

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES

FOR

TORGAN GROUP DEVELOPMENT DUFORD AND ST. JOSEPH

CITY OF OTTAWA

PROJECT NO.: 16-897

SEPTEMBER 2019 – REV 2
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**ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
FOR
TORGAN GROUP DEVELOPMENT**

DUFORD AND ST. JOSEPH

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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained to prepare an Assessment of Adequacy of Public Services report in support of the application for a Zoning By-law Amendment (ZBLA) of a contemplated mixed use development at the south west corner of Duford Drive and St. Joseph Boulevard.

The subject property is located within the City of Ottawa urban boundary, in the Orleans ward. As illustrated in **Figure 1**, the subject property is located at the south west corner of the intersection of Duford Drive, Place D'Orleans Drive and St. Joseph Boulevard. Comprised of a single parcel of land, the subject property measures approximately **0.27ha** and is zoned as Arterial Main Street (AM3).



Figure 1: Site Location

The proposed ZBLA would allow for the development of a 16-storey residential /commercial building fronting onto St. Joseph Boulevard. The contemplated development would include approximately 426 m² of ground-level commercial space, along with 2 levels of underground parking with access from St. Joseph Boulevard. The residential component contemplates approximately **165 units**. A copy of the conceptual site plan is included in ***Drawings/Figures***.

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

The existing site consists of grassy undeveloped lands that contain a 450mm sanitary sewer and a 250mm watermain that bisect the site from Duford Drive to St. Joseph Boulevard. Overhead hydro and telecommunication wires exist along the St. Joseph Boulevard edge of the property, and anchors from these utility poles extend into the site. The grade differential from Duford Drive to St. Joseph boulevard is 11.35m with slopes greater than 10%.

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

St. Joseph Boulevard

- A 600mm diameter feedermain exists within the St. Joseph Boulevard right-of-way
- A 400mm diameter ductile iron watermain exists within the St. Joseph Boulevard right-of-way
- A 250mm diameter sanitary sewer exists within the St. Joseph Boulevard right-of-way
- A 675mm diameter concrete storm sewer exists within the northern side of the St. Joseph Boulevard right-of-way
- A 300mm diameter storm sewer exists at the corner of St. Joseph Boulevard and Duford Drive, which connects to the 600mm storm sewer within Duford Drive.
- A fire hydrant exists on the south side of St. Joseph Boulevard, approximately 30m from the subject property

Duford Drive

- A 250mm diameter cast iron watermain exists within the Duford Drive right-of-way
- A 450mm diameter concrete sanitary sewer exists within the Duford Drive right-of-way
- A 600mm diameter PVC storm sewer exists within the Duford Drive right-of-way

Sewer and watermain mapping collected from the City of Ottawa indicate that the following services currently bisect the existing site:

- A 450mm diameter concrete sanitary sewer;
- A 300mm diameter PVC watermain.

1.2 Required Permits / Approvals

The contemplated development is subject to the site plan control approval process. The City of Ottawa must approve the engineering design drawings and reports prior to the issuance of site plan control.

The contemplated development is a single parcel of land that is not industrial and would outlet to a storm sewer. As a result, the stormwater management system is exempt from sections 53(1) and (3) of the Ontario Water Resources Act under Ontario Regulation 525/98.

It is contemplated to re-locate the existing sanitary and watermain bisecting the subject site to the City right-of-ways along Duford Drive and St. Joseph Boulevard. It is anticipated that the relocation of the existing sanitary sewer will be subject to an MECP ECA through the Transfer of Review program.

1.3 Pre-consultation

Pre-consultation correspondence, along with 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)
 - **Technical Bulletin ISTB-2018-04**
City of Ottawa, June 27, 2018.
(ISTB-2018-04)
- **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,
January 1, 2010 Update
(OBC)
 - **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 2E pressure zone as shown by the Pressure Zone map in **Appendix B**. A 300mm diameter watermain exists from Duford Drive to St. Joseph Boulevard that bisects the subject property.

A local 600mm diameter watermain exists within the St. Joseph Boulevard right-of-way that services the 2E pressure zone. A 250mm diameter watermain exists within the Duford Drive right-of-way, which bisects the subject property and connects to the 600mm diameter watermain within St. Joseph Boulevard. Existing services in the surrounding areas are shown by GeoOttawa in **Drawing/Figures**.

3.2 Water Supply Servicing Design

In accordance with City of Ottawa technical bulletin ISDTB-2014-02, redundant service connections are required due to an anticipated design flow of greater than 50 m³/day. It is anticipated that the contemplated development will be serviced via a dual connection to the existing 250mm diameter watermain within Duford Drive. A valve would be placed between the two connections to allow for isolation of a single service in the event of a watermain disruption.

The 400mm watermain within St. Joseph Boulevard does not service the 2E pressure zone. In addition, the City of Ottawa does not typically support connections to large watermains such as the 600mm within St. Joseph Boulevard.

The existing 250mm watermain that bisects the site is contemplated to be rerouted around the subject property from Duford Drive to St. Joseph Boulevard through the Duford Drive right-of-way. A detailed design of the proposed relocation will be submitted for City approval during the site plan control process.

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

Table 1
Water Supply Design Criteria

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Residential 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential Average Daily Demand	280 L/d/P
Residential Maximum Daily Demand	3.6 x Average Daily *
Residential Maximum Hourly	5.4 x Average Daily *
Restaurant Demand	125 L/seat/day
Commercial Retail	2.5 L/m ² /d
Commercial Office	75 L/9.3m ² /d
Commercial Maximum Daily Demand	1.5 x avg. day
Commercial Maximum Hour Demand	1.8 x max. day
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 must not exceed	552kPa
During fire flow operating pressure must not drop below	140kPa

*Daily average based on Appendix 4-A from **Water Supply Guidelines**
 ** 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

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

Table 2
Water Demand and Boundary Conditions
Proposed Conditions

Design Parameter	Anticipated Demand ¹ (L/min)	Boundary Condition ² (m H ₂ O / kPa)	
Average Daily Demand	54.4	58.8	576.8
Max Day + Fire Flow	195.5 + 11,000 = 11,195.5	54.7	536.6
Peak Hour	293.4	54.7	536.6

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 71.5 m. See **Appendix A**.

Fire flow requirements are to be determined in accordance with City of Ottawa **Water Supply Guidelines** and the Ontario Building Code.

Fire flow requirements were estimated per City of Ottawa Technical Bulletin **ISTB-2018-02**. The following assumptions were obtained from the Architect, refer to **Appendix A** for correspondence:

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

The above assumptions result in an estimated fire flow of approximately **11,000 L/min**, noting that actual building materials selected will affect the estimated flow.

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 anticipated minimum and maximum water pressures, as well as the estimated water pressure during fire flow as indicated by the correspondence in **Appendix A**. Average Day pressures received from the City of Ottawa exceed the maximum operating conditions; a pressure check is recommended at the time of construction to ensure that pressures are below 552kPa. The Peak Hour pressures fall within the required range identified in **Table 1**. Based on boundary conditions provided by the City, the contemplated fire flow of **11,000 L/min** can be accommodated above minimum pressures.

3.3 Water Supply Conclusion

It is contemplated to service the development from the existing 250mm watermain within Duford Drive that bisects the site, which would be rerouted around the subject property.

The anticipated water demand was submitted to the City of Ottawa for establishing boundary conditions. In the Average Day scenario, pressures exceed the maximum allowable pressures, a pressure check should be completed at the time of construction to determine if pressure reducing controls are required. Based on the City of Ottawa Technical Bulletin **ISTB-2018-02**, the subject site has adequate fire protection.

The contemplated water supply design conforms to all relevant **City Guidelines** and Policies.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject site lies within the Gloucester Collector Sewer catchment area, as shown by the Trunk Sanitary Sewers and Collection Areas map included in **Appendix C**. The existing 450mm diameter sanitary sewer that bisects the site from Duford Drive to St. Joseph Boulevard is available to service the contemplated development.

The existing 450mm diameter sanitary sewer is currently draining an area of approximately 138 Ha. The City of Ottawa provided a design flow of approximately **130 L/s** in the existing sanitary sewer at the subject site, see correspondence with the City of Ottawa in **Appendix C**.

4.2 Wastewater Design

It is anticipated that the contemplated development will be serviced via a connection to the existing 450mm sanitary sewer within Duford Drive that currently bisects the subject property. This sanitary sewer is contemplated to be rerouted around the subject property from Duford Drive to St. Joseph Boulevard through the Duford Drive right-of-way.

Table 3 summarizes the **City Standards** employed in the design of the proposed wastewater sewer system.

Table 3
Wastewater Design Criteria

Design Parameter	Value
Residential 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential Average Apartment	1.8 P/unit
Average Daily Demand	280 L/d/P
Peaking Factor	Harmon's Peaking Factor. Max 3.8, Min 2.0
Commercial Floor Space	5 L/m ² /d
Commercial Office Space	75 L/9.3m ² /d
Restaurant	125 L/seat/d
Infiltration and Inflow Allowance	0.33L/s/ha
Commercial Peaking Factor	1.50 per City of Ottawa Sewer Design Guidelines Appendix 4B
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	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 4 demonstrates the anticipated peak flow from the contemplated development. See **Appendix C** for associated calculations.

Table 4
Summary of Estimated Peak Wastewater Flow

Design Parameter	Total Flow (L/s)
Estimated Average Dry Weather Flow	0.97
Estimated Peak Dry Weather Flow	3.20
Estimated Peak Wet Weather Flow	3.28

The estimated sanitary flow based on the concept plan provide in **Drawings/Figures** anticipates a peak wet weather flow of **3.28 L/s**.

A sanitary analysis was conducted for the existing 450mm municipal sanitary sewer located immediately downstream of the subject property. The capacity analysis includes the **130 L/s** provided by the City and the **3.28 L/s** from the subject site. The residual capacity within the sewer is approximately **217.2 L/s**. See **Appendix C** for capacity calculation and mapping of the sanitary sewer analyzed. Due to the complexity of the downstream network, the City will need to confirm capacity and the existing HGL within the municipal system.

4.3 Wastewater Servicing Conclusions

The site is tributary to the Gloucester Collector sewer; based on the sanitary analysis sufficient capacity is available to accommodate the anticipated **3.28 L/s** peak wet weather flow from the contemplated development.

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 Taylor Creek sub-watershed, which discharges to the Ottawa River. As such, approvals for contemplated development 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 East watershed, and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA). Correspondence with the RVCA is located in **Appendix A**.

The estimated pre-development peak flows for the 2, 5, and 100-year are summarized in **Table 5**:

Table 5
Summary of Existing Peak Storm Flow Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
2-year	11.5
5-year	15.6
100-year	33.5

5.2 Post-development Stormwater Management Target

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

- Attenuate to an allowable release rate based on a Rational Method Coefficient of 0.20, 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;
- Control all storms up to and including the City of Ottawa 100-year design event are to be attenuated on site;
- Based on consultation with the RVCA, stormwater quality controls are not required so long as surface parking is not proposed; correspondence with the RVCA is included in **Appendix A**.

Based on the above, the allowable release rates for the contemplated development is **15.6 L/s**.

5.3 Proposed Stormwater Management System

It is contemplated that the stormwater outlet for the development will be to either the 675mm or 300mm diameter storm sewer within St. Joseph Boulevard. Uncontrolled flow will discharge to catch basins connected to the 675mm and 300mm storm sewers within St. Joseph Boulevard.

To meet the stormwater objectives the contemplated development may contain a combination of roof top flow attenuation along with cistern storage. **Table 6** estimates post-development flow rates assuming **10%** of the area will be uncontrolled. These areas will be compensated for in areas with flow attenuation controls.

Table 6
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	7.8	0.0	14.9	0.0
Attenuated Areas	0.4	79.8	0.7	149.9
Total	8.2	79.8	15.6	149.9

It is anticipated that approximately **149.9 m³** of storage will be required on site to attenuate flow to the established release rate of **15.6 L/s**; storage calculations are contained within **Appendix D**.

Actual volumes will need to be confirmed at the detailed design stage based on a number of factors including grading constraints.

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 allowable release rate was calculated as **15.6 L/s**. It is estimated that **149.9 m³** will be required to meet this release rate.

Based on consultation with the RVCA, stormwater quality controls are not required.

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

6.0 UTILITIES

Gas and hydro services currently exist along the north side of St. Joseph Boulevard. There is also an existing gas line within the south side of Duford Drive and a Bell line within the north side of Duford Drive that runs to the corner of St. Joseph Boulevard. Streetlights exist within the Duford Drive right-of-way, adjacent to the subject site. Utility servicing will be coordinated with the individual utility companies prior to site development.

The contemplated development will need to respect clearances for utility lines as required by the utility company having jurisdiction for the services. Any new services crossing the hydro corridor will require an easement and approval from hydro. Any proposed works within the existing hydro easement will require approval from hydro.

7.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate and topography. During construction the extent of erosion losses is exaggerated due to the removal of vegetation and the top layer of soil becoming 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; and
- 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; and
 - Clean and change filter cloth at catch basins.

8.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained to prepare an Assessment of Adequacy of Public Services report in support of the application for a Zoning By-law Amendment (ZBLA) at the south west corner of Duford Drive and St. Joseph Boulevard. The preceding report outlines the following:

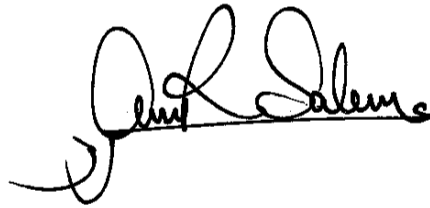
- It is contemplated to relocate the existing watermain and sanitary trunk sewer bisecting the subject site, an ECA submitted through the City of Ottawa transfer of review process will be required for the relocation of the existing trunk sewer;
- Based on boundary conditions provided by the City the existing municipal water infrastructure is capable of providing the contemplated development with water within the City's required pressure range;
- The contemplated development is anticipated to have a peak wet weather flow of **3.28 L/s**; based on the sanitary analysis conducted the existing sewer infrastructure directly adjacent to the site has sufficient capacity to support the development;
- Based on the **City Standards**, the contemplated development will be required to attenuate post development flows to an equivalent release rate of **15.6 L/s** for all storms up to and including the 100-year storm event;
- It is contemplated that stormwater objectives may be met through storm water retention via roof top and cistern storage, it is anticipated that **149.9 m³** of onsite storage will be required to attenuate flow to the established release rate above;
- Based on consultation with the RVCA, stormwater quality controls are not required for the subject property so long as surface parking is not proposed.

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Per: Brandon Chow

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Per: Amr Salem

Reviewed by,
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Per: Robert Freel, P.Eng.

APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

16-897

28/03/2017

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 checked="" type="checkbox"/>	Reference to geotechnical studies and recommendations concerning servicing.	Section 1.4
<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 checked="" type="checkbox"/>	Analysis of available capacity in existing public infrastructure.	Section 5.1, Appendix D
<input checked="" type="checkbox"/>	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Drawings/Figures
<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, 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 checked="" type="checkbox"/>	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 6.0
<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 checked="" 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 Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	Section 1.2
<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 7.0
<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	

Hannah Pepper

Subject: FW: Stormwater Quality Controls - Duford and St. Joseph

From: Jamie Batchelor [mailto:jamie.batchelor@rvca.ca]
Sent: March 22, 2017 4:20 PM
To: Hannah Pepper <HPepper@dsel.ca>
Cc: Steve Merrick <SMerrick@dsel.ca>
Subject: RE: Stormwater Quality Controls - Duford and St. Joseph

Hi Hannah,

You are correct. Based on the plans provided, the development will be primarily rooftop area receiving rain water. Given that there is no above ground parking or large drive isles proposed the RVCA would not require water quality control. Just a side note for future reference, the ditch along that stretch of 174 has been identified as part of Brisebois Creek (which has been altered over time). Normally we would request 80% for that stretch if above ground parking and drive isles were proposed.

From: Hannah Pepper [mailto:HPepper@dsel.ca]
Sent: Wednesday, March 22, 2017 11:15 AM
To: Jamie Batchelor <jamie.batchelor@rvca.ca>
Cc: Steve Merrick <SMerrick@dsel.ca>
Subject: Stormwater Quality Controls - Duford and St. Joseph

Hi Jamie,

Could you please let us know if any stormwater quality controls would be necessary for a contemplated development with the following details?

The property is located at the south west corner of Duford Drive and St. Joseph Boulevard, and would include a 12-storey residential/commercial building. This building would consist of 144 units, a restaurant, commercial space and 3 storeys of underground parking. There would be no surface parking and stormwater storage onsite would be through cistern and rooftop storage.

Stormwater from the subject property would flow to the existing 300mm storm sewer within Duford Drive and then travel 450m within this sewer prior to discharge to the roadside near the on-ramp to Ottawa Regional Road 174, adjacent to Place d'Orleans Drive. Stormwater then travels another 2250m from here before discharging into the Ottawa River. Please see the attached sketch for the flow path.

Runoff from the site would only be from the rooftop and landscape areas and since there is no surface parking, we have anticipated that quality controls will not be necessary. If you could confirm this that would be great.

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

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Hannah Pepper

Subject: FW: St. Joseph and Duford Drive - FUS Information
Attachments: Project Areas Sept 2016.pdf

From: Robert Verch [mailto:rverch@rodericklahey.ca]
Sent: March 22, 2017 10:30 AM
To: Hannah Pepper <HPepper@dsel.ca>
Cc: Steve Merrick <SMerrick@dsel.ca>
Subject: RE: St. Joseph and Duford Drive - FUS Information

Areas are attached. This building would have a construction type of Non-combustible

Rob

From: Hannah Pepper [mailto:HPepper@dsel.ca]
Sent: March-21-17 4:43 PM
To: Robert Verch <rverch@rodericklahey.ca>
Cc: Steve Merrick <SMerrick@dsel.ca>
Subject: St. Joseph and Duford Drive - FUS Information

Hi Rob,

Would you be able to please answer my questions below as best as you can? We are trying to put together some FUS calculations for the site at the corner of St. Joseph Boulevard and Duford Drive, with the Torgan Group.

- 1) Confirm square footage for the building; a floor by floor breakdown would be great if possible.
- 2) Confirm construction type (Wood Frame, Ordinary Construction, Non-combustible, Fire Resistive)

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.

Thank you,

Hannah Pepper, EIT.
Project Coordinator / Junior Designer

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Amr Salem

From: Brandon Chow
Sent: September 17, 2019 11:32 AM
To: Amr Salem
Subject: FW: Corner of St. Joseph and Duford - Boundary Condition Request
Attachments: 1617 Duford Drive SP-1 2019 08 22 Site Plan.pdf; wtr-2019-09-05_897_aas.pdf

Follow Up Flag: Follow up
Flag Status: Completed

FYI

Brandon Chow
Project Coordinator / Intermediate Designer

DSEL

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email: bchow@DSEL.ca

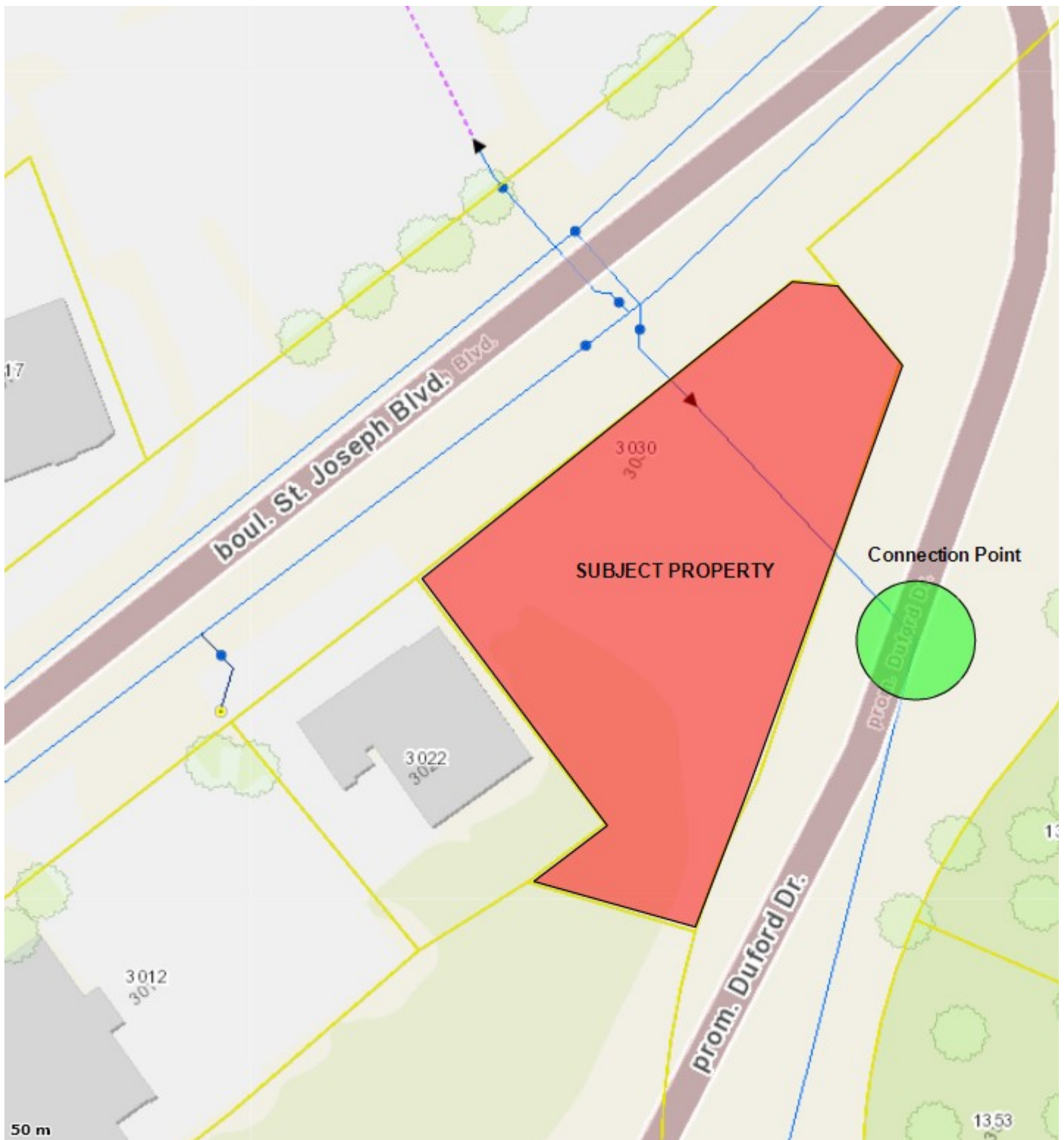
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From: Brandon Chow
Sent: September 9, 2019 3:15 PM
To: 'William.Curry@ottawa.ca' <William.Curry@ottawa.ca>
Subject: RE: Corner of St. Joseph and Duford - Boundary Condition Request

Good afternoon Will,

We would like to kindly request updated boundary conditions for the proposed development at **3030 St Joseph Boulevard** using the following proposed development demands:

1. Location of Service / Street Number: **3030 St Joseph Boulevard**
2. Type of development: **The proposed mixed-use development involves a 16-storey mixed-use building with 426 m2 of retail space proposed on the ground floor level. The development consists of a total of 165 residential units.**
3. Proposed Connection points:
 - **Dual service connections to existing 250mm diameter watermain within Duford Drive.**
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	54.4	0.91
Max Day + FUS	$195.5 + 11,000 = 11,195.5$	$3.26 + 183.33 = 186.59$
Peak Hour	293.4	4.89

Thanks,

Brandon Chow
Project Coordinator / Intermediate Designer

DSEL

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From: Burda, Dave [<mailto:Dave.Burda@ottawa.ca>]

Sent: Thursday, March 16, 2017 11:22 AM

To: Steve Merrick <SMerrick@dsel.ca>

Cc: Hannah Pepper <HPepper@dsel.ca>; Belan, Steve <Steve.Belan@ottawa.ca>

Subject: RE: Corner of St. Joseph and Duford - Boundary Condition Request

Hi Steve

I have attached the boundary condition request for this site.

I will not provide the "maximum flow available at 140 kPa" as instructed below. I have provided BCs for a fire demand of 10,000 l/min (Technical Bulletin ISTDB-2014-02) and 17,000 l/min, respectively. Fire flows exceeding 17,000 l/min will require justification. The residual pressure is well above 20 psi during the two fire flows scenarios simulated for this development.

Feel free to contact me if you have any further questions or inquiries.

Regards

David Burda, C.E.T.,rcsi
Project Manager, Infrastructure Approvals
Development Review, Suburban Services
Planning, Infrastructure and Economic Development Department
City of Ottawa
110 Laurier Avenue West, Ottawa, ON, K1P 1J1
613.580.2424 ext. 27885



From: Steve Merrick [<mailto:SMerrick@dsel.ca>]
Sent: Thursday, March 09, 2017 3:13 PM
To: Burda, Dave
Cc: Hannah Pepper
Subject: Corner of St. Joseph and Duford - Boundary Condition Request

Hi Dave,

I understand you met with Adam Fobert on the above noted site. We hope you can provide water boundary conditions based on the information below.

1. The development will yield a demand greater than 50m³/day and, therefore, will be serviced by a dual connection. It is contemplated to provide a dual connection to the existing 250mm diameter watermain within Duford Drive. A valve will be placed between the two connections to allow for isolation of a single service in the event of watermain disruption. We understand it is the City's preference to provide dual connections to separate watermains for further redundancy, however, the 400mm watermain within St. Joseph does not service the 2E pressure and I do not believe the City typically would accept a connection to a vital watermain such as the 610mm within St. Joseph. Please see the attached sketch for the locations of the connection points to the municipal system.
2. The contemplated development consists of a twelve storey commercial and residential building with 144 residential units and three levels of parking. Approximately 366 m² retail space, a 275m² restaurant and additional parking spaces are contemplated for the ground floor.
3. A summary of the average total demands for the development is as follows:

	L/min	L/s
Avg. Daily	62.9	1.05
Max Day	224.5	3.74
Peak Hour	337.1	5.62

4. As the concept plan is still in the preliminary stages and specific building information is not available, we hope the City can provide the maximum flow available at 140 kPa. An FUS calculation will be provided at the detailed design phase to ensure that adequate fire protection is available.

Feel free to call if you have any questions, look forward to working with you on this project.

Thanks,

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
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Boundary Conditions for 3030 St Joseph Boulevard

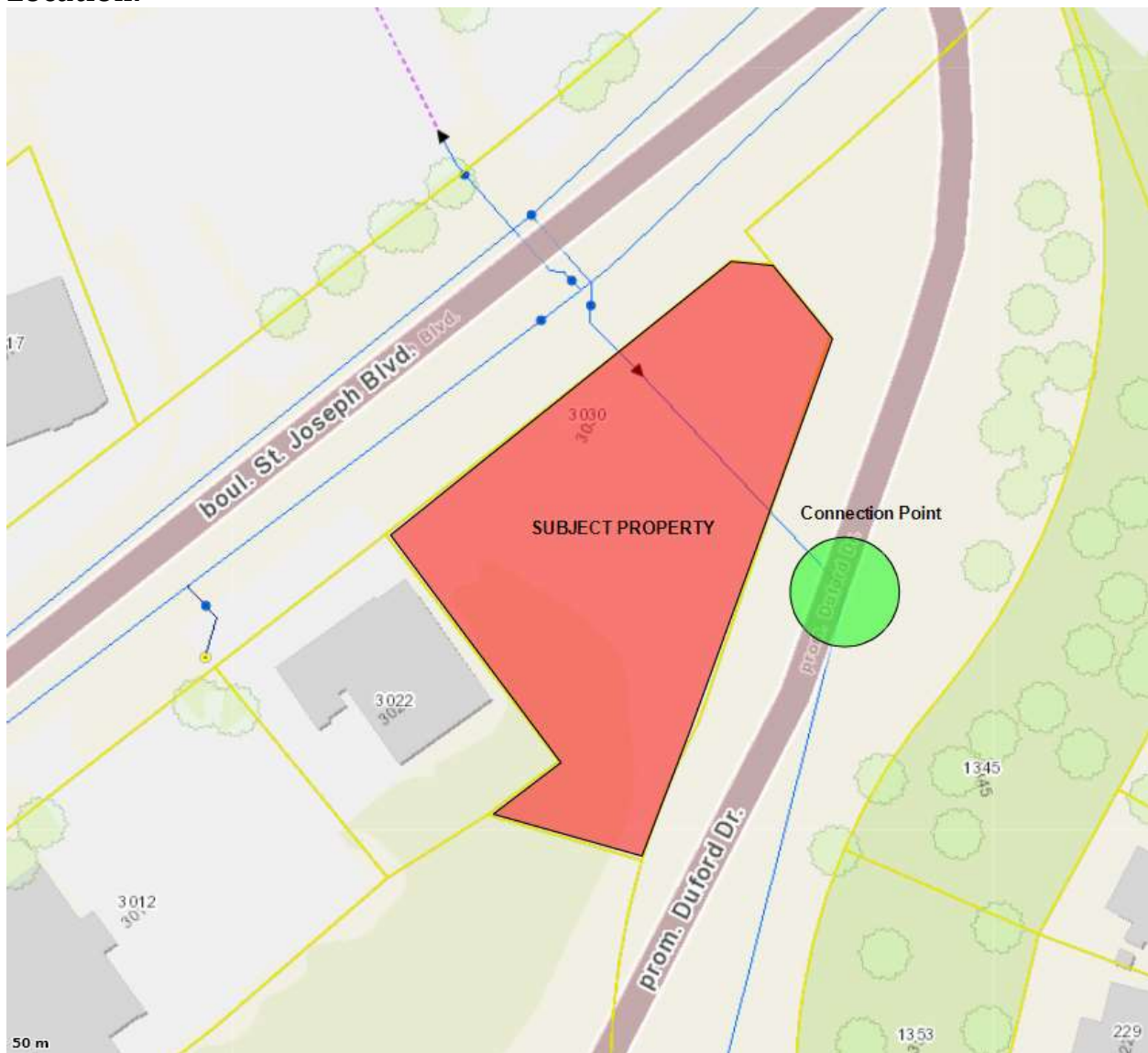
Provided Information:

Date Provided

September-19

Scenario	Demand	
	L/min	L/s
Average Daily Demand	54.6	0.91
Maximum Daily Demand	195.6	3.26
Peak Hour	293.4	4.89
Fire Flow Demand #1	11000	183.33

Location:



Results:

Connection 1 - 3030 St Joseph Blvd

Demand Scenario	Head (m)	Pressure ¹ (psi)
Maximum HGL	130.3	83.5
Peak Hour	126.2	77.7
Max Day plus Fire #1	126.2	77.7

¹ Ground Elevation = 71.5 m

Notes:

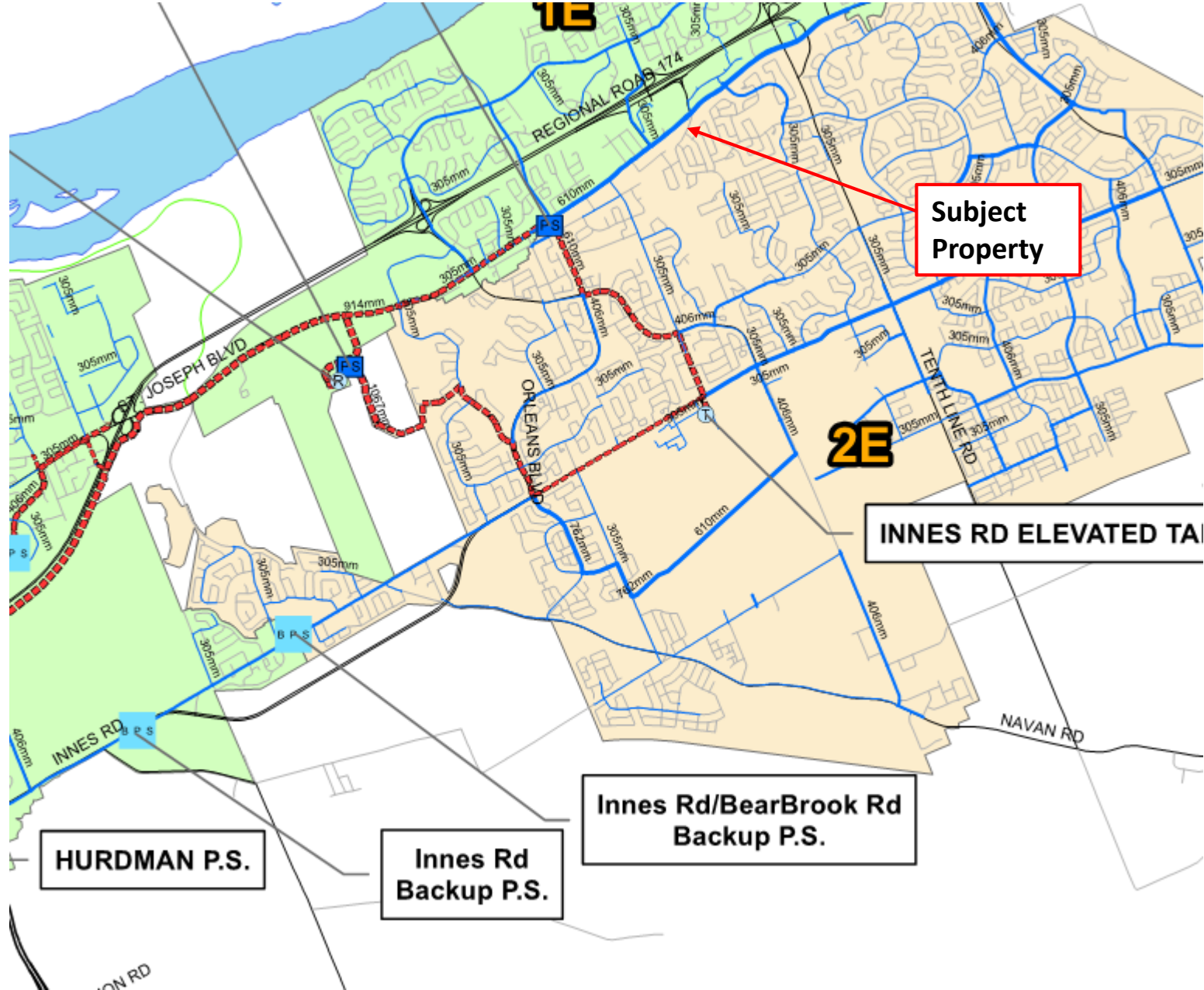
1. The site requires two connections since the number of residential units exceeds 50.
2. Pressure reducing valves are required since maximum pressure is over 80 psi.

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

APPENDIX B

Water Supply



Water Pressure Zone Map

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	7	10
1 Bedroom	1.4	90	126
2 Bedroom	2.1	68	143
3 Bedroom	3.1		0
Average	1.8		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	279	78.1	54.3	281.2	195.3	421.8	293.0

Institutional / Commercial / Industrial Demand

Property Type	Unit Rate	Units	Avg. Daily		Max Day		Peak Hour	
			m ³ /d	L/min	m ³ /d	L/min	m ³ /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 ² /d	426	0.23	0.2	0.3	0.2	0.6	0.4
Office	75 L/9.3m ² /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
Total I/CI Demand			0.2	0.2	0.3	0.2	0.6	0.4
Total Demand			78.3	54.4	281.6	195.5	422.5	293.4

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

** Water closets demand of 150 L/hour from Appendix 4-A of the Sewer design guidelines, assuming a 12 hour operation

***Assuming a 12 hour commercial operation

**Torgan Group Development
FUS-Fire Flow Demand**

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999



Fire Flow Required

1. Base Requirement

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

Type of Construction: **Non-Combustible Construction**

C 0.8 Type of Construction Coefficient per FUS Part II, Section 1
A 11130.5 m² Total floor area based on FUS Part II section 1

Fire Flow	18568.2 L/min
	19000.0 L/min rounded to the nearest 1,000 L/min

Adjustments

2. Reduction for Occupancy Type

Limited Combustible -15%

Fire Flow	16150.0 L/min
------------------	----------------------

3. Reduction for Sprinkler Protection

Sprinklered -50%

Reduction	-8075 L/min
------------------	--------------------

4. Increase for Separation Distance

N 30.1m-45m 5%

S >45m 0%

E >45m 0%

W 10.1m-20m 15%

% Increase	20%	value not to exceed 75% per FUS Part II, Section 4
-------------------	------------	--

Increase	3230.0 L/min
-----------------	---------------------

Total Fire Flow

Fire Flow	11305.0 L/min	fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section 4
	11000.0 L/min	rounded to the nearest 1,000 L/min

Notes:

-Type of construction, Occupancy Type and Sprinkler Protection information provided by BJH & Associates Architects Inc.

-Calculations based on Fire Underwriters Survey - Part II

APPENDIX C

Wastewater Collection

**Torgan Group
Proposed Development**

**Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004**



Site Area 0.270 ha

Extraneous Flow Allowances

Infiltration / Inflow (Dry)	0.01 L/s
Infiltration / Inflow (Wet)	0.08 L/s
Infiltration / Inflow (Total)	0.09 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	7	10
1 Bedroom	1.4	90	126
2 Bedroom	2.1	68	143
3 Bedroom	3.1		0
Average	1.8		0
Type of Housing	Per/Bed	Beds	Pop
Boarding †	1		0

Total Pop 279

Average Domestic Flow 0.90 L/s

Peaking Factor 3.47

Peak Domestic Flow 3.14 L/s

Institutional / Commercial / Industrial Contributions

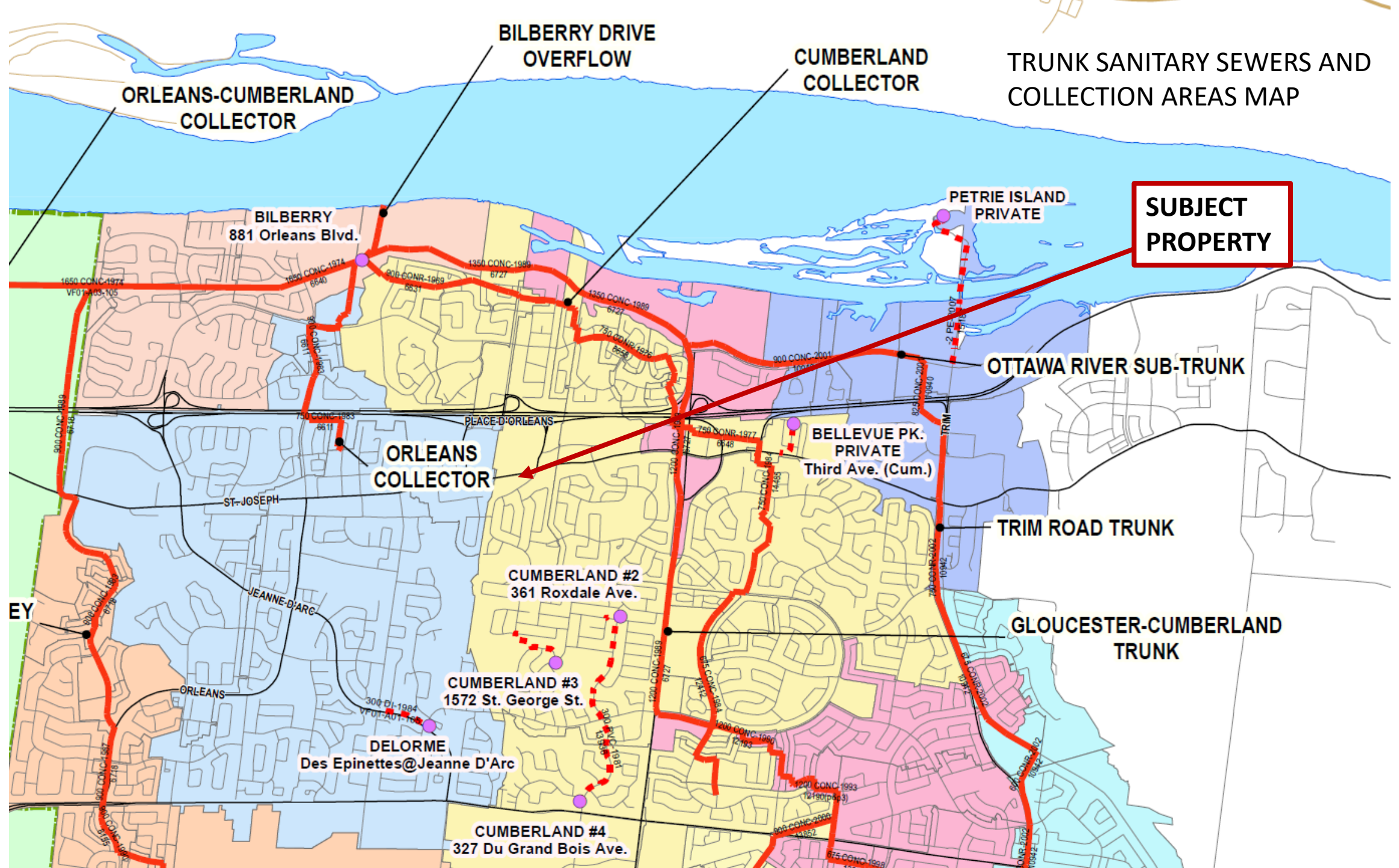
Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Dining room †	125 L/per/d		0.00
Commercial floor space*	5 L/m ² /d	426	0.05
Average I/C/I Flow			0.05
Peak Institutional / Commercial Flow			0.05
Peak Industrial Flow**			0.00
Peak I/C/I Flow			0.05

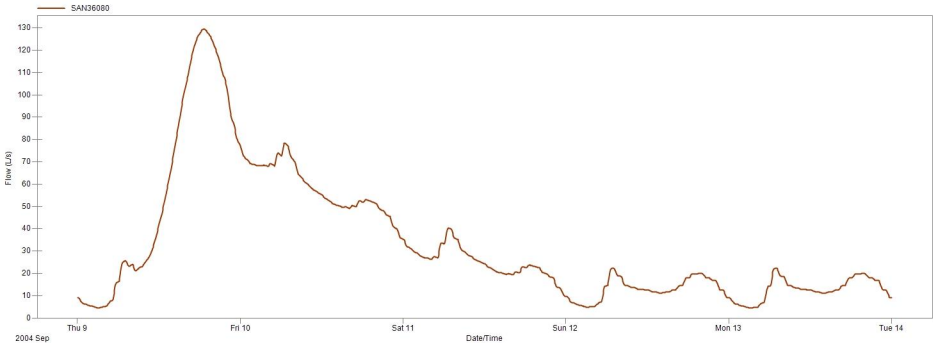
* assuming a 12 hour commercial operation

** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B

† Flow rates per City of Ottawa Sewer Design Guidelines Appendix 4A

Total Estimated Average Dry Weather Flow Rate	0.97 L/s
Total Estimated Peak Dry Weather Flow Rate	3.20 L/s
Total Estimated Peak Wet Weather Flow Rate	3.28 L/s





Steve Merrick

From: Burda, Dave <Dave.Burda@ottawa.ca>
Sent: Thursday, March 30, 2017 3:22 PM
To: Steve Merrick
Cc: Hannah Pepper; Belan, Steve
Subject: RE: Corner of St. Joseph and Duford - Boundary Condition Request
Attachments: 2011DesignFlow_San36080.jpg

Hi Steve

A design flow of approximately 130 L/s was computed for the areas upstream of the development in 2011 as part of the City's Wastewater Infrastructure Master Plan (see attached). Can you review the theoretical capacity of a few sanitary sewers downstream of the development and add your findings to the servcablity study? I don't foresee any issues.

Regards

David Burda, C.E.T.,rcsi
Project Manager, Infrastructure Approvals
Development Review, Suburban Services
Planning, Infrastructure and Economic Development Department
City of Ottawa
110 Laurier Avenue West, Ottawa, ON, K1P 1J1
613.580.2424 ext. 27885



From: Steve Merrick [mailto:SMerrick@dsel.ca]
Sent: Monday, March 27, 2017 1:15 PM
To: Burda, Dave <Dave.Burda@ottawa.ca>
Cc: Hannah Pepper <HPepper@dsel.ca>; Belan, Steve <Steve.Belan@ottawa.ca>
Subject: RE: Corner of St. Joseph and Duford - Boundary Condition Request

Hi Dave,

I understand that you spoke with Adam Fobert during the pre-consultation regarding the capacity within the adjacent 450mm sanitary trunk sewer. We can coordinate directly with Eric Touisgnant or, if you rather, forward on the below information for him to complete his analysis.

The contemplated development is located at the south-west corner of the St. Joseph and Duford Dr and consists of a twelve storey commercial and residential building with 144 residential units, 366m² of retail and 275m² restaurant space. We have calculated the wastewater discharge from the site as per the City of Ottawa sewer design guidelines, see Table 1 below:

Design Parameter	Total Flow (L/s)
Estimated Average Dry Weather Flow	1.09
Estimated Peak Dry Weather Flow	4.21
Estimated Peak Wet Weather Flow	4.29

I understand that the subject site was contemplated in the construction of the adjacent storm and sanitary sewers. I understand the sanitary contributions are most likely higher than originally contemplated, we hope that City can review the increase in flow to ensure there will be no negative impacts to the sanitary sewer capacity.

Feel free to call to discuss.

Thanks,

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
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From: Burda, Dave [<mailto:Dave.Burda@ottawa.ca>]
Sent: Thursday, March 16, 2017 11:22 AM
To: Steve Merrick <SMerrick@dsel.ca>
Cc: Hannah Pepper <HPepper@dsel.ca>; Belan, Steve <Steve.Belan@ottawa.ca>
Subject: RE: Corner of St. Joseph and Duford - Boundary Condition Request

Hi Steve

I have attached the boundary condition request for this site.

I will not provide the "maximum flow available at 140 kPa" as instructed below. I have provided BCs for a fire demand of 10,000 l/min (Technical Bulletin ISTDB-2014-02) and 17,000 l/min, respectively. Fire flows exceeding 17,000 l/min

will require justification. The residual pressure is well above 20 psi during the two fire flows scenarios simulated for this development.

Feel free to contact me if you have any further questions or inquiries.

Regards

David Burda, C.E.T.,rcsi
Project Manager, Infrastructure Approvals
Development Review, Suburban Services
Planning, Infrastructure and Economic Development Department
City of Ottawa
110 Laurier Avenue West, Ottawa, ON, K1P 1J1
613.580.2424 ext. 27885



From: Steve Merrick [<mailto:SMerrick@dsel.ca>]
Sent: Thursday, March 09, 2017 3:13 PM
To: Burda, Dave
Cc: Hannah Pepper
Subject: Corner of St. Joseph and Duford - Boundary Condition Request

Hi Dave,

I understand you met with Adam Fobert on the above noted site. We hope you can provide water boundary conditions based on the information below.

1. The development will yield a demand greater than 50m³/day and, therefore, will be serviced by a dual connection. It is contemplated to provide a dual connection to the existing 250mm diameter watermain within Duford Drive. A valve will be placed between the two connections to allow for isolation of a single service in the event of watermain disruption. We understand it is the City's preference to provide dual connections to separate watermains for further redundancy, however, the 400mm watermain within St. Joseph does not service the 2E pressure and I do not believe the City typically would accept a connection to a vital watermain such as the 610mm within St. Joseph. Please see the attached sketch for the locations of the connection points to the municipal system.
2. The contemplated development consists of a twelve storey commercial and residential building with 144 residential units and three levels of parking. Approximately 366 m² retail space, a 275m² restaurant and additional parking spaces are contemplated for the ground floor.
3. A summary of the average total demands for the development is as follows:

	L/min	L/s
Avg. Daily	62.9	1.05
Max Day	224.5	3.74
Peak Hour	337.1	5.62

4. As the concept plan is still in the preliminary stages and specific building information is not available, we hope the City can provide the maximum flow available at 140 kPa. An FUS calculation will be provided at the detailed design phase to ensure that adequate fire protection is available.

Feel free to call if you have any questions, look forward to working with you on this project.

Thanks,

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

DSEL

david schaeffer engineering ltd.

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

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APPENDIX D

Stormwater Management

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



Existing Drainage Characteristics From Internal Site

Area	0.27 ha
C	0.20 Rational Method runoff coefficient
L	58 m
Up Elev	79 m
Dn Elev	71.25 m
Slope	13.4 %
Tc	10.0 min

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

	2-year	5-year	100-year
i	76.8	104.2	178.6 mm/hr
Q	11.5	15.6	33.5 L/s

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

Target Flow Rate

Area 0.27 ha
C 0.20 Rational Method runoff coefficient
t_c 10.0 min

5-year

i 104.2 mm/hr
Q 15.6 L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area 0.03 ha
C 0.90 Rational Method runoff coefficient

t _c (min)	5-year					100-year				
	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	7.8	7.8	0.0	0.0	178.6	14.9	14.9	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 0.24 ha
C 0.90 Rational Method runoff coefficient

t _c (min)	5-year					100-year				
	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	62.5	0.4	62.1	37.3	178.6	119.0	0.7	118.3	71.0
15	83.6	50.1	0.4	49.7	44.8	142.9	95.3	0.7	94.5	85.1
20	70.3	42.2	0.4	41.8	50.1	120.0	80.0	0.7	79.2	95.1
25	60.9	36.5	0.4	36.1	54.2	103.8	69.2	0.7	68.5	102.7
30	53.9	32.4	0.4	32.0	57.5	91.9	61.2	0.7	60.5	108.9
35	48.5	29.1	0.4	28.7	60.3	82.6	55.1	0.7	54.3	114.0
40	44.2	26.5	0.4	26.1	62.7	75.1	50.1	0.7	49.3	118.4
45	40.6	24.4	0.4	24.0	64.7	69.1	46.0	0.7	45.3	122.3
50	37.7	22.6	0.4	22.2	66.6	64.0	42.6	0.7	41.9	125.7
55	35.1	21.1	0.4	20.7	68.2	59.6	39.7	0.7	39.0	128.7
60	32.9	19.8	0.4	19.4	69.7	55.9	37.3	0.7	36.5	131.5
65	31.0	18.6	0.4	18.2	71.1	52.6	35.1	0.7	34.3	134.0
70	29.4	17.6	0.4	17.2	72.3	49.8	33.2	0.7	32.4	136.3
75	27.9	16.7	0.4	16.3	73.5	47.3	31.5	0.7	30.8	138.4
80	26.6	15.9	0.4	15.5	74.6	45.0	30.0	0.7	29.2	140.4
85	25.4	15.2	0.4	14.8	75.6	43.0	28.6	0.7	27.9	142.2
90	24.3	14.6	0.4	14.2	76.5	41.1	27.4	0.7	26.7	144.0
95	23.3	14.0	0.4	13.6	77.4	39.4	26.3	0.7	25.5	145.6
100	22.4	13.4	0.4	13.0	78.3	37.9	25.3	0.7	24.5	147.1
105	21.6	12.9	0.4	12.6	79.1	36.5	24.3	0.7	23.6	148.6
110	20.8	12.5	0.4	12.1	79.8	35.2	23.5	0.7	22.7	149.9

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)

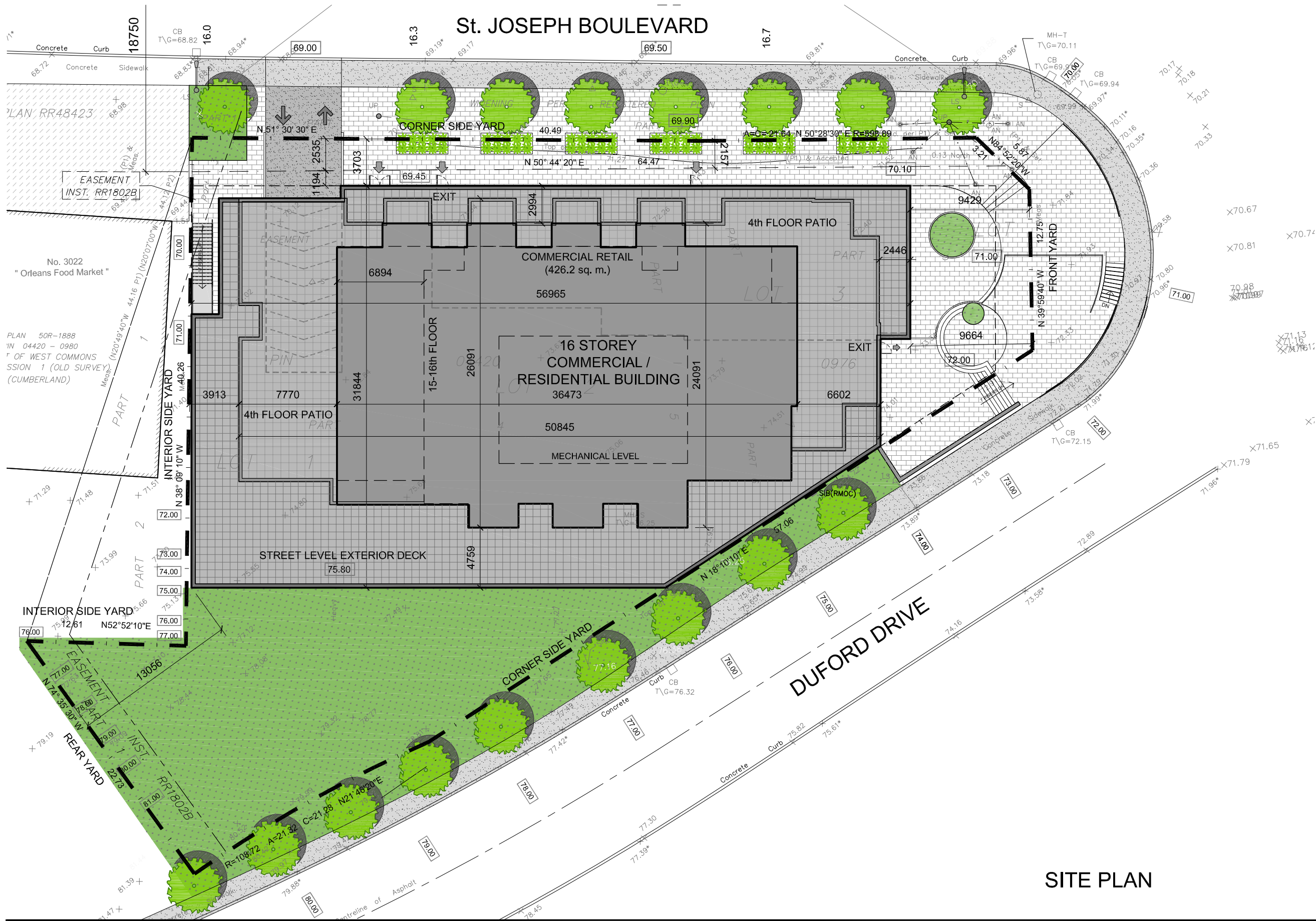
5-year Q_{attenuated} 0.40 L/s
5-year Max. Storage Required 79.8 m³
100-year Q_{attenuated} 0.75 L/s
100-year Max. Storage Required 149.9 m³

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Storage (m ³)	100-Year Release Rate (L/s)	100-Year Storage (m ³)
Unattenuated Areas	7.8	0.0	14.9	0.0
Attenuated Areas	0.4	79.8	0.7	149.9
Total	8.2	79.8	15.6	149.9

DRAWINGS / FIGURES





PROJECT INFORMATION			
ZONING Zoning By-Law 2008-250		AM3	
SITE AREA		2,643.97 sq. m. (28,459) sq. ft.	
ZONING REQUIRED			
MAXIMUM PERMITTED BUILDING HEIGHT		19.0 M	
MAXIMUM FLOOR SPACE INDEX		3.0	
FRONT YARD SETBACK - MINIMUM		0.0 M	
FRONT YARD SETBACK - MAXIMUM		4.0 M	
INTERIOR SIDE YARD SETBACK		0.0 M	
CORNER YARD SETBACK		0.0 M	
REAR YARD SETBACK		7.5 M	
AMENITY AREA 6 m² PER UNIT		990 sq. m.	
PROJECT STATISTICS			
ZONING PROVIDED			
BUILDING HEIGHT		51.4 M	
MAXIMUM FLOOR SPACE INDEX		4.21	
FRONT YARD SETBACK - MINIMUM		9.4 M	
FRONT YARD SETBACK - MAXIMUM		9.6 M	
INTERIOR SIDE YARD SETBACK		0.0 M	
CORNER YARD SETBACK - St. JOSEPH BOULEVARD		3.7 M	
CORNER YARD SETBACK - DUFORD DRIVE		0.0 M	
REAR YARD SETBACK		13.0 M	
GROSS BUILDING (CITY OF OTTAWA'S DEFINITION)			
PARKING LEVELS (2 LEVELS U/G)		N/A	
GROUND FLOOR		426.2 sq. m. (4,588) sq. ft.	
1st - 3th FLOOR		3 x 960.6 sq. m. 3 x (10,340) sq. ft.	
4th FLOOR		597.1 sq. m. (6,427) sq. ft.	
5th to 14th FLOOR		10 x 629.0 sq. m. 10 x (6,771) sq. ft.	
15th & 16th FLOOR		2 x 467.4 sq. m. 2 x (5,031) sq. ft.	
MECHANICAL / AMENITY FLOOR		N/A	
TOTAL AREA		11,130.5 sq. m. (119,808) sq. ft.	
UNIT STATISTICS			
STUDIO UNIT		7	
1 BEDROOM UNIT		72	
1 BEDROOM + DEN UNIT		18	
2 BEDROOM UNIT		68	
2 BEDROOM + DEN UNIT		0	
TOTAL		165	
COMMERCIAL RETAIL		426.2 sq. m. (4,588) sq. ft.	
CAR PARKING			
REQUIRED by ZONING BY-LAW			
RESIDENCE		- AREA 'Z' NONE REQUIRED 0	
VISITOR		- 0.1 PER DWELLING UNIT (AFTER 12 UNITS) 15	
COMMERCIAL RETAIL (RETAIL FOOD BANK'S CONSIDERED 1/2 USE)		- AREA 'Z' NONE REQUIRED 0	
TOTAL		15	
PROVIDED			
P2 LEVEL UNDER GROUND PARKING		47	
P1 LEVEL UNDER GROUND PARKING		38	
TOTAL		85	
BICYCLE PARKING			
REQUIRED			
RESIDENCE		- 0.5 PER UNIT (165 UNITS) 83	
COMMERCIAL RETAIL		- 1.0 PER 250m² OF G.F.A. 2	
TOTAL		85	
PROVIDED			
EXTERIOR		10	
INDOOR ON GROUND FLOOR		180	
TOTAL		190	

SITE PLAN

TOPOGRAPHICAL PLAN OF

PART OF LOTS 1, 2, 3 AND 4 REGISTERED PLAN 17 Formerly City of Cumberland NOW CITY OF OTTAWA

Prepared by
ANNIS, O'SULLIVAN, VOLLEBEKK LTD.

FIELD WORK COMPLETED JULY 11, 2006

Scale 1 : 250



Metric

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

ST. JOSEPH BOULEVARD

(FORMERLY THE KING'S HIGHWAY 17)
PIN 14508 - 0167

JOB BENCHMARK
Top of Spindle on
Fire Hydrant
Elev=69.77

EXPROPRIATION PLAN RR48099
BY-LAW 206-1975

Sept 5/06
Date

V. Andrew Shelp, O.L.S.

Notes & Legend

□	Denotes	Survey Monument Planted
■	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
(WIT)	"	Witness
Meas.	"	Measured
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	"	Plan 50R-4499
(P2)	"	Registered Plan 17
(P3)	"	Plan 50R-1888
○ LS	"	Light Standard
○ UP	"	Utility Pole
○ MH-S	"	Maintenance Hole (Sanitary)
○ MH-T	"	Maintenance Hole (Traffic)
○ FH	"	Fire Hydrant
□ CB	"	Catch Basin
△ S	"	Sign
○ AN	"	Anchor
+65.00	"	Location of Elevations
+65.00'	"	Top of Curb Elevations
T/G	"	Top of Lid/Grate
—	"	Property Line

Bearings are astronomic, derived from part of the easterly limit of Plan 50R-4499, shown to be N 18°10'10" E thereon.

SITE AREA = 2643 m²

ELEVATION NOTES

- Elevations shown are referred to geodetic datum.
- It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that its relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

- This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
- Only visible surface utilities were located.
- A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

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Job No. 7615-06 N D

