

# SERVICING BRIEF

Ladouceur Street & Merton Street  
Townhouses  
Ottawa, Ontario

Report No. 13029-SB

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NOT VALID UNLESS  
SIGNED & DATED

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# SERVICING BRIEF

## Ladouceur Street & Merton Street Townhouses Ottawa, Ontario

The following Servicing Brief is a description of the services of a proposed of an 8 unit townhouse residential development located on 698 sq.m. of land at the intersection of Ladouceur Street & Merton Street in Ottawa. It is proposed to be a freehold development with common element lands.

Refer to drawing SG-1, SG-2 & SG-3 prepared by D. B. Gray Engineering Inc.

### Water Supply for Fire Fighting:

There is an existing fire hydrant in the municipal right-of-way at the north-west corner of the Ladouceur Street & Merton Street intersection approximately 65m from the front door of the furthest proposed townhouse unit.

A fire demand of 5,400 L/min (90 l/s) at 138 kPa is required as per "Required Minimum Water Supply Flow Rate" as calculated using the Ontario Building Code - Appendix A - Article A-3.2.5.7 "Water Supply For Fire Fighting". If fire walls are constructed between Units 3 & 4 and 6 & 8 the required fire demand can be reduced to 2,700 L/min (45 l/s) at 138 kPa.

The boundary conditions, based on the City of Ottawa computer simulation of the water distribution system in this area, are required to determine if an adequate water supply for firefighting is available.

We have requested boundary conditions for two Scenarios.

### Scenario 1:

Fire Flow demand: 90 l/s

Fire Flow + Max Day: 90.8 l/s (see below for Maximum Daily Demand calculations)

### Scenario 2:

Fire Flow demand: 45 l/s

Fire Flow + Max Day: 45.8 l/s

### Water Service:

Each townhouse unit will have a 19mm water service connection. Units 1 to 6 will connect to the existing 200mm municipal watermain in Ladouceur Street. The water service connections for Units 7 & 8 will connect to a proposed 38mm watermain which will connect to a future 300mm municipal watermain in Merton Street. (We understand that the existing 300mm watermain in Merton Street is being replaced this year.)

Based on the City of Ottawa and Ministry of the Environment Design Guidelines the daily average flow is 0.09 l/s with a maximum daily and maximum hourly demand of 0.8 and 1.3 l/s respectively. To determine water pressure under these demands, the boundary conditions, based on the City of Ottawa computer simulation of the water distribution system in this area, is required.

In summary, we have requested boundary conditions for the Ladouceur Street / Merton Street area based on the following:

Average daily demand: 0.1 l/s.  
Maximum daily demand: 0.8 l/s.  
Maximum hourly daily demand: 1.3 l/s

#### Sanitary Service:

Each townhouse unit will have a 135mm sanitary sewer service connection.

Units 1 to 6 will connect to the existing 250mm municipal sanitary sewer in Ladouceur Street. Based on the City of Ottawa Sewer Design Guidelines for a residential development (six townhouse units – 2.7 persons per unit – 350 l/person/day – 4.0 peaking factor; and a 0.28 l/s/ha infiltration flow) the post development flow is calculated to be 0.27 l/s. The 0.27 l/s increase in sanitary flows contributing to the existing 250mm municipal sanitary sewer is expected to have a negligible impact given its capacity of 68.0 l/s.

The sanitary sewer connections for Units 7 & 8 will connect to a proposed 200mm sanitary sewer which will connect to a the existing 375mm municipal sanitary in Merton Street. Based on the City of Ottawa Sewer Design Guidelines for a residential development (two townhouse units – 2.7 persons per unit – 350 l/person/day – 4.0 peaking factor; and a 0.28 l/s/ha infiltration flow) the post development flow is calculated to be 0.10 l/s. The 0.10 l/s increase in sanitary flows contributing to the existing 375mm municipal sanitary sewer is expected to have a negligible impact given its capacity of 119.9 l/s.

#### Stormwater:

Stormwater quantity control measures are based on the criteria that the release rate for post-development storm events is equal to or less than the flow produced by the existing development. See Stormwater Management Report No. 13029-SWM, prepared by D. B. Gray Engineering Inc.

Each townhouse unit will have a 100mm storm sewer service connection servicing only the roof drains. The Units 1 to 6 block will have two 100mm storm sewer connections serving the only the foundation drains. The Unit 7& 8 block will have one 100mm storm sewer connection serving the only the foundation drains.

The storm sewer connections serving the roof drains on Units 1 to 6 will connect to the existing 300mm municipal storm sewer in Ladouceur Street. The uncontrolled flow for the five-year event is 9.9 l/s. However all proposed roof drains will be flow control type. The controlled flow for the five-year event is 6.5 l/s. Since the release rate for post-development storm events has been designed to be equal to or less than the flow produced by the existing development, the 6.5 l/s flows contributing to the existing municipal storm sewer is expected to have a negligible impact. The capacity of the 300mm municipal storm sewer (0.69% slope) is 83.8 l/s.

The storm sewer connections for Units 7 & 8 will connect to a proposed 250mm storm sewer which will connect to a the existing 375mm municipal storm sewer in Merton Street. The uncontrolled flow for the five-year event is 3.8 l/s. However all proposed roof drains will be flow control type and there is an inlet control device in the outlet pipof an on-site manhole (MH-2). The controlled flow for the five-year event is 1.7 l/s. Since the release rate for post-development storm events has been designed to be equal to or less than the flow produced by the existing development, the 1.7 l/s flow contributing to the existing municipal storm sewer is expected to have a negligible impact. The capacity of the 375mm municipal storm sewer (0.32% slope) is 103.5 l/s.

Since the development is freehold with common element lands it is expected that a Ministry of Environment Certificate of Approval will be required.

## Conclusions:

1. Boundary conditions are required to determine if there is an adequate water supply for firefighting.
2. We require the boundary conditions to determine if the existing water pressure is adequate for the proposed development.
3. Boundary conditions are required to determine if the water pressure can be above 80 psi and if a pressure reducing valve is required.
4. The proposed water service connection is adequately sized to serve the development.
5. The expected sanitary sewage flow will be adequately handled by the proposed sanitary sewer service connection.
6. The increase in sanitary flows contributing to the existing municipal sanitary sewers is expected to have a negligible impact.
7. The stormwater quantity control is based on the criteria that the release rate for post-development storm events is equal to or less than the flow produced by the existing conditions.
8. The restricted flowrate produced by a one in five year storm event will be adequately handled by a proposed storm sewer and existing municipal storm sewers.
9. It is expected that a Ministry of Environment Certificate of Approval will be required because development is freehold with common element lands.

## Ladouceur St & Merton St Townhouses Ottawa, Ontario

### Water Supply for Fire-Fighting Calculations:

A fire demand of 5,400 L/min (90 l/s) is required as per "Required Minimum Water Supply Flow Rate" as calculated using the Ontario Building Code - Appendix A - Article A-3.2.5.7 "Water Supply For Fire Fighting".

Fire Protection Water Supply  $Q = KVS_{Tot}$

$$S_{Tot} = 1.0 + S_{Side1} + S_{Side2} + S_{Side3} + S_{Side4}$$

Spatial Coefficient		Exposure Distance	
		m	
$S_{Side1}$	0.5	3.8	(to north property line)
$S_{Side2}$	0.5	0.0	(to east property line)
$S_{Side3}$	0.09	9.1	(to center line of road)
$S_{Side4}$	0.29	7.1	(to center line of road)
<hr style="width: 20%; margin-left: 0;"/>			
$S_{Tot}$	2.38		
Maximum $S_{tot}$	2.0		

K (Water Supply Coefficient)

23 As per A-3.2.5.7. Table 1 (Group C Occupancy / Combustible construction with fire separations but no fire resistance ratings as per OBC 3.2.2.)

V (Building Volume)

	Area	Average	Volume
	sq.m.	Height	cu.m.
		m	
4th Floor	62	2.52	156
3rd Floor	379	3.05	1,156
2nd Floor	404	3.05	1,232
Ground Floor	218	3.05	665
Units 1 to 6 Basement	160	2.79	446
Units 7 & 8 Basement	21	2.50	53

3,708 cu.m.

$$Q = KVS_{Tot}$$

$$Q = 170,577 \text{ L}$$

Required Minimum Water Supply Flow Rate      5,400 L/min      90 L/sec  
(As per A-3.2.5.7. Table 2)

## Ladouceur St & Merton St Townhouses Ottawa, Ontario

### Water Supply for Fire-Fighting Calculations:

#### Fire Walls between Units 3 & 4 and Units 6 & 7

A fire demand of 2,700 L/min (45 l/s) is required as per "Required Minimum Water Supply Flow Rate" as calculated using the Ontario Building Code - Appendix A - Article A-3.2.5.7 "Water Supply For Fire Fighting".

#### Units 1 to 3

Fire Protection Water Supply  $Q = KVS_{Tot}$

$$S_{Tot} = 1.0 + S_{Side1} + S_{Side2} + S_{Side3} + S_{Side1} + S_{Side4}$$

Spatial Coefficient	Exposure Distance m		
$S_{Side1}$	0.50	5.0	(to north property line)
$S_{Side2}$	0.50	0.0	(to Unit 4)
$S_{Side3}$	0.09	9.1	(to center line of road)
$S_{Side4}$	0.29	7.1	(to center line of road)
<hr style="width: 20%; margin-left: 0;"/>			
$S_{Tot}$	2.38		
Maximum $S_{tot}$	2.0		

K (Water Supply Coefficient)

23 As per A-3.2.5.7. Table 1 (Group C Occupancy / Combustible construction with fire separations but no fire resistance ratings as per OBC 3.2.2.)

V (Building Volume)

	Area sq.m.	Average Height m	Volume cu.m.
4th Floor	29	2.52	73
3rd Floor	151	3.05	461
2nd Floor	155	3.05	473
Ground Floor	99	3.05	302
Basement	89	2.79	248
<hr style="width: 20%; margin-left: 0;"/>			
			1,557 cu.m.

$$Q = KVS_{Tot}$$

$$Q = 71,605 \text{ L}$$

Required Minimum Water Supply Flow Rate      2,700 L/min      45 L/sec  
(As per A-3.2.5.7. Table 2)

## Fire Walls between Units 3 & 4 and Units 6 & 7 (continued)

### Units 4 to 6

Fire Protection Water Supply  $Q = KVS_{Tot}$

$$S_{Tot} = 1.0 + S_{Side1} + S_{Side2} + S_{Side3} + S_{Side1} + S_{Side4}$$

Spatial Coefficient	Exposure Distance		
		m	
$S_{Side1}$	0.5	5.0	(to north property line)
$S_{Side2}$	0.5	0.0	(to east property line)
$S_{Side3}$	0.5	0.0	(to Unit 3)
$S_{Side4}$	0.5	0.0	(to west property line)
$S_{Tot}$	3.00		
Maximum $S_{Tot}$	2.0		

K (Water Supply Coefficient)

23 As per A-3.2.5.7. Table 1 (Group C Occupancy / Combustible construction with fire separations but no fire resistance ratings as per OBC 3.2.2.)

V (Building Volume)

	Area	Average	Volume
	sq.m.	Height	cu.m.
		m	
4th Floor	33	2.52	83
3rd Floor	141	3.05	430
2nd Floor	152	3.05	464
Ground Floor	86	3.05	262
Basement	71	2.79	198
			1,437

cu.m.

$$Q = KVS_{Tot}$$

$$Q = 66,111 \text{ L}$$

Required Minimum Water Supply Flow Rate 2,700 L/min  
(As per A-3.2.5.7. Table 2)

45 L/sec

## Fire Walls between Units 3 & 4 and Units 6 & 7 (continued)

### Units 7 & 8

Fire Protection Water Supply  $Q = KVS_{Tot}$

$$S_{Tot} = 1.0 + S_{Side1} + S_{Side2} + S_{Side3} + S_{Side1} + S_{Side4}$$

Spatial Coefficient	Exposure Distance		
		m	
$S_{Side1}$	0.50	0.0	(to Unit 7)
$S_{Side2}$	0.50	0.0	(to east property line)
$S_{Side3}$	0.09	9.1	(to center line of road)
$S_{Side4}$	0.50	0.0	(to Unit 3)
$S_{Tot}$	2.59		
Maximum $S_{Tot}$	2.0		

K (Water Supply Coefficient)

23 As per A-3.2.5.7. Table 1 (Group C Occupancy / Combustible construction with fire separations but no fire resistance ratings as per OBC 3.2.2.)

V (Building Volume)

	Area	Average	Volume
	sq.m.	Height	cu.m.
		m	
3rd Floor	87	3.05	265
2nd Floor	97	3.05	296
Ground Floor	33	3.05	101
Basement	21	2.50	53
			714

cu.m.

$$Q = KVS_{Tot}$$

$$Q = 32,860 \text{ L}$$

Required Minimum Water Supply Flow Rate 2,700 L/min  
(As per A-3.2.5.7. Table 2)

45 L/sec

# Ladouceur St & Merton St Townhouses Ottawa, Ontario Water Demand

	Number of Units	Persons Per Unit	Population
<b>UNIT TYPE:</b>			
Single Family:	0	3.4	0
Semi- detached:	0	2.7	0
Duplex:	0	2.3	0
Townhouse:	8	2.7	22
<b>APARTMENTS:</b>			
Bachelor	0	1.4	0
1 Bedroom:	0	1.4	0
2 Bedroom:	0	2.1	0
3 Bedroom:	0	3.1	0
Average Apartment:	0	1.8	0
<b>TOTAL:</b>			22

**DAILY AVERAGE**

350	litres / person / day
5.3	l / min
0.09	l / sec
1.4	Usgpm

**MAXIMUM DAILY DEMAND**

9.5	(Peaking Factor for a equivalent population of 30: Table 3-3 MOE Design Guidelines for Drinking-Water Systems)
49.9	l / min
0.83	l / sec
13.2	Usgpm

**MAXIMUM HOURLY DEMAND**

14.3	(Peaking Factor for a equivalent population of 30: Table 3-3 MOE Design Guidelines for Drinking-Water Systems)
75.1	l / min
1.25	l / sec
19.8	Usgpm







## City of Ottawa Servicing Study Checklist

### General Content

**Executive Summary (for large reports only):** not applicable

**Date and revision number of the report:** see page 1 of Servicing Brief

**Location map and plan showing municipal address, boundary, and layout of proposed development:** see drawings SG-1, SG-2 and SG-3

**Plan showing the site and location of all existing services:** see drawings SG-1, SG-2 and SG-3

**Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere:** not applicable

**Summary of Pre-consultation Meetings with City and other approval agencies:** not available

**Reference and confirm conformance to higher level studies and reports ( Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defensible design criteria:** not applicable

**Statement of objectives and servicing criteria:** see page 1 of Servicing Brief

**Identification of existing and proposed infrastructure available in the immediate area:** see drawings SG-1, SG-2 and SG-3

**Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development ( Reference can be made to the Natural Heritage Studies, if available).** not applicable

**Concept level master grading plan to confirm existing and proposed grades in the development and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths:** not applicable

**Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts:** not applicable

**Proposed phasing of the development, if applicable:** not applicable

**Reference to geotechnical studies and recommendations concerning servicing:** not available see note 1.5 on drawing SG-3

**All preliminary and formal site plan submissions should have the following information:**

- **Metric scale:** included
- **North arrow:** included
  - **(including construction North):** not included
- **Key Plan:** included
- **Name and contact information of applicant and property owner:** not available
- **Property limits:** included
  - **including bearings and dimensions:** not included
- **Existing and proposed structures and parking areas:** included
- **Easements, road widening and rights-of-way:** included
- **Adjacent street names:** included

### Development Servicing Report: Water

**Confirm consistency with Master Servicing Study, if available:** not applicable

**Availability of public infrastructure to service proposed development:** see page 2 of Servicing Brief

**Identification of system constraints:** see page 2 of Servicing Brief

**Confirmation of adequate domestic supply and pressure:** see page 2 of Servicing Brief

**Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow locations throughout the development:** see page 2 and 5 to 8 of Servicing Brief

**Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves:** see page 2 of Servicing Brief

**Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design:** not applicable

**Address reliability requirements such as appropriate location of shut-off valves:** not applicable

**Check on the necessity of a pressure zone boundary modification:.** not applicable

**Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range:** not applicable

**Description of the proposed water distribution network, including locations of proposed connections to the existing systems, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions:** not applicable

**Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation:** not applicable

**Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines:** see page 2 of Servicing Brief

**Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference:** not applicable

#### **Development Servicing Report: Wastewater**

**Summary of proposed design criteria:** see page 3 of Servicing Brief

**(Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure):** not applicable

**Confirm consistency with Master Servicing Study and /or justification for deviations:** not applicable

**Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and conditions of sewers:** not applicable

**Descriptions of existing sanitary sewer available for discharge of wastewater from proposed development:** see page 3 of Servicing Brief

**Verify available capacity in downstream sanitary sewer and / or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable):** not applicable

**Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix C) format.** see page 9 of Servicing Brief

**Description of proposed sewer network including sewers, pumping stations, and forcemains:** see page 3 of Servicing Brief

**Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality):** not applicable

**Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development:** not applicable

**Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity:** not applicable

**Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding:** not applicable

**Special considerations such as contamination, corrosive environment etc:** not applicable

#### **Development Servicing Report: Stormwater Checklist**

**Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property):** see page 3 of Servicing Brief

**Analysis of available capacity in existing public infrastructure.** not applicable

**A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern:** not applicable

**Water quality control objective (e/g/ controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects:** see Stormwater Management Report

**Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements:** see Stormwater Management Report

**Descriptions of the references and supporting information.**

**Set-back from private sewage disposal systems.** not applicable

**Watercourse and hazard lands setbacks:** not applicable

**Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed:** not available

**Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists:** not applicable

**Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).** see drawing SG-1, SG-2 & SG-3 and Stormwater Management Report

**Identification of watercourses within the proposed development and how watercourses will be protected, or , if necessary, altered by the proposed development with applicable approvals.** see drawing SG-1, SG-2 & SG-3 and Stormwater Management Report

**Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions:** see Stormwater Management Report

**Any proposed diversion of drainage catchment areas from one outlet to another. :** not applicable

**Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities. :** not applicable

**If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event:** not applicable

**Identification of potential impacts to receiving watercourses:** see page 3 of Servicing Brief

**Identification of municipal drains and related approval requirements. :** not applicable

**Descriptions of how the conveyance and storage capacity will be achieved for the development:** see page 3 of Servicing Brief

**100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading:**

**Inclusion of hydraulic analysis including hydraulic grade line elevations. :** not applicable

**Description of approach to erosion and sediment control during construction for the protection of receiving watercourses of drainage corridors:** see notes 2.1 to 2.5 on drawing SG-3

**Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplains elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current:** not applicable

**Identification of fill constraints related to floodplain and geotechnical investigation. :** not applicable

#### **Approval and Permit Requirements: Checklist**

**The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:**

**Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act:** not available

**Application for Certificate of Approval (CofA) under the Ontario Water Resources Act:**

**Changes to Municipal Drains. :** not applicable

**Other permits (National Capital commission, Parks Canada, public Works and Government Services Canada, Ministry of transportation etc.) :** not applicable

#### **Conclusion Checklist**

**Clearly stated conclusions and recommendations:** see page 3 of Servicing Brief

**Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.**

**All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario:** included