SERVICING & STORMWATER MANAGEMENT REPORT 16-STOREY MIXED USE BUILDING – 311 SOMERSET STREET WEST

Project No.: CP-21-2341

City File No.: D07-12-XX-XXXX

Prepared for:

Gemstone Corporation
252 Argyle Avenue
Ottawa, ON K2P 1B9

Prepared by:

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

2021-02-19

McINTOSH PERRY

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1.0 PROJECT OVERVIEW

1.1 Purpose

McIntosh Perry (MP) has been retained by Gemstone Corporation to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control application for the proposed 16-Storey Residential Building, located at 311 Somerset Street West 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 Rideau Valley Conservation Authority (RVCA), 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 drawing:

- CP-21-2341, C101 – Site Grading. Servicing and Drainage Plan.

1.2 Site Description

The subject property, herein referred to as the site, is located at 311 Somerset Street West within the Somerset Ward. The legal description of the site is Registered Plan 12281, Lot 5 (West O'Connor Street) & Lot 41 (North Somerset Street), City of Ottawa. The site covers approximately 0.14 ha and is located between Somerset Street West and O'Connor Street as shown by ***Figure 1*** below. The site is zoned for Traditional Main Street Use (TM [2185]).

Figure 1: Site Map

Additional details are included on the Site Location Plan included in Appendix 'A'.

1.3 Proposed Development and Statistics

The proposed development consists of a 16 storey, mixed use commercial/residential building. The ***Site Plan*** proposes to have 140 residential units, with 581 m^2 of amenity space and 252 m^2 of commercial space located on the ground floor. Underground parking and an access ramp will be provided throughout the site along with landscaping. There will be one site accesses for the development from O'Connor Street.

1.4 Existing Conditions and Infrastructure

The existing site is located within the City of Ottawa's Rideau River Sub-Watershed. The existing site is currently developed as paved parking area and is made up of gravel and asphalt parking areas. The site is sloped at approximal 1.5% towards O'Connor Street as shown by drawing ***PRE*** located within ***Appendix E***. The existing site is assumed to have no sanitary, storm or water services.

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

- **O'Connor Street**
  - 406 mm dia. UCI Watermain
  - 525 mm dia. Conc. Sanitary Sewer tributary to the Queen Elizabeth Combined Trunk and ultimately the Interceptor Sewer
  - 450 mm dia. Conc Storm Sewer, tributary to the Cooper Street Trunk Sewer and outlets to the Rideau Canal
- **Somerset Street West**
  - 406 mm dia. PVC Watermain
  - 450 mm dia. Conc. Sanitary Sewer tributary to the Queen Elizabeth Combined Trunk and ultimately the Interceptor Sewer
  - 600 mm dia. Conc Storm Sewer, tributary to the Cooper Street Trunk Sewer and outlets to the Rideau Canal

1.5 Approvals

The contemplated development is subject to the City of Ottawa site plan control approval process. 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 contemplated development as the stormwater management system meets the exemption requirements

under O.Reg 525/90. It is a single parcel, stormwater is not proposed to outlet to a combined sewer and is not zoned or proposed to be an industrial use.

2.0 BACKROUND STUDIES, STANDARDS AND REFERENCES

2.1 Background Reports / Reference Information

As-built drawings of existing services within the vicinity of the proposed site were reviewed in order to determine accurate servicing and stormwater management schemes for the site.

A topographic survey (2139123) of the site was completed by Farley, Smith & Denis Surveying Ltd. dated November 12,2020.

The Site Plan, A105 was prepared by Figurr Architects Collective dated September 2020 (***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 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-2018-03 City of Ottawa, March 2018. ***(ISTB-2018-03)***

Ministry of Environment, Conservation and Parks:

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

3.0 PRE-CONSULTATION SUMMARY

A pre-consultation meeting was conducted on May 29th, 2019 regarding the proposed site. Specific design parameters to be incorporated within this design include the following based on a follow up email to the City sent on December 3rd, 2020.

- Pre-development and post-development flows shall be calculated using a time of concentration (Tc) with a minimum Tc of 10 minutes.
- Control 5 through 100-year post-development flows to the 5-year pre-development flows with a combined C value to a maximum of 0.50.
- Quality controls are not required to be provided for this site per RVCA requirements.

The notes from the City of Ottawa and correspondence with the RVCA can be found in ***Appendix G***.

4.0 WATERMAIN

4.1 Existing Watermain

There is an existing 400 mm diameter PVC watermain within Somerset Street West as well as a 406 mm diameter watermain within O'Connor Street.

4.2 Proposed Watermain

Dual 150mm diameter PVC water laterals are proposed to service the site complete with a water valve located at the property line. They will be connected to the existing 406 mm diameter watermains within Somerset Avenue and O'Connor Street. The laterals are designed to have a minimum of 2.4m cover.

The Fire Underwriters Survey 1999 (FUS) method was utilized to estimate the required fire flow for the site. Fire flow requirements were calculated per City of Ottawa Technical Bulletin ***ISTB-2018-03***. The following parameters were coordinated with the architect:

- Type of construction – Non-Combustible Construction;
- Occupancy type – Limited Combustible;
- and Sprinkler Protection –Fully supervised.

The results of the calculations yielded a required fire flow of 18,000 L/min. 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 ***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	0.14 ha
Residential	280 L/day/person
Commercial	2.5 L/m2/d
Average Day Demand (L/s)	0.71
Maximum Daily Demand (L/s)	2.58
Peak Hourly Demand (L/s)	3.87
FUS Fire Flow Requirement (L/s)	300.00

The City provided the estimated water pressures at both for the average day scenario, peak hour scenario and the peak hour fire flow scenario for the demands indicated by the correspondence in ***Appendix C***. As shown by ***Table 2*** below, the minimum and maximum pressures fall within the required range identified in the ***Ottawa Water Guidelines***.

Table 2: Boundary Conditions Results

Scenario	HGL (m H_2O)*	Pressure (kPa)
Average Day Demand (L/s)	44.0	431.1
Maximum Daily + Fire Flow Demand (L/s)	37.1	363.5
Peak Hourly Demand (L/s)	35.5	347.8
*Adjusted for an estimated ground elevation of 71.55 above the connection point		

The normal operating pressure range is anticipated to be 347.8 kPa to 431.1 kPa and will not be less than 275 kPa (40 psi) or exceed 689 kPa (100 psi). The proposed watermain will meet the minimum required 20 psi (140 kPa) 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 and private fire hydrants within 150 m of the proposed building were accounted for per ***ISTB 2018-03*** Appendix I, Table 3. as demonstrated 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.)
311 Somerset Street West	18000	3	1	21,500

5.0 SANITARY DESIGN

5.1 Existing Sanitary Sewer

There is an existing 450 mm diameter concrete sanitary collection sewer tributary to the combined Interceptor Collector sewer fronting the development within Somerset Street West.

5.2 Proposed Sanitary Sewer

A new 200 mm diameter gravity sanitary service will be connected to the existing 450 mm diameter sanitary sewer within Somerset Street West.

Table 4: Sanitary Design Criteria

Design Parameter	Value
Residential 1 Bedroom / Studio Apartment	1.4 persons/unit
Residential 2 Bedroom Apartment	2.1 persons/unit
Average Daily Demand	280 L/day/person
Commercial / Amenity Space	2500 L/(1000m² /day)

Table 5: Summary of Estimated Sanitary Flow

Design Parameter	Total Flow (L/S)
Total Estimated Average Dry Weather Flow	0.74
Total Estimated Peak Dry Weather Flow	2.92
Total Estimated Peak Wet Weather Flow	2.97

The estimated sanitary flow based on the ***Site Plan*** results in a peak wet weather flow of ***2.97 L/s.*** The proposed 200 mm diameter gravity sanitary service will be installed with a minimum full flow target velocity (cleansing velocity) of 0.6 m/s and a full flow velocity of not more than 3.0 m/s. Design parameters for the site include an infiltration rate of 0.28 l/s/ha. The proposed service for the site will be connected to existing 450 mm diameter sanitary sewer within Somerset Street West.

6.0 STORM SEWER DESIGN

6.1 Existing Storm Sewers

The site is assumed to contains no existing stormwater infrastructure as such there is presumed to be no flow attenuation. Runoff from the existing development is tributary to the existing storm sewer within O'Connor Street.

6.2 Proposed Storm Sewers

A new storm service will be extended from the existing 600 mm diameter storm sewer within Somerset Street.

Runoff from the proposed site will be collected and directed towards an internal cistern within the buildings parking garage. Area Drains are proposed throughout the subject property conveying flow into an internal cistern within the parking garage. Storm flows will be controlled by an inlet control device (ICD) to limit flows to the specified allowable release rate.

See CP-21-2341 - *POST* and *Storm Sewer Design Sheet* in Appendix 'F' of this report for more details. The Stormwater Management design for the subject property will be outlined in Section 6.0.

7.0 PROPOSED STORMWATER MANAGEMENT

7.1 Design Criteria and Methodology

Stormwater management for the proposed site will be maintained through positive drainage away from the proposed building and into a new internal cistern system. The storm system will capture the roof and drive aisle runoff and direct the flow to an internal 40 m^3 cistern. The restricted flow will then release into a proposed storm service that connects to the existing 600 mm storm sewer located within Somerset Street West. The emergency overflow for the proposed site will be directed south towards O'Connor Street. The quantitative properties of the storm runoff for both the pre & post development flows are further detailed below.

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

Quality Control

- The site does not require quality controls as no surface parking is proposed and roof drainage is considered clean.

Quantity Control

- Post-development flow 5/100-year is be restricted to match the 5-year pre-development flow with a maximum C value of 0.50.

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
Gravel	0.60
Undeveloped and Grass	0.20

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

As per the pre-consultation meeting with the City of Ottawa the time of concentration (Tc) used for pre-development shall be calculated and no less than 10 minutes and post-development flows shall be calculated and no less than 10 minutes.

7.3 Pre-Development Drainage

The existing site drainage limits are demonstrated on the Pre-Development Drainage Area Plan. A summary of the Pre-Development Runoff Calculations can be found below.

Table 6: Pre-Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (2/5-Year)	Runoff Coefficient (100-Year)	2-year Peak Flow (L/s)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)
A1	0.14	0.50	0.63	14.65	19.87	42.58
Total	**0.14**			**14.65**	**19.87**	**42.58**

See CP-21-2341 - *PRE* in ***Appendix E*** and ***Appendix G*** for calculations.

7.4 Post-Development Drainage

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan. See CP-21-2341 - *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)	Runoff Coefficient (2/5-Year)	Runoff Coefficient (100-Year)	2-year Peak Flow (L/s)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)
B1	0.03	0.90	1.00	4.99	6.76	12.88
B2	0.11	0.90	1.00	21.38	29.01	55.24
Total	**0.14**			**26.37**	**35.77**	**68.12**

See ***Appendix G*** for calculations. Runoff for areas B2 will be restricted before outletting to the existing storm system within Somerset Street West. The flow will be controlled within the internal cistern for area B2. Runoff for areas B1 will not be controlled and run-off towards the City rights-of-way. The flow will be controlled by an inlet control device located within the building's cistern. The restriction device will account for the unrestricted flow (Area B1) leaving the site. This quantity control will be further detailed in Sections 7.5 and 7.6.

7.5 Quantity Control

After discussing the stormwater management criteria for the site with City staff, the total post-development runoff for this site has been restricted to match the 5-year pre-development flow rate with a combined C value of 0.50. (See ***Appendix E*** for pre-consultation notes). The site is required to restrict flow to ***19.87 L/s*** in the 100-year event.

See ***Appendix G*** for calculations.

Reducing site flows will be achieved using flow restrictions and will create the need for onsite storage. Runoff from areas B2 will be restricted as shown in the table below.

Table 8: Post-Development Restricted Runoff Summary

Drainage Area	Post Development Unrestricted Flow (L/s)		Post Development Restricted Flow (L/s)		
	5-Year	100-Year	5-Year	100-Year	
B1	6.67	12.88	6.67	12.88	Unrestricted
B2	29.01	55.24	9.13	7.00	Restricted - Internal Cistern
Total	**35.77**	**68.12**	**15.90**	**19.87**	

Runoff from Areas B2 will be restricted through an IPEX Tempest ICD or an approved equivalent. This orifice plug will restrict areas B2 to ***7.51 L/s*** for both the 5 and 100-year storm events. The storage for this area will be provided via the internal ***40 m³*** cistern to be designed by the mechanical engineer.

See ***Appendix G*** for calculations.

In the event that there is a rainfall above the 100-year storm event, or a blockage within the storm sewer system, an emergency overland flow route has been provided so that the storm water runoff will be conveyed towards the east entrance at O'Connor Street or Somerset Street West per an emergency overflow located within the internal cistern design.

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 catchbasins and filter fabric is to be placed under the grates of all existing catchbasins 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

Rip-rap will be placed at all locations that have the potential for concentrated flow. It is crucial that the Contractor ensure that the geotextile is keyed in properly to ensure runoff does not undermine the rip rapped area. Additional rip rap is to be placed at erosion prone locations as identified by the Contractor / Contract Administrator / City or Conservation Authority.

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 new 16 storey residential building is proposed to be constructed along the west property line at 311 Somerset Street West.
- A 150 mm diameter dual water service is proposed to service the site, connecting to the watermain within Somerset Street West and O'Connor Street.
- A 200 mm sanitary service lateral will be installed to service the proposed building and connect to the sanitary sewer within Somerset Street West.
- The 250mm diameter storm service lateral is proposed to connect to the existing storm sewer within Somerset Street West.
- Storage for the 5-through 100-year storm events will be provided via an internal 40.00 m^3 cistern within the buildings parking garage.

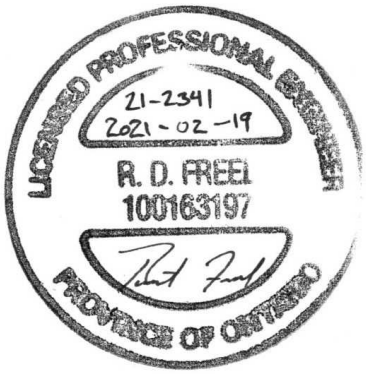
10.0 RECOMMENDATION

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 311 Somerset Street West Development.

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 Gemstone Corporation. 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, Conservation and Parks, 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

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

600 300 0 600

Scale 1:20,000 Metres

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2020.

CLIENT: GEMSTONE CORPORATION

PROJECT: SIXTEEN STOREY APARTMENT BUILDING

TITLE: SITE LOCATION

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PROJECT NO:CCO-21-2341	
Date	Dec., 15, 2020
GIS	EU
Checked By	CK

FIGURE: 1

APPENDIX B
BACKGROUND DOCUMENTS

McINTOSH PERRY

Pre-application Consultation Meeting Minutes
Address: 234-236 O'Connor & 311 Somerset St W
Formal Pre-consultation File No.: PC2019-0115
Date: Wednesday May 29, 2019, 10:00am – 11:00am
Location: Room 4103, City Hall, 110 Laurier Ave W
City Contact: Ann O'Connor

City of Ottawa Staff Present:
Ann O'Connor – File Lead, Planner, Central Development Review
Anne Fitzpatrick – Heritage Planner
Christopher Moise – Urban Designer
Shawn Wessel – Infrastructure Project Manager
Wally Dubyk – Transportation Project Manager
Mark Gordon – Planning Student
Will Fleury – Heritage Student

Invitees Present:
Jack Hanna –Centretown Citizens Community Association (CCCA) Representative
Miguel Tremblay – Planner, Fotenn Consultants
Jaime Posen – Planner, Fotenn Consultants
Josh Zaret – Gemstone Developments
Neil Zaret – Gemstone Developments
Roberto Campos – Architect, Figurr Architects Collective

Introductions and Acknowledgements
- Round table introductions
- Acknowledgement that an NDA has been signed by the CCCA Representative

Overview of Proposal (Miguel Tremblay and Roberto Campos)
- A surface parking lot (on lots municipally known as 236 O'Connor and 311 Somerset Street W) and a Privately-Owned Public Space (on 234 O'Connor) currently occupy the site.
- The POPS on 234 O'Connor was established through a Demolition Control application that also involved demolishing a heritage building that had been damaged by a fire.
- There are multiple planning designations associated with the three properties in the subject area (including two zones, two OP designations, and designations through the Centretown Secondary Plan). Miguel provided an overview of the municipal policy context for the three properties.
- There is a belief that the abutting property to the north will not likely redevelop to be a high-rise building because the area is too small.
- The proposal is for a 16-storey mixed-use building. There is ground floor commercial with residential above. The massing transitioning from 9-storeys facing Somerset to 16-storeys moving north. Two levels of underground parking are proposed to be accessed from an egress off O'Connor.

- There is currently setbacks in the massing from Somerset to accommodate hydro wires. A survey of the hydro poles and wires has not yet been completed, and therefore, the setbacks are estimated.
- There is a desire to provide a lot of glass at-grade and provide a contemporary backdrop for the heritage buildings that surround the site.
- The parking garage will extend under the drive aisle.

Preliminary Comments from the City

Planning Comments (Ann O'Connor)

- Based on the current proposal, the proposal would require:
    - Official Plan Amendment
    - Major Zoning By-law Amendment
    - Site Plan Control, Complex, Non-Rural application
    - Heritage application
    - Subject to the Urban Design Review Panel (UDRP) during the other Planning Act applications.

- Planning Services supports the intensification of a surface parking lot in Centretown, provided the redevelopment is compatible with the existing and planned context and adheres to Planning policy. There are concerns with how the current proposal relates to its broader Centretown context. There are also concerns with how it relates to its immediate context, including the existing abutting low-rise heritage-designated developments, planned abutting high-rise context to the north, and the streetscapes.

- The properties have two Official Plan designations on Schedule B.
    - 311 Somerset is designated Traditional Mainstreet
    - 234 and 236 O'Connor is designated General Urban Area (unless amalgamated with 311 Somerset)

- The properties are subject to the Centretown Secondary Plan and Community Design Plan.
    - *Schedule H – Centretown Land Use* designates all three properties "Residential Area – High Profile"
    - *Schedule H1 – Land Use* designates the properties 311 Somerset and 236 O'Connor "Mixed-Use Areas – Traditional Mainstreet" and designates 234 O'Connor "Residential Areas - Apartment Neighbourhood".
    - *Schedule H2 – Maximum Building Heights* designates the properties 311 Somerset and 236 O'Connor "Mid-rise – 9 storeys" and designates 234 O'Connor "High-rise – 16 storeys".

- *Schedule H3 – Greening Centretown* designates the frontage along both Somerset and O'Connor as a "Smaller Moments - Priority Streetscape Improvement"
- *Annex 1 – Character Areas* designates the properties as being located within the "Central" area and within the "North" and "Central" character area.

- Two zones apply to the subject area:
  - 236 O'Connor and 311 Somerset are zoned TM[2185] – Traditional Mainstreet, Exception 2185 and subject to Heritage Overlay (Section 60)
  - 234 O'Connor is zoned R5B[482] F(3.0) - Residential Fifth Density, Subzone B, Exception 482, FSI of 3.0 and subject to Heritage Overlay (Section 60)

- The properties are located within a "Design Priority Area" as there is frontage along the Somerset Traditional Mainstreet.
  - Given the nature of the proposal, a formal review by the Urban Design Review Panel (UDRP) is required. This formal review takes place during the application process.
  - An informal pre-consultation, prior to submitting an application, is requested and considered a good opportunity for the applicant to address design concerns/building changes earlier in the process, prior to the further investment and time.

- Other site development considerations:
  - Hydro poles along Somerset Street West may require additional setbacks.
  - Section 37 calculations should be submitted with the rezoning application.
  - There is an access easement over 234 O'Connor granted to the City of Ottawa for a Privately-Owned Public Space (POPS). Please review the Demolition Control Agreement (Inst. No. OC1941454). As per the Agreement, the City agrees to release the easement, at the request and expense of the Owner, once the Owner has received site plan approval and the applicable SPA has been registered.
  - As per the Heritage Comments, the property is located in the Centretown Heritage District Plan and all the subject properties are designated heritage. Therefore, redevelopment of these lands requires a heritage application that will go to Build Heritage Sub-Committee > Planning Committee > Council. Planning staff can work with your team to arrange for the heritage and planning act applications be reviewed at PC at the same time.
  - Through the Site Plan Agreement, the City will take a corner site triangle and two ROWs along both frontages (see Transportation Comments). If the ZBLA comes in before the SPC application, the building envelope and

extent of the underground parking garage should still reflect the new property lines that will ultimately be established through redevelopment.

- It is recommended you consult with following:
    - Councillor Catherine McKenney (Ward 14 – Somerset)
    - Centretown Citizens Community Association (CCCA)
    - Abutting property owners

- Comments on the current proposal and approach:
    - An OPA is required to amend multiple schedules and increase the number of storeys and uses outlined in the Centretown Secondary Plan. In order for Planning to consider additional height at this location, the proposal needs to demonstrate:
        - Compliance with provincial planning policy (PPS and Planning Act) and heritage act
        - Compatibility with the Centretown heritage context (specifically addressing form, materiality, massing)
        - Sensitively address the existing and future context of abutting/adjacent properties through transitions, setbacks, stepbacks, and design.

    - It would be valuable for the applicant's team to model the surrounding context based on Sch.H2 of the Centretown Secondary Plan.
        - The proposal can then be put into the model, and the massing addressed to respond to this context.
        - The model should reflect the potential high-rise (16-storey) context to the north, along Cooper.
        - The model should also respect/assume the retention of the heritage designations of the low-rise development in the middle of the Somerset St block (despite the fact up to 4 storeys is permitted in the SP).

    - Refer to the *Urban Design Guidelines for High-Rise Buildings*. Particular attention should be paid to the policies relating to "Context - Transition in Scale" (p.9), "Built Form – Height and Transition" (p. 21), and "Separation between Towers" (p.24).

    - The proposal should respond to the Traditional Mainstreet context. Please refer to the *Urban Design Guidelines for Traditional Mainstreets*. Adjust the floor plans and building facades to ensure Somerset has an active entrance and reflects the rhythm of the rest of the street.

- Address the pedestrian and cycling connections. Easily accessible and secure bicycle parking is a priority. Planning supports the proposal's ground floor bicycle parking area.

- Address how the streetscapes can be greened as per *Schedule H3 – Greening Centretown*, which designates the abutting streetscapes as priorities for greening/streetscape improvement.

Heritage Comments (Anne Fitzpatrick)

- Process
  - The property is located within the Centretown Heritage Conservation District, which is designated under Part V of the Ontario Heritage Act.

  - An application for new construction under the Ontario Heritage Act would be required for this proposal in addition to any Planning applications. The application would require Council approval after consultation with Built Heritage Sub-Committee and Planning Committee. The application form and requirements can be found on the City's website:
    - https://ottawa.ca/en/city-hall/planning-and-development/heritage-conservation/changes-heritage-properties

  - A Cultural Heritage Impact Statement (CHIS) is also required for this project. The CHIS must examine the potential impacts of the proposed development on the cultural heritage value and attributes of the Centretown Heritage Conservation District. It should also propose mitigation strategies or options related to any identified negative impacts. A guide for completing these documents can be found here : https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#guide-preparing-cultural-heritage-impact-statements

  - The properties are also subject to the Heritage Overlay

- Comments on the Proposal
  - Heritage staff have significant concerns with the proposal and its potential impact on the heritage character of the Centretown HCD.

  - The proposal must consider the guidelines regarding new developments in Section 6.5 of the Centretown CDP and Section VII 5.5 of the Centretown Heritage Conservation District Guidelines.

  - The Centretown HCD Plan recommends that:

- All infill should be contemporary design, distinguishable as being of its time. However, it must be sympathetic to the heritage character of the area, and designed to enhance these existing properties rather than calling attention to itself.
- Infill should be sympathetic to the heritage character of the area
- The form of new infill should reflect the character of existing buildings on adjoining and facing properties. The buildings should normally be 3-4 storeys in height, with massing and setbacks matching earlier, rather than later patterns in the area
- Brick veener should be the primary finish material

- The Centretown CDP provides the following direction regarding new buildings in the HCD:
  - Where heritage buildings are low scaled, the podium of a new building will respect and reflect the urban grain and scale, visual relationships, and materials of the surrounding historic building(s).
  - Use compatible materials
  - Use stepbacks, front and side, to appropriately transition with adjacent building heights
  - Minimize the use and height of blank walls
  - Inform new development with adjacent building ground floor heights and heritage character to enhance the public realm
  - Modulate façades through the use of vertical breaks and stepbacks in a manner that is compatible with the surrounding heritage structures

- The transition to the properties to the west along Somerset needs to be more carefully considered. This stretch of Somerset is a significant streetscape in the Centretown HCD and the proposal needs to reflect that. The building should be designed to maintain the texture and variety of the streetscape.

- Heritage Staff encourage you to look more closely to the historic buildings along the street and in the nearby area, to maintain the character of the area; take visual clues from those buildings in terms of height, details, massing, setback etc.

Urban Design Comments (Christopher Moise)

- We recommend that the applicant do some massing analysis to better understand how this parcel fits within the broader picture of the whole block as it is envisioned in the Centretown CDP.

- We have the following concerns related to:
    - Tower separation;
    - Transition from high-rise to mid-rise to low-rise; and
    - Setbacks from adjoining sites and potential for blockage to light and sky.

- We believe that the analysis will also help inform the way the design relates to its surrounding context ie step-back locations and materiality. The proposal would also benefit from an analysis of the different natures of the two abutting streets; Somerset, which is much more pedestrian oriented with low scale massing, wider sidewalk and street trees, while O'Connor being more of a transit corridor.

- A visit to the UDRP is required and can be organized through David Maloney (David.Maloney@ottawa.ca).

Infrastructure Comments (Shawn Wessel)

- Somerset Ave.
    - A 406 mm dia. PVC Watermain (c. 2006) is available
    - A 450 mm dia. PVC Sanitary Sewer (c. 2006) which drains to the Queen Elizabeth Combined Trunk Sewer and then to Interceptor Sewer.
    - A 600 dia. mm Conc. Storm Sewer (c. 2006) on Somerset Ave., which drains to the Cooper Storm Trunk Sewer and Outlets to the Rideau River at Queen Elizabeth Drive.

- O'Connor Ave.
    - A 406 mm dia. UCI Watermain (c. 1912) is available
    - A 525 mm dia. Conc. Sanitary Sewer (c. 1934) which drains to the Queen Elizabeth Combined Trunk Sewer and then to Interceptor Sewer.
    - A 450 dia. mm Conc. Storm Sewer (c. 1992) on O'Connor Ave., which drains to the Cooper Storm Trunk Sewer and Outlets to the Rideau River at Queen Elizabeth Drive.

- The following apply to this site and any development within a combined sewer area:
    - Total (San & Stm) allowable release rate will be 2 year pre-development rate.
    - Coefficient (C) of runoff will need to be determined as per existing conditions but in no case more than 0.4
    - TC = 20 minutes or can be calculated
    - TC should be not be less than 10 minutes, since IDF curves become unrealistic at less than 10 min.

- Any storm events greater than 2 year, up to 100 year, and including 100 year storm event must be detained on site.
- Two separate sewer laterals (one for sanitary and other for storm) will be required.

- Due to a downstream combined sewer connection, an MECP Environmental Compliance Approval (ECA) is required, Direct Submission.

- An MECP ECA will be required. Please have the applicant provide one copy of the following for our initial review:
  - MECP ECA Application Form - TOR or Direct Submission tied to SPC
  - Fees - Certified Cheque made out to "City of Ottawa" or for DS "Ministry of Finance"
  - Proof of Applicant's Identification (if no Certificate of Incorporation)
  - Certificate of Incorporation (if Applicable)
  - NAICS Code (If Applicable)
  - Plan & Profile
  - Grading and Servicing Plans
  - Survey Plan
  - Pipe Data Form
  - Draft ECA (City of Ottawa Expanded Works Form)
  - Source Protection Policy Screening & Significant Threat Report
  - Sewer Drainage Area Plan
  - SWM Report
  - Services Report
  - Geotechnical Report & any other supportive documentation
  - Correspondence: City of Ottawa including ROW, Water Resources Dept., ISD etc., MNR, Conservation Authority & MECP.

- Please note that once the review has been completed and the Sr. Engineer is satisfied and ready to sign off on the application, after the PM recommendations 4 final bound copies including 4 CD Rom disks will be required to accompany the applications with MECP and for City of Ottawa records.

- Please also note:
  - Foundation drains are to be independently connected to storm sewermain (or combined sewer as applicable) unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.
  - Roof drains are to be connected downstream of any incorporated ICD within the SWM system.
  - Re RVCA: Applicant to contact Rideau Valley Conservation Authority (RVCA) for possible restrictions due to quality control. Provide correspondence in Report.

- Environmental Source Information:
  - City of Ottawa - Historical Land Use Inventory (HLUI)

The HLUI database is currently undergoing an update. The updated HLUI will include additional sources beyond those included in the current database, making the inclusion of this record search even more important.

Although a municipal historic land use database is not specifically listed as required environmental record in O. Reg 153/04, Schedule D, Part II states the following:

- Records review, specific objectives:
  The following are the specific objectives of a records review:

  1. To obtain and review records that relate to the phase one property and to the current and past uses of and activities at or affecting the phase one property in order to determine if an area of potential environmental concern exists and to interpret any area of potential environmental concern.

  2. To obtain and review records that relate to properties in the phase one study area, other than the phase one property, in order to determine if an area of potential environmental concern exists and to interpret any area of potential environmental concern.

- Further to above, It is therefore reasonable to request that the HLUI search be included in the Phase One ESA to meet the above objectives.

- Under site plan application, there is a need for Delegated Authority Report for SPCA not for sewer extension. In addition, there will be an agreement for site plan control application that will cover all planning and infrastructure aspects. You do need to ask for any Delegated Authority Report for sewer extension.

- Under Severance application: There is a need for sewer extension agreement that will be taken care of by the legal after getting related approved documents from the concerned reviewer.

- Existing buildings require a CCTV inspection and report to ensure existing services to be re-used are in good working order and meet current minimum size requirements. Located services to be placed on site servicing plans.

CCTV Scan Guideline.pdf

- Boundary Conditions will be provided at request of consultant after providing Average Daily Demands, Peak Hour Demands & Max Day + Fire Flow Demands

- Other:
    - Due to a more sensitive use, a Record of Site Condition (RSC) is required. Please ensure Phase I, and if applicable, Phase II ESA's speak to this requirement.

    - Environmental Noise Study (ENS) is required due to within 100m proximity of Somerset and O'Connor Streets. Ensure consultant speaks to Stationary Noise as per City NCG and NPC 300 Guidelines.

    - Stationary Noise Study – provide if necessary and speak in ENS as per City NCG and NPC 300 Guidelines.

    - Shadow Study required for this proposal.

    - Wind Study is required for this proposal.

    - No Capital Projects listed in the area on GeoOttawa or Envista.

    - There is a SPC application currently for 296 and 332 Somerset Ave.

    - Water Supply Redundancy – Fire Flow:

    - Applicant to ensure that a second service with an inline valve chamber be provided where the average daily demand exceeds 50 m^3 / day (0.5787 l/s per day)

    - Where underground storage (UG) and surface ponding are being considered:

        1. Show all ponding for 5 and 100 year events

        2. Note - There must be at least 15cm of vertical clearance between the spill elevation and the ground elevation at the building envelope that is in proximity of the flow route or ponding area. The exception in this case would be at reverse sloped loading dock locations. At these locations, a minimum of 15cm of vertical clearance must be provided below loading dock openings. Ensure to provide discussion in report and ensure grading plan matches if applicable.

        3. Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc.

4. Provide a cross section of underground chamber system showing invert and obvert/top, major and minor HWLs, top of ground, system volume provided during major and minor events. UG storage to provide actual 2 and 100 year event storage requirements.

5. In regards to all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective.

- Modeling can be provided to ensure capacity for both storm and sanitary sewers for the proposed development by City's Water Distribution Dept. – Modeling Group, through PM and upon request.

- City Provided Info:
  - Please be advised that it is the responsibility of the applicant and their representatives/consultants to verify information provided by the City of Ottawa.

  - Please contact City View and Release Info Centre at Ext. 44455

- Summary of the Source Protection policy screening for 311 Somerset Ave:
  - The address lies within the Mississippi-Rideau Source Protection Region and is subject to the policies of the Mississippi-Rideau Source Protection Plan. The area is not located within a Surface Water Intake Protection Zone (IPZ) where significant threat policies apply.

  - The area is not located within a Wellhead Protection Area (WHPA).

  - The area is not within a Significant Groundwater Recharge Area.

  - The property is partially located within a Highly Vulnerable Aquifer. There are no legally-binding source protection policies under the Mississippi-Rideau Source Protection Plan for activities within Highly Vulnerable Aquifers.

  - In terms of the Planning Application, please note that the address is not located in an area where legally-binding source protection policies apply.

Transportation Comments (Wally Dubyk)

- Somerset Street is designated as an Arterial road within the City's Official Plan with a ROW protection limit, maximum land requirement from property abutting existing ROW 0.9 metres. The ROW protection limit is to be depicted on the drawings.

- O'Connor Street is designated as an Arterial road within the City's Official Plan with a ROW protection limit of 20.0 metres. The ROW protection limit and the offset distance (10.0 metres) are to be dimensioned from the existing centerline of pavement and shown on the drawings.

- Land for a road widening will be taken equally from both sides of a road, measured from the centreline in existence at the time of the widening if required by the City. The centreline is a line running down the middle of a road surface, equidistant from both edges of the pavement. In determining the centreline, paved shoulders, bus lay-bys, auxiliary lanes, turning lanes and other special circumstances are not included in the road surface.

- A 5.0 metres x 5.0 metres sight triangle would be required at the intersection of Booth Street and Lett Street and is to be shown on all drawings. The sight triangle dimensions are to be measured from the protected ROW limits.

- All underground and above ground building footprints and permanent walls need to be shown on the plan to confirm that any permanent structure does not extend either above or below into the existing property lines, sight triangles and/or future road widening protection limits.

- The TIA Step 2 – Scoping report is to be submitted for review.

- A construction Traffic Management Plan is to be provided for approval by the Senior Engineer, Traffic Management, Transportation Services Dept.

- Further comments related to a Site Plan will be provided.

Preliminary Comments from Centretown Citizens Community Association (CCCA) Representative (Jack Hanna)

- Explore affordable housing opportunities

- Describe the experience walking along the street

- Encourage the applicant to sit down with the CCCA Planning Committee to discuss the proposal further

- This is a high profile site, on a corner lot and in close proximity to Dominion Chalmers (which is notable for its good architecture).

- Appreciate the varying sides of the building and setbacks

- Concern with the balconies and with the cantilevered portion of the building

- Need a well-designed building that has good architecture and contributes to Centretown. The current design is not appealing and does not fit in the area.

Next Steps

- Refine the proposal to address issues raised through the pre-consultation.

- Encouraged to submit and attend an informal meeting with the Urban Design Review Panel.

- It is recommended that the applicant team seek input from the Ward Councillor, CCCA, and neighbouring property owners.

APPENDIX C
WATERMAIN CALCULATIONS

McINTOSH PERRY

Charlotte Kelly

From:	Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent:	December 4, 2020 9:52 AM
To:	Charlotte Kelly
Cc:	Robert Freel
Subject:	RE: 311 Somerset Avenue West - Boundary Condition Request and Stormwater Quantity Criteria
Attachments:	311 Somerset Avenue West December 2020.pdf

Good morning Ms. Kelly

Please find requested boundary conditions attached and below:

**** The following information may be passed on to the consultant, but do NOT forward this e-mail directly.****

The following are boundary conditions, HGL, for hydraulic analysis at 311 Somerset (zone 1W) assumed to be connected to the 406mm on Somerset Street West and 406mm on O'Connor Street (see attached PDF for location).

Both Connections:

Minimum HGL = 107.0m

Maximum HGL = 115.5m

Connection 1: MaxDay + Fire Flow (300 L/s) = 108.6m

Connection 2: MaxDay + Fire Flow (300 L/s) = 108.4m

These are for current conditions and are based on computer model simulation.

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.

If you require additional information or clarification, please do not hesitate to contact me anytime.

Thank you

Regards,

Shawn Wessel, A.Sc.T.,rcji
Project Manager - Infrastructure Approvals
Gestionnaire de projet – Approbation des demandes d'infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale
Planning, Infrastructure and Economic Development Department | Direction générale de la planification de l'infrastructure et du développement économique
City of Ottawa | Ville d'Ottawa
110 Laurier Ave. W. | 110, avenue Laurier Ouest, Ottawa ON K1P 1J1
(613) 580 2424 Ext. | Poste 33017
Int. Mail Code | Code de Courrier Interne 01-14
shawn.wessel@ottawa.ca

Please consider the environment before printing this email

*** Please also note that, while my work hours may be affected by the current situation and am working from home, I still have access to email, video conferencing and telephone. Feel free to schedule video conferences and/or telephone calls, as necessary.***

From: Charlotte Kelly <c.kelly@McIntoshPerry.com>
Sent: November 27, 2020 10:50 AM
To: Wessel, Shawn <shawn.wessel@ottawa.ca>
Cc: Robert Freel <r.freel@mcintoshperry.com>
Subject: 311 Somerset Avenue West - Boundary Condition Request and Stormwater Quantity Criteria

Good Morning Shawn,

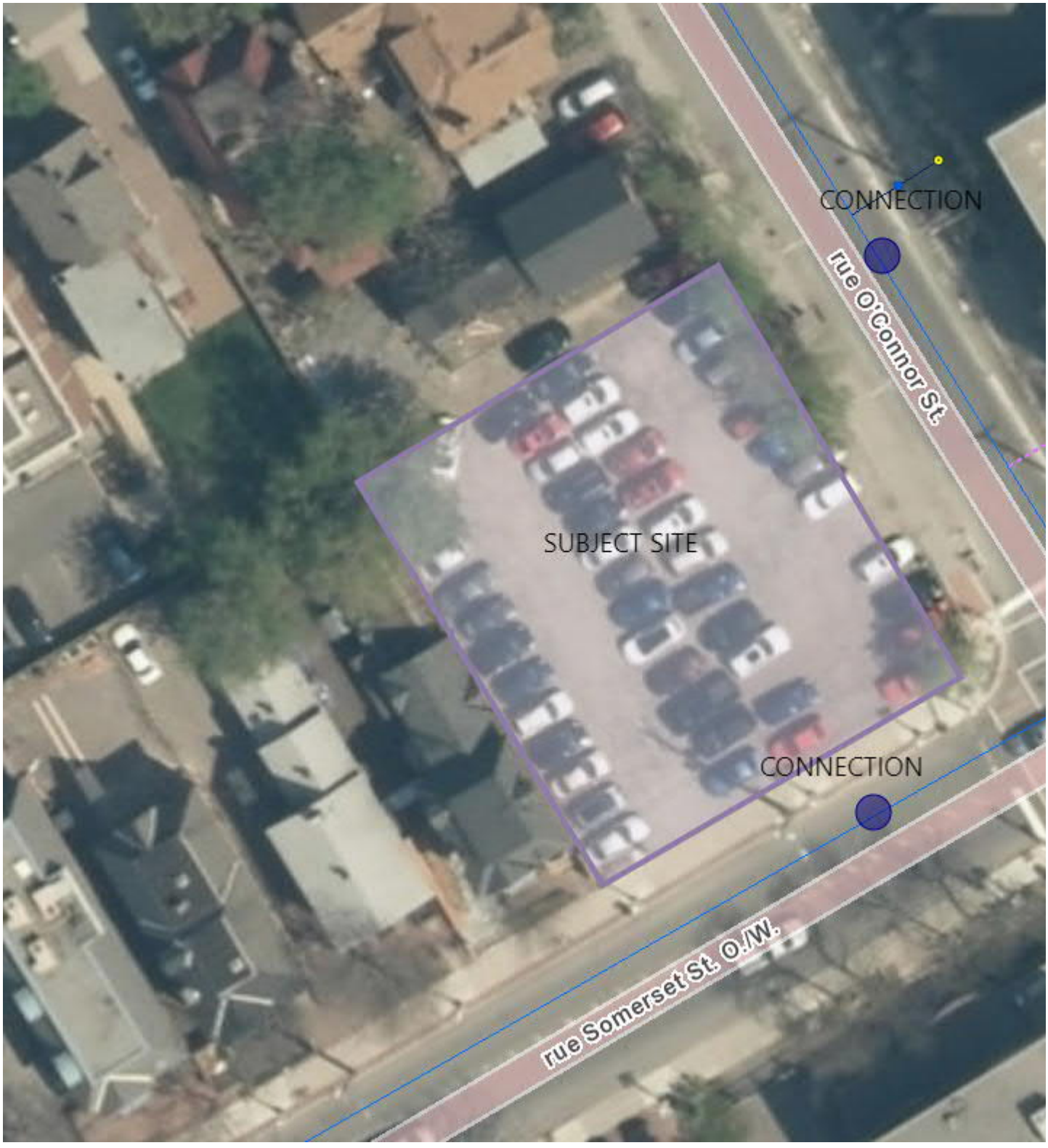
We would like to request water boundary conditions for 311 Somerset street West using the following development demands:

- Location of Service: Somerset Avenue West / O'Connor Street
- Type of development and the amount of fire flow required for the proposed development:
    - The development will include one 16-storey condominium building with approximately 619 m2 of amenity and commercial space, and 140 residential units. It is anticipated that the development will have a connection from either the existing 406 mm diameter watermain

within Somerset Street West or the existing 406 mm diameter watermain within O'Connor Street, as shown by the attached map.

- Fire demand based on Technical Bulletin ISTB-2018-02 has been used to calculate an estimate the max fire demand of 18,000 L/min. Refer to the attached for detailed calculations.
- Estimated Demand:

Average Day	0.73 L/s	43.41 L/min
Maximum Day	2.57 L/s	154.00 L/min
Maximum Hour	3.86 L/s	231.49 L/min



Please let us know if you require further information or have any questions.

Thank-you,

Charlotte Kelly, EIT
Engineering Intern - Land Development

115 Walgreen Road, Carp, ON K0A 1L0
T. 613.714.6209
c.kelly@McIntoshPerry.com | www.mcintoshperry.com

McINTOSH PERRY

We have been informed that a number of our clients have received phishing emails from scammers pretending to be McIntosh Perry. We take information security very seriously and ask that you also be vigilant in order to prevent fraud. If you have any concerns, please let your contact at McIntosh Perry know or email us at info@mcintoshperry.com

CANADA BEST MANAGED COMPANIES | Platinum member

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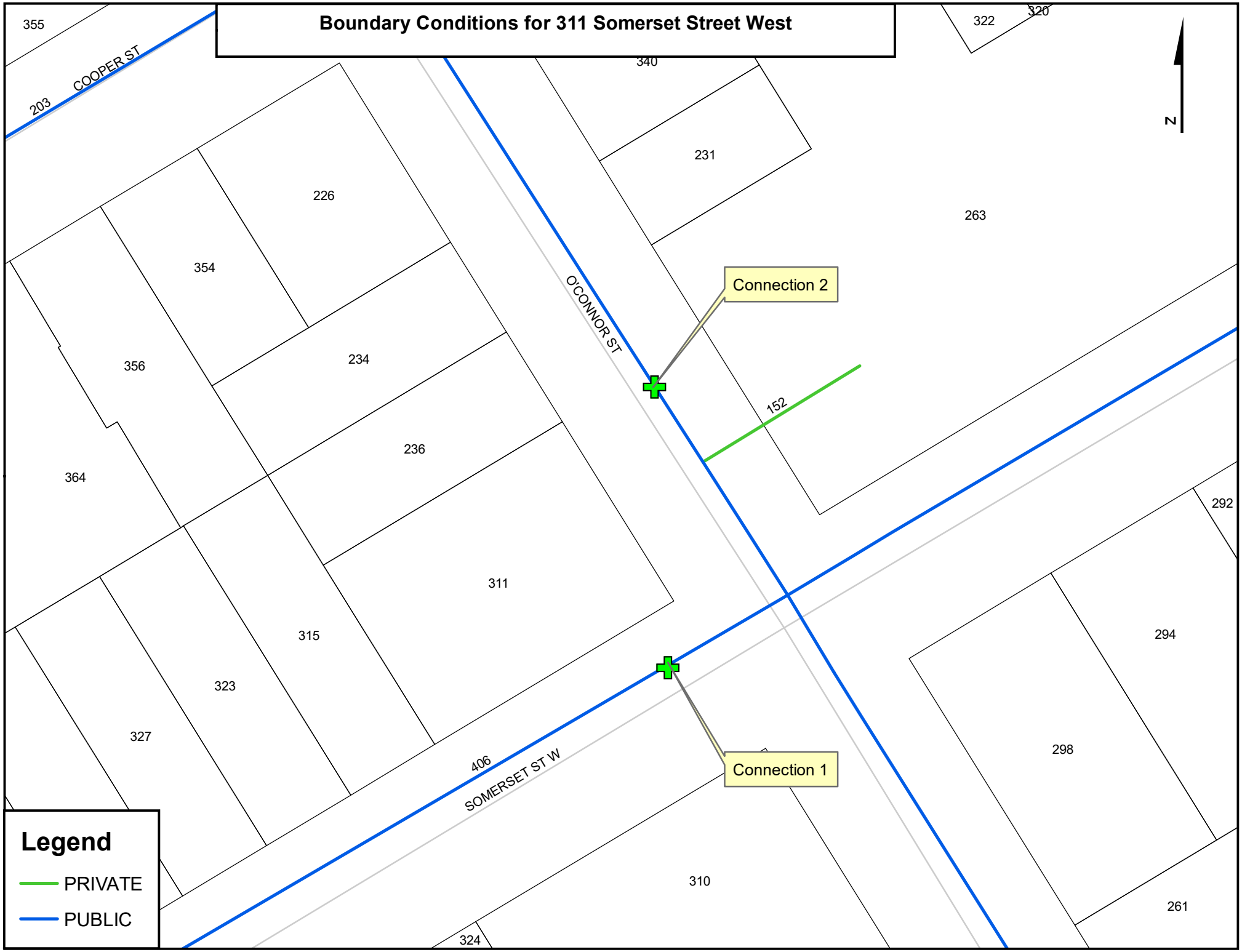
'


Boundary Conditions for 311 Somerset Street West
355
COOPER ST
203
340
322
320
N
231
226
263
354
Connection 2
O'CONNOR ST
356
234
152
236
364
292
311
315
294
323
298
327
406
SOMERSET ST W
Connection 1
310
261
324
Legend
PRIVATE
PUBLIC

McINTOSH PERRY

CCO-21-2341 - 311 Somerset Street West - Water Demands

Project:	311 Somerset Street West	
Project No.:	CCO-21-2341	
Designed By:	C.M.K.	
Checked By:	R.D.F.	
Date:	December 9, 2020	
Site Area:	0.14	gross ha
1 Bed / Bachelor Units	109	1.4 Persons per unit
2 Bedroom Units	31	2.1 Persons per unit
Total Population	218	Persons
Commercial Area	252.00	m^2
Amenity Space	581.00	m^2

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	*280*	*L/c/d*
Commercial	*2,500*	*L /(1000m ² /d)*
Amenity Space	*2,500*	*L /(1000m ² /d)*
RESIDENCIAL	0.71	L/s
	42.33	L/min
COMMERCIAL	0.02	L/s
	1.45	L/min

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	*3.6 x avg. day*	*L/c/d*
Commercial	*1.5 x avg. day*	*L/gross ha/d*
MAXIMUM DAILY DEMAND	2.58	L/s
	154.56	L/min

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	*5.4 x avg. day*	*L/c/d*
Commercial	*1.8 x max. day*	*L/gross ha/d*
MAXIMUM HOUR DEMAND	3.87	L/s
	232.49	L/min

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010
FOR POPULATIONS BELOW 501, MOE DESIGN GUIDELINES FOR DRINKING WATER SYSTEMS USED

115 Walgreen Road, R.R.3. Carp, ON K0A 1L0 | T. 613-836-2184 | F. 613-836-3742
info@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

CCO-21-2341 - 311 Somerset Street West - Fire Underwriters Survey (FUS) Fire Calculations

Project:	311 Somerset Street West
Project No.:	CCO-21-2341
Designed By:	CMK
Checked By:	RDF
Date:	December 9, 2020

From the Fire Underwriters Survey (1999)

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

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** **11,636.0** m^2

Caluclated Fire Flow	**18985.2 L/min**
	19000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:

Limited Combustible -15%

Fire Flow	**16150.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered -50%

Reduction	**-8075 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	3.1 to 10	Wood frame	20	3	60	18%
Exposure 2	3.1 to 10	Wood frame	25	2	50	18%
Exposure 3	20.1 to 30	Non-Combustible	25	9	225	10%
Exposure 4	20.1 to 30	Non-Combustible	30	3	90	14%
					% Increase*	**60%**

Increase*	**9690.0 L/min**

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

Fire Flow	**17765.0 L/min**
Fire Flow Required**	**18000.0 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-21-2341 - 311 Somerset Street West - CITY OF OTTAWA BOUNDARY CONDITION RESULTS

Project:	311 Somerset Street West
Project No.:	CCO-21-2341
Designed By:	CMK
Checked By:	RDF
Date:	December 9, 2020

Boundary Conditions Unit Conversion

Scenario	Height (m)	Elevation (m)	m H_2O	PSI	kPa
Avg. DD	115.5	71.55	44.0	62.5	431.1
Fire Flow (200 L/s)	108.6	71.55	37.1	52.7	363.5
Peak Hour	107.0	71.55	35.5	50.4	347.8

APPENDIX D
SANITARY CALCULATIONS

McINTOSH PERRY

McINTOSH PERRY

CP-21-2341 - 311 Somerset Street West - Sanitary Demands

Project:	311 Somerset Street West	
Project No.:	CP-21-2341	
Designed By:	CMK	
Checked By:	RDF	
Date:	11/12/2030	
Site Area:	0.14	gross ha
1 Bed / Bachelor Units	109	1.4 Persons per unit
2 Bedroom Units	31	2.1 Persons per unit
Total Population	218	Persons
Commercial Area	252.00	m^2
Amenity Space	581.00	m^2

EXSTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.01
Wet	0.04
Total	**0.05**

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	NUMBER OF UNITS / AREA	Flow (L/s)
Residential	***280***	***L/c/d***	***218***	***0.71***
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	***2,500***	***L/(1000m^2/d)***	***833.00***	***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
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENCIAL FLOW	**0.71**	**L/s**
PEAK RESIDENCIAL FLOW	**2.84**	**L/s**
AVERAGE ICI FLOW	**0.02**	**L/s**
PEAK INSTITUTIONAL/COMMERCIAL FLOW	**0.04**	**L/s**
PEAK INDUSTRIAL FLOW **	**0.00**	**L/s**
TOTAL PEAK ICI FLOW	**0.04**	**L/s**

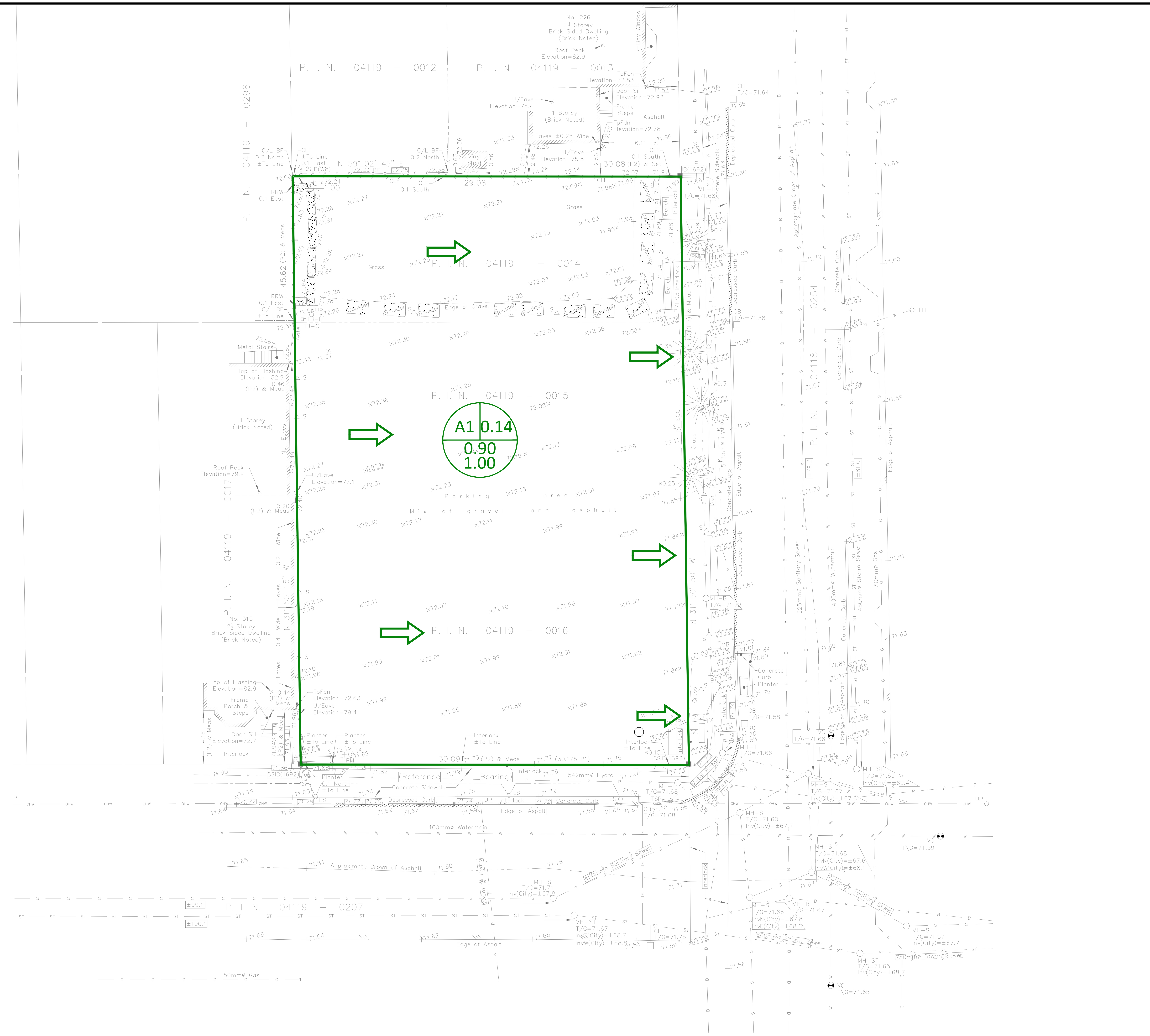
TOTAL SANITARY DEMAND

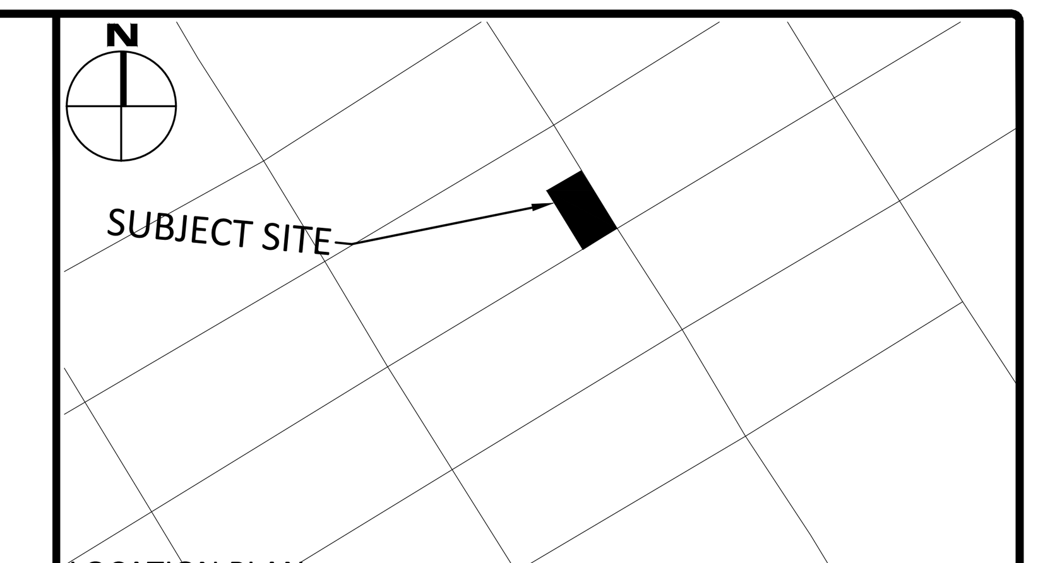
TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	**0.74**	**L/s**
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	**2.92**	**L/s**
TOTAL ESTIMATED PEAK WET WEATHER FLOW	**2.97**	**L/s**

** PEAK INDUSTRIAL FLOW PER CITY OF OTTAWA SEWER DESIGN GUIDELINES APPENDIX 4B

APPENDIX E
PRE-DEVELOPMENT DRAINAGE PLAN

McINTOSH PERRY





LOCATION PLAN

LEGEND

A1 0.25 / 0.90 / 1.00 — AREA NAME; AREA (Ha); 5yr & 100yr COEFFICIENT

OVERLAND DRAINAGE FLOW

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

No.	Revisions	Date
2	ISSUED FOR COORDINATION	FEB. 18, 2021
1	ISSUED FOR COORDINATION	NOV. 27, 2020

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

SCALE 1 : 150 (0, 5, 10, 15 Metres)

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

Stamp:

Client:
GEMSTONE CORPORATION
252 ARGYLE AVENUE
OTTAWA ON, K2P 1B9

Project:
16 STOREY APARTMENT BUILDING
311 SOMERSET STREET WEST

Drawing Title:
PRE-DEVELOPMENT AREA DRAINAGE PLAN

Scale: 1:150	Project Number: CCO-21-2341
Drawn By: C.M.K.	
Checked By: R.D.F.	Drawing Number: PRE
Designed By: C.M.K.	

D07-12--XX-XXXX

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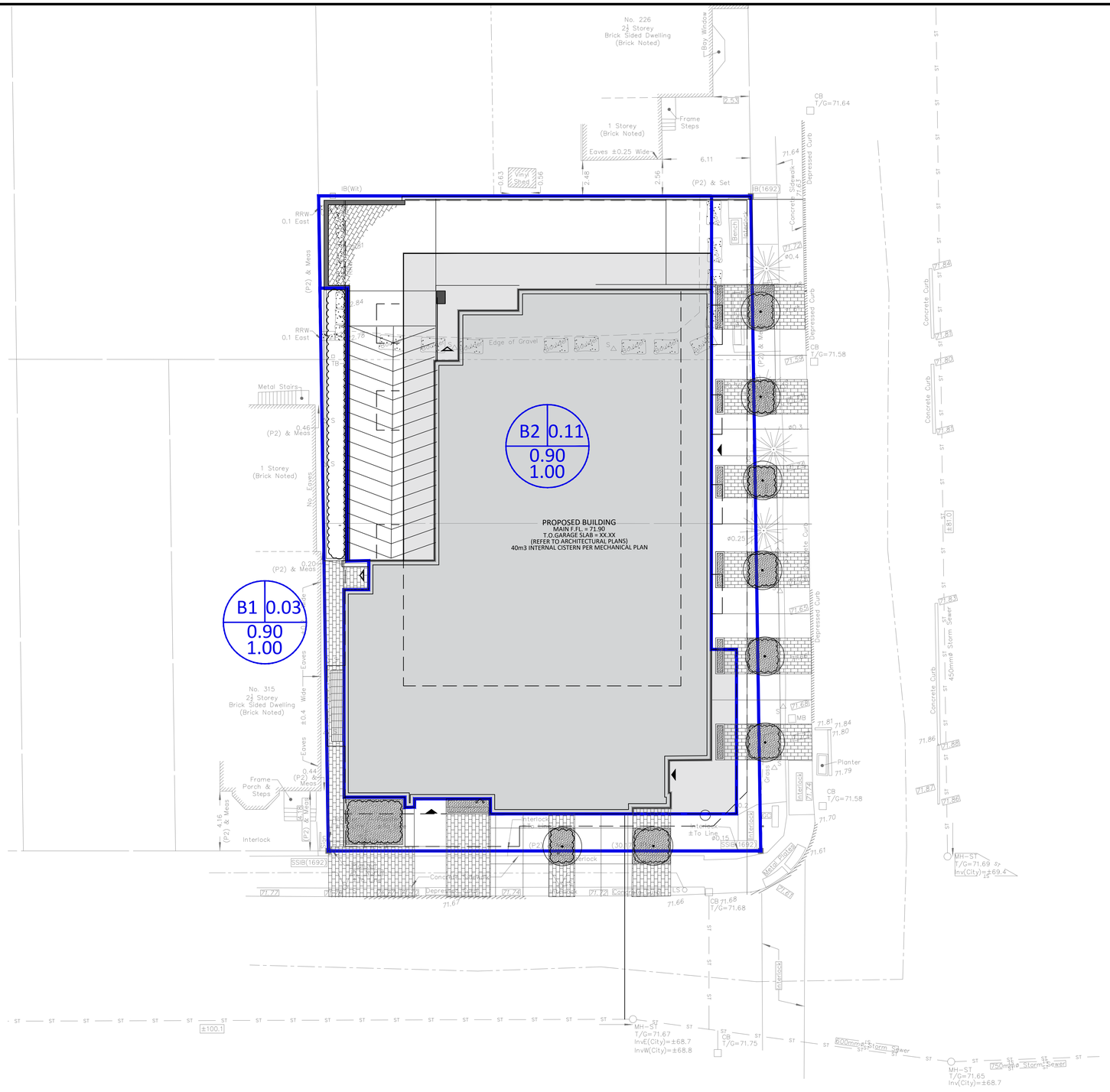
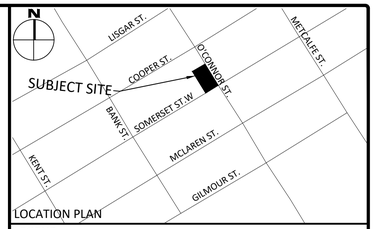
APPENDIX F
POST-DEVELOPMENT DRAINAGE PLAN

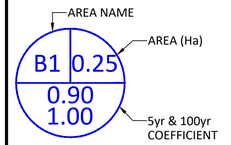
McINTOSH PERRY





LOCATION PLAN

LEGEND



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No.	Revisions	Date
2	ISSUED FOR COORDINATION	FEB. 18, 2021
1	ISSUED FOR COORDINATION	NOV. 27, 2020

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

SCALE 1 : 150

0 5 10 15 Metres

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Stamp:

Client:
GEMSTONE CORPORATION
252 ARGYLE AVENUE
OTTAWA ON, K2P 1B9

Project:
16 STOREY APARTMENT BUILDING
311 SOMERSET STREET WEST

Drawing Title:
POST-DEVELOPMENT AREA DRAINAGE PLAN

Scale: 1:150	Project Number: CCO-21-2341
Drawn By: C.M.K.	
Checked By: R.D.F.	Drawing Number: POST
Designed By: C.M.K.	

D07-12--XX-XXXX
#XXXXX

FILENAME: U:\Ottawa\03 Project - Proposals\2021 Jobs\CCO\CCO-21-2341 Gemstone - 311 Somerset Street\11 - Drawings\2020-12-21_Base.dwg
LAST SAVED: Thursday, February 18, 2021 LAST SAVED BY: R.Short
LAST PLOTTED: Thursday, February 18, 2021 CTB FILE USED: ----

APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

CCO-21-2341 - 311 Somerset Street West - Runoff Calculations

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} 2&5-Year	C_{AVG} 100-Year
A1	0.14	1,372.30	0.90	0.00	0.60	0.00	0.20	0.50	0.63

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2&5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
A1	0.14	0.50	0.63	10	76.8	104.2	178.6	14.65	19.87	42.58
Total	**0.14**							**14.65**	**19.87**	**42.58**

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} 2&5-Year	C_{AVG} 100-Year	
B1	0.03	259.46	0.90	0.00	0.60	0.00	0.20	0.90	1.00	UNRESTRICTED
B2	0.11	1,112.74	0.90	0.00	0.60	0.00	0.20	0.90	1.00	CONTROLLED

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2&5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
B1	0.03	0.90	1.00	10	76.8	104.2	178.6	4.99	6.76	12.88
B2	0.11	0.90	1.00	10	76.8	104.2	178.6	21.38	29.01	55.24
Total	**0.14**							**26.37**	**35.77**	**68.12**

Required Restricted Flow

Drainage Area	Area (ha)	C 2&5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
A1	0.14	0.50	0.63	10	76.8	104.2	178.6	14.65	19.87	42.58

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	6.76	12.88	6.76	12.88				
B2	29.01	55.24	9.13	7.00	12.72	39.00	40.00	40.00
Total	**35.77**	**68.12**	**15.90**	**19.87**	**12.72**	**39.00**	**40.00**	**40.00**

CCO-21-2341 - 311 Somerset Street West - STORAGE REQUIREMENTS

Storage Requirements for Area B2-B5

5-Year Storm Event

Tc (min)	I (mm/hr)	B2 Runoff (L/s)	Allowable Outflow 0	Runoff to be Stored (L/s)	Storage Required (m^3)
5	141.2	39.30	9.13	30.17	9.05
10	104.2	29.01	9.13	19.87	11.92
15	83.6	23.26	9.13	14.13	12.72
20	70.2	19.56	9.13	10.42	12.51
25	60.9	16.95	9.13	7.82	11.73
30	53.9	15.01	9.13	5.88	10.58
35	48.5	13.51	9.13	4.37	9.18

Maximum Storage Required 5-Year (m^3) =	12.72

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)
5	242.7	75.08	7.00	68.08	20.42
10	178.6	55.24	7.00	48.24	28.94
15	142.9	44.20	7.00	37.21	33.49
20	120.0	37.11	7.00	30.11	36.13
25	103.8	32.12	7.00	25.13	37.69
30	91.9	28.42	7.00	21.42	38.56
35	82.6	25.54	7.00	18.55	38.95
40	75.1	23.25	7.00	16.25	39.00
45	69.1	21.36	7.00	14.36	38.79

Maximum Storage Required 100-Year (m^3) =	39.00

5-Year Storm Event

Storage Available (m^3) =	40.00	*
Storage Required (m^3) =	12.72	

100-YEAR STORM EVENT

Storage Available (m^3) =	40.00	*
Storage Required (m^3) =	39.00	

Charlotte Kelly

From: Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent: December 3, 2020 1:00 PM
To: Charlotte Kelly
Cc: Robert Freel
Subject: RE: 311 Somerset Avenue West - Stormwater Quantity Criteria

Good afternoon Ms. Kelly.

Please find comments from Water Distribution Dept., below:

From the HGL analysis, the storm system in question can handle the 5-year flow and it does not discharge directly into a combined sewer.
A 5-year release rate with C=0.5 is acceptable.

Please note, from recent correspondence with the MECP, no ECA will be required.

If you require additional information or clarification, please do not hesitate to contact me anytime.

Thank you

Regards,

Shawn Wessel, A.Sc.T.,rcji
Project Manager - Infrastructure Approvals
Gestionnaire de projet – Approbation des demandes d'infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale
Planning, Infrastructure and Economic Development Department | Direction générale de la planification de l'infrastructure et du développement économique
City of Ottawa | Ville d'Ottawa
110 Laurier Ave. W. | 110, avenue Laurier Ouest, Ottawa ON K1P 1J1
(613) 580 2424 Ext. | Poste 33017
Int. Mail Code | Code de Courrier Interne 01-14
shawn.wessel@ottawa.ca

*** Please also note that, while my work hours may be affected by the current situation and am working from home, I still have access to email, video conferencing and telephone. Feel free to schedule video conferences and/or telephone calls, as necessary.***

From: Charlotte Kelly <c.kelly@McIntoshPerry.com>
Sent: November 27, 2020 11:42 AM
To: Wessel, Shawn <shawn.wessel@ottawa.ca>
Cc: Robert Freel <r.freel@mcintoshperry.com>
Subject: 311 Somerset Avenue West - Stormwater Quantity Criteria

Good Morning Shawn,

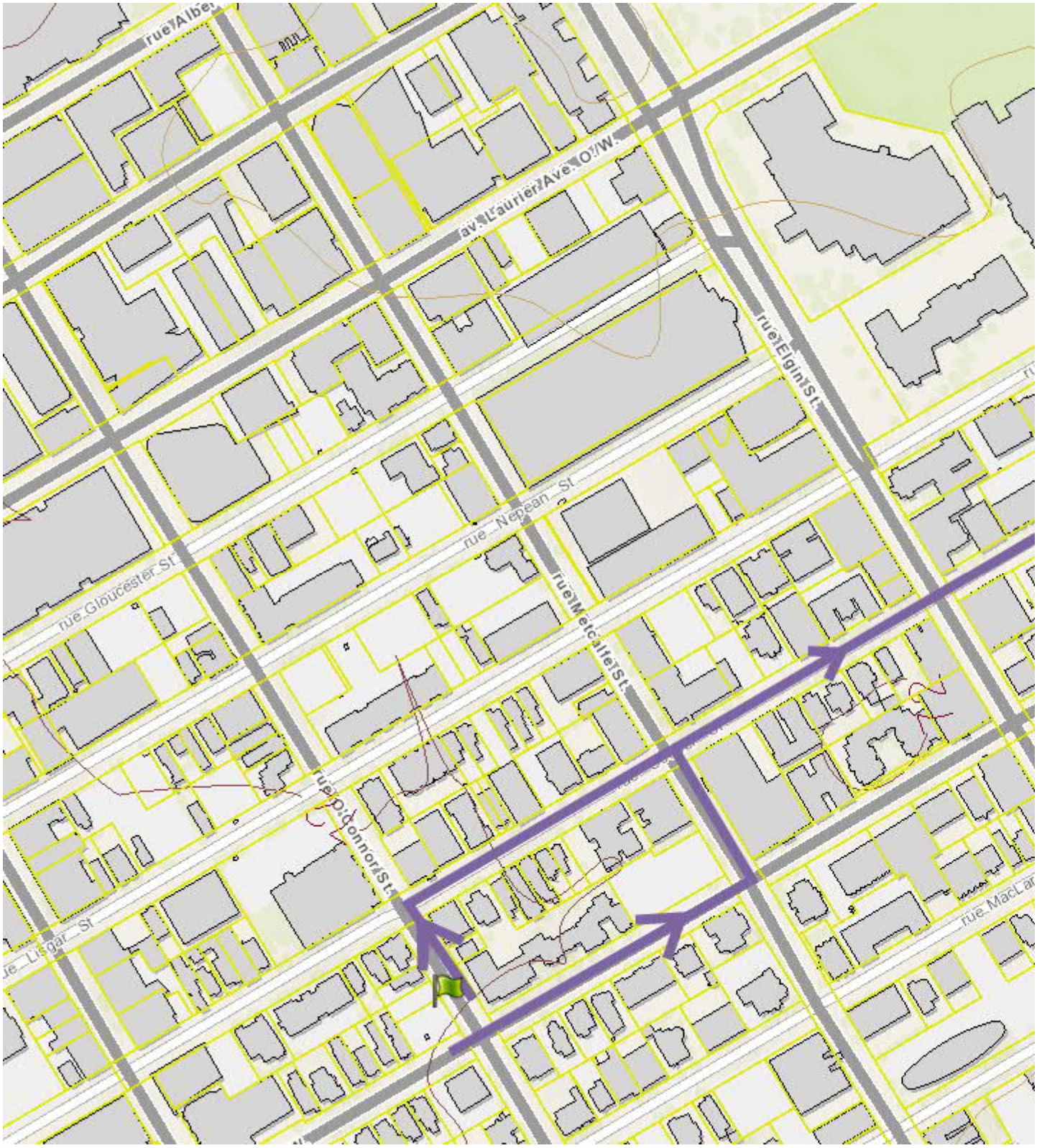
We would also like to confirm the stormwater criteria to which we are controlling the site.

- The pre-consultation indicates that the site is tributary to a combined sewer and as such stormwater is to be controlled to the 2-year release rate and a c-value of 0.4. The pre-consultation also indicated that sanitary flow should be deducted from the sites allowable release rate.

Per the figure below taken from GeoOttawa, stormwater from the site will be tributary to either the 450mm diam. storm sewer within O'Connor or the 600mm diam. storm sewer within Somerset. Stormwater from either sewer travels about 1km before outletting into the Rideau Canal and are fully separated.

- As these are not combined sewers and both sewers were constructed post 1970, it is proposed that the site be controlled to the 5-year storm event with a C-value of 0.5, as is standard for fully separated storm sewers. As the sanitary flow from the site is tributary to a separate sanitary sewer with a different outlet, it is not anticipated that the sanitary release rate will be required to be deducted from the overall sites stormwater release rate.

Finally, an ECA is not anticipated to be required as stormwater from the site is not tributary to a combined sewer network. Can you please confirm?



Please let us know if you have any questions or require additional information.

Thank-you,

Charlotte Kelly, EIT
Engineering Intern - Land Development
115 Walgreen Road, Carp, ON K0A 1L0
T. 613.714.6209
c.kelly@McIntoshPerry.com | www.mcintoshperry.com

McINTOSH PERRY

We have been informed that a number of our clients have received phishing emails from scammers pretending to be McIntosh Perry. We take information security very seriously and ask that you also be vigilant in order to prevent fraud. If you have any concerns, please let your contact at McIntosh Perry know or email us at info@mcintoshperry.com

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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 E
☐ 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 A
☐ 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, Drainage, Sediment & Erosion Control 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, Drainage, Sediment & Erosion Control 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 Backround Studies
☐ All preliminary and formal site plan submissions should have the following information: o Metric scale o North arrow (including construction North) o Key plan o Name and contact information of applicant and property owner o Property limits including bearings and dimensions o Existing and proposed structures and parking areas o Easements, road widening and rights-of-way o Adjacent street names	Site Grading, Drainage, Sediment & Erosion Control 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	N/A
☐ Identification of system constraints	N/A
☐ Identify boundary conditions	N/A
☐ 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 B
☐ 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	N/A

☐ 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.	N/A
☐ 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 B
☐ 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 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)	N/A
☐ 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 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 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 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 Management
☐ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 6.0 Stormwater Management
☐ Set-back from private sewage disposal systems.	N/A
☐ Watercourse and hazard lands setbacks.	N/A
☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	N/A
☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☐ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5-year return period) and major events (1:100-year return period).	Appendix F

☐ 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, Drainage, Sediment & Erosion Control 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 6.0 Stormwater Management Appendix F
☐ Any proposed diversion of drainage catchment areas from one outlet to another.	Section 6.0 Stormwater Management
☐ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 6.0 Stormwater Management
☐ If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	Appendix 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 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, Drainage, Sediment & Erosion Control 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 7.0 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 8.0 Summary Section 9.0 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