



**ALEO ASSOCIATES INC.**  
**CONSULTING ENGINEERS**

**FUNCTIONAL SERVICING REPORT  
PROPOSED MULTI-UNIT RESIDENTIAL  
DEVELOPMENT  
0 WYANDOTTE ST. E, WINDSOR, ONTARIO**

**PREPARED BY:**

**ALEO ASSOCIATES INC.  
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**DATE: MAY 7, 2026**

**PROJECT No.: 9222**

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## **1.0 INTRODUCTION**

Aleo Associates Inc. has been retained by Baker Investments Ltd. to prepare a functional servicing report for the proposed multi-unit residential development on the property located at 0 Wyandotte Street East in the City of Windsor. The property is located at the north-east corner of Wyandotte Street E. and Watson Avenue.

The property is currently an undeveloped grassed lot. The proposed development will consist of a new six-storey residential building and associated parking lot.

This report has been prepared to demonstrate how the proposed development will be serviced for water distribution, wastewater, and storm drainage. The report is provided to the Municipality of Windsor to assess the impact of this development on the existing infrastructure in reviewing the planning applications for which this report is prepared.

## **2.0 WATER SERVICING**

There is a 150 mm diameter watermain along Watson Avenue and a 300 mm diameter watermain along Wyandotte Street East. The property is not currently serviced for water.

For the proposed residential development, a new 200 mm watermain connection is proposed off the 300 mm watermain on Wyandotte Street East. The 200 mm watermain will be split at the property for a separated 200 mm firemain and a 150 mm domestic water service.

The average domestic water demand was selected in accordance with the Ontario Design Guidelines for Drinking Water Systems, which indicates domestic water demand used in design has historically ranged from 270 to 450 L/capita/day. The guidelines note that, with increased water metering and improved conservation practices, values at the lower end of this range may be used. Accordingly, an average domestic water demand of 270 L/capita/day was assumed for this development. A maximum day peaking factor of 2.0 was applied to account for daily variations and peak usage conditions, consistent with standard municipal and provincial design practice.

The domestic demand was calculated as follows:

$$Q = 263 \text{ people} \times 270 \text{ L/day/person} \times 2.0 / 1000 = 142 \text{ m}^3/\text{day}$$

The equivalent maximum day domestic flow rate is 1.6 L/s (96 L/min)

The proposed building will be sprinklered and a new firemain service and on-site hydrant is required to provide the necessary fire protection coverage. The minimum required fire flow for the proposed addition has been calculated in accordance with the Ontario Building Code (O.B.C.) as follows:

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$$Q = K \times V \times Stotal$$

Where,

Q = Volume of water required (L)

V = Total building volume (m<sup>3</sup>) = (1,721 m<sup>2</sup> x 19 m) = 32,699m<sup>3</sup>

K= Water Supply Coefficient (K = 10 from O.B.C. tables)

Stotal =Total of spatial coefficient values from property line exposures on all sides = 1

$$Q = 10 \times 32,699 \text{ m}^3 \times 1 = 326,990 \text{ L}$$

As the calculated fire flow volume (Q) is greater than 270,000 L, the minimum required fire flow rate in accordance with the O.B.C. is 9,000 L/min.

The combined fire flow and maximum day domestic demand is therefore: 9,000 L/min + 96 L/min = 9,096 L/min.

Hydrant flow testing was last completed on the 300 mm municipal watermain along Wyandotte Street East by Enwin Utilities in 2021. Enwin has provided that the watermain had a static pressure of 68 psi (469 kPa) and a residual pressure of 65 psi (448 kPa). The watermain has over 5,000 GPM (22,731 L/min) at 20 psi.

The combined required fire flow and maximum day domestic demand for the proposed addition is 9,096 L/min (2,000 GPM). The available flow at 140 kPa (20 psi) is over 5,000 GPM (22,731 L/min) and greatly exceeds the required combined demand. The existing 300 mm municipal watermain has sufficient capacity to service the proposed multi-unit residential development.

### **3.0 SANITARY SERVICING**

There is a 375 mm diameter sanitary sewer along Watson Avenue, and both 300 mm and 600 mm sanitary sewers along Wyandotte Street East. The property does not currently have a known sanitary service connection.

An assessment of the existing 450 mm municipal sanitary sewer within the Wyandotte Street East right-of-way, extending from MH 6S3848 to MH 6S3835, was completed for the purpose of determining the available capacity to accommodate the increased sewage flow generated by the proposed apartment building development located at the northeast corner of Wyandotte Street East and Watson Avenue.

The tributary drainage area of the existing 450 mm sanitary sewer is approximately 39.5 hectares and currently consists of single-family residential dwellings, apartment buildings, an elementary school, and commercial land uses. Refer to the enclosed drainage area plans illustrating both the existing and proposed conditions.

Under existing conditions, the total peak sanitary flow rate, including infiltration, was determined to be approximately 45.9 L/s. The existing 450 mm diameter sanitary sewer has a capacity of 98.8 L/s, resulting in approximately 46.5% utilization of the available capacity. As such, sufficient residual capacity exists within the municipal sanitary sewer system to accommodate future development.

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The proposed six-storey apartment building will have 105 units for a total a population 263 people based on a 2.5 person per unit population density. This results in an estimated peak domestic sewage flow rate of 4.5 L/s. Under proposed future conditions, which include both the subject development and an apartment building currently under construction at 8380 Wyandotte Street East, the total peak sanitary flow rate, including infiltration, is estimated to increase to approximately 52.8 L/s.

This represents a relatively minor increase in peak sanitary flow, with the existing 450 mm sanitary sewer operating at approximately 53.5% of its available capacity under proposed conditions. Therefore, sufficient capacity is available within the municipal sanitary sewer system to support the proposed apartment building development.

#### **4.0 STORM SERVICING & STORMWATER MANAGEMENT**

The property is currently an open grass lot and is therefore completely pervious. The property drains by overland flow to the adjacent right-of-way and into the municipal storm sewers through catch basins along the roadway. The pre-development peak runoff rate was determined to be 29 L/s, based on a 5-year design storm, a 30-minute time of concentration, and a runoff coefficient of 0.20. See pre-development release rate calculation enclosed. The site will be serviced for storm drainage via a new 200 mm storm service connection to the 1,050 mm storm sewer along Wyandotte Street East.

A stormwater management design shall be prepared in accordance with the Windsor/Essex Stormwater Management Standards Manual. Stormwater quality control measures are required to be implemented on site to effectively treat stormwater runoff before it is released into the municipal storm sewer. The MOE Stormwater Management Planning and Design Manual (2003) requires 70% TSS removal for a normal level of protection. It is recommended that an oil and grit separator unit be installed to meet the stormwater quality requirements for a normal level of protection.

#### **5.0 CONCLUSION**

This functional servicing report has established how the development of this site will be serviced with respect to water distribution, wastewater, and storm drainage without negatively impacting the existing municipal infrastructure.

A summary of the report's conclusions are the following:






- The existing 300 mm diameter municipal watermain along Wyandotte Street East will be utilized for the building fire protection and domestic water service. A new 200 mm diameter water service connection is proposed and the water service will be split at the property line for a dedicated 150 mm domestic water service and a 200 mm firemain. The municipal watermain has adequate capacity to service the proposed development.

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- Sewage from the proposed apartment building will drain to the existing 375 mm diameter municipal sanitary sewer along Watson Avenue via a new 200 mm sanitary service connection. The municipal sanitary sewer system has been assessed and determined to have sufficient available capacity to accommodate the increased sanitary flows generated by the proposed apartment building development.
- Stormwater runoff from the proposed development will drain to the existing 1,050 mm diameter municipal storm sewer along Wyandotte Street East via a new 200 mm storm connection. Stormwater runoff from the proposed development will be restricted to the pre-development release rate of 29 L/s, with the post-development flows attenuated through on-site stormwater detention.
- Stormwater management design shall follow the latest Windsor/Essex Stormwater Management Standards Manual, and a full Stormwater Management report will be submitted for City review and approval during the Site Plan Approval process.
- Stormwater quality control of the stormwater leaving the site will be required to meet MOE requirements for removal of oil and 70% of total suspended solids (TSS), consistent with a Normal Level of Protection. This will be achieved through the implementation of an oil and grit separator unit (OGS).

**LEGEND:**

-  Sanitary Sewer Drainage Area (39.5 Ha.)
-  Residential (31.5 Ha.)
-  Commercial (6.3 Ha.)
-  Existing Apartments (0.8 Ha.)
-  Existing Elementary School (0.9 Ha.)



**SANITARY SEWER  
DRAINAGE AREA PLAN**

**EXISTING CONDITION**

EX. 600 mm SAN. SEWER

MH 6S3835  
EX. 450 mm SAN. SEWER

MH 6S3848

**ALEO ASSOCIATES INC.**  
 Consulting Engineers

Prepared By: J.P.A.  
 Project Name: 0 Wyandotte St. E. (NE corner of Wyandotte St. E. & Watson Ave.)  
 Project No.: 9222  
 Date: May 1, 2026








**SANITARY SEWER CAPACITY ASSESSMENT**  
**450 mm DIAMETER SANITARY SEWER ON WYANDOTTE STREET EAST (FROM MH 6S3848 TO MH 6S3835)**  
**ASSESSMENT OF EXISTING CONDITION**

LOCATION			POPULATION			SEWAGE FLOW			SEWER DESIGN					
Area No.	DEVELOPMENT TYPE	AREA (HEC.)	PER HEC.	POP.	PEAKING FACT.	INFIL. l/sec	SEW. l/sec	TOTAL l/sec	SIZE (mm)	n	SLOPE (%)	CAP. l/sec	VEL. m/s	CAPACITY UTILIZED (%)
1	RESIDENTIAL	31.5	50	1575	3.66	4.91	24.24	29.15	-	-	-	-	-	-
2	COMMERCIAL	6.3	74	466	3.99	0.98	1.8	2.8	-	-	-	-	-	-
3	APARTMENTS	0.8	-	382	4.03	0.12	6.5	6.6	-	-	-	-	-	-
4	ELEMENTARY SCHOOL	0.9	-	430	4.01	0.14	7.2	7.4	-	-	-	-	-	-
	TOTAL	39.5	-	2041	-	6.2	39.7	45.9	450	0.013	0.12	98.8	0.62	46.5

Design Criteria:

- 1) Residential/Domestic Sewage Flow = 0.0042 l/sec/cap
- 2) Commercial Sewage Flow = 0.286 l/ha/s
- 3) Infiltration = 0.1560 l/s/ha
- 4) Peak Wastewater Flow Factor, M =  $1+14/(4+P^{0.5})$
- 5) Manning's Coefficient = 0.013
- 6) Minimum Velocity = 0.60 m/s
- 7) Maximum Velocity = 3.0 m/s
- 8) Student population of school is 430 students.
- 9) Population for existing apartments estimated based on number of parking stalls. 1 parking stall per residential unit. 182 parking stalls = 182 units. Assumed two bedrooms per unit. Total population is 382 persons based on 2.1 persons/unit.

**LEGEND:**

-  Sanitary Sewer Drainage Area (39.5 Ha.)
-  Single Family Residential (31.5 Ha.)
-  Commercial (4.9 Ha.)
-  Future Multi-Storey Residential Development By Others (0.6 Ha.)
-  Proposed Multi-Storey Residential Development (0.8 Ha.)
-  Existing Apartments (0.8 Ha.)
-  Existing Elementary School (0.9 Ha.)



**SANITARY SEWER  
DRAINAGE AREA PLAN**  
**PROPOSED CONDITION**

EX. 600 mm SAN. SEWER

MH 6S3835

EX. 450 mm SAN. SEWER

MH 6S3848

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**450 mm DIAMETER SANITARY SEWER ON WYANDOTTE STREET EAST (FROM MH 6S3848 TO MH 6S3835)**  
**ASSESSMENT OF PROPOSED CONDITION**

LOCATION			POPULATION					SEWAGE FLOW			SEWER DESIGN					
Area No.	DEVELOPMENT TYPE	AREA (HEC.)	PER HEC.	PERS. PER UNIT	NO. OF UNITS	POP.	PEAKING FACT.	INFIL. l/sec	SEW. l/sec	TOTAL l/sec	SIZE (mm)	n	SLOPE (%)	CAP. l/sec	VEL. m/s	CAPACITY UTILIZED (%)
1	RESIDENTIAL	31.5	50	-	-	1575	3.66	4.91	24.2	29.2	-	-	-	-	-	-
2	COMMERCIAL	4.9	74	-	-	363	4.04	0.76	1.4	2.2	-	-	-	-	-	-
3	FUTURE MULTI-STOREY RESIDENTIAL DEVELOPMENT BY OTHERS	0.6	-	2.5	63	158	4.18	0.09	2.8	2.9	-	-	-	-	-	-
4	PROPOSED MULTI-STOREY RESIDENTIAL DEVELOPMENT	0.8	-	2.5	105	263	4.10	0.12	4.5	4.6	-	-	-	-	-	-
5	EXISTING APARTMENTS	0.8	-	2.1	182	382	4.03	0.12	6.5	6.6						
6	EXISTING ELEMENTARY SCHOOL	0.9	-	-	-	430	4.01	0.14	7.2	7.4						
TOTAL		39.5	-	-	-	3170	-	6.2	46.6	52.8	450	0.013	0.12	98.8	0.62	53.5

Design Criteria:

- 1) Residential/Domestic Sewage Flow = 0.0042 l/sec/cap
- 2) Commercial Sewage Flow = 0.286 l/ha/s
- 3) Infiltration = 0.1560 l/s/ha
- 4) Peak Wastewater Flow Factor, M =  $1+14/(4+P^{0.5})$
- 5) Manning's Coefficient = 0.013
- 6) Minimum Velocity = 0.75 m/s
- 7) Maximum Velocity = 3.0 m/s
- 8) Population density of 2.5 person per unit has been used for the proposed residential development.

# ALEO ASSOCIATES INC., CONSULTING ENGINEERS

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**PROJECT NAME:** Proposed Multi-Unit Residential Development  
**PROJECT No.:** 9222  
**PREPARED BY:** J.P.A.  
**DATE:** April 23, 2026  
**REVISED:** -  
**FILE NAME:** 9222\_1-100yr\_2026.05.01.xlsx

## PROPOSED MULTI-UNIT RESIDENTIAL DEVELOPMENT 0 WYANDOTTE STREET EAST, WINDSOR, ONTARIO PRE-DEVELOPMENT RELEASE RATE CALCULATION

### A. PRE-DEVELOPMENT SITE CONDITIONS:

Total Drainage Area = 8,817 sq.m. 0.88 ha. Cex.  
Total Existing Grass Area \* = 8,817 sq.m. 0.88 ha. C = 0.20  
\* Soil is a Clyde Clay (Hydrologic Group 'D')

### B. RUNOFF COEFFICIENT:

EXISTING:  $C_{pre} = \frac{(8,817 \text{ m}^2 \times 0.20)}{8,817 \text{ m}^2}$   
 $C_{pre} = 0.20$

### C. PRE-DEVELOPMENT DISCHARGE RATE FOR A 1:5 YEAR FREQUENCY STORM:

Average Runoff Coefficient, Cex. = 0.20  
Tc = 30 minutes  
Intensity, i = 58.7 mm/hr

Design storm intensity is calculated from the equation  $i = a/(Tc+b)^c$

Where a,b,c are IDF curve parameters based on historical data for a 5 year return period at Windsor Airport.

For a 1:5 year frequency storm,  $i = 1259/(Tc+8.8)^{(0.838)}$ ,

$$\begin{aligned} Q_{pre} &= Cex. * i * A \\ &= 2.78 * 0.20 * i * 0.88 \\ &= 0.49 * i \\ &= 29 \text{ L/s} \end{aligned}$$