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ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES

FOR

11021028 AND 11073656 CANADA INC.
1151 TERON ROAD

CITY OF OTTAWA

PROJECT NO.: 19-1128

NOVEMBER 2019 – REV. 1

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
FOR
1151 TERON ROAD

11021028 AND 11073656 CANADA INC.

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FOR
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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained by 11021028 and 11073656 Canada Inc. to prepare an Assessment of Adequacy of Public Services report in support of the application for a Zoning By-law Amendment (ZBLA) at 1151 Teron Road.

The subject property is located within the City of Ottawa urban boundary, in Kanata North. As illustrated in ***Figure 1*** below, the subject property is located south of the intersection of March Road and Teron Road. Comprised of one parcel, the subject property measures approximately ***1.43 ha*** and is zoned R5A[2144]S327 and O1[2143].

Figure 1: Site Location

The proposed ZBLA would allow for the development of a nine-storey mixed-use building fronting onto Teron Road. The contemplated development would include approximately 1,071 m^2 of ground level retail accompanied by surface parking, with access from March Road. The residential component is comprised of approximately 109 units. A copy of the ***Concept Site Plan*** is included in ***Drawings/Figures***.

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

1.1 Existing Conditions

The existing site is undeveloped and consists of a vegetated area with a few trees. The elevations range between 89.75 m and 87.75 m with a grade change of approximate 1.30% from the Southeast to the Northwest corner of the property.

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:

Teron Road

- 610 mm diameter water feedermain;
- 300 mm diameter concrete storm sewer; and
- 525 mm diameter concrete sanitary sewer.

March Road

- 450 mm diameter concrete storm sewer.

Weeping Willow Lane (formerly Varley Lane)

- A private 250 mm diameter PVC sanitary sewer

1.2 Required Permits / Approvals

The contemplated development is subject to the Zoning By-law Amendment approval process. The City of Ottawa must approve the Adequacy of Public Services Report prior to the issuance of ZBLA approval.

Should the anticipated site stormwater design discharge into a ditch and not a storm sewer, OWRA s.53 approval will be required from the Ministry of the Environment, Conservation and Parks (MECP).

1.3 Pre-consultation

Pre-Consultation was conducted with interested parties at the City of Ottawa on April 08, 2019. Pre-consultation correspondence, along with the servicing guidelines checklist, is 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.
  (MECP* 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 2W2C pressure zone. A local 610 mm diameter watermain exists within the Teron Road right-of-way, as shown by the Pressure Zone map, in ***Appendix B***.

3.2 Water Supply Servicing Design

It is anticipated that the contemplated development will be serviced via two service connections to existing municipal infrastructure. As the water demand exceeds 50 m^3/day, it is anticipated that the services will be looped internally to allow for redundancy in case of interruption of service to either connection.

Table 1, below, 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 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 *
Commercial Retail	2.5 L/m^2/d
Commercial Office	75 L/9.3m^2/d
Restaurant	125 L/seat/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 MECP Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.*
-Table updated to reflect ISD-2010-2

Table 2, below, 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
Contemplated Conditions

Design Parameter	Anticipated Demand[1] (L/min)	Boundary Condition[2] (m H_2O / kPa)
Average Daily Demand	37.2	131.7 / 410.1
Max Day + Fire Flow	130.2 + 11,000 = 11,130.2	126.1 / 355.1
Peak Hour	196.1	125.9 / 353.2

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 89.9m. See ***Appendix B.***

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 B*** 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 provided both the anticipated minimum and maximum water pressures, as well as, the estimated water pressure during fire flow demand for the demands as indicated by the correspondence in ***Appendix B***. As shown by ***Table 2***, the minimum and maximum pressures fall within the required range identified in ***Table 1***.

3.3 Water Supply Conclusion

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

The anticipated 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 March Ridge Trunk Sewer catchment area, as shown by the City sewer mapping included in ***Appendix C***. An existing 525 mm diameter sanitary sewer within Teron Road exists and is located 240 m south of the subject property. An existing 250 mm diameter private sanitary sewer exists within Weeping Willow Lane (formerly Varley Lane) located south-west of the property.

No sanitary services within the municipal right-of-way currently exist adjacent to the subject property. As a part of a previous application, a service lateral from the private sanitary sewer was contemplated as shown in the ***Conceptual Site Servicing Sketch,*** included in ***Drawings/Figures***.

4.2 Wastewater Design

It is anticipated that the contemplated development will connect to the existing private 250 mm diameter sanitary sewer within Weeping Willow Lane (formerly Varley Lane) as shown in the ***Conceptual Site Servicing Sketch,*** included in ***Drawings/Figures***.

The private sewage system will be analyzed at the detailed design stage to ensure that it complies with relevant ***MECP*** **Design Guidelines**.

Table 3, below**,** summarizes the ***City Standards*** employed in the design of the contemplated 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
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^2/d
Commercial Office Space	75 L/9.3m^2/d
Infiltration and Inflow Allowance	0.33 L/s/ha
Industrial - Light	35,000 L/gross ha/d
Industrial Peaking Factor	7.0 per City of Ottawa Sewer Design Guidelines Appendix 4B
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} A R^{2/3} S^{1/2}$
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, below, 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	0.78
Estimated Peak Dry Weather Flow	2.27
Estimated Peak Wet Weather Flow	2.65

The estimated sanitary flow based on the ***Concept Site Plan***, provided in ***Drawings/Figures,*** anticipates a peak wet weather flow of ***2.65 L/s***.

In order to estimate the available capacity, a sanitary analysis was conducted for the local municipal sanitary sewers located across the frontage of the subject property. The catchment area serviced by the March Ridge Trunk sewer was identified and evaluated by reviewing existing development and zoning within the area. ***City Standards*** were employed to generate a conservative estimate of the existing wastewater flow conditions within the sewer. Refer to the sanitary drainage plan in ***Appendix C***, for the extents of the existing sanitary sewer analysis.

Based on the sanitary analysis, it is estimated that the most restricted leg of local sanitary sewer downstream of the subject site, has an available residual capacity of ***17.17 L/s***, which is sufficient to accommodate the estimated ***2.27 L/s*** peak wastewater flow increase generated by the contemplated development. Refer to ***Appendix C*** for detailed calculations.

The analysis above indicates that sufficient capacity is available in the local sewers to accommodate the contemplated development.

4.3 Wastewater Servicing Conclusions

The site is tributary to the March Ridge Trunk sanitary sewer. Based on the above sanitary analysis, sufficient capacity is available to accommodate the anticipated ***2.65 L/s*** peak wet weather flow from the contemplated development.

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

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system located within the Ottawa West watershed. As such, approvals for proposed 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 Kizell Drain sub-watershed; and is therefore subject to review by Mississippi Valley Conservation Authority (MVCA). The MVCA has been contacted for any quality controls that may apply to stormwater runoff from the site. Consultation with the MVCA is located in ***Appendix A***.

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

Table 5
Summary of Existing Peak Storm Flow Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
2-year	46.6
5-year	63.0
100-year	134.7

5.2 Post-development Stormwater Management Target

Stormwater management requirements for the contemplated development were reviewed with the City of Ottawa for two potential options;

Option 1**:** If the contemplated development outlets to a municipal ditch, the contemplated development is required to:

- Estimate allowable release rates based on a Rational Method Coefficient of 0.20, employing the City of Ottawa IDF parameters for a 5-year and 100-year storms with a calculated time of concentration greater than or equal to 10 minutes, controlling post-development runoff rates to pre-development conditions. Refer to correspondence with the City included in ***Appendix D.***

Option 2**:** If the contemplated development outlets to a local storm sewer, the contemplated development is required to:

- Estimate 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 greater than or equal to 10 minutes.

The contemplated development is also required to meet the following requirements in both options;

- All storms up to and including the City of Ottawa 100-year design event are to be attenuated on site;
- Based on coordination with the MVCA, enhanced quality level treatment (80% TSS removal) will be required for the contemplated development; correspondence with the MVCA is included in ***Appendix A***.

5.3 Proposed Stormwater Management System

The contemplated development is anticipated to be serviced via one, or a combination, of two options. The first option contemplates discharging to a municipal ditch and the second option contemplates discharging to a municipal storm sewer.

5.3.1 Option 1: Stormwater Outlet to Municipal Ditch

It is anticipated that the stormwater outlet from the contemplated development will be to the municipal ditch located at the north corner of the site within the March Road right-of-way.

Based on stormwater objectives for this option, the allowable release rates for the contemplated development are ***63.0 L/s*** and ***134.7 L/s*** for the 5-year and 100-year storms, respectively. To meet the stormwater objectives, the contemplated development may contain a combination of roof top flow attenuation along with surface and subsurface storage.

Table 6, below, summarizes post-development flow rates for option 1. The following storage requirement estimate assumes that approximately 10% of the development area will be directed to the outlet without flow attenuation. These areas will be compensated for in areas with flow attenuation controls.

Table 6
Option 1 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	15.5	0.0	33.3	0.0
Attenuated Areas	47.4	128.1	101.4	272.4
Total	**62.9**	**128.1**	**134.7**	**272.4**

It is anticipated that approximately ***272.4 m^3*** of storage will be required on site to attenuate flow to the established release rate of ***134.7 L/s*** in the 100-year storm; storage calculations are contained within ***Appendix D***.

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

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

5.3.2 Option 2: Stormwater Outlet to Local Storm Sewer

It is anticipated that the stormwater outlet from the contemplated development will be to the 300 mm diameter storm sewer within Teron Road right-of-way.

Based on stormwater objectives for this option, the allowable release rates for the contemplated development is ***63.0 L/s***. To meet the stormwater objectives the contemplated development may contain a combination of roof top flow attenuation along with surface and subsurface storage.

Table 7, below, summarizes post-development flow rates for option 2. The following storage requirement estimate assumes that approximately 10% of the development area will be directed to the outlet without flow attenuation. These areas will be compensated for in areas with flow attenuation controls.

Table 7
Option 2 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	15.5	0.0	33.3	0.0
Attenuated Areas	14.1	210.6	29.7	445.9
Total	**29.6**	**210.6**	**63.0**	**445.9**

It is anticipated that approximately ***445.9 m^3*** of storage will be required on site to attenuate flow to the established release rate of ***63.0 L/s***; storage calculations are contained within ***Appendix D***.

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

To meet quality controls, a combination of on-site treatment including LID measures and oil/grit separators may be implemented in order to achieve 80% TSS removal.

5.4 Stormwater Servicing Conclusions

The development is anticipated to be serviced via one of two options.

Option 1 contemplates a stormwater outlet to the municipal ditch within March Road - right-of-way. Post-development runoff rates are required to be restricted to pre-development conditions. Allowable release rates for the contemplated development were calculated to be ***63.0 L/s*** and ***134.7 L/s*** for the 5-year and 100-year storms respectively. It is estimated that a maximum of ***272.4 m^3*** of storage will be required on site to attenuate flow to the established release rates for the contemplated development.

Option 2 contemplates a stormwater outlet to the 300 mm diameter storm sewer within the Teron Road right-of-way. 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***. It is estimated that ***445.9 m^3*** of storage will be required on site to attenuate flow to the established release rate of ***63.0 L/s*** for the contemplated development.

Based on coordination with the MVCA, enhanced quality level treatment (80% TSS removal) will be required for the contemplated development.

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

6.0 UTILITIES

Gas, Hydro and Bell services currently exist within the Teron Road right-of-way. Utility servicing will be coordinated with the individual utility companies prior to site development.

Special considerations will need to be taken with development within the Hydro corridor. The contemplated development will be coordinated and approved by the utility company having jurisdiction.

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:

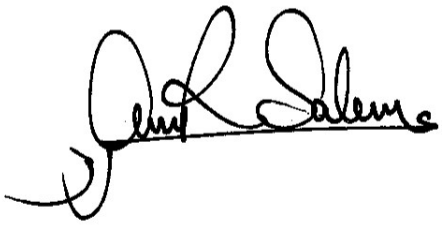
- Verification that water is not flowing under silt barriers; and
- Clean and change filter cloth at catch basins.

8.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained by 11021028 and 11073656 Canada Inc. to prepare an Assessment of Adequacy of Public Services report in support of the application for a Zoning By-law Amendment (ZBLA) at 1151 Teron Road. 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 FUS method for estimating fire flow indicated ***11,000 L/min*** is required for the contemplated development,
- The contemplated development is anticipated to have a peak wet weather flow of ***2.65 L/s***; Based on the sanitary analysis conducted the existing municipal sewer infrastructure has sufficient capacity to support the development;
- Based on coordination with the City, the contemplated development will be required to attenuate post development flows to allowable release rates of ***63.0 L/s*** and ***134.7 L/s*** for the 5-year and 100-year storms respectively if discharging to municipal ditches ***(Option 1);***
- 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 ***63.0 L/s*** for all storms up to and including the 100-year storm event if discharging to local storm sewers ***(Option 2)***;
- It is contemplated that stormwater objectives may be met through storm water retention via roof top, surface and subsurface storage. It is anticipated that ***272.4 m^3*** of onsite storage will be required to attenuate flow to the established release rates for ***Option 1*** and ***445.9 m^3*** of onsite storage will be required for ***Option 2***;
- To meet quality controls, a combination of on-site treatment including LID measures and oil/grit separators may be employed in order to achieve 80% TSS removal.

Prepared by,
David Schaeffer Engineering Ltd.



Per: Amr Salem.

Reviewed by,
David Schaeffer Engineering Ltd.

Per: Robert D. Freel, P. Eng.

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APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

19-1128 07/11/2019

4.1 General Content		
☐	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	Report Cover Sheet
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Drawings/Figures
☒	Plan showing the site and location of all existing services.	Figure 1
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 1.0
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.3
☒	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Section 2.1
☒	Statement of objectives and servicing criteria.	Section 1.0
☒	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3.1, 4.1, 5.1
☐	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/A
☐	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	N/A
☐	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
☐	Proposed phasing of the development, if applicable.	N/A
☐	Reference to geotechnical studies and recommendations concerning servicing.	N/A
☐	All preliminary and formal site plan submissions should have the following information: -Metric scale -North arrow (including construction North) -Key plan -Name and contact information of applicant and property owner -Property limits including bearings and dimensions -Existing and proposed structures and parking areas -Easements, road widening and rights-of-way -Adjacent street names	N/A

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

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

☒	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Section 3.2
☐	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	N/A
☐	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☐	Address reliability requirements such as appropriate location of shut-off valves	N/A
☐	Check on the necessity of a pressure zone boundary modification	N/A
☒	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	Section 3.2, 3.3
☐	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	N/A
☐	Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 3.2
☐	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

☒	Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Section 4.2
☐	Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☐	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 4.1
☒	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 4.2
☒	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 4.2, Appendix C
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2
☐	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A

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

☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐	Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

☒	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.1
☐	Analysis of available capacity in existing public infrastructure.	N/A
☐	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	N/A
☒	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 5.2
☒	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.2
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3
☐	Set-back from private sewage disposal systems.	N/A
☐	Watercourse and hazard lands setbacks.	N/A
☒	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A
☐	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☒	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 5.3
☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
☒	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 5.1, 5.3
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
☐	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	N/A
☐	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
☐	Identification of potential impacts to receiving watercourses	N/A
☐	Identification of municipal drains and related approval requirements.	N/A

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

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

4.5 Approval and Permit Requirements: Checklist

☒	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement ct. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	Section 1.2
☐	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐	Changes to Municipal Drains.	N/A
☐	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

4.6 Conclusion Checklist

☒	Clearly stated conclusions and recommendations	Section 7.0
☐	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	
☐	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	

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

Amr Salem

From: Nader Nakhaei <nnakhaei@mvc.on.ca>
Sent: September 11, 2019 2:42 PM
To: Amr Salem
Cc: Brandon Chow
Subject: RE: 1151 Teron Road - MVCA Correspondence

Hi Amr,

Thanks a lot for your email. The quality control requirement for Kizell Drain has been considered as "Enhanced" (80% TSS removal) in the past planning applications and therefore since there is no end of pipe SWM facility for the proposed site, on-site quality control to an enhanced level will be required.
Please let me know if you have any further question or concern.

Sincerely,

Nader Nakhaei, Ph.D., E.I.T. | Water Resources Specialist, Research Fellow | Mississippi Valley Conservation Authority (MVCA)
www.mvc.on.ca | t. 613 253 0006 ext. 259 | f. 613 253 0122 | NNakhaei@mvc.on.ca

---

From: Amr Salem [mailto:ASalem@dsel.ca]
Sent: 9-Sep-19 4:07 PM
To: Nader Nakhaei <nnakhaei@mvc.on.ca>
Cc: Brandon Chow <BChow@dsel.ca>
Subject: FW: 1151 Teron Road - MVCA Correspondence

Hello Nader,

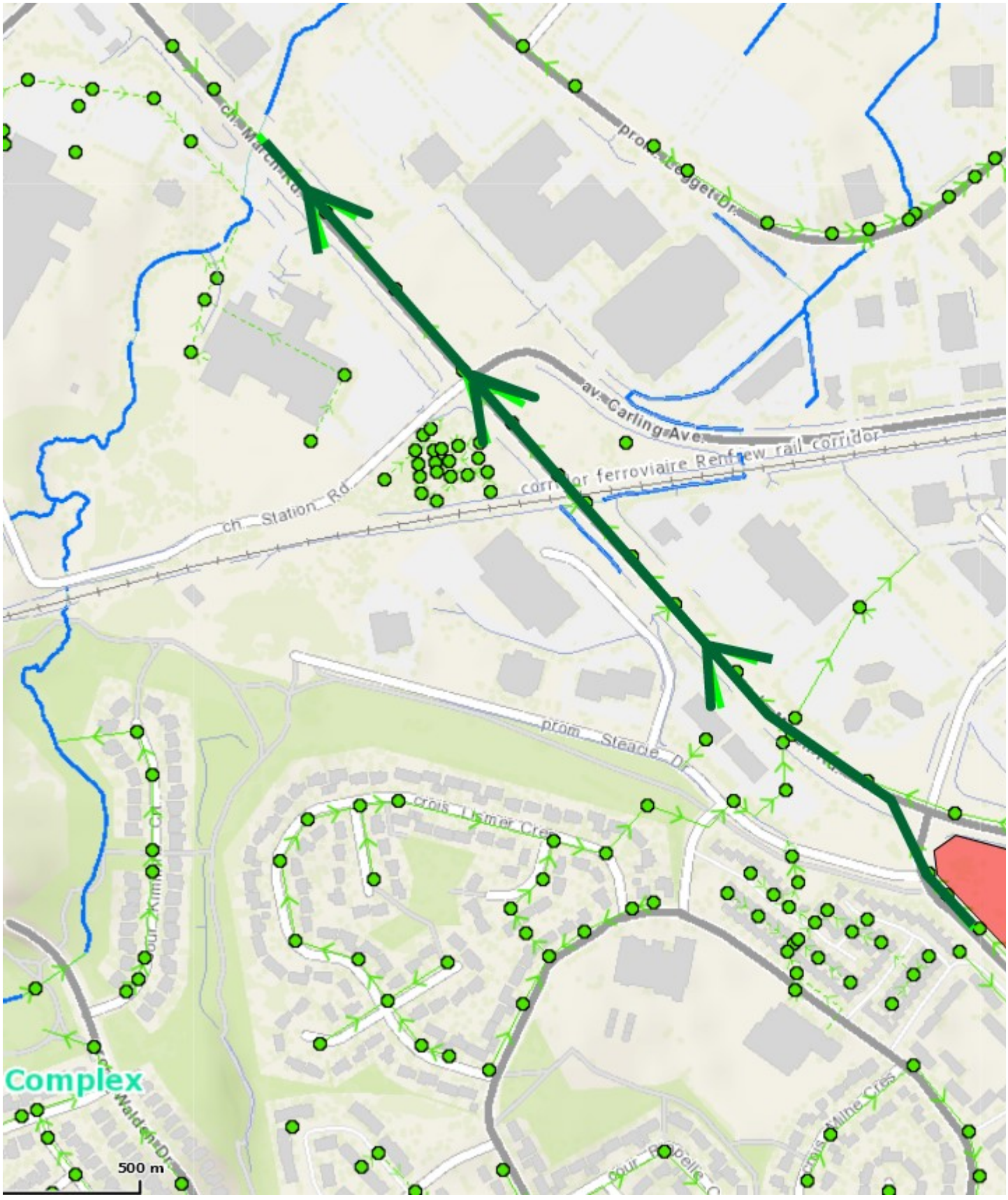
We wanted to consult with you regarding a mixed-use development we are working on located at the 1151 Teron Road.

The existing stormwater runoff from the site outlets to a city owned road side ditch running along the north boundary of the site . The stormwater collected from the site travels approximately 1.1 km through municipal sewer and roadside ditches to a direct outlet into the Kizell Drain.

The development proposes to construct a mixed use 9-storey building (commercial/office/residential) and surface parking lot fronting Teron Road. Storm water runoff from the contemplated development will primarily be coming from the paved surface parking lot and building rooftop. See attached conceptual site plan for reference.

At present, the existing site area is an undeveloped area consisting of grass and a few trees.

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



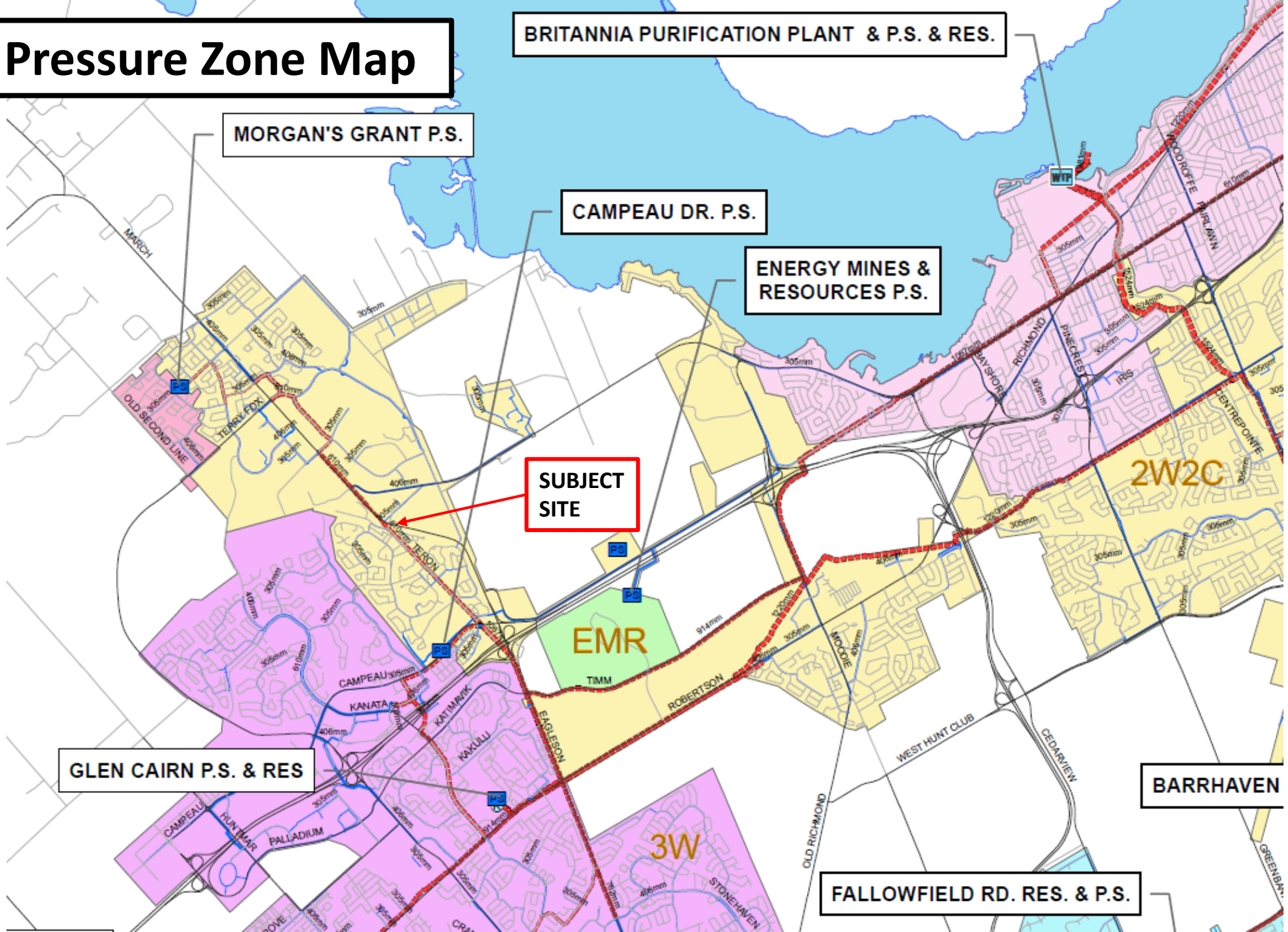
Thank you,

Amr Salem
Project Coordinator

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	16	23
1 Bedroom	1.4	53	75
2 Bedroom	2.1	40	84
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	182	51.0	35.4	183.5	127.4	275.2	191.1

Institutional / Commercial / Industrial Demand

			Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**	**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Commercial floor space	2.5 $L/m^2/d$	1,071	2.68	1.9	4.0	2.8	7.2	5.0
Office	75 $L/9.3m^2/d$	-	0.00	0.0	0.0	0.0	0.0	0.0
Restaurant*	125 L/seat/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			2.7	1.9	4.0	2.8	7.2	5.0
Total Demand			**53.6**	**37.2**	**187.5**	**130.2**	**282.4**	**196.1**

* Estimated number of seats at 1 seat per $9.3m^2$

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required

1. Base Requirement

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

Type of Construction: Non-Combustible Construction

C	0.8		*Type of Construction Coefficient per FUS Part II, Section 1*
A	10170.0	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	17749.0	L/min	
	18000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Limited Combustible	-15%	
Fire Flow	**15300.0**	**L/min**

3. Reduction for Sprinkler Protection

Sprinklered - Supervised	-50%	
Reduction	**-7650**	**L/min**

4. Increase for Separation Distance

	Cons. of Exposed Wall	S.D	Lw	Ha	LH	EC	
N	Non-Combustible	>45m	0	1	0	0%	
S	Non-Combustible	30.1m-45m	18	2	36	5%	
E	Non-Combustible	10.1m-20m	16	3	48	13%	
W	Non-Combustible	30.1m-45m	21	2	42	5%	
		% Increase				**23%**	*value not to exceed 75%*

Increase	**3519.0**	**L/min**

Lw = Length of the Exposed Wall
Ha = number of storeys of the adjacent structure. Max 5 stories
LH = Length-height factor of exposed wall. Value rounded up.
EC = Exposure Charge

Total Fire Flow

Fire Flow	11169.0	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 RLA Architecture.
-Calculations based on Fire Underwriters Survey - Part II

Amr Salem

From: Antoine Cousineau <antoine@neufarchitectes.com>
Sent: September 4, 2019 10:24 AM
To: Amr Salem; Antoine Cardinal
Cc: Brandon Chow; Raphaël Esposito
Subject: RE: 1151 Teron Road - Omnipex - FUS Coordination

Follow Up Flag: Follow up
Flag Status: Completed

See comments below in blue.

A

ANTOINE COUSINEAU, **OAQ, OAA, AAA, NCARB, IRAC, LEED, AP**
Architecte associé. Partner Architect
T 514 847 1117 #250 F 514 847 2287 C 514 515 2048
630, boul. René-Lévesque O. 32e étage, Montréal QC H3B 1S6
47 Clarence Street, suite 406, Ottawa (ON) K1N 9K1
NEUF ARCHITECTES SENCRL

De : Amr Salem <ASalem@dsel.ca>
Envoyé : 3 septembre 2019 14:38
À : Antoine Cardinal <acardinal@neufarchitectes.com>; Antoine Cousineau <antoine@neufarchitectes.com>
Cc : Brandon Chow <BChow@dsel.ca>
Objet : 1151 Teron Road - Omnipex - FUS Coordination

Hey guys,

Can you please provide your input on the following to assist with our FUS calculations;

1. We need to know if the building will be protected by a sprinkler system that is fully supervised. ***[Antoine Cousineau]*** Yes sprinklers supervised

2. Would you be able to confirm the ISO construction type for the buildings. I have included the ISO guide in which sections 1, 2 and 3 on pages 3 to 8 provides definitions to clarify as well as the section from the City's technical bulletin below. Note that ISO refers only to fire-resistive for fire ratings not less than 1-hour. ***[Antoine Cousineau]*** Not sure how to help you, because it is not our field of expertise. That being said the building will be NON-COMBUSTIBLE (most likely concrete structure with Masonry) Since it will be a High-rise all floor assembly will have a 2h fire rating

3. Are there any areas with a minimum fire rating of 2 hours? ***[Antoine Cousineau]*** All floors assemblies

A. *Determine the type of construction.*

- Coefficient *C* in the FUS method is equivalent to coefficient *F* in the ISO method:

Correspondence between FUS and ISO construction coefficients

FUS type of construction	ISO class of construction	Coefficient *C*
Fire-resistive construction	Class 6 (fire resistive)	0.6
	Class 5 (modified fire resistive)	0.6
Non-combustible construction	Class 4 (masonry non-combustible)	0.8
	Class 3 (non-combustible)	0.8
Ordinary construction	Class 2 (joisted masonry)	1.0
Wood frame construction	Class 1 (frame)	1.5

However, the FUS definition of fire-resistive construction is more restrictive than those of ISO construction classes 5 and 6 (modified fire resistive and fire resistive). FUS requires structural members and floors in buildings of fire-resistive construction to have a fire-resistance rating of 3 hours or longer.

- With the exception of fire-resistive construction that is defined differently by FUS and ISO, practitioners can refer to the definitions of the ISO construction classes (and the supporting definitions of the types of materials and assemblies that make up the ISO construction classes) found in the current ISO guide [4] (see Annex i) to help select coefficient *C*.
- To identify the most appropriate type of construction for buildings of mixed construction, the rules included in the current ISO guide [4] can be followed (see Annex i). For a building to be assigned a given classification, the rules require ⅔ (67%) or more of the total wall area and ⅔ (67%) or more of the total floor and roof area of the building to be constructed according to the given construction class or a higher class.
- New residential developments (less than 4 storeys) are predominantly of wood frame construction ($C = 1.5$) or ordinary construction ($C = 1.0$) if exterior walls are of brick or masonry. Residential buildings with exterior walls of brick or masonry veneer and those with less than ⅔ (67%) of their exterior walls made of brick or masonry are considered wood frame construction ($C = 1.5$).

Feel free to contact me 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

Amr Salem

From: Candow, Julie <julie.candow@ottawa.ca>
Sent: September 16, 2019 10:36 AM
To: Amr Salem
Cc: Brandon Chow
Subject: RE: 1151 Teron Rd - Boundary Conditions Request
Attachments: 1151 Teron Road_Boundary Conditions_12Sept2019.docx

Hi Amr,

As per the pre-consultation notes:

Connections to the existing 610mm feedermain will not be accepted. *Proposed water service connections could be looped from the existing hydrant lateral at the south-east corner of the property to a connection off Steacie Drive. Looped connections must be separated by an existing or proposed valve to allow for maintenance of the 610mm feedermain.*

Our Infrastructure Planning department has provided preliminary boundary condition results assuming one connection to the 610mm feedermain, however, connections to local watermains will need to be provided. A minimum of 2 watermain connections will be required assuming the basic day demand remains above 50 m3/day (as per City of Ottawa Water Distribution Guidelines 2010).

In response to your stormwater management inquiry, if stormwater flows were to outlet to an existing ditch, the allocated release rate would be pre to post for all storm events. Please note that a MECP Environmental Compliance Approval (ECA) would be required if stormwater flows were to outlet to an existing ditch.

Regards,

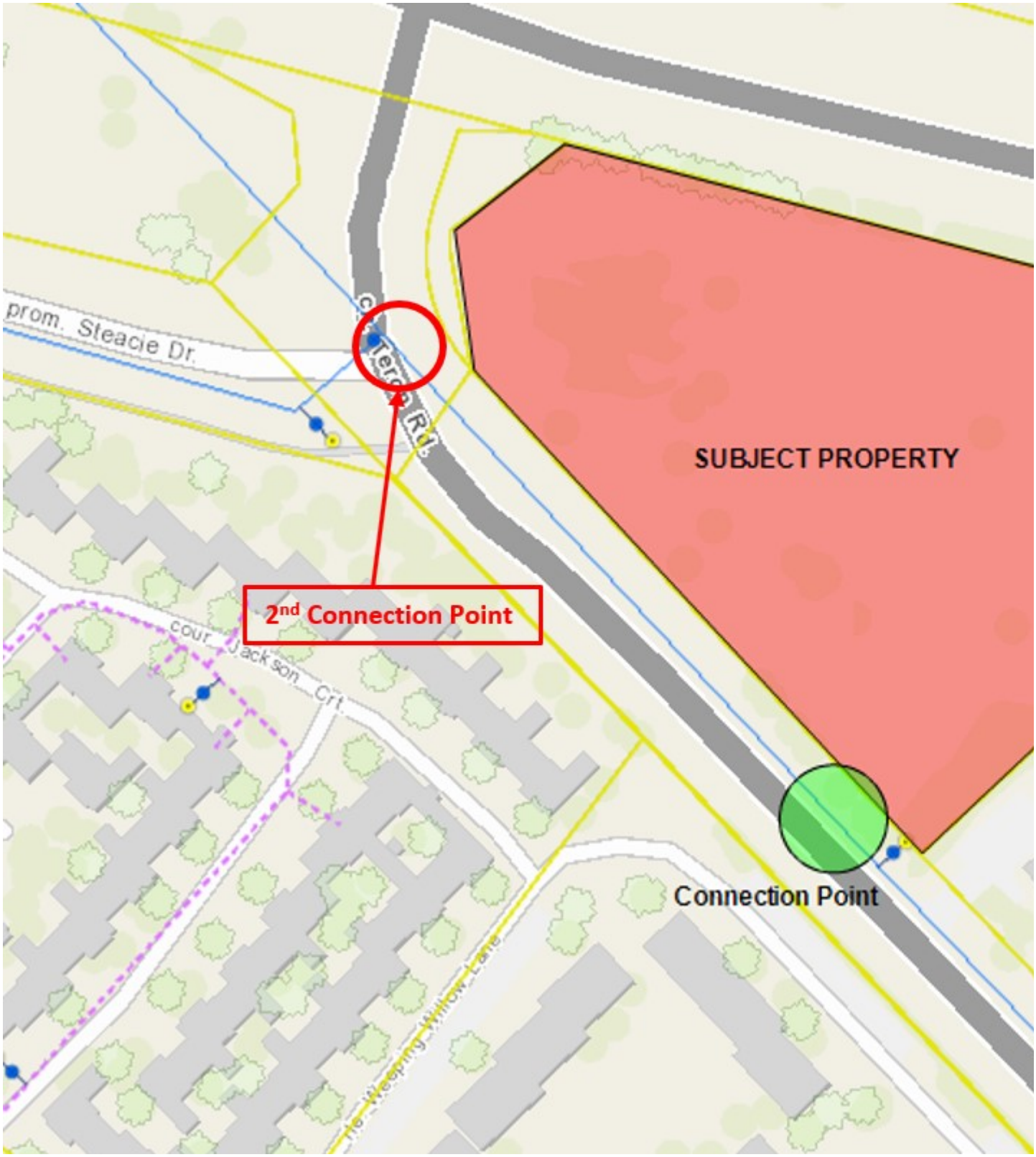
Julie Candow, P.Eng.
Project Manager - Infrastructure Approvals

City of Ottawa
Development Review - West Branch
Tel: 613-580-2424 x 13850

From: Amr Salem <ASalem@dsel.ca>
Sent: September 12, 2019 4:18 PM
To: Candow, Julie <julie.candow@ottawa.ca>
Cc: Brandon Chow <BChow@dsel.ca>
Subject: FW: 1151 Teron Rd - Boundary Conditions Request

Hello Julie,

Further to my e-mail below, we'd also like boundary conditions at a second connection point to the 610mm feedermain @ Stacie Drive. Please see snapshot below



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

From: Amr Salem
Sent: September 5, 2019 3:24 PM
To: 'Julie.candow@ottawa.ca' <Julie.candow@ottawa.ca>
Subject: FW: 1151 Teron Rd - Boundary Conditions Request

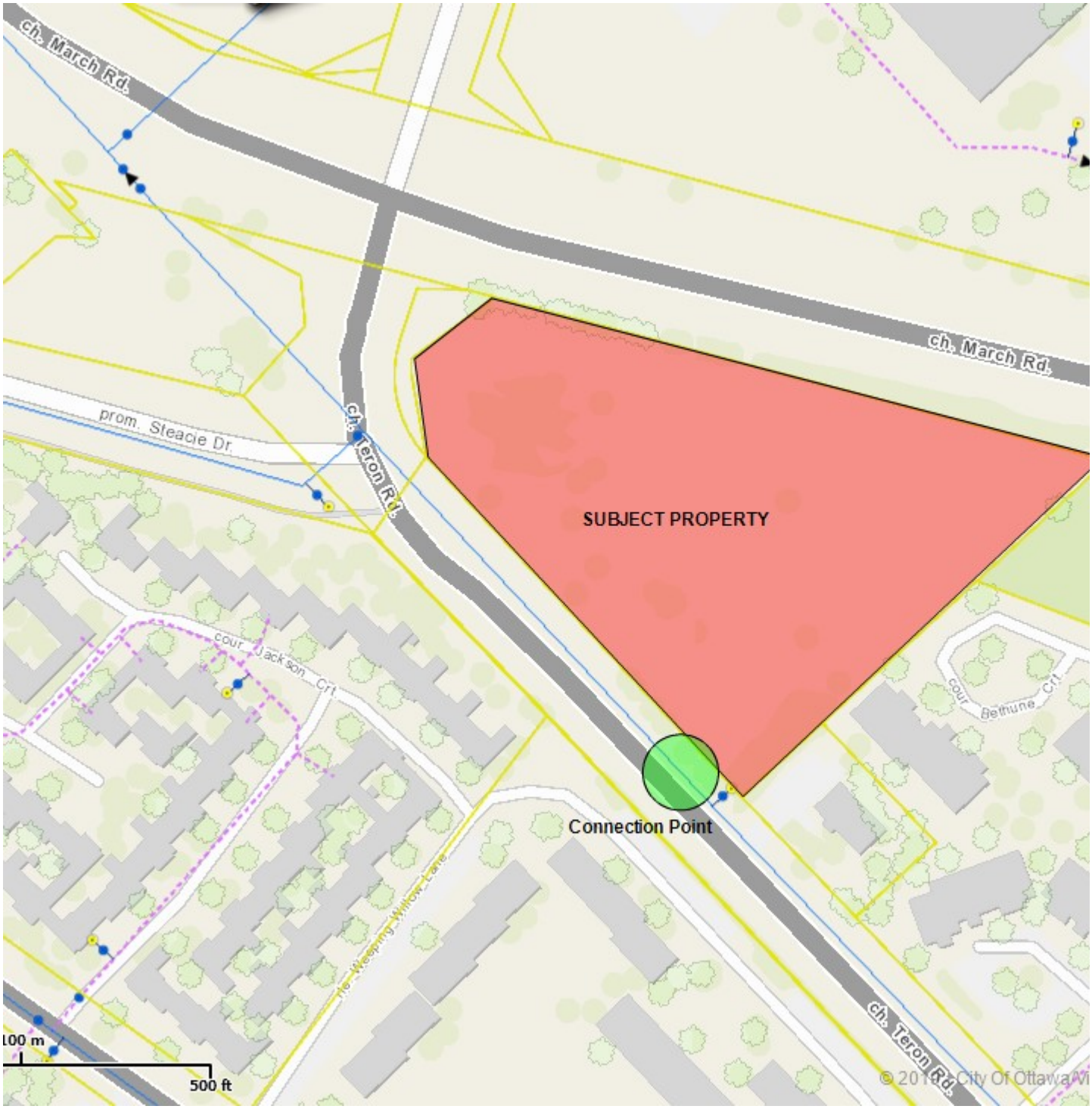
Hey Julie,

We would like to kindly request updated boundary conditions for the proposed development at **1151 Teron Road** using the following proposed development demands:

1. Location of Service / Street Number: **1151 Teron Road**

2. Type of development: **The proposed mixed-use development involves a 9-storey mixed-use building with 1,071 m2 of retail space proposed on the ground floor level. The development consists of a total of 109 residential units.**

3. Proposed Connection points:
   - **Connection to existing 600mm diameter watermain along Teron Road.**
     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	37.2	0.62
Max Day + FUS	130.2 + 11,000 = 11,130.2	2.17+ 183.33 = 185.50
Peak Hour	196.1	3.27

Thanks,

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

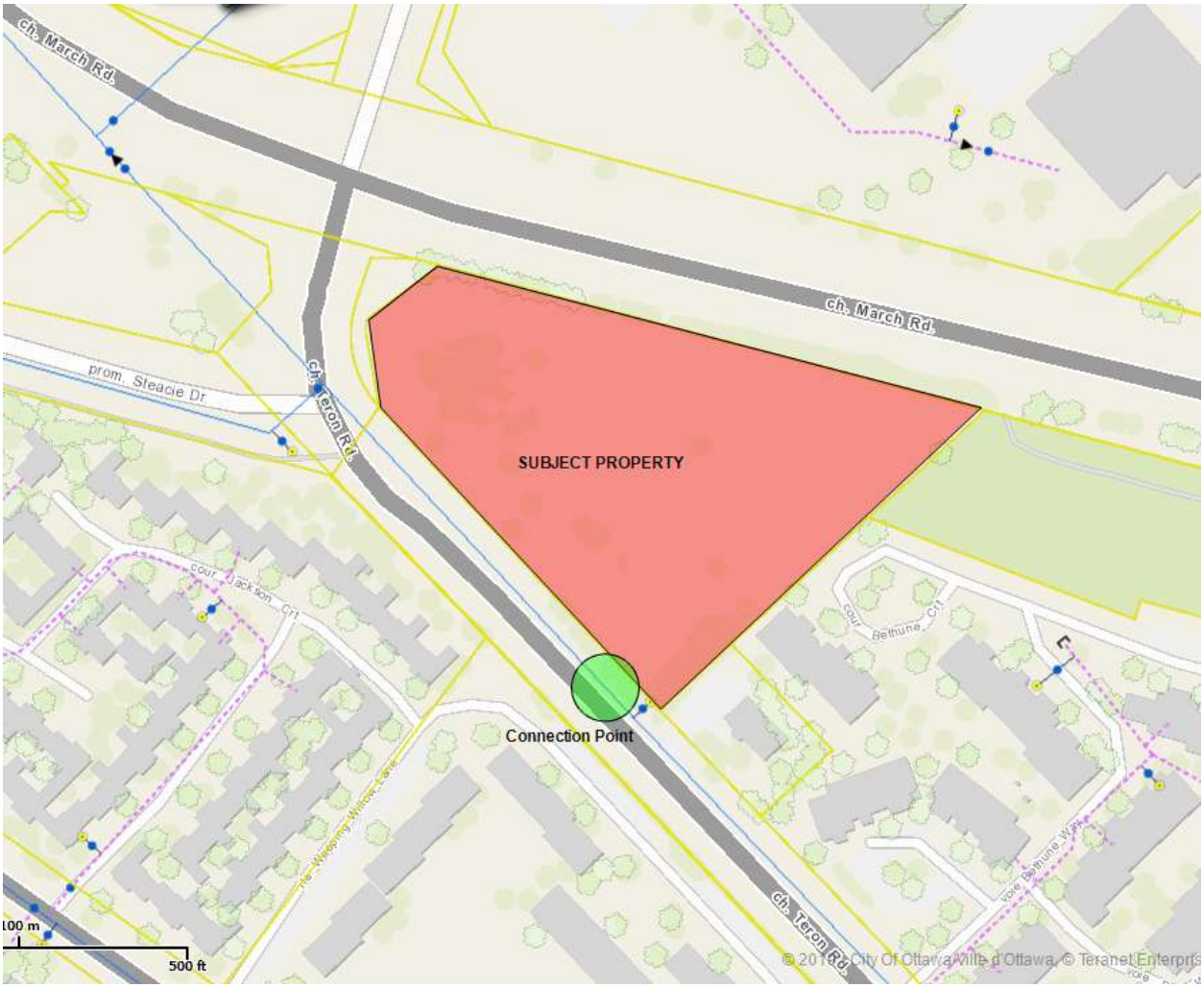
Boundary Conditions for 1151 Teron Road

Information Provided:

Date provided: September 2019

Scenario	Demand	
	L/min	L/s
Average Daily Demand	37.2	0.62
Maximum Daily Demand	130.2	2.17
Peak Hour	196.2	3.27
Fire Flow Demand #1	11000	183.33

Location:



Results:

Connection 1 - Teron Road

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	131.7	59.4
Peak Hour	125.9	51.2
Max Day plus Fire	126.1	51.5

[1] Ground Elevation = 89.9m

Notes:

1. A new service connection to the 610mm transmission main is not permitted.
2. The site requires two connections since the number of residential units exceeds 50.

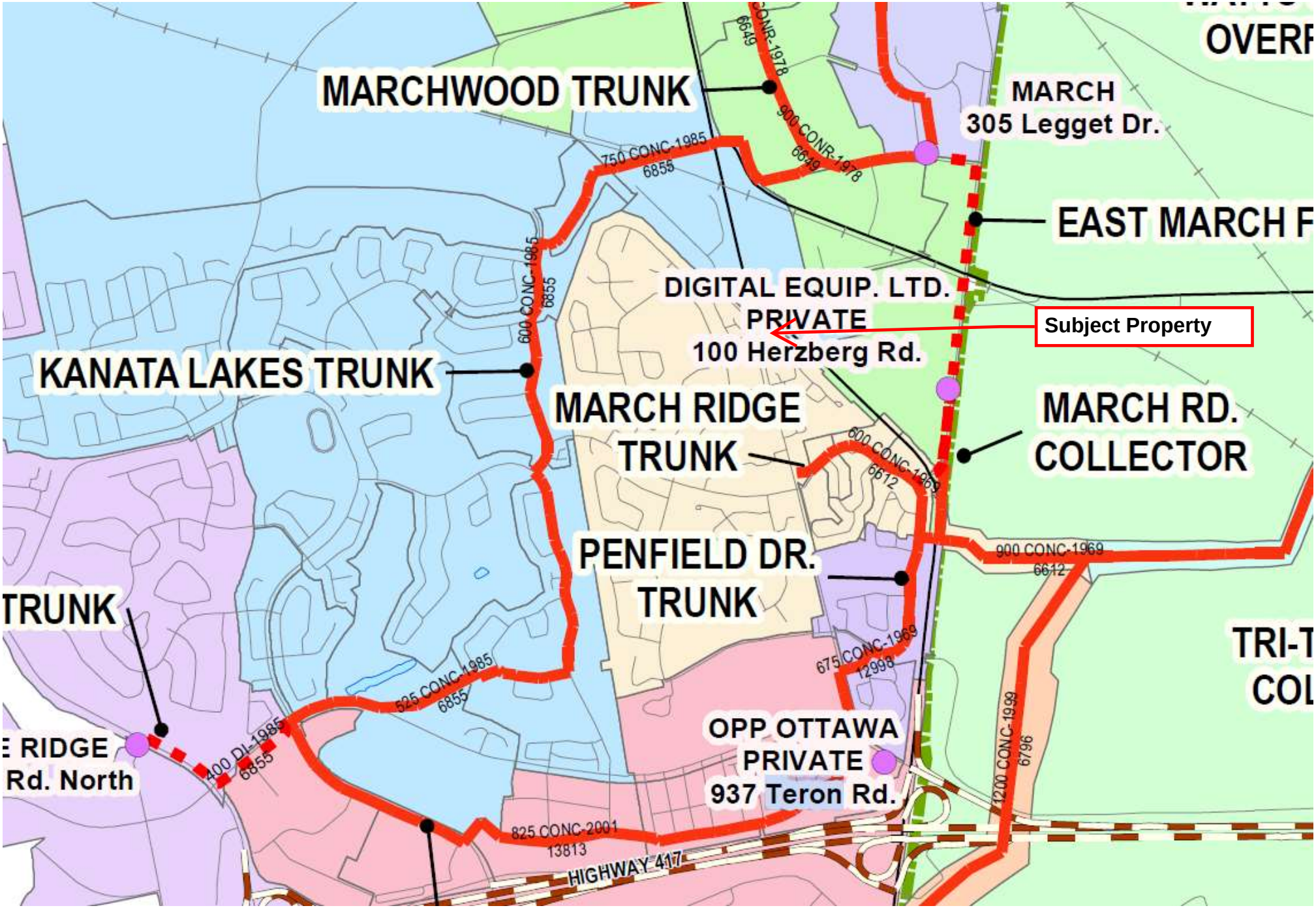
Disclaimer

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 C

Wastewater Collection

Sanitary Sewer Distribution Map



11021028 and 11073656 Canada Inc.
1151 Teron Road
Proposed Site Conditions

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

Site Area	1.342	**ha**

Extraneous Flow Allowances

Infiltration / Inflow (Dry)	**0.07**	**L/s**
Infiltration / Inflow (Wet)	**0.38**	**L/s**
Infiltration / Inflow (Total)	**0.44**	**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	16	23
1 Bedroom	1.4	53	75
2 Bedroom	2.1	40	84
3 Bedroom	3.1		0
Average	1.8		0

Total Pop	**182**	
Average Domestic Flow	**0.59**	**L/s**
Peaking Factor	**3.53**	
Peak Domestic Flow	**2.08**	**L/s**

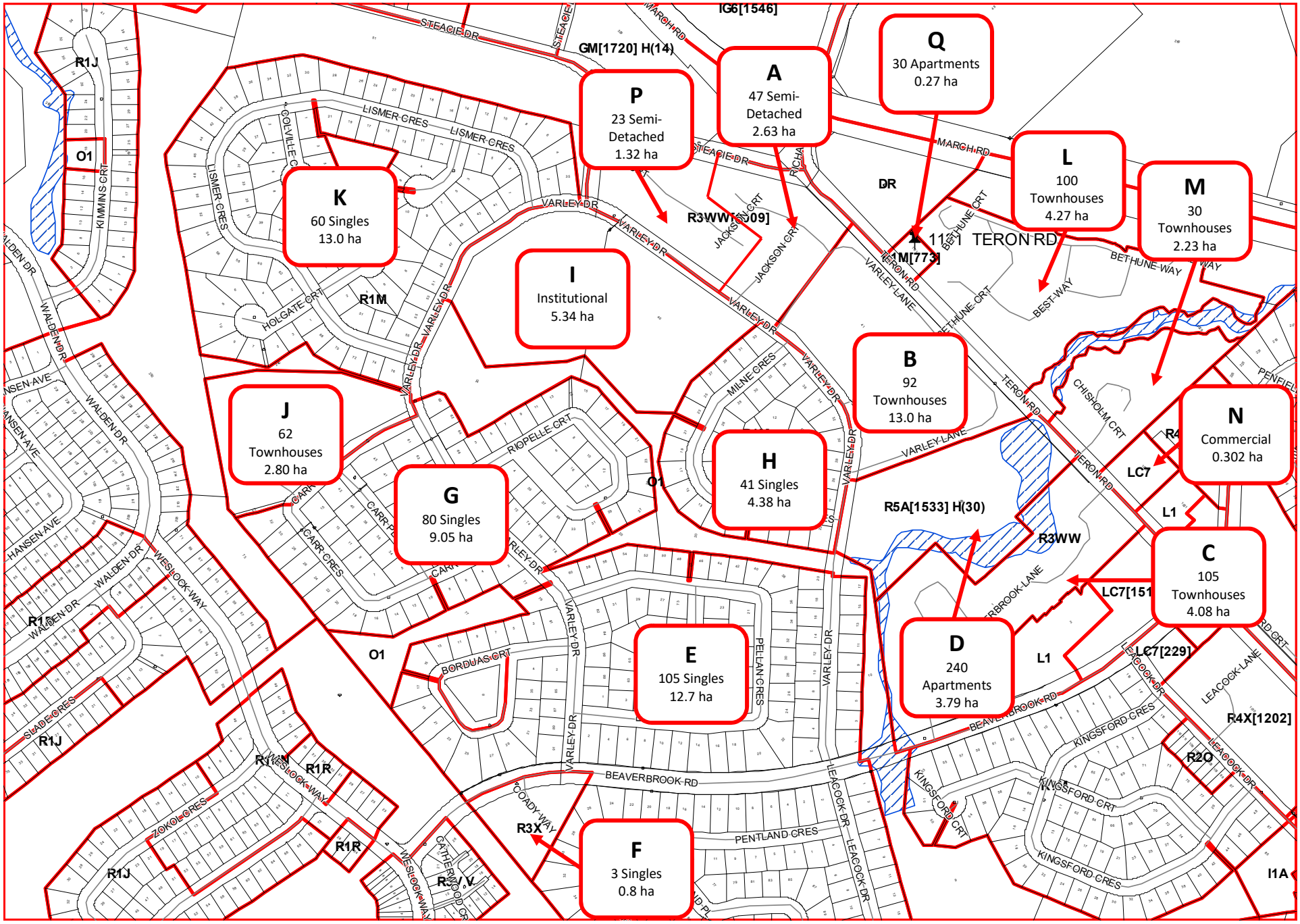
Institutional / Commercial / Industrial Contributions

Property Type	**Unit Rate**	**No. of Units**	**Avg Wastewater (L/s)**
Commercial floor space*	5 $L/m^2/d$	1,071	0.12
Hospitals	900 L/bed/d		0.00
School	70 L/student/d		0.00
Industrial - Light**	35,000 L/gross ha/d		0.00
Industrial - Heavy**	55,000 L/gross ha/d		0.00

Average I/C/I Flow	**0.12**
Peak Institutional / Commercial Flow	0.12
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**0.12**

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

Total Estimated Average Dry Weather Flow Rate	**0.78 L/s**
Total Estimated Peak Dry Weather Flow Rate	**2.27 L/s**
Total Estimated Peak Wet Weather Flow Rate	**2.65 L/s**


A
47 Semi-Detached
2.63 ha
B
92 Townhouses
13.0 ha
C
105 Townhouses
4.08 ha
D
240 Apartments
3.79 ha
E
105 Singles
12.7 ha
F
3 Singles
0.8 ha
G
80 Singles
9.05 ha
H
41 Singles
4.38 ha
I
Institutional
5.34 ha
J
62 Townhouses
2.80 ha
K
60 Singles
13.0 ha
L
100 Townhouses
4.27 ha
M
30 Townhouses
2.23 ha
N
Commercial
0.302 ha
P
23 Semi-Detached
1.32 ha
Q
30 Apartments
0.27 ha
1151 TERON RD
R3WW[1509]
R5A[1533] H(30)
R3X
R4X[1202]
LC7
LC7[229]
LC7[151
L1
R1J
R1M
R1N
R1R
R2O
R2V
I1A
O1
GM[1720] H(14)
IG6[1546]
1M[773]
STEACIE DR
MARCH RD
LISMER CRES
VARLEY DR
VARLEY LANE
TERON RD
JACKSON CRT
BETHUNE CRT
BETHUNE WAY
BEST WAY
CHISHOLM CRT
MILNE CRES
RIOPELLE CRT
CARR CRES
BORDUAS CRT
PELTAN CRES
WALDEN DR
HANSEN AVE
WESTLOCK WAY
ZOKOL CRES
SLADE CRES
COADY WAY
PENTLAND CRES
BEAVERBROOK RD
LEACOCK DR
LEACOCK LANE
KINGSFORD CRES
KINGSFORD CRT
HOLGATE CRT
KIMMINS CRT
GOLVILLE CRT
GATHERWOOD CRT

SANITARY SEWER CALCULATION SHEET: Existing Conditions

PROJECT:
LOCATION: **1151 Teron Rd.**
FILE REF:
DATE: **01-Oct-19**

DESIGN PARAMETERS

Avg. Daily Flow Res.	280	L/p/d	Peak Fact Res. Per Harmons:	Min = 2.0, Max =4.0	Infiltration / Inflow	0.33	L/s/ha
Avg. Daily Flow Comm	50,000	L/ha/d	Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60	m/s full flowing
Avg. Daily Flow Instit.	50,000	L/ha/d	Peak Fact. Instit.	1.5	Max. Pipe Velocity	3.00	m/s full flowing
Avg. Daily Flow Indust	35,000	L/ha/d	Peak Fact. Indust. per MOE graph		Mannings N	0.013	

Existing Condtiotions

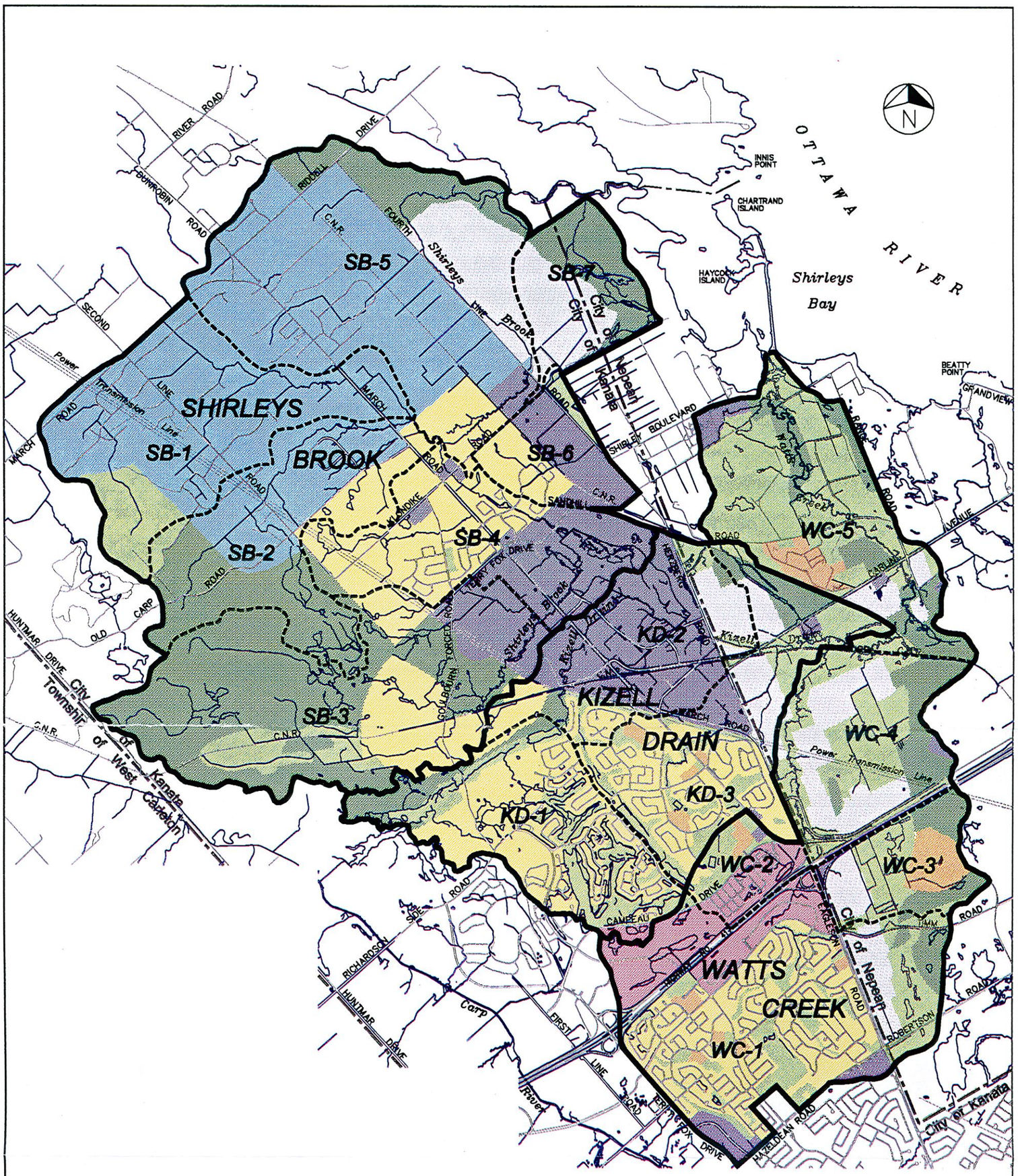
Location			Residential Area and Population									Commercial		Institutional		Industrial			Infiltration				Pipe Data							
Area ID	Up	Down	Area	Number of Units by type				Pop.	Cumulative Area	Cumulative Pop.	Peak. Fact.	Q_{res}	Area	Accu. Area	Area	Accu. Area	Area	Accu. Area	Q_{C+I+I}	Total Area	Accu. Area	Infiltration Flow	Total Flow	DIA	Slope	Length	$A_{hydraulic}$	R	Velocity	Q_{cap}	Q / Q full
			(ha)	Singles	Semi's	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m^2)	(m)	(m/s)	(L/s)	(-)
A	10	9	2.63		47			126.0	2.633	126.0	4.00	1.63		0.00		0.00		0.00	0.0	2.633	2.633	0.737	2.37	250	0.24	92.8	0.049	0.063	0.59	29.1	0.08
B	9	8	3.78			92		248.0	6.413	374.0	4.00	4.85		0.00		0.00		0.00	0.0	3.780	6.413	1.796	6.64	250	0.24	68.6	0.049	0.063	0.59	29.1	0.23
L	8	7	4.27			100		270.0	10.683	644.0	3.92	8.17		0.00		0.00		0.00	0.0	4.270	10.683	2.991	11.16	250	0.24	69.3	0.049	0.063	0.59	29.1	0.38
Q*	7	6	0.27				30	54.0	10.953	698.0	3.90	8.81		0.00		0.00		0.00	0.0	0.270	10.953	3.067	11.88	250	0.24	45.7	0.049	0.063	0.59	29.1	0.41
C			3.79				240	432.0	14.743	1130.0	3.77	13.79		0.00		0.00		0.00	0.0	3.790	14.743	4.128	17.92								
P			1.32		23			63.0	16.060	1193.0	3.75	14.50		0.00		0.00		0.00	0.0	1.317	16.060	4.497	18.99								
E			10.50	105				357.0	26.560	1550.0	3.67	18.43		0.00		0.00		0.00	0.0	10.500	26.560	7.437	25.87								
F			0.80	3				10.0	27.360	1560.0	3.67	18.54		0.00		0.00		0.00	0.0	0.800	27.360	7.661	26.20								
G			9.05	80				272.0	36.410	1832.0	3.62	21.46		0.00		0.00		0.00	0.0	9.050	36.410	10.195	31.66								
H			4.38	41				139.0	40.790	1971.0	3.59	22.94		0.00		0.00		0.00	0.0	4.380	40.790	11.421	34.36								
I			0.00					0.0	40.790	1971.0	3.59	22.94		0.00	5.34	5.34		0.00	4.6	5.340	46.130	12.916	40.49								
J			2.80			62		167.0	43.590	2138.0	3.56	24.69		0.00		5.34		0.00	4.6	2.800	48.930	13.700	43.02								
K	6	5	12.99	60				204.0	56.580	2342.0	3.53	26.80		0.00		5.34		0.00	4.6	12.990	61.920	17.338	48.78	525	0.10	19.2	0.216	0.131	0.63	136.0	0.36
	5	4	0.00					0.0	56.580	2342.0	3.53	26.80		0.00		5.34		0.00	4.6	0.000	61.920	17.338	48.78	525	0.10	84.2	0.216	0.131	0.63	136.0	0.36
M	4	3	2.23			30		81.0	58.810	2423.0	3.52	27.64		0.00		5.34		0.00	4.6	2.230	64.150	17.962	50.23	525	0.10	19.3	0.216	0.131	0.63	136.0	0.37
N	3	2	0.00					0.0	58.810	2423.0	3.52	27.64	0.30	0.30		5.34		0.00	4.9	0.300	64.450	18.046	50.58	525	0.10	56.3	0.216	0.131	0.63	136.0	0.37
D	2	1	4.08			105		284.0	62.890	2707.0	3.48	30.53		0.30		5.34		0.00	4.9	4.080	68.530	19.188	54.61	600	0.11	109.2	0.283	0.150	0.72	203.5	0.27

Note: Slope for segment between nodes 1-2 from City of Ottawa GIS data. All other slopes assumed minimum values from City of Ottawa Sewer Design Guidline

** Anticipated demands per proposed development in neighboring parcel at 1131 Teron Road*

APPENDIX D

Stormwater Management



SHIRLEYS BROOK/WATTS CREEK SUBWATERSHED STUDY

REGION OF OTTAWA-CARLTON AND CITY OF KANATA

FUTURE LAND USE

LEGEND

- Subwatershed Boundary
- Subarea Boundary
- Watercourse/Waterbody
- Roads
- Railway
- Municipal Boundary
- SB-1 Subarea Number

Land Use

- Urban Residential
- Rural Residential
- Institutional
- Open Space
- Forest/Woodland
- Industrial/Commercial
- Agriculture
- Kanata Town Centre

DILLON CONSULTING

SCALE	FIGURE	PROJECT NO.
1 : 40,000	5.1	97-4771

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2004

Existing Drainage Area Charateristics

Area	1.34	ha	
C	0.20	Rational Method runoff coefficient	
t_c	14.7	min	** Min. time of concentrtaion = 10min*

Estimated Peak Flow

	2-year	**5-year**	**100-year**	
i	62.5	84.5	144.6	mm/hr
Q	46.6	63.0	134.7	L/s

* C value calculated as a composite value based on existing site soil conditions and topography.
value derived using Table 5.7 Runoff Coefficients for Various Soil Conditions from the Ottawa Sewer Design Guidelines,

Drainage Basin Characteristics

Area ID	
A (ha)	1.342
L (m)	93
Up Elev	89.86
Dn Elev	88
S (%)	2.0
CN (-)	61
Tc (min)	14.7

**CN value was selected assuming Hydrologic Soil Group B and good conditions (grass covering >75%)*

Time of Concentration per SCS lag equation

$$t_c = \frac{100L^{0.8}\left[\left(\frac{1000}{CN}\right)-9\right]^{0.7}}{1900S^{0.5}}$$

L, length in ft
CN, SCS runoff curve number
S, average watershed slope in (%)

11021028 and 11073656 Canada Inc.
1151 Teron Road
Proposed Conditions
Option 1 - Outlet to Municipal Ditch

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

Target Flow Rate

Area 1.34 ha
C 0.20 Rational Method runoff coefficient
t_c 14.7 min

	5-year		100-year	
i	84.5	mm/hr	144.6	mm/hr
Q	63.0	L/s	134.7	L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area 0.13 ha **10% of site area assumed unattenuated as a conservative estimate*
C 0.40 Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}* (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10.0	104.2	15.5	15.5	0.0	0.0	178.6	33.3	33.3	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 1.21 ha
C 0.65 Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10	104.2	227.2	47.4	179.9	107.9	178.6	486.7	101.5	385.3	231.2
15	83.6	182.2	47.4	134.9	121.4	142.9	389.5	101.5	288.1	259.2
20	70.3	153.2	47.4	105.8	127.0	120.0	327.0	101.5	225.5	270.6
25	60.9	132.8	47.4	85.4	128.1	103.8	283.1	101.5	181.6	272.4
30	53.9	117.6	47.4	70.2	126.4	91.9	250.4	101.5	149.0	268.1
35	48.5	105.8	47.4	58.4	122.7	82.6	225.1	101.5	123.6	259.6
40	44.2	96.4	47.4	49.0	117.6	75.1	204.8	101.5	103.4	248.1
45	40.6	88.6	47.4	41.2	111.3	69.1	188.2	101.5	86.8	234.3
50	37.7	82.1	47.4	34.7	104.2	64.0	174.3	101.5	72.9	218.6
55	35.1	76.6	47.4	29.2	96.5	59.6	162.5	101.5	61.1	201.5
60	32.9	71.8	47.4	24.5	88.1	55.9	152.4	101.5	50.9	183.2
65	31.0	67.7	47.4	20.3	79.3	52.6	143.5	101.5	42.0	164.0
70	29.4	64.1	47.4	16.7	70.1	49.8	135.7	101.5	34.3	143.9
75	27.9	60.8	47.4	13.5	60.5	47.3	128.8	101.5	27.3	123.1
80	26.6	57.9	47.4	10.6	50.7	45.0	122.6	101.5	21.2	101.6
85	25.4	55.3	47.4	8.0	40.6	43.0	117.1	101.5	15.6	79.7
90	24.3	53.0	47.4	5.6	30.2	41.1	112.1	101.5	10.6	57.2
95	23.3	50.8	47.4	3.5	19.7	39.4	107.5	101.5	6.0	34.4
100	22.4	48.9	47.4	1.5	9.0	37.9	103.3	101.5	1.9	11.1
105	21.6	47.1	47.4	0.0	0.0	36.5	99.5	101.5	0.0	0.0
110	20.8	45.4	47.4	0.0	0.0	35.2	96.0	101.5	0.0	0.0
115	20.1	43.9	47.4	0.0	0.0	34.0	92.7	101.5	0.0	0.0
120	19.5	42.5	47.4	0.0	0.0	32.9	89.7	101.5	0.0	0.0
125	18.9	41.1	47.4	0.0	0.0	31.9	86.9	101.5	0.0	0.0
130	18.3	39.9	47.4	0.0	0.0	30.9	84.2	101.5	0.0	0.0
135	17.8	38.7	47.4	0.0	0.0	30.0	81.8	101.5	0.0	0.0
140	17.3	37.7	47.4	0.0	0.0	29.2	79.5	101.5	0.0	0.0
145	16.8	36.6	47.4	0.0	0.0	28.4	77.3	101.5	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)

5-year $Q_{attenuated}$ 47.37 L/s **100-year $Q_{attenuated}$ 101.47 L/s**
5-year Max. Storage Required 128.1 m^3 **100-year Max. Storage Required 272.4 m^3**

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	15.54	0.0	33.28	0.0
Attenutated Areas	47.37	128.1	101.47	272.4
Total	**62.9**	**128.15**	**134.75**	**272.4**

11021028 and 11073656 Canada Inc.
1151 Teron Road
Proposed Conditions
Option 2 - Outlet to Local Storm Sewer

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

Target Flow Rate

Area	1.34	ha
C	0.20	Rational Method runoff coefficient
t_c	14.7	min

5-year

i	84.5	mm/hr
Q	63.0	L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area	0.13	ha
C	0.40	Rational Method runoff coefficient

**10% of site area assumed unattenuated as a conservative estimate*

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}* (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10.0	104.2	15.5	15.5	0.0	0.0	178.6	33.3	33.3	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	1.21	ha
C	0.65	Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10	104.2	227.2	13.9	213.3	128.0	178.6	486.7	29.7	457.0	274.2
15	83.6	182.2	13.9	168.3	151.5	142.9	389.5	29.7	359.8	323.8
20	70.3	153.2	13.9	139.3	167.1	120.0	327.0	29.7	297.2	356.7
25	60.9	132.8	14.0	118.8	178.3	103.8	283.1	29.7	253.3	380.0
30	53.9	117.6	14.0	103.6	186.5	91.9	250.4	29.7	220.7	397.2
35	48.5	105.8	14.0	91.8	192.8	82.6	225.1	29.7	195.4	410.2
40	44.2	96.4	14.0	82.4	197.7	75.1	204.8	29.7	175.1	420.2
45	40.6	88.6	14.0	74.6	201.4	69.1	188.2	29.7	158.5	427.9
50	37.7	82.1	14.0	68.1	204.3	64.0	174.3	29.7	144.6	433.8
55	35.1	76.6	14.0	62.6	206.5	59.6	162.5	29.7	132.8	438.2
60	32.9	71.8	14.0	57.8	208.1	55.9	152.4	29.7	122.6	441.4
65	31.0	67.7	14.0	53.7	209.3	52.6	143.5	29.7	113.8	443.7
70	29.4	64.1	14.0	50.0	210.1	49.8	135.7	29.7	106.0	445.1
75	27.9	60.8	14.0	46.8	210.5	47.3	128.8	29.7	99.1	445.8
80	26.6	57.9	14.0	43.9	210.6	45.0	122.6	29.7	92.9	445.9
85	25.4	55.3	14.1	41.3	210.5	43.0	117.1	29.7	87.3	445.4
90	24.3	53.0	14.1	38.9	210.1	41.1	112.1	29.7	82.3	444.5
95	23.3	50.8	14.1	36.8	209.5	39.4	107.5	29.7	77.7	443.2
100	22.4	48.9	14.1	34.8	208.8	37.9	103.3	29.7	73.6	441.4
105	21.6	47.1	14.1	33.0	207.9	36.5	99.5	29.7	69.7	439.4
110	20.8	45.4	14.1	31.3	206.8	35.2	96.0	29.7	66.2	437.0
115	20.1	43.9	14.1	29.8	205.6	34.0	92.7	29.7	62.9	434.3
120	19.5	42.5	14.1	28.4	204.3	32.9	89.7	29.7	59.9	431.4
125	18.9	41.1	14.1	27.0	202.8	31.9	86.9	29.7	57.1	428.3
130	18.3	39.9	14.1	25.8	201.3	30.9	84.2	29.7	54.5	424.9
135	17.8	38.7	14.1	24.6	199.6	30.0	81.8	29.7	52.0	421.4
140	17.3	37.7	14.1	23.6	197.9	29.2	79.5	29.7	49.7	417.6
145	16.8	36.6	14.1	22.5	196.1	28.4	77.3	29.7	47.6	413.7

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 $Q_{attenuated}$	**14.05 L/s**	**100-year $Q_{attenuated}$**	**29.75 L/s**
5-year Max. Storage Required	**210.6 m^3**	**100-year Max. Storage Required**	**445.9 m^3**

11021028 and 11073656 Canada Inc.
1151 Teron Road
Proposed Conditions
Option 2 - Outlet to Local Storm Sewer

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	15.54	0.0	33.28	0.0
Attenutated Areas	14.05	210.6	29.75	445.9
Total	**29.6**	**210.60**	**63.03**	**445.9**

Amr Salem

From: Amr Salem
Sent: September 13, 2019 12:28 PM
To: 'Julie.candow@ottawa.ca'
Cc: Brandon Chow
Subject: 1151 Teron Road SWM criteria
Attachments: 1131 Teron Preconsultation Notes.pdf

Hey Julie,

I wanted to confirm stormwater management criteria for our subject site at 1151 Teron Road. It is my understanding that the criteria previously stated in the pre-consultation notes (*attached for your reference*) are assuming that the proposed development outlets to the local sewer within Teron Road right-of-way.

Should we choose to keep discharging to the existing outlet at the existing ditch located at the north of the subject site, can you please confirm that maintaining pre to post conditions would be acceptable as per the previous AES for the subject site?

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

Amr Salem

From: Candow, Julie <julie.candow@ottawa.ca>
Sent: September 16, 2019 10:36 AM
To: Amr Salem
Cc: Brandon Chow
Subject: RE: 1151 Teron Rd - Boundary Conditions Request
Attachments: 1151 Teron Road_Boundary Conditions_12Sept2019.docx

Hi Amr,

As per the pre-consultation notes:

Connections to the existing 610mm feedermain will not be accepted. *Proposed water service connections could be looped from the existing hydrant lateral at the south-east corner of the property to a connection off Steacie Drive. Looped connections must be separated by an existing or proposed valve to allow for maintenance of the 610mm feedermain.*

Our Infrastructure Planning department has provided preliminary boundary condition results assuming one connection to the 610mm feedermain, however, connections to local watermains will need to be provided. A minimum of 2 watermain connections will be required assuming the basic day demand remains above 50 m3/day (as per City of Ottawa Water Distribution Guidelines 2010).

In response to your stormwater management inquiry, if stormwater flows were to outlet to an existing ditch, the allocated release rate would be pre to post for all storm events. Please note that a MECP Environmental Compliance Approval (ECA) would be required if stormwater flows were to outlet to an existing ditch.

Regards,

Julie Candow, P.Eng.
Project Manager - Infrastructure Approvals

City of Ottawa
Development Review - West Branch
Tel: 613-580-2424 x 13850

From: Amr Salem <ASalem@dsel.ca>
Sent: September 12, 2019 4:18 PM
To: Candow, Julie <julie.candow@ottawa.ca>
Cc: Brandon Chow <BChow@dsel.ca>
Subject: FW: 1151 Teron Rd - Boundary Conditions Request

DRAWINGS / FIGURES

SITE PLAN LEGEND

- BUILDING AREA
- SOFT LANDSCAPING. REFER TO LANDSCAPE DRAWINGS
- HARD LANDSCAPING. REFER TO LANDSCAPE DRAWINGS
- ASPHALT. REFER TO LANDSCAPE DRAWINGS
- BUILDING ENTRANCE / EXIT (GROUND FLOOR)
- BUILDING EXIT (GROUND FLOOR)
- TRAFFIC DIRECTION
- ROOF DRAIN
- 5 200 / 2 600 CAR PARKING
- 5 200 / 2 400 BARRIER-FREE PARKING (TYPE B)
- 5 200 / 3 400 BARRIER-FREE PARKING (TYPE A)

SIGNS

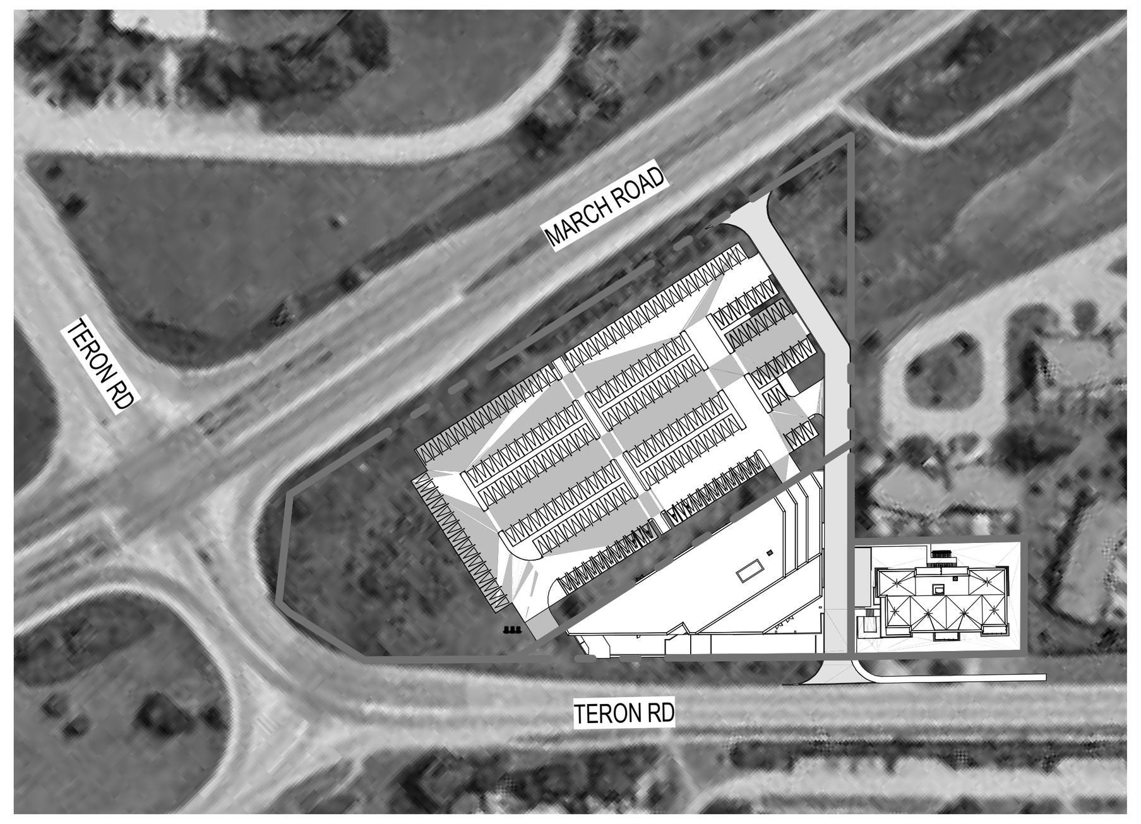
SIGNS SHALL BE PROVIDED FOR ALL VISITOR PARKINGS, BARRIER FREE PARKINGS & FIRE ROUTES
ALL THE SIGNS SHALL FOLLOW THE SPECIFICATIONS OF THE CITY OF OTTAWA

THE PARKING SIGNS WILL BE LABELED AS:
"VISITOR ONLY"
"RESIDENT ONLY"
"ACCESSIBLE PARKING"
AND REINFORCED: "UNAUTHORIZED VEHICLES TOWED AWAY"

GENERAL NOTE:
WHEN RETAINING WALLS ARE GREATER THAN 1 METER IN HEIGHT THE DESIGN WILL BE DONE BY A STRUCTURAL ENGINEER

PARKING, DRIVEWAY, PATHWAY AND TERRACE LIGHTING TO BE PROVIDED WITH LIGHTING FIXTURES LOCATED ON BUILDINGS

ROOF SCUPERS LOCATED AT A MAXIMUM OF 150mm ABOVE DRAINS

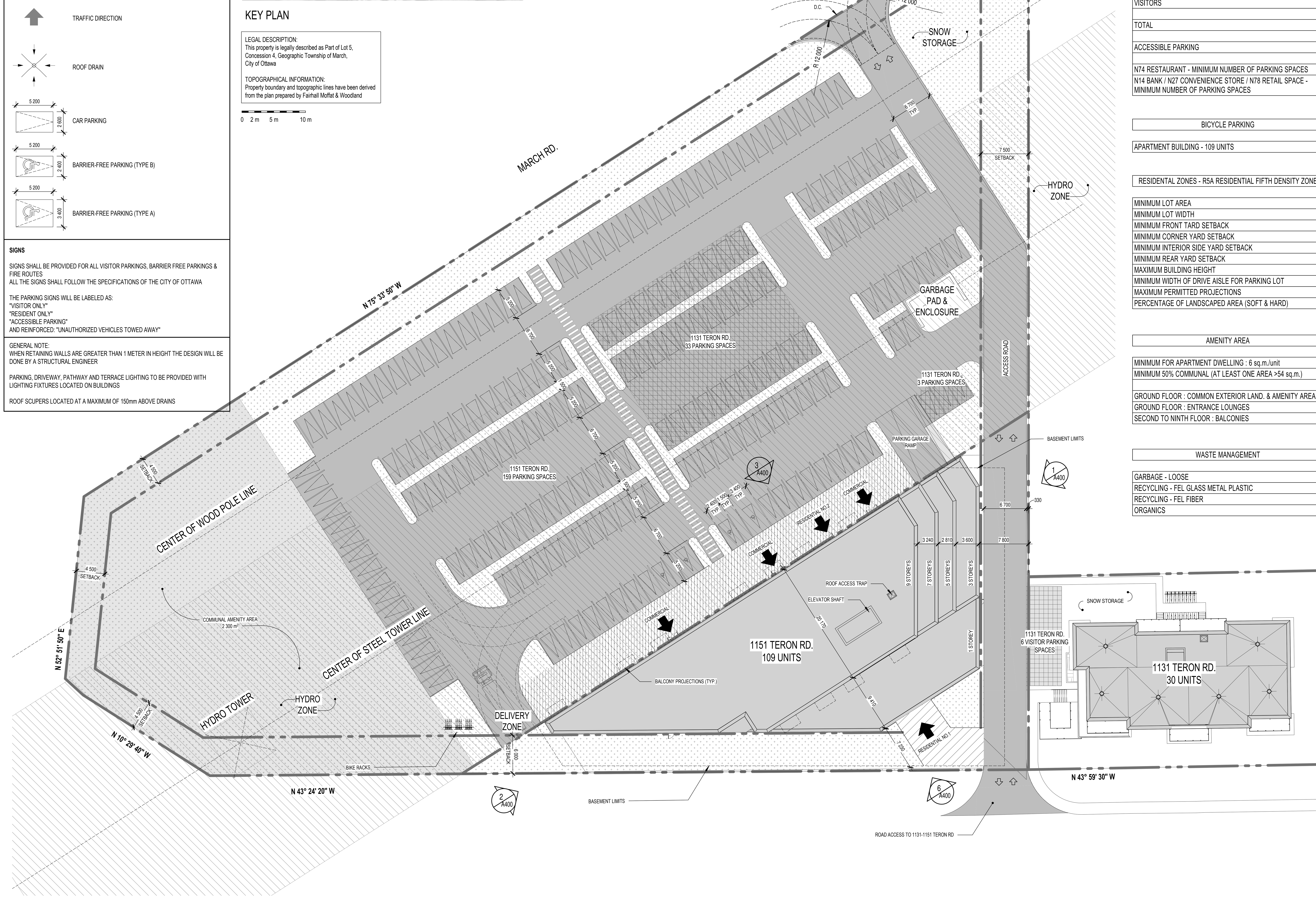


KEY PLAN

LEGAL DESCRIPTION:
This property is legally described as Part of Lot 5, Concession 4, Geographic Township of March, City of Ottawa

TOPOGRAPHICAL INFORMATION:
Property boundary and topographic lines have been derived from the plan prepared by Fairhall Moffat & Woodland

0 2 m 5 m 10 m



PROJECT STATISTICS	
PROPERTY AREA	13 424 sq.m.
BUILDING HEIGHT	30 m
GROSS BUILDING FLOOR AREA	10 170 sq.m.
GROSS COMMERCIAL FLOOR AREA (GROUND FLOOR)	1 071 sq.m.

UNIT STATISTICS	PROVIDED
BACHELOR	16
1 BEDROOM	53
2 BEDROOMS	40

PARKING	REQUIRED	PROVIDED
APARTMENT BUILDING - 109 UNITS	131 (1.2 RATIO)	46 + 137 = 183
VISITORS	22 (0.2 RATIO)	22
TOTAL	153	205
ACCESSIBLE PARKING	6 (3 TYPE A + 3 TYPE B)	6
N74 RESTAURANT - MINIMUM NUMBER OF PARKING SPACES	(10 / 100 sq.m.) 107	TBD
N14 BANK / N27 CONVENIENCE STORE / N78 RETAIL SPACE - MINIMUM NUMBER OF PARKING SPACES	(3.4 / 100 sq.m.) 36	TBD

BICYCLE PARKING	REQUIRED	PROVIDED
APARTMENT BUILDING - 109 UNITS	55 (0.5 RATIO)	64

RESIDENTAL ZONES - R5A RESIDENTIAL FIFTH DENSITY ZONE	REQUIRED	PROVIDED
MINIMUM LOT AREA	540 sq.m.	13 424 sq.m.
MINIMUM LOT WIDTH	18 m	28.8 m
MINIMUM FRONT TARD SETBACK	6 m (SCH. 327)	6 m
MINIMUM CORNER YARD SETBACK	N/A	N/A
MINIMUM INTERIOR SIDE YARD SETBACK	7.5 m (SCH. 327)	7.5 m
MINIMUM REAR YARD SETBACK	0 m (SCH. 327)	0 m
MAXIMUM BUILDING HEIGHT	30 m / 9 storeys (SCH. 327)	30 m / 9 storeys
MINIMUM WIDTH OF DRIVE AISLE FOR PARKING LOT	6.7 m	6.7 m
MAXIMUM PERMITTED PROJECTIONS	2 m	2 m
PERCENTAGE OF LANDSCAPED AREA (SOFT & HARD)	30%	42% (5 588 / 13 424 sq.m.)

AMENITY AREA	REQUIRED	PROVIDED
MINIMUM FOR APARTMENT DWELLING : 6 sq.m./unit	654 sq.m.	3 152 sq.m.
MINIMUM 50% COMMUNAL (AT LEAST ONE AREA >54 sq.m.)	327 sq.m.	2 498 sq.m.
GROUND FLOOR : COMMON EXTERIOR LAND. & AMENITY AREA	-	2 300 sq.m.
GROUND FLOOR : ENTRANCE LOUNGES	-	198 sq.m.
SECOND TO NINTH FLOOR : BALCONIES	-	654 sq.m.

WASTE MANAGEMENT	REQUIRED	PROVIDED
GARBAGE - LOOSE	12.0 c.yd. (0.110 c.yd./UN.)	3 x 4-yard containers
RECYCLING - FEL GLASS METAL PLASTIC	2.0 c.yd. (0.018 c.yd./UN.)	1 x 2-yard container
RECYCLING - FEL FIBER	4.1 c.yd. (0.038 c.yd./UN.)	1 x 2-y. + 1 x 4-y. container
ORGANICS	523L (240L / 50 UNITS)	3 x 240L

GENERAL NOTES Notes générales

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STRUCTURE Structure
FIRM
ADDRESS
PHONE NUMBER

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FIRM
ADDRESS
PHONE NUMBER

LANDSCAPE ARCHITECT Architecture de paysage
FIRM
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CLIENT Client

PROJECT Ouvrage
1151 TERON ROAD

LOCATION Emplacement
OTTAWA

NO PROJET No.
12003.00

NO	REVISION	DATE (yy-mm-dd)
1	ISSUED FOR COMMENTS	2019.08.22

DRAWN BY Dessiné par
A.CA.

CHECKED BY Vérifié par
Ant.C.

DATE (mm.dd.yy)
18/07/24

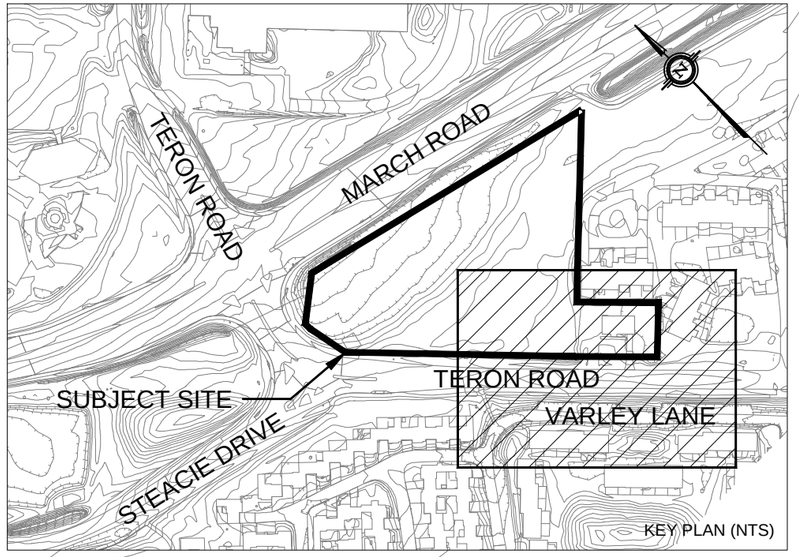
SCALE Échelle
Comme indiqué

DRAWING TITLE Titre du dessin
SITE PLAN

REVISION Révision
1

DWG NUMBER No. Dessin
A100

C:\Users\acardinal\Documents\12003_1151 TERON_ARCH_R18_option2_acardinal.rvt



SUBJECT PROPERTY

PROPOSED SANITARY SERVICE
34.8m — 200mmø @ 0.34%
INV.(NORTH PL)=86.63
INV.(SOUTH PL)=86.55

EX. 300mmø STM
EX. 600mmø WATERMAIN
EX. CBMH
T/L=89.92±
W.INV=88.09±
E.INV=88.09±
S.INV=88.25
EX. STMMH
T/L=90.10±
W.INV=
E.INV=88.50±
EX. 300mmø STM
EX. STMMH
T/L=90.25±
W.INV=
S.INV=89.05±
EX. 225mmø STM
EX. 225mmø STM
EX. 600mmø WATERMAIN
EX. CB
T/L=89.40±
W.INV=88.70
E.INV=88.70
EX. CB
T/L=89.85±
INV=88.82
EX. 24m ROW

TERON ROAD

EX. RETAINING WALL
EX. STMMH
T/L=89.36
E.INV=86.83
W.INV=86.83
EX. STMMH
T/L=89.050
E.INV=86.695
6.0m
0.3m RESERVE
EX. STM
EX. 250mmø SAN
6.0m
EX. STM
EX. 250mmø SAN
EX. 250mmø SAN
EX. SANMH
T/L=?
W.INV=72.51?
E.INV=72.51?
EX. 250mmø SAN
EX. SANMH
T/L=88.92
SE.INV=86.78
NW.INV=86.81
W.INV=86.82
EX. 250mmø SAN
EX. SANMH
T/L=89.424
E.INV=86.503
EX. SANMH
T/L=?
W.INV=72.38?
E.INV=72.38?
EX. SANMH
T/L=89.25±
W.INV=86.85±

VARLEY LANE

APPROXIMATE LOCATION OF EX. SEWER EASEMENT

APPROXIMATE LOCATION OF PROPOSED SEWER EASEMENT

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EXISTING SANITARY SEWER
EXISTING STORM SEWER
EXISTING WATERMAIN
PROPOSED SANITARY SEWER
PROPOSED STORM SEWER
PROPOSED WATERMAIN
PROPERTY LINE

1131 TERON ROAD

PROJ NO.:	11-541
DRAWN BY:	AJT
DATE:	2018-03-26
SCALE:	1:500
FIGURE NO.:	FIG-1

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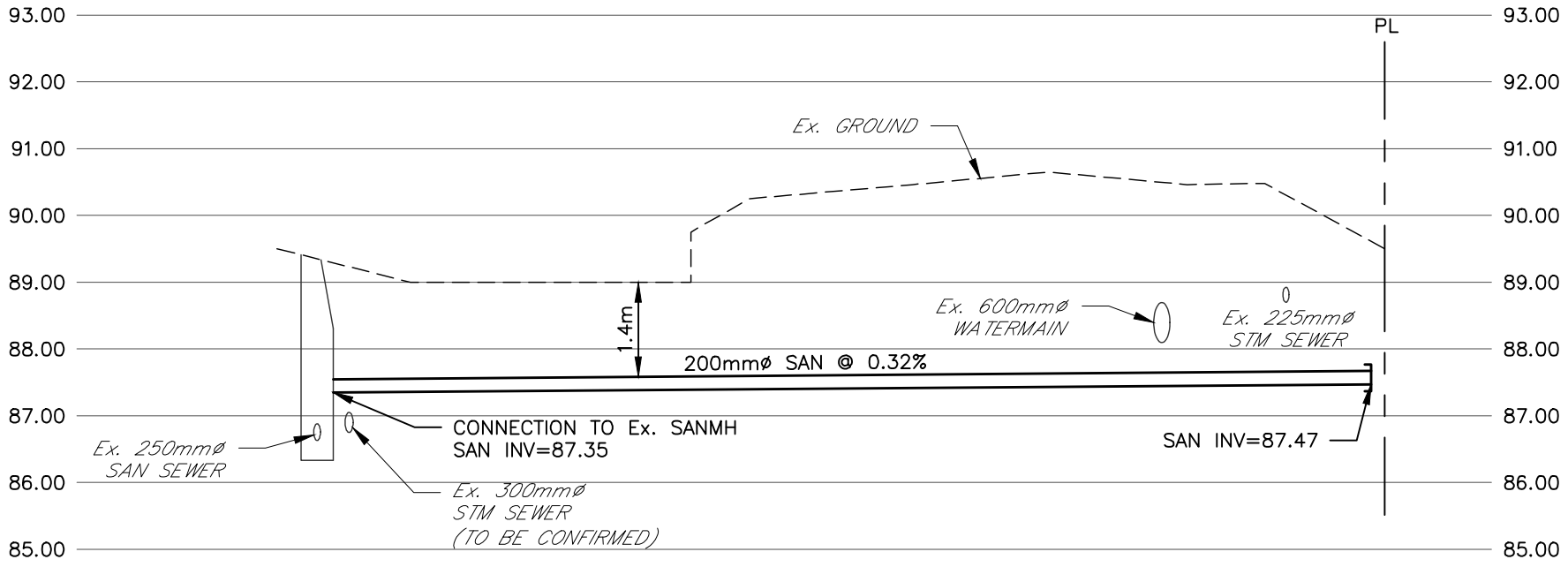
NOTE: ELEVATION OF Ex. 600mmø WATERMAIN TO BE CONFIRMED



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1131 TERON RD
SANITARY SERVICE CROSS SECTION

PROJECT No.:	11-541
SCALE:	H 1:250, V 1:100
DATE:	DECEMBER 2018
FIGURE:	1

z:\projects\11-541_holzman_1131-teron\b_design\b2_drawings\b2-5_sketches and figures\2018-11-28_service-section\2018-12-10_541_serv_section.dwg