Site Servicing Report
Prince of Wales & Meadowland Drive KDR Redevelopment

SHELL CANADA LIMITED

JULY 19, 2024; REVISED SEPTEMBER 2025

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Revision History

Revision #	Date	Revised By	Revision Description
0	July 19 2024		Original
1	April 16 2025	YF	Added comments from SPA review
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3	Sept 24 2025	YF	Added comments from SPA review

Authors

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Report Reviewed By:	Bibi Mapp, Project Manager | AECOM

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1 Project Information

Client:	Shell Canada Products
Contact:	Kerry Morrison, EPCM Advisor
Project Name:	Prince of Wales & Meadowlands KDR
Description:	Redevelopment (Knockdown Rebuild) Gas Bar with Canopy, C-store
Location:	1440 Prince of Wales Drive, Ottawa, Ontario
Consultant:	CTM Design Services Ltd.
Contact:	Yvonne Faas, P.Eng. Civil Engineer

2 Introduction

CTM Design Services Ltd. (CTM) has been retained by Shell Canada Products to provide site servicing plans in support of the redevelopment of a proposed gas station and convenience store in the City of Ottawa. The property is located on the northwest corner of the intersection of Prince of Wales Drive and Meadowlands Drive. The address is 1440 Prince of Wales Drive, Ottawa, Ontario. The location map is shown in Figure 1.

2.1 Location Map

The site is located west of Prince of Wales Drive and north of Meadowlands Drive.

2.2 Existing Boundary Conditions & Infrastructure

The subject site 0.18-hectare site, zoned GM15 F(1.0)1, is located at the corner of Prince of Wales Drive and Meadowlands Drive. The site is currently occupied by one c-store and attached canopy over the gas bar which includes 4 dispensers, and a fenced in garbage enclosure. There are two commercial accesses from Prince of Wales Drive and one commercial access from Meadowlands Drive. The existing site cover consists of paved parking and drive areas, and some perimeter grassed landscaping with some mature trees.

The site currently has existing water, storm and sanitary sewer services. Using City of Ottawa block profiles in combination with a survey and GIS mapping, the existing site servicing plan was pieced together. The existing site servicing is shown on the drawing provided.

During the pre-app meeting, the following servicing information was provided.

Water Servicing:

a) Existing 305 mm diameter CI watermain (install year = 1965) located on Prince of Wales Drive
b) Existing 203 mm diameter DI watermain (install year = 1971) on Meadowlands Drive

Sanitary Servicing:

a) Existing 225 mm diameter Conc. Sanitary sewer (Install year = 1966) on Prince of Wales Drive.
b) Existing 225 mm diameter Conc. Sanitary sewer (install year = 1969)

Storm Servicing:

a) Existing 450 mm diameter Conc. Storm sewer (install year = 1962) on Prince of Wales Drive.
b) Existing 300 mm diameter Storm sewer (install year = 1969) on Meadowlands Drive.

Additionally, the City of Ottawa provided Block Profile drawings 2199, Sheet 2 and DR-222 Sheet 2.

The City was not able to provide the conditions of the existing services. They are presumed to be in good working order and maintained by the owner (city). If, however, the existing pipes are found to be in poor condition and unsuitable, the contingency plan is to replace the existing pipes like for like to current standards.

The plan shows the servicing boundary conditions, appended to the end of this report.

2.3 Proposed Conditions

The proposed site will consist of a new C-store, a new 4-dispenser gas bar covered by a canopy, new underground tanks will be installed, new drive-through lanes adjacent to the back property lines, new in-ground waste containers, new retaining wall adjacent to existing parking lot, and new EV charging stations. There will be one commercial access from Prince of Wales Drive and one commercial access from Meadowlands Drive. Most of the site cover will consist of paved parking and drive areas, and some perimeter landscaping frontage; existing mature trees will be protected where possible.

Proposed new services to the new building shown on the site servicing drawing provided. All existing servicing lines within the site will be removed and replaced with new service lines to the new building and the new canopy.

2.4 Supporting Drawings

This report has been prepared based on the Site Plan, Site Grading Plan and Servicing Plan. The Servicing Plan shows the servicing boundary conditions, appended to the end of this report.

2.5 Supporting Reports

Referencing the Geotechnical Investigation Report, by Gemtec, September 2023, groundwater depth below existing ground surface ranges from 2.3 to 2.5m. Groundwater levels will fluctuate seasonally and may be higher during wet periods of the year such as the early spring or fall, or following periods of heavy precipitation. Hydraulic response testing results in conductivity for sandy silt deposits. The groundwater quality results are presented in the report. Groundwater management during construction may experience inflow and can be controlled with sumps during excavation when required. Suitable detention and filtration will be required before discharging the water to a sewer. The rate of groundwater inflow from the overburden deposits is not expected to exceed 50,000 litres per day, as such the water takings for this project will likely not be subject to an EASR. Although to prevent potential construction delays, a provisional EASR may be considered depending on duration of excavation, trench size and to account for contingencies related to stormwater infiltration. To minimize groundwater management requirements, it is recommended that construction be undertaken during the dry period of the year (i.e. June to September).

2.6 Pipe Bedding

Referencing the Geotechnical Investigation Report, by Gemtec, September 2023, the bedding for the proposed sewers and watermain should be in accordance with OPSD 802.010 for Type 3 Soil. The pipe bedding material should consist of at least 150mm of well graded crushed stone meeting OPSS for Granular A. Additional pipe bedding considerations should follow the recommendations made in the geotechnical report. Cover material, from pipe spring line to at least 300mm above the top of pipe, should consist of granular material, such as OPSS Granular A.

Follow the trench backfill recommendations from the geotechnical report.

Add insulation as recommended on the servicing drawings.

3 Water Servicing

The existing water service line connection to the site will be maintained to the watermain in Meadowlands Drive.

3.1 Design Criteria

The water servicing design adhered to the Ottawa Water Distribution Guidelines and associated Technical Bulletins. A summary of the relevant criteria is presented below:

Average Daily Demand

Demand Type	Amount	Units
Other Commercial	28000	L/gross ha/day
Site Area	1795	sq.m
	0.1795	ha
Average Daily Demand	5026	L/day

Maximum Daily Demand

Commercial	1.5 x avg. day	L/gross ha/day
Maximum Daily Demand	7539	L/day
	0.087	L/s

Maximum Hour Demand

Commercial	1.8 x avg. day	L/gross ha/day
Maximum Hour Demand	9047	L/day
	0.105	L/s

3.2 Proposed Servicing

The existing 203 mm diameter DI watermain on Meadowlands Drive will be the water supply point for the proposed commercial redevelopment. It is presumed to be in good condition.

The proposed water line is 50mm diameter CU to the new building. The reducer and valve are proposed at the property line in the access crossing to Meadowlands Drive.

3.3 Fire Flows

Based on the Fire Underwriters Survey, the following data is provided for calculating the Required Fire Flows (RFF).

$$\mathrm{RFF} = 220\mathrm{C}\sqrt{A}$$

RFF = the Required Fire Flow in liters per minute (LPM)

C = the Construction Coefficient is related to the type of construction of the building

A= the total Effective Floor Area (effective building area) in square meters of the building.

Following the procedure recommended by the FUS,

A. C = 1.0 for Type III Ordinary Construction

B. A = 190 sq.m

C. RFF = $220C\sqrt{A}$ = 3000 LPM

D. Occupancy Contents Adjustment Factor = -15% to +15% (based on E Occupancy and Limited Combustible Contents).

- 15% = - 450 RFF = 2550 to

+ 15% = + 450 RFF = 3450

E. No Automatic Sprinkler Protection. Increase/Decrease = 0

F. Exposure Adjustment Charge. Table 6: 0% + 0% = 0% Increase = 0

G. RFF = 3450 LPM rounded to 4000 LPM

Results indicate a hydrant shall be located within 90m of the building.

Reference: Water Supply for Public Fire Protection, A Guide to Recommended Practice in Canada, 2019, Fire Underwriters Survey.

There are two (2) existing fire hydrants located well within 90 m of the site and specifically the building entrance. The closest hydrant is located on the SW corner of the intersection of Prince of Wales Drive and Meadowlands Drive. The next nearest hydrant is located on Prince of Wales Drive, west side, adjacent to the apartment complex.

4 Sanitary Servicing

The existing sanitary service line connection to the site will be maintained to the sanitary main in Meadowlands Drive. The block profiles and survey suggest the existing site service size is 200 mm diameter, adjacent to the access crossing from Meadowland Drive. It is presumed to be in good condition. The proposed sanitary service is a new manhole and new 150mm diameter service line to the new building. The sanitary sewer design sheet is appended to this report.

5 Storm Service

The existing storm service line connection to the site will be maintained to the storm main in Meadowlands Drive. It is presumed to be in good condition. The block profiles and survey suggest the existing site service size is 250 mm diameter, adjacent to the access crossing from Meadowlands Drive. The proposed storm service is a new OGS manhole and new 250 mm diam and 300 mm diameter storm lines. The flow rate will be restricted and controlled with an orifice plate in proposed GTMH#1, therefore the outgoing pipe reduction is reasonable to match the existing line. Details for the stormwater management and calculations are provided in a separate report, the Stormwater Management Report. The storm sewer design table is appended to this report.

6 Summary

The proposed redevelopment of this site will tie new servicing to existing services already provided from Meadowlands Drive, as recommended in the pre-app documentation. The existing service lines to the site will be maintained in size and location, thus no disturbance to the existing adjacent roadways.

There are two existing fire hydrants well within 90m of the building opening, which meets the FUS code.

7 Appendix A: Sanitary Sewer Design Sheet

Sanitary Sewer Design Sheet (per Ottawa Sewer Design Guideline, Technical Bulletin ISTB-2018-01)			
Site location (City)	1440 Prince of Wales Dr, Ottawa, ON	Checking Date (yyyy/mm/dd)	2025-04-10
Ref#		Reviewer	Yvonne Faas

A= area in hectares Peak Factor: 1.5 (commercial)

F= average waste water flow (commercial) =28,000 L/Ha/day I = Infiltration Allowance (Total I/I) = 0.33 l/s/ha

Q(d) = dry weather flow (L/s) Q(d) = A x F (l/s)

Q(p) = peak dry weather flow (L/s) Q(p) = Q(d) x Peak Factor (l/s)

Q(i) = extraneous flow (L/s) Q(i) = A x I (l/s)

Q(t) = total peak design flow (L/s) Q(t) = Q(p) + Q(i) (L/s)

Commercial Site Area, A (ha)	F (l/ha/day)	Q(d) (l/s)	Peak Factor	Q(p) (l/s)	I (l/s/ha)	Q(i) (l/s)	Q(t) (l/s)
0.18	28,000	0.06	1.50	0.09	0.33	0.06	0.15

The total peak design sanitary flow for the subject site is 0.15 l/s.

Daily Sewage Flow for Shell Convenience Store (Per Ottawa Sewer Design Guideline, Appendix 4-A)										
Convenience -store		(per toilet room)								
	2000 liter / day				2000	liter / day				
	2 toilet rooms on site				4000	liter / day			0.05	liter / second
Total									**0.05**	**liter / second**

The daily sewage flow for the subject site meets the peak design flow for the site.

8 Appendix B: Storm Sewer Design Sheet

STORM SEWER DESIGN - COMPUTATION FORM

Project Name: Prince of Wales, Shell
Job No: 2024072
Date Created: 6/26/2024

1:5 year intensity (mm/hr) **100.90**
ST Ci **2018**

storm event	constant	tc	constant	intensity
1:5	2018	10.00	10.00	100.90

Use PVC Pipe for sizes less than: 450
Use Concrete Pipe for sizes greater than: 450

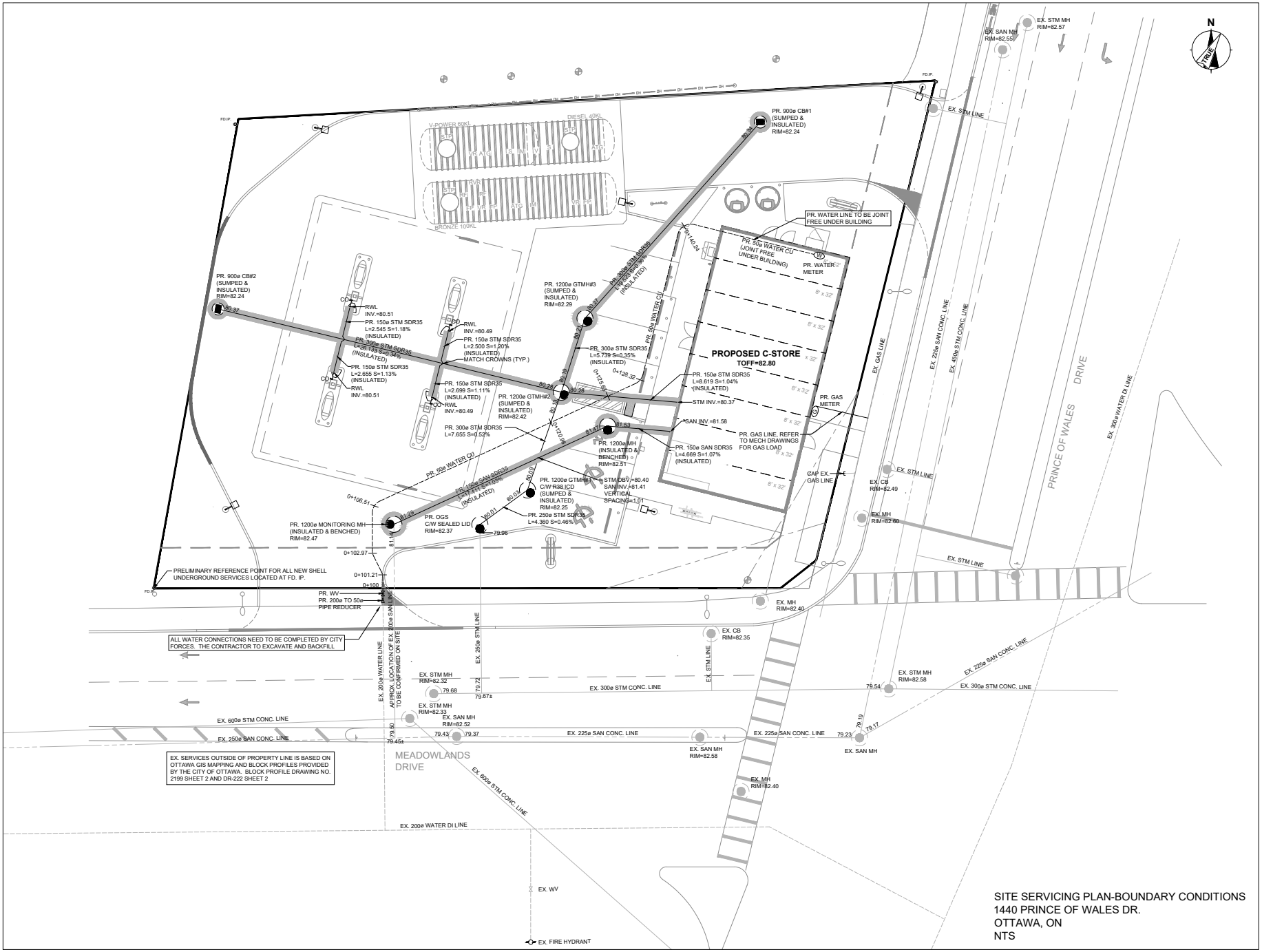
Friction Coefficients: (n)

UR	Concrete	PVC
0.011	0.013	0.90<v<3.0

Computed By: Yvonne
Date: 6/26/2024
Revised: 11/27/2024

Catchment Area Design														Pipe Design									Capacity Check	
	Manhole																							
Drainage Area Label	U/S	D/S	Drainage Area (ha	Sum Area (ha)	Runoff Factor C	Equivalent Area (ha) AxC	Cumulative Area (ha) AxC	U/S Tc (min)	D/S Tc (min)	Intensity (mm/hr)	Incremental Design Flow, (L/s)	Design Flow (L/s)	Restricted Flow, (L/s)	Pipe Slope (%)	Nominal Pipe Diameter (mm)	Pipe Material	Friction Coeff. (n)	Pipe Length (m)	Pipe Capacity (L/s)	Velocity (m/s)	Time of Flow (min)	Actual Pipe Diameter (mm)	Design / Cap. Ratio	Pipe OK or SURCHARGED
A2-1	CB#1	GTMH#3	0.0336	0.0336	0.84	0.028	0.028	10.00	10.34	100.90	7.9	7.9	7.9	0.360%	300	PVC	0.011	19.523	68.2	0.97	0.34	299.4	0.12	OK
A2-3	GTMH#3	GTMH#2	0.0200	0.0536	0.90	0.018	0.046	10.34	10.44	99.23	5.0	12.7	12.7	0.350%	300	PVC	0.011	5.739	67.2	0.96	0.10	299.4	0.19	OK
A2-2	CB#2	GTMH#2	0.0552	0.0552	0.92	0.051	0.051	10.00	10.46	100.90	14.3	14.3	14.3	0.340%	300	PVC	0.011	26.133	66.3	0.94	0.46	299.4	0.22	OK
A2-4	GTMH#2	GTMH#1	0.0190	0.1278	1.00	0.019	0.116	10.46	10.57	98.62	5.2	31.8	31.8	0.520%	300	PVC	0.011	7.655	81.9	1.16	0.11	299.4	0.39	OK
A2-5	GTMH#1	OGS	0.0259	0.1537	0.75	0.019	0.135	10.57	10.65	98.09	5.3	36.9	18.0	0.460%	250	PVC	0.011	4.360	48.4	0.97	0.07	251.5	0.37	OK
	OGS	EX MH	0.0000	0.1537	0.88	0.000	0.135	10.65	10.75	97.74	0.0	36.8	18.0	1.920%	250	PVC	0.011	12.474	98.9	1.99	0.10	251.5	0.18	OK

9 Appendix C: Servicing Plan – Boundary Conditions



SITE SERVICING PLAN-BOUNDARY CONDITIONS
1440 PRINCE OF WALES DR.
OTTAWA, ON
NTS