



2180 Montreal Rd,
Ottawa, ON

FUNCTIONAL SERVICING REPORT

FOR THE PROPERTY LOCATED AT

2180 MONTREAL RD, OTTAWA, ON



PETRO-CANADA

Prepared By:

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1. INTRODUCTION

1.1 Study Area

The study area is located at south-west corner of the intersection of Shefford Rd and Montreal Rd. The civic address for this property is 2180 Montreal Rd, Ottawa, Ontario and is shown in Figure 1. The study area comprises an existing commercial property (gas bar) and a residential property, which has been rezoned to be incorporated into the proposed development.

This study has been prepared on behalf of Suncor Energy Products to address the servicing requirements of the site which includes water, sanitary and storm development located in Ottawa, Ontario.



Figure 1: Study Area

2. BACKGROUND

2.1 Background Information

This study addresses the stormwater, sanitary, and water servicing requirements associated with the proposed redevelopment and outlines the measures to be implemented to ensure that the development will not have any adverse impacts on the existing servicing infrastructure.

2.2 Land Use

The existing study area consists of two properties which are to be combined for this new development. The larger of the two properties is currently a commercial site. It consists of gas pump station, convenience store and a car wash. The commercial property currently has a Sanitary, Water and a Stormwater conveyance pipe network and connection to the municipal infrastructure in place.

The smaller property was an existing residential site that was rezoned and consolidated to form one larger property. Based on underground locates and city records, existing water and sanitary was not found. However, it will be decommissioned in accordance with city standards during construction once located.

3. WATER SUPPLY AND APPURTENANCES

To calculate the water demand during existing and proposed conditions for the building and car wash, the following design criteria have been utilized:

- MOE – Design Guidelines for Drinking water systems
- Ottawa Design Guidelines – Water Distribution (July 2010)
- Technical Bulletin ISTB-2018-02 (21 Mar 2018)
- Assuming 35 GPM water demand for car wash based on historical data for similar type of car washes.

3.1 Water Supply Existing

The existing gas station is serviced by a 100 mm water service which feeds off a 300 mm dia watermain located along Montreal Road. There is an existing 100mm water meter assembly in the car wash with a 50mm water service feed to the existing C-store. The table below summarizes the calculations for the existing water demand at the site.

The existing water service line to the residential unit is to be located, removed/ abandoned and capped at the main.

Existing - Commercial Site	Area [ha]	Avg Demand* [L/Ha/Day]	Avg Demand [L/s]	Max Daily Demand Factor*	Max Daily Demand [L/s]	Max Hour Demand Factor*	Max Hour Demand [L/s]	Flow Rate [L/s]	Peak Flow (L/s)	Pipe Size [mm]
Car Wash**	-	-	2.208	1.5	3.312	1.8	3.975	2.208	2.208	100.00
Existing commercial building	0.514	28000.000	0.167	1.5	0.250	1.8	0.300	0.167	0.300	50.00
Ex. Commercial site Total								2.375	2.508	-
Existing - Residential Site	Persons	Avg Demand* [L/Ha/Day]	Avg Demand [L/s]	Max Daily Demand Factor*	Max Daily Demand [L/s]	Max Hour Demand Factor*	Max Hour Demand [L/s]	Flow Rate [L/s]	Peak Flow (L/s)	Pipe Size [mm]
Existing Residential Building	3.400	350.000	0.014	2.5	0.034	2.2	0.030	0.014	0.034	-
Ex. Residential site Total								0.014	0.034	-
Existing TOTAL								2.389	2.542	-

* Values obtained from Ottawa Design Guidelines - Water Distribution (Jul 2010)

** Values Assumed based on historical data

Based on the above parameters the water demand for the existing development is calculated as 2.54 L/s.

3.2 Water Supply Proposed

The proposed redevelopment will utilize the existing 100mm diameter water service and meter assembly. A new 50mm PE Water service connection to the proposed building to be feed from the existing water meter assembly.

The water calculations for the proposed development are summarized in the Table 3-1 below. (Refer to Appendix A for calculations.)

Proposed	Area [ha]	Avg Demand* [L/Ha/Day]	Avg Demand [L/s]	Max Daily Demand Factor*	Max Daily Demand [L/s]	Max Hour Demand Factor*	Max Hour Demand [L/s]	Flow Rate [L/s]	Peak Flow (L/s)	Pipe Size [mm]
Car Wash**	-	-	2.208	1.5	3.312	1.8	3.975	2.208	3.975	100.00
Proposed Building	0.606	28000.000	0.196	1.5	0.295	1.8	0.354	0.196	0.354	50.00
Proposed TOTAL					3.607		4.328	2.405	4.328	-

* Values obtained from Ottawa Design Guidelines - Water Distribution (Jul 2010)

** Values Assumed based on historical data

Table 3-1: Water Demand for Proposed Site

Based on the above parameters the average daily demand and maximum hourly demand for the proposed development is calculated as 2.405 L/s and 4.328 L/s respectively. Therefore, when comparing to the calculated existing water demand of 2.54 L/s, under the proposed conditions the existing 100mm water connection will be sufficient to service the proposed site.

The city of Ottawa was contacted to obtain the boundary conditions associated with the estimated water demand, as indicated in the boundary request correspondence located in Appendix C.

3.3 Fire flow Calculation

The fire flow requirement for the proposed development is calculated to be 83.33L/s using FUS (Fire Underwriters Survey) method adopting following design parameters.

- Type of construction – Ordinary Construction
- Occupancy Hazard – Combustible
- Automatic Sprinkler – No

The subject property will be serviced by the existing fire hydrants located along Shefford Rd right of way (ROW) approximately 54.7m from the furthest corner of the proposed C-store. Additionally, there is another existing fire hydrant on the east right of way along Shefford Rd approximately 75.3m from the furthest corner of the C-store. No additional fire hydrants are required for the proposed development.

4. SANITARY SEWAGE SYSTEM

To calculate the sanitary flow rate for the existing and proposed conditions for the building and car wash, the following design criteria have been utilized:

- Sewer Design Guidelines – City of Ottawa – Second Edition, October 2012
- Assuming 35 GPM sanitary flow for car wash based on historical data for similar type of car washes.

4.1 Existing Sanitary Sewage System

The existing gas station is serviced by an existing sanitary network comprising within the commercial property and an existing 200mm sanitary lateral discharging into the 250 mm municipal sanitary sewer located along Shefford Rd. Currently the existing car wash and c-store are being serviced through this connection.

The existing sanitary flow for the commercial property has been calculated to be 3.91L/s. Additionally the sanitary demand for the existing residential property was calculated to be 0.034 L/s. The calculations have been summarized in Appendix B for reference.

4.2 Proposed Sanitary Sewage System

The proposed development will utilize the existing 200 mm sanitary connection from the commercial property connecting to the 250mm sanitary sewer along Shefford Rd. The existing sanitary service

connection to the residential unit is to be located, removed/abandoned and capped at the main. Refer to the site servicing drawing P-301 in Appendix B.

The sanitary flow from the proposed site has been calculated to be 4.33 L/s. Calculations are summarized in Appendix B.

The City of Ottawa was contacted to perform a downstream sanitary capacity analysis based on our calculated flow rates and it has been confirmed that there are no concern. The correspondence has been included in the Appendix D for reference.

Our findings and conclusions for the sanitary servicing are as follows:

- The anticipated sanitary peak flow for the entire development is 4.33 L/s. For calculation see Appendix B.
- The proposed development will utilize the existing 200mm sanitary connection to 250mm Sanitary sewer along Shefford Rd. However, the sanitary pipe network within the site will be altered to accommodate for the proposed site conditions. Refer to the site servicing drawing P-301 in Appendix B.

5. STORM DRAINAGE SYSTEM

A Stormwater Management Report for this development has been prepared under a separate cover. It identifies the stormwater quantity and quality controls under which this site will operate to comply with the City's Design Criteria.

5.1 Existing Condition

The existing site with a gas station is fully developed with stormwater structures and conveyance system throughout the site to capture the stormwater entering the site and direct it to the municipal storm sewer along Shefford Rd and appears to have no quantity control in place. A portion of the site freely flows uncontrolled into the municipal roads. The residential property does not contain any stormwater management structures in place. However, the site is generally flat with drainage directed towards Shefford Road. There is a municipal catch basin located in front of the property on Shefford Rd, the drainage from the site is currently being captured by it.

5.2 Proposed Conditions

The existing storm network will be reconfigured to introduce quantity and quality control measures and will utilize existing 250mm lateral to discharge into the storm sewer along Shefford Rd. Emergency overland flow will sheet flow into municipal ROW along Shefford in accordance with City standards.

6. CONCLUSION

WATER DISTRIBUTION

The proposed development will be serviced via the existing 100 mm domestic water connection from the existing 300 mm watermain located along Montreal Road. A 4.328 L/sec peak water demand has been calculated for this project. Sizing and location of the proposed water services within the proposed buildings will be coordinated with the mechanical consultant at the detailed design stage. Additional fire hydrants are not required for this development.

SANITARY SEWAGE

The existing 200mm sanitary connection to the 250mm sanitary sewer will be utilized for the proposed development. The existing sanitary pipe network within the site is proposed to be altered to match proposed site conditions.

STORM DRAINAGE

The existing storm network will be reconfigured to introduce quantity and quality control measures and will utilize existing 250mm lateral to discharge into the storm sewer along Shefford Rd. Emergency overland flow will sheet flow into municipal ROW along Shefford in accordance with City standards.

Therefore, the existing municipal sewers will not be adversely affected. The major storm drainage will be directly away from the building and entrances and towards the public right of way. For more details regarding the storm water management strategy and design, refer to the storm water management report under s separate cover.



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Appendix A

WATER DEMAND CALCULATIONS



Existing & Proposed Water Demand Calculations

Water demand calculations for Existing & Proposed Conditions @ 2180 Montreal Rd										
Proposed	Area [ha]	Avg Demand* [L/Ha/Day]	Avg Demand [L/s]	Max Daily Demand Factor*	Max Daily Demand [L/s]	Max Hour Demand Factor*	Max Hour Demand [L/s]	Flow Rate [L/s]	Peak Flow (L/s)	Pipe Size [mm]
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Proposed TOTAL					3.607		4.328	2.405	4.328	-
* Values obtained from Ottawa Design Guidelines - Water Distribution (Jul 2010)										
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* Values obtained from Ottawa Design Guidelines - Water Distribution (Jul 2010)										
** Values Assumed based on historical data										



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Appendix B

SANITARY FLOW CALCULATIONS



Existing & Proposed Sanitary Demand Calculations:

PROPOSED - COMMERCIAL	Commercial Avg Flow* (L/ha/d)	Area [Ha]	FLOW RATE (gal/min)	FLOW RATE (L/s)	Peak Factor*	Peak Flow (L/s)	Extraneous Flows* (L/s)	Total Flow [L/s]
CARWASH**			35	2.21	1.50	3.308		3.308
C-STORE	50000	0.606	-	0.35	1.50	0.526		0.526
STE		0.606				3.834	0.17	4.003
						3.834		4.003
PROPOSED TOTAL								4.003
EXISTING-COMMERCIAL								
EXISTING-COMMERCIAL	Commercial Avg Flow* (L/ha/d)	Area [Ha]	FLOW RATE (gal/min)	FLOW RATE (L/s)	Peak Factor*	Peak Flow (L/s)	Extraneous Flows* (L/s)	Total Flow [L/s]
CARWASH**	-	-	35	2.21	1.50	3.308		3.308
C-STORE	50000	0.514	-	0.30	1.50	0.446		0.446
STE		0.514				3.754	0.14	3.898
						3.754		3.898
EX COMMERCIAL TOTAL								3.898
EXISTING-RESIDENTIAL								
EXISTING-RESIDENTIAL	Residential Avg Flow* (L/c/d)	Area [Ha]	Person per unit	FLOW RATE (L/s)	Peak Factor*	Peak Flow (L/s)	Extraneous Flows* (L/s)	Total Flow [L/s]
RESIDENTIAL	350	0.092	3.4	0.0138	4.45	0.409	0.0258	0.435
EX RESIDENTIAL TOTAL								0.435
EXISTING-TOTAL FLOW								4.333