david schaeffer engineering ltd

120 Iber Road, Suite 103
Ottawa, Ontario K2S 1E9
Tel. (613)836-0856
Fax (613) 836-7183
www.DSEL.ca

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

FOR

KATASA GROUPE DÉVELOPPEMENT 770 SOMERSET STREET WEST

CITY OF OTTAWA

PROJECT NO.: 17-960
CITY FILE NO: DO7-12-17-0136

JUNE 2018 – REV 2

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KATASA GROUPE DÉVELOPPEMENT
770 SOMERSET STREET WEST

CITY OF OTTAWA

JUNE 2018 – REV 2

PROJECT NO.: 17-960

1.0 INTRODUCTION

David Schaeffer Engineering Ltd. (DSEL) has been retained by Katasa Groupe Développement to prepare a Functional Servicing and Stormwater Management Report in support of the Minor Zoning Amendment and Site Plan Control application for the proposed development at 770 Somerset Street West.

The subject property is located within the City of Ottawa urban boundary, in the Somerset ward. As illustrated in ***Figure 1***, the subject property is bounded by Somerset Street West to the north, Lebreton Street North to the west, the Annunciation Orthodox Cathedral to the south and an apartment building to the east. The subject property measures approximately ***0.16ha*** and is designated, Traditional Mainstreet (TM[2040] S310), under the current City of Ottawa zoning by-law.

Figure 1: Site Location

The proposed development involves the construction of a 9-storey residential/commercial building fronting onto both Somerset Street West and Lebreton Street North. The development would include approximately ***445 m²*** of commercial space and three levels of underground parking. The residential component is comprised of approximately ***108 units***. A copy of the proposed site plan is included in ***Drawings/Figures***.

The objective of this report is to support the application for Site Plan Control and Minor Zoning Amendment by providing sufficient detail to demonstrate that the proposed development is supported by existing and proposed municipal servicing infrastructure and that the site design conforms to current City of Ottawa design standards.

1.1 Existing Conditions

The subject site currently consists of a pay parking lot and one single family home. Existing Bell, gas and hydro services are located within the adjacent municipal right-of-ways.

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

Somerset Street West

- 600 mm PVC combined sewer tributary to the Preston Trunk Sewer
- 305 mm PVC watermain

Lebreton Street North

- 300 mm PVC combined sewer tributary to the Preston Trunk Sewer
- 203 mm PVC watermain

1.2 Required Permits / Approvals

Development of the site is subject to the City of Ottawa Planning and Development Approvals process. The City of Ottawa must approve detailed engineering design drawings and reports, prepared to support the proposed development plan.

The subject property contains existing trees. Development, which may require removal of existing trees, may be subject to the City of Ottawa Urban Tree Conservation By-law No. 2009-200.

The development is proposed to discharge to an existing combined sewer and is therefore not exempt under Ontario Regulation 525/98. The development will require an Environmental Compliance Approval (ECA) through a direct submission to the Ministry of the Environment and Climate Change (MOECC).

1.3 Pre-consultation

Pre-consultation correspondence and the servicing guidelines checklist are located in ***Appendix A***.

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

The following studies were utilized in the preparation of this report:

- **Ottawa Sewer Design Guidelines**,
  City of Ottawa, *SDG002,* October 2012.
  (City Standards)
  - **Technical Bulletin ISDTB-2014-01**
    City of Ottawa, February 5, 2014.
    (ITSB-2014-01)
  - **Technical Bulletin PIEDTB-2016-01**
    City of Ottawa, September 6, 2016.
    (PIEDTB-2016-01)
  - **Technical Bulletin ISTB-2018-01**
    City of Ottawa, March 21, 2018.
    (ISTB-2018-01)
- **Ottawa Design Guidelines – Water Distribution**
  City of Ottawa, October 2012
  (Water Supply Guidelines)
  - **Technical Bulletin ISD-2010-2**
    City of Ottawa, December 15, 2010.
    (*ISD-2010-2*)
  - **Technical Bulletin ISDTB-2014-02**
    City of Ottawa, May 27, 2014.
    (*ISDTB-2014-02*)
  - **Technical Bulletin ISDTB-2018-02**
    City of Ottawa, March 21, 2018.
    (ISDTB-2018-02)
- **Stormwater Planning and Design Manual,**
  Ministry of the Environment, March 2003.
  (SWMP Design Manual)
- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch, January 1, 2010, Update.
  (OBC)

- **Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems**
  National Fire Protection Association
  2014 Edition.
  (NFPA 25)

- **Water Supply for Public Fire Protection**
  Fire Underwriters Survey, 1999.
  (FUS)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 1W pressure zone, as shown by the Pressure Zone map in ***Appendix B.*** An existing 305 mm diameter watermain exists within the Somerset Street West right-of-way and an existing 203 mm diameter watermain exists within the Lebreton Street North right-of-way.

3.2 Water Supply Servicing Design

In accordance with City of Ottawa technical bulletin ***ISDTB-2014-02***, redundant service connections are required due to a design flow of greater than 50 m^3/day.

The subject property is proposed to be serviced by the existing 203mm diameter watermain within the Lebreton Street North right-of-way via two 150 mm diameter service laterals.

Table 1 summarizes the ***Water Supply Guidelines*** employed in the preparation of the water demand estimate.

Table 1
Water Supply Design Criteria

Design Parameter	Value
Commercial-Floor space	5 L/m^2/d
Residential Demand	280 L/p/d
Residential Maximum Daily Demand	3.6 x Average Daily *
Residential Maximum Hourly	5.4 x Average Daily *
Commercial Maximum Daily Demand	1.5 x avg. day L/gross ha/d
Commercial Maximum Hour Demand	1.8 x avg. day L/gross ha/d
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350kPa and 480kPa
During normal operating conditions pressure must not drop below	275kPa
During normal operating conditions pressure shall not exceed	552kPa
During fire flow operating pressure must not drop below	140kPa
** Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.* *** Table updated to reflect ISD-2010-2* ****Building A tenant provided specific demand requirements.*	

Table 2 summarizes the estimated water supply demand and boundary conditions for the proposed development based on the ***Water Supply Guidelines***.

Table 2
Proposed Water Demand and Boundary Conditions

Design Parameter	Water Demand[1] (L/min)	Boundary Conditions[2] Lebreton Street N (m H_2O / kPa)	
Average Daily Demand	38.9	42.6	417.9
Max Day + Fire Flow	136.7 + 15,000 = 15,136.7	46,380 L/min @140 kPa	
Peak Hour	205.8	34.0	333.5

1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.
2) Boundary conditions supplied by the City of Ottawa for the demands indicated in the correspondence; assumed ground elevation 75.0m for Connection 1 and 73.4m for Connection 2. See ***Appendix B.***

Fire flow requirements are to be determined in accordance with Local Guidelines (***FUS as per ISTB-2018-02***), City of Ottawa ***Water Supply Guidelines***, and the Ontario Building Code.

Using the ***FUS*** method a conservative estimation of fire flow had been established. The following parameters were coordinated with Roderick Lahey Architects Inc.:

- Type of construction – Non-Combustible Construction
- Occupancy type –Limited combustible
- Sprinkler Protection – Sprinklered system

The above assumptions result in an estimated fire flow of approximately ***15,000 L/min***. Based on the boundary conditions identified in ***Table 2***, ***46,380 L/min*** at ***140kPa*** is available for the development, which exceeds the estimated maximum fire flow required. A certified fire protection system specialist would need to be employed to design the building fire suppression system and confirm the actual fire flow demand.

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand, as indicated in the boundary request correspondence included in ***Appendix A***.

The City provided both the minimum and maximum water pressures, as well as the estimated water pressure during fire flow demand. The minimum and maximum pressures fall within the required range identified in ***Table 1***.

3.3 Water Supply Conclusion

It is proposed to service the development from two connection to the existing 203 mm diameter watermain within the Lebreton Street North right-of-way via two 150 mm diameter service laterals.

The water demand was submitted to the City of Ottawa for establishing boundary conditions. As demonstrated by ***Table 2***, based on the City's model, the municipal system is capable of delivering water within the ***Water Supply Guidelines*** pressure range.

The design of the water distribution system conforms to all relevant City Guidelines and Policies.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject property lies within the Preston Street Sewer catchment area, as shown by the Trunk Sanitary Sewers and Collection Areas map included in ***Appendix C***. An existing 600 mm diameter combined sewer exists within the Somerset Street West right-of-way and an existing 300 mm diameter combined sewer exists within the Lebreton Street North right-of-way.

The existing site consists of a parking lot and one single family home. ***Table 3*** summarizes the estimated sanitary flow from the existing site.

Table 3
Existing Wastewater Flow

Design Parameter	Total Flow (L/s)
Estimated Average Dry Weather Flow	0.01
Estimated Peak Dry Weather Flow	0.05
Estimated Peak Wet Weather Flow	0.10

4.2 Wastewater Design

The development is proposed to be serviced by the existing 300 mm diameter combined sewer within the Lebreton Street North right-of-way via a 250 mm diameter sanitary service lateral.

Table 4 summarizes the ***City Standards*** employed in the calculation of wastewater flow rates for the proposed development.

Table 4
Wastewater Design Criteria

Design Parameter	Value
Commercial Floor Space	28,000 L/ha/d
Commercial Peaking Factor	1.5 x Average I/C/I Flow
Residential Flow	280 L/p/d
Residential Peaking Factor	Harmon Formula (Max = 4.0)
Infiltration and Inflow Allowance	0.33L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} A R^{2/3} S^{1/2}$
Minimum Sanitary Sewer Lateral	200mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012.	

Table 5 demonstrates the estimated peak flow from the proposed development. See ***Appendix C*** for associated calculations.

Table 5
Summary of Proposed Wastewater Flows

Design Parameter	Sanitary Flow (L/s)
Average Dry Weather Flow Rate	0.65
Peak Dry Weather Flow Rate	2.23
Peak Wet Weather Flow Rate	2.28

The estimated sanitary flow based on the site plan provided in ***Drawings/Figures*** estimates a peak wet weather flow of ***2.28 L/s***.

The peak wastewater flow generated from the proposed development to the local Lebreton Street North combined sewer and ultimately the Preston Trunk sewer has been estimated to be ***2.28 L/s***; this results in a ***2.18 L/s*** increase from the existing conditions. Detailed calculations are included in ***Appendix C***. The increase in wastewater discharge will be compensated for by a reduction in stormwater flow, as per City of Ottawa criteria, detailed in ***Section 5.0 & Section 6.0***.

4.3 Wastewater Servicing Conclusions

The site is tributary to the Preston Trunk sewer; it is proposed to discharge wastewater to the existing 300 mm combined sewer within the Lebreton Street North right-of-way.

The proposed development results in an estimated increase in wastewater flow contribution of ***2.28 L/s*** from the proposed development to the Lebreton Street North sewer. This increase in wastewater discharge will be compensated for by a reduction in stormwater flow, as per City of Ottawa Criteria.

The proposed wastewater design conforms to all relevant ***City Standards***.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system located within the Ottawa Central sub-watershed. As such, approvals for proposed developments within this area are under the approval authority of the City of Ottawa.

Flows that influence the watershed in which the subject property is located are further reviewed by the principal authority. The subject property is located within the Ottawa River watershed and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA).

It is anticipated that no stormwater management controls for flow attenuation exist on-site. The estimated pre-development peak flows for the 2, 5, and 100-year events are summarized in ***Table 6***:

Table 6
Summary of Existing Peak Storm Flow Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
2-year	30.1
5-year	40.9
100-year	77.9

5.2 Post-development Stormwater Management Targets

Stormwater management requirements for the proposed development were reviewed with the City of Ottawa, where the proposed development is required to:

- Meet a combined allowable release rate based on a calculated Rational Method Coefficient of 0.5, employing the City of Ottawa IDF parameters for a 5-year storm with a calculated time of concentration equal to or greater than 10 minutes;
- The stormwater release rate is equal to the allowable combined flow subtract the proposed sanitary flow;
- Attenuate storms up to and including the City of Ottawa 100-year design event on site;
- Quality controls are not anticipated to be required for the development since stormwater is tributary to a combined sewer.

Based on the above criteria, the allowable combined flow rate equals ***22.8 L/s*** and the allowable stormwater release rate is equal to ***20.5 L/s.*** (22.8 – 2.2 = 20.6 L/s).

5.3 Proposed Stormwater Management System

It is proposed that the stormwater for the development be serviced from the existing 300 mm diameter combined sewer within the Lebreton Street North right-of-way via a 200 mm diameter storm service lateral.

To achieve the allowable post-development stormwater runoff release rate identified in ***Section 5.2*** above, the proposed development will employ flow attenuation using onsite storage through the use of an internal stormwater cistern.

Table 7 estimates post-development flow rates and storage requirements.

Table 7
Stormwater Flow Rate Summary

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage
	(L/s)	(m^3)	(L/s)	(m^3)
Unattenuated Areas	7.6	0.0	14.4	0.0
Attenuated Areas	3.2	25.7	6.2	49.7
Total	**10.8**	**25.7**	**20.6**	**49.7**

It is estimated that approximately ***49.7 m^3*** of storage will be required on site to attenuate flow to a release rate of ***20.6 L/s***. Storage calculations are contained within ***Appendix D***.

5.4 Stormwater Servicing Conclusions

Post development stormwater runoff will be required to be restricted to the allowable target release rate for storm events up to and including the 100-year storm, in accordance with City of Ottawa ***City Standards***. The post-development stormwater allowable release rate to the combined sewer within the Lebreton Street North right-of-way was calculated to be ***20.6 L/s***. It is estimated that ***49.7 m^3*** of storage provided via an internal stormwater cistern will be required to meet this release rate.

The proposed stormwater design conforms to all relevant ***City Standards*** and Policies for approval.

6.0 COMBINED SEWER SYSTEM FLOW

Based on criteria outlined in ***Section 5.2***, the combined stormwater and sanitary flow is not to exceed ***22.8 L/s***.

Table 8 summarizes the pre-development and post-development flow rates to the combined sewershed.

Table 8
Summary of Release Rates to the Combined Sewer

Flow Type	5-Year		100-year	
	Pre-Development (L/s)	Post-Development (L/s)	Pre-Development (L/s)	Post-Development (L/s)
Sanitary*	0.05	2.23	0.05	2.23
Storm	40.9	10.8	77.9	20.6
Combined Flow	**41.0**	**13.0**	**78.0**	**22.8**
*Infiltration flows have been taken into account in stormwater calculations. Sanitary flow is equal to the peak dry weather flow.				

As shown by ***Table 8***, the post-development combined flow meets the target objective described in section 5.2. In addition, the development proposes to decrease the discharge to the existing combined sewer by approximately 70%.

7.0 UTILITIES

Utility servicing will be coordinated with the individual utility companies prior to site development.

8.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate and topography. The extent of erosion losses is exaggerated during construction where vegetation has been removed and the top layer of soil becomes agitated.

Prior to topsoil stripping, earthworks or underground construction, erosion and sediment controls will be implemented and will be maintained throughout construction.

Silt fence will be installed around the perimeter of the site and will be cleaned and maintained throughout construction. Silt fence will remain in place until the working areas have been stabilized and re-vegetated.

Catch basins will have SILTSACKs or an approved equivalent installed under the grate during construction to protect from silt entering the storm sewer system.

A mud mat will be installed at the construction access in order to prevent mud tracking onto adjacent roads.

Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents:

- Limit extent of exposed soils at any given time;
- Re-vegetate exposed areas as soon as possible;
- Minimize the area to be cleared and grubbed;
- Protect exposed slopes with plastic or synthetic mulches;
- Install silt fence to prevent sediment from entering existing ditches;
- No refueling or cleaning of equipment near existing watercourses;
- Provide sediment traps and basins during dewatering;
- Install filter cloth between catch basins and frames;
- Plan construction at proper time to avoid flooding;Establish material stockpiles away from watercourses, so that barriers and filters may be installed.

The contractor will, at every rainfall, complete inspections and guarantee proper performance. The inspection is to include:

- Verification that water is not flowing under silt barriers;
- Clean and change filter cloth at catch basins.

9.0 CONCLUSION AND RECOMMENDATIONS

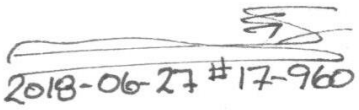
David Schaeffer Engineering Ltd. (DSEL) has been retained by Katasa Groupe Développement to prepare a Functional Servicing and Stormwater Management report in support of the application for Site Plan Control and Minor Zoning Amendment for the proposed development at 770 Somerset Street West. The preceding report outlines the following:

- Based on boundary conditions provided by the City the existing municipal water infrastructure is capable of providing the proposed development with water within the City's required pressure range;
- The proposed development is to have a peak wet weather flow of ***2.28 L/s*** directed to the existing Lebreton Street North combined sewer. The increase in wastewater discharge will be compensated by a reduction in stormwater flow;
- Based on the ***City Standards***, the proposed development will be required to attenuate post development flows to an equivalent release rate of ***20.6 L/s*** for all storms up to and including the 100-year storm event;
- It is proposed that stormwater objectives be met through storm water retention via cistern storage. It is estimated that ***49.7 m^3*** of onsite storage will be required to attenuate flow to the established release rates to the Lebreton Street North sewer;
- It is anticipated that stormwater quality controls are not required as flows are being discharged to a combined sewer;
- Combined stormwater runoff and sanitary discharge will not exceed the combined allowable release rate of ***22.8/s***;
- Utility services will need to be coordinated with utility companies prior to development.

Prepared by,
David Schaeffer Engineering Ltd.

Per: Steven L. Merrick, P.Eng.

Reviewed by,
David Schaeffer Engineering Ltd.



Per: Adam D. Fobert, P.Eng.

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APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

17-960 12/10/2017

4.1 General Content		
☐	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	Report Cover Sheet
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Drawings/Figures
☒	Plan showing the site and location of all existing services.	Figure 1
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 1.0
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.3
☒	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.	Section 2.1
☒	Statement of objectives and servicing criteria.	Section 1.0
☒	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3.1, 4.1, 5.1
☐	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).	N/A
☐	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.	N/A
☐	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.	N/A
☐	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	N/A

4.2 Development Servicing Report: Water		
☐	Confirm consistency with Master Servicing Study, if available	N/A
☒	Availability of public infrastructure to service proposed development	Section 3.1
☒	Identification of system constraints	Section 3.1
☒	Identify boundary conditions	Section 3.1, 3.2
☒	Confirmation of adequate domestic supply and pressure	Section 3.3

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	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.	Section 3.2
☐	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	Section 3.2, 3.3
☐	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.	Section 3.2
☐	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

☒	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).	Section 4.2
☐	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 4.1
☒	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 4.2
☒	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 4.2, Appendix C
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2
☐	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

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☐	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

☒	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.1
☒	Analysis of available capacity in existing public infrastructure.	Section 5.1, Appendix D
☐	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	N/A
☒	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 5.2
☒	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.2
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3
☐	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).	Section 5.3
☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
☒	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 5.1, 5.3
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
☐	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	N/A
☐	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

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3
☐	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A
☐	Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A
☐	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	N/A
☐	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
☐	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

☐	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 ct. 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

☒	Clearly stated conclusions and recommendations	Section 7.0
☐	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 draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

Hannah Pepper

Subject: FW: Boundary Condition Request - 770 Somerset Street West
Attachments: W_366-030_Somserset_Connections.pdf; 770 Somerset St W Oct 2017.pdf

From: Buchanan, Richard [mailto:Richard.Buchanan@ottawa.ca]
Sent: October 11, 2017 3:22 PM
To: Hannah Pepper <HPepper@dsel.ca>
Subject: FW: Boundary Condition Request - 770 Somerset Street West

Hi Hannah

The following are boundary conditions, HGL, for hydraulic analysis at 770 Somerset St W (zone 1W) assumed to be connected to the 305 mm on Somerset St W and the 203 mm on Lebreton St N (see PDF for locations).

Minimum HGL = 107.6 m (Both connections)

Maximum HGL = 116.2 m (Both connections)

Available fire flow (Connection 1) = 1092 L/s assuming a residual of 20 psi and a ground elevation of 75.0 m

Available fire flow (Connection 2) = 773 L/s assuming a residual of 20 psi and a ground elevation of 73.4 m

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.

Richard Buchanan, CET

Project Manager, Development Approvals
Planning, Infrastructure and Economic Development Department
Planning & Growth Management Branch
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 27801
ottawa.ca/planning / ottawa.ca/urbanisme

From: Hannah Pepper [mailto:HPepper@dsel.ca]
Sent: Wednesday, October 04, 2017 4:22 PM
To: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Subject: Boundary Condition Request - 770 Somerset Street West

Hi Richard,

I would like to request water boundary conditions for 770 Somerset Street West using the following proposed development demands:

1. It is anticipated that the development will be serviced from one connection to the existing 300mm watermain within Somerset Street West, and from one connection to the existing 200mm watermain within Lebreton Street North. Please see the attached sketch for locations of the connection points to the municipal system.
2. The proposed development consists of an 9-storey apartment building with approximately 112 units, 440 square metres of commercial area and 3 levels of underground parking.
3. A summary of the average total demands for the development is as follows:
4.

	L/min	L/s
Avg. Day	48.7	0.8
Max Day	172.0	2.9
Peak Hour	258.8	4.3

5. Could you please give us the maximum available flow at a minimum pressure of 20 psi for fire flow? FUS calculation will be completed at a later date.

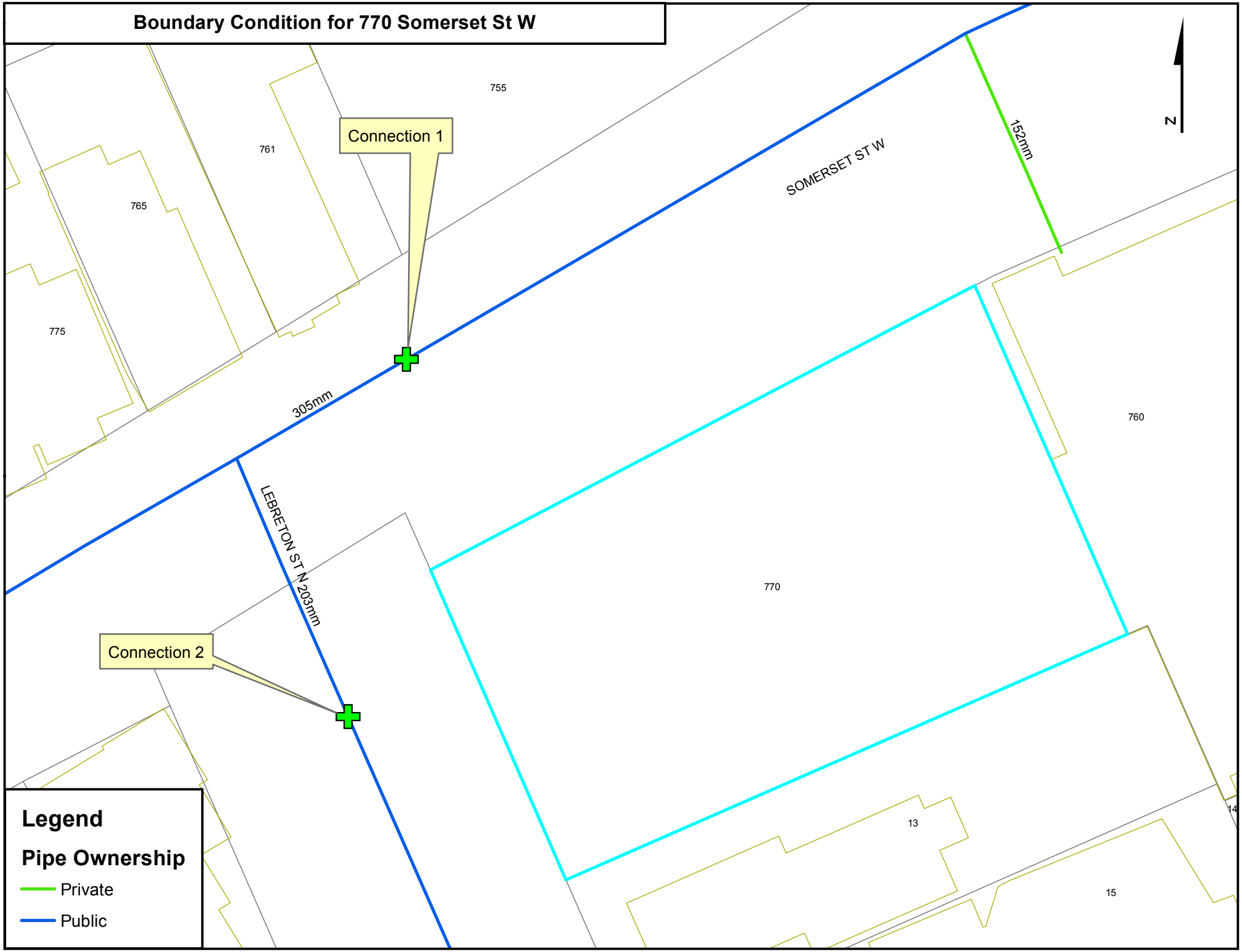
Thank you,

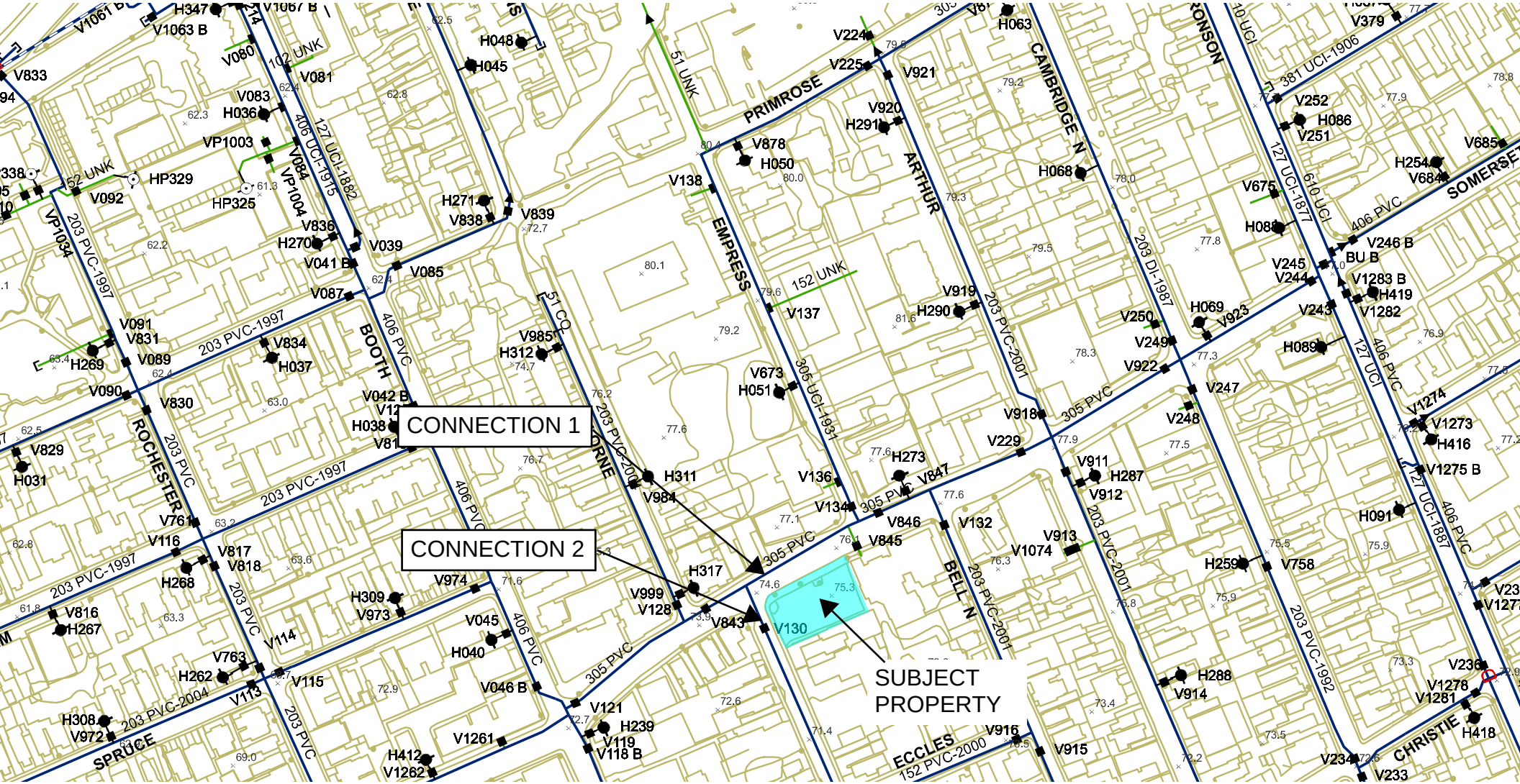
Hannah Pepper, EIT.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 569
fax: (613) 836-7183
email: hpepper@DSEL.ca


Boundary Condition for 770 Somerset St W
755
761
765
775
760
770
13
15
14
Connection 1
Connection 2
SOMERSET ST W
152mm
305mm
LEBRETON ST N 203mm
N
Legend
Pipe Ownership
Private
Public


CONNECTION 1
CONNECTION 2
SUBJECT PROPERTY
PRIMROSE
EMPRESS
ARTHUR
CAMBRIDGE N
BELL N
BOOTH
ROCHESTER
SPRUCE
ECCLES
CHRISTIE
SOMERSET
RONSON
CORINE
203 PVC-1997
203 PVC-2001
203 PVC
406 PVC
305 PVC
305 UCI-1931
127 UCI-1882
127 UCI-1915
127 UCI-1877
127 UCI
610 UCI
381 UCI-1906
203 PVC-2004
203 PVC-1992
203 DI-1987
152 PVC-2000
51 CQ
51 UNK
102 UNK
152 UNK

Hannah Pepper

Subject: FW: Precon Follow-up - 770 Somerset St W & 13 Lebreton St N

From: Buchanan, Richard [mailto:Richard.Buchanan@ottawa.ca]
Sent: Friday, October 13, 2017 10:55 AM
To: Steve Merrick <SMerrick@dsel.ca>
Subject: RE: Precon Follow-up - 770 Somerset St W & 13 Lebreton St N

Hi Steve

For this location, if you connect to Lebreton St North (outlets to the Preston Trunk sewer) you would be controlling the site to a 1:5 year storm event with a C factor of 0.5 and a TC of 10 minutes. If you connect to Somerset St West (outlets to the Booth St Trunk Sewer), you will would be controlling the site to a 1:2 year storm event with a C factor of 0.4 and a TC of 20 minutes.

Richard Buchanan, CET

Project Manager, Development Approvals
Planning, Infrastructure and Economic Development Department
Planning & Growth Management Branch
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 27801
ottawa.ca/planning / ottawa.ca/urbanisme

From: Steve Merrick [mailto:SMerrick@dsel.ca]
Sent: Friday, October 13, 2017 9:54 AM
To: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Cc: Hannah Pepper <HPepper@dsel.ca>
Subject: RE: Precon Follow-up - 770 Somerset St W & 13 Lebreton St N

Thanks Richard, can you confirm that the criteria I described below is correct for the combined sewer within Lebreton?

Steve Merrick, P.Eng.
Project Manager / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 561
cell: (613) 222-7816
email: smerrick@DSEL.ca

From: Buchanan, Richard [mailto:Richard.Buchanan@ottawa.ca]
Sent: Friday, October 13, 2017 9:49 AM
To: Steve Merrick <SMerrick@dsel.ca>
Cc: Hannah Pepper <HPepper@dsel.ca>
Subject: RE: Precon Follow-up - 770 Somerset St W & 13 Lebreton St N

Hi Steve

Miss quoted. I indicated you would need to provide storage for storm events up to the 1:100 year event. Flows above this level need to be directed to the public corridor.

Richard Buchanan, CET

Project Manager, Development Approvals
Planning, Infrastructure and Economic Development Department
Planning & Growth Management Branch
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 27801
ottawa.ca/planning / ottawa.ca/urbanisme

From: Steve Merrick [mailto:SMerrick@dsel.ca]
Sent: Friday, October 13, 2017 9:25 AM
To: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Cc: Hannah Pepper <HPepper@dsel.ca>
Subject: FW: Precon Follow-up - 770 Somerset St W & 13 Lebreton St N

Hi Richard,

We are working on the detailed design for the proposed development at 770 Somerset. In your pre-consultation notes you indicate that stormwater management is necessary to control up to 100 L flow/day.

This is a little different then what we typically see for connecting to a combined sewer. Can you clarify how we would establish a target release rate using this criteria?

Normally we would assume the storm and proposed sanitary flow to the combined sewer would be restricted to the 2-year storm event @ 0.4 RC and 20 minute TC + the existing sanitary flow from the subject site.

Thanks in advance,

Steve Merrick, P.Eng.
Project Manager / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 561
cell: (613) 222-7816
email: smerrick@DSEL.ca

From: Stephanie Morris [mailto:morris@fotenn.com]
Sent: Wednesday, October 4, 2017 3:47 PM
To: Steve Merrick <SMerrick@dsel.ca>
Subject: FW: Precon Follow-up - 770 Somerset St W & 13 Lebreton St N

Hi Steve,

Per your email, please see below and attached.

Thanks,

Stephanie Morris-Rashidpour, MCIP RPP
Planner
T 613.730.5709 ext. 244

From: O'Connor, Ann [mailto:Ann.O'Connor@ottawa.ca]
Sent: Friday, June 30, 2017 3:17 PM
To: Stephanie Morris <morris@fotenn.com>
Cc: Buchanan, Richard <Richard.Buchanan@ottawa.ca>; Moise, Christopher <christopher.moise@ottawa.ca>; Dubyk, Wally <Wally.Dubyk@ottawa.ca>; Weekes, Miles <miles.weekes@ottawa.ca>
Subject: Precon Follow-up - 770 Somerset St W & 13 Lebreton St N

Good Afternoon Stephanie,

Thank you for sending the plans and pre-application form in advance of the formal pre-consultation for 770 Somerset St W & 13 Lebreton St N which took place June 12, 2017. Please find attached the meeting minutes which lists all the attendees at the meeting.

Official Plan, Zoning and other City Guidelines

- Site/Surroundings: The site is currently occupied by a surface parking lot and a two-storey residential house. The subject property is an assembly of two lots, 770 Somerset Street West and 13 Lebreton Street North, and is a corner lot located at the southeast corner of the Somerset Street West and Lebreton Street North intersection. The site is located in the Chinatown neighbourhood, west of Bronson Avenue and east of Booth Street. The site area is 1,567 square metres with 42 metres of frontage along Somerset Street. The site is within 600 metres of the Lebreton rapid transit station.

- History: On April 10, 2014 the Planning Department approved Site Plan Control and ZBLA for a nine-storey, 75 unit mixed use building with ground-level restaurant and supermarket and upper-level residential. The SPA was sent for signature but never signed. In April 2015 the applicant was granted a 2 year SPC extension to the approval from 2014. The approval lapsed on April 10, 2017.
- Proposal: The applicant wishes to develop a 9 storey mixed use building with 464 square metres of ground floor commercial with 112 dwelling units and 95 parking spaces underground. The applicant wishes to apply for a Minor Zoning By-law Amendment to amend Schedule 310 of the ZBL to accommodate a revised design for the property.
- The property is:
    - designated Traditional Mainstreet in the Official Plan
    - zoned TM[2040] S310 – Traditional Mainstreet, Exception 2040, Schedule 310 within the Mature Neighbourhoods Overlay
    - subject to the Urban Design Guidelines for Traditional Mainstreets
    - within a Design Priority Area and subject to review by the Urban Design Review Panel
    - There is a 20m ROW on Somerset St W and no road widening required along Lebreton
- Proper setbacks and stepbacks will be expected to be accommodated in any new design to be respectful of the surroundings.
- Please consider and take into account the grade difference in the new design
- Please incorporate gestures to the public realm and incorporate the bus stop along Somerset into the design.

Engineering Considerations

- Combined Sewer - MOECC ECA application required - Direct Submission required which may be a 6 to 9 month approval process.
- Connection of water, storm and sanitary to Lebreton Street North municipal infrastructure.
- Shoring requirements due to multi-level underground parking. Tie back submission to the city prior to constructing.
- Storm water management required 5 year design release rate for assumed C=0.5 for all storm events up to 100 year storm events.
- ESA Phase 1 and if necessary Phase 2.
- Serviceability Study - will deal with fire flow requirements. Need their flow requirements to provide boundary conditions.
- Sections of sidewalk along roadside which are depressed will need to be replaced with full height walkways to city standards.
- No consultant retained.

Transportation Considerations

- Somerset Street is designated as an Arterial road within the City's Official Plan with a ROW protection of 20.0 metres. The ROW protection limits and the offset distance (10.0 metres) measured from the existing centerline of pavement is to be dimensioned on the drawings.
- ROW interpretation – 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 is required at the intersection of Somerset Street and Lebreton Street and is to be dimensioned on all drawings. Dimensions are to be taken from the Right-of-Way (ROW) protection limits. The sight triangles are to be free of permanent foundations for the purpose to secure either subsurface utilities & municipal service manholes or aerial encroachments for utility & traffic signal poles.
- 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.

- Permanent structures such as curbing, stairs, retaining walls, and underground parking foundation also bicycle parking racks are not to extend into the City's right-of-way and sight triangle limits.
- The Tactile Walking Surface Indicator (TWSI) should be provided at pedestrian crossings. Under the Integrated Accessibility Standards of the Accessibility for Ontarians with Disabilities Act, 2005, and the City of Ottawa Accessibility Design Standards, TWSI's are required for new construction and the redevelopment of elements in public spaces, such as for exterior paths of travel (e.g. sidewalks and at the top of stairs).
- The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards.
- Ensure that the driveway grade does not exceed 2-6% within the private property for a distance of 9.0 metres from the highway line; see Section 25 (t) of the Private Approach By-Law #2003-447. Any grade exceeding 6% will require a subsurface melting device.
- All underground and above ground building footprints need to be shown on the plan to confirm the structure does not extend over existing property lines, sight triangles and/or future road widening requirements.
- The concrete sidewalk is to meet City standards and be 2.0 metres in width and be continuous and depressed through the proposed access (please refer to the City's sidewalk and curb standard drawing SC2).
- Bicycle parking spaces are required as per Section 111 of the Ottawa Comprehensive Zoning By-law. Bicycle parking spaces should be located in safe, secure places near main entrances and preferably protected from the weather.
- Relocating an existing roadway curbing by 30 cm will require a RMA report and approval by the delegated authority. Please confirm if you are triggering an RMA.
- The Transportation Brief should address the westbound left turning queue length at the Somerset & Lebreton intersection and the southbound left turning queue length into the proposed access on Lebreton Street.

Urban Design Considerations

- It is a pleasure to see such detailed analysis and contextual research for this project;
- Areas for further design and development include the Somerset and Lebreton streetscape
- Material treatment and their relationships on the building: The conceptual use of the layering and 'peel-away' employed on the first proposal does not seem to fit well with the second. If this second proposal is chosen, perhaps an alternative material approach could be investigated.
- Architectural elements: Although the roof-top expression of the local vernacular is appreciated, it still seems to fall short of clarity. Perhaps this element can be developed more.
- Building massing: Of the two proposals presented, the second seems to clearly be more sensitive to the planned context of Somerset Street in this location;
- Site layout: Please provide an illustration of how the building set-back manages the adjacent hydro set-back requirement.

Community Association Representative Comments

Michael Powell

- It is important that some real step backs be incorporated into the final design. The TM zoning's 6 story limit helps to create walkable, human-scale streets. To the degree that building above that is necessary, moving it farther from the street to reduce the canyon effect and is in keeping with similar compromises made elsewhere in the neighbourhood (like Booth/Somerset and the approved plan for this site). As you said, Option 2 is a good start towards this but further step backs would be desirable.
- Underground works on the site should include, where possible, the ability to plant real street trees using appropriate soil mediums (like Silva cells). We don't have enough trees, more is nicer.
- For the podium that is closest to the street, making it feel less like a flat wall would hopefully make it feel less massive. Perhaps this can be done with materialty or with the French balconies as proposed.
- The presence of bike parking and ground level amenity space is appreciated. It would be nice if the ground level courtyard was also visible from Lebreton in some way (rather than just a solid fence).

- As much as is possible, traffic from this site should still use Somerset St. Primarily, if not exclusively. There will also need to be provisions for an appropriate loading zone for deliveries to the commercial units and for moving trucks for the building.

Charles Akben-Marchand

- I had meant in my remarks to credit and thank you for being the first to raise the concept of massing, stepbacks and the amount of effort that led to the previously approved design, but I neglected to do so when my turn came. I'm glad the file has a planner with such familiarity with the previous iteration.
- Given that this building is on the south side of a Traditional Mainstreet, I think it's important that sun is allowed to reach the street level as much as possible. Obviously that's a design matter since zoning doesn't cover sun or 'right to light', but frankly I'd prefer power lines that come with stepbacks to the developer having to pay to bury the wires and offset those costs by building more units. (And there are a LOT of wires on those towers)
- I agree with Michael's comments, with the usual disclaimer: we are members of the community association but our opinions in these closed-door discussions are not an official position of the community association since we are not able to discuss the proposal with the other members.

Development Applications Required

For your proposal, an application for Minor Zoning By-law Amendment and Site Plan Revision, Manager Approval would be required.

Attached is the *Applicant's Study and Plan Identification List*, which identifies the required studies and plans to support your application. For additional information on preparing studies and plans, please click on the following hyperlink: Guide to Preparing Studies and Plans.

Also attached is the *Notification List*, which lists the contact information for the community groups registered to be notified of development within this area. As you may know, the property is in Ward 14 - Somerset, with Councillor Catherine McKenney. It is in your best interest to initiate contact with close neighbours as well as the Councillor and Registered Community Groups. In addition, it may be beneficial to contact key technical agencies that may be involved in this file, to discuss the proposal before submitting an application.

You may also want to reference information available on the City's website for building permits/demolition permits and development charges as well. For additional information on these items, please follow the following associated links: Building Permits or Development Charges. Please contact Building Code Services if you have any questions regarding permits or charges; they can be reached at 613-580-2424 ext. 12870.

The above pre-consultation comments are valid for one year. If you submit a development application after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change.

Please do not hesitate to contact me if you have questions or require clarification.

Best Regards,

Ann O'Connor, MCIP, RPP
Planner | Urbaniste
Development Review, Urban Services | *Examen des projets d'aménagement, Services urbains*
Planning, Infrastructure and Economic Development Department | Services de planification, d'infrastructure et de développement économique
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West. Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 12658, fax/téléc:613-580-2576, ann.oconnor@ottawa.ca

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'

Hannah Pepper

Subject: FW: 770 Somerset Street West - FUS Calcs

From: Justin Langlois [mailto:jlanglois@rlaarchitecture.ca]
Sent: October 16, 2017 1:05 PM
To: Hannah Pepper <HPepper@dsel.ca>
Subject: RE: 770 Somerset Street West - FUS Calcs

Hi Hannah,

Sorry for the confusion – L2 is incorrect and doesn't exist as a commercial floor… The building is in fact the same way you described it:

- 3 Parking Levels
- Ground / L1 (Lobby + Commercial)
- Residential 2nd floor to 9th floor
- Roof

You can disregard the L2 area calculation.

Thanks,

Justin D. Langlois
Architectural Technologist Dipl.

Roderick Lahey Architect Inc.
56 Beech Street,
Ottawa, Ontario K1S 3J6
Tel: 613.724.9932 x 239
Fax: 613.724.1209
jlanglois@rodericklahey.ca

rla/architecture
roderick lahey architect inc.

From: Hannah Pepper [mailto:HPepper@dsel.ca]
Sent: October-16-17 12:15 PM
To: Justin Langlois <jlanglois@rlaarchitecture.ca>
Subject: RE: 770 Somerset Street West - FUS Calcs

Hi Justin,

It was my understanding from the site plan that we have that there are three levels of parking, one ground level (lobby, commercial space, etc) and then levels 2-9 above that? What is the L1 and L2?

Thank you,

Hannah Pepper, EIT.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 569
fax: (613) 836-7183
email: hpepper@DSEL.ca

From: Justin Langlois [mailto:jlanglois@rlaarchitecture.ca]
Sent: October 13, 2017 2:52 PM
To: Hannah Pepper <HPepper@dsel.ca>
Cc: Kevin Reid <kreid@rlaarchitecture.ca>
Subject: RE: 770 Somerset Street West - FUS Calcs

Hi Hannah,

See my responses to you questions below in red.

Regards,

Justin D. Langlois
Architectural Technologist Dipl.

Roderick Lahey Architect Inc.
56 Beech Street,
Ottawa, Ontario K1S 3J6
Tel: 613.724.9932 x 239
Fax: 613.724.1209
jlanglois@rodericklahey.ca

From: Hannah Pepper [mailto:HPepper@dsel.ca]
Sent: October-13-17 1:41 PM
To: Kevin Reid <kreid@rlaarchitecture.ca>; Justin Langlois <jlanglois@rlaarchitecture.ca>
Subject: 770 Somerset Street West - FUS Calcs

Hi Justin and Kevin,

I'm doing FUS calcs for the proposed 9-storey apartment building at 770 Somerset Street West. Could you please confirm several details about the building?

1) Confirm square footage for each floor of the building.

P3 – 5664 sq.ft
P2 – 16,822 sq.ft
P1 – 16,277 sq.ft
L1 – 10,323 sq.ft
L2 – 11,237 sq.ft
Typ 2-4 – 11,237 sq.ft
Typ 5-6 – 10,602 sq.ft
Typ 7-9 – 10,245 sq.ft
Roof – 617 sq.ft

2) Confirm construction type for the building (Wood Frame, Ordinary Construction, Non-combustible, fire resistive)

Non-Combustible (Concrete Superstructure & Steel Studs)

Extracted from FUS:

C = coefficient related to the type of construction.
= 1.5 for wood frame construction (structure essentially all combustible).
= 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior).
= 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls).
= 0.6 for fire-resistive construction (fully protected frame, floors, roof).

Fire-Resistive Construction - Any structure that is considered fully protected, having at least 3-hour rated structural members and floors. For example, reinforced concrete or protected steel.

Non-combustible Construction - Any structures having all structural members including walls, columns, piers, beams, girders, trusses, floors, and roofs of non-combustible material and not qualifying as fire-resistive construction. For example, unprotected metal buildings.

Ordinary Construction - Any structure having exterior walls of masonry or such non-combustible material, in which the other structural members, including but not limited to columns, floors, roofs, beams, girders, and joists, are wholly or partly of wood or other combustible material.

Wood Frame Construction - Any structure in which the structural members are wholly or partly of wood or other combustible material and the construction does not qualify as ordinary construction.

3) Confirm if the building will be sprinklered.

It will be sprinklered

Thank you,

Hannah Pepper, EIT.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 569
fax: (613) 836-7183
email: hpepper@DSEL.ca

APPENDIX B

Water Supply

Proposed Site Conditions
Water Demand

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4	5	7
1 Bedroom	1.4	57	80
2 Bedroom	2.1	38	80
3 Bedroom	3.1	8	25
Average	1.8		0

Type of Housing	Per/Bed	Beds	Pop
Boarding*	1		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	192	53.8	37.3	193.5	134.4	290.3	201.6

Institutional / Commercial / Industrial Demand

			Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**	**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Commercial floor space**	5.0 $L/m^2/d$	445	2.23	1.5	3.3	2.3	6.0	4.2
Industrial - Light	35,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Total I/CI Demand			2.2	1.5	3.3	2.3	6.0	4.2
Total Demand			**56.0**	**38.9**	**196.9**	**136.7**	**296.3**	**205.8**

* Based on a daily demand of 200L/day per person as identified by Appendix 4-A of the Sewer design guidelines
**Assuming a 12 hour commercial operation

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required

1. Base Requirement

$$F = 220C\sqrt{A}$$ L/min *Where **F** is the fire flow, **C** is the Type of construction and **A** is the Total floor area*

Type of Construction: Non-Combustible Construction

C	0.8		*Type of Construction Coefficient per FUS Part II, Section 1*
A	6755.1	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	14465.3	L/min	
	14000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Limited Combustible	-15%	
Fire Flow	**11900.0**	**L/min**

3. Reduction for Sprinkler Protection

Sprinklered	-30%	
Reduction	**-3570**	**L/min**

4. Increase for Separation Distance

	Cons. of Exposed Wall	S.D	Lw	Ha	LH	EC	
N	Non-Combustible	20.1m-30m	39	5	195	10%	
S	Non-Combustible	3.1m-10m	47	3	141	20%	
E	Non-Combustible	3.1m-10m	23	6	138	20%	
W	Non-Combustible	20.1m-30m	35	2	70	9%	
		% Increase				**59%**	*value not to exceed 75%*

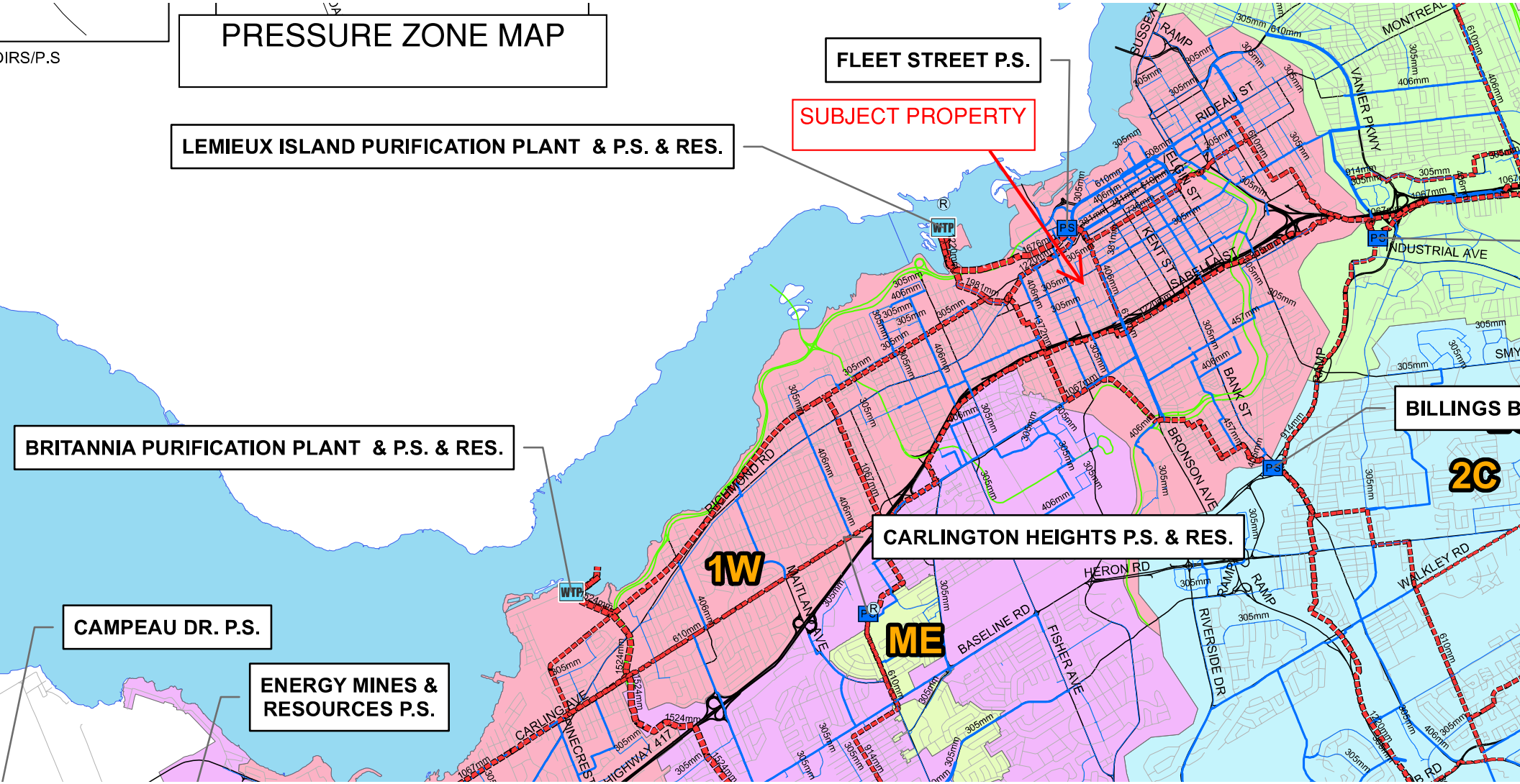
Increase	**7021.0**	**L/min**

Lw = Length of the Exposed Wall
Ha = number of storeys of the adjacent structure
LH = Length-height factor of exposed wall. Value rounded up.
EC = Exposure Charge

Total Fire Flow

Fire Flow	15351.0	L/min	*fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section*
	15000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Notes:
-Type of construction, Occupancy Type and Sprinkler Protection information provided by _____.
-Calculations based on Fire Underwriters Survey - Part II


PRESSURE ZONE MAP
IRS/P.S
FLEET STREET P.S.
SUBJECT PROPERTY
LEMIEUX ISLAND PURIFICATION PLANT & P.S. & RES.
BRITANNIA PURIFICATION PLANT & P.S. & RES.
CAMPEAU DR. P.S.
ENERGY MINES & RESOURCES P.S.
CARLINGTON HEIGHTS P.S. & RES.
BILLINGS B
1W
ME
2C
WTP
PS
RAMP
MONTREAL
VANIER PKWY
RIDEAU ST
ELGIN ST
KENT ST
ISABELLA ST
INDUSTRIAL AVE
BANK ST
BRONSON AVE
RICHMOND RD
MAITLAND AVE
BASELINE RD
FISHER AVE
HERON RD
WALKLEY RD
RIVERSIDE DR
CARLING AVE
HIGHWAY 417

APPENDIX C

Wastewater Collection

Katasa Group Développment
770 Somerset Street West
Existing Site Conditions

Existing Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012

Site Area 0.157 **ha**

Extraneous Flow Allowances

Infiltration / Inflow	**0.05**	**L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4	1	4
Semi-detached and duplex	2.7		0
Duplex	2.3		0
Townhouse	2.7		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

Total Pop	**4**	
Average Domestic Flow	**0.01**	**L/s**
Peaking Factor	**3.76**	
Peak Domestic Flow	**0.05**	**L/s**

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate		No. of Units	Avg Wastewater (L/s)
Commercial floor space*	5	$L/m^2/d$		0.00
Hospitals	900	L/bed/d		0.00
School	70	L/student/d		0.00
Industrial - Light**	35,000	L/gross ha/d		0.00

Average I/C/I Flow	**0.00**
Peak Institutional / Commercial Flow	0.00
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**0.00**

** assuming a 12 hour commercial operation*
*** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B*

Total Estimated Average Dry Weather Flow Rate	**0.01 L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.05 L/s**
Total Estimated Peak Wet Weather Flow Rate	**0.10 L/s**

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012

Site Area 0.157 **ha**

Extraneous Flow Allowances

Infiltration / Inflow	**0.05**	**L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7		0
Stacked Townhouse	2.3		0
Apartment			
Bachelor	1.4	5	7
1 Bedroom	1.4	57	80
2 Bedroom	2.1	38	80
3 Bedroom	3.1	8	25
Average	1.8		0

Total Pop	**192**	
Average Domestic Flow	**0.62**	**L/s**
Peaking Factor	**3.52**	
Peak Domestic Flow	**2.19**	**L/s**

Institutional / Commercial / Industrial Contributions

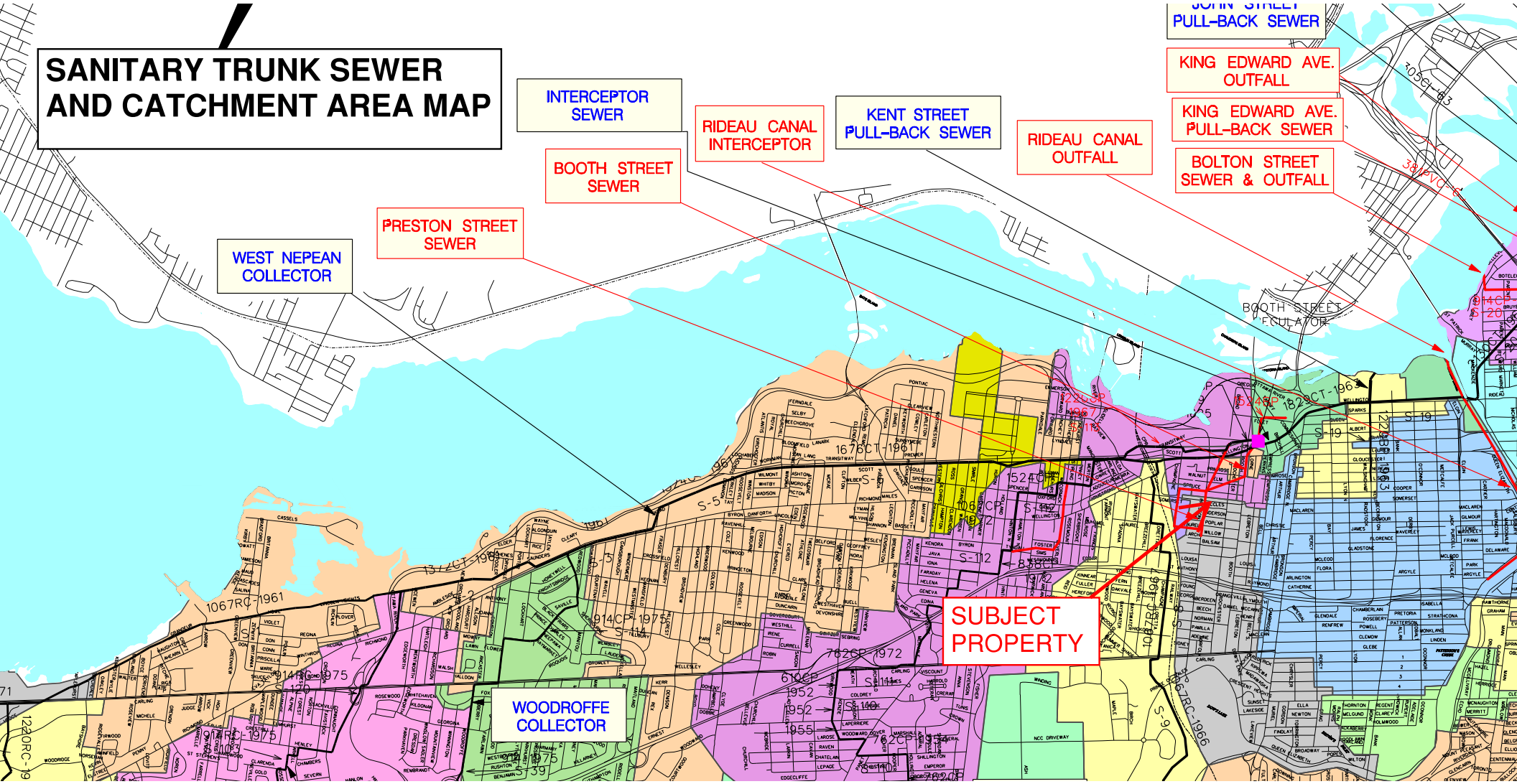
Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Commercial floor space*	2.5 $L/m^2/d$	445	0.03

Average I/C/I Flow	**0.03**
Peak Institutional / Commercial Flow	0.04
Peak I/C/I Flow	**0.04**

Total Estimated Average Dry Weather Flow Rate	**0.65**	**L/s**
Total Estimated Peak Dry Weather Flow Rate	**2.23**	**L/s**
Total Estimated Peak Wet Weather Flow Rate	**2.28**	**L/s**

* Based on a daily demand of 200L/day per person as identified by Appendix 4-A of the Sewer design guidelines

SANITARY TRUNK SEWER AND CATCHMENT AREA MAP



APPENDIX D

Stormwater Management

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2012

Existing Drainage Charateristics From Internal Site

Area	0.157	ha
C	0.90	Rational Method runoff coefficient
L	42.8	m
Up Elev	75.9	m
Dn Elev	73.41	m
Slope	5.8	%
Tc	10.00	min

1) Time of Concentration per Federal Aviation Administration

$$t_c = \frac{1.8(1.1-C)L^{0.5}}{S^{0.333}}$$

4.11 *Based on 108 proposed units.

tc, in minutes
C, rational method coefficient, (-)
L, length in ft
S, average watershed slope in %

Estimated Peak Flow

	2-year	5-year	100-year	
i	76.8	104.2	178.6	mm/hr
Q	30.1	40.9	77.9	L/s

Stormwater - Proposed Development
City of Ottawa Sewer Design Guidelines, 2012

Target Flow Rate

Area	0.157	ha	
C	0.50	Rational Method runoff coefficient	
t_c	10.0	min	
	5-year		
i	104.2	mm/hr	
Q	22.7	L/s	
Ex. Sanitary Flow	0.10	L/s	*Based on an assumption of 1 existing single family home.
Total Combined Allowable Release	**22.8**	**L/s**	**<---- 5-Year Release (22.7 L/s) + Ex. Sanitary Flow (0.10 L/s)**
Proposed Sanitary Flow	2.23	L/s	*NOTE: The peak dry weather flow rate is used as infiltration is acounted for in storm calculations
Total Allowable Stormwater Release	**20.6**	**L/s**	**<---- Total Combined Release (22.8 L/s) - Proposed Sanitary Flow (2.23 L/s)**

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area	0.029	ha	
C	0.90	Rational Method runoff coefficient	

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10.0	104.2	7.6	7.6	0.0	0.0	178.6	14.4	14.4	0.0	0.0

Estimated Post Development Peak Flow from Attenuated Areas

Total Area	0.128	ha	
C	0.88	Rational Method runoff coefficient	

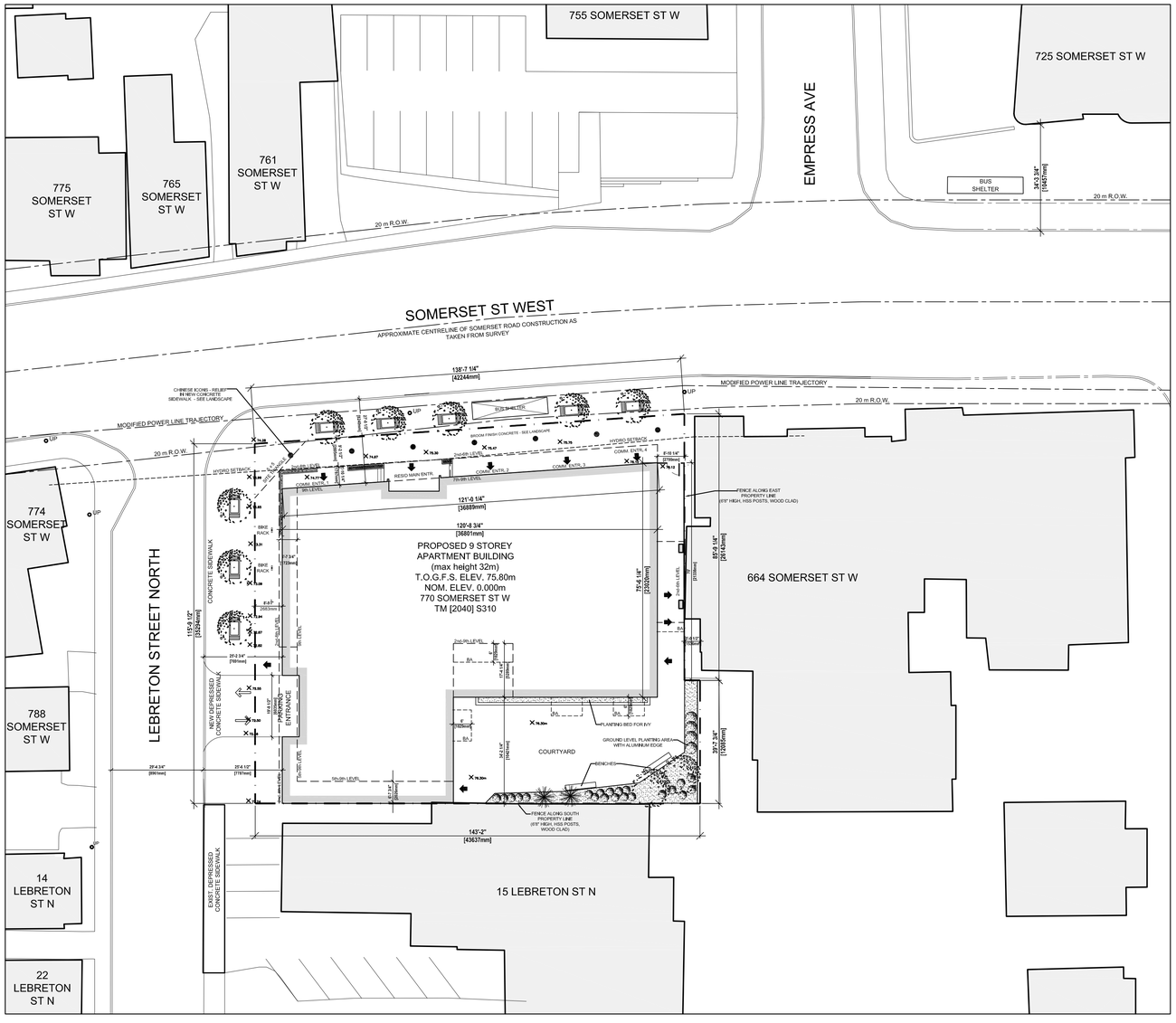
	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10	104.2	32.6	3.2	29.4	17.6	178.6	63.5	6.2	57.3	34.4
15	83.6	26.1	3.2	23.0	20.7	142.9	50.8	6.2	44.6	40.1
20	70.3	22.0	3.2	18.8	22.5	120.0	42.6	6.2	36.5	43.7
25	60.9	19.0	3.2	15.9	23.8	103.8	36.9	6.2	30.7	46.1
30	53.9	16.9	3.2	13.7	24.6	91.9	32.6	6.2	26.5	47.7
35	48.5	15.2	3.2	12.0	25.2	82.6	29.3	6.2	23.2	48.7
40	44.2	13.8	3.2	10.6	25.5	75.1	26.7	6.2	20.5	49.3
45	40.6	12.7	3.2	9.5	25.7	69.1	24.5	6.2	18.4	49.6
50	37.7	11.8	3.2	8.6	25.7	64.0	22.7	6.2	16.6	49.7
55	35.1	11.0	3.2	7.8	25.7	59.6	21.2	6.2	15.0	49.6
60	32.9	10.3	3.2	7.1	25.6	55.9	19.9	6.2	13.7	49.3
65	31.0	9.7	3.2	6.5	25.4	52.6	18.7	6.2	12.5	48.9
70	29.4	9.2	3.2	6.0	25.1	49.8	17.7	6.2	11.5	48.4
75	27.9	8.7	3.2	5.5	24.8	47.3	16.8	6.2	10.6	47.8
80	26.6	8.3	3.2	5.1	24.5	45.0	16.0	6.2	9.8	47.1
85	25.4	7.9	3.2	4.7	24.1	43.0	15.3	6.2	9.1	46.4
90	24.3	7.6	3.2	4.4	23.7	41.1	14.6	6.2	8.4	45.6
95	23.3	7.3	3.2	4.1	23.3	39.4	14.0	6.2	7.8	44.7
100	22.4	7.0	3.2	3.8	22.8	37.9	13.5	6.2	7.3	43.8
105	21.6	6.7	3.2	3.5	22.3	36.5	13.0	6.2	6.8	42.8
110	20.8	6.5	3.2	3.3	21.8	35.2	12.5	6.2	6.3	41.8

5-year $Q_{attenuated}$	**3.21**	**L/s**	**100-year $Q_{attenuated}$**	**6.17**	**L/s**
5-year Max. Storage Required	**25.7**	**m^3**	**100-year Max. Storage Required**	**49.7**	**m^3**

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Storage Storage (m^3)	100-Year Release Rate Release Rate (L/s)	100-Year Storage Storage (m^3)
Unattenuated Areas	7.6	0.0	14.4	0.0
Attenutated Areas	3.2	25.7	6.2	49.7
Total	**10.8**	**25.7**	**20.6**	**49.7**

DRAWINGS / FIGURES



1 / A100 SITE PLAN

SCALE = 1:250

NOTE: THE BOUNDARY INFORMATION SHOWN HERE HAS BEEN DERIVED FROM A PLAN SURVEY BY FAIRHALL, MOFFATT & WOODLAND LIMITED DATED SEPTEMBER 13, 2017

Legend	
UP	Utility Pole
00.00m	Elevation Marker
	Location of Entrance/Exit
	Vehicular Traffic Direction
	Property Line
2nd-5th LEVEL	Building Overhang/Stepback
BA	Balconies Above
	Inlay in Concrete Paving
	Bicycle Parking Ring
	Concrete Unit Paver
	Concrete Steps and Planter
	Tree in Concrete Planter with Built-in Benches
BUS SHELTER	Bus Shelter

2 / A100 KEY PLAN

SCALE = 1/128" = 1'-0"

Project Information for 770 Somerset Street West and 13 Lebreton Street North		
Current Zoning: TM [2040] S310		
Site Area: 1571.6 sq. m./ 16,916 sq. ft		
Performance Standards	**Required**	**Proposed**
Total Gross Floor Area (m2)	*	8,772
Total Amenity Space (m2)	648 (6/dwelling unit)	1,231
Communal Amenity Space (m2)	324	818
Landscaped Area (m2)	189	589,2 (37,5%)
Minimum Lot Width (m)	*	*
Minimum Lot Area (m2)	*	*
Maximum Building Height (m)	32	29,6 (average)
Minimum Front Yard Setback (m)	0.9	2.8
Minimum Corner Side Yard Setback (m)	0	*
Minimum Rear Yard Setback (m)	0	VARIES (0 - 10,4)
Minimum Interior Side Yard Setback (m)	2.7	2.7
Minimum Vehicular Parking Spaces	0	52 (62 TOTAL)
Minimum Vehicular Visitor Parking Spaces	10	10
Minimum Number of Accessible Vehicular Parking Spaces (Traffic and Parking By-law No. 2003-530 Part C)	1	2
Minimum Bicycle Parking	54 Resid + 2 Comm = 56	114 Inter + 2 Exter
Minimum Storage	0	120
Minimum Width of Drive Aisle (m)	6.0	6.0
Minimum Number of Loading Spaces	*	*

Building Statistics for 770 Somerset Street West and 13 Lebreton Street North	
Gross Buildlng Areas City of Ottawa Definition	
P3 Level	526 sq. m. / 5,664 sq. ft.
P2 Level	1,563 sq. m. / 16,822 sq. ft.
P1 Level	1,512 sq. m. / 16,277 sq. ft.
Ground Level (Total)	958 sq. m. / 10,312 sq. ft.
Resid. Lobby, Amenity, Stg., and Bike Stg.	512 sq. m. / 5,513 sq. ft.
Commercial	446 sq. m. / 4,799 sq. ft.
2nd to 4th Level	1,044 sq. m. / 11,237 sq. ft.
5th & 6th Level	983 sq. m. / 10,577 sq. ft.
7th & 8th Level	925 sq. m. / 9,960 sq. ft.
9th Level	867 sq. m. / 9,327 sq. ft.
Total Above Grade (without parking levels)	8,772 sq. m. / 94,424 sq. ft.
Amenity	
Outdoor Courtyard	259 sq. m. / 2,791 sq. ft.
Ground Floor	146 sq. m. / 1,576 sq. ft.
Roof Top (Exterior)	412 sq. m. / 4,435 sq. ft.
Balconies (Private Amenity)	413 sq. m. / 4,444 sq. ft.
Total Combined Amenity	1,231 sq. m. / 13,246 sq. ft.
Unit Statistics	
Studio Units	5
1 Bedroom Units	57
2 Bedroom Units	46
Total Units	108

NOTATION SYMBOLS:

- (00) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- ◇00 INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDUAL.
- (00) INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- (000) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- 00 / A100 — 00 = DETAIL NUMBER; A100 = DETAIL REFERENCE PAGE; TITLE; SCALE; DETAIL CROSS REFERENCE PAGE

GENERAL NOTES:

- (A) REFER TO TYPICAL ASSEMBLIES SHEET FOR WALL, PARTITION, ROOF CEILING & FLOOR TYPES.
- (B) FOR DOOR TYPES AND HARDWARE REQUIREMENTS REFER TO DOOR SCHEDULE ON A900 SERIES.
- (C) ALL INTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF FRAMING.
- (D) ALL EXTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF CLADDING.
- (E) ALL EXTERIOR WALLS ARE TO BE TYPE 'W1' UNLESS NOTED OTHER WISE.
- (F) ALL INTERIOR PARTITIONS ARE TO BE TYPE 'P1' UNLESS NOTED OTHER WISE.

No.	Revision	Date
1	RESUBMISSION FOR SITE PLAN APPROVAL	MAR 12,2018

ARCHITECT SEAL: ONTARIO ASSOCIATION OF ARCHITECTS — RODERICK J. LAHEY — LICENCE 4375

SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT: KATASA GROUPE + DÉVELOPPEMENT

69 Rue Jean-Proulx #301, Gatineau, QC t: 819.771.2787

ARCHITECT:
rla/architecture
roderick lahey architect inc.
56 beech street, ottawa, ontario K1S 3J6
t. 613.724.9932 f. 613.724.1209 rlaarchitecture.ca

PROJECT TITLE:

770 SOMERSET ST. WEST + 13 LEBRETON ST.

OTTAWA ONTARIO

SHEET TITLE:

SITE PLAN

DRAWN: | CHECKED:

SCALE: AS SHOWN

SHEET No. A100

PROJECT No. 1709