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SITE SERVICING AND STORMWATER MANAGEMENT REPORT

FOR

1343678 ONTARIO LTD
1330 CARLING AVENUE

CITY OF OTTAWA

PROJECT NO.: 19-1144
CITY APPLICATION NO.: D07-12-XX-XXXX

APRIL 2020 – REV 1

SITE SERVICING AND STORMWATER MANAGEMENT REPORT
FOR
1330 CARLING AVENUE

1343678 ONTARIO LTD

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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained by 1343678 Ontario Ltd to prepare a Site Servicing and Stormwater Management report in support of the application for a Zoning By-law Amendment (ZBLA) and Site Plan Control (SPC) at 1330 Carling Avenue.

The subject property is located within the City of Ottawa urban boundary, in River Ward. As illustrated in ***Figure 1***, the subject property is located south of the intersection of Carling Avenue and Archibald Street. Comprised of a single parcel the subject property measures approximately **0.2** ***ha*** and is zoned Arterial Main Street zone (AM10).

Figure 1: Site Location

The proposed ZBLA and SPC would allow for the development of a 24-Storey Mixed Use Residential building fronting onto Carling Avenue and Archibald Street. The proposed development would include approximately ***792 m²*** of ground level retail and underground parking, with access from Archibald Street. The residential component is comprised of approximately ***175 units***. A copy of the 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 proposed development is supported by existing municipal services.

1.1 Existing Conditions

The existing site includes a one-storey commercial building including an asphalt parking lot. The elevations range between 74.30 m and 73.67 m with a grade change of approximately 1.6% from the Northeast to the Southwest corner of the property.

The subject site is located at an existing low point at Archibald Street. Overland flow is directed northeast towards Merivale Road with a spill elevation of 74.47 m.

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:

Archibald Street

- 152 mm diameter unlined cast iron watermain
- 225 mm diameter concrete sanitary sewer tributary to the Cave Creek Collector
- 900 mm diameter concrete storm sewer tributary to the Cave Creek Storm sewer
- 675 mm diameter concrete storm sewer tributary to the Cave Creek Storm sewer

Carling Avenue

- 1220 mm diameter concrete lined steel watermain
- 406 mm diameter PVC watermain
- 900 mm diameter concrete Cave Creek Collector sanitary sewer
- 1800 mm concrete Cave Creek Collector storm tunnel tributary to Ottawa River
- 2100 mm concrete West Hintonburg storm tunnel tributary to Ottawa River

1.2 Required Permits / Approvals

The proposed development is subject to the zoning by-law amendment and site plan control approval process. The City of Ottawa must approve the engineering design drawings and reports prior to the issuance of zoning by-law amendment and site plan control.

The proposed 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

1.3 Pre-consultation

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 ISTB-2018-01**
      City of Ottawa, March 21, 2018.
      (*ISTB-2018-01*)
    - **Technical Bulletin ISTB-2018-03**
      City of Ottawa, March 21, 2018.
      (*ISTB-2018-03*)
- **Ottawa Design Guidelines – Water Distribution**
  City of Ottawa, July 2010.
  (Water Supply Guidelines)
    - **Technical Bulletin ISD-2010-2**
      City of Ottawa, December 15, 2010.
      (*ISD-2010-2*)
    - **Technical Bulletin ISDTB-2014-02**
      City of Ottawa, May 27, 2014.
      (*ISDTB-2014-02*)
    - **Technical Bulletin ISDTB-2018-02**
      City of Ottawa, March 21, 2018.
      (*ISDTB-2018-02*)
- **Design Guidelines for Sewage Works,**
  Ministry of the Environment, 2008.
  (MOE* Design Guidelines*)
- **Stormwater Planning and Design Manual,**
  Ministry of the Environment, March 2003.
  (SWMP Design Manual)
- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch, January 1, 2010 Update.
  (OBC)

- **Geotechnical Investigation**
  Paterson Group Inc., PG5157-1, February 27, 2020.
  (Geotechnical Report)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 2W pressure zone, as shown by the Pressure Zone map in ***Appendix B***. A local 152 mm diameter watermain exists within the Archibald Street right-of-way. In addition to the local 406 mm diameter watermain main exists within the Carling Avenue right-of-way, as shown by the water distribution mapping included in ***Appendix B***.

3.2 Water Supply Servicing Design

It is proposed to service the development with two 150 mm diameter service connections. A service connection to the existing 152 mm diameter watermain within Archibald Street and a service connection to the existing 406 mm diameter watermain within Carling Avenue.

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

Based on As-built drawings provided by the City of Ottawa, it appears that there are two fire hydrants along Archibald Street and one fire hydrant approximately 70 m north of the property along Carling Avenue.

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	3.0 x Average Daily *
Residential Maximum Hourly	4.5 x Average Daily *
Commercial Retail	2.5 L/m^2/d
Commercial Maximum Daily Demand	1.5 x avg. day
Commercial Maximum Hour Demand	1.8 x max. day
Minimum Watermain Size	150 mm diameter
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure must not exceed	552 kPa
During fire flow operating pressure must not drop below	140 kPa

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, below, summarizes the estimated water supply demand and boundary conditions for the proposed 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] Archibald Street (m H_2O / kPa)	Boundary Condition[2] Carling Avenue (m H_2O / kPa)
Average Daily Demand	63.9	132.3 / 570.9	132.3 / 570.9
Max Day + Fire Flow	184.5+ 13,000= 13,184.5	101.0 / 263.9	120.0 / 450.3
Peak Hour	278.9	123.5 / 484.6	123.5 / 484.6
Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.			

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 parameters were coordinated with the architect:

- Type of construction – Fire-resistive Construction;
- Occupancy type – Limited Combustibility; and
- Sprinkler Protection – Sprinklered System.

The above assumptions result in an estimated fire flow of approximately ***13,000 L/min***, noting that actual building materials selected will affect the estimated flow. A certified fire protection system specialist would need to be employed to design the building fire suppression system and confirm the actual fire flow demand.

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

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 indicated by the correspondence in ***Appendix B***. The available pressure for the fire flow demand exceeds the pressure range identified by the ***Water Supply Guidelines***. As shown by ***Table 2,*** the average day demand pressures exceed the recommended range identified in ***Table 1***, therefore pressure reducing valves may be required.

3.3 Water Supply Conclusion

The estimated water demand was submitted to the City of Ottawa for establishing boundary conditions. The City provided both the anticipated minimum and maximum water pressures, as well as, the estimated water pressure during fire flow.

As demonstrated by ***Table 2***, based on the City's model, pressures during average day demands exceed the ***Water Supply Guidelines*** required pressure range, therefore pressure reducing valves may be required.

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

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

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject site lies within the Cave Creek Collector Sewer catchment area, as shown by the City sewer mapping included in ***Appendix C***. An existing 225 mm diameter sanitary sewer within Archibald Street is available to service the proposed development.

The existing site consists of one-storey commercial building with an estimated average wastewater flow of 0.04 L/s and a maximum wastewater flow of 0.10 L/s.

4.2 Wastewater Design

It is proposed that the development will be serviced via the existing 225 mm sanitary sewer within Archibald Street via a 250 mm diameter service lateral. Refer to drawing ***SSP-1*** for a detailed servicing layout.

Table 3, below***,*** 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
Average Daily Demand	280 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0 Harmon's Corrector Factor 0.8
Commercial Floor Space	5 L/m^2/d
Infiltration and Inflow Allowance	0.05 L/s/ha (Dry Weather) 0.28 L/s/ha (Wet Weather) 0.33 L/s/ha (Total)
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	200 mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6 m/s
Maximum Full Flowing Velocity	3.0 m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012.	

Table 4, below, demonstrates the estimated peak flow from the proposed 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	1.25
Estimated Peak Dry Weather Flow	3.67
Estimated Peak Wet Weather Flow	3.73

The estimated sanitary flow based on the Site Plan, included in ***Drawings/Figures,*** results in a peak wet weather flow of ***3.73 L/s***.

In order to assess 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 Archibald Street sanitary sewer was identified and evaluated by reviewing existing development and zoning within the area. The analysis was conducted from the site to the upstream extents of the drainage area, as shown by the sanitary drainage figure included in ***Appendix C***.

Based on the sanitary analysis, the controlling section of the Archibald Street sanitary sewer is located between Node 2A and 2B with an available residual capacity of ***17.3 L/s***; detailed calculations are included in ***Appendix C***.

The analysis above indicates that sufficient capacity is available in the local sewers to accommodate the proposed development. The site ultimately discharges to the Cave Creek Collector, therefore, the City of Ottawa Water Resources Group will need to confirm the available capacity within the collector sewer.

4.3 Wastewater Servicing Conclusions

The site is tributary to the Cave Creek Collector sewer. It is proposed to discharge wastewater to the existing 225 mm diameter sanitary sewer within Archibald Street via a 250 mm diameter service lateral.

Based on the above sanitary analysis, sufficient capacity is available to accommodate the anticipated ***3.73 L/s*** peak wet weather flow from the proposed development.

Due to the complexity of the Cave Creek Collector, the existing collector capacity will need to be confirmed by City of Ottawa staff.

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

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system located within the Ottawa Central sub-watershed. As such, approvals for proposed 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 watershed, and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA). Consultation with the RVCA 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	37.8
5-year	51.3
100-year	97.7

5.2 Post-development Stormwater Management Target

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

- Meet an allowable release rate based on a Rational Method Coefficient of 0.50, employing the City of Ottawa IDF parameters for a 2-year storm with a calculated time of concentration no less than 10 minutes;
- Attenuate all storms up to and including the City of Ottawa 100-year design event on site;
- Quality controls are not required for the proposed development due to the site's distance from the outlet; correspondence with the RVCA is included in ***Appendix A***.

Based on the above the allowable release rate for the proposed development is ***21.0 L/s***.

5.3 Proposed Stormwater Management System

It is proposed that the stormwater outlet from the development will be to the 675 mm diameter storm sewer within Archibald Street.

To meet the stormwater objectives the proposed development will provide flow attenuation by utilizing an internal cistern.

Stormwater runoff collected from the roof area and surface parking will be directed to a ***60 m³*** internal stormwater cistern. Cistern flow will controlled to a maximum release rate of ***12.5 L/s*** and will outlet to the municipal storm sewer within Archibald Street, as shown by drawing ***SSP-1***. Foundation drains are to be connected downstream of any cistern controls.

Table 6, below, summarizes post-development release rates and corresponding storage volume based on the target release rate.

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	4.0	0.0	8.5	0.0
Attenuated Areas	6.6	28.5	12.5	53.9
Total	**10.6**	**28.5**	**21.0**	**53.9**

It is anticipated that approximately ***53.9 m³*** of storage will be required on site to attenuate flow to the established release rate of ***21.0 L/s***; storage calculations are contained within ***Appendix D***.

5.4 Stormwater Servicing Conclusions

Post development stormwater runoff will be required to be restricted to the allowable target release rate for storm events up to and including the 100-year storm in accordance with City of Ottawa ***City Standards***. The post-development allowable release rate was calculated as ***21.0 L/s*** based on consultation with the City of Ottawa. It is estimated that ***53.9 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 within the Carling Avenue and Archibald Street right-of-ways. Utility servicing will be coordinated with the individual utility companies prior to site development.

The proposed 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

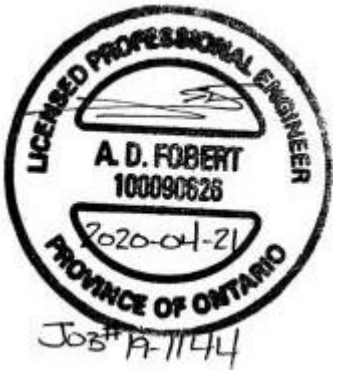
David Schaeffer Engineering Ltd. (DSEL) has been retained by 1343678 Ontario Ltd to prepare a Site Servicing and Stormwater Management report in support of the application for a Zoning By-law Amendment (ZBLA) and Site Plan Control (SPC) at 1330 Carling Avenue. The preceding report outlines the following:

- Based on boundary conditions provided by the City, demands during average day exceed the required pressure range. As a result, pressure reducing valves are required;
- The FUS method for estimating fire flow indicated ***7,000 L/min*** is required for the contemplated development,
- The proposed development is anticipated to have a peak wet weather flow of ***3.73 L/s***; Based on the sanitary analysis conducted the existing municipal sewer infrastructure has sufficient capacity to support the development;
- Based on consultation with the City, the proposed development will be required to attenuate post development flows to an equivalent release rate of ***21.0 L/s*** for all storms up to and including the 100-year storm event. It is estimated that ***53.9 m^3*** of storage will be required to meet the established release rate;
- Based on consultation with the RVCA, stormwater quality controls are not required;

Prepared by,
David Schaeffer Engineering Ltd.

Per: Brandon N. Chow

Reviewed by,
David Schaeffer Engineering Ltd.



Per: Adam D. Fobert, P.Eng

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APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

19-1144 09/04/2020

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.	Section 2.1
☒	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	SSP-1

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

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

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

4.3 Development Servicing Report: Wastewater

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

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

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

4.4 Development Servicing Report: Stormwater Checklist

☒	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.1
☒	Analysis of available capacity in existing public infrastructure.	Section 5.1, Appendix D
☒	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Drawings/Figures
☒	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.	Section 6.0
☐	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

Site Plan Pre- Application Consultation Notes

Date: 30 Dec 2019
Site Location: 1330 Carling Ave, 815 Archibald St
Type of Development: ☒ **Residential (**☐ **townhomes,** ☐ **stacked,** ☐ **singles,** ☒ **apartments),** ☐ **Office Space,** ☒ **Commercial,** ☐ **Retail,** ☐ **Institutional,** ☐ **Industrial, Other:** N/A
Owner/Agent:
Project Manager:
Assigned Planner:
Attendees:

Infrastructure

Water

Water District Plan No: 364-027
Existing public services:

- Archibald St – 152mm UCI
- Carling Ave – 406mm PVC
- Carling Ave – 1200mm STC (backbone – connections not permitted)

Existing connection:

- Existing on-site water service must be shown on the plans. The existing on-site water services will be blanked at the watermain if it will not be reused.

Watermain Frontage Fees to be paid ($190.00 per metre) ☐ **Yes** ☒ **No**

- A water meter sizing questionnaire [water card] will have to be completed prior to receiving a water permit (water card will be provided post approval)
- Service areas with a basic demand greater than 50 m^3/day shall be connected with a minimum of two water services, separated by an isolation valve, to avoid creation of vulnerable service area.

Boundary conditions:
Civil consultant must request boundary conditions from the City's assigned Project Manager prior to first submission.

- Water boundary condition requests must include the location of the service(s) and the expected loads required by the proposed developments. Please provide all the following information:

- Location of service(s)
- Type of development and the amount of fire flow required (as per FUS, 1999).
- Average daily demand: ___ l/s.
- Maximum daily demand: ___l/s.
- Maximum hourly daily demand: ___ l/s.

- Fire protection (Fire demand, Hydrant Locations)
- A water meter sizing questionnaire [water card] will have to be completed prior to receiving a water permit (water card will be provided post approval)

Sanitary Sewer

Existing public services:

- Carling Ave – 900mm Concrete (trunk sewer)
- Archibald St – 225mm Concrete

Existing connection:

- Existing on-site sanitary service must be shown on the plans. If existing sanitary sewer is to be reused, provide CCTV inspection report along with consultant's assessment of the existing sewer conditions. Existing on-site sanitary sewer to be capped and abandoned to City of Ottawa standards at the property line if it will not be reused.

Is a monitoring manhole required on private property? ☒ **Yes** ☐ **No**

- The designer should be aware there may be limited capacity in the downstream sanitary sewer system to support the proposed change in use. The sanitary demand needs to be coordinated with the City Planning Dept. to determine if the existing sanitary sewer system has sufficient capacity to support the proposed rezoning. Provide sanitary demands to the City project manager for coordination.
- Any premise in which there is commercial or institutional food preparation shall install a grease and oil inceptor on all fixtures.
- Designers and contractors to be aware of potential abandoned sewers along Carling Ave and on-site.
- For concrete sewer pipe, maintenance holes shall be installed when the service is greater than 50% of the diameter of the mainline concrete pipe

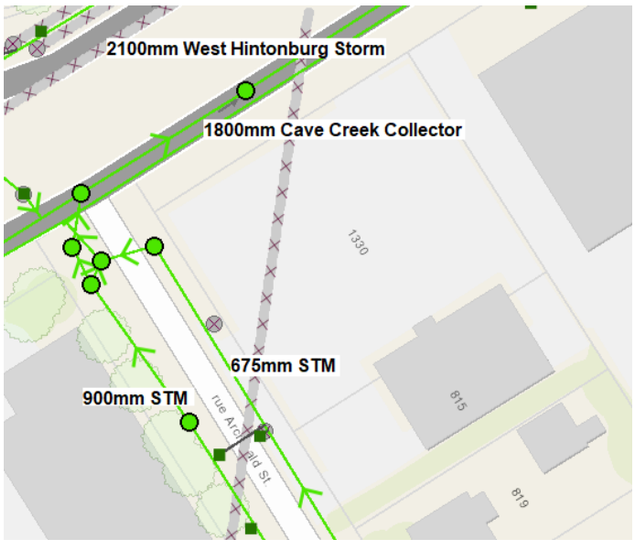
Storm Sewer

Existing public services:

- Carling Ave – 2100mm Concrete “West Hintonburg Storm Trunk” (deep sewer tunnel)
- Carling Ave – 1800mm Concrete “Cave Creek Trunk Collector”
- Archibald St – 675mm Concrete
- Archibald St – 900mm Concrete

Existing connection:

- Existing on-site storm service must be shown on the plans. If existing storm sewer is to be reused, provide CCTV inspection report along with consultant's assessment of the existing sewer conditions. Existing on-site storm sewer to be capped and abandoned to City of Ottawa standards at the property line if it will not be reused.



- There is a low point along Archibald Street that the designer should be cognizant of when preparing the grading design for the site. Ensure that the proposed drive lane entrance to the underground parking garage is protected from the major overland flow route within Archibald and Carling Ave.
- Designers and contractors to be aware of potential abandoned sewers along Carling Ave and on-site.
- The Environmental Site Assessment (ESA) may provide recommendations where site contamination may be present. The recommendations from the ESA need to be coordinated with the servicing report to ensure compliance with the Sewer Use By-Law.

Stormwater Management

Quality Control:

- Rideau Valley Conservation Authority to confirm quality control requirements.

Quantity Control:

- Master Servicing Study: N/A
- Allowable Runoff coefficient (C): C = the lesser of the existing pre-development conditions to a maximum of 0.5.
- Time of concentration (Tc): Tc = pre-development; maximum Tc = 10 min
- Allowable flowrate: Control the 100-year storm events to the 2-year storm event.

Ministry of Environment, Conservation and Parks (MECEP)

All development applications should be considered for an Environmental Compliance Approval, under MECP regulations.

a. Consultant determines if an approval for sewage works under Section 53 of OWRA is required. Consultant determines what type of application is required and the City's project manager confirms. (If the consultant is not clear if an ECA is required, they will work with the City to determine what is required. If unclear or there is a difference of opinion the City Project Manager will coordinate requirements with MECP).
b. The project will be either transfer of review (standard), transfer of review (additional), direct submission, or exempt as per O. Reg. 525/98.
c. Pre-consultation is not required if applying for standard or additional works (Schedule A of the Agreement) under Transfer Review.
d. Pre-consultation with local District office of MECP is recommended for direct submission.
e. Consultant completes an MECP request form for a pre-consultation. Sends request to moeccottawasewage@ontario.ca

NOTE: Site Plan Approval, or Draft Approval, is required before any Ministry of the Environment and Climate Change (MOECC) application is sent

General Service Design Comments

- The City of Ottawa requests that all new services be located within the existing service trench to minimize necessary road cuts.
- Monitoring manholes should be located within the property near the property line in an accessible location to City forces and free from obstruction (i.e. not a parking).
- Where service length is greater than 30 m between the building and the first maintenance hole / connection, a cleanout is required.
- Manholes are required for connections to sanitary or combined trunk sewers as per City of Ottawa Standards S13.
- The City of Ottawa Standard Detail Drawings should be referenced where possible for all work within the Public Right-of-Way.
- The upstream and downstream manhole top of grate and invert elevations are required for all new sewer connections.
- Services crossing the existing watermain or sewers need to clearly provide the obvert/invert elevations to demonstration minimum separation distances. A watermain crossing table may be provided.

Other

Are there are Capital Works Projects scheduled that will impact the application? ☐ **Yes** ☒ **No**

References and Resources

- As per section 53 of the Professional Engineers Act, O. Reg 941/40, R.S.O. 1990, all documents prepared by engineers must be signed and dated on the seal.
- All required plans are to be submitted on standard A1 size sheets (594mm x 841mm) sheets, utilizing a reasonable and appropriate metric scale as per City of Ottawa Servicing and Grading Plan Requirements: title blocks are to be placed on the right of the sheets and not along the bottom. Engineering plans may be combined, but the Site Plans must be provided separately. Plans shall include the survey monument used to confirm datum. Information shall be provided to enable a non-surveyor to locate the survey monument presented by the consultant.
- All required plans & reports are to be provided in *.pdf format (at application submission and for any, and all, re-submissions)
- Please find relevant City of Ottawa Links to Preparing Studies and Plans below: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#standards-policies-and-guidelines
- To request City of Ottawa plan(s) or report information please contact the City of Ottawa Information Centre:
  InformationCentre@ottawa.ca<mailto:InformationCentre@ottawa.ca>
  (613) 580-2424 ext. 44455
- geoOttawa
  http://maps.ottawa.ca/geoOttawa/

Brandon Chow

To: Eric Lalande
Subject: RE: 1330 Carling Ave - quality requirement

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: April 9, 2020 9:07 AM
To: Brandon Chow <BChow@dsel.ca>
Subject: Re: 1330 Carling Ave - quality requirement

Hi Brandon,

Upon review of the attached documents the RVCA does not require quality control for the site, however, it is recommended to provide best management practices where available, such as minimizing the number of surface parking spaces.

Thank you,

Eric Lalande, MCIP, RPP

Planner, RVCA

613-692-3571 x1137

From: Brandon Chow <BChow@dsel.ca>
Sent: April 8, 2020 6:07 PM
To: Eric Lalande <eric.lalande@rvca.ca>
Subject: 1330 Carling Ave - quality requirement

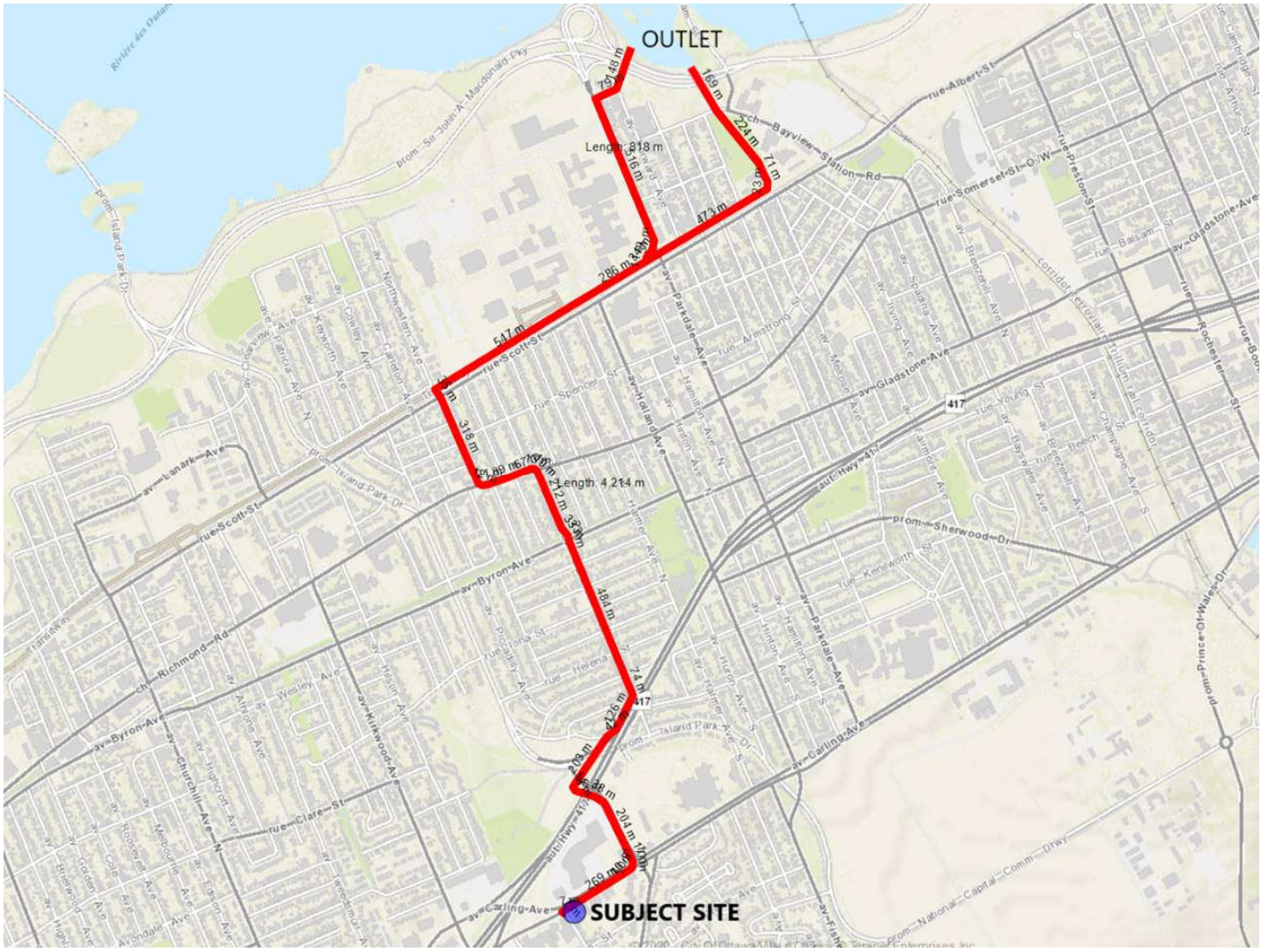
Hi Eric,

I hope you are doing well.

We would like to touch base with you regarding a development located at 1330 Carling Avenue.

The proposed development involves the construction of a 24-storey mixed-use residential building as shown by the attached plan.
Stormwater collected from the site will outlet to the existing Carling Avenue storm sewer and travel approximately 4.2 km to an outlet at the Ottawa River.

Can you provide comments regarding any quality controls required for this site?



Thank you,

Brandon Chow
Project Coordinator / Intermediate Designer

DSEL
david schaeffer engineering ltd.

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

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

APPENDIX B

Water Supply

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

Domestic Demand

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

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	0	0.0	0.0	0.0	0.0	0.0	0.0

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	$L/m^2/d$	270	0.68	0.5	1.0	0.7	1.8	1.3
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				0.7	0.5	1.0	0.7	1.8	1.3
Total Demand				**0.7**	**0.5**	**1.0**	**0.7**	**1.8**	**1.3**

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

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	40	56
1 Bedroom	1.4	53	75
2 Bedroom	2.1	82	173
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	304	85.1	59.1	255.4	177.3	383.0	266.0

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 $L/m^2/d$	792	1.98	1.4	3.0	2.1	5.3	3.7
Amenity Space	3.5 $L/m^2/d$	1,403	4.91	3.4	7.4	5.1	13.3	9.2
Total I/CI Demand			6.9	4.8	10.3	7.2	18.6	12.9
Total Demand			**92.0**	**63.9**	**265.7**	**184.5**	**401.6**	**278.9**

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: Fire-Resistive Construction

C	0.6		*Type of Construction Coefficient per FUS Part II, Section 1*
A	18890.0	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	18142.2	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	Wood Frame	>45m	0	0	0	0%	
S	Wood Frame	20.1m-30m	20	2	40	8%	
E	Wood Frame	3.1m-10m	28	2	56	18%	
W	Wood Frame	20.1m-30m	34	5	170	10%	
		% Increase				**36%**	*value not to exceed 75%*

Increase	**5508.0**	**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	13158.0	L/min	*fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section 4*
	13000.0	**L/min**	*rounded to the nearest 1,000 L/min*

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

Brandon Chow

From: Alison Gosling
Sent: March 11, 2020 8:41 AM
To: Robert Freel; Brandon Chow
Subject: FW: 1330 Carling Avenue - Boundary Condition Request
Attachments: 1330 Carling March 2020.pdf

FYI

Alison Gosling, E.I.T.
Junior Project Manager

DSEL
david schaeffer engineering ltd.

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

phone: (613) 836-0856 ext.542
cell: (343) 542-9218
email: agosling@dsel.ca

From: Baker, Adam <adam.baker@ottawa.ca>
Sent: March 11, 2020 8:35 AM
To: Charlotte Kelly <CKelly@dsel.ca>
Cc: Alison Gosling <AGosling@dsel.ca>; Oram, Cody <Cody.Oram@ottawa.ca>
Subject: RE: 1330 Carling Avenue - Boundary Condition Request

Hi Charlotte,

Please find attached water boundary conditions –

The following are boundary conditions, HGL, for hydraulic analysis at 1330 Carling (zone 2W2C) assumed to be connected to the 152mm on Archibald and 406mm on Carling (see attached PDF for locations).

Minimum HGL = 123.5

Maximum HGL = 132.3m, The maximum pressure is estimated to be close to 80 psi. A pressure check at completion of construction is recommended to determine if pressure control is required.

MaxDay + FireFlow (217 L/s) = 101.0m at Archibald connection

MaxDay + FireFlow (217 L/s) = 120.0m at Carling connection

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

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation

of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

Thanks,
Adam

Adam Baker, EIT
Engineering Intern
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - South Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 26552, Adam.Baker@ottawa.ca

From: Charlotte Kelly <CKelly@dsel.ca>
Sent: March 06, 2020 5:37 PM
To: Oram, Cody <Cody.Oram@ottawa.ca>
Cc: Baker, Adam <adam.baker@ottawa.ca>; Alison Gosling <AGosling@dsel.ca>
Subject: 1330 Carling Avenue - Boundary Condition Request

Good afternoon Cody,

We would like to kindly request boundary conditions for the proposed development at 1330 Carling Avenue using the following proposed development demands:

1. Location of Service / Street Number: 1330 Carling Avenue
2. Type of development and the amount of fire flow required for the proposed development:
   - Type of development: The proposed development involves a 24-storey commercial/residential tower. Please see the attached site plan for reference.
   - The apartment buildings are proposed to consist of ***190*** residential units, ***792 m2*** of amenity space and ***1,110 m2*** of amenity space.
   - Proposed Connections:
     - Connection 1 to existing 152 mm diameter watermain within Archibald Street.
     - Connection 2 to existing 406 mm diameter watermain within Carling Avenue.
   - Fire demand based on Technical Bulletin ISTB-2018-02 has been used to estimate a max fire demand of ***13,000 L/min***.
   - As a fully-supervised sprinkler system is proposed, the fire flow per the National Fire Protection Association 13 has also been estimated at ***4,150 L/min***. Could the pressure at both fire flows please be provided?

Demand	L/min	L/s
Avg. Daily	67.3	1.12
Max Day	195.7	3.26
Peak Hour	295.4	4.92

Please let me know if you have any questions.

Thank-you,

Charlotte Kelly, E.I.T.
Junior Engineering Designer

DSEL
david schaeffer engineering ltd.

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

phone: (613) 836-0856 ext.511
email: ckelly@dsel.ca

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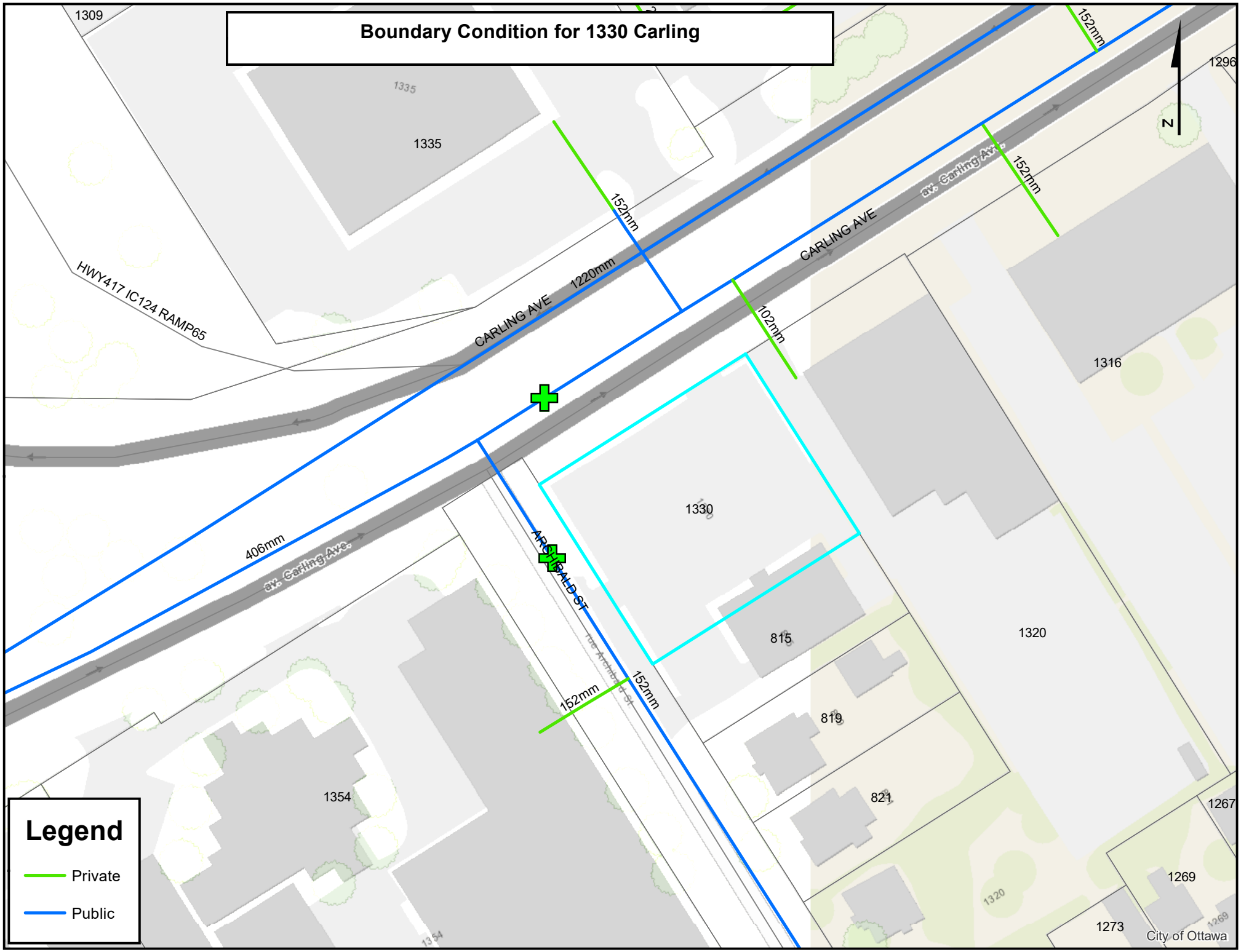

Boundary Condition for 1330 Carling
1309
1335
1296
HWY417 IC124 RAMP65
CARLING AVE
CARLING AVE
ex. Carling Ave.
ex. Carling Ave.
152mm
152mm
152mm
1220mm
102mm
406mm
1330
ARCHIBALD ST
The Archibald St
152mm
152mm
1316
1320
815
819
821
1354
1267
1269
1273
1320
1269
1354
City of Ottawa
N
Legend
Private
Public

Brandon Chow

From: Melissa du Plessis <mduplessis@figurr.ca>
Sent: March 5, 2020 5:16 PM
To: Charlotte Kelly
Cc: Roberto Campos; Alison Gosling
Subject: Re: 1330 Carling Avenue - Building Construction Inquiry

Follow Up Flag: Follow up
Flag Status: Completed

Charlotte,

This is a concrete structure so we would be considered Fire-resistive construction and will include automatic sprinklers.

Units will fall under non-combustible construction.

Let me know if you need anything else.

Thanks,

Melissa Du Plessis OAA M.Arch B.A.S ORSA
Architect

Figurr
architects collective
figurr.ca

FIG. 1
190 Somerset St W #206
Ottawa ON
K2P 0J4
T 613 695–6122 X 135
C 613 618–3290

FIG. 2
3550, Saint-Antoine O.
Montréal QC
H4C 1A9
T 514 861–5122

From: Charlotte Kelly <CKelly@dsel.ca>
Sent: March 5, 2020 4:03 PM
To: Melissa du Plessis <mduplessis@figurr.ca>
Cc: Roberto Campos <rcampos@figurr.ca>; Alison Gosling <AGosling@dsel.ca>
Subject: 1330 Carling Avenue - Building Construction Inquiry

Good Afternoon Melissa,

We wanted to touch base with you regarding the development at 1330 Carling Avenue.

In order to complete the Fire Flow estimate for the City of Ottawa boundary condition request we need some particulars on the building construction.

First, please see the attached. What type of construction are we based on the descriptions provided?

Second, can you confirm that the building will be equipped with automatic sprinkler protection?

Lastly, are you able to provide of which of the following categories for occupancy the units fall under:

- Non-combustible
- Limited combustible
- Combustible
- Free burning
- Rapid burning

Please let me know if you have any questions.

Thank you,

Charlotte Kelly, E.I.T.
Junior Engineering Designer

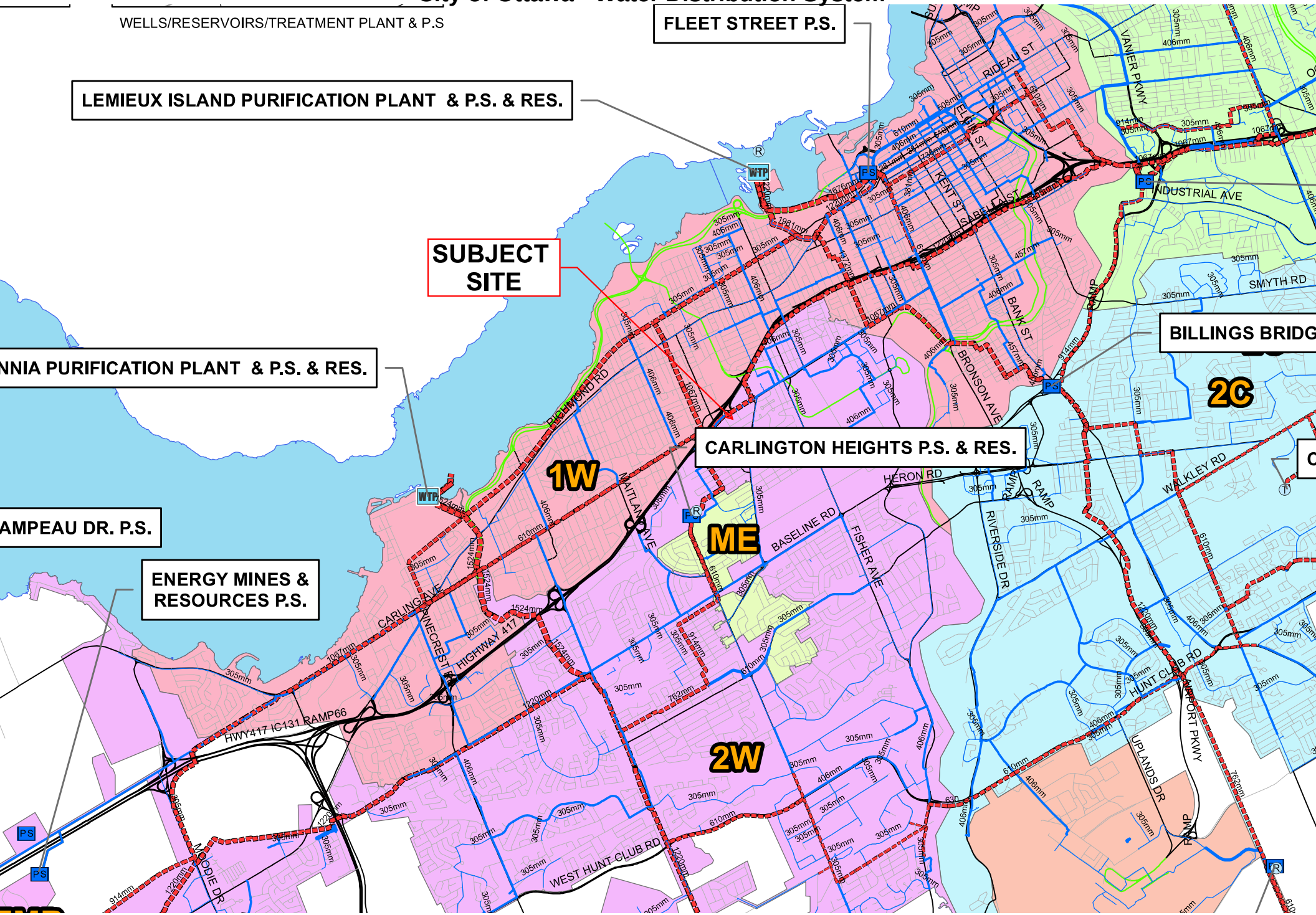
DSEL
david schaeffer engineering ltd.

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

phone: (613) 836-0856 ext.511
email: ckelly@dsel.ca

City of Ottawa - Water Distribution System

WELLS/RESERVOIRS/TREATMENT PLANT & P.S



19-1144

APPENDIX C

Wastewater Collection

Kevlar Developments
1330 Carling Avenue
Existing Site Conditions

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

Site Area 0.197 **ha**

Extraneous Flow Allowances

Infiltration / Inflow (Dry)	**0.01 L/s**
Infiltration / Inflow (Wet)	**0.06 L/s**
Infiltration / Inflow (Total)	**0.07 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		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

Total Pop	**0**
Average Domestic Flow	**0.00 L/s**
Peaking Factor	**3.80**
Peak Domestic Flow	**0.00 L/s**

Institutional / Commercial / Industrial Contributions

Property Type	**Unit Rate**		**No. of Units**	**Avg Wastewater (L/s)**
Commercial floor space*	5	$L/m^2/d$	270	0.03
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	**0.03**
Peak Institutional / Commercial Flow	0.03
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**0.03**

** 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	**0.04 L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.04 L/s**
Total Estimated Peak Wet Weather Flow Rate	**0.10 L/s**

Kevlar Developments
1330 Carling Avenue
Proposed Site Conditions

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

Site Area	0.197	**ha**

Extraneous Flow Allowances

Infiltration / Inflow (Dry)	**0.01**	**L/s**
Infiltration / Inflow (Wet)	**0.06**	**L/s**
Infiltration / Inflow (Total)	**0.07**	**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	40	56
1 Bedroom	1.4	53	75
2 Bedroom	2.1	82	173
3 Bedroom	3.1		0
Average	1.8		0

Total Pop	**304**	
Average Domestic Flow	**0.99**	**L/s**
Peaking Factor	**3.46**	
Peak Domestic Flow	**3.41**	**L/s**

Institutional / Commercial / Industrial Contributions

Property Type	**Unit Rate**		**No. of Units**	**Avg Wastewater (L/s)**
Commercial floor space*	5	$L/m^2/d$	792	0.09
Amenity space	5	$L/m^2/d$	1,403	0.16
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	**0.25**
Peak Institutional / Commercial Flow	0.25
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**0.25**

** 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	**1.25**	**L/s**
Total Estimated Peak Dry Weather Flow Rate	**3.67**	**L/s**
Total Estimated Peak Wet Weather Flow Rate	**3.73**	**L/s**

SANITARY SEWER CALCULATION SHEET

CLIENT: **Kevlar Developments**
LOCATION: **1330 Carling Avenue**
FILE REF: **19-1144**
DATE: **09-Apr-20**

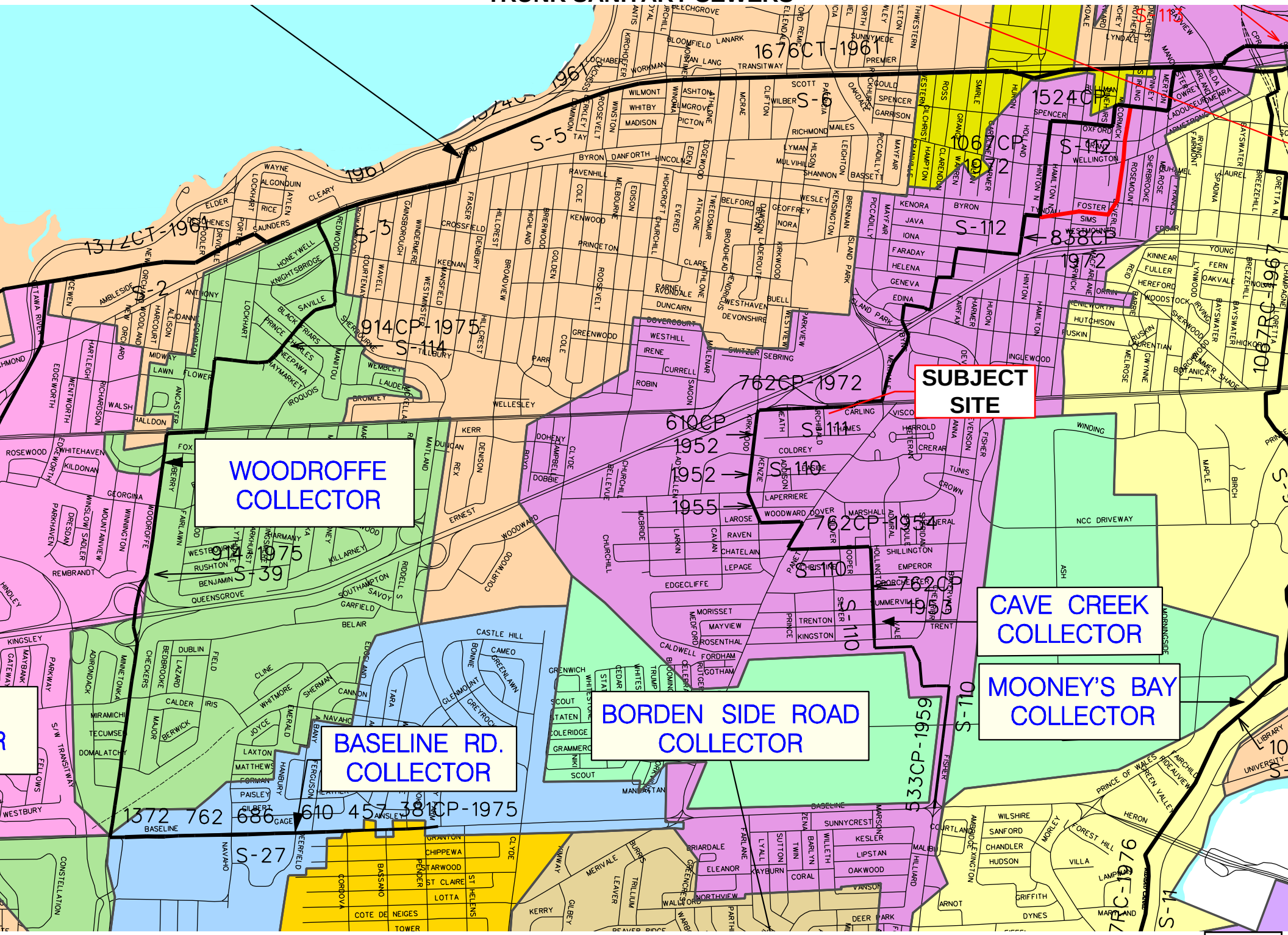
DESIGN PARAMETERS

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.	28,000	L/ha/d	Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60	m/s full flowing
Avg. Daily Flow Instit.	28,000	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	

Location			Residential Area and Population									Commercial		Institutional		Industrial			Infiltration				Pipe Data							
Area ID	Up	Down	Area	Number of Units				Pop.	Cumulative		Peak.	Q_{res}	Area	Accu.	Area	Accu.	Area	Accu.	Q_{C+I+I}	Total	Accu.	Infiltration	Total	DIA	Slope	Length	$A_{hydraulic}$	R	Velocity	Q_{cap}	Q / Q full
				by type					Area	Pop.	Fact.			Area		Area														
			(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)	(-)
ARCHIBALD/THAM	2A	2B	2.900	24	2		58	191.0	2.900	191.0	4.00	2.48	0.66	0.66		0.00		0.00	0.6	3.560	3.560	0.997	4.05	225	0.24	62	0.040	0.056	0.55	22.0	0.18
OUTLET TO CAVE	2B	2C	0.230	1			2	7.0	3.130	198.0	4.00	2.57	0.95	1.61		0.00		0.00	1.4	1.180	4.740	1.327	5.29	225	0.32	108	0.040	0.056	0.64	25.4	0.21


OUTLET TO THE CAVE CREEK COLLECTOR
2C
SUBJECT SITE
2B
2A
av. Carling Ave.
av. Coldrey Ave
av. Crerar Ave
rue Thames St.
Meath St.

TRUNK SANITARY SEWERS



19-1144

APPENDIX D

Stormwater Management

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

Existing Drainage Charateristics From Internal Site

Area	0.20	ha
C	0.90	Rational Method runoff coefficient
L	40	m
Up Elev	74.3	m
Dn Elev	73.67	m
Slope	1.6	%
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	37.8	51.3	97.7	L/s

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)

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

Target Flow Rate

Area	0.20	ha
C	0.50	Rational Method runoff coefficient
t_c	10.0	min

2-year

i	76.8	mm/hr
Q	21.0	L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area	0.03	ha
C	0.45	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	4.0	4.0	0.0	0.0	178.6	8.5	8.5	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)

Estimated Post Development Peak Flow from Attenuated Areas

Total Area	0.17	ha
C	0.90	Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	**i (mm/hr)**	**Q_{actual} (L/s)**	**$Q_{release}$ (L/s)**	**Q_{stored} (L/s)**	**V_{stored} (m^3)**	**i (mm/hr)**	**Q_{actual} (L/s)**	**$Q_{release}$ (L/s)**	**Q_{stored} (L/s)**	**V_{stored} (m^3)**
10	104.2	43.3	6.6	36.8	22.1	178.6	82.5	12.5	70.0	42.0
15	83.6	34.8	6.6	28.2	25.4	142.9	66.0	12.5	53.5	48.2
20	70.3	29.2	6.6	22.6	27.2	120.0	55.4	12.5	42.9	51.5
25	60.9	25.3	6.6	18.7	28.1	103.8	48.0	12.5	35.5	53.2
30	53.9	22.4	6.6	15.8	28.5	91.9	42.5	12.5	30.0	53.9
35	48.5	20.2	6.6	13.6	28.5	82.6	38.2	12.5	25.7	53.9
40	44.2	18.4	6.6	11.8	28.2	75.1	34.7	12.5	22.2	53.3
45	40.6	16.9	6.6	10.3	27.7	69.1	31.9	12.5	19.4	52.4
50	37.7	15.7	6.6	9.0	27.1	64.0	29.6	12.5	17.0	51.1
55	35.1	14.6	6.6	8.0	26.3	59.6	27.6	12.5	15.0	49.7
60	32.9	13.7	6.6	7.1	25.4	55.9	25.8	12.5	13.3	48.0
65	31.0	12.9	6.6	6.3	24.5	52.6	24.3	12.5	11.8	46.1
70	29.4	12.2	6.6	5.6	23.4	49.8	23.0	12.5	10.5	44.1
75	27.9	11.6	6.6	5.0	22.3	47.3	21.8	12.5	9.3	42.0
80	26.6	11.0	6.6	4.4	21.1	45.0	20.8	12.5	8.3	39.8
85	25.4	10.6	6.7	3.9	19.9	43.0	19.9	12.5	7.3	37.4
90	24.3	10.1	6.7	3.5	18.6	41.1	19.0	12.5	6.5	35.0
95	23.3	9.7	6.7	3.0	17.3	39.4	18.2	12.5	5.7	32.6
100	22.4	9.3	6.7	2.7	16.0	37.9	17.5	12.5	5.0	30.0
105	21.6	9.0	6.7	2.3	14.6	36.5	16.9	12.5	4.4	27.5
110	20.8	8.7	6.7	2.0	13.2	35.2	16.3	12.5	3.8	24.8

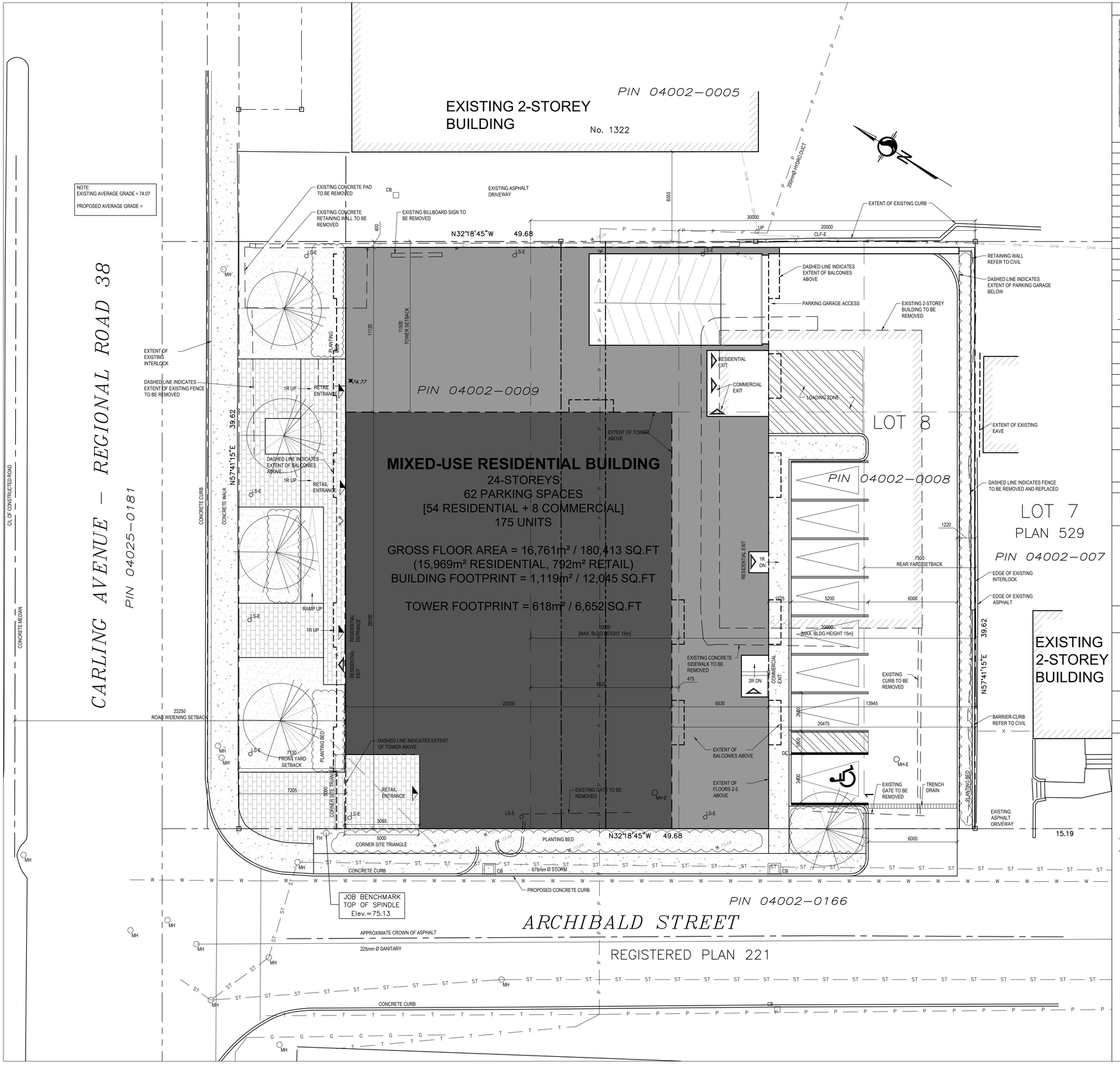
Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

5-year $Q_{attenuated}$	**6.6 L/s**	**100-year $Q_{attenuated}$**	**12.5 L/s**
5-year Max. Storage Required	**28.5 m^3**	**100-year Max. Storage Required**	**53.9 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	4.0	0.0	8.5	0.0
Attenutated Areas	6.6	28.5	12.5	53.9
Total	**10.6**	**28.5**	**21.0**	**53.9**

DRAWINGS / FIGURES



KEY PLAN

PROPERTY DESCRIPTION

24-STOREY RESIDENTIAL BUILDING	
CITY OF OTTAWA PIN NUMBER	04002 0008
MUNICIPAL ADDRESS	1330 Carling Avenue

SITE INFORMATION

LOT AREA:	1,969m²
LOT FRONTAGE:	39.62m
LOT DEPTH:	49.68m

BUILDING INFORMATION

BUILDING AREA:	1,119m²	
BUILDING FLOOR AREA:	16,761m²	
PROPOSED USE:	MIXED-USE RESIDENTIAL, HIGH-RISE	
UNIT BREAKDOWN:		
FLOORS 2:	9 UNITS	7- 1BD, 2- 2BD
FLOORS 3-5:	12 UNITS	1- STUDIO, 9- 1 BD, 2- 2BD
FLOOR 6:	4 UNITS	1- STUDIO, 1- 1BD, 2- 2BD
TYPICAL FLOORS 7-24:	7 UNITS	2- STUDIO, 1- 1BD, 4- 2BD
TOTAL:	175 UNITS	40- STUDIO, 53- 1 BD, 82- 2 BD

ZONING TABLE — AM10

CITY OF OTTAWA ZONING BY-LAW No. 2008-250	REQUIRED	PROPOSED
LOT AREA	No minimum	
LOT WIDTH	No minimum	
FRONT YARD SETBACK	0m	7.21m (as per road widening)
MINIMUM INTERIOR SIDE YARD SETBACK	0m	0.4m
MINIMUM REAR YARD SETBACK	3m for the first 20m from Archibald; 7.5m otherwise	13.9m
MAXIMUM BUILDING HEIGHT	Within 20m of R4 zone: 15m 20-30m from R4 zone: 20m 30+m from R4 zone: 30m (up to 9 storeys)	Commercial Ground Floor 1(5.2m) Residential 24(69m) Total 25(74.2m)
MAXIMUM FLOOR SPACE INDEX	N/A	
LANDSCAPED AREA	15% = 295m² 3m buffer between parking lots and lot lines (10-99 parking spaces)	18.6% = 367m²
VEHICLE PARKING REQUIREMENTS (AREA Y, SCHEDULE 1A)	Residential: 0.5 spaces/unit after first 12 units [175 x 0.5 = 88] Residential visitor: 0.1/unit after first 12 units [175 x 0.1 = 18] At-grade restaurant use (GFA<350m²): 0 spaces At-grade non-residential use (GFA<500m²): 0 spaces Other non-residential: 1-5 spaces/100m² GFA	62 SPACES TOTAL VISITOR = 18 RESIDENTIAL = 36 COMMERCIAL = 8
LOADING	1 space for 2,000-4,999m² non-residential GFA	1 SPACE
AMENITY AREA REQUIREMENTS	6m² per unit 50% communal and at least one area of min. 54m² Total = 1,110m²	COMMUNAL AMENITY: 525m² BALCONIES: 878m² TOTAL AMENITY: 1,403m²
BICYCLE PARKING SPACES	0.5 per dwelling unit =93 1/250m² non-residential GFA	156 SPACES

LEGEND

- SOFT LANDSCAPING REFER TO LANDSCAPE
- UNIT PAVERS REFER TO LANDSCAPE
- ASPHALT PAVING
- CONCRETE
- EXISTING BUILDING ELEMENT TO BE REMOVED
- EXISTING FENCE
- NEW BOARD FENCE REFER TO LANDSCAPE
- LOT LINE
- SETBACK LINE
- DESIGNATED BUILDING ENTRANCE / EXIT
- FH FIRE HYDRANT. REFER TO CIVIL
- CB CATCH BASIN
- MH MANHOLE
- FLOOR DRAIN
- UTILITY POLE
- OHW OVERHEAD UTILITY WIRES
- L.S. LIGHT STANDARD
- DC DEPRESSED CURB
- EXISTING TREE TO REMAIN (REFER TO LANDSCAPE DRAWINGS)
- NEW TREE (REFER TO LANDSCAPE DRAWINGS)
- NEW SHRUBS (REFER TO LANDSCAPE DRAWINGS)
- NEW EVERGREEN SHRUB (REFER TO LANDSCAPE DRAWINGS)
- FIRE DEPARTMENT CONNECTION
- 77.70 EXISTING GROUND ELEVATION (TO DETERMINE EXISTING AVERAGE GRADE)
- 58.84 NEW GROUND ELEVATION REFER TO CIVIL

NOTE: 'X'-E INDICATES EXISTING TO REMAIN

No.	Date	Émis pour / Object
1	2020-01-24	PRECONSULTATION
2	2020-02-26	COORDINATION
3	2020-03-26	COORDINATION
–	---	---
–	---	---
–	---	---
–	---	---

Ingénieur / Engineer
(Mécanique & Électricité / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Architecte/ Architect
(paysagiste / Landscape)

Ingénieur / Engineer
(Civil / Civil)

Client / Client

Architecte / Architect
fig. 1
3550, Saint-Antoine O.
Montréal QC H4C 1A9
T. 514 861-5122

fig. 2
190 Somerset St W #206
Ottawa ON K2P 0J4
T. 613 695-6122

Collectif d'architectes / Architects Collective
figurr
www.figurr.ca

Sceau / Seal

Note:

L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

Projet / Project

MIXED-USE RESIDENTIAL BUILDING

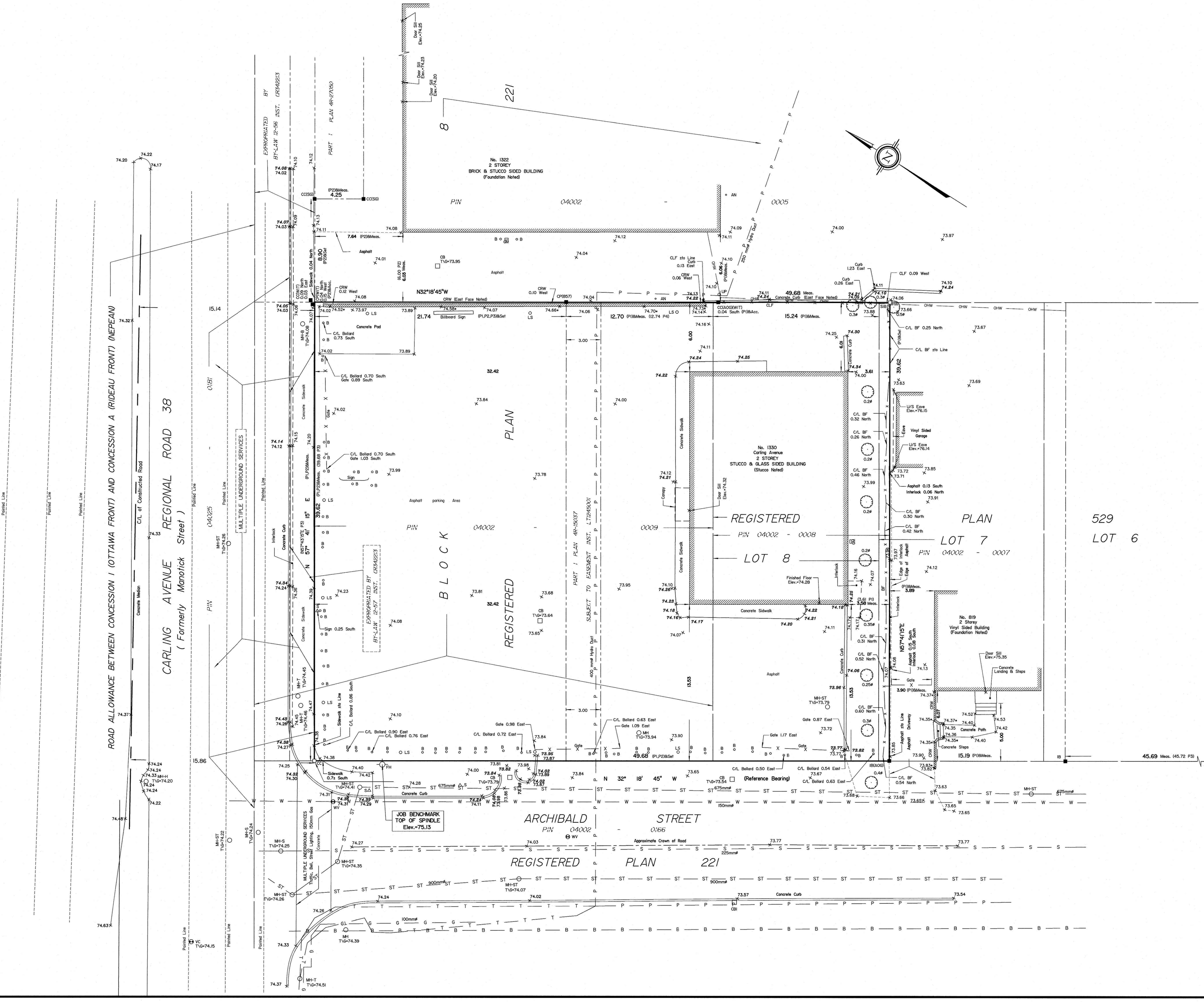
1330 Carling Avenue

Ottawa, ON

Titre / Title

SITE PLAN

Dessiné par / Drawn by: MD	No. projet / Project number: 1956
Vérifié par / Verified by: RC	No. dessin / Drawing number: A-105
Échelle / Scale: AS SHOWN	Révision / Revision: 0
Date de création du dessin / Drawing creation date: 2020-01-06	



Notes & Legend

Denotes		
—□—	=	Survey Monument Planted
—■—	=	Survey Monument Found
SIB	=	Standard Iron Bar
SSIB	=	Short Standard Iron Bar
IB	=	Iron Bar
CC	=	Cut Cross
(W/T)	=	Witness
Meas.	=	Measured
(AOG)	=	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	=	(AOG) Plan December 3, 2001
(P2)	=	Plan 4R-27050
(P3)	=	(725) Plan January 30, 1991
○FH	=	Fire Hydrant
⊗ WV	=	Water Valve
⊖ VC	=	Valve Chamber (Watermain)
○ MH–ST	=	Maintenance Hole (Storm Sewer)
○ MH-S	=	Maintenance Hole (Sanitary)
○ MH-B	=	Maintenance Hole (Bell Telephone)
○ MH-T	=	Maintenance Hole (Traffic)
○ MH-H	=	Maintenance Hole (Hydro)
○ MH	=	Maintenance Hole (Unidentified)
—— OHW ——	=	Overhead Wires
□ CB	=	Catch Basin
□ CBI	=	Catch Basin Inlet
○ UP	=	Utility Pole
+ AN	=	Anchor
○ LS	=	Light Standard
Ø	=	Diameter
+ 65.00	=	Location of Elevations
+ 65.00	=	Top of Wall Elevations
+ 65.00	=	Top of Concrete Curb Elevation
C/L	=	Centreline
▭ GM	=	Gas Meter
○ B	=	Bollard
△ S	=	Sign
	=	Deciduous Tree
	=	Coniferous Tree
CLF	=	Chain Link Fence
BF	=	Board Fence
CRW	=	Concrete Retaining Wall
T/G	=	Top of Grate
—— ST ——	=	Underground Storm Sewer
—— S ——	=	Underground Sanitary Sewer
—— W ——	=	Underground Water
—— P ——	=	Underground Power
—— G ——	=	Underground Gas
—— T ——	=	Underground Traffic
—— B ——	=	Underground Bell
U/S	=	Underside

SURVEYOR'S REAL PROPERTY REPORT

PART 1 Plan of
PART OF BLOCK 8 REGISTERED PLAN 221 and LOT 8 and PART OF LOT 7 REGISTERED PLAN 529 CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 150

6 4.5 3.0 1.5 0 3 6 Metres

Metric

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

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.
2. The survey was completed on the 9th day of March, 2020.

March 9, 2020
Date

E. H. Herweyer
Ontario Land Surveyor

PART 2
THIS PLAN MUST BE READ IN CONJUNCTION WITH SURVEY REPORT DATED: March 9, 2020

ANNIS, O'SULLIVAN, VOLLEBEKK LTD. grants to 1343678 ONTARIO LTD. ("the Client"), their solicitors, mortgagees, and other related parties, permission to use original, signed, sealed copies of the Surveyor's Real Property Report in transactions involving The Client.

Bearings are grid, derived from easterly limit of Archibald Street shown to be N 32°18'45" W on Plan 4R-27050 and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) NAD-83 (original).
For bearing comparisons, a rotation of 0°32'45" counter-clockwise was applied to bearings on P1 & P3.

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum, derived from City of Ottawa vertical control monument No. N-29 having an elevation of 77.347 metres.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. 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.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.
4. Underground services on Archibald Street are taken fro the City of Ottawa Engineering Plans F-05-22 and G-06-01, Services on Carling Avenue are not shown.

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2114209

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
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Nepean, Ont. K2E 7S6
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Ontario Land Surveyors

Job No. 20260-19 Pt Blk8 PL221 Pt Lt 7&8 PL529 T D2 | 1 of 1

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