SERVICING & STORMWATER MANAGEMENT REPORT
16 EDGEWATER STREET, OTTAWA

Project No.: CCO-22-0244

City File No.: D07-12-21-0176

Prepared for:

Park River Properties
206-900 Boulevard de la Carriere
Gatineau, Quebec J8Y 6T5

Prepared by:

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

July 29, 2022

McINTOSH PERRY

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1.0 PROJECT DESCRIPTION

1.1 Purpose

McIntosh Perry (MP) has been retained by Park River Properties to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control and Zoning By-Law Amendment application processes for the proposed development located at 16 Edgewater Street within the City of Ottawa.

The main purpose of this report is to present a servicing and stormwater management design for the development in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Mississippi Valley Conservation Authority (MVCA), and the Ministry of the Environment, Conservation and Parks (MECP). This report will address the water, sanitary and storm sewer servicing for the development, ensuring that existing and available services will adequately service the proposed development.

This report should be read in conjunction with the following drawings:

- CCO-22-0244, C101 – Grading & Sediment and Erosion Control Plan
- CCO-22-0244, C102 – Servicing Plan
- CCO-22-0244, PRE – Pre-Development Drainage Area Plan (Appendix E)
- CCO-22-0244, POST – Post-Development Drainage Area Plan (Appendix F)

1.2 Site Description

Figure 1: Site Map

The subject property, herein referred to as the site, is located at 16 Edgewater Street within the Kanata South Ward. The site covers approximately 0.62 ha and is located north of the Hazeldean Road and Edgewater Street intersection. The site is zoned for General Industrial use (IG). See Site Location Plan in Appendix A for more details.

1.3 Proposed Development and Statistics

The proposed development consists of a 10-storey mixed-use residential and commercial building and three townhome blocks. Combined, the buildings will contain 176 residential units and 767 m^2 of commercial space. Drive aisles and aboveground, and underground parking will be provided with access from Edgewater Street. Refer to Site Plan prepared by CSV Architects and included in Appendix B for further details.

1.4 Existing Conditions and Infrastructures

The site is currently undeveloped with grass swales and currently slopes from the northeast to southwest corner of the site. Edgewater Street contains a roadside ditch system, sloping towards Hazeldean Road.

Sewer and watermain mapping collected from the City of Ottawa indicate that the following services exist across the property frontages within the adjacent municipal rights-of-way(s):

- Edgewater Street
  - 406 mm diameter ductile iron watermain,
  - 300 mm diameter PVC sanitary sewer tributary to the South Glen Cairn collector sewer, and
  - A roadside stormwater drainage system tributary to the Carp River approximately 640 m downstream.

1.5 Approvals

The proposed development is subject to the City of Ottawa site plan control and zoning by-law amendment approval processes. Site plan control requires the City to review, provided concurrence and approve the engineering design package. Permits to construct can be requested 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 development since the development is contained within a single parcel of land, is not within a combined sewershed, and does not propose industrial sewage. As a result, the stormwater management system meets the exemption requirements under O. Reg 525/90.

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 proposed site were reviewed in order to identify infrastructure available to service the proposed development.

A topographic survey (22-0289) of the site was completed by McIntosh Perry Surveying Inc and dated May 11th, 2021.

The Site Plan (A.100) was prepared by CSV Architects and dated June 7th, 2022 (Site Plan).

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-2018-03 City of Ottawa, March 2018. (ISTB-2018-03)
  - Technical Bulletin ISTB-2019-01 City of Ottawa, January 2019. (ISTB-2019-01)
  - 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)

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 PRE-CONSULTATION SUMMARY

A pre-consultation meeting was held with City staff on November 18th, 2020, regarding the proposed site servicing. Specific design parameters to be incorporated within this design include the following:

- Pre-development and post-development flows shall be calculated using a time of concentration (Tc) of 10 minutes or greater.
- Control 5 through 100-year post-development flows to the calculated pre-development flows.
- Quality controls up to an enhanced level of protection are required based on direction from the MVCA.

4.0 WATERMAIN

4.1 Existing Watermain

There is an existing 406 mm diameter PVC watermain within Edgewater Street. The site is located within the 3W pressure zone, as per the Water Distribution System mapping included in Appendix C. There are four municipal fire hydrants along Edgewater Street available to service the development.

4.2 Proposed 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. As a result, a dual connection to the existing 406 mm diameter PVC watermain within Edgewater Street will be required. A new water valve to the 406 mm diameter watermain is proposed to provide a redundant connection.

It is proposed to connect two 150 mm diameter water services with water valves located at the property line. The watermain is designed to have a minimum of 2.4 m cover, expect for the roadside ditch crossing where the cover will be limited to 1.2 m. Refer to drawing C102 for a detailed servicing layout.

The Fire Underwriters Survey 2020 (FUS) method was utilized to estimate the required fire flow for the site. The following parameters were coordinated with the architect.

- Type of construction – Non-Combustible Construction for Building A and Wood Frame Construction for Buildings B-D
- Occupancy Type – Limited Combustibility for Building A and Combustible for Buildings B-D
- Sprinkler Protection – Supervised Sprinkler System for Building A and no Sprinkler System for Buildings B-D

The results of the calculations yielded a maximum fire flow of 14,000 L/min (233.3 L/s). The detailed calculations for the FUS can be found in Appendix C.

The water demands for the proposed building have been calculated to adhere to the 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

Site Area	0.62 ha
Commercial	28,000 L/gross ha /day
Maximum Daily Peaking Factor – Comm	1.5 x avg day
Maximum Hour Peaking Factor – Comm	1.8 x max day
Residential	280 L/person/day
Bachelor Apartment	1.4 persons/unit
1 Bedroom Apartment	1.4 persons/unit
2 Bedroom Apartment or 1 Bedroom +	2.1 persons/unit
3 Bedroom Apartment or 2 Bedroom +	3.1 persons/unit
Townhome	2.7 persons/unit
Maximum Daily Peaking Factor – Res	3.0 x avg day
Maximum Hour Peaking Factor – Res	4.5 x max day
Average Day Demand (L/s)	1.30
Maximum Daily Demand (L/s)	3.86
Peak Hourly Demand (L/s)	5.80
FUS Fire Flow Requirement (L/s)	116.7 (7,000 L/min) – Building A 200 (12,000 L/min) – Building B 233.3 (14,000 L/min) – Building C 166.7 (10,000 L/min) – Building D

The City provided the estimated water pressures at both for the average day scenario, peak hour scenario, and the max day plus fire flow scenario for the demands indicated by the correspondence in Appendix C. The resulting pressures for the boundary conditions results are shown in Table 2, below.

Table 2: Boundary Conditions Results

Scenario	Proposed Demands (L/s)	HGL (m H_2O)*/kPa
Average Day Demand	1.30	61.9 / 607.2
Maximum Daily + Fire Flow Demand (166.7 L/s or 10,000 L/min)	3.86 + 166.7	80.5 / 555.2
Maximum Daily + Fire Flow Demand (250 L/s or 15,000 L/min)	3.86 + 250	78.7 / 542.5
Peak Hourly Demand	5.80	81.4 / 561.1
*Adjusted for an estimated ground elevation of 101.9m above the connection point for connection.		

The normal operating pressure range is anticipated to be 561.1 kPa to 607.2 kPa and will not be less than 275 kPa (40 psi) or exceed 689 kPa (100 psi). The proposed watermains will meet the minimum required 20 psi (140 kPa) from the Ottawa Water Guidelines at the ground level under maximum day demand and fire flow conditions.

To confirm the adequacy of fire flow to protect the proposed development, public fire hydrants within 150 m of the proposed building were analysed per City of Ottawa ISTB 2018-02 Appendix I Table 1. Based on City guidelines (ISTB-2018-02), the existing hydrants can provide adequate fire protection to the proposed development. The results are summarized 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.)
16 Edgewater St	7,000-14,000	1 (FH#1)	3 (FH#2, FH#3, FH#4)	16,500

5.0 SANITARY DESIGN

5.1 Existing Sanitary Sewer

There is an existing 300 mm diameter sanitary sewer within Edgewater Street, fronting the subject site. The subject site currently contributes wastewater to the Edgewater Street sewer system tributary to the South Glen Cairn trunk sewer.

5.2 Proposed Sanitary Sewer

A new 200 mm diameter gravity sanitary service will be connected to the existing 300 mm diameter sanitary sewer. Refer to drawing C102 for a detailed servicing layout.

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

Table 4: Sanitary Design Criteria

Design Parameter	Value
Site Area	0.62 ha
Commercial	2.8 L/m2/day
Commercial Peaking Factor	1.0
Residential	280 L/person/day
Bachelor Apartment	1.4 persons/unit
1 Bedroom Apartment	1.4 persons/unit
2 Bedroom Apartment or 1 Bedroom +	2.1 persons/unit
3 Bedroom Apartment or 2 Bedroom +	3.1 persons/unit
Townhome	2.7 persons/unit
Residential Peaking Factor	3.42
Extraneous Flow Allowance	0.33 L/s/ha

Table 5, below, summarizes the estimated wastewater flow from the proposed development. Refer to Appendix D for detailed calculations.

Table 5: Summary of Estimated Sanitary Flow

Design Parameter	Total Flow (L/s)
Total Estimated Average Dry Weather Flow	1.33
Total Estimated Peak Dry Weather Flow	4.41
Total Estimated Peak Wet Weather Flow	4.59

As noted above, the development is proposed to be serviced via the existing 300 mm diameter sanitary sewer within Edgewater Street. Based on coordination with City staff, the municipal infrastructure has capacity to accommodate the development. Refer to Appendix D for correspondence.

The full flowing capacity of a 200 mm diameter service at a 1% slope is estimated to be 34.2 L/s. Per Table 4, a peak wet weather flow of 4.59 L/s will be conveyed within the 200 mm diameter service, therefore the proposed system is sufficient sized for the development.

6.0 STORM SEWER DESIGN

6.1 Existing Storm Sewers

Stormwater runoff from the site is currently tributary to the Carp River approximately 640 m downstream. There is an existing roadside ditch system along Edgewater Street. Edgewater Street drainage is collected by the existing 450 mm diameter storm sewer with Hazeldean Road, northeast of the Edgewater Street intersection.

6.2 Proposed Storm Sewers

A 250 mm diameter perforated subdrain system is proposed to run along the north, east, and south property limits. External drainage, as well as side yard drainage, will be directed towards Edgewater Street without flow attenuation. See CCO-22-0244 - POST included in Appendix F and CCO-22-0244 – PRE included in Appendix E of this report for more details. The Stormwater Management design for the subject property will be further outlined in Section 7.0 of this report.

A new 250 mm diameter storm service is proposed to be extended from the existing roadside ditch system along Edgewater Street. The sewer system will provide flow attenuation for the walkways, drive aisles, and rear parking lot (Area B6) by an internal cistern storage unit. Storage unit details to be provided by building designers.

Runoff collected on the roof of the proposed buildings (Area B1, B2, B5, and B7) will be stored and controlled internally using roof drains. Roof drains will be used to limit the flow from the roof to the specified allowable release rate. For calculation purposes a Watts Accutrol roof drain was used estimate a reasonable roof flow. Other products maybe specified at detailed building design so long as release rates and storage volumes are respected. Drainage from the roof will be directed to the existing roadside ditch system.

Foundation drainage is proposed to be conveyed without flow attenuation via a 250 mm storm service discharging runoff to the roadside ditch system.

7.0 PROPOSED STORMWATER MANAGEMENT

7.1 Design Criteria and Methodology

Stormwater management for the proposed site will be maintained through two methods. The first will store and control runoff collected on the rooves of the proposed buildings. It is estimated that fifteen Watts Accutrol Weirs (combined) will be used to control the release rate of the stormwater. The second will control stormwater via an internal cistern storage unit and will collect runoff from the at-grade areas within the site. The flow will be directed to the existing roadside drainage ditch system along Edgewater Street.

In summary, the following design criteria have been employed in developing the stormwater management design for the site as directed by the City:

Quality Control

- Quality controls are required based on correspondence with the MVCA.

Quantity Control

- Pre-development and post-development flows shall be calculated using a time of concentration (Tc) of 10 minutes or greater.
- Control 5 through 100-year post-development flows to the calculated pre-development flows. Refer to Section 7.2 for further details.

7.2 Runoff Calculations

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

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

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
Undeveloped and Grass	0.20

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

7.3 Pre-Development Drainage

It has been assumed that the existing development contained no stormwater management controls for flow attenuation. The estimated pre-development peak flows for the 2, 5, and 100-year events are summarized below in Table 6. See CCO-22-0244 - PRE in Appendix E and Appendix G for calculations.

Table 6: Pre-Development Runoff Summary

Drainage Area	Area (ha)	Q (L/s)	
		5-Year	100-Year
A2	0.624	24.38	52.03

7.4 Post-Development Drainage

To meet the stormwater objectives the development will contain a combination of flow attenuation with rooftop controls and internal cistern storage.

Based on the criteria listed in Section 7.2.1, the development will be required to restrict flow to the pre-development flow rates identified in Table 6, above. See Appendix G for calculations.

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan. See CCO-22-0244 - POST in Appendix F of this report for more details. A summary of the post-development runoff calculations can be found below.

Table 7: Post-Development Runoff Summary

Drainage Area	Area (ha)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)	100-year Storage Required (m^3)	100-year Storage Available (m^3)
B1	0.040	1.14	2.07	15.37	16.69
B2	0.041	1.14	2.07	15.51	16.80
B3	0.125	9.21	19.13	-	-
B4	0.015	3.02	5.81	-	-
B5	0.135	3.08	5.32	56.18	60.60
B6	0.234	5.58	15.56	65.17	65.17
B7	0.035	1.14	2.07	12.39	14.28
Total	0.624	24.31	52.03	164.63	173.55

Runoff for area B1 will be stored on the roof of the proposed building and restricted using three Watts Accutrol roof drains (or equivalent product) to a maximum release rate of 2.07 L/s and will provide up to 16.7 m^3 of storage.

Runoff for area B2 will be stored on the roof of the proposed building and restricted using three Watts Accutrol roof drains (or equivalent product) to a maximum release rate of 2.07 L/s and will provide up to 16.8 m^3 of storage.

A 250 mm diameter perforated subdrain system is proposed to run along the north, east, and south property limits. Rear yard (Area B3) and front yard (Area B4) drainage will be directed towards Edgewater Street without flow attenuation. Areas B3 and B4 will contribute up to 24.94 L/s.

Runoff for area B5 will be stored on the roof of the proposed building and restricted using seven Watts Accutrol roof drains (or equivalent product) to a maximum release rate of 5.32 L/s and will provide up to 60.6 m^3 of storage.

Runoff for area B6 will be restricted inside the parking garage before discharging to the existing roadside ditch system. The flow will be controlled by a 65.2 m^3 internal cistern storage unit. Cistern and pump details to be provided by the building designers. Drainage from Area B6 will be controlled to a maximum release rate of 15.6 L/s.

Runoff for area B7 will be stored on the roof of the proposed building and restricted using three Watts Accutrol roof drains (or equivalent product) to a maximum release rate of 2.07 L/s and will provide up to 14.3 m^3 of storage.

Foundation drainage is proposed to be conveyed without flow attenuation via a 250 mm storm service discharging runoff to the roadside ditch system.

The following measures are being incorporated to provide quality controls for the development:

- Water collected within drive aisles and surface parking lots will drain inside the building towards the internal cistern. Water will then flow from the cistern to the Edgewater ditch system per existing conditions. Pump requirements to be confirmed by the mechanical engineer.
- A CB Shield has been added to a structure on the storm outlet to provide a level of treatment for water leaving the cistern, which will be diluted by the clean roof drainage.
- Water collected in the perimeter swale and subdrain system is considered clean and therefore no treatment is expected to be required.

8.0 EROSION AND SEDIMENT CONTROL

8.1 Temporary Measures

Before construction begins, temporary silt fence, straw bale or rock flow check dams will be installed at all-natural runoff outlets from the property. It is crucial that these controls be maintained throughout construction and inspection of sediment and erosion control will be facilitated by the Contractor or Contract Administration staff throughout the construction period.

Silt fences will be installed where shown on the final engineering plans, specifically along the downstream property limits. The Contractor, at their discretion or at the instruction of the City, Conservation Authority or the Contract Administrator shall increase the quantity of sediment and erosion controls on-site to ensure that the site is operating as intended and no additional sediment finds its way off site. The rock flow, straw bale & silt fence check dams and barriers shall be inspected weekly and after rainfall events. Care shall be taken to properly remove sediment from the fences and check dams as required. Fibre roll barriers are to be installed at all existing curb inlet catch basins and filter fabric is to be placed under the grates of all existing catch basins and manholes along the frontage of the site and any new structures immediately upon installation. The measures for the existing/proposed structures is to be removed only after all areas have been paved. Care shall be taken at the removal stage to ensure that any silt that has accumulated is properly handled and disposed of. Removal of silt fences without prior removal of the sediments shall not be permitted.

Although not anticipated, work through winter months shall be closely monitored for erosion along sloped areas. Should erosion be noted, the Contractor shall be alerted and shall take all necessary steps to rectify the situation. Should the Contractor's efforts fail at remediating the eroded areas, the Contractor shall contact the City and/or Conservation Authority to review the site conditions and determine the appropriate course of action. As the ground begins to thaw, the Contractor shall place silt fencing at all required locations as soon as ground conditions warrant. Please see the Site Grading, Drainage and Sediment & Erosion Control Plan for additional details regarding the temporary measures to be installed and their appropriate OPSD references.

8.2 Permanent Measures

It is expected that the Contractor will promptly ensure that all disturbed areas receive topsoil and seed/sod and that grass be established as soon as possible. Any areas of excess fill shall be removed or levelled as soon as possible and must be located a sufficient distance from any watercourse to ensure that no sediment is washed out into the watercourse. As the vegetation growth within the site provides a key component to the control of sediment for the site, it must be properly maintained once established. Once the construction is complete, it will be up to the landowner to maintain the vegetation and ensure that the vegetation is not overgrown or impeded by foreign objects.

9.0 SUMMARY

- A 10-storey mixed-use building, two mixed-use buildings, and one townhouse block are proposed to be constructed at 16 Edgewater Street.
- Dual 150 mm diameter water services are proposed to be connected to the existing 406 mm diameter watermain within Edgewater Street.
- A new 200 mm sanitary service is proposed to service the development via the 300 mm diameter sanitary sewer within Edgewater Street.
- As discussed with the City of Ottawa staff, the stormwater management design will ensure that the post-development flow rates are restricted to the calculated pre-development flow rates.
- Storage for the 5- through 100-year storm events will be provided through rooftop attenuation and internal cistern attenuation.
- A new 250 mm storm service for rooftop, surface, and foundation drainage is proposed to service the development.
- Quality controls measures are incorporated in the stormwater management design per MVCA requirements.

10.0 RECOMMENDATION

Based on the information presented in this report, we recommend that City of Ottawa approve this Servicing and Stormwater Management report in support of the proposed development at 16 Edgewater Street.

This report is respectfully being submitted for approval.

Regards,

McIntosh Perry Consulting Engineers Ltd.

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11.0 STATEMENT OF LIMITATIONS

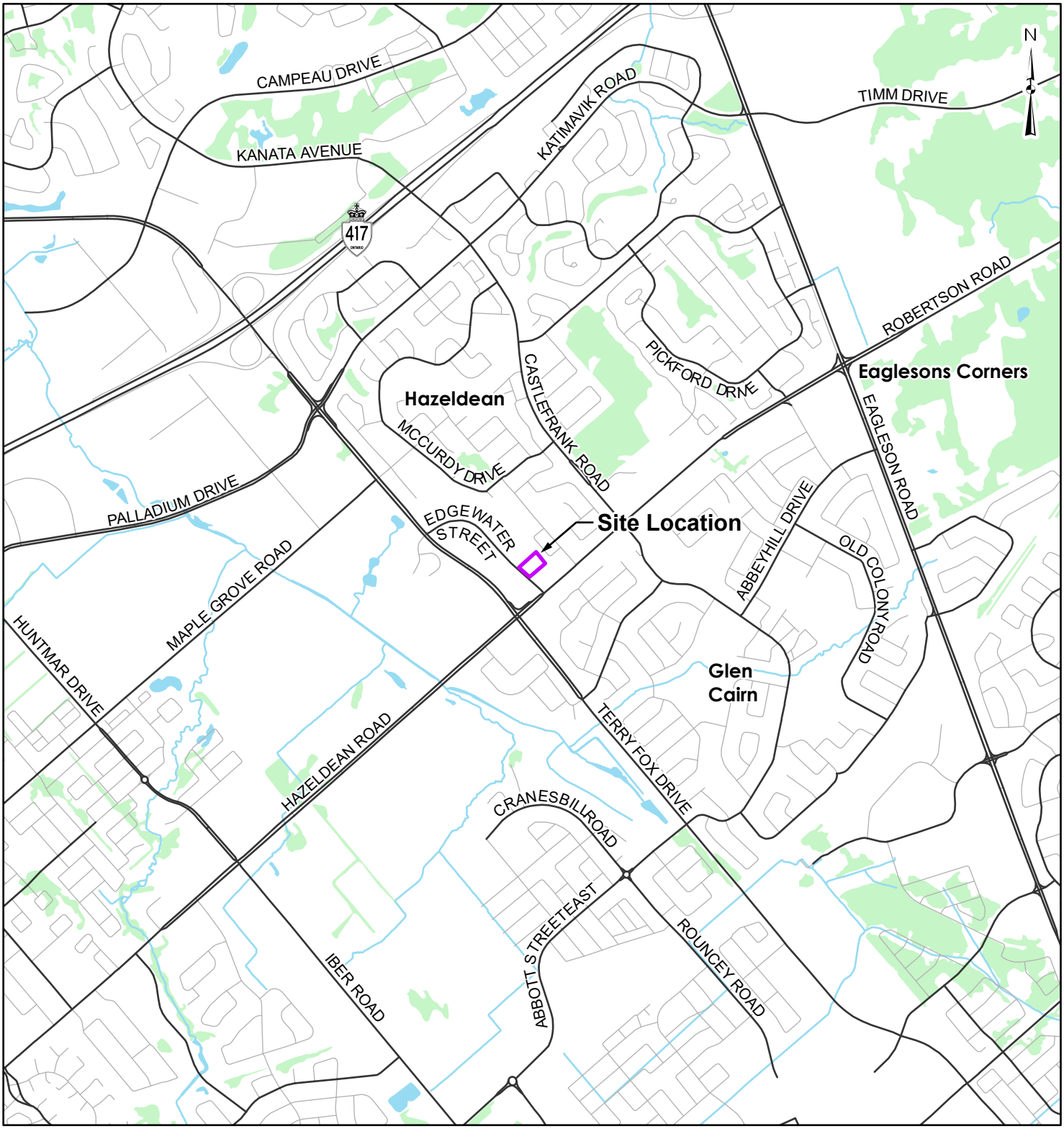
This report was produced for the exclusive use of Park River Properties. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry 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



LEGEND

- Approximate Site Boundary
- Local Road
- Major Road
- Watercourse
- Waterbody
- Wooded Area

600 300 0 600

Scale 1:25,000 Metres

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2021.

CLIENT: PARK RIVER PROPERTIES

PROJECT: 16 EDGEWATER STREET, OTTAWA, ON

TITLE: SITE LOCATION

McINTOSH PERRY
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www.mcintoshperry.com

PROJECT NO:	CCO-22-0244
Date	Oct., 18, 2021
GIS	EU
Checked By	AG

FIGURE: 1

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APPENDIX B
BACKGROUND DOCUMENTS

McINTOSH PERRY

16 Edgewater
Pre-Consultation Meeting Minutes

Location: Microsoft Team
Date: Friday, November 13, 2020 11am to 12pm

Attendees

Stream Shen, Planner, City of Ottawa

Santhosh Kuruvilla, Civil Project Manager, City of Ottawa

Josiane Gervais, Transportation Project Manager, City of Ottawa

Jenny Kluke, Housing Developer, City of Ottawa

Mark Young, Urban Designer, City of Ottawa

Taylor West, Planning, Novatech

Murray Chown, Planning, Novatech

Patrick Hatton, Transportation, Novatech

Kevin McMahon, Park River

Jordan Hawn, Park River

Pierre Boulet, Boulet Construction

Danielle Odongo, Park River

Chris McCluskey, McCluskey Group

Comments from Applicant

1. The applicant is proposing two apartments with ground floor commercial space. The seven-storey building fronting Edgewater will have a training centre on the ground floor and the six-storey building at the back will contain a co working space.
2. The applicant is also proposing a row of stacked townhome with office space underneath.
3. The goal is to create a commercial corridor between the three buildings that is pedestrian friendly and only accessible by emergency vehicle but not regular vehicle traffic.
4. There will be underground parking for the two apartment buildings. The ground level parking will be for commercial use only.

5. The applicant is looking to provide affordable housing unit in all the proposed residential units. The current proposal is to have rents that are approximately 25-30% under market value at around $1,200 per month.

Planning Comments

1. This is a pre-consultation for a Major Zoning By-law Amendment and Site Plan Control application, Complex, subject to Public Consultation. Application form, timeline and fees can be found here.
2. The proposal is located in the City's General Urban Area based on Schedule B of the City's Official Plan. Taller buildings may only be considered in an area already characterized by taller buildings or sites zoned to permit taller buildings.
3. Please assess the compatibility of the proposed mixed-use development with the existing industrial use (Toromont across Edgewater and adjacent supply stores). Please also assess the compatibility with the list of permitted uses within the IG2 zone. Please consider areas such as noise, dust and odour or applying the Ministry's D6 guideline on Compatibility between Industrial Facilities.
4. Please also assess the compatibility of the proposed development with the adjacent low-rise residential homes through technics such as 45 degree angular plane analysis and shadow study.
5. Please conduct a Section 37 analysis.
6. Please increase the landscape area abutting the existing low-rise homes and provide tree plantings in that space.
7. Please provide some at-grade amenity space.
8. Cash-in-lieu of parkland and associated appraisal fee will be required as a condition of approval as per the Parkland Dedication Bylaw.
9. Please consult with the Ward Councillor prior to submission.

Urban Design Comments

1. The proposed separation distance between the two buildings is not adequate as proposed. It was identified as 6 m in the meeting. Given the potential for units to be oriented directly toward each other, there are serious concerns regarding light and privacy. If two mid-rise buildings are sought, they should be off set to the greatest extent possible, and a minimum of 15 m should be provided between the two buildings. PRUD staff recommend one building vs. two and a townhome block, to allow for additional on-site outdoor amenity space and setback from the

abutting commercial and residential sites, and to possibly eliminate the need for a fire route on-site.
2. Are outdoor amenity requirements being met on-site? This is an important consideration in site design. The amenity area should be located to be functional by residents, enjoy light and benefit from greenery. The building entrance locations as suggested in the meeting do not qualify as outdoor amenity area.
3. Please provide additional landscape buffering along the rear of the property abutting the low-rise residential land uses.
4. Please provide additional landscape buffering along the northern property line abutting the general industrial zone.
5. Please ensure a pedestrian connection is provided to Hazeldean Road along Edgewater Drive with a direct connection to the principal entrances of all buildings.
6. Please demonstrate the height transition between the low-rise residential land uses to the rear and the proposed buildings.
7. Please consider orienting the commercial incubation spaces to face toward Hazeldean Road (Arterial Mainstreet) vs. internalized arrangement.
8. Please ensure adequate separation between the proposed townhouse block and the abutting commercial site. If the Tim Hortons' site is redeveloped for mixed uses including residential in the future, it should be demonstrated that the proposed setback along this joint property line is sufficient. The current arrangement appears to leave no room for tree planting/landscaping.
9. Is garbage and loading external to the buildings? It should be internalized.
10. A design brief is required and can be combined with the Planning Rationale. A terms of reference is attached.

Engineering Comments

Following are the engineering pre-application consultation comments for the 16 Edgewater Street:

- The Servicing Study Guidelines for Development Applications are available at the following link: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans
- Record drawings and utility plans are available for purchase from the City's Information Centre. Contact the City's Information Centre by email at informationcentre@ottawa.ca or by phone at (613) 580-2424 x44455
- Stormwater quantity control criteria – Control the quantity post to pre/existing level for all storms (5-year to 100-year) up to and including the 100-year storm.
- Stormwater quality control criteria – Contact the Conservation Authority (MVCA-Mississippi Valley Conservation Authority) for their requirements. Include the correspondence in the Stormwater Management/Site Servicing Report.
- Estimate the sanitary flow based on the proposed use.

- The maximum allowable release rate of the sanitary flow from this site must be estimated based on the criteria provided in Table 1 of the City of Ottawa Technical Bulletin ISTB-2018-01 and the release rate must be less than or equal to the maximum allowable.
- As per the City of Ottawa Slope Stability Guidelines for Development Applications an engineering report is required for any retaining walls proposed 1.0 m or greater in height within the subject site that addresses the global stability of the wall and provides structural details. A Retaining Wall Stability Analysis Report and Retaining Wall Structural Details are required to be provided from a Professional Engineer licensed in the Province of Ontario that demonstrates the proposed retaining wall structure has been assessed for global instability as per City standards.
- Emergency fire routes will need to be satisfactory to Fire Services. Please show fire routes on the site plan. For information regarding fire route provisions, please consult with Kim Cyr by email at kim.cyr@ottawa.ca
- Clearly show and label the property lines on all sides of the property.
- Clearly show and label all the easements (if any) on the property, on all plans.
- When calculating the post development composite runoff coefficient (C), please provide a drawing showing the individual drainage area and its runoff coefficient.
- When using the modified rational method to calculate the storage requirements for the site, the underground storage should not be included in the overall available storage. The modified rational method assumes that the restricted flow rate is constant throughout the storm which, in this case, underestimates the storage requirement prior to the 1:100-year head elevation being reached. Alternately, if you wish to include the underground storage, you may use an assumed average release rate equal to 50% of the peak allowable rate. Otherwise, disregard the underground storage as available storage or provide modeling to support the design.
- Engineering plans are to be submitted on standard A1 size (594mm x 841mm) sheets.
- Phase 1 ESA and Phase 2 ESA must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.
- Boundary conditions are required to confirm that the required fire flows can be achieved as well as availability of the domestic water pressure on the City street in front of the development. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons. Please provide the following information to the City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.
    - Type of Development and Units
    - Site Address

- A plan showing the proposed water service connection locations.
- Average Daily Demand (L/s)
- Maximum Daily Demand (L/s)
- Peak Hour Demand (L/s)
- Fire Flow (L/min)
  [Fire flow demand requirements shall be based on Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection 1999]

  Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).

- Hydrant capacity shall be assessed to demonstrate the RFF can be achieved. Please identify which hydrants are being considered to meet the RFF on a fire hydrant coverage plan as part of the boundary conditions request.

- If you are proposing any exterior light fixtures, all must be included and approved as part of the site plan approval. Therefore, the lights must be clearly identified by make, model and part number. All external light fixtures must meet the criteria for full cut-off classification as recognized by the Illuminating Engineering Society of North America (IESNA or IES) and must result in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). In order to satisfy these criteria, the applicant must provide certification from an acceptable professional engineer. The location of all exterior fixtures, a table showing the fixture types (including make, model, part number), and the mounting heights must be included on a plan.

Transportation Comments

- Follow Traffic Impact Assessment Guidelines:
  - A TIA is required.
  - Start this process asap. 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).
  - Request base mapping asap if RMA is required. Contact Engineering Services (https://ottawa.ca/en/city-hall/planning-and-development/engineering-services)
- Clear throat length of 15m is to be provided.
- A pedestrian facility is to be provided on site or along the frontage that ties into the raised gravel shoulder of the neighboring property to get pedestrians to Hazeldean Rd. Consider a paved shoulder or a pedestrian pathway on the property that travels over the ditch.
- Hazeldean Rd is a Transit Priority Corridor (Isolated Measures) along the corridor as part of the TMP's Affordable Network.
- Parking stall no. 17 overlaps with stall no. 16.

- Adjust the curbline on the northwest section of the site.
- On site plan:
    - Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
    - Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.
    - Turning movement diagrams required for internal movements (loading areas, garbage).
    - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible
    - Show lane/aisle widths.
    - Grey out any area that will not be impacted by this application.
- The City recommends development on private property be in accordance with the City's Accessibility Design Standards (see attached Site Plan Checklist, which summarizes AODA requirements). As the proposed site is a combination of residential and commercial and for general public use, AODA legislation applies.
- Noise Impact Studies required for the following:
    - Road
    - Stationary, due to the proximity to neighboring exposed mechanical equipment or if there will be any exposed mechanical equipment due to the proximity to neighboring noise sensitive land uses.

Forestry Comments

1. a Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City; an approved TCR is a requirement of Site Plan or Plan of Subdivision approval.
2. any removal of privately-owned trees 10cm or larger in diameter requires a tree permit issued under the Urban Tree Conservation Bylaw; the permit is based on the approved TCR
3. any removal of City-owned trees will require the permission of Forestry Services who will also review the submitted TCR
4. the TCR must list all trees on site by species, diameter and health condition
5. the TCR must list all trees on adjacent sites if they have a critical root zone that extends onto the development site
6. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
7. the City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
8. Please ensure newly planted trees have an adequate soil volume for their size at maturity. Here are the recommended soil volumes:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

9. For more information on the process or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca

Please refer to the links to "Guide to preparing studies and plans" and fees for general 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 informationcentre@ottawa.ca.

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 contact me at stream.shen@ottawa.ca or at 613-580-2424 extension 24488 if you have any questions.

Sincerely,

Stream Shen MCIP RPP
Planner II
Development Review - West

APPLICANT'S STUDY AND PLAN IDENTIFICATION LIST

Legend: **S** indicates that the study or plan is required with application submission.
A indicates that the study or plan may be required to satisfy a condition of approval/draft approval.

For information and guidance on preparing required studies and plans refer here:

Please sent the 1 paper copy to the attention of Santhosh Kuruvilla at Mail Code 01-14, 110 Laurier Ave W

S/A	Number of copies	ENGINEERING		S/A	Number of copies
S	1	1. Site Servicing Plan	2. Site Servicing Study	S	1
S	1	3. Grade Control and Drainage Plan	4. Geotechnical Study	S	1
	2	5. Composite Utility Plan	6. Groundwater Impact Study		3
	3	7. Servicing Options Report	8. Wellhead Protection Study		3
S	PDF	9. Transportation Impact Assessment (TIA)	10.Erosion and Sediment Control Plan	S	1
S	1	11.Storm water Management Report	12.Hydro geological and Terrain Analysis		3
	3	13.Hydraulic Water main Analysis	14.Noise Study	S	PDF
	PDF only	15.Roadway Modification Functional Design	16.Confederation Line Proximity Study		3

S/A	Number of copies	PLANNING / DESIGN / SURVEY		S/A	Number of copies
	15	17.Draft Plan of Subdivision	18.Plan Showing Layout of Parking Garage	S	PDF
	5	19.Draft Plan of Condominium	20.Planning Rationale	S	PDF
S	PDF	21.Site Plan	22.Minimum Distance Separation (MDS)		3
	15	23.Concept Plan Showing Proposed Land Uses and Landscaping	24.Agrology and Soil Capability Study		3
	3	25.Concept Plan Showing Ultimate Use of Land	26.Cultural Heritage Impact Statement		3
S	1	27.Landscape Plan	28.Archaeological Resource Assessment Requirements: **S** (site plan) **A** (subdivision, condo)		3
S	PDF	29.Survey Plan	30.Shadow Analysis	S	PDF
S	PDF	31.Architectural Building Elevation Drawings (dimensioned)	32.Design Brief (includes the Design Review Panel Submission Requirements)	S	PDF
	3	33.Wind Analysis			

S/A	Number of copies	ENVIRONMENTAL		S/A	Number of copies
S	PDF	34.Phase 1 Environmental Site Assessment	35.Impact Assessment of Adjacent Waste Disposal/Former Landfill Site		3
A	PDF	36.Phase 2 Environmental Site Assessment (depends on the outcome of Phase 1)	37.Assessment of Landform Features		3
A	PDF	38.Record of Site Condition (if required by phase 2)	39.Mineral Resource Impact Assessment		3
S	PDF	40.Tree Conservation Report	41.Environmental Impact Statement / Impact Assessment of Endangered Species		3
	3	42.Mine Hazard Study / Abandoned Pit or Quarry Study	43.Integrated Environmental Review (Draft, as part of Planning Rationale)		3

S/A	Number of copies	ADDITIONAL REQUIREMENTS		S/A	Number of copies
S	PDF	44. Applicant's Public Consultation Strategy (may be provided as part of the Planning Rationale)	45.Site Lighting Plan and Certification Letter	**S**	PDF

Meeting Date: November 13, 2020

Application Type: *Major Rezoning and Complex Site Plan*

File Lead (Assigned Planner): Stream Shen

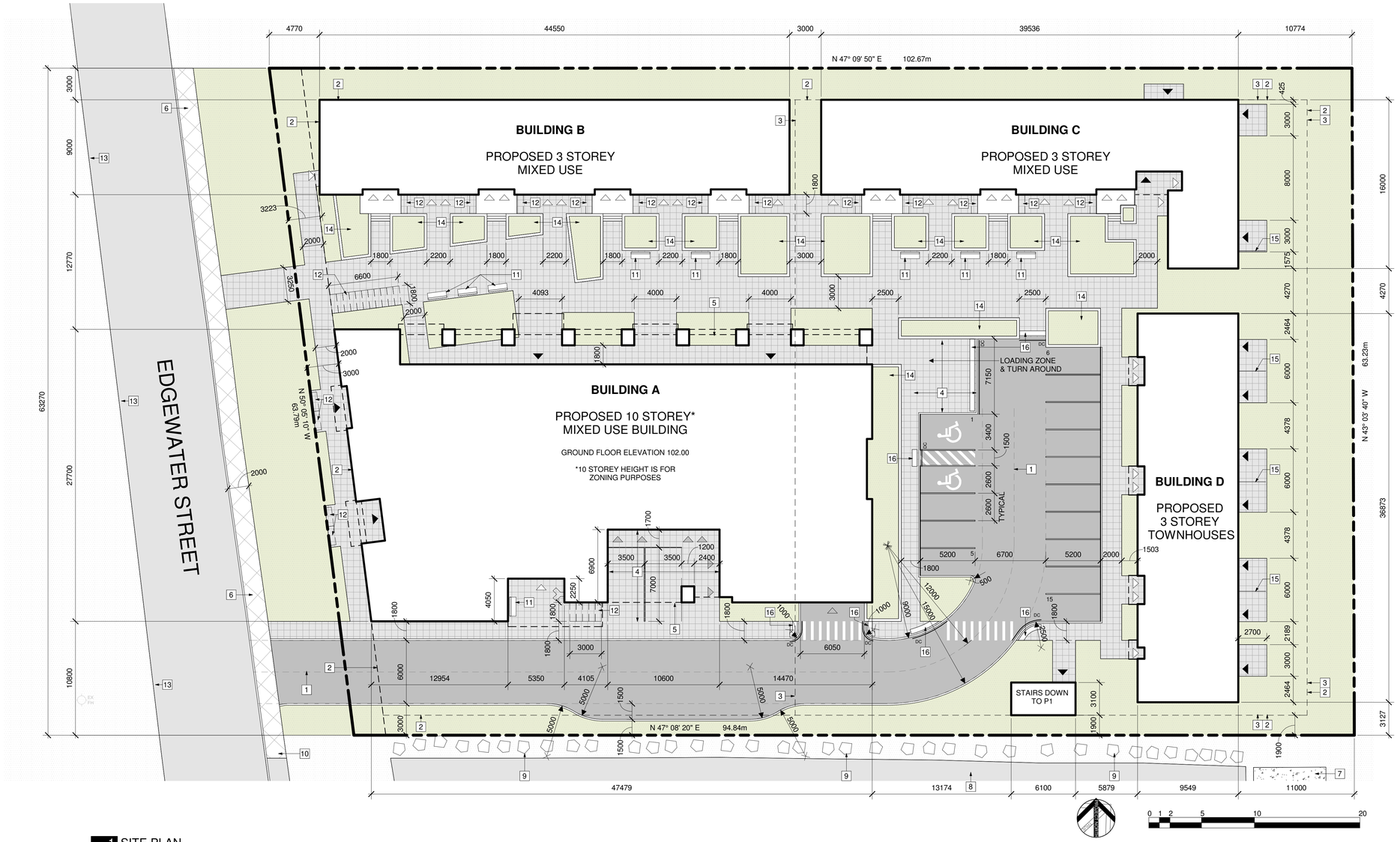
Infrastructure Approvals Project Manager: Santhosh Kuruvilla

Site Address (Municipal Address): 16 Edgewater

*Preliminary Assessment: 1☐ 2☐ 3☒ 4☐ 5

*One (1) indicates that considerable major revisions are required before a planning application is submitted, while five (5) suggests that proposal appears to meet the City's key land use policies and guidelines. **This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.**

It is important to note that the need for additional studies and plans may result during application review. If following the submission of your application, it is determined that material that is not identified in this checklist is required to achieve complete application status, in accordance with the Planning Act and Official Plan requirements, the* Planning, Infrastructure and Economic Development Department *will notify you of outstanding material required within the required 30 day period. Mandatory pre-application consultation will not shorten the City's standard processing timelines, or guarantee that an application will be approved. It is intended to help educate and inform the applicant about submission requirements as well as municipal processes, policies, and key issues in advance of submitting a formal development application. This list is valid for one year following the meeting date. If the application is not submitted within this timeframe the applicant must again pre-consult with the Planning, Infrastructure and Economic Development Department.



1 SITE PLAN
A.100 | 1 : 200

0 1 2 5 10 20

LEGAL DESCRIPTION:

PART OF LOT 30 CONCESSION 12 PART 1,
4R31503 IN THE CITY OF OTTAWA

REFERENCE SURVEY:

BASED ON INFORMATION FROM A SURVEY PREPARED BY McINTOSH PERRY SURVEYING INC. DATED MAY 11, 2021.

MUNICIPAL ADDRESS:

16 EDGEWATER STREET

DEVLOPMENT INFORMATION:

SITE AREA	6,247 m²	
GROSS FLOOR AREA	Building A	9,488 m²
	Building B	1,038 m²
	Building C	1,011 m²
	Building D	880 m²
	Total	12,717 m²
BUILDING HEIGHT	Building A	30 m + 3.35 m Penthouse
	Building B & C	9.55 m
	Buidling D	8.94 m
ZONE	Proposed	- GM2
	Current	- IG2
SCHEDULE 1:	AREA C SUBURBAN	
SCHEDULE 1A:	AREA C	
SCHEDULE 2:	DISTANCE EXCEEDS 600 m	

UNIT MIX:

BUILDING A	
3 BEDROOM	18
2 BEDROOM	46
2 BEDROOM WITH SECONDARY SUITE	18
ONE BEDROOM + DEN	36
ONE BEDROOM	9
STUDIO	18
SECONDARY SUITE	18
TOTAL	**153**
RETAIL SPACE GFA	294 m²
BUILDING B	
GROUND FLOOR COMMERICAL UNITS	8
2 BEDROOM + DEN (FLOORS 2 & 3)	8
OFFICE SPACE GFA	282 m²
BUILDING C	
GROUND FLOOR COMMERCIAL UNITS	5
2 BEDROOM + DEN (FLOORS 2 & 3)	6
3 BEDROOM TOWN HOUSE	2
OFFICE SPACE GFA	176 m²
BUILDING D	
3 BEDROOM TOWN HOUSE	7
TOTAL COMMERCIAL SPACE GFA (OFFICE AND RETAIL)	**752 m²**

ZONING PROVISION	REQUIRED	PROVIDED
MIN. LOT WIDTH	No Minimum	63.78 m
MIN. LOT AREA	No Minimum	6,247 m²
MIN. FRONT YARD SETBACK	3.0 m	3.0 m
MIN. REAR YARD SETBACK	7.5 m	11.0 m
MIN. INTERIOR YARD SETBACK	1.2 m (Residential building under 11.0 m)	1.9m & 3.0 m
	5.0 m (Mixed-use building)	10.8 m
MAX. HEIGHT	18.0 m	BLDG A - 30.0 m BLDG B - 9.55 m BLDG C - 9.55 m BDLG D - 8.94 m
AMENITY AREA TOTAL	918 m²	1006 m²
COMMUNAL AMENTIY AREA	459 m²	826 m²
FLOOR SPACE INDEX	2.0	2.0
COMMERCIAL SPACE FSI	1.0 (50%)	0.1 (5%)

VEHICLE PARKING	REQUIRED	PROVIDED
BUILDING A		
RESIDENT	153	163
VISITOR	31	31
RETAIL STORE	10	10
BUILDINGS B & C		
RESIDENT	16	16
VISITOR	4	4
OFFICE	11	11
BUILDING D (TOWNHOUSE)		
RESIDENT	7	14
VISITOR	2	1
TOTAL	**234**	**250**
BICYCLE PARKING		
RESIDENTIAL BUILDINGS A, B AND C (NONE REQUIRED FOR BUILDING D)	85	140
RETAIL STORE (BUILDING A)	2	18
OFFICE (BUILDING B AND C)	2	14
TOTAL	**89**	**172**

SITE PLAN KEYNOTES:

1. FIRE ROUTE
2. EXTENT OF UNDERGROUND PARKING (P1)
3. EXTENT OF UNDERGROUND PARKING (P2)
4. DROP OFF/LOADING
5. OUTLINE OF BUILDING ABOVE
6. NEW CURB AND SIDEWALK - REFER TO CIVIL
7. EXISTING GARBAGE ENCLOSURE
8. EXISTING ASPHALT PARKING LOT
9. EXISTING STONE BARRIERS
10. EXTEND NEW SIDEWALK TO MEET EXISTING ASHALT PATHWAY
11. BENCH
12. BICYCLE PARKING SPOT(S)
13. EDGE OF EXISTING PAVEMENT
14. RAISED PLANTER
15. WOOD PRIVACY SCREEN
16. TWSI

SITE PLAN GENERAL NOTES:

1. ALL GENERAL SITE INFORMATION AND CONDITIONS COMPILED FROM EXISTING PLANS AND SURVEYS
2. DO NOT SCALE THIS DRAWING
3. REPORT ANY DISCREPANCIES PRIOR TO COMMENCING WORK. NO RESPONSIBILITY IS BORN BY THE CONSULTANT FOR UNKNOWN SUBSURFACE CONDITIONS
4. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY ERRORS AND/OR OMISSIONS TO THE CONSULTANT
5. REINSTATE ALL AREAS AND ITEMS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO THE SATISFACTION OF THE CONSULTANT
6. CONTRACTOR TO LAYOUT PLANTING BEDS, PATHWAYS ETC. TO APPROVAL OF CONSULTANT PRIOR TO ANY JOB EXCAVATION
7. THE ACCURACY OF THE POSITION OF UTILITIES IS NOT GUARANTEED - CONTRACTOR TO VERIFY PRIOR TO EXCAVATION
8. INDIVIDUAL UTILITY COMPANY MUST BE CONTACTED FOR CONFIRMATION OF UTILITY EXISTENCE AND LOCATION PRIOR TO DIGGING
9. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE NOTED

SITE PLAN LEGEND:

- EXISTING BUILDING
- ASPHALT PAVING
- EXISTING ASPHALT PAVING
- EXISTING GRASS / LANDSCAPING
- NEW SOFT LANDSCAPING - REFER TO LANDSCAPE PLANS
- UNIT PAVERS
- NEW CONCRETE SIDEWALK
- BUILDING MAIN ENTRANCE
- OTHER ENTRANCE/EXIT
- SERVICE DOORS
- PROPERTY LINE
- FIRE HYDRANT EXISTING
- SIAMESE CONNECTION
- DROPPED CURB

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Novatech
240 Michael Cowpland Drive, Suite 200
Ottawa, Ontario
613-254-9643
novatech-eng.com

CIVIL ENGINEER
McIntosh Perry
115 Walgreen Road R.R. 3
Carp, Ontario
613-714-4621
www.mcintoshperry.com

LANDSCAPE ARCHITECT
Gino J. Aiello Landscape Architect
206-900 Boulevard de la Carriere
Gatineau, Quebec
613-285-5130
GJALA.com

STAMP

REV	DATE	ISSUE
10	2022-07-07	Issued for Site Plan Resubmission
9	2022-06-07	Issued for Coordination
7	2022-04-25	Issued for Coordination
5	2022-02-11	Issued for Review
4	2022-02-03	Issued for Coordination
1	2021-10-25	Issued for Site Plan Control

NOTES

3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER PROJECT DRAWINGS AND SPECIFICATIONS.
4. DO NOT SCALE DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY DIMENSIONS ON SITE.
5. ALL WORK SHALL BE IN ACCORDANCE WITH THE ONTARIO BUILDING CODE AND ALL SUPPLEMENTS AND APPLICABLE MUNICIPAL REGULATIONS.

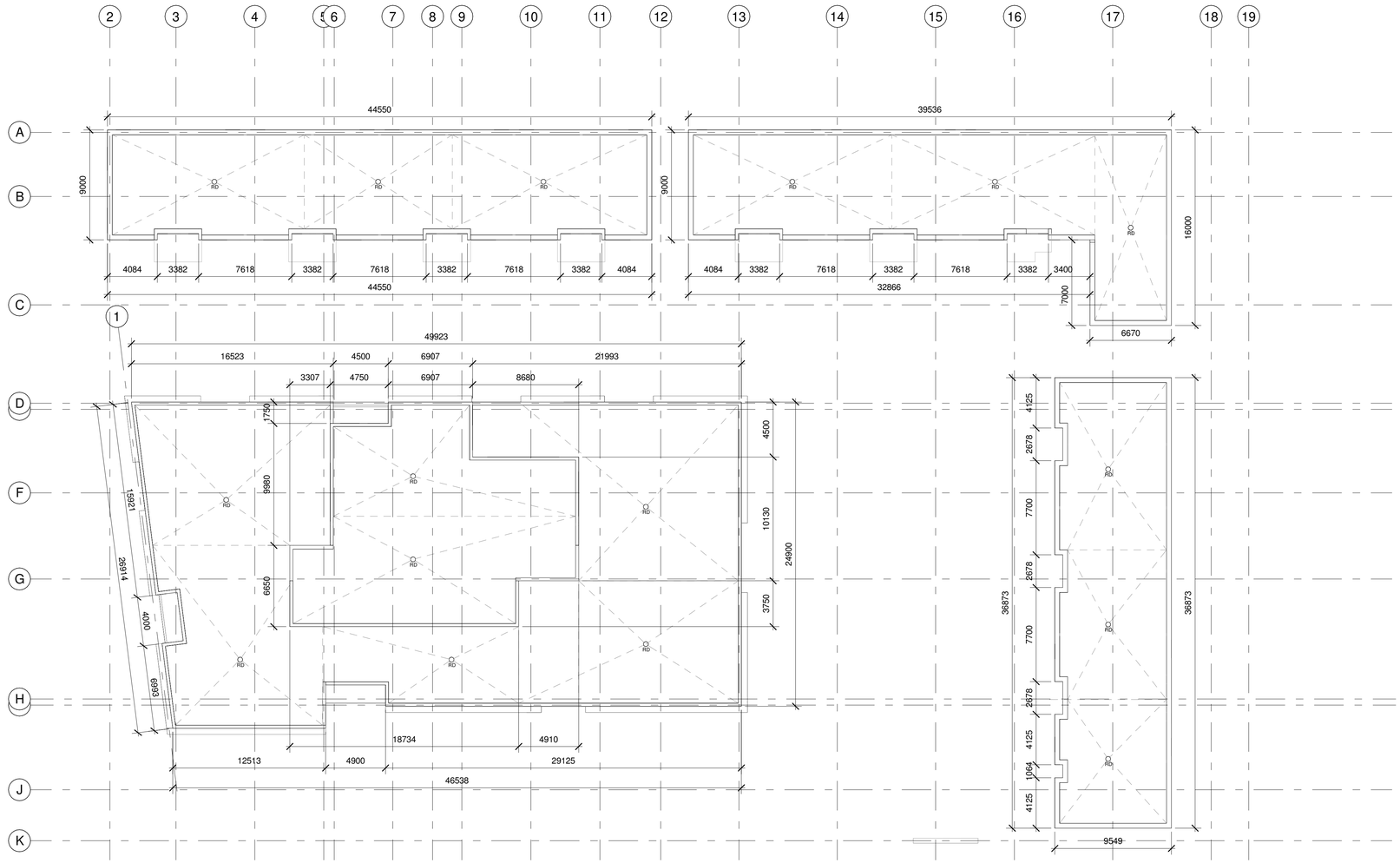
CLIENT
PARK RIVER PROPERTIES
OTTAWA
ONTARIO, CANADA

PROJECT
EDGEWATER DEVELOPMENT
16 EDGEWATER
OTTAWA, ONTARIO

TITLE
SITE PLAN

PROJECT NO: 2020-1930
DRAWN:
APPROVED:
SCALE: 1 : 200
DATE PRINTED: 7/28/2022 1:25:12 PM

REV 10
DRAWING NO. A.100



ROOF PLAN LEGEND

RD ROOF DRAIN

SLOPE VALLEY

1 ROOF PLAN
A.210 1 : 200

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Gatineau, Quebec
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GJALA.com

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NOTES

1. OWNERSHIP OF THE COPYRIGHT OF THE DESIGN AND THE WORKS EXECUTED FROM THE DESIGN REMAINS WITH CSV ARCHITECTS, AND MAY NOT BE REPRODUCED IN ANY FORM WITHOUT THE WRITTEN CONSENT OF CSV ARCHITECTS.
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CLIENT

PARK RIVER PROPERTIES
OTTAWA
ONTARIO, CANADA

PROJECT

EDGEWATER DEVELOPMENT

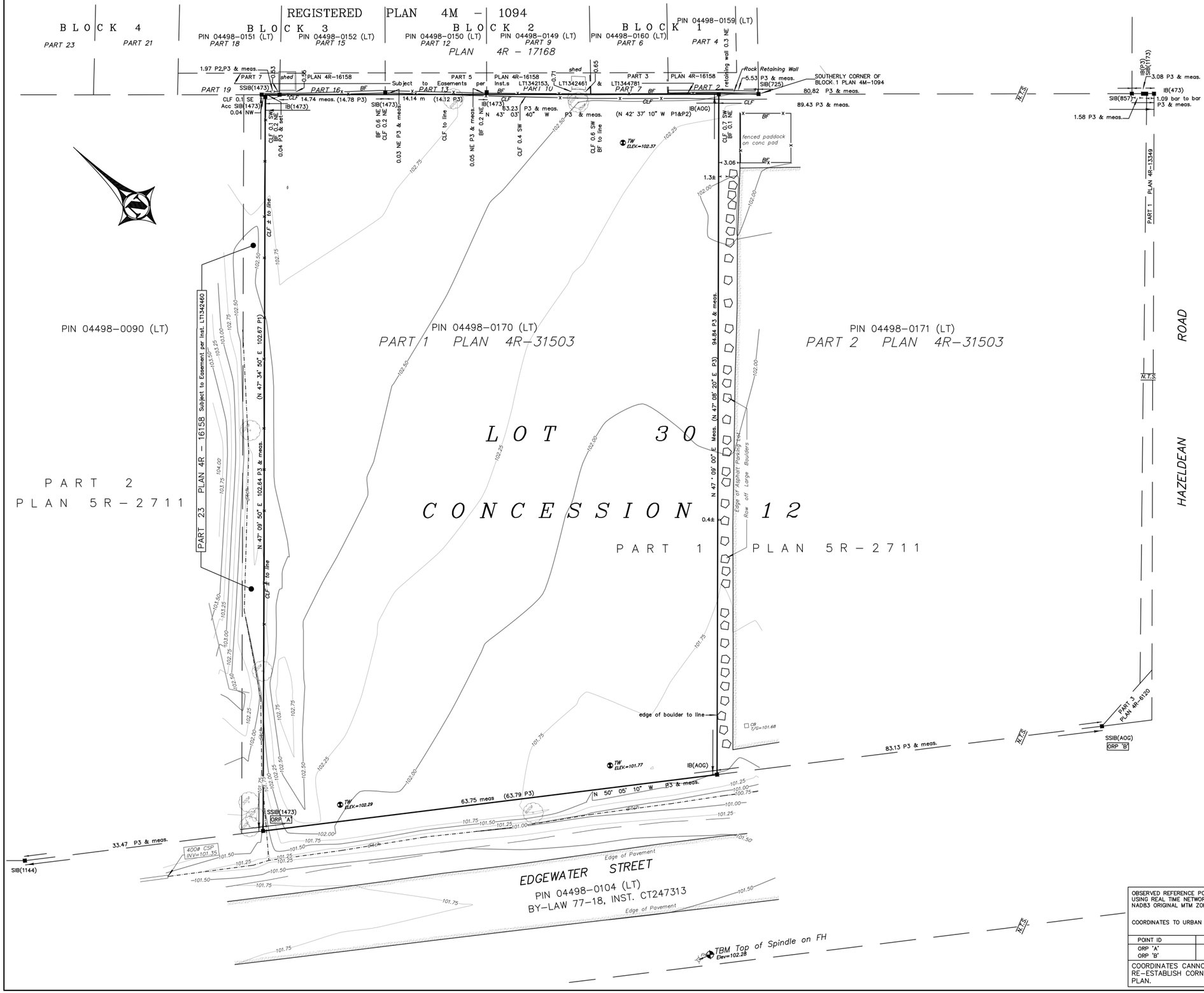
16 EDGEWATER
OTTAWA, ONTARIO

TITLE

ROOF PLAN

PROJECT NO: 2020-1930
DRAWN:
APPROVED:
SCALE: 1 : 200
DATE PRINTED: 7/21/2022 5:01:46 PM

REV 10
DRAWING NO. A.210



PLAN OF SURVEY WITH TOPOGRAPHY OF PART OF LOT 30 CONCESSION 12 GEOGRAPHIC TOWNSHIP OF GOULBOURN CITY OF OTTAWA

McINTOSH PERRY SURVEYING INC.

SCALE 1 : 250

0 5 10 15 20 25 Metres

METRIC :

DISTANCES, ELEVATIONS AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 23rd DAY OF APRIL, 2021.

MAY 11, 2021
DATE

JOHN GAUTIER
ONTARIO LAND SURVEYOR

LEGEND AND NOTES

□	DENOTES	MONUMENT PLANTED
■	"	MONUMENT FOUND
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
IB	"	IRON BAR
473	"	R.F. DYNES O.L.S.
725	"	R.W. ARNETT O.L.S.
857	"	FAIRHALL, MOFFATT & WOODLAND LTD.
1144	"	C.D. ROGERS O.L.S.
1173	"	C.D. REID O.L.S.
1473	"	WEBSTER & SIMMONDS SURVEYING LTD.
AOG	"	ANNIS O'SULLIVAN VOLLEBEKK LTD.
P1	"	PLAN 4R–16158
P2	"	PLAN 4R–17168
P3	"	PLAN 4R–31503
meas.	"	MEASURED
CLF	"	CHAIN LINK FENCE
BF	"	BOARD FENCE
NW	"	NORTHWEST
NE	"	NORTHEAST
SW	"	SOUTHWEST
SE	"	SOUTHEAST
ORP	"	OBSERVED REFERENCE POINT
CB	"	CATCH BASIN
T/G	"	TOP OF GRATE
N.T.S.	"	NOT TO SCALE
TW	"	TEST WELL ELEVATION AT GRADE
TBM	"	TEMPORARY BENCH MARK
CSP	"	CORRUGATED STEEL PIPE
INV	"	INVERT ELEVATION

DISTANCES

DISTANCES SHOWN ON THIS PLAN ARE GROUND DISTANCES AND CAN BE USED TO COMPUTE GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999917.

BEARINGS

BEARINGS ARE MTM GRID BEARINGS, DERIVED BY REAL TIME NETWORK GPS OBSERVATIONS ON OBSERVED REFERENCE POINTS A AND B, SHOWN HEREON, AND ARE REFERRED TO THE CENTRAL MERIDIAN OF MTM ZONE 9, (76° 30' WEST LONGITUDE).

ELEVATIONS

ELEVATIONS ARE CANADA GEODETIC VERTICAL DATUM 1928–1978 ADJUSTMENT (CGVD 28/78) DERIVED FROM REAL TIME NETWORK GPS OBSERVATIONS REFERENCED TO THE HT_2 GEOID MODEL.

THE CONTOUR INTERVAL IS 0.25 METRES.

THE LOCATION AND CONFIGURATION OF UNDERGROUND SERVICES AND UTILITIES HAS NOT BEEN INCLUDED IN THIS SURVEY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE CONFIGURATION AND LOCATION OF UNDERGROUND SERVICES AT THE SITE PRIOR TO CONSTRUCTION.

OBSERVED REFERENCE POINTS (ORPs) DERIVED FROM GPS OBSERVATIONS USING REAL TIME NETWORK (RTN) SERVICE.
NAD83 ORIGINAL MTM ZONE 9

COORDINATES TO URBAN ACCURACY PER SEC. 14 (2) OF O.REG. 216/10

POINT ID	NORTHING	EASTING
ORP 'A'	5017466.74	352202.43
ORP 'B'	5017372.50	352315.08

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE–ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

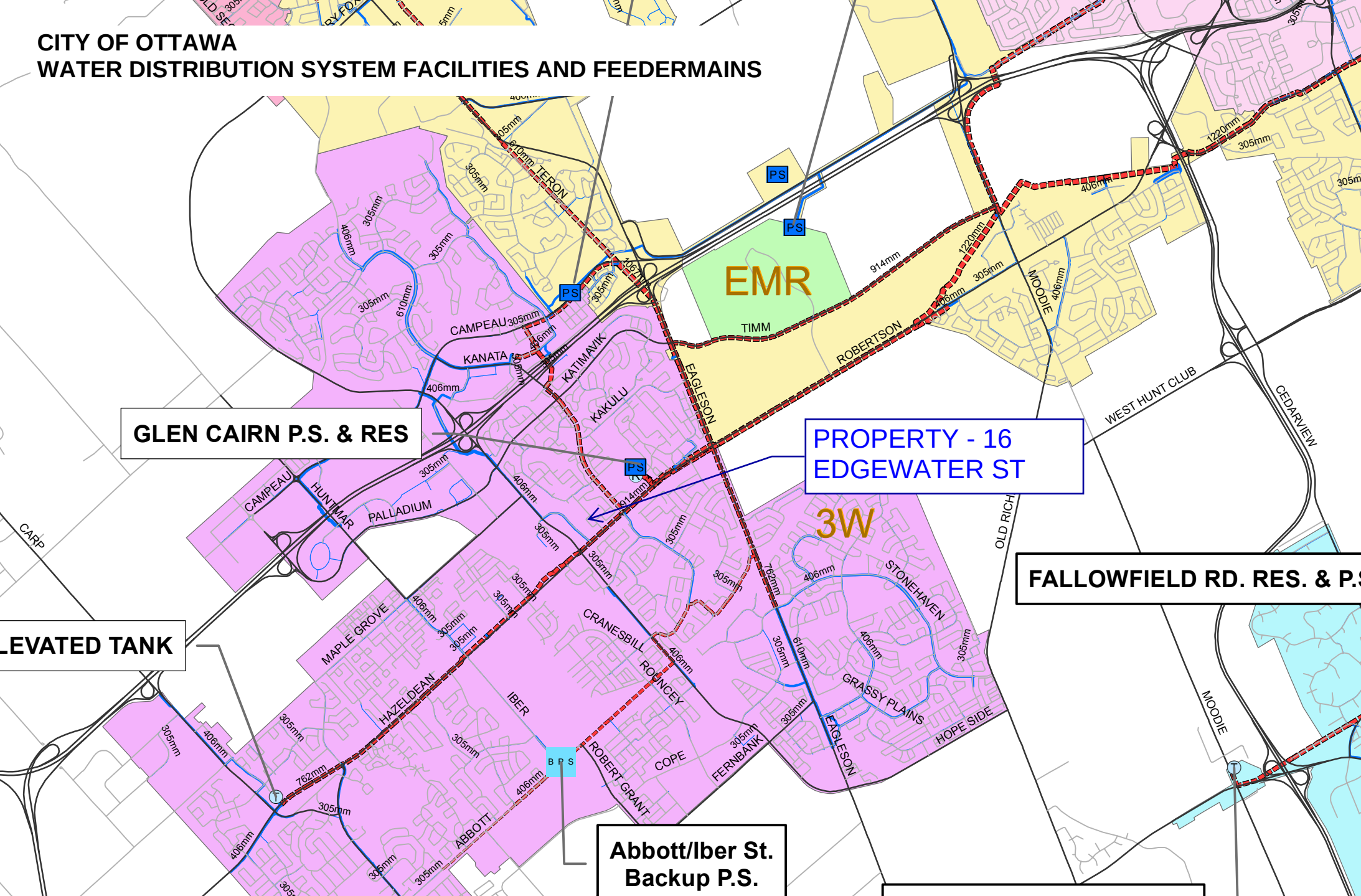
JOB No. 22–0289	DRAWING # 22–0289–Edgewater St.Topo.dwg
PREPARED FOR: McIntosh Perry Consulting Engineers	

McINTOSH PERRY
SURVEYING INC.
3240 Drummond Con. 5A, R.R. #7, Perth, ON K7H 3C9
Tel: 613–267–6524 Fax: 613–267–7992
www.mcintoshperry.com

EXAMINED: JG	CAD: PC:

APPENDIX C
WATERMAIN CALCULATIONS

McINTOSH PERRY


CITY OF OTTAWA
WATER DISTRIBUTION SYSTEM FACILITIES AND FEEDERMAINS
GLEN CAIRN P.S. & RES
PROPERTY - 16 EDGEWATER ST
FALLOWFIELD RD. RES. & P.S
LEVATED TANK
Abbott/Iber St. Backup P.S.
EMR
3W
TERON
CAMPEAU
KANATA
KATIMAVIK
KAKULU
EAGLESON
TIMM
ROBERTSON
MOODIE
WEST HUNT CLUB
CEDARVIEW
HUNTMAR
PALLADIUM
MAPLE GROVE
HAZELDEAN
IBER
CRANESBILL
ROUNCEY
ROBERT GRANT
COPE
FERNBANK
ABBOTT
STONEHAVEN
GRASSY PLAINS
HOPE SIDE
OLD RICH
CARP
PS
BPS

McINTOSH PERRY

CCO-22-0244 - 16 Edgewater (Building A) - Water Demands

Project:	16 Edgewater (Building A)
Project No.:	CCO-22-0244
Designed By:	AJG
Checked By:	AJG
Date:	June 28, 2022
Site Area:	0.62 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Single Family		homes	3.4	persons/unit
Semi-detached		homes	2.7	persons/unit
Townhouse		homes	2.7	persons/unit
Bachelor Apartment	**18**	**units**	1.4	persons/unit
1 Bedroom Apartment	**9**	**units**	1.4	persons/unit
2 Bedroom Apartment	**90**	**units**	2.1	persons/unit
3 Bedroom Apartment	**36**	**units**	3.1	persons/unit
Average Apartment		units	1.8	persons/unit
Total Population	**339**	**persons**		
Commercial	**306**	**m2**		
Industrial - Light		m2		
Industrial - Heavy		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**	**1.10**	**L/s**
	Commerical/Industrial /Institutional	**0.01**	**L/s**

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MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	3	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**	**3.30**	**L/s**
	Commerical/Industrial /Institutional	**0.01**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	4.5	x avg. 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**	**4.94**	**L/s**
	Commerical/Industrial /Institutional	**0.03**	**L/s**

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

AVERAGE DAILY DEMAND	1.11	L/s
MAXIMUM DAILY DEMAND	3.31	L/s
MAXIMUM HOUR DEMAND	4.97	L/s

McINTOSH PERRY

CCO-22-0244 - 16 Edgewater (Building B) - Water Demands

Project:	16 Edgewater (Building B)
Project No.:	CCO-22-0244
Designed By:	AJG
Checked By:	AJG
Date:	June 28, 2022
Site Area:	0.62 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Single Family		homes	3.4	persons/unit
Semi-detached		homes	2.7	persons/unit
Townhouse		homes	2.7	persons/unit
Bachelor Apartment		units	1.4	persons/unit
1 Bedroom Apartment		units	1.4	persons/unit
2 Bedroom Apartment	**8**	**units**	2.1	persons/unit
3 Bedroom Apartment		units	3.1	persons/unit
Average Apartment		units	1.8	persons/unit

Total Population	**17**	**persons**
Commercial	**282**	**m2**
Industrial - Light		m2
Industrial - Heavy		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**	**0.06**	**L/s**
	Commerical/Industrial /Institutional	**0.01**	**L/s**

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MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	3	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**	**0.17**	**L/s**
	Commerical/Industrial /Institutional	**0.01**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	4.5	x avg. 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**	**0.25**	**L/s**
	Commerical/Industrial /Institutional	**0.02**	**L/s**

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

AVERAGE DAILY DEMAND	0.06	L/s
MAXIMUM DAILY DEMAND	0.18	L/s
MAXIMUM HOUR DEMAND	0.27	L/s

McINTOSH PERRY

CCO-22-0244 - 16 Edgewater (Building C) - Water Demands

Project:	16 Edgewater (Building C)
Project No.:	CCO-22-0244
Designed By:	AJG
Checked By:	AJG
Date:	June 28, 2022
Site Area:	0.62 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Single Family		homes	3.4	persons/unit
Semi-detached		homes	2.7	persons/unit
Townhouse	**2**	**homes**	2.7	persons/unit
Bachelor Apartment		units	1.4	persons/unit
1 Bedroom Apartment		units	1.4	persons/unit
2 Bedroom Apartment	**6**	**units**	2.1	persons/unit
3 Bedroom Apartment		units	3.1	persons/unit
Average Apartment		units	1.8	persons/unit
Total Population	**18**	**persons**		
Commercial	**179**	**m2**		
Industrial - Light		m2		
Industrial - Heavy		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**	**0.06**	**L/s**
	Commerical/Industrial /Institutional	**0.01**	**L/s**

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MAXIMUM DAILY DEMAND

DEMAND TYPE		AMOUNT	UNITS
Residential	3	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	0.18	L/s
	Commerical/Industrial /Institutional	0.01	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE		AMOUNT	UNITS
Residential	4.5	x avg. 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	0.26	L/s
	Commerical/Industrial /Institutional	0.02	L/s

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

AVERAGE DAILY DEMAND	0.06	L/s
MAXIMUM DAILY DEMAND	0.18	L/s
MAXIMUM HOUR DEMAND	0.28	L/s

McINTOSH PERRY

CCO-22-0244 - 16 Edgewater (Building D) - Water Demands

Project:	16 Edgewater (Building D)
Project No.:	CCO-22-0244
Designed By:	AJG
Checked By:	AJG
Date:	June 28, 2022
Site Area:	0.62 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Single Family		homes	3.4	persons/unit
Semi-detached		homes	2.7	persons/unit
Townhouse	**7**	**homes**	2.7	persons/unit
Bachelor Apartment		units	1.4	persons/unit
1 Bedroom Apartment		units	1.4	persons/unit
2 Bedroom Apartment		units	2.1	persons/unit
3 Bedroom Apartment		units	3.1	persons/unit
Average Apartment		units	1.8	persons/unit

Total Population **19 persons**

Commercial	m2
Industrial - Light	m2
Industrial - Heavy	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/(1000m^2 /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	0.06	L/s
	Commerical/Industrial/ Institutional	0.00	L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	3	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	0.18	L/s
	Commerical/Industrial/ Institutional	0.00	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	4.5	x avg. 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	0.28	L/s
	Commerical/Industrial/ Institutional	0.00	L/s

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

AVERAGE DAILY DEMAND	0.06	L/s
MAXIMUM DAILY DEMAND	0.18	L/s
MAXIMUM HOUR DEMAND	0.28	L/s

McINTOSH PERRY

CCO-22-0244 - 16 Edgewater (Total) - Water Demands

Project:	16 Edgewater (Total)
Project No.:	CCO-22-0244
Designed By:	AJG
Checked By:	AJG
Date:	June 28, 2022
Site Area:	0.62 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Single Family		homes	3.4	persons/unit
Semi-detached		homes	2.7	persons/unit
Townhouse	**9**	**homes**	2.7	persons/unit
Bachelor Apartment	**18**	**units**	1.4	persons/unit
1 Bedroom Apartment	**9**	**units**	1.4	persons/unit
2 Bedroom Apartment	**104**	**units**	2.1	persons/unit
3 Bedroom Apartment	**36**	**units**	3.1	persons/unit
Average Apartment		units	1.8	persons/unit
Total Population	**393**	**persons**		
Commercial	**767**	**m2**		
Industrial - Light		m2		
Industrial - Heavy		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**	**1.27**	**L/s**
	Commerical/Industrial /Institutional	**0.02**	**L/s**

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MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	3	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	3.82	L/s
	Commerical/Industrial /Institutional	0.04	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	4.5	x avg. 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	5.73	L/s
	Commerical/Industrial /Institutional	0.07	L/s

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

AVERAGE DAILY DEMAND	1.30	L/s
MAXIMUM DAILY DEMAND	3.86	L/s
MAXIMUM HOUR DEMAND	5.80	L/s

McINTOSH PERRY

CCO-22-0244 - 16 Edgewater - Building A - Fire Underwriters Survey

Project:	16 Edgewater - Building A
Project No.:	CCO-22-0244
Designed By:	AJG
Checked By:	AJG
Date:	June 28, 2022

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**	**8,460.0**	**m²**
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)		**4,263.6**	**m²**

**Unprotected Vertical Openings*

Calculated Fire Flow	**11,492.1 L/min**
	11,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%	
Fire Flow		**9,350.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered	-50%	
Reduction		**-4,675.0 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 1	10.1 to 20	Wood frame	87	3	261.0	15%
Exposure 2	20.1 to 30	Wood frame	38.8	3	116.4	10%
Exposure 3	Over 30 m	Fire Resistive - Non Combustible (Unprotected Openings)	21	1	21.0	0%
Exposure 4	Over 30 m	Ordinary - Mass Timber (Unprotected)	74	2	148.0	0%
					% Increase*	**25%**

Increase*	**2,337.5 L/min**

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

Fire Flow	**7,012.5 L/min**
Fire Flow Required**	**7,000.0 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

McINTOSH PERRY

CCO-22-0244 - 16 Edgewater - Building B - Fire Underwriters Survey

Project:	16 Edgewater - Building B
Project No.:	CCO-22-0244
Designed By:	AJG
Checked By:	AJG
Date:	June 28, 2022

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 Wood Frame

C	1.5	**A**	**1,086.0 m^2**
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)		**1,086.0 m^2**

Calculated Fire Flow	**10,875.0 L/min**
	11,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%

Fire Flow	**9,350.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered	0%

Reduction	**0.0 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 1	Over 30 m	Ordinary - Mass Timber (Unprotected)	37	2	74.0	0%
Exposure 2	0 to 3	Wood frame	9	3	27.0	21%
Exposure 3	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	45	10	450.0	8%
Exposure 4	Over 30 m	Ordinary - Mass Timber (Unprotected)	74	2	148.0	0%
					% Increase*	**29%**

Increase*	**2,711.5 L/min**

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

Fire Flow	**12,061.5 L/min**
Fire Flow Required**	**12,000.0 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

McINTOSH PERRY

CCO-22-0244 - 16 Edgewater - Building C - Fire Underwriters Survey

Project:	16 Edgewater - Building C
Project No.:	CCO-22-0244
Designed By:	AJG
Checked By:	AJG
Date:	June 28, 2022

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 Wood Frame

C	1.5	**A**	**1,075.0 m^2**
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)		**1,075.0 m^2**

Calculated Fire Flow	**10,819.8 L/min**
	11,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%

Fire Flow	**9,350.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered	0%

Reduction	**0.0 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 1	Over 30 m	Ordinary - Mass Timber (Unprotected)	37	2	74.0	0%
Exposure 2	10.1 to 20	Wood frame	64	2	128.0	15%
Exposure 3	3.1 to 10	Wood frame	9	3	27.0	16%
Exposure 4	0 to 3	Wood frame	9	3	27.0	21%
					% Increase*	**52%**

Increase*	**4,862.0 L/min**

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

Fire Flow	**14,212.0 L/min**
Fire Flow Required**	**14,000.0 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

McINTOSH PERRY

CCO-22-0244 - 16 Edgewater - Building D - Fire Underwriters Survey

Project:	16 Edgewater - Building D
Project No.:	CCO-22-0244
Designed By:	AJG
Checked By:	AJG
Date:	June 28, 2022

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 Wood Frame

C	1.5	**A**	**927.0 m^2**
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)		**927.0 m^2**

Calculated Fire Flow	**10,047.4 L/min**
	10,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%

Fire Flow	**8,500.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered	0%

Reduction	**0.0 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 1	0 to 3	Wood frame	9	3	27.0	21%
Exposure 2	10.1 to 20	Wood frame	64	2	128.0	15%
Exposure 3	Over 30 m	Ordinary - Mass Timber (Unprotected)	21	1	21.0	0%
Exposure 4	20.1 to 30	Fire Resistive - Non Combustible (Unprotected Openings)	31	10	310.0	4%
					% Increase*	**40%**

Increase*	**3,400.0 L/min**

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

Fire Flow	**11,900.0 L/min**
Fire Flow Required**	**12,000.0 L/min**
Fire Flow Required***	**10,000.0 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
***In accordance with City of Ottawa Technical Bulletin ISTB-2018-02, townhomes can be capped at 10,000 L/min (once design requirements are met).

McINTOSH PERRY

CCO-22-0244 - 16 Edgewater - Boundary Condition Unit Conversion

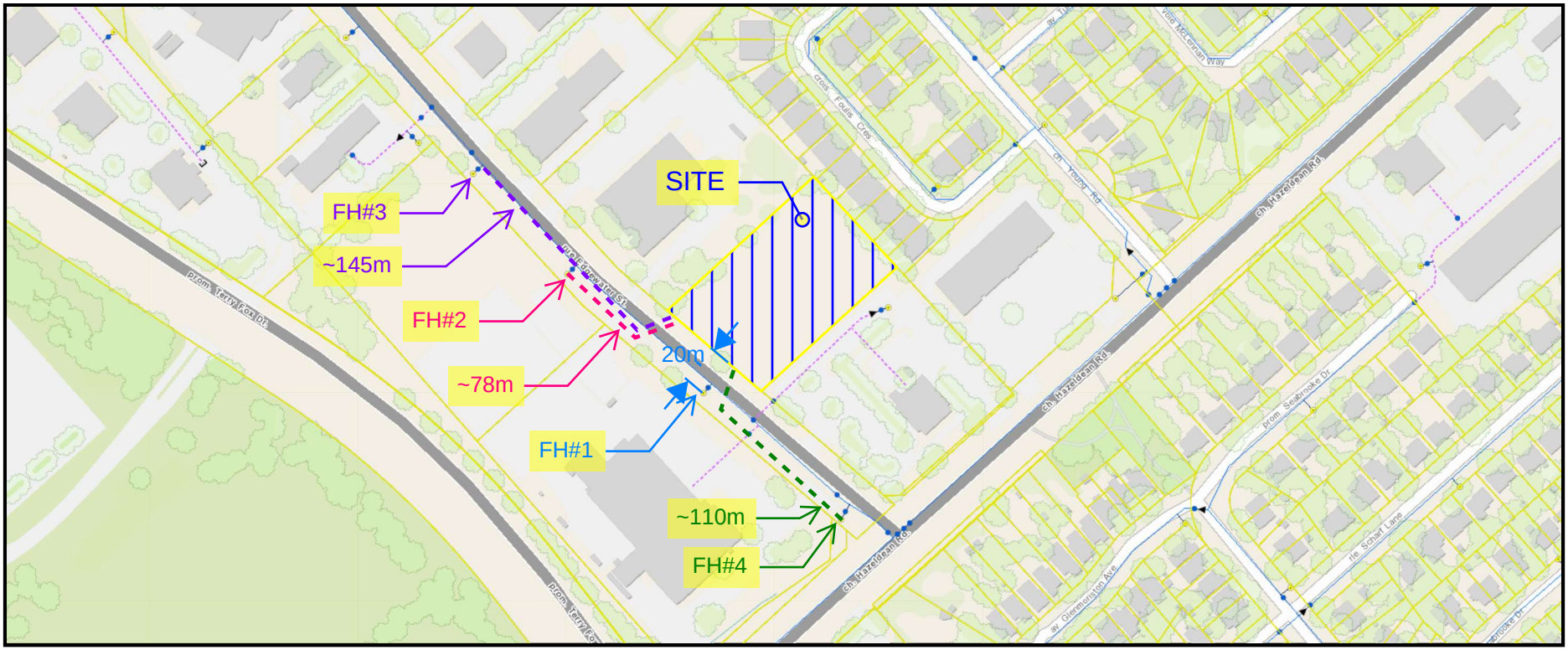
Project:	16 Edgewater
Project No.:	CCO-22-0244
Designed By:	AJG
Checked By:	AJG
Date:	June 28, 2022

Boundary Conditions Unit Conversion

EDGEWATER STREET

Scenario	Height (m)	Elevation (m)	m H_2O	PSI	kPa
Avg. DD	161.4	99.5	61.9	88.1	607.2
Fire Flow (166.7 L/s or 10,000 L/min)	156.1	99.5	56.6	80.5	555.2
Fire Flow (250 L/s or 15,000 L/min)	154.8	99.5	55.3	78.7	542.5
Peak Hour	156.7	99.5	57.2	81.4	561.1

16 Edgewater Street
Hydrant Coverage Figure



Map Origin:
https://maps.ottawa.ca/geoOttawa/

2021-10-18

Boundary Conditions
16 Edgewater Street

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	78	1.30
Maximum Daily Demand	232	3.86
Peak Hour	348	5.80
Fire Flow Demand #1	10,000	166.67
Fire Flow Demand #2	15,000	250.00

Location

Results

Connection 1 – Edgewater St.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	161.4	84.6
Peak Hour	156.7	78.0
Max Day plus Fire 1	156.1	77.1
Max Day plus Fire 2	154.8	75.2

Ground Elevation = 101.9 m

Notes

1. A second connection to the watermain, separated by an isolation valve, is required to decrease vulnerability of the water system in case of breaks.
2. 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.

APPENDIX D
SANITARY CALCULATIONS

McINTOSH PERRY

McINTOSH PERRY

CCO-22-0244 - 16 Edgewater - Sanitary Demands

Project:	16 Edgewater
Project No.:	CCO-22-0244
Designed By:	AJG
Checked By:	AJG
Date:	May 9, 2022

Site Area	0.62	Gross ha	
Townhouse	**9**	2.70	Persons per unit
Bachelor	**18**	1.40	Persons per unit
1 Bedroom	**9**	1.40	Persons per unit
2 Bedroom	**104**	2.10	Persons per unit
3 Bedroom	**36**	3.10	Persons per unit
Total Population	**393**	**Persons**	
Commercial Area	**767**	**m^2**	

DESIGN PARAMETERS

Institutional/Commercial Peaking Factor	1	
Residential Peaking Factor	3.42	** 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	0.03
Wet	0.17
Total	**0.21**

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	**280**	**L/c/d**	**393**	**1.27**
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)**	**767**	**0.02**
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	1.27	L/s
PEAK RESIDENTIAL FLOW	4.36	L/s
AVERAGE ICI FLOW	0.02	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.02	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.02	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	1.33	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	4.41	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	4.59	L/s

SANITARY SEWER DESIGN SHEET

PROJECT: CCO-22-0244
LOCATION: 16 Edgewater
CLIENT:

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	
				BAC/1-BED	2-BED	3-BED	TH		IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL			IND	CUM								L/s	(%)
													IND	CUM	IND	CUM	IND	CUM												
		BLDG	MH1B	27	104	36	9	0.62	392.1	392.1	3.42	4.35		0.00	0.08	0.08		0.00	0.02	0.70	0.70	0.23	4.60	34.22	3.00	200	1.00	1.055	29.61	86.55
		MH1B	EX.SEWER					0.62		392.1	3.42	4.35		0.00	0.00	0.08		0.00	0.02	0.00	0.70	0.23	4.60	34.22	7.10	200	1.00	1.055	29.61	86.55

Design Parameters:

Residential			ICI Areas			
BAC/1-BED	1.4	p/p/u				Peak Factor
2-BED	2.1	p/p/u	INST	28,000	L/Ha/day	1
3-BED	3.1	p/p/u				
TH	2.7	p/p/u	COM	28,000	L/Ha/day	1
OTH	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: RRR

Checked: AJG

Project No.: CCO-22-0244

No.	Revision	Date
1.	Issued for Review	2022-06-28

Sheet No:
1 of 1

Alison Gosling

From: Rathnasooriya, Shika <Thakshika.Rathnasooriya@ottawa.ca>
Sent: May 12, 2022 10:15 AM
To: Alison Gosling
Subject: FW: 22-0244 - 16 Edgewater - Sanitary Capacity Analysis

Hi Alison,

The sanitary flows are acceptable.

Thanks,
Shika

From: Tousignant, Eric <Eric.Tousignant@ottawa.ca>
Sent: May 11, 2022 1:54 PM
To: Rathnasooriya, Shika <Thakshika.Rathnasooriya@ottawa.ca>
Subject: RE: 22-0244 - 16 Edgewater - Sanitary Capacity Analysis

Hi Shika

No concerns with the proposed flow.

Eric

Eric Tousignant, P.Eng.
Senior Water Resources Engineer/ Ingénieur principal en resources hydriques
Infrastructure and Water Services / *services d'infrastructure et d'eau*
613-580-2424 ext 25129

From: Rathnasooriya, Shika <Thakshika.Rathnasooriya@ottawa.ca>
Sent: May 11, 2022 12:58 PM
To: Tousignant, Eric <Eric.Tousignant@ottawa.ca>
Subject: FW: 22-0244 - 16 Edgewater - Sanitary Capacity Analysis

Hi Eric,

Are you able to confirm if the 300mm sanitary sewer within Edgewater Street has the capacity to capture the demands from the proposed residential site that was originally zoned as industrial.

Thank you,
Shika

From: Alison Gosling <a.gosling@mcintoshperry.com>
Sent: May 09, 2022 2:52 PM

To: Rathnasooriya, Shika <Thakshika.Rathnasooriya@ottawa.ca>
Subject: 22-0244 - 16 Edgewater - Sanitary Capacity Analysis

Good afternoon Shika,

Per 16 Edgewater Comment #B6, can the City please assess the capacity of the municipal sanitary sewer? Demand calculations are summarized below and attached.

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WE
TOTAL ESTIMATED PEAK DRY WE
TOTAL ESTIMATED PEAK WET WE

Please let me know if you have any questions.

Thank you,

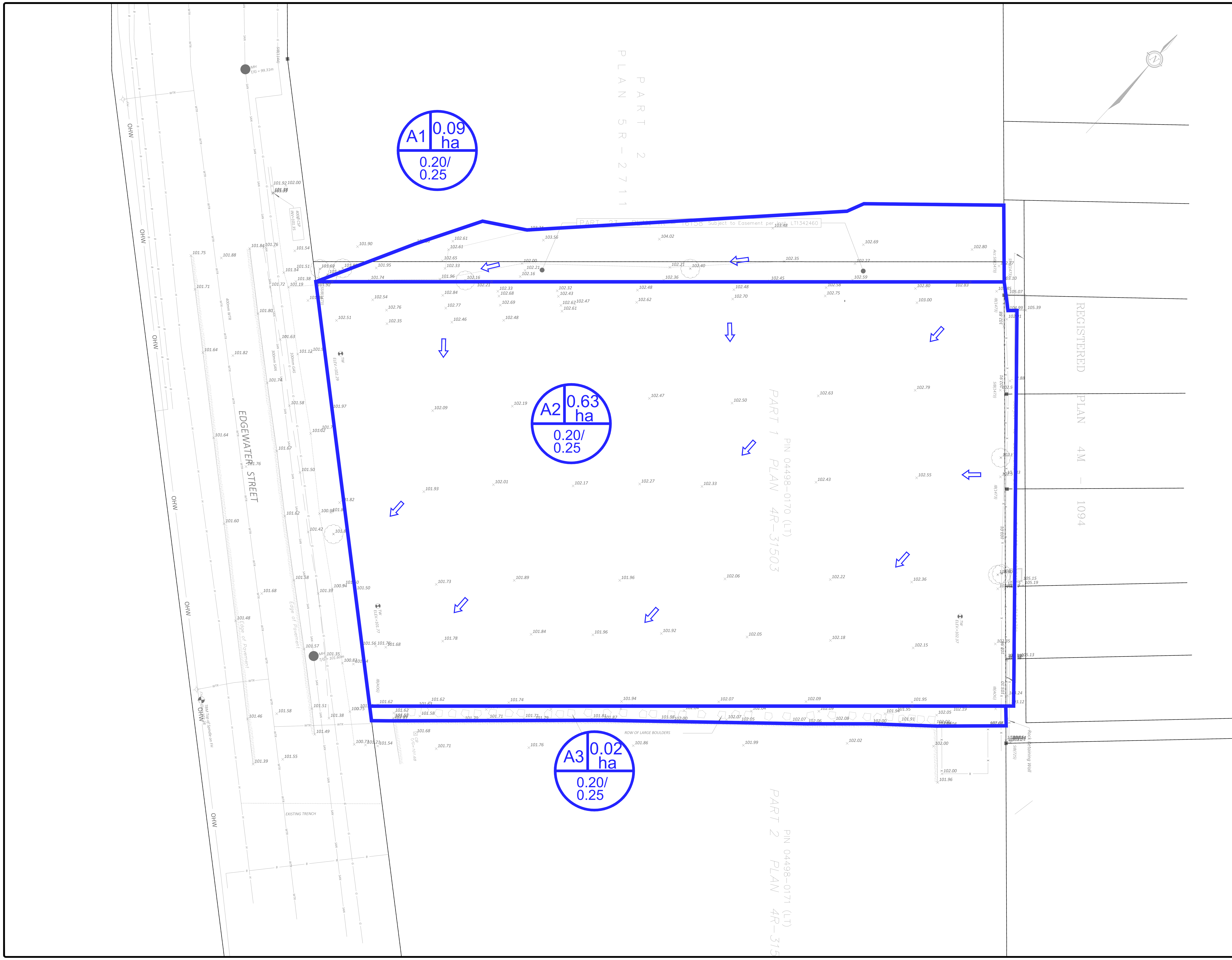
Alison Gosling, P.Eng.
Project Engineer, Land Development
T. 613.714.4629
a.gosling@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

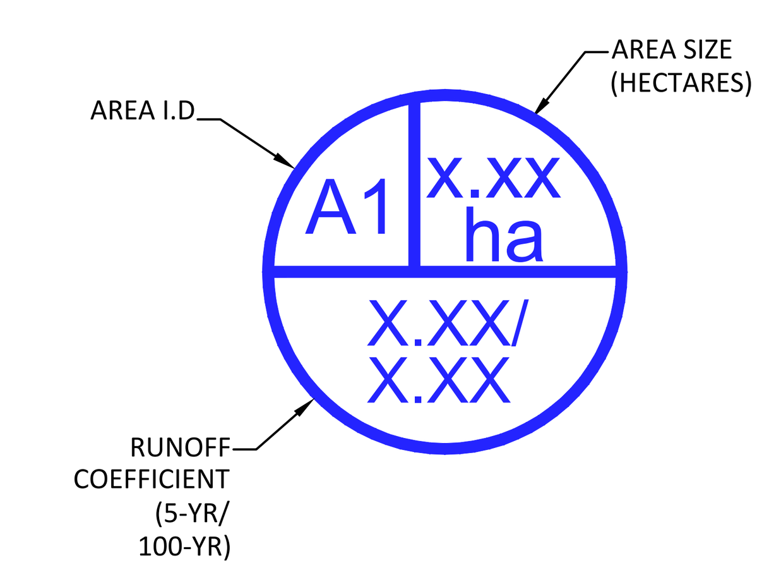
Turning Possibilities Into Reality

APPENDIX E
PRE-DEVELOPMENT DRAINAGE PLAN

McINTOSH PERRY



LOCATION PLAN
N.T.S.



SCALE 1 : 250
0 5 10 15 20 25 Metres

No.	Revision/Issue	Date
02	ISSUED FOR MUNICIPAL REVIEW	2022/07/29
01	ISSUED FOR MUNICIPAL REVIEW	2022/06/28
00	ISSUED FOR MUNICIPAL REVIEW	2021/10/22

Check and verify all dimensions before proceeding with the work

Do not scale drawings

McINTOSH PERRY
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Tel: 613-542-3788 Fax: 613-542-7583
www.mcintoshperry.com

Stamp:
LICENSED PROFESSIONAL ENGINEER 220244 A. J. GOSLING 100226726 2022-07-29 PROVINCE OF ONTARIO

Stamp:
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

Client:
KEVIN MCMAHON
PARK RIVER PROPERTIES
206-900 BOULEVARD DE LA CARRIERE, GATINEAU, QC, J8Y 6T5

Project:
16 EDGEWATER HOUSING
KANATA ONTARIO

Drawing Title:
PRE-DEVELOPMENT DRAINAGE PLAN

Scale: 1:250
Drawn by: M.M.
Checked By: A.G.
Designed By: S.G.
Project Number: CCO-22-0244
Drawing Number: 03

D07-12-21-0176

APPENDIX F
POST-DEVELOPMENT DRAINAGE PLAN

McINTOSH PERRY

PART 2 PLAN 5R – 2711

PART 23 PLAN 4R – 16158 Subject to Easement per Inst. LT1342460

REGISTERED PLAN 4M – 1094

PART 1 PLAN 4R-04498-0170 (LT)

PART 2 PLAN 4R-04498-0171 (LT)

EDGEWATER STREET

OHW

B1 0.04 ha 0.90/ 1.00

B2 0.04 ha 0.90/ 1.00

B3 0.12 ha 0.25/ 0.31

B4 0.02 ha 0.69/ 0.77

B5 0.14 ha 0.90/ 1.00

B6 0.23 ha 0.78/ 0.87

B7 0.03 ha 0.90/ 1.00

ROOF TOP STORAGE
VOL PROVIDED = 16.7m³
5-YEAR FLOW RATE = 1.14 L/s
100-YEAR FLOW RATE = 2.07 L/s

ROOF TOP STORAGE
VOL PROVIDED = 16.8m³
5-YEAR FLOW RATE = 1.14 L/s
100-YEAR FLOW RATE = 2.07 L/s

ROOF TOP STORAGE
VOL PROVIDED = 60.60m³
5-YEAR FLOW RATE = 3.08 L/s
100-YEAR FLOW RATE = 5.32 L/s

ROOF TOP STORAGE
VOL PROVIDED = 12.98m³
5-YEAR FLOW RATE = 0.96 L/s
100-YEAR FLOW RATE = 1.89L/s

AD1 T/G: 101.55
AD2 T/G: 101.61
AD3 T/G: 101.58
AD4 T/G: 101.50
AD5 T/G: 101.50
AD9 T/G: 101.55
AD10 T/G: 101.60
AD11 T/G: 101.60

ROW OF LARGE BOULDERS

EXISTING TRENCH

Edge of Pavement

Rock Retaining Wall

AREAS B1, B2 & B5-B7 TO BE CONTROLLED
AREAS B3 & B4 TO BE UNCONTROLLED

LOCATION PLAN
N.T.S.

AREA I.D. — AREA SIZE (HECTARES)
RUNOFF COEFFICIENT (5-YR/ 100-YR)

SCALE 1 : 250
0 5 10 15 20 25 Metres

No.	Revision/Issue	Date
02	ISSUED FOR MUNICIPAL REVIEW	2022/07/29
01	ISSUED FOR MUNICIPAL REVIEW	2022/06/28
00	ISSUED FOR MUNICIPAL REVIEW	2021/10/22

Check and verify all dimensions before proceeding with the work — Do not scale drawings

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Client:
KEVIN MCMAHON
PARK RIVER PROPERTIES
206-900 BOULEVARD DE LA CARRIERE, GATINEAU, QC, J8Y 6T5

Project:
16 EDGEWATER HOUSING
KANATA ONTARIO

Drawing Title:
POST-DEVELOPMENT DRAINAGE PLAN

Scale: 1:250	Project Number: CCO-22-0244
Drawn by: M.M.	
Checked By: A.G.	Drawing Number: 04
Designed By: S.G.	

D07-12-21-0176

FILENAME: I:\Ottawa\05 Project - Proposals\2022 Jobs\CCO\CCO-22-0244 Park River_Kanata Affordable Housing_16 Edgewater\12 - Drawings\CCO-22-0244_Design.dwg
LAST SAVED: Friday, July 29, 2022 LAST SAVED BY: r.robineau
LAST PLOTTED: Friday, July 29, 2022 CTB FILE USED:

APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

Pre-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	C_{AVG} 5-Year	C_{AVG} 100-Year
A2	0.624	0.00	0.90	0.00	0.60	6,241.43	0.20	0.20	0.25

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
A2	0.624	0.20	0.25	20	70.3	120.0	24.38	52.03
Total	0.624						24.38	52.03

Post-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	C_{AVG} 5-Year	C_{AVG} 100-Year
B1	0.040	404.63	0.90	0.00	0.60	0.00	0.20	0.90	1.00
B2	0.041	407.22	0.90	0.00	0.60	0.00	0.20	0.90	1.00
B3	0.125	97.57	0.90	0.00	0.60	1,151.19	0.20	0.25	0.31
B4	0.015	105.72	0.90	0.00	0.60	45.50	0.20	0.69	0.77
B5	0.135	1,346.75	0.90	0.00	0.60	0.00	0.20	0.90	1.00
B6	0.234	1,922.99	0.90	0.00	0.60	412.87	0.20	0.78	0.87
B7	0.035	346.19	0.90	0.00	0.60	0.00	0.20	0.90	1.00

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
B1	0.040	0.90	1.00	10	104.2	178.6	10.55	20.09
B2	0.041	0.90	1.00	10	104.2	178.6	10.62	20.21
B3	0.125	0.25	0.31	10	104.2	178.6	9.21	19.13
B4	0.015	0.69	0.77	10	104.2	178.6	3.02	5.81
B5	0.135	0.90	1.00	10	104.2	178.6	35.11	66.85
B6	0.234	0.78	0.87	10	104.2	178.6	52.52	100.58
B7	0.035	0.90	1.00	10	104.2	178.6	9.02	17.18
Total	0.624						130.05	249.86

Required Restricted Flow

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
A2	0.624	0.20	0.25	20	70.3	120.0	24.38	52.03

Post Development 5 & 100-year flows to match pre development 5 & 100-year flows

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	10.55	20.09	1.14	2.07	8.02	15.37	9.10	16.69	Restricted
B2	10.62	20.21	1.14	2.07	8.09	15.51	9.16	16.80	Restricted
B3	9.21	19.13	9.21	19.13					Unrestricted
B4	3.02	5.81	3.02	5.81					Unrestricted
B5	35.11	66.85	3.08	5.32	28.87	56.18	35.35	60.60	Restricted
B6	52.52	100.58	5.58	15.56	40.24	65.17	65.17	65.17	Restricted
B7	9.02	17.18	1.14	2.07	6.45	12.39	6.49	12.98	Restricted
Total	130.05	249.86	24.31	52.03	91.67	164.63	125.28	172.25	

Storage Requirements for Area B1

5-Year Storm Event

Tc (min)	I (mm/hr)	B1 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	10.55	1.14	9.41	5.65
20	70.3	7.11	1.14	5.97	7.17
30	53.9	5.46	1.14	4.32	7.78
40	44.2	4.47	1.14	3.33	8.00
50	37.7	3.81	1.14	2.67	8.02
60	32.9	3.34	1.14	2.20	7.90
70	29.4	2.97	1.14	1.83	7.70
80	26.6	2.69	1.14	1.55	7.44
90	24.3	2.46	1.14	1.32	7.12
100	22.4	2.27	1.14	1.13	6.77

Maximum Storage Required 5-Year (m^3) =	8.02

100-Year Storm Event

Tc (min)	I (mm/hr)	B1 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	20.09	2.07	18.02	10.81
20	120.0	13.49	2.07	11.42	13.71
30	91.9	10.33	2.07	8.26	14.88
40	75.1	8.45	2.07	6.38	15.32
50	64.0	7.19	2.07	5.12	15.37
60	55.9	6.29	2.07	4.22	15.18
70	49.8	5.60	2.07	3.53	14.83
80	45.0	5.06	2.07	2.99	14.36

Maximum Storage Required 100-Year (m^3) =	15.37

Storage Occupied In Area B1

5-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	303.47	0.030	9.10
		Total	9.10

Storage Available (m^3) =	9.10
Storage Required (m^3) =	8.02

100-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	303.47	0.055	16.69
		Total	16.69

Storage Available (m^3) =	16.69
Storage Required (m^3) =	15.37

*Storage area is 75% of the total roof area

Roof Drain Flow (B1)

Roof Drains Summary		
Type of Control Device	Watts Drianage - Accutrol Weir	
Number of Roof Drians	3	
	5-Year	100-Year
Rooftop Storage (m^3)	9.10	16.69
Storage Depth (m)	0.030	0.055
Flow (Per Roof Drain) (L/s)	0.38	0.69
Total Flow (L/s)	1.14	2.07

Flow Rate Vs. Build-Up (One Weir)	
Depth (mm)	Flow (L/s)
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

CALCULATING ROOF FLOW EXAMPLES

2 roof drains during a 5 year storm
elevation of water = 30mm
Flow leaving 2 roof drains = (2 x 0.36 L/s) = 0.72 L/s

2 roof drains during a 100 year storm
elevation of water = 45mm
Flow leaving 2 roof drains = (2 x 0.54 L/s) = 1.08 L/s

	Roof Drain Flow		
	Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
	0.19	15	0.57
	0.25	20	0.75
	0.32	25	0.96
5-Year	0.38	30	1.14
	0.44	35	1.32
	0.50	40	1.50
	0.57	45	1.71
	0.63	50	1.89
100-Year	0.69	55	2.07
	0.76	60	2.28
	0.82	65	2.46
	0.88	70	2.64
	0.95	75	2.85
	1.01	80	3.03
	1.07	85	3.21
	1.13	90	3.39
	1.20	95	3.60
	1.26	100	3.78
	1.32	105	3.96
	1.39	110	4.17
	1.45	115	4.35
	1.51	120	4.53
	1.58	125	4.74
	1.64	130	4.92
	1.70	135	5.10
	1.76	140	5.28
	1.83	145	5.49
	1.89	150	5.67

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

Storage Requirements for Area B2

5-Year Storm Event

Tc (min)	I (mm/hr)	B2 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	10.62	1.14	9.48	5.69
20	70.3	7.16	1.14	6.02	7.22
30	53.9	5.49	1.14	4.35	7.84
40	44.2	4.50	1.14	3.36	8.07
50	37.7	3.84	1.14	2.70	8.09
60	32.9	3.36	1.14	2.22	7.98
70	29.4	2.99	1.14	1.85	7.78
80	26.6	2.71	1.14	1.57	7.52
90	24.3	2.47	1.14	1.33	7.21
100	22.4	2.28	1.14	1.14	6.86

Maximum Storage Required 5-Year (m^3) =	8.09

100-Year Storm Event

Tc (min)	I (mm/hr)	B2 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	20.21	2.07	18.14	10.89
20	120.0	13.58	2.07	11.51	13.81
30	91.9	10.40	2.07	8.33	14.99
40	75.1	8.51	2.07	6.44	15.45
50	64.0	7.24	2.07	5.17	15.51
60	55.9	6.33	2.07	4.26	15.33
70	49.8	5.64	2.07	3.57	14.98
80	45.0	5.09	2.07	3.02	14.51

Maximum Storage Required 100-Year (m^3) =	15.51

Storage Occupied In Area B2

5-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	305.41	0.030	9.16
		Total	9.16

Storage Available (m^3) =	9.16
Storage Required (m^3) =	8.09

100-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	305.41	0.055	16.80
		Total	16.80

Storage Available (m^3) =	16.80
Storage Required (m^3) =	15.51

*Storage area is 75% of the total roof area

Roof Drain Flow (B2)

Roof Drains Summary		
Type of Control Device	Watts Drianage - Accutrol Weir	
Number of Roof Drians	3	
	5-Year	100-Year
Rooftop Storage (m^3)	9.16	16.80
Storage Depth (m)	0.030	0.055
Flow (Per Roof Drain) (L/s)	0.38	0.69
Total Flow (L/s)	1.14	2.07

Flow Rate Vs. Build-Up (One Weir)	
Depth (mm)	Flow (L/s)
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

CALCULATING ROOF FLOW EXAMPLES

3 roof drains during a 5 year storm
elevation of water = 25mm
Flow leaving 3 roof drains = (3 x 0.32 L/s) = 0.96L/s

3 roof drains during a 100 year storm
elevation of water = 50mm
Flow leaving 3 roof drains = (3 x 0.54 L/s) = 1.89L/s

	Roof Drain Flow		
	Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
	0.19	15	0.57
	0.25	20	0.75
	0.32	25	0.96
5-Year	0.38	30	1.14
	0.44	35	1.32
	0.50	40	1.50
	0.57	45	1.71
	0.63	50	1.89
100-Year	0.69	55	2.07
	0.76	60	2.28
	0.82	65	2.46
	0.88	70	2.64
	0.95	75	2.85
	1.01	80	3.03
	1.07	85	3.21
	1.13	90	3.39
	1.20	95	3.60
	1.26	100	3.78
	1.32	105	3.96
	1.39	110	4.17
	1.45	115	4.35
	1.51	120	4.53
	1.58	125	4.74
	1.64	130	4.92
	1.70	135	5.10
	1.76	140	5.28
	1.83	145	5.49
	1.89	150	5.67

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

Storage Requirements for Area B5

5-Year Storm Event

Tc (min)	I (mm/hr)	B7 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	35.11	3.08	32.03	19.22
20	70.3	23.67	3.08	20.59	24.71
30	53.9	18.17	3.08	15.09	27.16
40	44.2	14.89	3.08	11.81	28.34
50	37.7	12.69	3.08	9.61	28.82
60	32.9	11.10	3.08	8.02	28.87
70	29.4	9.90	3.08	6.82	28.63
80	26.6	8.95	3.08	5.87	28.18
90	24.3	8.18	3.08	5.10	27.56
100	22.4	7.55	3.08	4.47	26.82

Maximum Storage Required 5-Year (m^3) =	28.87

100-Year Storm Event

Tc (min)	I (mm/hr)	B7 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	66.85	5.32	61.53	36.92
20	120.0	44.91	5.32	39.59	47.51
30	91.9	34.40	5.32	29.08	52.34
40	75.1	28.13	5.32	22.81	54.75
50	64.0	23.94	5.32	18.62	55.87
60	55.9	20.93	5.32	15.61	56.18
70	49.8	18.64	5.32	13.32	55.95
80	45.0	16.84	5.32	11.52	55.32

Maximum Storage Required 100-Year (m^3) =	56.18

Storage Occupied In Area B5

5-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	1010.07	0.035	35.35
		Total	35.35

Storage Available (m^3) =	35.35
Storage Required (m^3) =	28.87

100-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	1010.07	0.060	60.60
		Total	60.60

Storage Available (m^3) =	60.60
Storage Required (m^3) =	56.18

*Storage area is 75% of the total roof area

Roof Drain Flow (B5)

Roof Drains Summary		
Type of Control Device	Watts Drianage - Accutrol Weir	
Number of Roof Drians	7	
	5-Year	100-Year
Rooftop Storage (m^3)	35.35	60.60
Storage Depth (m)	0.035	0.060
Flow (Per Roof Drain) (L/s)	0.44	0.76
Total Flow (L/s)	3.08	5.32

Flow Rate Vs. Build-Up (One Weir)	
Depth (mm)	Flow (L/s)
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

CALCULATING ROOF FLOW EXAMPLES

3 roof drains during a 5 year storm
elevation of water = 25mm
Flow leaving 3 roof drains = (3 x 0.32 L/s) = 0.96L/s

3 roof drains during a 100 year storm
elevation of water = 50mm
Flow leaving 3 roof drains = (3 x 0.54 L/s) = 1.89L/s

	Roof Drain Flow		
	Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
	0.19	15	1.33
	0.25	20	1.75
	0.32	25	2.24
	0.38	30	2.66
5-Year	0.44	35	3.08
	0.50	40	3.50
	0.57	45	3.99
	0.63	50	4.41
	0.69	55	4.83
100-Year	0.76	60	5.32
	0.82	65	5.74
	0.88	70	6.16
	0.95	75	6.65
	1.01	80	7.07
	1.07	85	7.49
	1.13	90	7.91
	1.20	95	8.40
	1.26	100	8.82
	1.32	105	9.24
	1.39	110	9.73
	1.45	115	10.15
	1.51	120	10.57
	1.58	125	11.06
	1.64	130	11.48
	1.70	135	11.90
	1.76	140	12.32
	1.83	145	12.81
	1.89	150	13.23

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

Storage Requirements for Area B6

5-Year Storm Event

Tc (min)	I (mm/hr)	B6 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
45	40.6	20.48	5.58	14.90	40.23
46	40.0	20.16	5.58	14.58	40.24
47	39.4	19.85	5.58	14.27	40.24
48	38.8	19.55	5.58	13.97	40.23
49	38.2	19.26	5.58	13.68	40.22
50	37.7	18.98	5.58	13.40	40.20
51	37.1	18.71	5.58	13.13	40.18

Maximum Storage Required 5-Year (m^3) =	40.24

100-Year Storm Event

Tc (min)	I (mm/hr)	B6 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
28	96.3	54.23	15.56	38.67	64.97
29	94.0	52.96	15.56	37.40	65.07
30	91.9	51.75	15.56	36.19	65.14
31	89.8	50.60	15.56	35.04	65.17
32	87.9	49.50	15.56	33.94	65.17
33	86.0	48.46	15.56	32.90	65.15
34	84.3	47.47	15.56	31.91	65.09

Maximum Storage Required 100-Year (m^3) =	65.17

Storage Provided

Structure	Storage Required (m^3)	Storage Provided (m^3)
Storage Tank	65.17	65.17

For Orifice Flow, C= 0.6
For Weir Flow, C= 3.33

	Orifice 1	Orifice 2	Weir 1	Weir 2
invert elevation	100.00			
center of crest elevation	100.07			
orifice width / weir length	143 mm			
orifice height				
orifice area (m^2)	0.016	0.000		

Elevation Discharge Table - Storm Routing

Elevation (m)	Orifice 1 H [m]	Orifice 1 Q [m^3]	Orifice 2 H [m]	Orifice 2 Q [m^3]	Weir 1 H [m]	Weir 1 Q [m^3]	Weir 2 H [m]	Weir 2 Q [m^3]	Total Q [l/s]
100.00	x	x							0.00
100.05	x	x							0.00
100.06	x	x							0.00
100.07	x	x							0.00
100.22	0.15	0.016							16.35
100.23	0.16	0.017							16.89
100.24	0.17	0.017							17.41
100.25	0.18	0.018							17.92
100.26	0.19	0.018							18.41
100.92	0.85	0.039							39.05
100.93	0.86	0.039							39.28
100.94	0.87	0.040							39.51
100.95	0.88	0.040							39.73
100.96	0.89	0.040							39.96
100.97	0.90	0.040							40.18
100.98	0.91	0.040							40.41
100.99	0.92	0.041							40.63
101.00	0.93	0.041							40.85

Notes: 1. For Orifice Flow, User is to Input an Elevation Higher than Crown of Orifice.
2. Orifice Equation: $Q = cA(2gh)^{1/2}$
3. Weir flow calculated in Bentley's FlowMaster - Trapezoidal Channel at 0.1%, 3:1 side slopes, roughness coeff. Of 0.035
4. These Computations Do Not Account for Submergence Effects Within the Pond Riser.
5. H for orifice equations is depth of water above the centroide of the orifice.
6. H for weir equations is depth of water above the weir crest.

Storage Requirements for Area B7

5-Year Storm Event

Tc (min)	I (mm/hr)	B7 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	9.02	1.14	7.88	4.73
20	70.3	6.08	1.14	4.94	5.93
30	53.9	4.67	1.14	3.53	6.36
40	44.2	3.83	1.14	2.69	6.45
50	37.7	3.26	1.14	2.12	6.36
60	32.9	2.85	1.14	1.71	6.17
70	29.4	2.54	1.14	1.40	5.90
80	26.6	2.30	1.14	1.16	5.57
90	24.3	2.10	1.14	0.96	5.20
100	22.4	1.94	1.14	0.80	4.80

Maximum Storage Required 5-Year (m^3) =	6.45

100-Year Storm Event

Tc (min)	I (mm/hr)	B7 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	17.18	2.07	15.11	9.07
20	120.0	11.54	2.07	9.47	11.37
30	91.9	8.84	2.07	6.77	12.19
40	75.1	7.23	2.07	5.16	12.39
50	64.0	6.15	2.07	4.08	12.25
60	55.9	5.38	2.07	3.31	11.91
70	49.8	4.79	2.07	2.72	11.43
80	45.0	4.33	2.07	2.26	10.85

Maximum Storage Required 100-Year (m^3) =	12.39

Storage Occupied In Area B7

5-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	259.64	0.025	6.49
		Total	6.49

Storage Available (m^3) =	6.49
Storage Required (m^3) =	6.45

100-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	259.64	0.050	12.98
		Total	12.98

Storage Available (m^3) =	12.98
Storage Required (m^3) =	12.39

*Storage area is 75% of the total roof area

Roof Drain Flow (B7)

Roof Drains Summary		
Type of Control Device	Watts Drainage - Accutrol Weir	
Number of Roof Drians	3	
	5-Year	100-Year
Rooftop Storage (m^3)	6.49	12.98
Storage Depth (m)	0.025	0.050
Flow (Per Roof Drain) (L/s)	0.32	0.63
Total Flow (L/s)	0.96	1.89

Flow Rate Vs. Build-Up (One Weir)	
Depth (mm)	Flow (L/s)
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

CALCULATING ROOF FLOW EXAMPLES

3 roof drains during a 5 year storm
elevation of water = 25mm
Flow leaving 3 roof drains = (3 x 0.32 L/s) = 0.96L/s

3 roof drains during a 100 year storm
elevation of water = 50mm
Flow leaving 3 roof drains = (3 x 0.54 L/s) = 1.89L/s

	Roof Drain Flow		
	Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
	0.19	15	0.57
	0.25	20	0.75
5-Year	0.32	25	0.96
	0.38	30	1.14
	0.44	35	1.32
	0.50	40	1.50
	0.57	45	1.71
100-Year	0.63	50	1.89
	0.69	55	2.07
	0.76	60	2.28
	0.82	65	2.46
	0.88	70	2.64
	0.95	75	2.85
	1.01	80	3.03
	1.07	85	3.21
	1.13	90	3.39
	1.20	95	3.60
	1.26	100	3.78
	1.32	105	3.96
	1.39	110	4.17
	1.45	115	4.35
	1.51	120	4.53
	1.58	125	4.74
	1.64	130	4.92
	1.70	135	5.10
	1.76	140	5.28
	1.83	145	5.49
	1.89	150	5.67

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

Time of Concentration Pre-Development

Drainage Area ID	Sheet Flow Distance (m)	Slope of Land (%)	Tc (min) (5-Year)	Tc (min) (100-Year)
A1	55	1.33	20	19

Tc= (3.26(1.1-c)L^0.5/S^0.33)

c = Blanced Runoff Coefficient

L = Length of drainage area

S = Average slope of watershed

STORM SEWER DESIGN SHEET

PROJECT: Residential Housing
LOCATION: 16 Edgewater
CLIENT: Park River Properties

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	16	17	18	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)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED 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)	(%)
EDGEWATER STREET	B1			0.90	0.04	0.04	0.04	10.00			104.19	122.14	178.56	10.43				1.14									
	B2			0.90	0.04	0.04	0.04	10.00			104.19	122.14	178.56	10.43				1.14									
	B5			0.90	0.14	0.13	0.13	10.00			104.19	122.14	178.56	36.50				3.08									
	B6			0.78	0.23	0.18	0.18	10.00			104.19	122.14	178.56	51.96				5.58									
	B7			0.90	0.04	0.03	0.03	10.00			104.19	122.14	178.56	9.12				5.58									
		BLDG	MH1	-	-	-	0.41	10.00	0.03	10.03	104.19	122.14	178.56	118.44				16.52	62.04	2.35	250			1.00	1.224	45.52	73.37%
		MH1	DITCH	-	-	-	0.41	10.03	0.04	10.07	104.02	121.94	178.27	118.25				16.52	62.04	2.98	250			1.00	1.224	45.52	73.37%
	B3	TCB1	DITCH	0.25	0.12	0.03	0.03	10.00	0.11	10.11	104.19	122.14	178.56	8.69				8.69	43.87	5.51	250			0.50	0.866	35.18	80.19%

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: RRR
Checked: AJG
Project No.: CCO-22-0244

No.	Revision	Date
1.	ISSUED FOR REVIEW	2022-06-28

Date: 2022-06-28
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.	Site Servicing Plan (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).	Site Grading Plan (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.	Site Grading Plan (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: ○ Metric scale ○ North arrow (including construction North) ○ Key plan ○ Name and contact information of applicant and property owner ○ Property limits including bearings and dimensions ○ Existing and proposed structures and parking areas ○ Easements, road widening and rights-of-way ○ Adjacent street names	Site Grading Plan (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	Section 4.0
☐ Identification of system constraints	N/A
☐ Identify boundary conditions	Unavailable at time of publication
☐ 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.	Site Servicing Plan (C101)
☐ 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 Proposed 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 5.3 Proposed 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 5.2 Proposed Sanitary Sewer
☐ 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 6.0 Stormwater Sewer Design & Section 7.0 Proposed 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 Plans
☐ 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 6.0 Stormwater Sewer Design & Section 7.0 Proposed 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 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed 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.	Site Grading Plan
☐ 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 7.0 Proposed Stormwater Management Appendix G
☐ Any proposed diversion of drainage catchment areas from one outlet to another.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed 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 6.0 Stormwater Sewer Design & Section 7.0 Proposed 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.	Site Grading Plan (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.	Section 8.0 Sediment & Erosion Control
☐ 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 9.0 Summary Section 10.0 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