ADEQUACY OF EXISTING SERVICES REPORT MIXED USE DEVELOPMENT – 1887 ST JOSEPH BOULEVARD

Project No.: CCO-23-4118

SDLP 1887 Orleans Limited
1020 64 Ave NE
Calgary, AB, T2E 7V8

Prepared by:

McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road
Carp, ON K0A 1L0

Submitted: July 14, 2023
Revision 2: November 23, 2023

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

1.0 PROJECT OVERVIEW

1.1 Purpose

McIntosh Perry (MP) has been retained by SDLP 1887 Orleans Limited. to prepare this Adequacy of Existing Services Report in support of the contemplated development at 1887 St Joseph Boulevard, within the City of Ottawa.

The main purpose of this report is to demonstrate that the contemplated development has access to sufficient public services in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Rideau Valley Conservation Authority (RVCA), and the Ministry of the Environment, Conservation and Parks (MECP). This report will address access to water, sanitary and storm servicing for the development, ensuring that existing services will adequately service the contemplated development.

1.2 Site Description

The subject property, herein referred to as the site, is located at 1887 St Joseph Boulevard within the Orleans West – Innes ward in the City of Ottawa. The site covers approximately ***2.31 ha*** and is located on the north side of St Joseph Boulevard between Jeanne d'Arc Boulevard and Youville Drive, as shown by ***Figure 1***, below. The site is primarily zoned AM3 (Arterial Mainstreet), however the Youville Drive access lane is zoned IL2 H (Industrial). Refer to the Site Location Plan included in ***Appendix 'A'***.

Figure 1: Site Map

1.3 Contemplated Development and Statistics

The contemplated development consists of a seven-building mixed use complex with buildings ranging in height from 7-storeys to 18-storeys. A future public street is contemplated along the west limits of the property connecting St Joseph Boulevard and Youville Drive. A private street with access to the underground parking garage is contemplated along the east property line. The Concept Plan contemplates ***1,076*** apartments, approximately ***40,000 m²*** of Commercial and Amenity Area, and an underground parking garage with access provided internal to the site. Refer to ***Site Plan*** included in ***Appendix 'B'*** for reference.

1.4 Existing Conditions and Infrastructure

The property is located within the Ottawa River East Sub-Watershed. Based on RVCA mapping, the subject site delineates the boundary between the Bilberry Creek East and Bilberry Creek West Catchments. The site is currently developed containing an asphalt parking lot and a large commercial building which is partially occupied by a physiotherapy centre.

Sewer and watermain mapping collected from the City of Ottawa indicate that the following services exist across the property frontages within the adjacent municipal right-of-ways:

- **St Joseph Boulevard**
  - 914 mm diameter concrete watermain, and
  - 250 mm diameter concrete sanitary sewer, tributary to the Orleans Collector Sewer, and a
  - 1500 mm diameter concrete storm sewer, tributary to Bilberry Creek West approximately 150m downstream.
- **Youville Drive**
  - 610 mm diameter concrete watermain, and
  - 305 mm diameter ductile iron watermain, and a
  - 525 mm diameter concrete sanitary sewer, tributary to the Orleans Collector Sewer, and a
  - 1050 mm diameter concrete storm sewer, tributary to Billberry Creek West approximately 310m downstream.

1.5 Approvals

The contemplated development will be subject to the City of Ottawa site plan control approval process. Site plan control requires the City to review, provide concurrence and approve the engineering design package. Permits to construct can be request once the City has issued a site plan agreement.

An Environmental Compliance Approval (***ECA***) through the Ministry of Environment, Conservation and Parks (***MECP***) is not anticipated to be required for the contemplated development as the stormwater management system meets the exemption requirements under O.Reg 525/90. It is a single parcel, stormwater will not outlet to a combined sewer, and industrial use is not contemplated. It is anticipated that an ECA will be required for the services within the lands that will form the contemplated future public ROW.

2.0 BACKROUND STUDIES, STANDARDS, AND REFERENCES

2.1 Background Reports / Reference Information

As-built drawings of existing services, provided by the City of Ottawa Information centre, within the vicinity of the site were reviewed in order to identify infrastructure available to service the contemplated development.

A topographic survey of the site was completed by Farley, Smith & Denis Surveying Ltd. The Site Plan (A-010) was prepared by Figurr.

2.2 Applicable Guidelines and Standards

City of Ottawa:

- Ottawa Sewer Design Guidelines, City of Ottawa, SDG002, October 2012. (***Ottawa Sewer Guidelines***)
  - Technical Bulletin ISTB-2014-01 City of Ottawa, February 2014***. (ISTB-2014-01)***
  - Technical Bulletin PIEDTB-2016-01 City of Ottawa, September 2016. ***(PIEDTB-2016-01)***
  - Technical Bulletin ISTB-2018-01 City of Ottawa, January 2018***. (ISTB-2018-01)***
  - Technical Bulletin ISTB-2018-04 City of Ottawa, March 2018. ***(ISTB-2018-04)***
  - Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. ***(ISTB-2019-02)***
- Ottawa Design Guidelines – Water Distribution City of Ottawa, July 2010. (***Ottawa Water Guidelines***)
  - Technical Bulletin ISD-2010-2 City of Ottawa, December 15, 2010. ***(ISD-2010-2)***
  - Technical Bulletin ISDTB-2014-02 City of Ottawa, May 2014. **(ISDTB-2014-02)**
  - Technical Bulletin ISTB-2018-02 City of Ottawa, March 2018. ***(ISTB-2018-02)***
  - Technical Bulletin ISTB-2021-03 City of Ottawa, August 2021. ***(ISTB-2021-03)***

Ministry of Environment, Conservation and Parks:

- Stormwater Planning and Design Manual, Ministry of the Environment, March 2003. ***(MECP Stormwater Design Manual)***
- Design Guidelines for Sewage Works, Ministry of the Environment, 2008. (***MECP Sewer Design Guidelines***)

Other:

- Water Supply for Public Fire Protection, Fire Underwriters Survey, 2020. (***FUS Guidelines***)

3.0 WATERMAIN

3.1 Existing Watermain

The subject site is located within the 1E pressure zone, as shown by the Water Distribution figure located in ***Appendix 'C'***. The following subsections outline the water infrastructure that exists within St Joseph Boulevard, Youville Drive, and the subject site.

3.1.1 *St Joseph Boulevard*

There is an existing 914 mm diameter watermain that runs along the property frontage within St Joseph Boulevard. An existing 305 mm diameter watermain is also located within St Joseph Boulevard, however it does not extend along the property frontage. Based on discussion with City staff, the 305 mm diameter watermain will be extended across the property frontage this year and will be available for servicing.

There is one public hydrant located at the corner of St Joseph Boulevard and Chants-d'Oiseaux Way available to contribute fire flow to a portion of the contemplated development. The existing hydrant is expected to be within 75m of buildings A1 and A2, and within 150m of buildings B1 and B2.

A second public hydrant located approximately 75m east of the site at the northeast corner of St Joseph Boulevard and Marenger Street is expected to be within 150m of buildings A1, A2, and B2. A hydrant coverage figure can be found in ***Appendix 'C'*** for reference.

3.1.2 *Youville Drive*

There are existing 305 mm diameter and 610 mm diameter watermains that runs the entire length of the property frontage along Youville Drive. There is one public hydrant approximately 45m east of the site in the boulevard south of Youville Drive, and one public hydrant approximately 40m west of the site in the boulevard south of Youville Drive. It is anticipated that both hydrants will be within 150m of building D only.

3.1.3 *Existing Site*

The existing site contains a private 200 mm diameter watermain network, connected to the existing 305 mm diameter watermain within Youville Drive. There is one existing private hydrant located within the parking lot approximately 15m south of the existing building, and one existing private hydrant located approximately 41m north of the existing building. It is anticipated that both hydrants and the existing private watermain will be removed as part of the development.

3.2 Contemplated Watermain

In accordance with Section 4.3.1 of the ***Ottawa Water Guidelines***, service areas with a basic day demand greater than 50 m^3/day require a dual connection to the municipal system. A dual

connection will be required to service the contemplated development, based on the site statistics provided by the ***Concept Plan***.

It is anticipated that a 200 mm diameter watermain will be extended from the planned 305 mm diameter watermain within St Joseph Boulevard to the existing 305 mm diameter watermain within Youville Drive. The contemplated 200 mm diameter watermain will be located within the future public road along the west property line. It is expected that the development will be serviced by a private 200 diameter watermain network looped throughout the site. Connections for the private watermain are contemplated to the extended 200 mm diameter watermain within the future private road, and the existing 305 mm diameter watermain within St Joseph Boulevard. Refer to the ***Conceptual Servicing Figure*** for additional information on the contemplated servicing layout.

The Fire Underwriters Survey 2020 (FUS) method was utilized to estimate the required fire flow for the site. Fire flow requirements were calculated per City of Ottawa Technical Bulletin ***ISTB-2018-02***. The following parameters were utilized in the calculation:

- Type of construction – Non-Combustible Construction
- Occupancy type – Limited Combustibility
- Sprinkler Protection – Fully Supervised Sprinklered

The results of the calculations yielded a maximum required fire flow of ***6,000 L/min*** (100 L/s). The detailed calculations for the FUS can be found in ***Appendix 'C'***.

The water demands for the contemplated development have been calculated to adhere to ***Ottawa Water Guidelines*** and can be found in ***Appendix 'C'***. The results have been summarized below:

Table 1: Water Supply Design Criteria and Water Demands

Design Parameter	Value
Development Area	2.31 ha
Residential	280 L/day/person
Commercial/Amenity	28,000 L/gross ha/d
Studio/1-Bedroom Apartment	1.4 persons/unit
2-Bedroom Apartment	2.1 persons/unit
3-Bedroom Apartment	3.1 persons/unit
Residential Peaking Factor (Day)	2.5 x avg. day
Residential Peaking Factor (Hour)	2.2 x max day
Commercial Peaking Factor (Day)	1.5 x avg. day
Commercial Peaking Factor (Hour)	1.8 x max day
Average Day Demand (L/s)	6.91 L/s
Maximum Daily Demand (L/s)	15.97 L/s
Peak Hourly Demand (L/s)	34.36 L/s
FUS Fire Flow Requirement (L/s)	100 L/s (6,000 L/min)

Boundary conditions have been provided by the City of Ottawa for the current conditions and are available in ***Appendix 'C'***. Please note the contemplated water demand has decreased slightly based on unit count changes, however this is not anticipated to impact the validity of the boundary condition result. A water model was completed using EPANET based on the boundary conditions. For modeling purposes, a hydrant was assumed at each building to determine the critical junction. The Max Day + Fire Flow scenario was analyzed at each hydrant, and it was determined that the lowest resulting pressures will occur during the Max Day + Fire Flow scenario at hydrant H6, servicing building C2.

The results indicated that the contemplated 200mm watermain can adequately service the contemplated development and provide sufficient fire flow since Hydrant H6 produced available fire flows of 6,000 L/min. The resulting pressures for the Average Day, Peak hour, and governing Max Day + Fire Flow scenario are summarized below. Water model results and supporting calculations are available in ***Appendix 'C'*** of this report.

Table 2: Water Pressure at Junction per Scenario

Junction	Average Day (kPa)	Max. Day + Fire Flow (kPa)	Peak Hourly (kPa)
H1	530.99	486.58	487.76
H2	548.05	503.44	503.74
H3	567.56	516.58	522.56
H4	567.46	510.21	522.46
H5	567.37	507.56	522.36
H6	547.07	345.11	502.76
H7	534.13	475.60	490.50
J1 (BLDG A1)	530.99	486.58	487.76
J2 (BLDG B1)	548.05	503.44	503.74
J3	570.40	525.60	525.40
J4	573.44	534.33	528.44
J5 (BLDG C1)	567.56	516.58	522.56
J6 (BLDG D)	567.46	510.21	522.46
J7 (BLDG C2)	567.37	507.56	522.36
J8	568.54	505.11	523.74
J9 (BLDG B2)	547.07	474.03	502.76
J10 (BLDG A2)	534.13	475.60	490.50

The normal operating pressure range is anticipated to be 487.8 kPa to 573.4 kPa and will not be less than 275 kPa (40 psi) or exceed 689 kPa (100 psi). The contemplated watermain will meet the minimum required 140 kPa (20 psi) at the ground level under maximum day demand and fire flow conditions. It is expected that pressure reducing valves will required for the contemplated development since the pressure will exceed 552 kPa (80 psi) at various junctions in the average day scenario.

To confirm the adequacy of fire flow to protect the contemplated development, existing public fire hydrants and contemplated private hydrants within 150 m of the site were accounted for per ***ISTB 2018-02*** *Appendix I*. Results can be seen in ***Table 3***, below.

Table 3: Fire Protection Confirmation

Building	Fire Flow Demand (L/min.)	Fire Hydrant(s) within 75m	Fire Hydrant(s) within 150m	Combined Fire Flow (L/min.)
Building A1	5,000 L/min	1 public	1 public	9,500
Building A2	6,000 L/min	1 public	1 public	9,500
Building B1	6,000 L/min	*1 private*	1 public	9,500
Building B2	6,000 L/min	-	2 public	7,600
Building C1	6,000 L/min	*1 private*	*1 private*	9,500
Building C2	5,000 L/min	*1 private*		5,700
Building D	6,000 L/min	-	2 public	7,600

Based on ***Table 3***, above, there is sufficient hydrant coverage to support the calculated fire flow demand of 5,000 - 6,000 L/min for buildings A1, A2, B2, and D. One new hydrant will be required to satisfy fire flow requirements for building B1 and C2, and two new hydrants will be required to satisfy fire flow requirements for building C1.

Given that all contemplated buildings will be sprinklered, new hydrants will also be required within 45m of each respective fire department connection to satisfy Ontario Building Code requirements.

In total, it is estimated that a minimum of three new fire hydrants will be required to meet fire flow and OBC requirements. Hydrant requirements and spacing will need to be confirmed during detailed design based on access lane locations and the associated unobstructed paths of travel.

4.0 SANITARY DESIGN

4.1 Existing Sanitary Sewer

The subject site lies within the Orleans Collector sewer collection area. The following subsections outline the sanitary infrastructure that exists within St Joseph Boulevard and Youville Drive.

4.1.1 *St Joseph Boulevard*

There is an existing 250 mm diameter sanitary sewer located within St Joseph Boulevard. The sanitary sewer slopes northeast before connecting to the 525 mm diameter Youville Drive sanitary sewer at the intersection of Youville Drive and Jeanne-d'Arc Boulevard. Based on consultation with City Staff, the existing sanitary sewer within St Joseph Boulevard has capacity constraints and cannot accommodate flows from the full development.

4.1.2 *Youville Drive*

There is an existing 525 mm diameter sanitary sewer located within Youville Drive. The sanitary sewer slopes east, and after passing through a series of residential neighbourhoods connects to the Orleans Collector Sewer near the Bilberry Drive overflow.

4.2 Contemplated Sanitary Sewer

It is contemplated that a new 250 mm diameter sanitary sewer will be installed within the future public road along the west property line. It is anticipated that buildings A1 and B1 will be serviced by 200 mm diameter service connection to the contemplated 250 mm diameter sewer within the future public road. It is contemplated that the remaining buildings will be serviced by 200 mm diameter service connections to a private 250 mm diameter sanitary sewer located within the site. The private 250 mm diameter sewer will discharge to the contemplated 250 mm diameter sewer within the future public road. A sanitary drainage figure can be found in ***Appendix 'D'***.

Table 4, below, summarizes the wastewater design criteria identified by the ***Ottawa Sewer Guidelines***.

Table 4: Sanitary Design Criteria

Design Parameter	Value
Residential 1 Bedroom / Studio Apartment	1.4 persons/unit
Residential 2 Bedroom	2.1 persons/unit
Residential 3 Bedroom	3.1 persons/unit
Average Daily Demand	280 L/day/person
Residential Peaking Factor	3.11
Commercial Peaking Factor	1.0
Commercial/Amenity Area	2800 L/(1000m² /d)

Table 5, below, summarizes the estimated wastewater flow from the contemplated development. Refer to ***Appendix 'D'*** for detailed calculations. Please note the contemplated sanitary demand has decreased slightly since the first submission as a result of unit count changes.

Table 5: Summary of Estimated Sanitary Flow

	Total Flow (L/S)
Total Estimated Average Dry Weather Flow	7.02
Total Estimated Peak Dry Weather Flow	18.84
Total Estimated Peak Wet Weather Flow	19.49

As mentioned above, it is contemplated that a new 250 mm diameter sanitary sewer will be installed within the contemplated future public road along the west property line. The contemplated sewer will connect to the existing 525 mm diameter sanitary sewer within Youville Drive. It is anticipated that a private on-site sanitary network will be required to convey wastewater from the contemplated buildings to the contemplated 250 mm diameter sanitary sewer located within the future public road. Refer to the ***Conceptual Servicing Figure*** for additional information.

The full flowing capacity of a 250 mm diameter sanitary sewer at a 1.0% slope is estimated to be ***62.04 L/s***. Per ***Table 5***, a peak wet weather flow of ***19.49 L/s*** will be conveyed within the 250 mm diameter sewer, therefore the contemplated system is sufficient sized for the development.

The full flowing capacity of the existing 525 mm diameter sanitary sewer within Youville Drive at 0.2% slope is estimated to be ***200.65 L/s***. Per ***Table 5***, a peak wet weather flow of ***19.49 L/s*** will occupy approximately ***9.7%*** of the existing sanitary sewers capacity. Based on consultation with City Staff found in ***Appendix 'B',*** sanitary flows from the contemplated development should be directed to the Youville Drive sanitary sewer. A sanitary sewer design sheet can be found in ***Appendix 'D'***.

5.0 STORM SEWER DESIGN

5.1 Existing Storm Sewers

Stormwater runoff from the site is currently tributary to the Ottawa River within the Ottawa River East Sub-Watershed. Runoff from the existing site is collected by a series of catch basins and conveyed to the existing 1050 mm diameter storm sewer within Youville Drive, where it then travels approximately 310m before discharging to Bilberry Creek West.

The following subsections outline the storm infrastructure that exists within St Joseph Boulevard and Youville Drive.

5.1.1 *St Joseph Boulevard*

There is an existing 1500 mm diameter storm sewer located within St Joseph Boulevard. The storm sewer slopes west before discharging to Bilberry Creek West approximately 150m downstream.

5.1.2 *Youville Drive*

There is an existing 1050 mm diameter storm sewer located within Youville Drive. The storm sewer slopes west before discharging to Bilberry Creek West approximately 310m downstream.

5.1.3 *Existing Development*

There is an existing 200-450 mm diameter storm sewer network within the subject site, complete with catch basins and storm maintenance holes. It is expected that the existing storm network will be removed as part of the contemplated development, however options may be explored to temporarily retain parts of the network for interim drainage during phased development.

5.2 Contemplated Storm Sewers

It is anticipated that a 600 mm diameter storm sewer will be required at the downstream end of the storm servicing within the contemplated future public road. Sizing estimates are based on the unrestricted 5-year flow with an estimated pipe slope of 1.0% and include external flows from the contemplated future public road. Sizing within the upstream reaches of the storm sewer network will be dependent on the grading schemes developed during detailed design, however estimates have been provided within the ***Conceptual Servicing Figure*** and ***Post-Development Drainage Area Figure*** based on preliminary conceptual grading. A storm sewer design sheet can be found in ***Appendix 'G'***.

It is anticipated that runoff will be directed to the municipal storm infrastructure at a restricted rate, as discussed in *Section 6.1*. It is expected that a combination of surface storage, subsurface storage, and rooftop storage will be required to meet the criteria identified by the City of Ottawa Sewer Design Guidelines.

6.0 STORMWATER MANAGEMENT

6.1 Design Criteria and Methodology

Stormwater management for the site is anticipated to be maintained through positive drainage away from the contemplated buildings and towards the adjacent ROWs. The quantitative and qualitative properties of the storm runoff for both the pre- and post-development flows are further detailed below.

The following design criteria will need to be employed to develop the stormwater management design for the site:

Quality Control

- Given the proximity to the outlet, it is anticipated that quality controls up to an enhanced level of treatment (80% TSS Removal) will be required.

Quantity Control

- Based on consultation with City staff, any storm events greater than 5-year, up to 100-year, and including 100-year storm event must be detained on site.
- Post-development flow must be restricted to match the existing 5-year storm event rate, based on a calculated time of concentration and a rational method coefficient up to a maximum of 0.50. Refer to *Section 6.3* for further details.

6.2 Quality Control

As mentioned above, quality controls are anticipated to be required up to an enhanced level of treatment (80% TSS removal) based on the distance to the outlet. Given the layout shown in the Concept Plan, it is expected that there will be insufficient green space for a treatment train approach to quality control.

Quality control options such as the Silva Cell bioretention system may be used to provide a level of quality treatment, however it is anticipated that an Oil & Grit Separator Unit located at the downstream end of the contemplated storm servicing may still be required to meet quality control requirements.

6.3 Quantity Control

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \quad \text{(L/s)}$$

Where C = Runoff coefficient
I = Rainfall intensity in mm/hr (City of Ottawa IDF curves)

A = Drainage area in hectares

It is recognized that the Rational Method tends to overestimate runoff rates. As a result, the conservative calculation of runoff ensures that any SWM facility sized using this method is expected to function as intended.

The following coefficients were used to develop an average C for each area:

Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped and Grass	0.20

As per the ***Ottawa Sewer Guidelines***, the 5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

The time of concentration (Tc) used for pre-development shall be calculated and no less than 10 minutes.

6.3.1 *Site Drainage*

Based on the criteria listed in *Section 6.1*, the contemplated development will be required to restrict flow to the 5-year storm event.

It has been assumed that the existing development contained no stormwater management controls for flow attenuation. The estimated pre-development peak flows for the 5- and 100-year events are summarized in ***Table 6***, below.

Table 6: Pre-Development Runoff Summary

Drainage Area	Area (ha)	C (5/100-Year)	Q (L/s)	
			5-Year	100-Year
A1	2.31	0.78/0.87	522.01	999.42

The required restricted release rate, based on a maximum runoff coefficient of 0.50, is shown in ***Table 7***, below.

Table 7: Pre-Development Runoff Summary

Drainage Area	Area (ha)	C (5-Year)	Q (L/s)
			5-Year
A1	2.31	0.50	334.44

To meet the stormwater objectives the contemplated development may contain a combination of flow attenuation along with surface storage, subsurface storage, and rooftop storage. Based on the layout shown in the Concept Plan, it is expected that surface storage will only be able to provide a small portion of the required storage, and so subsurface storage options such as internal cisterns or Silva Cell bioretention systems will need to incorporated into the design.

The following storage requirement estimate assumes that approximately 10% of the development area will be directed to the outlet without flow attenuation. A conservative value of 0.85 has been assumed for the post-development 5-year "C" value, however this will need to be confirmed during detailed design. The estimated post-development peak flows for the 5- and 100-year events and the required storage volumes are summarized in ***Table 7,*** below.

Table 8: Post Development Flow Rate and Storage Requirements

Drainage Area	Unrestricted Flow (L/S)		Restricted Flow (L/S)		Storage Required (m^3)	
	5-year	100-Year	5-Year	100-Year	5-Year	100-Year
B1 (Unrestricted)	56.97	108.70	56.97	108.70	-	-
B2 (Restricted)	515.78	983.89	202.76	225.74	187.8	522.6
Total	**572.75**	**1092.59**	**259.73**	**334.44**	**187.8**	**522.6**

It is anticipated that approximately ***522.6 m^3*** of storage will be required on site to attenuate flow to the established release rate of ***334.44 L/s***. Runoff and storage calculations can be found within ***Appendix 'G'***. Actual storage volumes will need to be confirmed at the detailed design stage based on grading constraints.

7.0 SUMMARY

- A new seven building mixed use complex is contemplated at 1887 St Joseph Boulevard;
- The FUS method estimated fire flow indicated a maximum of ***6,000 L/min*** is required for the contemplated development;
- The development is anticipated to have a peak wet weather flow of ***19.49 L/s***. Based on the sanitary analysis, the development is expected to occupy ***9.7%*** of the existing sanitary sewers capacity within Youville Drive;
- Based on discussion with City Staff, the development will be required to attenuate post-development 5 and 100-year flows to the 5-year release rate of ***334.44 L/s***;
- It is contemplated that stormwater objectives may be met through storm water retention via roof top, surface, and subsurface storage. It is anticipated that approximately ***522.6 m^3*** of onsite storage will be required to attenuate flow to the established release rate; and
- Quality controls are anticipated to be required to provide an enhanced level of treatment (80% TSS removal).

8.0 RECOMMENDATION

This report is respectfully being submitted for review.

Regards,

McIntosh Perry Consulting Engineers Ltd.

Robert D. Freel, P.Eng.
Project Engineer, Land Development
E: r.freel@mcintoshperry.com

Francis Valenti, EIT.
Engineering Intern, Land Development
E: f.valenti@mcintoshperry.com

9.0 STATEMENT OF LIMITATIONS

This report was produced for the exclusive use of SDLP 1887 Orleans Limited. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment, Parks and Climate Change, City of Ottawa and local approval agencies. McIntosh Perry reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by McIntosh Perry and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. McIntosh Perry accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, McIntosh Perry should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

APPENDIX A
KEY PLAN

McINTOSH PERRY

600 300 0 600

Scale 1:20,000 Metres

LEGEND

- Site Location
- Local Road
- Major Road
- Watercourse
- Waterbody
- Wooded Area

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2023.

CLIENT: SDLP 1887 ORLEANS LIMITED

PROJECT: MIXED USE DEVELOPMENT

TITLE: SITE LOCATION

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

PROJECT NO:	CCO-23-4118
Date	Jun., 20, 2023
GIS	AH
Checked By	FV

FIGURE: 1

APPENDIX B
BACKGROUND DOCUMENTS

McINTOSH PERRY

KEY PLAN

PROPOSED SITE

PROPERTY DESCRIPTION

5 NEW RESIDENTIAL BUILDINGS + 2 RESIDENTIAL / MIXED-USE BUILDINGS

CITY OF OTTAWA PIN NUMBER	04392-0959
MUNICIPAL ADDRESS	1887 ST JOSEPH BLVD

SITE INFORMATION

LOT AREA:	23,091.56 m²
LOT FRONTAGE:	69.43m
LOT DEPTH:	213.18m

BUILDING INFORMATION

TOTAL BUILDING AREA: 82355 m²

RESIDENTIAL: 81620 m², RETAIL: 735 m²

PROPOSED USE: APARTMENT DWELLINGS, RETAIL

APARTMENT UNIT BREAKDOWN:

BUILDING A1:	195 UNITS	STUDIO =73	1 BD = 78	2 BD =44	
BUILDING A2:	188 UNITS	STUDIO =60	1 BD = 82	2 BD =56	3 BD =10
BUILDING B1:	127 UNITS	STUDIO =14	1 BD = 80	2 BD =32	3 BD =1
BUILDING B2:	87 UNITS	STUDIO =15	1 BD = 34	2 BD =30	3 BD =8
BUILDING C1:	122 UNITS	STUDIO =34	1 BD = 51	2 BD =37	
BUILDING C2:	121 UNITS	STUDIO =33	1 BD = 53	2 BD =28	3 BD =7
BUILDING D:	236 UNITS	STUDIO =89	1 BD = 112	2 BD =24	3 BD =11
TOTAL:	1076 UNITS				

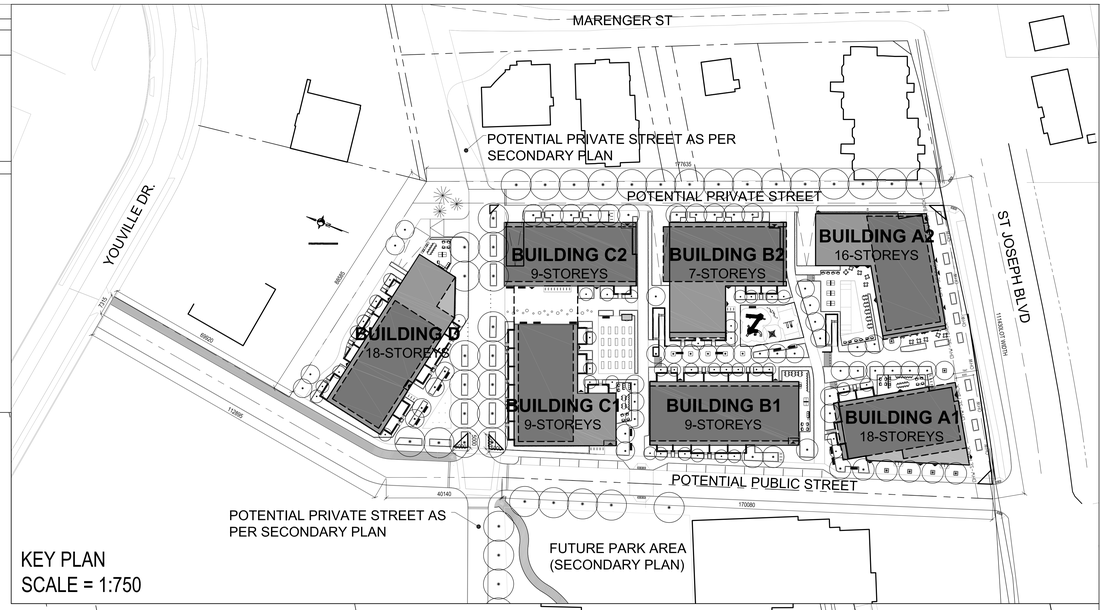
ZONING TABLE — AM3

CITY OF OTTAWA ZONING BY-LAW No. 2008-250	REQUIRED	PROPOSED
MINIMUM LOT AREA	1800m²	23,091.56 m²
MINIMUM LOT WIDTH	24m	111.4m
FRONT YARD SETBACK	4m (Non-residential or mixed-use) 6m (Residential building)	6.3m
HYDRO SETBACK	6m	6 m
MINIMUM INTERIOR SIDE YARD SETBACK	7.5 m	11.1 m
MINIMUM REAR YARD SETBACK	7.5 m	11.3 m
MAXIMUM FLOOR SPACE INDEX	3 [Table 186A(iii)]	3.5 (82355 m²/23091.56 m²)
VEHICLE PARKING REQUIREMENTS	No requirements other than Visitor Parking (AREA Z)	495 SPACES (P1 & P2)
VISITOR PARKING REQUIREMENTS (AREA Z)	0.1 Parking Spaces/Dwelling unit, less first 12 units, max 30 spaces per building A1= 18 A2= 18 B1= 12 B2= 8 C1= 5 C2= 11 D= 23 TOTAL = 95	A1= 18 A2= 18 B1= 12 B2= 8 C1= 5 C2= 11 D= 23 TOTAL = 95
RETAIL PARKING REQUIREMENTS (AREA Z)	0	12 (Street Parking)
AMENITY AREA REQUIREMENTS	6m² per dwelling unit A1= 1170 m² A2= 1158 m² B1= 768 m² B2= 534 m² C1= 384 m² C2= 726 m² D= 1410 m² TOTAL = 6150 m²	A1= 1205m² A2= 1279m² B1= 956m² B2= 867m² C1= 919m² C2= 1347m² D= 1497m² TOTAL= 8109m²
BICYCLE PARKING SPACES	0.5 per dwelling unit = 538 spaces	1479 Interior Storage Spaces 44 Exterior Spaces

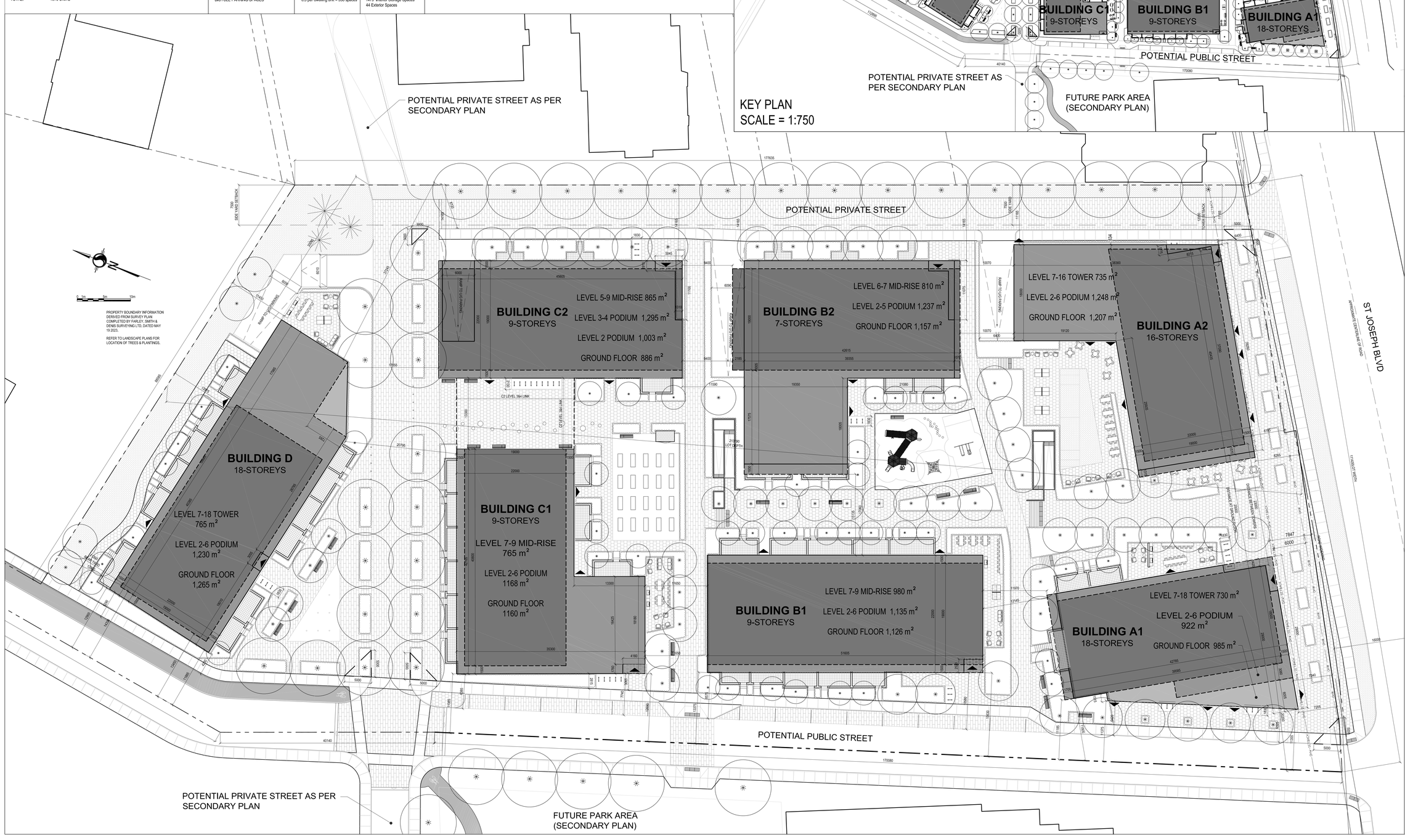
	REQUIRED	PROPOSED
MAXIMUM BUILDING HEIGHTS Table 186A(v)(C)	13m HIGH WITHIN 20m OF RESIDENTIAL ZONE, 19m HIGH BEYOND 20m OF RESIDENTIAL ZONE	A1= 56m A2= 50m B1= 28m B2 = 25m C1= 28m C2= 28m D = 55m

LEGEND

SOFT LANDSCAPING
ASPHALT PAVING
RIVERSTONE REFER TO LANDSCAPE
EXISTING BUILDING ELEMENT TO BE REMOVED
EXISTING FENCE
NEW BOARD FENCE REFER TO LANDSCAPE
LOT LINE
SETBACK LINE
DESIGNATED BUILDING ENTRANCE / EXIT
FIRE HYDRANT, REFER TO CIVIL
CATCH BASIN
MANHOLE
FLOOR DRAIN
UTILITY POLE
OVERHEAD UTILITY WIRES
LIGHT STANDARD
DEPRESSED CURB
EXISTING TREE TO REMAIN (REFER TO LANDSCAPE DRAWINGS)
NEW TREE (REFER TO LANDSCAPE DRAWINGS)
NEW SHRUBS (REFER TO LANDSCAPE DRAWINGS)
UNIT PAVERS REFER TO LANDSCAPE
CONCRETE
EXISTING GROUND ELEVATION [TO DETERMINE EXISTING AVERAGE GRADE]
NEW GROUND ELEVATION REFER TO CIVIL
EMERGENCY OVERFLOW ROOF SCUPPER
ROOF DRAIN
NOTE: 'X-E INDICATES EXISTING TO REMAIN



KEY PLAN
SCALE = 1:750



No.	Date	ISSUED FOR
1	2023-05-31	CLIENT REVIEW
2	2023-10-25	REZONING PHASE 3 PRE-CONSULTATION

Architecte D'intérieur / Interior Designer

Urbaniste / Urban Planner

FOTENN Planning + Design

Architecte / Architect (Paysagiste/ Landscape)

Ingénieur / Engineer (Civil / Civil)

Ingénieur / Engineer (Mécanique / Mechanical)

Ingénieur / Engineer (Électricité / Electrical)

Ingénieur / Engineer (Structure / Structure)

Client / Client

Architecte / Architect

Collectif d'architectes

figurr

No. 1
3550, Saint-Antoine O.
Montréal QC H4C 1A9
T. 514 861-5122

No. 2
190 Somerset St W #206
Ottawa ON K2P 0J4
T. 613-695-6122

www.figurr.ca

Droit d'auteur / Copyright

Ce dessin est sujet au droit d'auteur. Il ne peut être reproduit pour quelques intentions ou usages que ce soit, à moi peut être utilisé uniquement avec l'approbation de la signature et de l'estampe originale.

This drawing is subject to copyright. It is not to be reproduced for any purpose or by any means, and may only be used if it bears an original stamp and signature.

Sceau / Seal

Notes:

L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

Projet / Project

1887 ST JOSEPH MIXED-USE RE-ZONING

1887 ST JOSEPH
Ottawa ON

Titre / Title

SITE PLAN

Dessiné par / Drawn by	RH
No. projet / Project number	2309
Vérifié par / Verified by	RC, MD
No. dessin / Drawing number	A010
Échelle / Scale	1:250
Révision / Revision	2
Date de création du dessin / Drawing creation date	2023-06-08

Francis Valenti

From:	Polyak, Alex <alex.polyak@ottawa.ca>
Sent:	March 30, 2023 2:14 PM
To:	Belan, Steve; Tamara Nahal
Cc:	Frolick, Jasmine; erin.wallace@sobeys.com; Saide Sayah; Thiago Santos; Miguel Tremblay; Rejane Padaratz; Castro, Phil; Roberto Campos; Button, Jessica; Paudel, Neeti; Kadri, Nader; Giles, Peter
Subject:	RE: Pre-con Follow-up - [address]

Hello Steve,

Please see the following Zoning By-Law amendment requirements for the property at 1887 St. Joseph Blvd.

Zoning By-Law Amendment

Confirm if existing services (storm, water, sanitary) are adequate to service the site. I've reached out to asset management for information regarding existing servicing constraints, and will share any information once it becomes available.

Submission Documents:

- Site Plan
- General Plan of Services
- Design Brief
- Geotechnical Report including slope stability analysis if required based on proposed design

Water Boundary condition requests must include the location of the service and the expected loads required by the proposed development. Please provide the following information:

- Location of service connections (MAP)
- Type of development and the amount of fire flow required (as per FUS).
- Average daily demand: ___ l/s.
- Maximum daily demand: ___l/s.
- Maximum hourly daily demand: ___ l/s

Minimum Drawing and File Requirements- All Plans

Plans are to be submitted on standard A1 size (594mm x 841mm) sheets, utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400, or 1:500).

With all submitted hard copies provide individual PDF of the DWGs and for reports please provide one PDF file of the reports. All PDF documents are to be unlocked and flattened.

Regards,

Oleksandr (Alex) Polyak, B.Eng., P.Eng
Project Manager, Infrastructure Approvals, Development Review East Branch | Gestionnaire de projet, Direction de l'examen des projets d'aménagement – Est.
Planning, Real Estate and Economic Development Department | Direction générale de la planification, des biens immobiliers et du développement économique

City of Ottawa | Ville d'Ottawa
110 Laurier Ave., 4th Fl East, Ottawa ON K1P 1J1
Email: alex.polyak@ottawa.ca
www.Ottawa.ca

From: Belan, Steve <Steve.Belan@ottawa.ca>
Sent: March 30, 2023 1:17 PM
To: Tamara Nahal <nahal@fotenn.com>
Cc: Polyak, Alex <alex.polyak@ottawa.ca>; Frolick, Jasmine <Jasmine.Frolick@sobeys.com>; erin.wallace@sobeys.com; Saide Sayah <sayah@fotenn.com>; Thiago Santos <santos@fotenn.com>; Miguel Tremblay <tremblay@fotenn.com>; Rejane Padaratz <padaratz@fotenn.com>; Castro, Phil <phil.castro@ottawa.ca>; Roberto Campos <rcampos@figurr.ca>; Button, Jessica <jessica.button@ottawa.ca>; Paudel, Neeti <neeti.paudel@ottawa.ca>; Kadri, Nader <nader.kadri@ottawa.ca>; Giles, Peter <peter.giles1@ottawa.ca>
Subject: Pre-con Follow-up - [address]

Tamara,

I have provide you with this. I still need to add the Engineering comments with I expect soon. Hopefully this will assist in your discussion today. I will follow up with the complete comments shortly.

Steve

Hello Tamara,

Please refer to the below and/or attached notes regarding the Pre-Application Consultation (pre-con) Meeting held on Wednesday March 22, 2023 for the property at 1887 St. Joseph Blvd for a Rezoning Application in anticipation of selling the property to a developer to construct building complex consisting mid and modest high-rise residential buildings with a private street and POP. I have also attached the required Plans & Study List for application submission.

Below or attached are staff's preliminary comments based on the information available at the time of pre-con meeting:

Planning

- Policies and provisions
  - As described the property is Evolving Neighbourhood and Major Collector and is in close proximity with the Jeanne d'Arc Light Rail station. The secondary plan has

recently been approved and been appealed and set out a similar development scenario for the site.

- Zoning will be specific to the proposed development on this site and a schedule will be used to locate where taller buildings will be located. A (-h) Hold Provision will be placed on the site until there is an approved Site Plan and an agreement to contribute to the cost of the park located on other properties.
- Community benefits
  - "Community Benefits Charge", By-law No. 2022-307, of 4% of the land value. This charge will be required for ALL buildings that are 5 or more storeys and 10 or more units and will be required at the time of building permit. Questions regarding this change can be directed to Ranbir.Singh@ottawa.ca.
- I have concerns that this site will not be able to be developed without the neighbouring property being developed at the same time. The two properties share the burden of the future public street. Further, this site will only have a pedestrian link to Youville Drive until other lands are brought in to make a wider corridor.
- For Zoning By-law Amendments the Applicant must now provide a proposed strategy for public consultation as directed by Bill 73

Urban Design

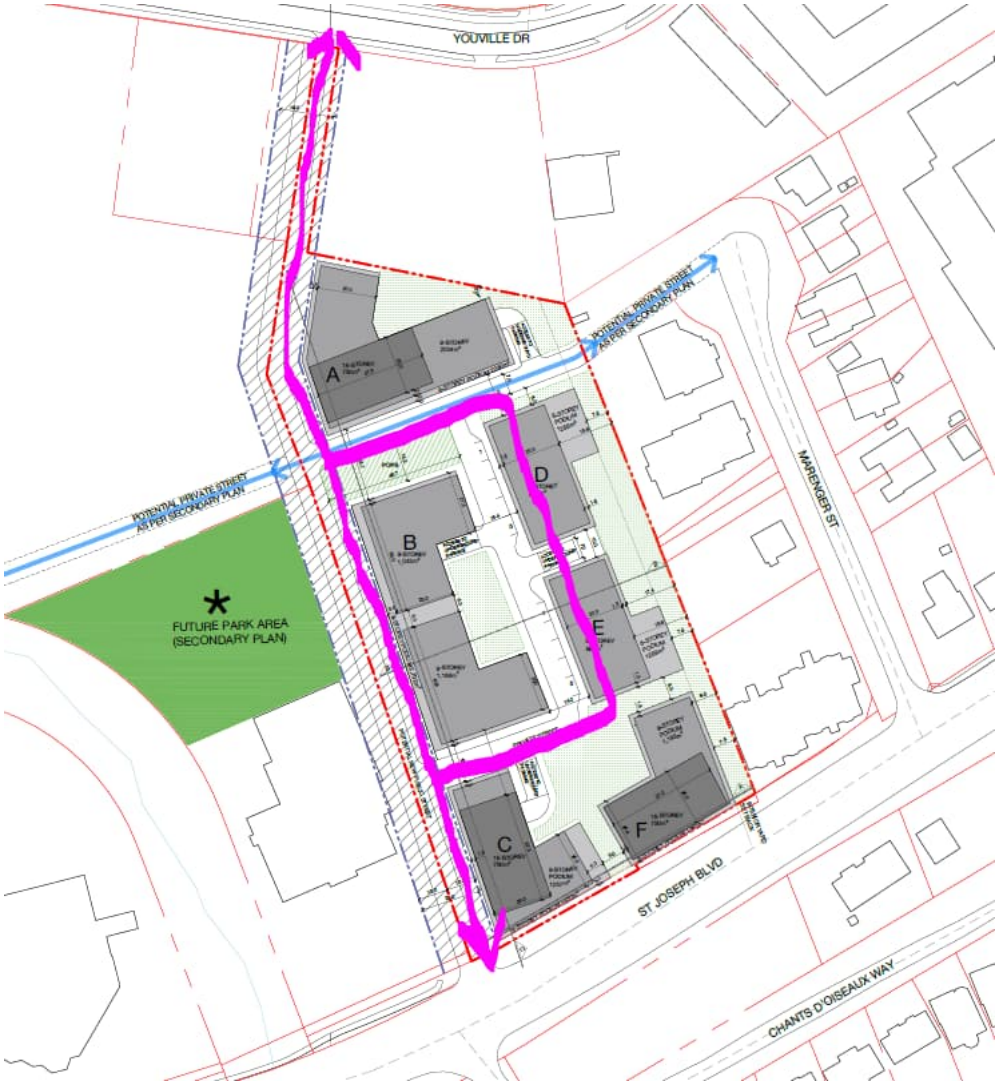
- Design Priority Area – visit to UDRP required. Recommend an informal visit.
- Design Brief required – TOR attached

General:

- Please ensure that the development adequately responds to the Secondary Plan and applicable urban design guidelines.
- Please consider a land use strategy. Identify opportunities for retail streets and the potential for other non-res uses to create a complete community.
- Active uses at-grade (including grade-related townhouse units) will be needed for all buildings.
- A phasing strategy is needed.
- Below-grade parking limits needed. Access to below-grade parking should be internal to buildings.
- POPS and mid-block connection off St.Joseph Boulevard appreciated.
- Please ensure that there is sufficient room along St.Joseph Boulevard for an enhanced streetscape treatment. The streetscape treatment should include a 2 metre pedestrian clearway in addition to areas for street trees, planters, and street furniture.
- Public realm treatment for internal streets will need to be established.
- Please indicate any sustainability features being considered at this stage.

Site access:

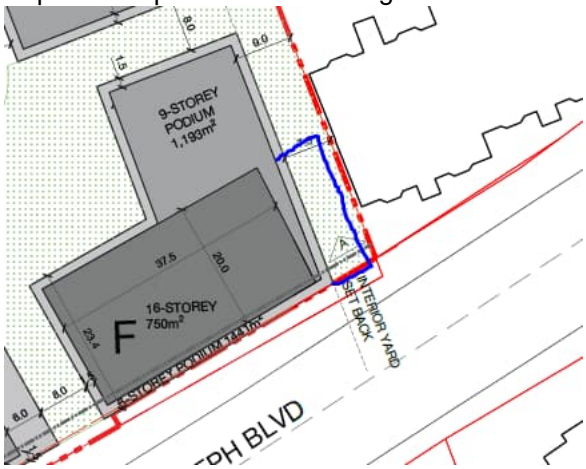
- Under the current scheme the public road connection will not be delivered to the City without the redevelopment of the adjacent property. If this is the approach forward, a timeline for this needs to be established with the adjacent landowner. A scheme independent of the adjacent property may be needed.
- Public street network needs to be thought out, especially in the context of a phased development approach. Staff recommend a public crescent (magenta) through the site.



Built form:

<u>High Rise</u>

- Lower the podium height for Buildings C and F (4 storeys suggested).
- Expand the podium for Building F to continue the main street form:



- Explore the potential for square towers instead of rectangular towers to mitigate shadow impacts.
- Ensure the towers meet the high-rise guidelines. Floor plates should not exceed 750 square metres.
- Tower F should be placed further away from St. Joseph Boulevard. Recommend keeping in line with Tower C.

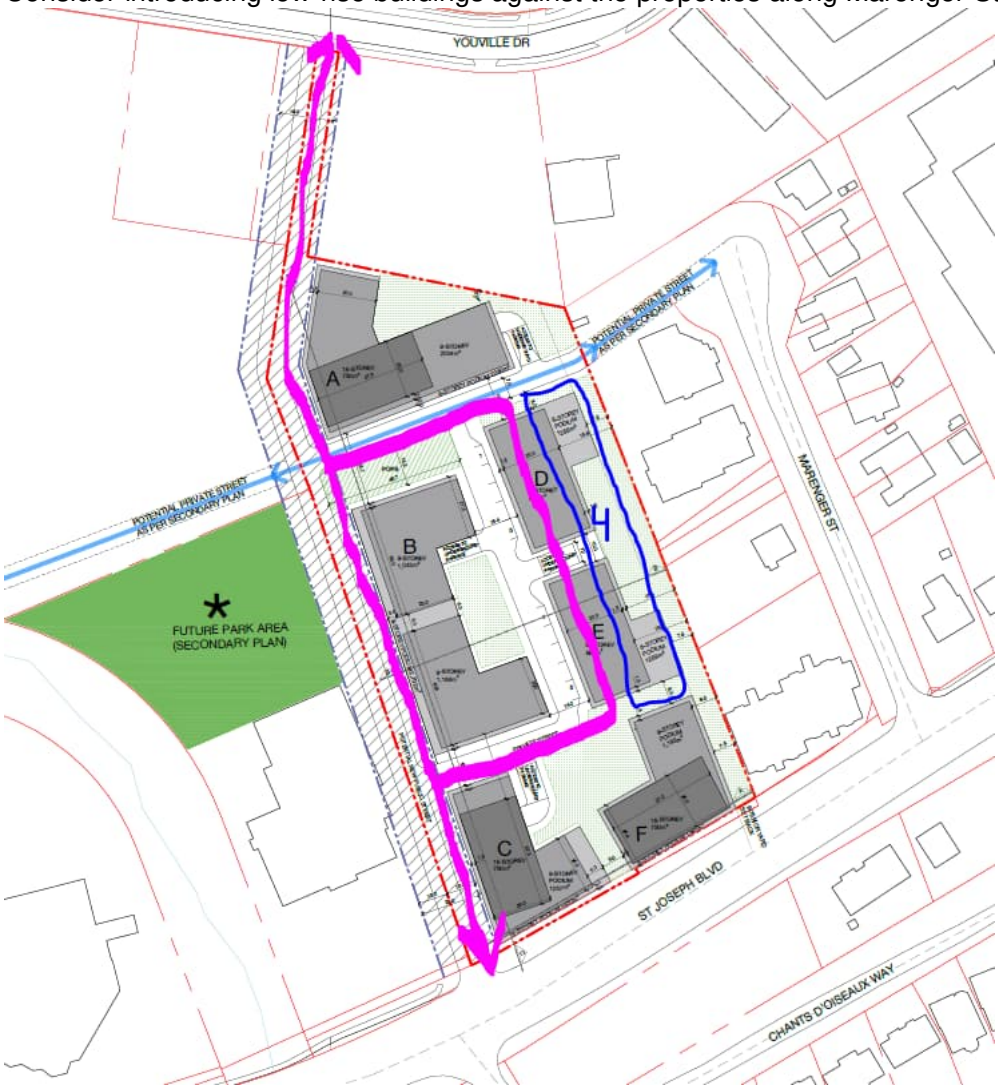
- Please ensure that Tower F provides an adequate separation distance to the adjacent property.

Mid Rise

- Recommend a 4 storey base for all mid-rise buildings.

Low-rise

- Consider introducing low-rise buildings against the properties along Marenger Street.



-
  - Please be aware that the application is subject to the Urban Design Review Panel (UDRP) review. It is important for the UDRP timeline to be align with the application review. UDRP review meeting schedules can be found from this link. Please contact Matthew Ippersiel at … if you need assistance related to UDRP.
- Feel free to contact the Infrastructure Project Manager, Nader Kadri, at Nader.Kadri@ottawa.ca, for follow-up questions.

Engineering

The attached "Pre-application consultation servicing memo" summarizes engineering design considerations as per our discussion. [Ensure the memo addresses all relevant engineering issues.]

[Alternatively, list engineering comments in this letter, addressing issues including but not limited to:

- Servicing policies (Mater Servicing Plan, etc.)
- Storm water quantity control
- Grading

- Water capacity
- Sewer (sanitary and storm) capacity
- Flow rates – Fire Services
- Geotechnical (including sensitive marine clay, where appropriate)
- Slope stability
- Hydrogeological and terrain analysis requirements (private servicing only)
- Construction constraints
- Background studies
- MECP approval
- New ROW cross-sections
-

Feel free to contact the Infrastructure Project Manager, Alex Polyak, at Alex.Polyak@ottawa.ca, for follow-up questions.

Transportation

- TIA is required. Proceed to scoping. Note the street / access locations at St Joseph require further analysis in the TIA. The proposed public street creates an undesirable offset with Chants-d'Oiseaux. Reconfiguration of the left turn lane and/or restriction of the access/ street to a right in right out may be required. This requires further review.
- The application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable). Although a full review of the TIA Strategy report (Step 4) is not required prior to an application, it is strongly recommended.
- ROW protection along St Joseph is 32m even. Ensure this is protected and shown on the draft plan.
- Geometric Road Design (GRD) drawings will be required with the first submission of underground infrastructure and grading drawings. City's approved 18m cross section should be used for local roads. These drawings should include such items as, but is not limited to:
- Road Signage and Pavement Marking for the subdivision;
- Intersection control measure at new internal intersections; and
- Location of depressed curbs and TWSIs;
- More details can be provided upon request
- A pedestrian and traffic calming plan will be required prior to the submission of the GRD.
- Include traffic calming measures on roads within the limits of their subdivision to limit vehicular speed to 30 kph and improve pedestrian safety. These measures may include either vertical or horizontal features. City's 30km/h guideline should be used for guidance.
- Noise Impact Studies required:
- Feasibility before draft approval
- Detailed before registration
- Road
- Stationary (due to the proximity to neighbouring exposed mechanical equipment) or (if there will be any exposed mechanical equipment due to the proximity to neighbouring noise sensitive land uses)
-
- Site triangles at the following locations on the final plan will be required:
- Local Road to Local Road: 3 metre x 3 metres
- Local Road to Collector Road: 5 metre x 5 metres
- Local Road to Arterial Road: 5 metre x 5 metres
- Collector Road to Collector Road: 5 metre x 5 metres
- Collector Road to Arterial Road: 5 metre x 5 metres

Feel free to contact the Transportation Project Manager, [xx], at [contact information], for follow-up questions.

Environmental

- Brownfields development – there was a former gas station on site. The zoning will be subject to a Phase 1 & 2 ESA and RSC prior to the registration of Site Plan Agreement
- Bird-Safe Design Guidelines are available online
- The Official Plan has tree canopy targets. The Design should limit surface parking and hard surfaces to provide space for trees. This may include the amount of building footprint that was shown in the concept plan. Soil volumes need to be sufficient for tree roots over underground parking structures.
- There should be some considerations towards High Performance Standard when this site is developed. It is a large site which will allow building orientation to passively heat (or cool) the building or have a central district heating facility.

Parkland

- A new Parkland Dedication By-law, By-law No. 2022-280, was approved by Council on August 31, 2022. The By-law increases the required parkland conveyance for mid-rise and high-rise residential development and includes one-year transition policies for in-stream development and building permit applications or those that met the requirements for completeness by September 1, 2022.
- A hold will be placed in the Zoning By-law until agreements to provide parkland on other site or parkland is provided on site to the satisfaction of Parks and Recreation.

City Surveyor

- The determination of property boundaries, minimum setbacks and other regulatory constraints are a critical component of development. An Ontario Land Surveyor (O.L.S.) needs to be consulted at the outset of a project to ensure properties are properly defined and can be used as the geospatial framework for the development.
- Topographic details may also be required for a project and should be either carried out by the O.L.S. that has provided the Legal Survey or done in consultation with the O.L.S. to ensure that the project is integrated to the appropriate control network.

Questions regarding the above requirements can be directed to the City's Surveyor, Bill Harper, at Bill.Harper@ottawa.ca

Waste Services

- New multi-unit residential development, defined as containing six (6) or more units, intending to receive City waste collection services will be required, as of June 1, 2022, to participate in the City's Green Bin program in accordance with Council's approval of the multi-residential waste diversion strategy. The development must include adequate facilities for the proper storage of allocated garbage, recycling, and green bin containers and such facilities built in accordance with the approved site design. Questions regarding this change and requirements can be directed to Andre.Laplante@ottawa.ca.
- A project of this size will be on private services and

Other

- Plans are to be standard A1 size (594 mm x 841 mm) or Arch D size (609.6 mm x 914.4 mm) sheets, dimensioned in metric and utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400 or 1:500).
- All PDF submitted documents are to be unlocked, flattened and not saved as a portfolio file.
- As mentioned at the meeting there will need to be a phasing plan to demonstrate how this site would be developed on its own, without the future public street and other connections.
- For sites containing one or more buildings with a total GFA greater than 2000 square metres with more than 75 units

        - A Waste Reduction Workplan Summary is required for the construction project as required by O.Reg. 102/94, being “Waste Audits and Waste Reduction Work Plans” made under the Environmental Protection Act, RSO 1990, c E.19, as amended.
    - You are encouraged to contact the Ward Councillor, Councillor Luloff, about the proposal.
    - Where private roads are proposed
        - Be advised, to submit a Private Roadway Street Naming application to Building Code Services Branch for any internal private road network.
        - applications are available at all Client Service Centres (the private roadway approval process takes three months).

Please refer to the links to Guide to preparing studies and plans and fees for further information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting geoinformation@ottawa.ca.

It is anticipated that, as a result of the *More Homes for Everyone Act, 2022*, for applications for site plan approval and zoning by-law amendments, new processes in respect of pre-application consultation will be put in place. The new processes are anticipated to require a multiple phase pre-application consultation approach before an application will be deemed complete. Applicants who have not filed a complete application by the effective date may be required to undertake further pre-application consultation(s) consistent with the provincial changes. The by-laws to be amended include By-law 2009-320, the Pre-Consultation By-law, By-law 2022-239, the planning fees by-law and By-law 2022-254, the Information and Materials for Planning Application By-law.

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please do not hesitate to contact me if you have any questions.

Regards,

Steve Belan, MCIP, RPP

Planner Planning Services, Development Review Services
Planning, Corporate Real Estate and Economic Development department (PRED)
City of Ottawa / Ville d'Ottawa
110 Laurier Avenue West, 4th Floor / 110, avenue Laurier Ouest, 4e étage
Ottawa, ON K1P 1J1
Telephone / tél.: 613-580-2424 ext./poste 27591
E-mail / courriel: Steve.Belan@ottawa.ca

'

'

Francis Valenti

From: Polyak, Alex <alex.polyak@ottawa.ca>
Sent: July 6, 2023 10:01 AM
To: Francis Valenti
Cc: Robert Freel
Subject: RE: 1887 St Joseph Boulevard - SWM Criteria

Follow Up Flag: Follow up
Flag Status: Flagged

Hello Francis,

You are required to control post-development flows from the site to the pre-development 5-year rate.

Regards,

Oleksandr (Alex) Polyak, B.Eng., P.Eng
Project Manager, Infrastructure Approvals, Development Review East Branch | Gestionnaire de projet, Direction de l'examen des projets d'aménagement – Est.
Planning, Real Estate and Economic Development Department | Direction générale de la planification, des biens immobiliers et du développement économique

City of Ottawa | Ville d'Ottawa
110 Laurier Ave., 4th Fl East, Ottawa ON K1P 1J1
Email: alex.polyak@ottawa.ca
www.Ottawa.ca

From: Francis Valenti <F.Valenti@McIntoshPerry.com>
Sent: June 20, 2023 4:46 PM
To: Polyak, Alex <alex.polyak@ottawa.ca>
Cc: Robert Freel <r.freel@mcintoshperry.com>
Subject: 1887 St Joseph Boulevard - SWM Criteria

Hi Alex,

I'd just like to touch base on the SWM criteria for 1887 St Joseph Boulevard. We've reviewed as-built information for the storm sewers in the area, and it appears the storm sewers within Youville Drive were constructed in 1977. Given they were installed later than 1970, we're assuming they were sized for the 5-year event and we'll be required to control post-development flows from the site down to the pre-development 5-year rate. Can you please review and confirm?

Thanks,

Francis Valenti, EIT
Engineering Intern
T. 613.714.6895 | **C.** 613.808.2123
F.Valenti@McIntoshPerry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

Francis Valenti

From: Polyak, Alex <alex.polyak@ottawa.ca>
Sent: June 13, 2023 10:48 AM
To: Francis Valenti
Cc: nahal@fotenn.com; Robert Freel
Subject: RE: Pre-con Follow-up - -1887 St. Joseph

Hello Francis,

Due to capacity constraints on St. Joseph, it is our preference that the proposed sanitary sewers be connected to Youville Drive.

Regards,

Oleksandr (Alex) Polyak, B.Eng., P.Eng
Project Manager, Infrastructure Approvals, Development Review East Branch | Gestionnaire de projet, Direction de l'examen des projets d'aménagement – Est.
Planning, Real Estate and Economic Development Department | Direction générale de la planification, des biens immobiliers et du développement économique

City of Ottawa | Ville d'Ottawa
110 Laurier Ave., 4th Fl East, Ottawa ON K1P 1J1
Email: alex.polyak@ottawa.ca
www.Ottawa.ca

From: Francis Valenti <F.Valenti@McIntoshPerry.com>
Sent: June 06, 2023 4:24 PM
To: Polyak, Alex <alex.polyak@ottawa.ca>
Cc: nahal@fotenn.com; Robert Freel <r.freel@mcintoshperry.com>
Subject: RE: Pre-con Follow-up - - servicing memo?

Good afternoon,

We would like to request boundary conditions for the contemplated development located at 1887 St Joseph Boulevard. The contemplated development consists of seven mixed use buildings ranging in height from 7 storeys to 18 storeys, complete with underground parking and drive aisles with access from St Joseph Boulevard and Youville Drive. The contemplated connections will be to the existing 914 mm diameter watermain located within St Joseph Boulevard, and the existing 305 mm or 610 mm watermain located within Youville Drive. It is contemplated that an internal 250 mm diameter watermain will connect from St Joseph Boulevard to Youville Drive. Can you please confirm if the Youville Drive connection will need to be to the existing 305 mm or 610 mm watermain to provide adequate servicing? A third connection, if required, is contemplated to the 910 mm diameter watermain with St Joseph Boulevard.

Please find attached a map showing the contemplated connection locations and calculations prepared for the demands listed above.

- The estimated fire flow is 6,000 L/min based on the FUS method
- Average Daily Demand: 6.91 L/s
- Maximum Daily Demand: 15.98 L/s
- Maximum hourly daily demand: 34.37 L/s

We have also completed sanitary calculations for the contemplated development. Can you please confirm which sanitary sewer has the capacity to accommodate the additional flow?

- Average Dry Weather Flow: 7.03 L/s
- Peak Dry Weather Flow: 18.85 L/s
- Peak Wet Weather Flow: 19.50 L/s

Thanks,

Francis Valenti, EIT
Engineering Intern
T. 613.714.6895 | **C.** 613.808.2123
F.Valenti@McIntoshPerry.com | www.mcintoshperry.com
McINTOSH PERRY
Turning Possibilities Into Reality

APPENDIX C
WATERMAIN CALCULATIONS

McINTOSH PERRY

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Total Water Demand

Project:	1887 St Joseph Boulevard
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023
Site Area:	2.31 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Studio Apartment	318	units	1.4	persons/unit
1 Bedroom Apartment	490	units	1.4	persons/unit
2 Bedroom Apartment	231	units	2.1	persons/unit
3 Bedroom Apartment	37	units	3.1	persons/unit

Total Population **1731 persons**

Commercial/Amenity **40039** m2

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	**Residential**	**5.61** L/s
	Commercial/Industrial/ Institutional	**1.30** L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**14.02**	**L/s**
	Commercial/Industrial/ Institutional	**1.95**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x max. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**30.85**	**L/s**
	Commercial/Industrial/ Institutional	**3.50**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	6.91	L/s
MAXIMUM DAILY DEMAND	15.97	L/s
MAXIMUM HOUR DEMAND	34.36	L/s

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Water Demand BLDG A1

Project:	1887 St Joseph Boulevard
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023
Site Area:	2.31 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Studio Apartment	73	units	1.4	persons/unit
1 Bedroom Apartment	78	units	1.4	persons/unit
2 Bedroom Apartment	44	units	2.1	persons/unit
3 Bedroom Apartment	0	units	3.1	persons/unit
Total Population	**304**	**persons**		
Commercial/Amenity	**3589**	m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	**Residential**	**0.99**	**L/s**
	Commercial/Industrial/ Institutional	**0.12**	**L/s**

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**2.46**	**L/s**
	Commercial/Industrial/ Institutional	**0.17**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x max. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**5.42**	**L/s**
	Commercial/Industrial/ Institutional	**0.31**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	1.10	L/s
MAXIMUM DAILY DEMAND	2.64	L/s
MAXIMUM HOUR DEMAND	5.73	L/s

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Water Demand - BLDG A2

Project:	1887 St Joseph Boulevard
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023
Site Area:	2.31 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Studio Apartment	60	units	1.4	persons/unit
1 Bedroom Apartment	82	units	1.4	persons/unit
2 Bedroom Apartment	36	units	2.1	persons/unit
3 Bedroom Apartment	10	units	3.1	persons/unit
Total Population	**306**	**persons**		
Commercial/Amenity	**6020**	m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	**Residential**	**0.99**	**L/s**
	Commercial/Industrial/ Institutional	**0.20**	**L/s**

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**2.48**	**L/s**
	Commercial/Industrial/ Institutional	**0.29**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x max. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**5.45**	**L/s**
	Commercial/Industrial/ Institutional	**0.53**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	1.19	L/s
MAXIMUM DAILY DEMAND	2.77	L/s
MAXIMUM HOUR DEMAND	5.98	L/s

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Water Demand - BLDG B1

Project:	1887 St Joseph Boulevard
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023
Site Area:	2.31 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Studio Apartment	14	units	1.4	persons/unit
1 Bedroom Apartment	80	units	1.4	persons/unit
2 Bedroom Apartment	32	units	2.1	persons/unit
3 Bedroom Apartment	1	units	3.1	persons/unit
Total Population	**202**	**persons**		
Commercial/Amenity	**6157**	m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	**Residential**	**0.65**	**L/s**
	Commercial/Industrial/ Institutional	**0.20**	**L/s**

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**1.64**	**L/s**
	Commercial/Industrial/ Institutional	**0.30**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x max. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**3.60**	**L/s**
	Commercial/Industrial/ Institutional	**0.54**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.85	L/s
MAXIMUM DAILY DEMAND	1.94	L/s
MAXIMUM HOUR DEMAND	4.14	L/s

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Water Demand - BLDG B2

Project:	1887 St Joseph Boulevard
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023
Site Area:	2.31 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Studio Apartment	15	units	1.4	persons/unit
1 Bedroom Apartment	34	units	1.4	persons/unit
2 Bedroom Apartment	30	units	2.1	persons/unit
3 Bedroom Apartment	8	units	3.1	persons/unit
Total Population	**157**	**persons**		
Commercial/Amenity	**5639**	m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	**Residential**	**0.51**	**L/s**
	Commercial/Industrial/ Institutional	**0.18**	**L/s**

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**1.27**	**L/s**
	Commercial/Industrial/ Institutional	**0.27**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x max. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**2.80**	**L/s**
	Commercial/Industrial/ Institutional	**0.49**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.69	L/s
MAXIMUM DAILY DEMAND	1.55	L/s
MAXIMUM HOUR DEMAND	3.29	L/s

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Water Demand - BLDG C1

Project:	1887 St Joseph Boulevard
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023
Site Area:	2.31 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Studio Apartment	34	units	1.4	persons/unit
1 Bedroom Apartment	51	units	1.4	persons/unit
2 Bedroom Apartment	37	units	2.1	persons/unit
3 Bedroom Apartment	0	units	3.1	persons/unit
Total Population	**197**	**persons**		
Commercial/Amenity	**4866**	m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	**Residential**	**0.64**	**L/s**
	Commercial/Industrial/ Institutional	**0.16**	**L/s**

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**1.60**	**L/s**
	Commercial/Industrial/ Institutional	**0.24**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x max. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**3.51**	**L/s**
	Commercial/Industrial/ Institutional	**0.43**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.80	L/s
MAXIMUM DAILY DEMAND	1.83	L/s
MAXIMUM HOUR DEMAND	3.94	L/s

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Water Demand - BLDG C2

Project:	1887 St Joseph Boulevard
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023
Site Area:	2.31 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Studio Apartment	33	units	1.4	persons/unit
1 Bedroom Apartment	53	units	1.4	persons/unit
2 Bedroom Apartment	28	units	2.1	persons/unit
3 Bedroom Apartment	7	units	3.1	persons/unit
Total Population	**201**	**persons**		
Commercial/Amenity	**7180**	m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	
Residential	280	L/c/d	
Industrial - Light	35,000	L/gross ha/d	
Industrial - Heavy	55,000	L/gross ha/d	
Shopping Centres	2,500	L/(1000m² /d	
Hospital	900	L/(bed/day)	
Schools	70	L/(Student/d)	
Trailer Park with no Hook-Ups	340	L/(space/d)	
Trailer Park with Hook-Ups	800	L/(space/d)	
Campgrounds	225	L/(campsite/d)	
Mobile Home Parks	1,000	L/(Space/d)	
Motels	150	L/(bed-space/d)	
Hotels	225	L/(bed-space/d)	
Tourist Commercial	28,000	L/gross ha/d	
Other Commercial	28,000	L/gross ha/d	
AVERAGE DAILY DEMAND	**Residential**	**0.65**	**L/s**
	Commercial/Industrial/ Institutional	**0.23**	**L/s**

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**1.63**	**L/s**
	Commercial/Industrial/ Institutional	**0.35**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x max. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**3.58**	**L/s**
	Commercial/Industrial/ Institutional	**0.63**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.88	L/s
MAXIMUM DAILY DEMAND	1.98	L/s
MAXIMUM HOUR DEMAND	4.21	L/s

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Water Demand - BLDG D

Project:	1887 St Joseph Boulevard
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023
Site Area:	2.31 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Studio Apartment	89	units	1.4	persons/unit
1 Bedroom Apartment	112	units	1.4	persons/unit
2 Bedroom Apartment	24	units	2.1	persons/unit
3 Bedroom Apartment	11	units	3.1	persons/unit
Total Population	**366**	**persons**		
Commercial/Amenity	**6588**	m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	
Residential	280	L/c/d	
Industrial - Light	35,000	L/gross ha/d	
Industrial - Heavy	55,000	L/gross ha/d	
Shopping Centres	2,500	L/(1000m² /d	
Hospital	900	L/(bed/day)	
Schools	70	L/(Student/d)	
Trailer Park with no Hook-Ups	340	L/(space/d)	
Trailer Park with Hook-Ups	800	L/(space/d)	
Campgrounds	225	L/(campsite/d)	
Mobile Home Parks	1,000	L/(Space/d)	
Motels	150	L/(bed-space/d)	
Hotels	225	L/(bed-space/d)	
Tourist Commercial	28,000	L/gross ha/d	
Other Commercial	28,000	L/gross ha/d	
AVERAGE DAILY DEMAND	**Residential**	**1.19**	**L/s**
	Commercial/Industrial/ Institutional	**0.21**	**L/s**

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**2.97**	**L/s**
	Commercial/Industrial/ Institutional	**0.32**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x max. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**6.52**	**L/s**
	Commercial/Industrial/ Institutional	**0.58**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	1.40	L/s
MAXIMUM DAILY DEMAND	3.29	L/s
MAXIMUM HOUR DEMAND	7.10	L/s

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Building A1 - Fire Underwriters Survey

Project:	1887 St Joseph Boulevard - Building A1
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Non-Combustible Construction

C 0.8 **A** **14,355.0** m^2

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) **4,481.0** m^2

Calculated Fire Flow	**11,781.5 L/min**
	12,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%

Fire Flow	**10,200.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered	-50%

Reduction	**-5,100.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	***Length-Height Factor		Exposure Fully Protected By Sprinklers
Exposure 1	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	22	9	198.0	0%	Yes
Exposure 2	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	22	16	352.0	0%	Yes
Exposure 3	Over 30 m	Ordinary - Mass Timber (Unprotected)	47	4	188.0	0%	No
Exposure 4	20.1 to 30	Ordinary - Mass Timber (Unprotected)	61	1	61.2	3%	No
					% Increase*	**3%**	

Increase*	**306.0 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**5,406.0 L/min**
Fire Flow Required**	**5,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min
***If both the subject building and the exposed building are fully protected with automatic sprinkler systems, no Exposure Adjustment Charge should be applied

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Building A2 - Fire Underwriters Survey

Project:	1887 St Joseph Boulevard - Building A2
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Non-Combustible Construction

C 0.8 **A** **14,797.0** m^2

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) **5,686.0** m^2

Calculated Fire Flow	**13,271.4 L/min**
	13,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%
Fire Flow	**11,050.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered	-50%
Reduction	**-5,525.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	***Length-Height Factor		Exposure Fully Protected By Sprinklers
Exposure 1	3.1 to 10	Fire Resistive - Non Combustible (Unprotected Openings)	38	7	266.0	0%	Yes
Exposure 2	10.1 to 20	Ordinary - Mass Timber (Unprotected)	22	3	66.0	8%	No
Exposure 3	Over 30 m	Ordinary - Mass Timber (Unprotected)	47	4	188.0	0%	No
Exposure 4	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	41	18	738.0	0%	Yes
					% Increase*	**8%**	

Increase*	**884.0 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**6,409.0 L/min**
Fire Flow Required**	**6,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min
***If both the subject building and the exposed building are fully protected with automatic sprinkler systems, no Exposure Adjustment Charge should be applied

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Building B1 - Fire Underwriters Survey

Project:	1887 St Joseph Boulevard - Building B1
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Non-Combustible Construction

C	0.8	**A**	**9,741.0 m²**
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)		**5,511.0 m²**

Calculated Fire Flow	**13,065.6 L/min**
	13,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%
Fire Flow	**11,050.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered	-50%
Reduction	**-5,525.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	***Length-Height Factor		Exposure Fully Protected By Sprinklers
Exposure 1	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	42	9	378.9	0%	Yes
Exposure 2	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	43	7	298.2	0%	Yes
Exposure 3	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	20	18	358.2	0%	Yes
Exposure 4	20.1 to 30	Ordinary - Mass Timber (Unprotected)	61	1	61.2	3%	No
					% Increase*	**3%**	

Increase*	**331.5 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**5,856.5 L/min**
Fire Flow Required**	**6,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min
***If both the subject building and the exposed building are fully protected with automatic sprinkler systems, no Exposure Adjustment Charge should be applied

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Building B2 - Fire Underwriters Survey

Project:	1887 St Joseph Boulevard - Building B2
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Non-Combustible Construction

C	0.8	**A**	**8,107.0 m^2**
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)		**5,246.0 m^2**

Calculated Fire Flow	**12,747.6 L/min**
	13,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%
Fire Flow	**11,050.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered	-50%
Reduction	**-5,525.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	***Length-Height Factor		Exposure Fully Protected By Sprinklers
Exposure 1	3.1 to 10	Fire Resistive - Non Combustible (Unprotected Openings)	22	9	198.0	0%	Yes
Exposure 2	20.1 to 30	Wood frame	23	3	69.0	6%	No
Exposure 3	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	43	16	688.0	0%	Yes
Exposure 4	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	52	9	464.4	0%	Yes
					% Increase*	**6%**	

Increase*	**663.0 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**6,188.0 L/min**
Fire Flow Required**	**6,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min
***If both the subject building and the exposed building are fully protected with automatic sprinkler systems, no Exposure Adjustment Charge should be applied

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Building C1 - Fire Underwriters Survey

Project:	1887 St Joseph Boulevard - Building C1
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Non-Combustible Construction

C	0.8	**A**	**9,878.9 m^2**

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) **5,721.0 m^2**

Calculated Fire Flow	**13,312.1 L/min**
	13,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%

Fire Flow	**11,050.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered	-50%

Reduction	**-5,525.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	***Length-Height Factor		Exposure Fully Protected By Sprinklers
Exposure 1	20.1 to 30	Fire Resistive - Non Combustible (Unprotected Openings)	62	18	1114.2	0%	Yes
Exposure 2	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	46	9	410.4	0%	Yes
Exposure 3	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	22	9	198.0	0%	Yes
Exposure 4	Over 30 m	Ordinary - Mass Timber (Unprotected)	61	1	61.0	0%	No
					% Increase*	**0%**	

Increase*	**0.0 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**5,525.0 L/min**
Fire Flow Required**	**6,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min
***If both the subject building and the exposed building are fully protected with automatic sprinkler systems, no Exposure Adjustment Charge should be applied

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Building C2 - Fire Underwriters Survey

Project:	1887 St Joseph Boulevard - Building C2
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Non-Combustible Construction

C	0.8	**A**	**8,804.0 m^2**
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)		**4,914.0 m^2**

Calculated Fire Flow	**12,337.6 L/min**
	12,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%

Fire Flow	**10,200.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered	-50%

Reduction	**-5,100.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	***Length-Height Factor		Exposure Fully Protected By Sprinklers
Exposure 1	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	62	18	1114.2	0%	Yes
Exposure 2	20.1 to 30	Ordinary - Mass Timber (Unprotected)	19	3	57.0	2%	No
Exposure 3	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	38	7	266.0	0%	Yes
Exposure 4	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	35	9	317.7	0%	Yes
					% Increase*	**2%**	

Increase*	**204.0 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**5,304.0 L/min**
Fire Flow Required**	**5,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min
***If both the subject building and the exposed building are fully protected with automatic sprinkler systems, no Exposure Adjustment Charge should be applied

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Building D - Fire Underwriters Survey

Project:	1887 St Joseph Boulevard - Building D
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	November 23, 2023

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Non-Combustible Construction

C 0.8 **A** **16,595.0** m^2

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) **5,720.0** m^2

Calculated Fire Flow	**13,311.0 L/min**
	13,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%
Fire Flow	**11,050.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered	-50%
Reduction	**-5,525.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	***Length-Height Factor		Exposure Fully Protected By Sprinklers
Exposure 1	Over 30 m	Ordinary - Mass Timber (Unprotected)	34	1	34.4	0%	No
Exposure 2	Over 30 m	Wood frame	24	3	73.2	0%	No
Exposure 3	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	22	9	198.0	0%	Yes
Exposure 4	Over 30 m	Ordinary - Mass Timber (Unprotected)	56	2	112.0	0%	No
					% Increase*	**0%**	

Increase*	**0.0 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**5,525.0 L/min**
Fire Flow Required**	**6,000.0 L/min**

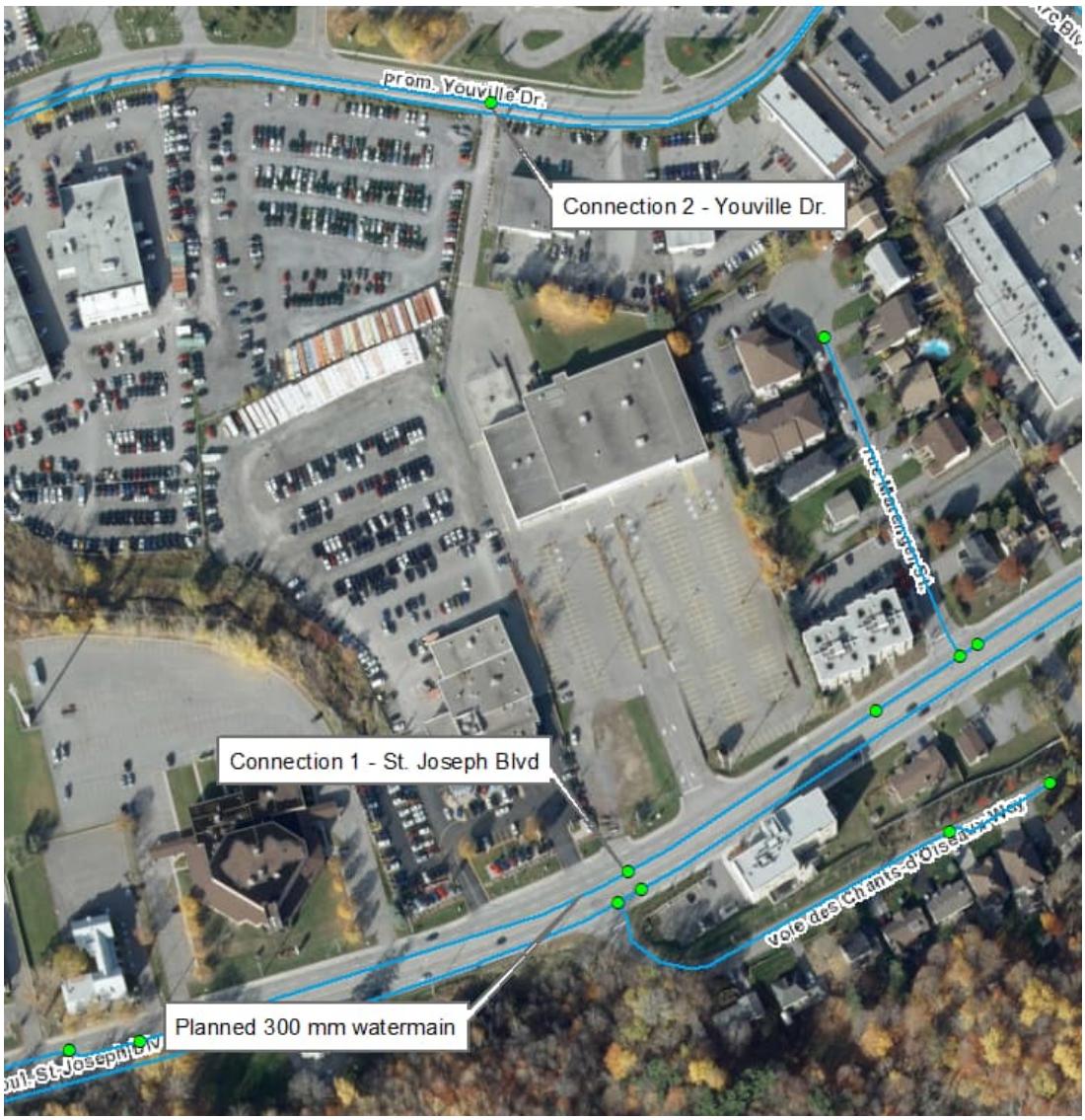
*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min
***If both the subject building and the exposed building are fully protected with automatic sprinkler systems, no Exposure Adjustment Charge should be applied

Boundary Conditions
1887 St Joseph Boulevard

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	415	6.91
Maximum Daily Demand	959	15.98
Peak Hour	2,062	34.37
Fire Flow Demand #1	6,000	100.00

Location



Results

Connection 1 – St. Joseph Blvd. (305 mm)

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	114.7	72.4
Peak Hour	110.4	66.3
Max Day plus Fire 1	110.2	66.0

[1] Ground Elevation = 63.7 m

Connection 2 – Youville Dr. (305 mm)

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	114.7	81.0
Peak Hour	110.1	74.6
Max Day plus Fire 1	112.5	77.8

[1] Ground Elevation = 57.7 m

Notes

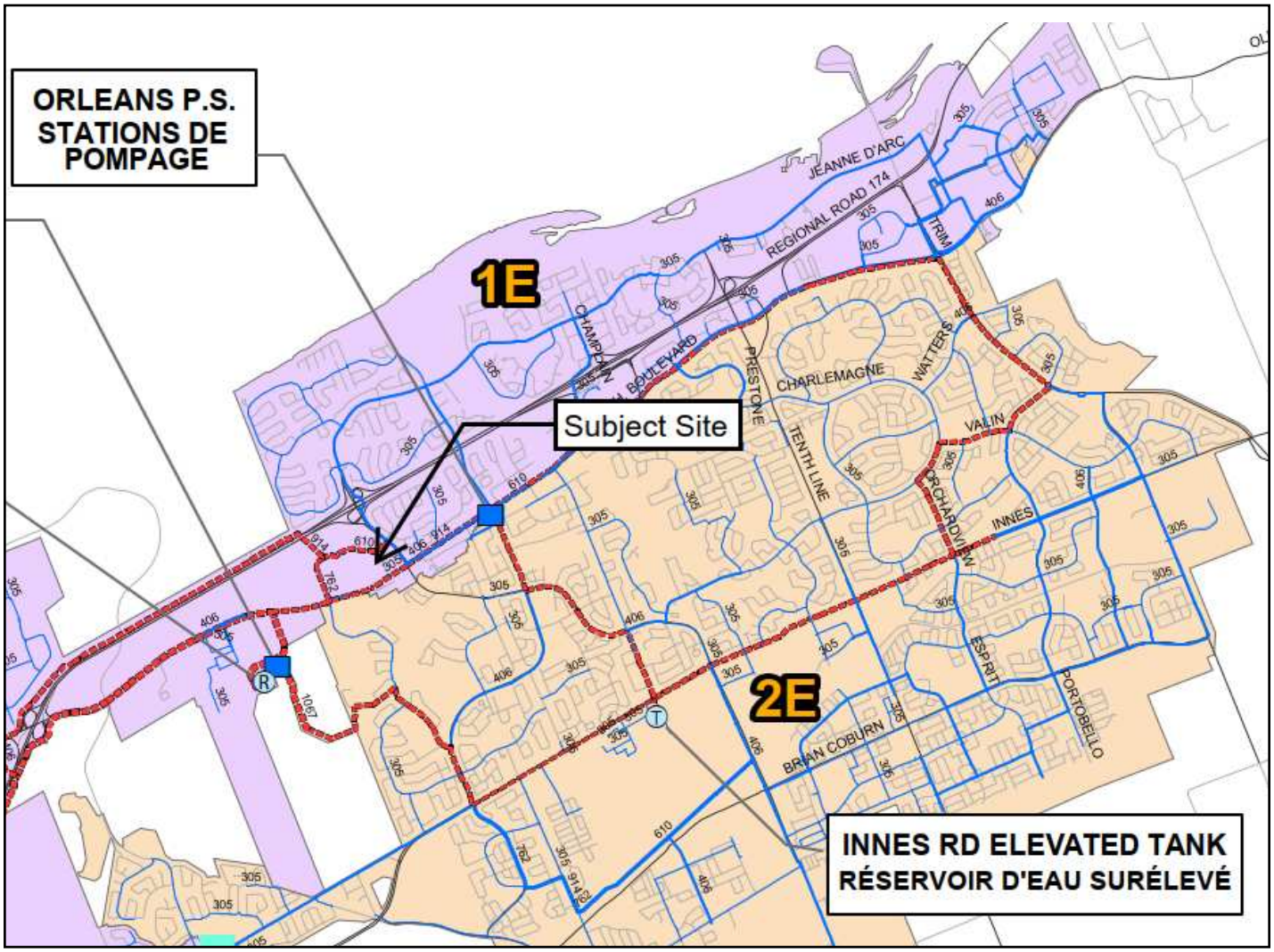
1. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
    a. If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
    b. Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

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 watermains 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. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

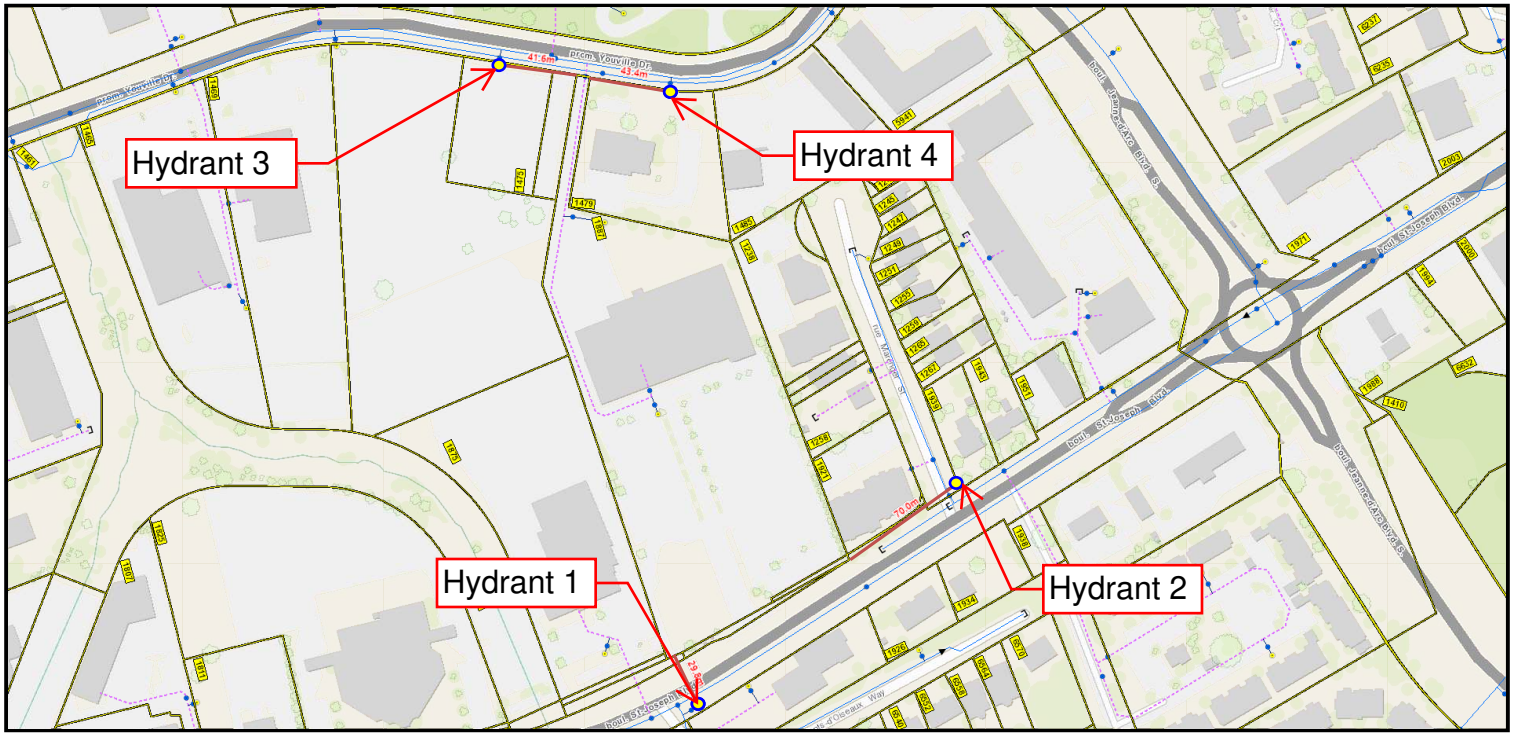
1887 St Joseph Boulevard

Pressure Zone Figure



1887 St Joseph Boulevard

Hydrant Coverage Figure



CCO-23-4118 - 1887 St Joseph Boulevard - Model Output

Project:	1887 St Joseph Boulevard
Project No.:	CCO-23-4118
Designed By:	FV
Checked By:	RF
Date:	July 13, 2023

MODEL INPUTS

Flow Units	L/s
Headloss Formula	H-W
Specific Gravity	1.0
Accuracy	0.001
Demand Multiplier	1.0
Maximum Fire Flow (L/s)	100.00
Fire Flow Per Hydrant (L/s)	83.33 - 100.00

MODEL LOSSES

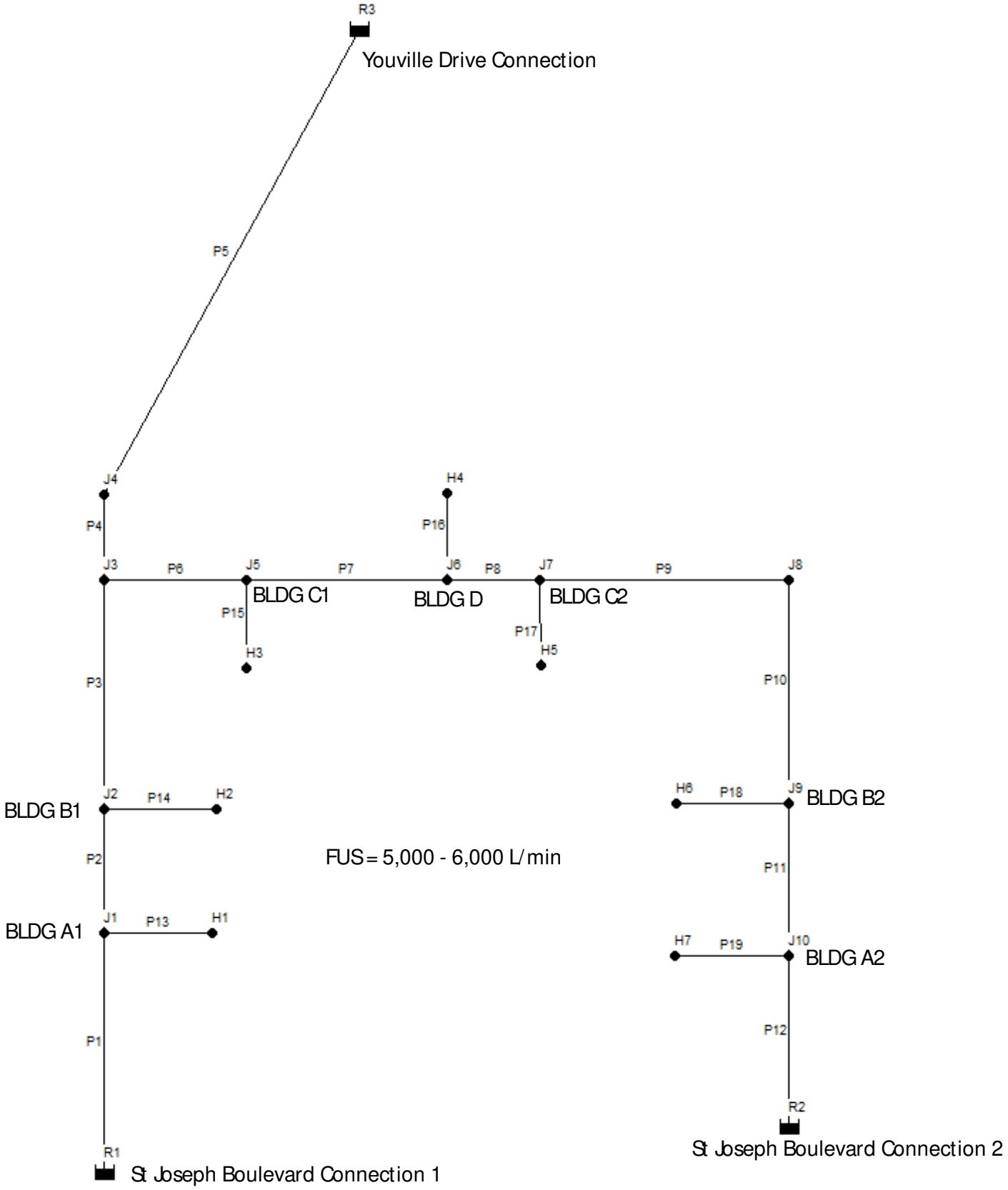
Standard Tee - Flow through run	0.6
Standard Tee - Flow through branch	1.8
45 Degree Elbow	0.4
Long Radius Elbow	0.6
Short Radius Elbow	0.9
Gate valve, fully open	0.2
Swing check valve, fully open	2.5

MODEL RESULTS

Junctions	Average Daily Demand (kPa)	Maximum Daily Demand + Fire Flow At Critical Node 'H6' (kPa)	Peak Hourly Demand (kPa)
H1	530.99	486.58	487.76
H2	548.05	503.44	503.74
H3	567.56	516.58	522.56
H4	567.46	510.21	522.46
H5	567.37	507.56	522.36
H6	547.07	345.11	502.76
H7	534.13	475.60	490.50
J1	530.99	486.58	487.76
J2	548.05	503.44	503.74
J3	570.40	525.60	525.40
J4	573.44	534.33	528.44
J5	567.56	516.58	522.56
J6	567.46	510.21	522.46
J7	567.37	507.56	522.36
J8	568.54	505.11	523.74
J9	547.07	474.03	502.76
J10	534.13	475.60	490.50

Junctions	Average Daily Demand (m)	Maximum Daily Demand + Fire Flow At Critical Node 'H6' (m)	Peak Hourly Demand (m)
H1	54.16	49.63	49.75
H2	55.90	51.35	51.38
H3	57.89	52.69	53.3
H4	57.88	52.04	53.29
H5	57.87	51.77	53.28
H6	55.80	35.20	51.28
H7	54.48	48.51	50.03
J1	54.16	49.63	49.75
J2	55.90	51.35	51.38
J3	58.18	53.61	53.59
J4	58.49	54.50	53.90
J5	57.89	52.69	53.3
J6	57.88	52.04	53.29
J7	57.87	51.77	53.28
J8	57.99	51.52	53.42
J9	55.80	48.35	51.28
J10	54.48	48.51	50.03

1887 St Joseph Boulevard - Water Model



```
*************************************************************************
*                            E P A N E T                                *
*                    Hydraulic and Water Quality                        *
*                    Analysis for Pipe Networks                         *
*                          Version 2.2                                  *
*************************************************************************
```

Input File: Average Day.net

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
P1	R1	J1	37.1	200
P2	J1	J2	71.2	200
P3	J2	J3	83.5	200
P4	J3	J4	35.12	200
P5	J4	R3	119.27	200
P7	J5	J6	35.04	200
P8	J6	J7	13.36	200
P9	J7	J8	24.18	200
P6	J3	J5	23.67	200
P10	J8	J9	74.71	200
P11	J9	J10	58.84	200
P12	J10	R2	51.03	200
P13	J1	H1	8.1	150
P14	J2	H2	7.1	150
P15	J5	H3	15.23	150
P16	J6	H4	5.73	150
P17	J7	H5	11.36	150
P18	J9	H6	11.53	150
P19	J10	H7	8.56	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality
J3	0.00	114.70	58.18	0.00
J4	0.00	114.70	58.49	0.00
J2	0.85	114.70	55.90	0.00
J1	1.10	114.70	54.16	0.00
J5	0.80	114.69	57.89	0.00
J6	1.40	114.69	57.88	0.00
J7	0.88	114.69	57.87	0.00
J8	0.00	114.69	57.99	0.00
J9	0.69	114.69	55.80	0.00
J10	1.19	114.70	54.48	0.00

H1	0.00	114.70	54.16	0.00
H2	0.00	114.70	55.90	0.00

Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
H3	0.00	114.69	57.89	0.00	
H4	0.00	114.69	57.88	0.00	
H5	0.00	114.69	57.87	0.00	
H6	0.00	114.69	55.80	0.00	
H7	0.00	114.70	54.48	0.00	
R1	-2.52	114.70	0.00	0.00	Reservoir
R3	-1.61	114.70	0.00	0.00	Reservoir
R2	-2.77	114.70	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status
P1	2.52	0.08	0.07	Open
P2	1.42	0.05	0.02	Open
P3	0.57	0.02	0.00	Open
P4	-1.61	0.05	0.03	Open
P5	-1.61	0.05	0.03	Open
P7	1.39	0.04	0.02	Open
P8	-0.01	0.00	0.00	Open
P9	-0.89	0.03	0.01	Open
P6	2.19	0.07	0.07	Open
P10	-0.89	0.03	0.01	Open
P11	-1.58	0.05	0.03	Open
P12	-2.77	0.09	0.09	Open
P13	0.00	0.00	0.00	Open
P14	0.00	0.00	0.00	Open
P15	0.00	0.00	0.00	Open
P16	0.00	0.00	0.00	Open
P17	0.00	0.00	0.00	Open
P18	0.00	0.00	0.00	Open
P19	0.00	0.00	0.00	Open

```
*************************************************************************
*                            E P A N E T                                *
*                    Hydraulic and Water Quality                        *
*                    Analysis for Pipe Networks                         *
*                          Version 2.2                                  *
*************************************************************************
```

Input File: Peak Hour.net

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
P1	R1	J1	37.1	200
P2	J1	J2	71.2	200
P3	J2	J3	83.5	200
P4	J3	J4	35.12	200
P5	J4	R3	119.27	200
P7	J5	J6	35.04	200
P8	J6	J7	13.36	200
P9	J7	J8	24.18	200
P6	J3	J5	23.67	200
P10	J8	J9	74.71	200
P11	J9	J10	58.84	200
P12	J10	R2	51.03	200
P13	J1	H1	8.1	150
P14	J2	H2	7.1	150
P15	J5	H3	15.23	150
P16	J6	H4	5.73	150
P17	J7	H5	11.36	150
P18	J9	H6	11.53	150
P19	J10	H7	8.56	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality
J3	0.00	110.11	53.59	0.00
J4	0.00	110.11	53.90	0.00
J2	4.14	110.18	51.38	0.00
J1	5.73	110.29	49.75	0.00
J5	3.94	110.10	53.30	0.00
J6	7.10	110.10	53.29	0.00
J7	4.21	110.10	53.28	0.00
J8	0.00	110.12	53.42	0.00
J9	3.29	110.17	51.28	0.00
J10	6.00	110.25	50.03	0.00

H1	0.00	110.29	49.75	0.00
H2	0.00	110.18	51.38	0.00

Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
H3	0.00	110.10	53.30	0.00	
H4	0.00	110.10	53.29	0.00	
H5	0.00	110.10	53.28	0.00	
H6	0.00	110.17	51.28	0.00	
H7	0.00	110.25	50.03	0.00	
R1	-18.97	110.40	0.00	0.00	Reservoir
R3	2.66	110.10	0.00	0.00	Reservoir
R2	-18.10	110.40	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status
P1	18.97	0.60	3.00	Open
P2	13.24	0.42	1.57	Open
P3	9.10	0.29	0.78	Open
P4	2.66	0.08	0.08	Open
P5	2.66	0.08	0.08	Open
P7	2.50	0.08	0.07	Open
P8	-4.60	0.15	0.26	Open
P9	-8.81	0.28	0.80	Open
P6	6.44	0.20	0.56	Open
P10	-8.81	0.28	0.70	Open
P11	-12.10	0.39	1.34	Open
P12	-18.10	0.58	2.93	Open
P13	0.00	0.00	0.00	Open
P14	0.00	0.00	0.00	Open
P15	0.00	0.00	0.00	Open
P16	0.00	0.00	0.00	Open
P17	0.00	0.00	0.00	Open
P18	0.00	0.00	0.00	Open
P19	0.00	0.00	0.00	Open

```
**************************************************************************
*                                EPANET                                  *
*                      Hydraulic and Water Quality                       *
*                      Analysis for Pipe Networks                        *
*                            Version 2.2                                 *
**************************************************************************
```

Input File: FUS - H6.net

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
P1	R1	J1	37.1	200
P2	J1	J2	71.2	200
P3	J2	J3	83.5	200
P4	J3	J4	35.12	200
P5	J4	R3	119.27	200
P7	J5	J6	35.04	200
P8	J6	J7	13.36	200
P9	J7	J8	24.18	200
P6	J3	J5	23.67	200
P10	J8	J9	74.71	200
P11	J9	J10	58.84	200
P12	J10	R2	51.03	200
P13	J1	H1	8.1	150
P14	J2	H2	7.1	150
P15	J5	H3	15.23	150
P16	J6	H4	5.73	150
P17	J7	H5	11.36	150
P18	J9	H6	11.53	150
P19	J10	H7	8.56	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality
J3	0.00	110.13	53.61	0.00
J4	0.00	110.71	54.50	0.00
J2	1.94	110.15	51.35	0.00
J1	2.64	110.17	49.63	0.00
J5	1.83	109.49	52.69	0.00
J6	3.29	108.85	52.04	0.00
J7	1.98	108.59	51.77	0.00
J8	0.00	108.22	51.52	0.00
J9	1.55	107.24	48.35	0.00
J10	2.78	108.73	48.51	0.00

H1	0.00	110.17	49.63	0.00
H2	0.00	110.15	51.35	0.00

Node Results: (continued)

Node ID	Demand LPS	Head m	Pressure m	Quality	
H3	0.00	109.49	52.69	0.00	
H4	0.00	108.85	52.04	0.00	
H5	0.00	108.59	51.77	0.00	
H6	100.00	94.09	35.20	0.00	
H7	0.00	108.73	48.51	0.00	
R1	-8.80	110.20	0.00	0.00	Reservoir
R3	-45.68	112.50	0.00	0.00	Reservoir
R2	-61.53	110.20	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status
P1	8.80	0.28	0.72	Open
P2	6.16	0.20	0.38	Open
P3	4.22	0.13	0.19	Open
P4	-45.68	1.45	16.63	Open
P5	-45.68	1.45	14.97	Open
P7	48.07	1.53	18.30	Open
P8	44.78	1.43	18.90	Open
P9	42.80	1.36	15.45	Open
P6	49.90	1.59	27.19	Open
P10	42.80	1.36	13.11	Open
P11	-58.75	1.87	25.38	Open
P12	-61.53	1.96	28.73	Open
P13	0.00	0.00	0.00	Open
P14	0.00	0.00	0.00	Open
P15	0.00	0.00	0.00	Open
P16	0.00	0.00	0.00	Open
P17	0.00	0.00	0.00	Open
P18	100.00	5.66	1140.38	Open
P19	0.00	0.00	0.00	Open

APPENDIX D
SANITARY CALCULATIONS

McINTOSH PERRY

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard - Sanitary Demands

Project:	1887 St Joseph Boulevard		
Project No.:	CCO-23-4118		
Designed By:	FV		
Checked By:	RF		
Date:	Nov-23		
Site Area	2.31	Gross ha	
Studio	318	1.40	Persons per unit
1 Bedroom	490	1.40	Persons per unit
2 Bedroom	231	2.10	Persons per unit
3 Bedroom	37	3.10	Persons per unit
Total Population	1731	Persons	
Commercial/Amenity	40039	m^2	

DESIGN PARAMETERS

Institutional/Commercial Peaking Factor	1	
Residential Peaking Factor	3.11	* *Using Harmon Formula =* 1+(14/(4+P^0.5))*0.8
		where P = population in thousands, Harmon's Correction Factor = 0.8
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Infiltration allowance	0.33	L/s/Ha

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.12
Wet	0.65
Total	**0.76**

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	1731	5.61
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m^2 /d)	40039.00	1.30
Hospital	900	L/(bed/day)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m^2/d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENTIAL FLOW	**5.61**	**L/s**
PEAK RESIDENTIAL FLOW	**17.43**	**L/s**
AVERAGE ICI FLOW	**1.30**	**L/s**
PEAK INSTITUTIONAL/COMMERCIAL FLOW	**1.30**	**L/s**
PEAK INDUSTRIAL FLOW	**0.00**	**L/s**
TOTAL PEAK ICI FLOW	**1.30**	**L/s**

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	**7.02**	**L/s**
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	**18.84**	**L/s**
TOTAL ESTIMATED PEAK WET WEATHER FLOW	**19.49**	**L/s**

SANITARY SEWER DESIGN SHEET

PROJECT: Mixed Use Development
LOCATION: 1887 St Joseph Boulevard
CLIENT: SDLP 1887 ORLEANS LIMITED

McINTOSH PERRY

LOCATION				RESIDENTIAL									ICI AREAS							INFILTRATION ALLOWANCE			FLOW	SEWER DATA						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
STREET	AREA ID	FROM MH	TO MH	UNIT TYPES				AREA (ha)	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)						PEAK FLOW (L/s)	AREA (ha)		FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY	
				SF	1-BED & STUDIO	2-BED	3-BED		IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL			IND	CUM								L/s	(%)
													IND	CUM	IND	CUM	IND	CUM											
Contemplated Future Public Road	200 - BLDG A1	SANMH200	SANMH201		151	44		0.52	304	304	3.46	3.41		0.00	0.36	0.36		0.00	0.12	0.52	0.52	0.17	3.70	108.70	61	250	3.07	2.145	105.00	96.60
	201 - BLDG B1	SANMH201	SANMH205-1		94	32	1	0.42	202	506	3.38	5.53		0.00	0.62	0.97		0.00	0.32	0.42	0.95	0.31	6.16	112.01	89	250	3.26	2.211	105.85	94.50
Contemplated Private Road	202 - BLDG A2	SANMH202	SANMH203		142	36	10	0.28	305	305	3.46	3.42		0.00	0.60	0.60		0.00	0.20	0.28	0.28	0.09	3.71	111.50	52	250	3.23	2.200	107.79	96.67
	203 - BLDG B2	SANMH203	SANMH204		49	30	8	0.26	156	462	3.39	5.08		0.00	0.56	1.17		0.00	0.38	0.26	0.54	0.18	5.63	95.91	77	250	2.39	1.893	90.28	94.13
	204 - BLDG C1,C2,D	SANMH204	SANMH205-1		372	89	18	0.82	764	1225	3.19	12.68		0.00	1.86	3.03		0.00	0.98	0.82	1.36	0.45	14.11	62.04	96	250	1.00	1.224	47.93	77.26
Contemplated Future Public Road	205	SANMH205-1	SANMH205-2					0.23		1731	3.11	17.43		0.00		4.00		0.00	1.30	0.23	2.54	0.84	19.56	65.95	35	250	1.13	1.302	46.38	70.33
	205	SANMH205-2	SANMH205-3							1731	3.11	17.43		0.00		4.00		0.00	1.30	0.00	2.54	0.84	19.56	65.95	105	250	1.13	1.302	46.38	70.33
	205	SANMH205-3	EX. 525mm							1731	3.11	17.43		0.00		4.00		0.00	1.30	0.00	2.54	0.84	19.56	65.95	15	250	1.13	1.302	46.38	70.33

Design Parameters:

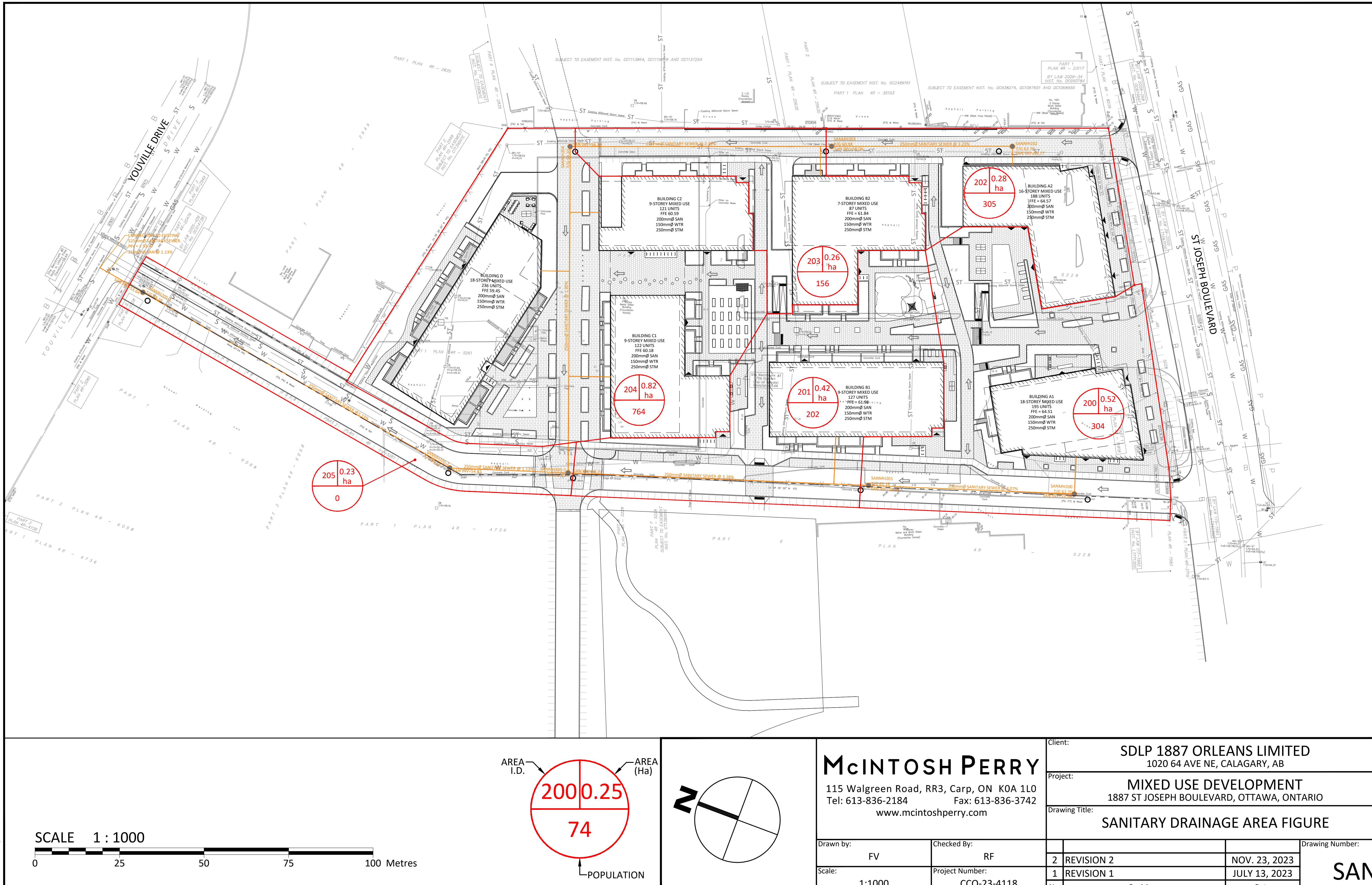
Residential			ICI Areas			
1-BED	1.4	p/p/u				Peak Factor
2-BED	2.1	p/p/u	INST	28,000	L/Ha/day	1.0
3-BED	3.1	p/p/u	COM	28,000	L/Ha/day	1.0
Other	60	p/p/Ha	IND	35,000	L/Ha/day	MOE Chart

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
   Harmon Formula = 1+(14/(4+P^0.5)*0.8)
   where P = population in thousands

Designed: FV
Checked: RF
Project No.: CCO-23-4118

No.	Revision	Date
1.	Conceptual Servicing	2023.07.13
2.	Revised Per City Comments	2023.11.23

Sheet No: 1 of 1



McINTOSH PERRY

115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

Client: SDLP 1887 ORLEANS LIMITED
1020 64 AVE NE, CALAGARY, AB

Project: MIXED USE DEVELOPMENT
1887 ST JOSEPH BOULEVARD, OTTAWA, ONTARIO

Drawing Title: SANITARY DRAINAGE AREA FIGURE

Drawn by:	Checked By:
FV	RF
Scale: 1:1000	Project Number: CCO-23-4118

No.	Revisions	Date
2	REVISION 2	NOV. 23, 2023
1	REVISION 1	JULY 13, 2023

Drawing Number: SAN

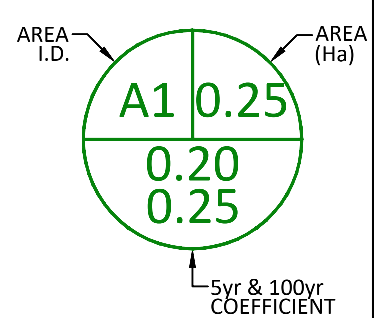
FILENAME: U:\Infrastructure\2023\CCO-23-4118 SDLP 1887 Orleans Limited - 1887 Joseph Blvd\12 - Drawings\CCO-23-4118_Presentation.dwg
LAST SAVED: Thursday, November 23, 2023 LAST SAVED BY: F.Valenti
LAST PLOTTED: Thursday, November 23, 2023 CTB FILE USED: ----

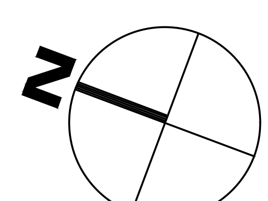
APPENDIX E
PRE-DEVELOPMENT DRAINAGE FIGURE

McINTOSH PERRY

SCALE 1 : 1000

0 25 50 75 100 Metres





McINTOSH PERRY

115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

Client: SDLP 1887 ORLEANS LIMITED
1020 64 AVE NE, CALAGARY, AB

Project: MIXED USE DEVELOPMENT
1887 ST JOSEPH BOULEVARD, OTTAWA, ONTARIO

Drawing Title: PRE-DEVELOPMENT DRAINAGE AREA FIGURE

Drawn by:	Checked By:
FV	RF
Scale: 1:1000	Project Number: CCO-23-4118

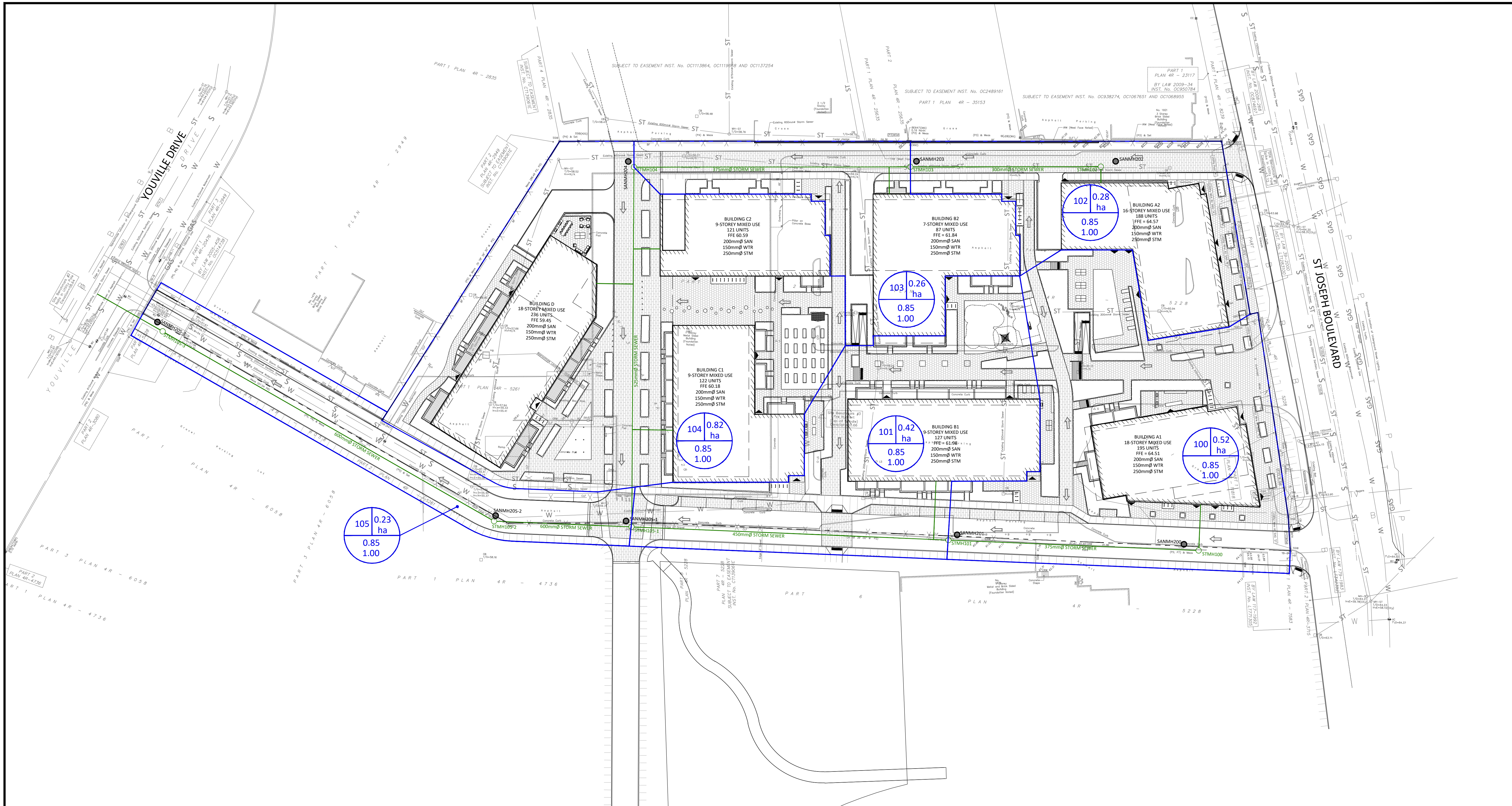
No.	Revisions	Date
2		
1	REVISION 1	JULY 13, 2023

Drawing Number: PRE

FILENAME: U:\Infrastructure\2023\CCO-23-4118 SDLP 1887 Orleans Limited - 1887 Joseph Blvd\12 - Drawings\CCO-23-4118_Presentation.dwg
LAST SAVED: Thursday, July 13, 2023 LAST SAVED BY: F.Valenti
LAST PLOTTED: Thursday, July 13, 2023 CTB FILE USED: ---

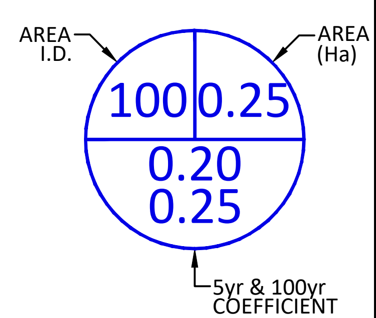
APPENDIX F
POST-DEVELOPMENT DRAINAGE FIGURE

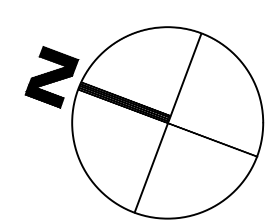
McINTOSH PERRY



SCALE 1 : 1000

0 25 50 75 100 Metres





McINTOSH PERRY

115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

Drawn by: FV	Checked By: RF
Scale: 1:1000	Project Number: CCO-23-4118

Client: SDLP 1887 ORLEANS LIMITED
1020 64 AVE NE, CALAGARY, AB

Project: MIXED USE DEVELOPMENT
1887 ST JOSEPH BOULEVARD, OTTAWA, ONTARIO

Drawing Title: POST-DEVELOPMENT DRAINAGE AREA FIGURE

No.	Revisions	Date
2		
1	REVISION 1	JULY 13, 2023

Drawing Number: POST

FILENAME: U:\Infrastructure\2023\CCO-23-4118 SDLP 1887 Orleans Limited - 1887 Joseph Blvd\12 - Drawings\CCO-23-4118_Presentation.dwg
LAST SAVED: Friday, July 14, 2023 LAST SAVED BY: F.Valenti
LAST PLOTTED: Friday, July 14, 2023 CTB FILE USED: ----

APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

CCO-23-4118 - 1887 St Joseph Boulevard

Tc (min)	Intensity (mm/hr)	
	5-Year	100-Year
20	70.3	120.0
10	104.2	178.6

C-Values	
Impervious	0.90
Gravel	0.60
Pervious	0.20

Pre-Development Runoff Coefficient

Drainage Area	Impervious Area (m^2)	Gravel (m^2)	Pervious Area (m^2)	Average C (5-year)	Average C (100-year)
A1	19,147	0	3,945	0.78	0.87

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	Q (L/s)	
					5-Year	100-Year
A1	2.31	0.78	0.87	10	522.01	999.42
Total	2.31				522.01	999.42

Post-Development Runoff Coefficient

Drainage Area	Impervious Area (m^2)	Gravel (m^2)	Pervious Area (m^2)	Average C (5-year)	Average C (100-year)	
B1	2,150	0	159	0.85	0.95	Unrestricted
B2	19,500	0	1,283	0.86	0.95	Restricted

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	Q (L/s)		
					5-Year	100-Year	
B1	0.23	0.85	0.95	10	56.97	108.70	Unrestricted
B2	2.08	0.86	0.95	10	515.78	983.89	Restricted
Total	2.31				572.75	1092.59	

Required Restricted Flow

Drainage Area	Area (ha)	C 5-Year	Tc (min)	Q (L/s)
				5-Year
A1	2.31	0.50	10	334.44

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/S)		Restricted Flow (L/S)		Storage Required (m^3)		Storage Provided (m^3)	
	5-year	100-Year	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year
B1	56.97	108.70	56.97	108.70				
B2	515.78	983.89	202.76	225.74	187.8	522.6		
Total	572.75	1092.59	259.73	334.44	187.8	522.6		

CCO-23-4118 - 1887 St Joseph Boulevard

Storage Requirements for Area B2

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B2	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	515.82	202.76	313.06	187.83
20	70.3	348.00	202.76	145.24	174.29
30	53.9	266.82	202.76	64.06	115.31
40	44.2	218.80	202.76	16.04	38.50

Maximum Storage Required 5-year =	188	m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B2	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	984.12	225.74	758.38	455.03
20	120.0	661.22	225.74	435.48	522.57
30	91.9	506.39	225.74	280.64	505.16
40	75.1	413.81	225.74	188.07	451.37
50	64.0	352.65	225.74	126.91	380.73
60	55.9	308.02	225.74	82.28	296.19
70	49.8	274.41	225.74	48.66	204.39
80	45.0	247.96	225.74	22.21	106.63
90	41.1	226.47	225.74	0.73	3.92

Maximum Storage Required 100-year =	523	m^3

5-Year Storm Event Storage Summary

Storage Required (m^3) = 187.8

100-Year Storm Event Storage Summary

Storage Required (m^3) = 522.6

STORM SEWER DESIGN SHEET

PROJECT: CCO-23-4118
LOCATION: 1887 St Joseph Boulevard
CLIENT: SDLP 1887 ORLEANS LIMITED

McINTOSH PERRY

LOCATION				CONTRIBUTING AREA (ha)				RATIONAL DESIGN FLOW								SEWER DATA								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	19	20	21	22	23	24	25	26	27	28
STREET	AREA ID	FROM MH	TO MH	C-VALUE	AREA	INDIV AC	CUMUL AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	5yr PEAK FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm)			SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (5yr)	
																		DIA	W	H			(L/s)	(%)
Contemplated Future Public Road	100	STMH100	STMH101	0.85	0.52	0.44	0.44	10.00	0.42	10.42	104.19	122.14	178.56	128.63	128.63	304.97	67	375			2.78	2.675	176.35	57.82%
	101	STMH101	STMH105-1	0.85	0.42	0.36	0.81	10.42	0.43	10.84	102.04	119.60	174.83	228.41	228.41	546.02	85	450			3.37	3.326	317.61	58.17%
Contemplated Private Road	102	STMH102	STMH103	0.85	0.28	0.24	0.24	10.00	0.33	10.33	104.19	122.14	178.56	68.12	68.12	185.74	51	300			3.39	2.546	117.62	63.32%
	103	STMH103	STMH104	0.85	0.26	0.22	0.46	10.33	0.49	10.82	102.46	120.10	175.56	129.93	129.93	288.63	74	375			2.49	2.532	158.70	54.98%
	104	STMH104	STMH105-1	0.85	0.82	0.70	1.16	10.82	0.81	11.63	100.05	117.26	171.39	321.29	321.29	448.66	97	525			1.00	2.008	127.36	28.39%
Contemplated Future Public Road	105	STMH105-1	STMH105-2	0.85	0.23	0.20	2.16	11.63	0.28	11.91	96.32	112.87	164.94	577.61	577.61	640.56	37	600			1.00	2.195	62.95	9.83%
	105	STMH105-2	STMH105-3			0.00	2.16	11.91	0.77	12.68	95.09	111.43	162.82	570.24	570.24	640.56	102	600			1.00	2.195	70.32	10.98%
	105	STMH105-3	EX. 1050mm			0.00	2.16	12.68	0.15	12.83	91.88	107.64	157.27	550.97	550.97	640.56	20	600			1.00	2.195	89.59	13.99%

Definitions:
Q = 2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) = 0.013

Designed:
FV

Checked:
RF

Project No.:
CCO-23-4118

No.	Revision	Date
1.	Conceptual Servicing	2023.07.13
2.	Revised Per City Comments	2023.11.23

Date: 2023.10.19

Sheet No: 1 of 1

APPENDIX H
CITY OF OTTAWA DESIGN CHECKLIST

McINTOSH PERRY

City of Ottawa

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

Criteria	Location (if applicable)
☐ Executive Summary (for larger reports only).	N/A
☐ Date and revision number of the report.	On Cover
☐ Location map and plan showing municipal address, boundary, and layout of proposed development.	Appendix A
☐ Plan showing the site and location of all existing services.	Conceptual Servicing Figure (C102)
☐ 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.	1.1 Purpose 1.2 Site Description 6.0 Stormwater Management
☐ Summary of pre-consultation meetings with City and other approval agencies.	Appendix B
☐ 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 defendable design criteria.	1.1 Purpose 1.2 Site Description 6.0 Stormwater Management
☐ Statement of objectives and servicing criteria.	3.0 Pre-Consultation Summary

☐ Identification of existing and proposed infrastructure available in the immediate area.	N/A
☐ 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).	Conceptual Grading Figure (C101)
☐ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management 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.	Conceptual Grading Figure (C101)
☐ 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.	N/A
☐ Proposed phasing of the development, if applicable.	N/A
☐ Reference to geotechnical studies and recommendations concerning servicing.	Section 2.0 Background Studies, Standards and References
☐ All preliminary and formal site plan submissions should have the following information: o Metric scale o North arrow (including construction North) o Key plan o Name and contact information of applicant and property owner o Property limits including bearings and dimensions o Existing and proposed structures and parking areas o Easements, road widening and rights-of-way o Adjacent street names	Conceptual Grading Figure (C101)

4.2 Development Servicing Report: Water

Criteria	Location (if applicable)
☐ Confirm consistency with Master Servicing Study, if available	N/A
☐ Availability of public infrastructure to service proposed development	N/A
☐ Identification of system constraints	N/A
☐ Identify boundary conditions	Appendix C
☐ Confirmation of adequate domestic supply and pressure	N/A
☐ 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 at locations throughout the development.	Appendix C
☐ 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.	N/A
☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☐ Address reliability requirements such as appropriate location of shut-off valves	N/A
☐ Check on the necessity of a pressure zone boundary modification.	N/A
☐ 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	Appendix C, Section 4.2

☐ Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Conceptual Servicing Figure (C102)
☐ Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☐ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Appendix C
☐ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

Criteria	Location (if applicable)
☐ Summary of proposed design criteria (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).	N/A
☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☐ 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 condition of sewers.	N/A
☐ Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 5.2 Contemplated Sanitary Sewer

☐ 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)	Section 4.2 Contemplated Sanitary Design
☐ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	N/A
☐ Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2 Contemplated Sanitary Design
☐ 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).	N/A
☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐ Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

Criteria	Location (if applicable)
☐ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.0 Storm Sewer Design & Section 6.0 Stormwater Management
☐ Analysis of available capacity in existing public infrastructure.	N/A
☐ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Pre & Post-Development Figures
☐ Water quantity 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.	Section 5.0 Storm Sewer Design & Section 6.0 Stormwater Management
☐ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.0 Storm Sewer Design & Section 6.0 Stormwater Management
☐ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 5.0 Storm Sewer Design & Section 6.0 Stormwater Management
☐ Set-back from private sewage disposal systems.	N/A
☐ Watercourse and hazard lands setbacks.	N/A
☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	N/A
☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☐ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5-year return period) and major events (1:100-year return period).	Appendix G

☐ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Conceptual Grading Figure (C101)
☐ 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.	Section 6.0 Stormwater Management Appendix G
☐ Any proposed diversion of drainage catchment areas from one outlet to another.	Section 5.0 Storm Sewer Design & Section 6.0 Stormwater Management
☐ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 5.0 Storm Sewer Design & Section 6.0 Stormwater Management
☐ 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.	N/A
☐ Identification of potential impacts to receiving watercourses	N/A
☐ Identification of municipal drains and related approval requirements.	N/A
☐ Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.0 Storm Sewer Design & Section 6.0 Stormwater Management
☐ 100-year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Conceptual Grading Figure (C101)
☐ Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A

☐ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	N/A
☐ Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
☐ Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 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:

Criteria	Location (if applicable)
☐ 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 the 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.	N/A
☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐ Changes to Municipal Drains.	N/A
☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

4.6 Conclusion Checklist

Criteria	Location (if applicable)
☐ Clearly stated conclusions and recommendations	Section 7.0 Summary Section 8.0 Recommendations
☐ 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 are stamped
☐ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	All are stamped