24	hour day				
	2.2	L/min	0.04	L/s	0.6	USgpm

Maximum Daily Demand:	1.5	(Peaking factor as per City of Ottawa Water Design Guidelines)				
	3.3	L/min	0.05	L/s	0.9	USgpm

Maximum Hourly Demand:	1.8	(Peaking factor as per City of Ottawa Water Design Guidelines)				
	5.9	L/min	0.10	L/s	1.6	USgpm

Elevation of Water Meter:	69.90	m
Basement Floor Elevation:	69.00	m

Minimum HGL:	107.0	m				
Static Pressure at Water Meter:	37.1	m	364	kPa	53	psi

Maximum HGL:	114.8	m				
Static Pressure at Water Meter:	44.9	m	440	kPa	64	psi



Ryan Faith <r.faith@dbgrayengineering.com>

RE: Request for Boundary Conditions - 320 Chapel Street

1 message

Hughes, Brett <brett.hughes@ottawa.ca>

Fri, Aug 21, 2026 at 10:49 AM

To: "r.faith" <r.faith@dbgrayengineering.com>

Cc: Natalie Hughes <natalie@kadusgroup.com>, "d.gray" <d.gray@dbgrayengineering.com>, "Rohan, Fayaz" <fayaz.rohan@ottawa.ca>

Ryan,

The following are boundary conditions, HGL, for hydraulic analysis at 320 Chapel St (zone 1W) assumed to be connected at the location(s) identified below.: (see attached PDF for location).

305mm on Chapel St

Minimum HGL = 107.0 m

Maximum HGL = 114.8 m

Max Day + Fire Flow (90 L/s) = 107.5 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 watermain 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,

Brett Hughes

Senior Project Manager, Infrastructure Approvals

Development Review East

PLANNING, DEVELOPMENT & BUILDING SERVICES (PDBS)

110 Laurier Ave West | 4th Floor | Ottawa, ON | K1P 1J1

City of Ottawa | Ville d'Ottawa

☎ 613.580.2424 ext./poste 76665

From: Ryan Faith <r.faith@dbgrayengineering.com>**Sent:** August 06, 2026 9:50 AM

To: Hughes, Brett <brett.hughes@ottawa.ca>

Cc: Natalie Hughes <natalie@kadusgroup.com>; d.gray <d.gray@dbgrayengineering.com>

Subject: Request for Boundary Conditions - 320 Chapel Street

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ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Hi Brett,

Please provide the boundary conditions for the 300 mm Chapel Street municipal watermain at 320 Chapel Street. Point of connection is expected to be in the NE corner of the property. We have calculated the following expected demands:

Fire flow demand: 90 L/s

Average daily demand: 0.04 L/s

Maximum daily demand: 0.05 L/s

Maximum hourly demand: 0.10 L/s

Calculations are attached.

FYI we assumed a few worst case scenarios to err on the side of caution. e.g. The SE spatial coefficient for the fire flow demand is based on a property line not shown on geoOttawa but the domestic demand is based on the the full property as shown on geoOttawa.

Thanks,

Ryan Faith

D.B. Gray Engineering Inc.

[700 Long Point Circle](#)

Ottawa, Ontario [K1T 4E9](#)

613-425-8044

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320 Chapel St August 2026.pdf
2024K

Boundary Conditions for 320 Chapel Street



Connection



203mm

203mm

203mm

305mm

305mm

av. Russell Ave.
203mm

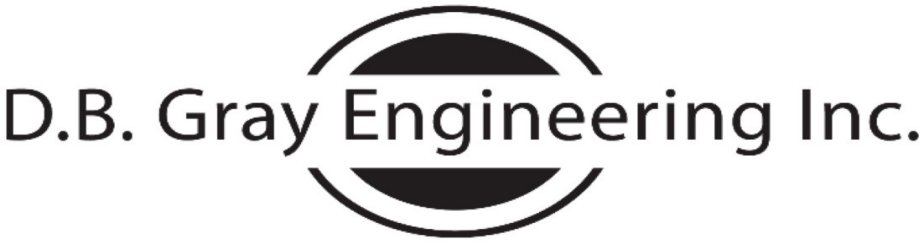
rue Chapel St.
305mm

Legend

- Public
- Private

APPENDIX B

SANITARY SERVICING



SANITARY SEWER CALCULATIONS

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

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Project: 320 Chapel Street
3-Storey Mixed-Use Building
Ottawa, Ontario

Date: August 26, 2026

Residential Average Daily Flow: 280 L/capita/day
Commercial Average Daily Flow: 28,000 L/ha/day
Institutional Average Daily Flow: 28,000 L/ha/day
Light Industrial Average Daily Flow: 35,000 L/ha/day
Heavy Industrial Average Daily Flow: 55,000 L/ha/day

Infiltration Allowance: 0.33 L/s/ha

Residential Peaking Factor: Harmon Formula
Harmon Formula Correction Factor: 0.8
Commercial Peaking Factor: 1.5
Institutional Peaking Factor: 1.5
Industrial Peaking Factor: Ministry of the Environment

Manning's Roughness Coefficient: 0.013

Location		Residential													Nonresidential				Infiltration				Q Total Flow Rate (L/s)	Sewer Data						
		Individual									Cumulative				Individual		Cumulative		Individual		Cumulative			Length (m)	Nominal Diameter (mm)	Actual Diameter (mm)	Slope (%)	Velocity (m/s)	Q _{Full} Capacity (L/s)	Q / Q _{Full}
		Single Family	Semi Detached	Duplex	Apartment (1 Bed)	Apartment (2 Bed)	Apartment (3 Bed)	Apartment (Average)	Area (ha)	Population	Area (ha)	Population	Peaking Factor	Flow Rate (L/s)	Area (ha)	Area (ha)	Peaking Factor	Flow Rate (L/s)	Area (ha)	Area (ha)	Flow Rate (L/s)									
From	To	ppu = 3.4	ppu = 2.7	ppu = 2.3	ppu = 1.4	ppu = 2.1	ppu = 3.1	ppu = 1.8																						
Existing	250 SAN	1							0.113	3.4	0.113	3.4	3.2	0.04					0.113	0.113	0.04	0.07								
Proposed	250 SAN														0.113	0.113	1.5	0.05	0.113	0.113	0.04	0.09		150	150	1	0.86	15.23	1%	
Existing 250 mm Chapel Street Municipal Sanitary Sewer:																								250	250	0.4	0.77	37.61		