

**ASSESSMENT OF ADEQUACY OF  
PUBLIC SERVICES**

**FOR**

**TRINITY DEVELOPMENT GROUP INC.  
145 LORETTA AVENUE NORTH  
& 951 GLADSTONE AVENUE**

**CITY OF OTTAWA**

PROJECT NO.: 18-1026  
CITY APPLICATION NO.: D07-12-XX-XXXX

NOVEMBER 2019 – REV. 3  
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FOR  
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& 951 GLADSTONE AVENUE**

**TRINITY DEVELOPMENT GROUP INC.**

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## **1.0 INTRODUCTION**

David Schaeffer Engineering Limited (DSEL) has been retained by Trinity Development Group Inc. to prepare an Assessment of Adequacy of Public Services report in support of the application for Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBLA) at 145 Loretta Avenue North and 951 Gladstone Avenue.

The subject property is located within the City of Ottawa urban boundary, in the Kitchissippi Ward. As illustrated in **Figure 1**, below, the subject property is located north east of the intersection of Loretta Avenue and Gladstone Avenue. The subject property measures approximately **1.0 ha** and is zoned General Industrial, (IG1 H(11)).



*Figure 1: Site Location*

The existing site area consists of two 2-storey, one 1-storey, and one 3-storey commercial buildings. Surface parking also exists on site. The application for OPA and ZBLA would allow for the mixed-use development of three multi-storey residential towers (30, 33, and 35 stories) above a common retail and office podium with a contemplated zoning of

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Mixed-Use Centre (MC). The redevelopment of the subject property involves the retention of the existing 3-storey Standard Bread Building constructed in 1924.

The contemplated redevelopment is anticipated to be constructed in 2 phases. Phase 1 includes residential Towers 1 and 2 (35 and 33 storeys respectively) consisting of approximately **553** residential units. Both towers are contemplated to share a common podium consisting of **3,276 m<sup>2</sup>** of total retail area (including existing retail), and approximately **17,569 m<sup>2</sup>** of office space. The underground parking garage is also estimated to be constructed as part of the first phase. The contemplated phase 2 development includes the 30-storey residential tower (Tower 3) consisting of approximately **192** residential units. A total of **745** residential units is contemplated between the two phases.

The objective of this report is to provide sufficient detail to demonstrate that the contemplated development is supported by existing municipal services.

## 1.1 Existing Conditions

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:

### Loretta Avenue:

- 203 mm diameter unlined cast iron watermain;
- 1372 mm diameter concrete pressure watermain backbone pipe;
- 1350 mm diameter concrete storm sewer tributary to the Ottawa River, and outletting approximately 1.5 km downstream;
- 1050 mm diameter concrete sanitary Mooney's Bay trunk sewer; and
- 300 mm diameter concrete combined sewer.

### Gladstone Avenue:

- 203 mm diameter PVC watermain, east of Loretta and Gladstone intersection;
- 406 mm diameter PVC watermain, west of Loretta and Gladstone intersection;
- 1350 mm diameter concrete storm sewer tributary to the Ottawa River, and outletting approximately 1.5 km downstream;
- 375 mm diameter PVC storm sewer tributary to the Ottawa River, and outletting approximately 1 km downstream;

- 
- 1050mm diameter concrete Mooney's Bay sanitary sewer, east of Loretta and Gladstone intersection; and
  - 250 mm diameter PVC sanitary sewer west of Loretta and Gladstone intersection.

## **1.2 Required Permits / Approvals**

The contemplated development is subject to the Zoning By-law Amendment approval process. The City of Ottawa must approve engineering reports prior to issuing ZBLA approval.

## **1.3 Pre-consultation**

Pre-consultation correspondence from the City of Ottawa, along with the servicing guidelines checklist, is located in **Appendix A**.

Pre-consultation with RVCA was conducted to confirm stormwater management targets on July 24, 2019, see **Appendix A**.

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## 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 ISTB-2018-01**  
City of Ottawa, March 21, 2018.  
**(ISTB-2018-01)**
  - **Technical Bulletin ISTB-2018-03**  
City of Ottawa, March 21, 2018.  
**(ISTB-2018-03)**
- **Ottawa Design Guidelines – Water Distribution**  
City of Ottawa, July 2010.  
**(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)**
- **Design Guidelines for Sewage Works,**  
Ministry of the Environment, 2008.  
**(MOE Design Guidelines)**
- **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,

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January 1, 2010 Update.  
**(OBC)**

- **Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems**  
National Fire Protection Association,  
2016 Edition.  
**(NFPA)**

### 3.0 WATER SUPPLY SERVICING

#### 3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 1W pressure zone. A local 203 mm diameter watermain and a 1372 mm diameter backbone pipeline exist within the Loretta Avenue right-of-way and a 203 mm diameter watermain exists within the Gladstone Avenue right-of-way east of the intersection, as shown by the **City Water Distribution Mapping** located in **Appendix B**.

**Table 1**, below, estimates the water demand of the existing buildings, based on the **Water Supply Guidelines** shown in **Table 2**.

**Table 1**  
**Water Demand**  
**Existing Conditions**

Design Parameter	Anticipated Demand <sup>1</sup> (L/min)
Average Daily Demand	22.5
Max Day	33.8
Peak Hour	60.8
1) Water demand calculation per <b>Water Supply Guidelines</b> . See <b>Appendix B</b> for detailed calculations.	

#### 3.2 Water Supply Servicing Design

It is anticipated that the contemplated development will be serviced via a minimum of 2 service connections to the 203 mm diameter watermains within Gladstone and Loretta Avenues. As the water demand exceeds 50 m<sup>3</sup>/day it is contemplated to loop the services internally to allow for redundancy in case of interruption of service to either service.

**Table 2**, below, summarizes the **Water Supply Guidelines** employed in the preparation of the preliminary water demand estimate.

**Table 2**  
**Water Supply Design Criteria**

Design Parameter	Value
Residential 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential 3 Bedroom Apartment	3.1 P/unit
Residential Average Daily Demand	280 L/d/P
Residential Maximum Daily Demand	2.5 x Average Daily *
Residential Maximum Hourly	5.5 x Average Daily *
Commercial Space	2500 L/(1000m <sup>2</sup> /d)
Minimum Watermain Size	150 mm diameter
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure must not exceed	552 kPa
During fire flow operating pressure must not drop below	140 kPa
<small>* Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons. Above 500 persons, refer to Table 4.2 from City Guidelines. -Table updated to reflect ISD-2018-02</small>	

**Table 3**, below, summarizes the anticipated water supply demand and boundary conditions, received from the City of Ottawa, for the Contemplated development based on the **Water Supply Guidelines**. Refer to **Appendix B** for correspondence with the City of Ottawa.

**Table 3**  
**Water Demand and Boundary Conditions**  
**Contemplated Conditions**

Design Parameter	Estimated Demand <sup>1</sup> (L/min)	Connection 1 Boundary Conditions <sup>2</sup> (m H <sub>2</sub> O / kPa)		Connection 2 Boundary Conditions <sup>3</sup> (m H <sub>2</sub> O / kPa)	
Average Daily Demand	373.4	47.6	466.7	47.3	464.2
Max Day + Fire Flow Scenario 1 (per ISDTB-2018-02)	823.8 +4,150	41.6	407.8	40.2	394.6
Peak Hour	1746.5	40.3	395.0	40.2	392.6
1) Water demand calculation per <b>Water Supply Guidelines</b> . See <b>Appendix B</b> for detailed calculations. 2) Boundary conditions above for connection 1 to Gladstone Avenue assumed ground elevation equal to 67.2m 3) Boundary condition for connection 2 to Loretta Avenue assumed ground elevation equal to 67.5m					

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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 B**.

Based on correspondence with the City of Ottawa, Loretta North Avenue will undergo reconstruction, resulting in the replacement of the existing 203 mm diameter watermain between Gladstone and Laurel with a 203 mm diameter watermain. The future watermain project could potentially affect the boundary condition results, refer to **Appendix B** for correspondence with the City.

For the purpose of estimating fire flow, the short method within the National Fire Protection Association (NFPA) standards was utilized. As indicated by Section 11.2.2 from the **NFPA Standards**, fire flow requirements are to be determined by combining the required flow rate for the sprinkler system, along with the estimated hose stream. As indicated by Table 11.2.2.1 and Table 11.2.3.1.2 extracted from the **NFPA Standards** and included in **Appendix B**, the estimated fire flow requirements for the sprinkler system is **3,200 L/min** (850 gpm) and the estimated internal and external total combined inside and outside hose stream demand is **950 L/min** (250 gpm).

As a result, the total fire flow is estimated to be **4,150 L/min** (1,100 gpm), refer to supporting calculation in **Appendix B**. Based on the boundary conditions provided by the City of Ottawa, sufficient supply is available for fire flow. A certified fire protection system specialist will need to be employed to design the building's fire suppression system and confirm the actual fire flow demand.

### **3.3 Water Supply Conclusion**

The anticipated water demand based on the concept plan was submitted to the City of Ottawa for establishing boundary conditions. As demonstrated by **Table 3**, the municipal system is capable of delivering water within the **Water Supply Guidelines** pressure range.

A certified fire protection system specialist will need to be employed in order to design the building's fire suppression system and confirm the maximum fire flow demand for the design. However, the current maximum fire flow that can be supplied to the contemplated development exceeds the maximum fire flow required as per **NFPA Standards**.

DSEL employed a daily consumption rate of 280 L/person/day to align with the revised wastewater rates identified by City of Ottawa Technical Bulletin ISTB-2018-03. As a result, DSEL is submitting for a deviation from the **Water Supply Guidelines**.



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## 4.0 WASTEWATER SERVICING

### 4.1 Existing Wastewater Services

The subject site lies within Mooney's Bay Collector Sewer catchment area, as shown by the ***Sanitary & Storm Collection System Maps***, included in ***Appendix C***. There is an existing 1050 mm diameter Mooney's Bay Collector Trunk sanitary sewer within Loretta Avenue and within Gladstone Avenue east of the Gladstone and Loretta intersection. A 250 mm diameter sanitary sewer exists within Gladstone Avenue fronting the subject property.

**Table 4**, below, summarizes the estimated wastewater flows for the existing development.

**Table 4**  
**Summary of Estimated Existing Peak Wastewater Flow**

Design Parameter	Existing Flow (L/s)
Estimated Average Dry Weather Flow	0.75
Estimated Peak Dry Weather Flow	1.13
Estimated Peak Wet Weather Flow	1.46

The existing building is comprised primarily of commercial space and is estimated to have a peak wastewater flow of **1.46 L/s**.

### 4.2 Wastewater Design

The contemplated development is anticipated to discharge to the 1050 mm diameter sanitary trunk within Loretta Avenue.

**Table 5**, below, summarizes the ***City Standards*** employed in the design of the Contemplated wastewater sewer system.

**Table 5**  
**Wastewater Design Criteria**

Design Parameter	Value
Residential 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential 3 Bedroom Apartment	3.1 P/unit
Average Daily Demand	280 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 3.8, Min 2.0
Commercial Floor Space	5 L/m <sup>2</sup> /d
Commercial Office Space	75 L/9.3m <sup>2</sup> /d
Infiltration and Inflow Allowance	0.33 L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{\frac{2}{3}} S^{\frac{1}{2}}$
Minimum Sewer Size	250 mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6 m/s
Maximum Full Flowing Velocity	3.0 m/s
<i>Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012.</i>	

**Table 6**, below demonstrates the anticipated peak flow from the Contemplated development. See **Appendix C** for associated calculations.

**Table 6**  
**Summary of Estimated Contemplated Peak Wastewater Flow**

Design Parameter	Contemplated Flow (L/s)
Estimated Average Dry Weather Flow	6.41
Estimated Peak Dry Weather Flow	16.95
Estimated Peak Wet Weather Flow	17.28

The anticipated peak wet weather flow of **17.28 L/s** is a **15.82 L/s** increase from the existing condition.

The City was contacted in order to confirm available capacity and resulting HGL within the existing 1050 mm sanitary trunk sewer. As indicated in the correspondence located in **Appendix A**, the 1050 mm trunk sewer has sufficient capacity to accommodate the increase in wastewater flow from the proposed development. Anticipated connections to the existing trunk sewer are to be a minimum of 0.30m above the receiving sewer's **HGL**, or anticipated wastewater flow from the contemplated development shall be pumped.

The City of Ottawa conducted a Hydraulic Grade Line (**HGL**) analysis of the sanitary sewers surrounding the site. **Table 7** below, summarized the results provided by the City at three maintenance structures.

**Table 7**  
**Summary of 100-Year HGL Levels**

Maintenance Structure	Location	HGL (m)		
		6 hr SCS	3 hr Chicago	Hurricane Frances (scaled)
MHSA00934	Northwest Corner	59.5	59.1	58.9
MHSA00935	Southwest Corner	60.1	59.6	59.4
MHSA00936	Southeast Corner	60.3	59.8	59.6

### 4.3 Wastewater Servicing Conclusions

The site is tributary to the Mooney's Bay Collector Trunk sanitary sewer. The anticipated wet weather flow is **17.28 L/s** which is a **15.82 L/s** increase from the existing condition.

The City provided confirmation that the existing 1050 mm sanitary trunk sewer within Loretta and Gladstone Avenues is capable of accommodating the increase in flow as indicated in the correspondence located in **Appendix A**.

The contemplated wastewater servicing design conforms to all relevant City Guidelines and Policies.

## 5.0 STORMWATER MANAGEMENT

### 5.1 Existing Stormwater Services

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system and is located within the Ottawa Central sub-watershed. As such, approvals for contemplated 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). Consultation with the RVCA is located in **Appendix A**.

An existing 1350 mm diameter Mooney's Bay Collector Storm Sewer Trunk runs along Loretta Avenue and Gladstone Avenue east of Loretta and Gladstone intersection.

It is anticipated that the existing development contains no stormwater management controls for flow attenuation. The estimated pre-development peak flows for the 2, 5, and 100-year events are summarized in **Table 8**, below

**Table 8**  
**Summary of Existing Peak Storm Flow Rates**

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
2-year	192.0
5-year	260.5
100-year	496.0

### 5.2 Post-development Stormwater Management Target

City of Ottawa Standards and pre-consultation was used to determine stormwater management requirements, where the development is required to:

- Meet an allowable release rate based on the lesser of either the existing calculated Rational Method Coefficient of 0.50, employing the City of Ottawa IDF parameters for a 2-year storm with a time of concentration equal to or greater than 10 minutes;
- Attenuate all storms up to and including the City of Ottawa 100-year design event on site; and
- Based on coordination with the RVCA, enhanced quality level treatment (80% TSS removal) will be required for the contemplated development; correspondence with the RVCA is included in **Appendix A**.

Based on the above, the allowable release rate for the contemplated development is **106.7 L/s**. Refer to city pre-consultation correspondence in **Appendix A**.

### 5.3 Proposed Stormwater Management System

It is anticipated that the stormwater outlet from the contemplated development will discharge to the existing 1350 mm diameter Mooney's Bay Collector Storm sewer within Loretta Avenue. The proposed development is contemplated to utilize an internal cistern to meet the stormwater objectives.

**Table 9**, below summarizes post-development flow rates. The following storage requirement estimate assumes that approximately 10% of the development area will be directed to Loretta Avenue and Gladstone Avenue right-of-ways without flow attenuation. These areas will be compensated for in areas with flow attenuation.

**Table 9**  
**Stormwater Flow Rate Summary**

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage
	(L/s)	(m <sup>3</sup> )	(L/s)	(m <sup>3</sup> )
Unattenuated Areas	23.2	0.0	49.6	0.0
Attenuated Areas	28.2	155.0	57.1	313.9
<b>Total</b>	<b>51.3</b>	<b>155.0</b>	<b>106.7</b>	<b>313.9</b>

It is anticipated that approximately **314 m<sup>3</sup>** of storage, provided via an internal cistern, will be required on site to attenuate flow to the established release rate of **106.7 L/s**; storage calculations are contained within **Appendix D**.

The City of Ottawa conducted a Hydraulic Grade Line (**HGL**) analysis of the storm sewers surrounding the site. **Table 10** below, summarized the results provided by the City at three maintenance structures.

**Table 10**  
**Summary of 100-Year HGL Levels**

Maintenance Structure	Location	HGL (m)
MHST101877	Northwest Corner	60.53
MHST101876	Southwest Corner	61.76
MHST101875	Southeast Corner	62.40

The HGL analysis will need to be reviewed and included during the detailed design. Refer to **Appendix A** for correspondence with the City, identifying the maintenance structures above. Anticipated connections to the existing 1350 mm diameter collector storm sewer are to be a minimum of 0.30m above the receiving sewer's **HGL**. Alternatively, anticipated storm flow from the contemplated development will be required to be pumped.

Actual storage volumes will need to be confirmed at the detailed design stage based on a number of factors including, but not limited to, grading constraints and external drainage.

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To meet quality controls, on-site treatment including LID measures and oil/grit separators will be contemplated to achieve 80% TSS removal.

#### **5.4 Stormwater Servicing Conclusions**

In accordance with City of Ottawa **City Standards**, 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. The post-development allowable release rate was calculated as **106.7 L/s**; it is estimated that **314 m<sup>3</sup>** of storage provided by an internal cistern to meet the established release rate.

Based on coordination with the RVCA, enhanced quality level treatment (80% TSS removal) will be required for the contemplated development; correspondence with the RVCA is included in **Appendix A**. To meet quality controls, on-site treatment including LID measures and oil/grit separators will be contemplated to achieve 80% TSS removal.

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

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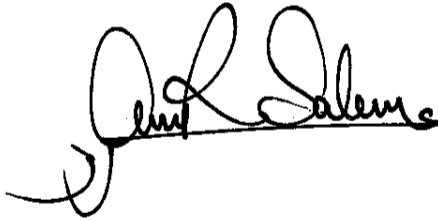
## 6.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained by Trinity Development Group Inc. to prepare an Assessment of Adequacy of Public Services report in support of the application for an Official Plan and Zoning Bylaw Amendment at 145 Loretta Avenue North and 951 Gladstone Avenue. The preceding report outlines the following:

- Based on boundary conditions provided by the City, the existing municipal water infrastructure is capable of providing the contemplated development with water within the City's required pressure range;
- The **NFPA Standards** method for estimating maximum fire flow indicated **4,150 L/min** is required for the contemplated development;
- The contemplated development is anticipated to have a peak wet weather flow of **17.28 L/s**, which is a **15.82 L/s** increase from the existing condition. It is anticipated that the 1050 mm diameter Mooney's Bay Collector Trunk sewer is capable of accommodating this increase in flow;
- Based on the City of Ottawa's City Standards the contemplated development will be required to attenuate post development flows to an equivalent release rate of **106.7 L/s** for all storms up to and including the 100-year storm event;
- It is contemplated that stormwater objectives will be met by an internal cistern, it is estimated that **314 m<sup>3</sup>** of onsite storage will be required to attenuate flow to the established release rate;
- To meet quality controls, on-site treatment including various LID and oil/grit separators will be contemplated to achieve 80% TSS removal.

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Prepared by,  
**David Schaeffer Engineering Ltd.**



Per: Amr Salem

Reviewed by,  
**David Schaeffer Engineering Ltd.**



Per: Robert Freel, P.Eng.

Prepared by,  
**David Schaeffer Engineering Ltd.**



Per: Brandon Chow



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## ***APPENDIX A***

### ***Pre-Consultation***

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# DEVELOPMENT SERVICING STUDY CHECKLIST

18-1026

2019-11-07

## 4.1 General Content

<input type="checkbox"/>	Executive Summary (for larger reports only).	N/A
<input checked="" type="checkbox"/>	Date and revision number of the report.	Report Cover Sheet
<input checked="" type="checkbox"/>	Location map and plan showing municipal address, boundary, and layout of proposed development.	Drawings/Figures
<input checked="" type="checkbox"/>	Plan showing the site and location of all existing services.	Figure 1
<input checked="" type="checkbox"/>	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
<input checked="" type="checkbox"/>	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.3
<input checked="" type="checkbox"/>	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 defensible design criteria.	Section 2.1
<input checked="" type="checkbox"/>	Statement of objectives and servicing criteria.	Section 1.0
<input checked="" type="checkbox"/>	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3.1, 4.1, 5.1
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	Proposed phasing of the development, if applicable.	N/A
<input type="checkbox"/>	Reference to geotechnical studies and recommendations concerning servicing.	N/A
<input type="checkbox"/>	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

<input type="checkbox"/>	Confirm consistency with Master Servicing Study, if available	N/A
<input checked="" type="checkbox"/>	Availability of public infrastructure to service proposed development	Section 3.1
<input checked="" type="checkbox"/>	Identification of system constraints	Section 3.1
<input checked="" type="checkbox"/>	Identify boundary conditions	Section 3.1, 3.2
<input checked="" type="checkbox"/>	Confirmation of adequate domestic supply and pressure	Section 3.3

<input checked="" type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
<input type="checkbox"/>	Address reliability requirements such as appropriate location of shut-off valves	N/A
<input type="checkbox"/>	Check on the necessity of a pressure zone boundary modification	N/A
<input checked="" type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	Description of off-site required feeder mains, 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
<input checked="" type="checkbox"/>	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 3.2
<input type="checkbox"/>	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

<input checked="" type="checkbox"/>	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
<input type="checkbox"/>	Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
<input type="checkbox"/>	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
<input checked="" type="checkbox"/>	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 4.1
<input checked="" type="checkbox"/>	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
<input checked="" type="checkbox"/>	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
<input checked="" type="checkbox"/>	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2
<input type="checkbox"/>	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

<input type="checkbox"/>	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
<input type="checkbox"/>	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
<input type="checkbox"/>	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
<input type="checkbox"/>	Special considerations such as contamination, corrosive environment etc.	N/A

#### 4.4 Development Servicing Report: Stormwater Checklist

<input checked="" type="checkbox"/>	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
<input type="checkbox"/>	Analysis of available capacity in existing public infrastructure.	N/A
<input type="checkbox"/>	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	N/A
<input checked="" type="checkbox"/>	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
<input checked="" type="checkbox"/>	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
<input checked="" type="checkbox"/>	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3
<input type="checkbox"/>	Set-back from private sewage disposal systems.	N/A
<input type="checkbox"/>	Watercourse and hazard lands setbacks.	N/A
<input checked="" type="checkbox"/>	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A
<input type="checkbox"/>	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
<input checked="" type="checkbox"/>	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
<input type="checkbox"/>	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
<input checked="" type="checkbox"/>	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, Section 5.3
<input type="checkbox"/>	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
<input type="checkbox"/>	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	N/A
<input type="checkbox"/>	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
<input type="checkbox"/>	Identification of potential impacts to receiving watercourses	N/A
<input type="checkbox"/>	Identification of municipal drains and related approval requirements.	N/A

<input checked="" type="checkbox"/>	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3
<input type="checkbox"/>	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
<input type="checkbox"/>	Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A
<input type="checkbox"/>	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	N/A
<input type="checkbox"/>	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
<input type="checkbox"/>	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

#### 4.5 Approval and Permit Requirements: Checklist

<input type="checkbox"/>	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
<input type="checkbox"/>	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
<input type="checkbox"/>	Changes to Municipal Drains.	N/A
<input type="checkbox"/>	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

#### 4.6 Conclusion Checklist

<input checked="" type="checkbox"/>	Clearly stated conclusions and recommendations	Section 6.0
<input type="checkbox"/>	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.	
<input type="checkbox"/>	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	

## Charlotte Kelly

---

**Subject:** FW: 145 Loretta Avenue North/ 951 Gladstone Avenue

**From:** Fraser, Mark <[Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)>  
**Sent:** August 7, 2019 4:09 PM  
**To:** Brandon Chow <[BChow@dsel.ca](mailto:BChow@dsel.ca)>  
**Cc:** O'Connor, Ann <[Ann.O'Connor@ottawa.ca](mailto:Ann.O'Connor@ottawa.ca)>  
**Subject:** RE: 145 Loretta Avenue North/ 951 Gladstone Avenue

Hi Brandon,

The stormwater management criteria noted in the attached correspondence was provided in error after further review of the install year of the receiving storm sewer. Based on the install year of **1967** the 1350mm dia. storm sewer within Loretta Ave. was only designed to a 2-year level of service not a 5-year level of service [pre-1970 the design of the storm sewers were based on a 2-year storm].

Post-development flows from the subject site are to be controlled up to a 100-year storm event, to a **2-year allowable release rate** calculated using a runoff coefficient (C) determined using the pre-development runoff coefficient or a maximum equivalent 'C' of 0.5, whichever is less (Cl.8.3.7.3) [If 0.5 applies it needs to be clearly demonstrated in the report that the pre-development runoff coefficient is greater than 0.5], and a calculated time of concentration ( $T_c$ ) using an appropriate method to justify the parameter selection [ *$T_c$  of 20 minutes should be used for all pre-development calculations without engineering justification,  $T_c$  should not be less than 10 min. since IDF curves become unrealistic at less than 10 min;  $T_c$  of 10 minutes shall be used for all post-development calculations*].

Please note that the impact from the receiving storm system HGL will need to be assessed if underground storage is proposed as part of the stormwater management solution. The receiving storm sewer system is uncontrolled and therefore subject to surcharge (HGL will be elevated for events greater than 2-year storm event).

If using the modified rational method to calculate the storage requirements for the site any underground storage should not be included in the overall available storage. The modified rational method assumes that the restricted flow rate is constant throughout the storm which underestimates the storage requirement prior to the 1:100 year head elevation being reached. Please note that if you wish to utilize any underground storage as available storage, the  $Q_{(release)}$  must be modified to compensate for the lack of head on the orifice. An assumed average release rate equal to 50% of the peak allowable rate shall be applied. Otherwise, disregard the underground storage as available storage or provide modeling to support the SWM strategy.

If you have any questions or require any clarification please let me know.

Regards,

### Mark Fraser

Project Manager, Planning Services  
Development Review Central Branch  
City of Ottawa | Ville d'Ottawa  
Planning, Infrastructure and Economic Development Department  
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1  
[Tel:613.580.2424](tel:613.580.2424) ext. 27791  
Fax: 613-580-2576  
Mail: Code 01-14  
Email: [Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)

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**From:** Brandon Chow <[BChow@dsel.ca](mailto:BChow@dsel.ca)>  
**Sent:** August 06, 2019 5:41 PM  
**To:** Fraser, Mark <[Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)>  
**Subject:** 145 Loretta Avenue North/ 951 Gladstone Avenue

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Hi Mark,

We would like to confirm stormwater management requirements for the proposed development at the above noted site.

A City comment on the Adequacy of Services Report noted that the receiving storm sewer system is a 2-year system. Previous correspondence with the City (attached) indicated the allowable release rate to be based on the below criteria.

- 1:5 year storm
- C=0.5
- 10min concentration time

Can you please confirm?

Thanks,

Brandon Chow  
Project Coordinator / Intermediate Designer

**DSEL**  
**david schaeffer engineering ltd.**

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

**phone:** (613) 836-0856 ext.532  
**fax:** (613) 836-7183  
**email:** [bchow@DSEL.ca](mailto:bchow@DSEL.ca)

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,

## Amr Salem

---

**From:** Eric Lalande <eric.lalande@rvca.ca>  
**Sent:** September 26, 2018 9:29 AM  
**To:** Amr Salem  
**Cc:** Steve Merrick  
**Subject:** RE: 1026- 145 Loretta Ave N/951 Gladstone Ave

Hi Amr,

The RVCA looks for on-site enhance level of protection (80% TSS Removal) for quality control for sites less than 2km away from an outlet without an intervening storm water management facility. Specifically as it relates to surface parking, this standard is expected to be achieved, on-site best management practices including LID could be provided and demonstrated through the Site Servicing report.

Thanks,

**Eric Lalande, MCIP, RPP**  
Planner, Rideau Valley Conservation Authority  
613-692-3571 x1137

---

**From:** Amr Salem <ASalem@dsel.ca>  
**Sent:** Wednesday, September 26, 2018 9:24 AM  
**To:** Eric Lalande <eric.lalande@rvca.ca>  
**Cc:** Steve Merrick <SMerrick@dsel.ca>  
**Subject:** FW: 1026- 145 Loretta Ave N/951 Gladstone Ave

Good morning Eric,

I just wanted to follow up on this. Did you get a chance to review?

Please let me know if you have any questions.

Thank you,

**Amr Salem**  
Project Coordinator

**DSEL**  
**david schaeffer engineering ltd.**

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

**phone:** (613) 836-0856 ext. 512  
**email:** [asalem@DSEL.ca](mailto:asalem@DSEL.ca)

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**From:** Jamie Batchelor <[jamie.batchelor@rvca.ca](mailto:jamie.batchelor@rvca.ca)>  
**Sent:** September 21, 2018 1:47 PM  
**To:** Amr Salem <[ASalem@dsel.ca](mailto:ASalem@dsel.ca)>  
**Cc:** Steve Merrick <[SMerrick@dsel.ca](mailto:SMerrick@dsel.ca)>; Eric Lalande <[eric.lalande@rvca.ca](mailto:eric.lalande@rvca.ca)>  
**Subject:** RE: 1026- 1045 Loretta Ave N/951 Gladstone Ave

Good Afternoon Amr,

I am forwarding this to Eric as it would be in his area.

---

**From:** Amr Salem <[ASalem@dsel.ca](mailto:ASalem@dsel.ca)>  
**Sent:** Friday, September 21, 2018 11:47 AM  
**To:** Jamie Batchelor <[jamie.batchelor@rvca.ca](mailto:jamie.batchelor@rvca.ca)>  
**Cc:** Steve Merrick <[SMerrick@dsel.ca](mailto:SMerrick@dsel.ca)>  
**Subject:** 1026- 1045 Loretta Ave N/951 Gladstone Ave

Good morning Jamie ,

We wanted to consult with you regarding a mixed-use development we are working on located at the intersection of Gladstone Avenue and Lorretta Avenue North.

The existing stormwater on site discharges to the municipal infrastructure (1350 mm Diameter Storm Sewer) within Gladstone Avenue and Lorretta Avenue. The stormwater collected from the site travels approximately 1.3 km through municipal sewer to a direct outlet into the Ottawa River.

The development proposes to construct new mixed use buildings (commercial/office/residential) consisting of three high-rise residential towers with one of which stemming from a large commercial/office building fronting Gladstone Ave with the other towers located to the North. The site will be landscape with storm water primarily coming from the roof tops collected from the towers. There will be approximately parking for 14 cars on the surface of the lot with the majority of parking located underground.

At present, the existing site area consists of mostly paved asphalt for surface parking (50+ spots) and 4 buildings.

Can you please provide your input regarding quality controls that maybe required for the site.



Please feel free to contact me if you have any questions.

Regards,

**Amr Salem**  
Project Coordinator

**DSEL**  
**david schaeffer engineering ltd.**

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

**phone:** (613) 836-0856 ext. 512  
**email:** [asalem@DSEL.ca](mailto:asalem@DSEL.ca)

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## Brandon Chow

---

**To:** Fraser, Mark  
**Subject:** RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

**From:** Fraser, Mark <Mark.Fraser@ottawa.ca>  
**Sent:** November 7, 2019 3:15 PM  
**To:** Brandon Chow <BChow@dsel.ca>  
**Subject:** RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Brandon,

The Water Resources Assets Unit has no anticipated issues with the proposed peak wastewater flow from the development discharging to the 1050mm dia. Collector Sewer. No additional analysis is necessary.

As this proposal only proposes a private building service the OBC method of calculating fire flow can be used. However please note that there are internal discussions happening with Building Code Services (BCS) and Ottawa Fire Services (OFS) regarding this approach so requirements may change at the time of Site Plan Control.

Regards,

### Mark Fraser

Project Manager, Planning Services  
Development Review Central Branch  
City of Ottawa | Ville d'Ottawa  
Planning, Infrastructure and Economic Development Department  
110 Laurier Avenue West, 4th Floor, Ottawa ON, K1P 1J1  
[Tel:613.580.2424](tel:613.580.2424) ext. 27791  
Fax: 613-580-2576  
Mail: Code 01-14  
Email: [Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)

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**From:** Fraser, Mark  
**Sent:** November 05, 2019 2:50 PM  
**To:** Brandon Chow <[BChow@dsel.ca](mailto:BChow@dsel.ca)>  
**Subject:** RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Brandon,

Please see the below wastewater flows within the sanitary trunk sewer as requested.

#	STRUCT_ID	From MH	To MH	100 year Peak Flow (L/s)		
				6 hr SCS	3 hr Chicago	Hurricane Frances (scaled)
1	SAN00976	MHSA00935	MHSA00934	1420	1220	940
2	SAN00975	MHSA00934	MHSA00933 (1A)	1440	1240	960

Regards,

## Mark Fraser

Project Manager, Planning Services  
Development Review Central Branch  
City of Ottawa | Ville d'Ottawa  
Planning, Infrastructure and Economic Development Department  
110 Laurier Avenue West, 4th Floor, Ottawa ON, K1P 1J1  
[Tel: 613.580.2424](tel:613.580.2424) ext. 27791  
Fax: 613-580-2576  
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Email: [Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)

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**From:** Brandon Chow <[BChow@dsel.ca](mailto:BChow@dsel.ca)>  
**Sent:** October 30, 2019 3:54 PM  
**To:** Fraser, Mark <[Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)>  
**Subject:** RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

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Hi Mark,

We would like to request the flows that have been computed in the City's model for the 1050mm sanitary trunk that is anticipated to receive flows from the subject proposal.

Can you please provide the computed flows for the sanitary trunk between nodes 1A to MHSA00934 and MHSA00934 to MHSA00935? See attachment for reference.

Thanks,

Brandon Chow  
Project Coordinator / Intermediate Designer

## DSEL

**david schaeffer engineering ltd.**

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

**phone:** (613) 836-0856 ext.532  
**fax:** (613) 836-7183  
**email:** [bchow@DSEL.ca](mailto:bchow@DSEL.ca)

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**From:** Fraser, Mark <[Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)>  
**Sent:** October 28, 2019 3:51 PM

**To:** Brandon Chow <[BChow@dsel.ca](mailto:BChow@dsel.ca)>

**Subject:** RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Brandon,

The Water Resources Assets Unit has no anticipated issues with the proposed peak wastewater flow however confirmation of available sanitary sewer capacity needs to be discussed and assessed to demonstrate that the sewer system can accommodate the anticipated wastewater flow from the subject proposal for documentation purposes.

Regards,

## Mark Fraser

Project Manager, Planning Services  
Development Review Central Branch  
City of Ottawa | Ville d'Ottawa  
Planning, Infrastructure and Economic Development Department  
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1  
[Tel:613.580.2424](tel:613.580.2424) ext. 27791  
Fax: 613-580-2576  
Mail: Code 01-14  
Email: [Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)

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**From:** Brandon Chow <[BChow@dsel.ca](mailto:BChow@dsel.ca)>

**Sent:** October 25, 2019 5:25 PM

**To:** Fraser, Mark <[Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)>

**Subject:** RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

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Hi Mark,

Thank you for providing the HGL. Would you be able confirm with the modelling group that the receiving sanitary trunk has capacity to support the anticipated flows from the subject development?

Thanks,

Brandon Chow  
Project Coordinator / Intermediate Designer

## DSEL

**david schaeffer engineering ltd.**

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

**phone:** (613) 836-0856 ext.532

**fax:** (613) 836-7183  
**email:** [bchow@DSEL.ca](mailto:bchow@DSEL.ca)

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**From:** Fraser, Mark <[Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)>  
**Sent:** October 24, 2019 3:18 PM  
**To:** Brandon Chow <[BChow@dsel.ca](mailto:BChow@dsel.ca)>  
**Subject:** RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Brandon,

Please see attached and below the 100-year HGL in the sanitary trunk sewer model as requested.

#	STRUCT_ID	100 year HGL (m)		
		6 hr SCS	3 hr Chicago	Hurricane Frances (scaled)
1	MHSA00934	59.5	59.1	58.9
2	MHSA00935	60.1	59.6	59.4
3	MHSA00936	60.3	59.8	59.6

Regards,

**Mark Fraser**

Project Manager, Planning Services  
Development Review Central Branch  
City of Ottawa | Ville d'Ottawa  
Planning, Infrastructure and Economic Development Department  
110 Laurier Avenue West, 4th Floor, Ottawa ON, K1P 1J1  
[Tel:613.580.2424](tel:613.580.2424) ext. 27791  
Fax: 613-580-2576  
Mail: Code 01-14  
Email: [Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)

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**From:** Fraser, Mark  
**Sent:** October 23, 2019 9:22 AM  
**To:** Brandon Chow <[BChow@dsel.ca](mailto:BChow@dsel.ca)>  
**Subject:** RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Brandon,

I have been advised that some preliminary design drawings were completed for the reconstruction of Loretta Ave. N. (North of Gladstone Ave.) however Asset Management is now considering replacing the existing backbone watermain within Loretta Ave. N. as part of the reconstruction works which will change the design. There is no timeline to revise the preliminary design prior to Spring 2020 thus no plans are available at this time.

You will need to contact and discuss with the City Project Manager (Marc Tremblay) of this reconstruction project to ensure both projects are planned to function together and the latest design details are obtained. It is my understanding



there has been no discussion to date on how this development proposal will function with the ultimate condition of Loretta Ave. N.

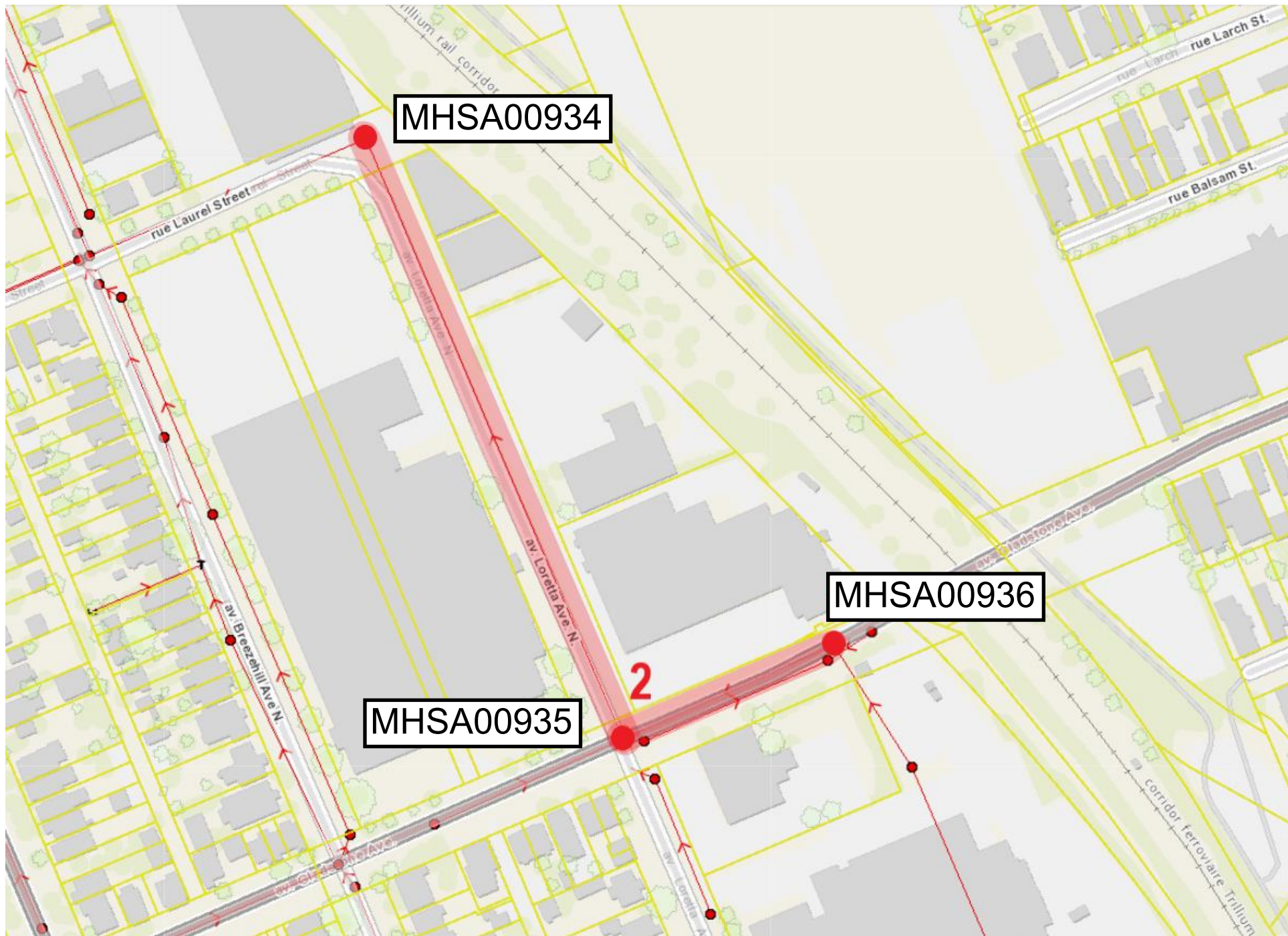
Regards,

**Mark Fraser**

Project Manager, Planning Services  
Development Review Central Branch  
City of Ottawa | Ville d'Ottawa  
Planning, Infrastructure and Economic Development Department  
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1  
[Tel:613.580.2424](tel:613.580.2424) ext. 27791  
Fax: 613-580-2576  
Mail: Code 01-14  
Email: [Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)

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## Charlotte Kelly

---

**Subject:** FW: 145 Loretta and 951 Gladstone - D02-02-18-0099

**From:** Buchanan, Richard <[Richard.Buchanan@ottawa.ca](mailto:Richard.Buchanan@ottawa.ca)>

**Sent:** May 29, 2019 12:05 PM

**To:** Brandon Chow <[BChow@dsel.ca](mailto:BChow@dsel.ca)>

**Cc:** O'Connor, Ann <[Ann.O'Connor@ottawa.ca](mailto:Ann.O'Connor@ottawa.ca)>

**Subject:** 145 Loretta and 951 Gladstone - D02-02-18-0099

Hi Brandon

This is the 100-year HGL at three MH near this site:

MHST101877: 60.53 m

MHST101876: 61.76 m

MHST101875: 62.40 m





**Richard Buchanan, CET**

Coordinator, Front Ending Agreements and Brownfields Programs  
Planning Services, Development Review Branch  
Planning, Infrastructure and Economic Development Department  
City of Ottawa | Ville d'Ottawa  
☎ 613.580.2424 ext./poste 27801

**From:** Brandon Chow <[BChow@dsel.ca](mailto:BChow@dsel.ca)>  
**Sent:** May 29, 2019 11:10 AM  
**To:** Buchanan, Richard <[Richard.Buchanan@ottawa.ca](mailto:Richard.Buchanan@ottawa.ca)>  
**Subject:** RE: 1026 - Loretta and Gladstone

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Good morning Richard,

I would like to touch base regarding the above noted site. We've received the City's engineering comments relating to the submission of the Adequacy of Public Services Report dated October 2018 and would like to request info based on the comment below. Would you be able to direct me to the contact who will be looking after this project?

J.1 - The consultant must keep in mind that the receiving storm system is only a 2 year system and not a 5 year system. In addition, if they plan to use underground storage, they will need to consider the impact from the receiving system HGL. The receiving system is uncontrolled, therefore the HGL will be elevated for events greater than 2 years.

*We will require the City to provide the HGL in the receiving system in order to review the impacts on the system.*

Thanks,

Brandon Chow  
Project Coordinator / Intermediate Designer

**DSEL**

**david schaeffer engineering ltd.**

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

**phone:** (613) 836-0856 ext.532

**fax:** (613) 836-7183

**email:** [bchow@DSEL.ca](mailto:bchow@DSEL.ca)

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**From:** Buchanan, Richard <[Richard.Buchanan@ottawa.ca](mailto:Richard.Buchanan@ottawa.ca)>  
**Sent:** October 11, 2018 9:25 AM  
**To:** Amr Salem <[ASalem@dsel.ca](mailto:ASalem@dsel.ca)>  
**Cc:** O'Connor, Ann <[Ann.O'Connor@ottawa.ca](mailto:Ann.O'Connor@ottawa.ca)>  
**Subject:** FW: 1026 - Loretta and Gladstone - Boundary Request

Amr

FYI

**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](http://ottawa.ca/planning) / [ottawa.ca/urbanisme](http://ottawa.ca/urbanisme)

---

**From:** Tremblay, Marc (ISD)  
**Sent:** Thursday, October 11, 2018 9:23 AM  
**To:** Buchanan, Richard <[Richard.Buchanan@ottawa.ca](mailto:Richard.Buchanan@ottawa.ca)>  
**Subject:** RE: 1026 - Loretta and Gladstone - Boundary Request

Hi Richard

The existing 200mm watermain on Loretta North between Gladstone and Laurel is to be replaced with a new 200mm diameter watermain as part of the road reconstruction project. This reconstruction work will not occur until 2020 at the earliest.

Regards  
Marc

---

**From:** Buchanan, Richard  
**Sent:** Thursday, October 11, 2018 8:24 AM  
**To:** 'Amr Salem' <[ASalem@dsel.ca](mailto:ASalem@dsel.ca)>  
**Subject:** FW: 1026 - Loretta and Gladstone - Boundary Request

Good Morning Amr

Please note that I believe there's future watermain projects (on Loretta specifically) in this area that could affect the results, especially the fire flow results. I'm trying to confirm with our water division to see what the plan is and when it's scheduled for.

The following are boundary conditions, HGL, for hydraulic analysis at 1026 Loretta/Gladstone (zone 1W) assumed to be connected to the 203mm on Gladstone (Connection 1) and 203mm on Loretta (Connection 2). See attached PDF for locations.

	Connection 1 (Gladstone)	Connection 2 (Loretta)
Min HGL	107.5m	107.5m
Max HGL	114.8m	114.8m

Max day + FireFlow (57.5L/s),	108.5m	107.3m
Max day + FireFlow (317 L/s),	104.8m	85.5m
Max day + FireFlow (433 L/s),	102.1m	Available Flow @ 20psi = 350 L/s assuming a ground elevation of 67m

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](http://ottawa.ca/planning) / [ottawa.ca/urbanisme](http://ottawa.ca/urbanisme)

---

**From:** Amr Salem <[ASalem@dsel.ca](mailto:ASalem@dsel.ca)>  
**Sent:** Thursday, September 27, 2018 1:04 PM  
**To:** Buchanan, Richard <[Richard.Buchanan@ottawa.ca](mailto:Richard.Buchanan@ottawa.ca)>  
**Cc:** Steve Merrick <[SMerrick@dsel.ca](mailto:SMerrick@dsel.ca)>  
**Subject:** 1026 - Loretta and Gladstone - Boundary Request

Good afternoon Richard,

We would like to kindly request boundary conditions for the proposed development at **145 Loretta Avenue North/ 951 Gladstone Avenue** using the following proposed development demands:

1. Location of Service / Street Number: **145 Loretta Avenue North/ 951 Gladstone Avenue**
2. Type of development: **The proposed mixed-use development involves 3 multi-storey residential towers (30, 35 and 40 storeys) above a common retail and office podium, consisting of a total of 931 residential units. An underground parking garage extending the footprint of the site is also proposed. Please note that the existing 3-storey Standard Bread Building is to be retained.**

*Please find attached the Site Plan for reference.*

3. Proposed Connection points:

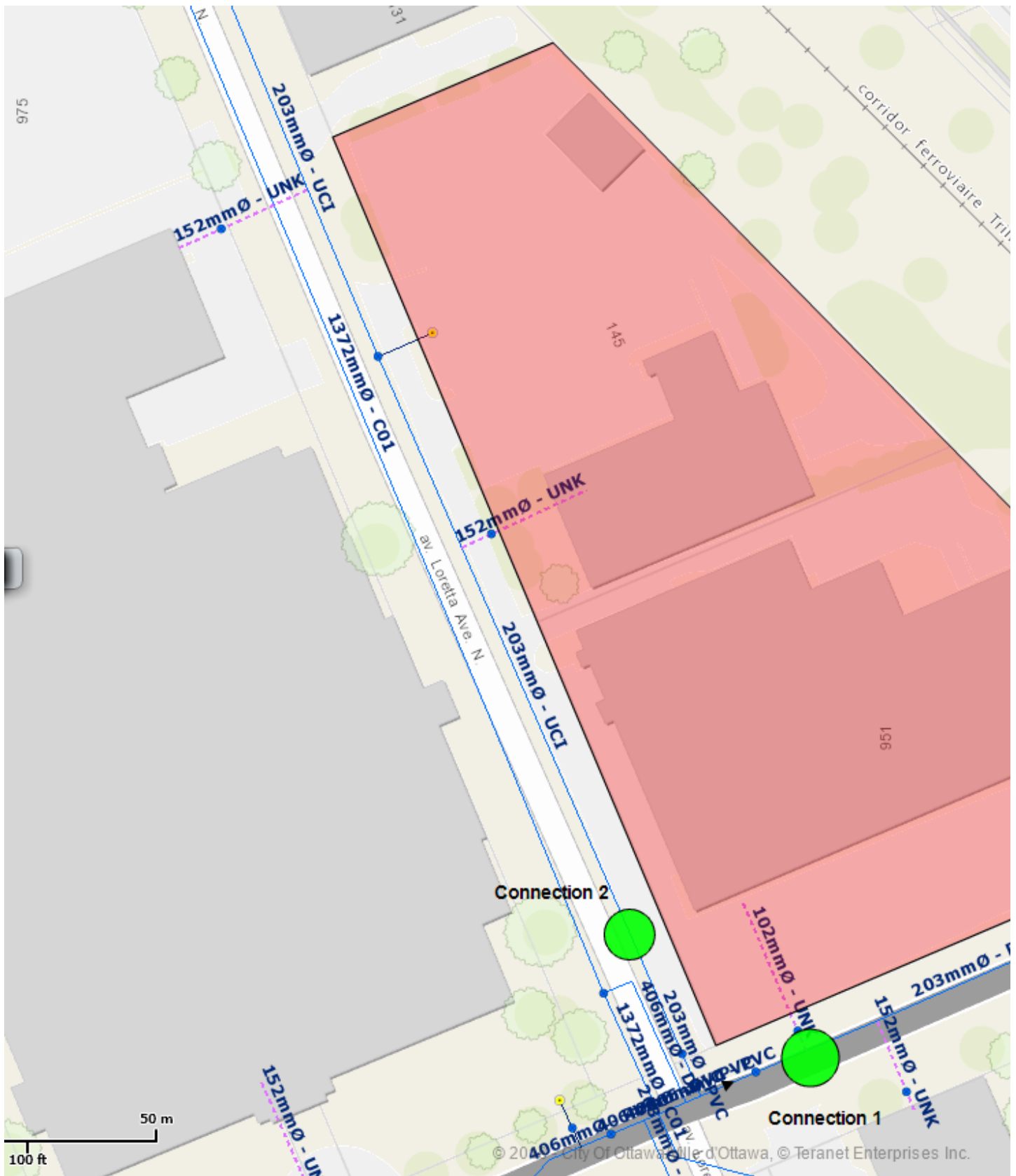
- **Connection 1 to existing 203mm diameter watermain along Gladstone Avenue east of Loretta and Gladstone intersection.**
- **Connection 2 to existing 203mm diameter watermain along Loretta Avenue north of Loretta and Gladstone intersection.**

*Please see the diagram below for reference.*

4. Please provide pressures for the following water demand scenarios required for the proposed development:

	L/min	L/s
<b>Avg. Daily</b>	397.6	6.63
<b>Max Day + FUS 1</b>	$904.8 + 26000.0 = 26904.8$	$15.1 + 433.3 = 448.4$
<b>Max Day + FUS 2/3</b>	$904.8 + 19000.0 = 19904.8$	$15.1 + 316.7 = 331.8$
<b>Max Day + OBC</b>	$904.8 + 3450.0 = 4354.8$	$15.1 + 57.5 = 72.6$
<b>Peak Hour</b>	1937.1	32.3





Please find attached the related water demand and FUS calculations as well as OBC demand methodology used for reference.

If you have any questions please feel free to contact me.

Thank you,

**Amr Salem**  
Project Coordinator

**DSEL**  
**david schaeffer engineering ltd.**

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

**phone:** (613) 836-0856 ext. 512  
**email:** [asalem@DSEL.ca](mailto:asalem@DSEL.ca)

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## ***APPENDIX B***

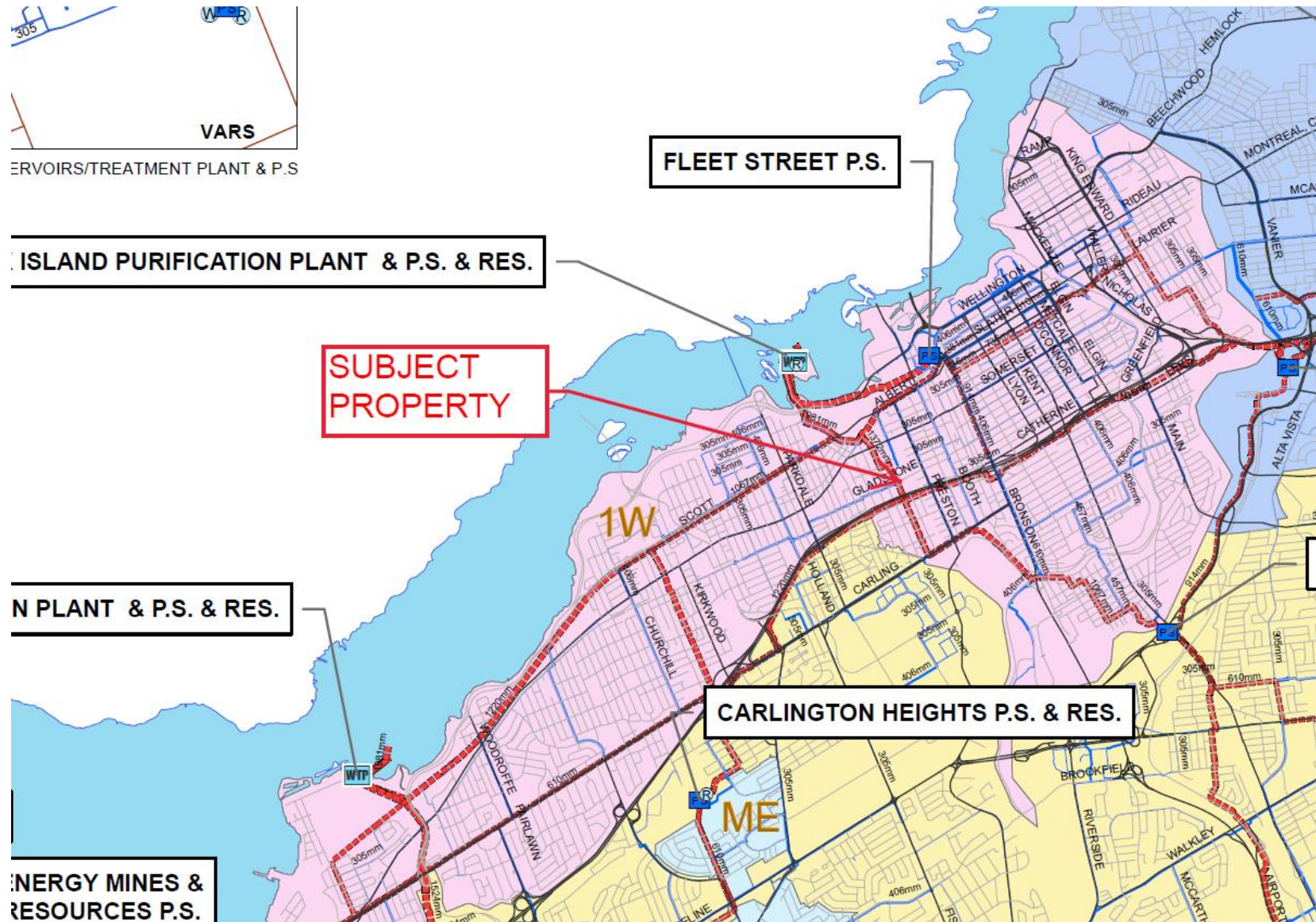
### ***Water Supply***

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## Water Pressure Zone Map





Water Distribution Map



**145 Loretta Avenue North / 951 Gladstone Avenue  
Trinity Development Group Inc  
Existing Site 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		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m <sup>3</sup> /d	L/min	m <sup>3</sup> /d	L/min	m <sup>3</sup> /d	L/min
<b>Total Domestic Demand</b>	0	0.0	0.0	0.0	0.0	0.0	0.0

**Institutional / Commercial / Industrial Demand**

Property Type	Unit Rate	Units	Avg. Daily		Max Day		Peak Hour	
			m <sup>3</sup> /d	L/min	m <sup>3</sup> /d	L/min	m <sup>3</sup> /d	L/min
Water Closets	150.0 L/hr		0.00	0.0	0.0	0.0	0.0	0.0
Restaurant	125.0 L/seat/d		0.00	0.0	0.0	0.0	0.0	0.0
Commercial floor space**	5.0 L/m <sup>2</sup> /d	6,482	32.41	22.5	48.6	33.8	87.5	60.8
Laundry	1,200.0 L/machine/d		0.00	0.0	0.0	0.0	0.0	0.0
School	70 L/student/d		0.00	0.0	0.0	0.0	0.0	0.0
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
<b>Total I/CI Demand</b>			<b>32.4</b>	<b>22.5</b>	<b>48.6</b>	<b>33.8</b>	<b>87.5</b>	<b>60.8</b>
<b>Total Demand</b>			<b>32.4</b>	<b>22.5</b>	<b>48.6</b>	<b>33.8</b>	<b>87.5</b>	<b>60.8</b>

\* 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

**145 Loretta Avenue North / 951 Gladstone Avenue  
Trinity Development Group Inc  
Proposed Site 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	120	168
1 Bedroom	1.4	244	342
2 Bedroom	2.1	336	706
3 Bedroom	3.1	45	140
Average	1.8		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m <sup>3</sup> /d	L/min	m <sup>3</sup> /d	L/min	m <sup>3</sup> /d	L/min
<b>Total Domestic Demand</b>	1356	379.7	263.7	949.2	659.2	2088.2	1450.2

**Institutional / Commercial / Industrial Demand**

Property Type	Unit Rate	Units	Avg. Daily		Max Day		Peak Hour	
			m <sup>3</sup> /d	L/min	m <sup>3</sup> /d	L/min	m <sup>3</sup> /d	L/min
Office	75 L/9.3m <sup>2</sup> /d	17,569	141.68	98.4	212.5	147.6	382.5	265.7
Commercial floor space**	5 L/m <sup>2</sup> /d	3,276	16.38	11.4	24.6	17.1	44.2	30.7
Laundry	1,200 L/machine/d		0.00	0.0	0.0	0.0	0.0	0.0
School	70 L/student/d		0.00	0.0	0.0	0.0	0.0	0.0
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
<b>Total I/CI Demand</b>			158.1	109.8	237.1	164.7	426.8	296.4
<b>Total Demand</b>			<b>537.7</b>	<b>373.4</b>	<b>1186.3</b>	<b>823.8</b>	<b>2515.0</b>	<b>1746.5</b>

\*\*Assuming a 12 hour commercial operation



## Boundary Conditions Unit Conversion

CONNECTION 1 [203mm dia. – Gladstone Ave.]

Grnd Elev 67.23

	<b>Hight (m)</b>	<b>m H2O</b>	<b>PSI</b>	<b>kPa</b>
Avg. Day	<b>114.8</b>	47.57	67.7	466.7
Peak Hour	<b>107.5</b>	40.27	57.3	395.0
Max Day + FF	<b>108.8</b>	41.57	59.1	407.8

CONNECTION 2 [203mm dia. – Loretta Ave. N.]

Grnd Elev 67.48

	<b>Hight (m)</b>	<b>m H2O</b>	<b>PSI</b>	<b>kPa</b>
Avg. Day	<b>114.8</b>	47.32	67.3	464.2
Peak Hour	<b>107.5</b>	40.02	56.9	392.6
Max Day + FF	<b>107.7</b>	40.22	57.2	394.6

## Amr Salem

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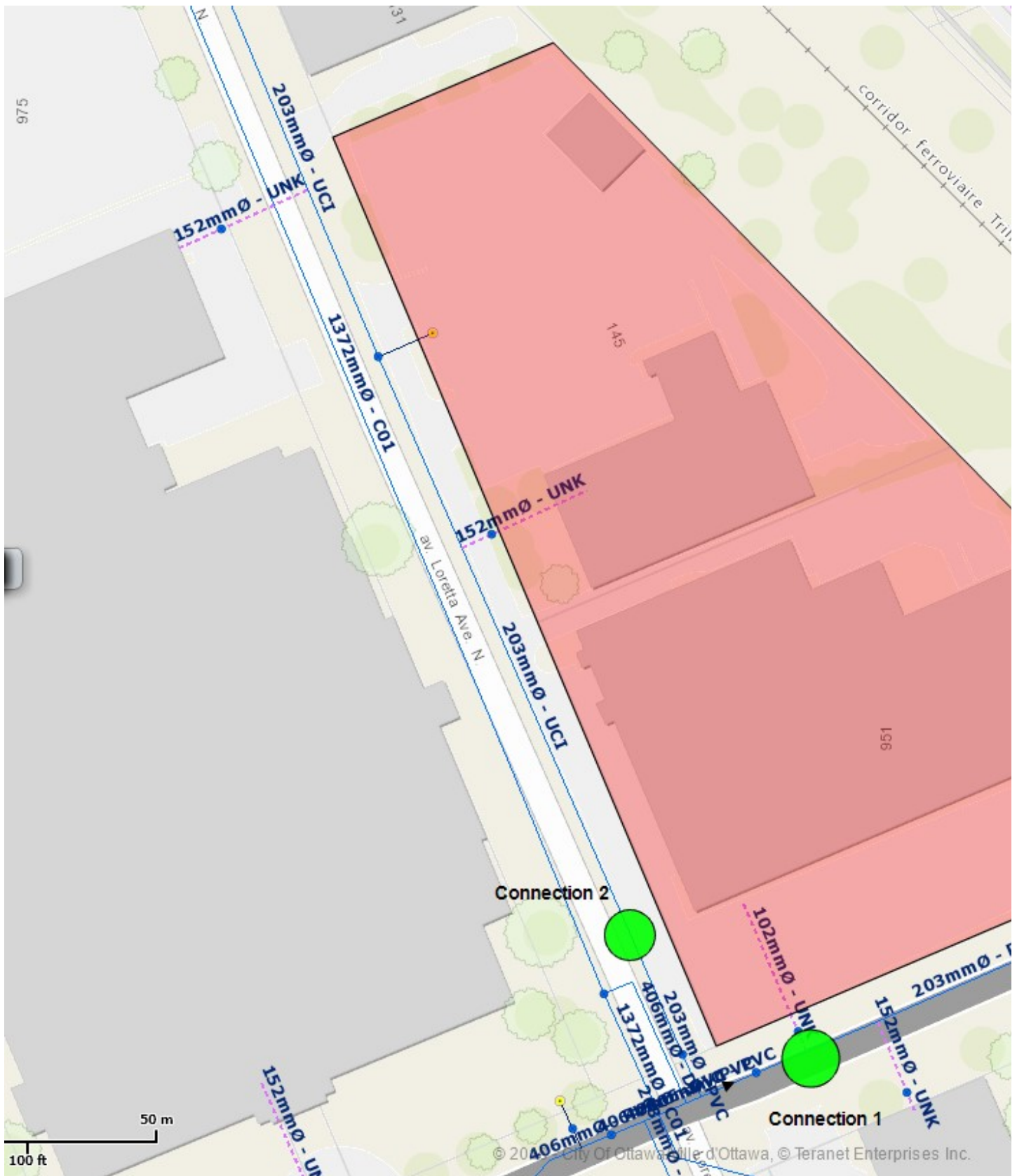
**From:** Amr Salem  
**Sent:** July 26, 2019 3:52 PM  
**To:** 'Buchanan, Richard'  
**Cc:** Brandon Chow  
**Subject:** 145 Loretta Avenue North/ 951 Gladstone Avenue - Updated Boundary Conditions Request  
**Attachments:** 2019-07-22 - Architecture Coordination Set.pdf; 2019-07-26 \_wtr\_Proposed\_Conditions\_aas.pdf; 2019-07-23\_1026\_OBC\_NFPA\_aas.pdf

Hello Richard,

We would like to kindly request updated boundary conditions for the proposed development at **145 Loretta Avenue North/ 951 Gladstone Avenue** using the following proposed development demands:

1. Location of Service / Street Number: **145 Loretta Avenue North/ 951 Gladstone Avenue**
2. Type of development: **The proposed mixed-use development involves 3 multi-storey residential towers (30, 33 and 35 storeys) above a common retail and office podium, consisting of a total of 745 residential units. An underground parking garage extending the footprint of the site is also proposed. Please note that the existing 3-storey Standard Bread Building is to be retained.**  
*Please find attached the Site Plan for reference.*
3. Proposed Connection points:
  - **Connection 1 to existing 203mm diameter watermain along Gladstone Avenue east of Loretta and Gladstone intersection.**
  - **Connection 2 to existing 203mm diameter watermain along Loretta Avenue north of Loretta and Gladstone intersection.***Please see the diagram below for reference.*
4. Please provide pressures for the following water demand scenarios required for the proposed development:

	L/min	L/s
Avg. Daily	373.4	6.2
Max Day + NFPA	$823.8 + 4150.0 = 4,973.8$	$13.7 + 69.2 = 82.9$
Peak Hour	1746.5	29.1



Thank you in advance,

**Amr Salem**  
Project Coordinator

# **DSEL**

**david schaeffer engineering ltd.**

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

**phone:** (613) 836-0856 ext. 512

**email:** [asalem@DSEL.ca](mailto:asalem@DSEL.ca)

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## Amr Salem

---

**From:** Fraser, Mark <Mark.Fraser@ottawa.ca>  
**Sent:** August 2, 2019 11:50 AM  
**To:** Amr Salem  
**Cc:** O'Connor, Ann; Brandon Chow  
**Subject:** RE: 145 Loretta Avenue North/ 951 Gladstone Avenue - Updated Boundary Conditions Request  
**Attachments:** 145 Loretta\_Gladstone Aug 2019.pdf; 2019-07-22 - Architecture Coordination Set.pdf; 2019-07-26\_wtr\_Proposed\_Conditions\_aas.pdf; 2019-07-23\_1026\_OBC\_NFPA\_aas.pdf

Hi Arm,

Please find below updated boundary conditions for hydraulic analysis at 145 Loretta Ave. N. / 951 Gladstone Ave. (zone 1W) assumed to be connected to the 203m on Gladstone (Connection 1) and 203mm on Loretta (Connection 2) as requested. See attached PDF for connection locations.

**CONNECTION 1 [203mm dia. – Gladstone Ave.]**

**Minimum HGL = 107.5M**

**Maximum HGL = 114.8m**

**MaxDay + Fire Flow (69 L/s) = 108.8m**

**CONNECTION 2 [203mm dia. – Loretta Ave. N.]**

**Minimum HGL = 107.5mm**

**Maximum HGL = 114.8m**

**MaxDay + Fire Flow (69 L/s) = 107.7m**

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

Please refer to *City of Ottawa, Ottawa Design Guidelines – Water Distribution, First Edition, July 2010, WDG001 Clause 4.2.2* for watermain pressure and demand objectives.

*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 have any questions please let me know.

Regards,

**Mark Fraser**

Project Manager, Planning Services  
Development Review Central Branch  
City of Ottawa | Ville d'Ottawa  
Planning, Infrastructure and Economic Development Department  
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1  
[Tel: 613.580.2424](tel:613.580.2424) ext. 27791  
Fax: 613-580-2576  
Mail: Code 01-14  
Email: [Mark.Fraser@ottawa.ca](mailto:Mark.Fraser@ottawa.ca)

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**From:** Amr Salem <[ASalem@dsel.ca](mailto:ASalem@dsel.ca)>

**Sent:** July 26, 2019 3:55 PM

**To:** Buchanan, Richard <[Richard.Buchanan@ottawa.ca](mailto:Richard.Buchanan@ottawa.ca)>

**Cc:** Brandon Chow <[BChow@dsel.ca](mailto:BChow@dsel.ca)>

**Subject:** 145 Loretta Avenue North/ 951 Gladstone Avenue - Updated Boundary Conditions Request

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Hello Richard,

We would like to kindly request updated boundary conditions for the proposed development at **145 Loretta Avenue North/ 951 Gladstone Avenue** using the following proposed development demands:

1. Location of Service / Street Number: **145 Loretta Avenue North/ 951 Gladstone Avenue**
2. Type of development: **The proposed mixed-use development involves 3 multi-storey residential towers (30, 33 and 35 storeys) above a common retail and office podium, consisting of a total of 745 residential units. An underground parking garage extending the footprint of the site is also proposed. Please note that the existing 3-storey Standard Bread Building is to be retained.**  
*Please find attached the Site Plan for reference.*
3. Proposed Connection points:
  - **Connection 1 to existing 203mm diameter watermain along Gladstone Avenue east of Loretta and Gladstone intersection.**
  - **Connection 2 to existing 203mm diameter watermain along Loretta Avenue north of Loretta and Gladstone intersection.***Please see the diagram below for reference.*
4. Please provide pressures for the following water demand scenarios required for the proposed development:



# DSEL

**david schaeffer engineering ltd.**

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

**phone:** (613) 836-0856 ext. 512

**email:** [asalem@DSEL.ca](mailto:asalem@DSEL.ca)

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[illegible]

**Legend**

**Pipe Ownership**

- Private
- Public

**Legend**

**Pipe Ownership**

- Private
- Public

**Legend**

**Pipe Ownership**

- Private
- Public

**Legend**

**Pipe Ownership**

- Private
- Public

**Legend**

**Pipe Ownership**

- Private
- Public

The map displays a street corridor with various buildings and utility infrastructure. Pipe diameters are labeled as 406mm and 152mm. The City of Ottawa logo is visible in the bottom right corner.



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***National Fire Protection Association (NFPA) 13 – Standard for the  
Installation of Sprinkler Systems***

***Table 11.2.2.1, Table 11.2.3.1.2***

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**National Fire Protection Association 13 - Standard for the Installation  
of Sprinkler Systems Report, Table 11.2.2.1**

**Table 11.2.2.1 Water Supply Requirements for Pipe  
Schedule Sprinkler Systems**

Occupancy Classification	Minimum Residual Pressure Required		Acceptable Flow at Base of Riser (Including Hose Stream Allowance)		Duration (minutes)
	psi	bar	gpm	L/min	
Light hazard	15	1	500-750	1900-2850	30-60
Ordinary hazard	20	1.4	850-1500	3200-5700	60-90

## National Fire Protection Association 13 - Standard for the Installation of Sprinkler Systems Report, Table 11.2.3.1.2

**Table 11.2.3.1.2 Hose Stream Allowance and Water Supply Duration Requirements for Hydraulically Calculated Systems**

Occupancy	Inside Hose		Total Combined Inside and Outside Hose		Duration (minutes)
	gpm	L/min	gpm	L/min	
Light hazard	0, 50, or 100	0, 190, or 380	100	380	30
Ordinary hazard	0, 50, or 100	0, 190, or 380	250	950	60-90
Extra hazard	0, 50, or 100	0, 190, or 380	500	1900	90-120

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## ***APPENDIX C***

### ***Wastewater Collection***

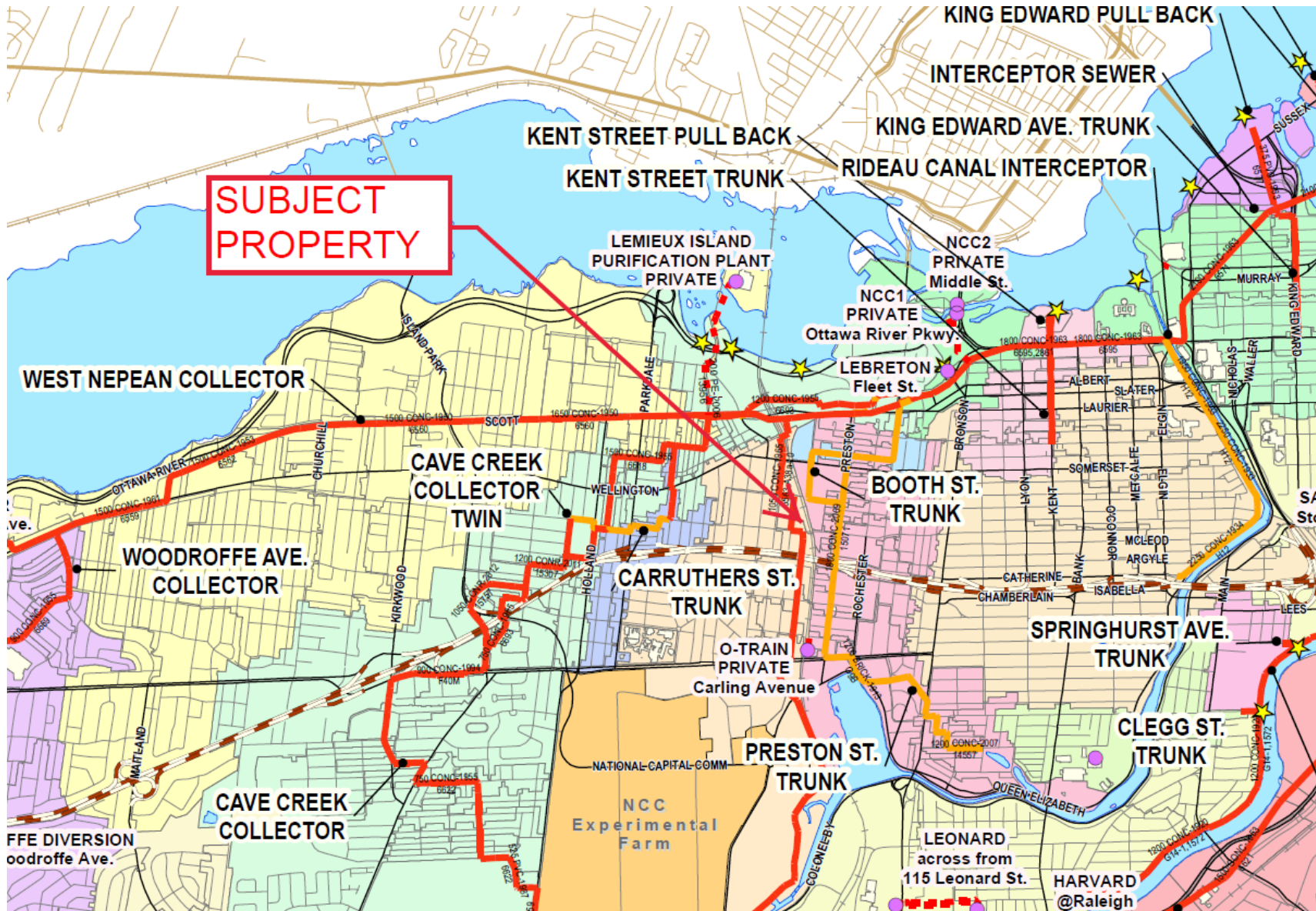
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## Sanitary Trunk Sewer Map



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



Site Area 1.00 ha

Extraneous Flow Allowances

Infiltration / Inflow 0.33 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 (Duplex)	2.3		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
Type of Housing	Per/Bed	Beds	Pop
Boarding*	1		0
Total Pop			0
Average Domestic Flow			0.00 L/s
Peaking Factor			3.80
Peak Domestic Flow			0.00 L/s

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Water Closets	150 L/hr		0.00
Restaurant	125 L/seat/d		0.00
Commercial floor space*	5 L/m <sup>2</sup> /d	6,482	0.75
Laundry*	1,200 L/machine/d		0.00
Hospitals	900 L/bed/d		0.00
School	70 L/student/d		0.00
Average I/C/I Flow			0.75
Peak Institutional / Commercial Flow			1.13
Peak Industrial Flow**			0.00
Peak I/C/I Flow			1.13

\* assuming a 12 hour commercial operation

Total Estimated Average Dry Weather Flow Rate	0.75 L/s
Total Estimated Peak Dry Weather Flow Rate	1.13 L/s
Total Estimated Peak Wet Weather Flow Rate	1.46 L/s

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



Site Area 1.00 ha

Extraneous Flow Allowances

Infiltration / Inflow 0.33 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 (Duplex)	2.3		0
Apartment			
Bachelor	1.4	120	168
1 Bedroom	1.4	244	342
2 Bedroom	2.1	336	706
3 Bedroom	3.1	45	140
Average	1.8		0
Total Pop			1356
Average Domestic Flow			<u>4.39 L/s</u>
Peaking Factor			3.17
Peak Domestic Flow			<u>13.92 L/s</u>

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Office	75 L/9.3m <sup>2</sup> /d	17,569	1.64
Restaurant	125 L/seat/d		0.00
Commercial floor space*	5 L/m <sup>2</sup> /d	3,276	0.38
Laundry*	1,200 L/machine/d		0.00
Hospitals	900 L/bed/d		0.00
School	70 L/student/d		0.00
Average I/C/I Flow			<u>2.02</u>
Peak Institutional / Commercial Flow			3.03
Peak Industrial Flow**			0.00
Peak I/C/I Flow			<u>3.03</u>

\* assuming a 12 hour commercial operation

Total Estimated Average Dry Weather Flow Rate	6.41 L/s
Total Estimated Peak Dry Weather Flow Rate	16.95 L/s
Total Estimated Peak Wet Weather Flow Rate	17.28 L/s



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***APPENDIX D***

***Stormwater Management***

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**Estimated Peak Stormwater Flow Rate**  
**City of Ottawa Sewer Design Guidelines, 2012****Existing Drainage Characteristics From Internal Site**

<b>Area</b>	1.00 ha	
<b>C</b>	0.90	Rational Method runoff coefficient
<b>L</b>	139 m	
<b>Up Elev</b>	67.25 m	
<b>Dn Elev</b>	64.25 m	
<b>Slope</b>	2.2 %	
<b>Tc</b>	6.0 min	
<b>Tc</b>	10.0 min	<-- Assume 10 minutes as minimum

## 1) Time of Concentration per Federal Aviation Administration

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

tc, in minutes

C, rational method coefficient, (-)

L, length in ft

S, average watershed slope in %

**Estimated Peak Flow**

	<b>2-year</b>	<b>5-year</b>	<b>100-year</b>
<b>i</b>	76.8	104.2	178.6 mm/hr
<b>Q</b>	192.0	260.5	496.0 L/s

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



Area 1.00 ha  
C 0.50 Rational Method runoff coefficient  
t<sub>c</sub> 10.0 min *\*Based on a time of concentration equal to or greater than 10 min*

2-year  
i 76.8 mm/hr  
Q 106.7 L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area 0.100 ha *\*Conservative estimate of 10% of total site area for unattenuated areas*  
C 0.80 Rational Method runoff coefficient

t <sub>c</sub> (min)	5-year					100-year				
	i (mm/hr)	Q <sub>actual</sub> (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )	i (mm/hr)	Q <sub>actual</sub> (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )
10.0	104.2	23.2	23.2	0.0	0.0	178.6	49.6	49.6	0.0	0.0

Note:

C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Total Area 0.90 ha  
C 0.84 Rational Method runoff coefficient

t <sub>c</sub> (min)	5-year					100-year				
	i (mm/hr)	Q <sub>actual</sub> (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )	i (mm/hr)	Q <sub>actual</sub> (L/s)	Q <sub>release</sub> (L/s)	Q <sub>stored</sub> (L/s)	V <sub>stored</sub> (m <sup>3</sup> )
10	104.2	218.8	28.0	190.8	114.5	178.6	446.4	57.1	389.3	233.6
15	83.6	175.5	28.0	147.4	132.7	142.9	357.2	57.1	300.2	270.1
20	70.3	147.5	28.1	119.4	143.3	120.0	299.9	57.1	242.8	291.4
25	60.9	127.9	28.1	99.8	149.7	103.8	259.6	57.1	202.5	303.8
30	53.9	113.2	28.1	85.1	153.2	91.9	229.7	57.1	172.6	310.7
35	48.5	101.9	28.2	73.7	154.8	82.6	206.4	57.1	149.4	313.7
40	44.2	92.8	28.2	64.6	155.0	75.1	187.9	57.1	130.8	313.9
45	40.6	85.3	28.2	57.1	154.2	69.1	172.6	57.1	115.6	312.0
50	37.7	79.1	28.2	50.8	152.5	64.0	159.9	57.1	102.8	308.4
55	35.1	73.8	28.2	45.5	150.2	59.6	149.1	57.1	92.0	303.6
60	32.9	69.2	28.3	40.9	147.3	55.9	139.7	57.1	82.7	297.6
65	31.0	65.2	28.3	36.9	144.0	52.6	131.6	57.1	74.5	290.7
70	29.4	61.7	28.3	33.4	140.3	49.8	124.5	57.1	67.4	283.1
75	27.9	58.6	28.3	30.3	136.2	47.3	118.1	57.1	61.1	274.8
80	26.6	55.8	28.3	27.5	131.9	45.0	112.5	57.1	55.4	265.9
85	25.4	53.3	28.3	25.0	127.3	43.0	107.4	57.1	50.3	256.6
90	24.3	51.0	28.3	22.7	122.5	41.1	102.8	57.1	45.7	246.8
95	23.3	48.9	28.3	20.6	117.5	39.4	98.6	57.1	41.5	236.6
100	22.4	47.1	28.3	18.7	112.3	37.9	94.8	57.1	37.7	226.1
105	21.6	45.3	28.4	17.0	106.9	36.5	91.2	57.1	34.2	215.3
110	20.8	43.7	28.4	15.4	101.4	35.2	88.0	57.1	30.9	204.2

Note:

C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

5-year Q <sub>attenuated</sub>	28.19 L/s	100-year Q <sub>attenuated</sub>	57.07 L/s
5-year Max. Storage Required	155.0 m <sup>3</sup>	100-year Max. Storage Required	313.9 m <sup>3</sup>

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Storage (m <sup>3</sup> )	100-Year Release Rate (L/s)	100-Year Storage (m <sup>3</sup> )
Unattenuated Areas	23.2	0.0	49.6	0.0
Attenuated Areas	28.2	155.0	57.1	313.9
<b>Total</b>	<b>51.3</b>	<b>155.0</b>	<b>106.7</b>	<b>313.9</b>



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***DRAWINGS / FIGURES***

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GLADTONE + LORETTA  
SITE STATS

7/19/2019

Site Area (sq.ft.):	107,772
Total GFA, Excl. Parking (sq.ft.)	1,019,062
FSI:	9.46

Area Schedule (GFA by Floor)

Level	Retail (Incl. Pedestrian Street) (sq.ft.)	Retail Loading (sq.ft.)	Office (sq.ft.)	Existing Building (sq.ft.)	Residential (sq.ft.)			GFA / Level (sq.ft.)	(x) # of Floors	GFA Totals (sq.ft.)
Level P1 - P2								103,476	2	206,952
					Podium 1 Ground Flr (Res.)	Podium 2 Ground Flr	Podium 3 Ground Flr			
Level 1	17,894	5,514	1,390	5,790	5,185	13,258	10,656	59,687	1	59,687
					Tower 1 (35 Flrs.)	Tower 2 (33 Flrs.)	Tower 3 (30 Flrs.)			
Level 2 - 3	0	0	46,930	5,790			12,733	65,453	2	130,906
Level 4	0	0	46,930	0			12,733	59,663	1	59,663
Level 5	0	0	46,930	0			8,311	55,241	1	55,241
Level 6 - 18	0	0	0	0	8,791	8,751	8,311	25,853	13	336,089
Level 19 - 25	0	0	0	0	9,308	8,751	8,311	26,370	7	184,590
Level 26 - 29	0	0	0	0	9,308	8,751	8,593	26,652	4	106,608
Level 30	0	0	0	0	8,799	8,751	8,593	26,143	1	26,143
Level 31	0	0	0	0	8,799	9,089		17,888	1	17,888
Level 32	0	0	0	0	8,799	9,089		17,888	1	17,888
Level 33	0	0	0	0	5,090	9,089		14,179	1	14,179
Level 34	0	0	0	0	5,090			5,090	1	5,090
Level 35	0	0	0	0	5,090			5,090	1	5,090
Level 36	0	0	0	0				0	1	0

1,019,062



GLADTONE + LORETTA  
SITE STATS

7/19/2019

Area Schedule (GFA by Type)

GFA Type			GFA Totals (sq.ft)
Retail			17,894
Retail Loading			5,514
Office			189,110
Existing Building			17,370
Residential	Cumulative Podium Res. / Amenity		67,298
	Tower 1 (30 / 35 Flrs.)		258,338
	Tower 2 (29 / 33 Flrs.)		246,042
	Tower 3 (26 / 30 Flrs.)		217,496
	Total Res.		789,174
			1,019,062

Residential GFA vs Net Area Comparison

Area Type	GFA	Net Area	Efficiency
Tower 1 (35 Flrs.)	258,338	219,500	85.0%
Tower 2 (33 Flrs.)	246,042	211,640	86.0%
Tower 3 (30 Flrs.)	217,496	187,446	86.2%
	721,876	618,586	85.7%

Unit Count

Unit Type	% of total	TOWER 1	TOWER 2	TOWER 3	RES. TOTALS
BACHELOR	16.1%	54	56	10	120
1 BED	32.8%	96	112	36	244
2 BED	45.1%	120	112	104	336
3 BED	6.0%	3	0	42	45
Totals		273	280	192	745

Bylaw Amenity Requirements (Bylaw 2008-250, Table 137 - "Amenity Area")

(5) Apartment Bldg Mid - High Rise: 6m² per dwelling unit (x740) = 4,440 m²

Amenity Area Provided

Location of Amenity	Area (m²)
Landscape Area at Grade	1,233
Rooftop Terrace	3,179
Indoor Communal Amenity	1,150
Balconies	1,894
Total	7,456



## GLADTONE + LORETTA SITE STATS

7/19/2019

### Parking Information

No. of Parking Levels:		2
No. of Spaces:	Surface	8
	(P1)	253
	(P2)	260
<b>Total</b>		<b>521</b>

**Bylaw Parking Rates (Bylaw 2008-250, Section 103 - "Maximum Limit on Number of Parking Spaces Near Rapid Transit Stations"):**

(a) Apartment Bldg Mid - High Rise (Combined Resident & Visitor)	1.75 MAX. spaces per dwelling unit
(e) Office	2.2 MAX. spaces per 1076 sq.ft. (100m <sup>2</sup> ) GFA
(h) Retail	3.6 MAX. spaces per 1076 sq.ft. (100m <sup>2</sup> ) GFA

**Visitor Parking (Bylaw 2008-250, Section 102 - "Minimum Visitor Parking Space Rates"):**

(2) / Table 102

0.1 MIN. spaces per unit	MAX. required =30 spaces
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**Total Anticipated**

	# of Units	Total Area	# of Spaces / Unit	# Spaces / 1076ft2	# Spaces
Apartment Bldg	745		0.50		375
Office		142,180		0.75	99
Retail		17,894		1	17
Visitor Parking					30
<b>Total</b>					<b>521</b>

**Bylaw Bicycle Parking Rates (Bylaw 2008-250, Section 111 - "Bicycle Parking Space Rates & Provisions")**

(b) Apartment Bldg	0.5 MIN. per dwelling unit (x787)	372.5
(e) Office, Retail & Studio	1 MIN. Space per 2691 sq.ft. (250m <sup>2</sup> ) GFA (208,006 / 2,691)	78

<b>Total Required</b>	<b>450.5</b>
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<b>Total Provided (Anticipated)</b>	<b>518</b>
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