

REPORT PROJECT: 119385-5.2.2

SITE SERVICING STUDY

81 Slater Street



ΙΒΙ

Prepared for Place Doree by IBI Group August 15, 2019

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1 INTRODUCTION

1.1 Development Servicing Study Checklist

The Servicing Study Guideline Checklist is included in **Appendix A** for reference. The list identifies where elements in this report can be found. Some elements are not applicable and are identified accordingly. Otherwise, the checklist items are addressed in this report.

1.2 Purpose

The purpose of this report is to outline the required municipal services, including water supply, stormwater management and wastewater disposal, needed to support the redevelopment of the subject property. The property is approximately 0.091 hectares in area and is located at 81 Slater Street in the City of Ottawa.

This Site Servicing Study, which also includes the Stormwater Management Plan, Watermain Analysis and Erosion and Sedimentation Control Plans, is being completed in support of the Site Plan Application.

1.3 Subject Site

The subject property is located at 81 Slater Street between Metcalfe Street and Elgin Street. The location plan is shown on **Figure 1.1**.

The subject property is zoned Mixed-Use Downtown Zone (MD S46). It is currently improved with a two-storey restaurant building, as well as a two-storey parking complex. These are attached to the Capital Hill hotel behind the property located at 88 Albert.

In terms of municipal services, both properties, 88 Albert and 81 Slater, are serviced with a common watermain and combined sewer from Slater Street. Bell and gas are also entering the properties from Slater Street. Rogers and hydro are entering the hotel from Albert Street, and feeding the restaurant/parking garage. **Figure 1.2** shows the existing municipal infrastructure to the buildings.

The proposed re-development includes replacing the restaurant/parking garage complex with a twenty-five storey mixed-use residential building. The existing hotel will remain unchanged and is not included in the re-development application.

The proposed mixed-use residential building will include 171 one-bedroom units, 25 two-bedroom units, 81 m² of ground floor retail, and 628 m² of amenity space. A total of 18 parking spaces are proposed, all of which will be accommodated on the ground floor and mezzanine levels. The proposed site plan is shown in **Figure 1.3**. Although the site plan covers 0.091 ha, the proposed building will cover an area of only 0.078 ha.

Site access to the existing two-storey parking lot is from a two-way drive aisle from Slater Street. Access to the proposed ground floor parking lot will be from a ground-level entrance directly off Slater Street, while the entrance for the mezzanine level will be through the 88 Albert Street hotel parking area. The main pedestrian accesses to the new mixed-use residential building will be from both Slater Street and the hotel.

1.4 Pre-Consultation

A pre-consultation meeting was held on December 19th, 2018 regarding the proposed construction at 81 Slater Street. The notes from that meeting are included in **Appendix B**.

IBI Group contacted the City of Ottawa to discuss and agree on relevant design criteria to be considered in this report. The criteria relate to water supply and sewage disposal. Attached in **Appendix B** is a copy of the e-mail correspondence.

1.5 Geotechnical Investigation

A Geotechnical Investigation Report by Paterson Group, dated February 21, 2019, has been completed for the subject site.

The objective of the investigation report includes:

- Determination of the subsoil and groundwater conditions;
- Provision of geotechnical recommendations pertaining to the design and development of the subject site including construction considerations.

Among other items, the report comments on the following:

- Site grading and grade raises;
- Foundation design;
- Pavement structure;
- Infrastructure construction;
- Groundwater control;
- Contamination/corrosive environment.

2 WATER SUPPLY

2.1 Existing Condition

The existing site, including the 88 Albert Street hotel, has access to three existing watermains:

- A 381 mm diameter UCI main (c. 1875) in Slater Street (north side)
- A 610 mm diameter UCI main (c. 1939) in Slater Street (south side)
- A 200 mm diameter main in Albert Street

The restaurant/parking complex and the adjacent hotel are both presently serviced from the Slater Street watermain. **Figure 1.2** shows the location of the existing watermain system adjacent to the subject property. The location of existing hydrants are also shown on this Figure. The existing hydrants are located within 45 metres of the property. FH Analysis was completed for hydrants H222 (next to 88 Albert) and H137 (next to 81 Slater), which returned a total aggregate flow of 158 l/s. A record of the FH Analysis can be found in Appendix A.

2.2 Design Criteria

The following design criteria, which were extracted from the City's Water Distribution Design Guidelines, were used to estimate the water demand requirements for the site:

| • • • | Average Daily Demand (ADD) Maximum Daily Demand (MDD) = 2.5 X ADD Peak Hourly Demand = 2.5 X MDD Fire Demand | = 350 l/cap/day = 875 l/cap/day = 1925 l/s = 167 l/s (as per Fire Underwriters Survey) |
|-------------|---|--|
| Hydrau | ilic Gradient: | , , , |
| ٠ | Minimum – max hour | 276 kPa |
| • | Minimum – max day and fire | 140 kPa |
| • | Maximum pressure | 552 kPa |

The following are the boundary conditions provided by the City for 200 mm diameter main on Fifth Avenue:

| • | Maximum Day plus Fire Flow | 106.8 m |
|---|----------------------------|---------|
| • | Minimum HGL (Peak Hour) | 107.0 m |
| • | Maximum HGL | 115.0 m |

The population of the building was calculated using the City of Ottawa guidelines (1.4 ppu for onebedroom units, 2.1 ppu for two-bedroom units). Based on a building of 196 units (171 1-bd, 25 2bd), the expected water demand for the proposed development is:

| • | Average Daily Demand | 1.18 l/s (102 m³/d) |
|---|----------------------|---------------------|
| • | Maximum Daily Demand | 2.96 l/s |
| • | Peak Hourly Demand | 6.51 l/s |

2.3 Hydraulic Analysis

The finished floor elevation for the new building will be approximately 68.80 meters. Under the Minimum HGL condition, the water pressure inside the building at the meter location is 375 kPa, which exceeds the minimum requirement of 276 kPa per the City guidelines. Because the pressure on the 24th floor of the building is less than the requirement of 276 kPa, a water pump will be required. Details of this system will be designed by the mechanical engineer.

Under the Maximum HGL condition the water pressure is 482 kPa at the basement level, which is less than the maximum allowed of 552 kPa per City guidelines. Therefore, pressure reducing valves are not required.

FH Analysis was conducted by the city for the subject site. Two hydrants were considered: H222 (northeast of subject property) and H137 (southeast of subject property). The total aggregate flow from those two hydrants is 158 l/s, based on Table 1, Appendix I of Tech bulletin ISTB-2018-02. A copy of the FH Analysis is located in Appendix A.

A required fire flow rate of 133.3 l/s (8,000 l/min) has been determined using the methodology from the Fire Underwriters Survey (FUS) 1999, a copy of the calculation is included in **Appendix C**. 167 l/s fire flow was provided to the City in order to determine the HGL condition for the maximum day plus fire condition as discussed in **Section 2.2**. The Maximum Day plus Fire Flow pressure is 344 kPa, which exceeds the minimum of 140 kPa per City guidelines. Accordingly, there will be sufficient fire flow pressure available for the site.

The site survey identified a water standpost on Slater Street which services the existing restaurant/parking complex. During construction it is anticipated that the City will be notified to decommission the existing water service as per City regulations.

2.4 Proposed Water Plan

As noted above, both the Capital Hill hotel fronting Albert Street and the subject site are both presently serviced with a common water service from Slater Street. It is proposed to leave the existing water service as-is, but install a separate service to the new development on Slater Street.

Since the total basic day demand for this building exceeds 50 cubic metres per day, the building is proposed to be serviced with two laterals, separated with a valve, all in accordance with Section 4.3.1 of the City of Ottawa Water Distribution Design Guidelines. Two 200 mm diameter water services are proposed from the Slater Street watermain and will enter the new building near the proposed mechanical room. Each lateral will have a shutoff valve located near the property line. The two laterals will be connected via a tee in the building mechanical room from which a single service pipe will supply water to the building. The water meter will be installed on the single water service line in the mechanical room. The proposed watermain locations are shown on the Site Servicing Plan, Drawing 001 which is included in **Appendix D**.

3 WASTEWATER DISPOSAL

3.1 Existing Conditions

The site consists of an existing two-storey restaurant building which fronts Slater Street and a twostorey parking complex beside the restaurant that also fronts Slater Street. There is also an existing hotel behind the site that fronts Albert Street.

The hotel building, which is not part of the re-development and will remain as is, is serviced with water and sewer infrastructure from Slater Street. The restaurant/parking complex, which will be replaced, uses the same services. The location of the existing sanitary sewer is shown in **Figure 1.2**. A 1200 mm diameter sanitary sewer is located in Slater Street in front of the subject site.

Runoff from the sidewalk in front of the restaurant/parking complex sheet flows to Slater Street. Internal site runoff from the complex is captured and discharged to the existing sanitary sewer in Slater Street. Based on our calculations, which are included in a spreadsheet located in **Appendix E**, there is an existing peak wastewater flow of about 0.03 l/s from the restaurant/parking complex that is discharging to Slater Street.

3.2 Design Criteria

As previously mentioned, the current proposal is to improve the site with a 24-storey residential building containing 171 one bedroom units and 25 two bedroom units. Parking will be provided on the ground and mezzanine levels. IBI estimates that the peak wastewater flow from the proposed development will be 4.81 l/s. This is based on the following criteria:

| Total # of one bedroom units | 171 |
|------------------------------|--|
| Total # of two bedroom units | 25 |
| Population density | |
| - One bedroom | 1.4 ppu |
| - Two bedroom | 1.8 ppu |
| Average Residential Flow | 280 l/p/d |
| Residential Peaking Factor | Harmon Formula [max = 4.0, min. = 2.0] |

The sanitary drainage area plan is shown in **Figure 3.1**, and together with the detailed sewer calculations, are both included in **Appendix E.**

3.3 Sewer Capacity Analysis

A sewer spreadsheet for both existing conditions and proposed conditions for wastewater and storm runoff quantities is included in **Appendix E**. The spreadsheet provides estimates of flow from the restaurant/parking complex to Slater Street. The hotel is also discharging to Slater Street. Since the re-development of the site does not include the hotel, the balance of this report will concentrate on the site runoff changes proposed by the re-development of the existing restaurant/parking complex.

The existing restaurant/parking complex discharges wastewater to the sewer in Slater Street at an estimated peak flow of 0.03 l/s. The proposed sanitary design flow from the new development is 4.76 l/s. The increase in sanitary flow is unsubstantial compared to the capacity of the 1200 mm diameter sanitary sewer in Slater Street.

3.4 Proposed Wastewater Plan

As previously noted, both the Capital Hill hotel fronting Albert Street and the subject site are both presently serviced with a common service lateral. It is proposed to leave the existing service lateral as-is and install a separate service to the new development on Slater Street.

It is proposed that a new 200 mm diameter sanitary service be connected to the existing 1200 mm diameter sanitary sewer in Slater Street. The service will enter the building just west of the storm manhole as shown on the Site Servicing Plan, Drawing 100 which is included in **Appendix D**.

As per City of Ottawa requirements, an access structure, or monitoring manhole, is to be included on the new sanitary service pipe.

4 STORMWATER

4.1 Existing Conditions

The subject site is situated at 81 Slater. The site is improved with a restaurant/parking complex and surrounding asphalt access and surface parking. Runoff from most of the site is collected in surface area drains which are routed to the existing sanitary sewer in Slater Street.

Runoff from the fronting sidewalks sheet flows directly to street catchbasins which are connected to the existing 375 mm diameter storm sewer in Slater Street. Based on the existing Storm Drainage Area Plan **Figure 4.1** which is included in **Appendix F**, the estimated existing storm runoff is 23.72 l/s.

The location of the existing storm sewer adjacent to the site is shown in Figure 1.2.

4.2 Design Criteria

The City of Ottawa has advised that the following stormwater criteria must be used to calculate the allowable release rate from the site:

| Time of Concentration | 10 min. | |
|-----------------------------|---------|--|
| Average Runoff Coefficient: | 0.50 | |
| Storm Event | 1:2 yr. | [i = 732.951/(Tc+6.199) ^{0.810}] |

Based on these criteria, the restricted release rate from the site is 9.72 l/s. The allowable release rate calculation for the site is included on the storm sewer design sheet, found in **Appendix F**.

4.3 Sewer Capacity Analysis

As noted above, the storm sewer adjacent to the site which could provide an outlet for the proposed development is the 375 mm diameter storm sewer in Slater Street. Based on the criteria set by the City of Ottawa for storm runoff, the redeveloped site is restricted to discharge only 9.72 l/s.

Figure 4.2, the post development Drainage Area Plan and the associated flow spreadsheet are provided in **Appendix E**. The spreadsheet provides a summary of existing and proposed flow conditions for the redeveloped site based on the 100 year storm. There is currently about 17.49 I/s of storm water discharging to Slater Street. The new servicing proposal is to direct all runoff to the 375 mm storm sewer. Due to flow limitations for the site, only 9.72 I/s can discharge to that sewer. This total includes the 4.47 I/s of uncontrolled runoff from the sidewalk area, and the controlled release rate of 5.25 I/s from the proposed cistern. Therefore, since the new total release rate of 9.72 I/s is less than existing conditions for the site, there should be sufficient capacity in the 375 mm diameter storm sewer to handle the site runoff flows during the 100 year event. The post development flow calculations also include a 25% increase to the runoff coefficient to a maximum of 1.00.

4.4 Proposed Stormwater Plan

As mentioned previously, both the Capital Hill hotel fronting Albert Street and the subject site are both presently serviced with a common service lateral. It is proposed to leave the existing service as-is and install a separate storm service to the new development on Slater Street.

The design criteria for this site requires that post-development runoff not exceed the 1:2 year event based on an average runoff coefficient of 0.50 and a time of concentration of 10 minutes. Based on the total site area of 0.091 ha, the estimated allowable release rate is 9.72 l/s. The detailed calculations are included in the Sewer Calculation Sheet included in **Appendix F**. Based

on the 100 year uncontrolled post-development flows, the City of Ottawa's requirements cannot be met by the proposed development unless on-site storage is provided.

In an effort to determine the amount of required on-site storage, the site has been divided into three drainage areas (Areas A, B, and C). The location of these drainage areas is illustrated in **Figure 4.2**. The following sections provide a brief summary of the proposed quantity stormwater management plan for the site. Detailed calculations of the runoff rates for the various sub-catchment areas, together with the stormwater management schematic (**Figure 4.3**), are included in **Appendix F**.

4.5 Area A – Building Roofs

Runoff from Area A would be released uncontrolled and routed to a cistern which is proposed to be located inside the new building. Area A covers 580 m^2 and the estimated uncontrolled 100 year release rate is 28.79 l/s at a runoff coefficient of 1.00.

4.6 Area $B - 2^{nd}$ Floor Amenity Deck

Runoff generated by Area B will be collected from two area drains, located in the outdoor amenity area and routed uncontrolled to a cistern which is proposed to be located inside the proposed building. The estimated uncontrolled release rate for the 240 m^2 Area B is 11.91 l/s at a runoff coefficient of 1.00.

4.7 Area C – Uncontrolled Flow to Slater

Runoff from Area C will be released uncontrolled and captured by the existing storm sewer adjacent to the site on Slater Street. Area C covers 90 m^2 and the estimated uncontrolled 100 year release rate is 4.47 l/s at a runoff coefficient of 1.00.

4.8 Cistern Storage

The runoff generated by Areas A and B (total area 820 m²) is proposed to discharge into and be attenuated in an under-ground cistern. Outflow from the cistern would be controlled with an orifice. The cistern release rate was calculated by determining the remaining allowable flow from the site using the following equation:

- QCistern pipe= Qmax Quncontrolled
- QCistern pipe= 9.72 I/s 4.47 I/s = 5.25 I/s

To meet the allowable release rate for the redeveloped site, the required cistern volume for the 100 year storm event was determined to be 33.06 m^3 . Detailed calculations are presented in **Appendix F**. The cistern orifice will be designed to restrict the release rate to 5.25 l/s. The attenuated flow will be discharged directly into the existing storm sewer system on Slater Street via a 250 mm diameter service lateral pipe.

The detailed minor stormwater plan for the subject site is indicated on the site servicing plan, Drawing 100. The plan shows area drains located in the 2nd floor outdoor amenity area. A 150 mm diameter outlet pipe from each floor drain is proposed to be directed internally to the basement level where the mechanical designer will complete the drainage pipe routing to the building cistern. The outlet from the cistern is proposed to be a 250 mm diameter service pipe at a 0.6% slope.

The final details of the cistern will be confirmed by the building's mechanical designer. However, it is expected that the cistern will operate by gravity with a direct piped connection from the bottom of the cistern to the existing storm sewer in Slater Street. There are no pumps proposed for the

cistern so power is not a requirement for the cistern operation. The cistern will most likely be fitted with an overflow mechanism to be routed to surface where water will eventually be captured by the street drainage system.

4.9 Stormwater Management Summary

The following is a summary of the various Stormwater Management calculations for the proposed residential building at 81 Slater Street:

- The maximum allowable release rate is 9.72 l/s based on a runoff coefficient of 0.50 and a time of concentration of 10 min. Cistern storage would be provided to meet the City of Ottawa requirement.
- The flow from Area A would discharge into the proposed cistern at a flow rate of 28.79 l/s.
- The flow from Area B would discharge into a proposed cistern at a flow rate of 11.91 l/s.
- The flow from Area C would discharge uncontrolled into the existing storm sewer in Slater Street at a flow rate of 4.47 l/s.
- The proposed cistern would provide 33.06 m³ of storage and discharge into the existing storm sewer in Slater Street at a restricted flow rate of 5.25 l/s.

5 GRADING AND DRAINAGE

5.1 Grading and Drainage Plan

The existing site is improved with a two storey restaurant and a two storey parking garage. The existing buildings are presently set back +0.3 meters from the property line. A concrete sidewalk has been constructed between the buildings and the nearby curb. Runoff presently sheet flows across the sidewalk into nearby street catchbasins which are connected to the local storm sewer.

The new building will be set back about 3.2 meters from the property line and the area between it and the curb line is proposed to be completed with a new concrete surface. Because the new building will take up most of the site, the Grading and Drainage Plan includes only the proposed grades for the new sidewalk in front of the building. The proposed Grading and Drainage Plan, Drawing 200, is included in **Appendix F**.

It should be noted that the Geotechnical Investigation Report by Paterson Group dated February 21, 2019, indicates that a subfloor drainage system will be required, to be designed by others.

6 SEDIMENT AND EROSION CONTROL PLAN

6.1 General

During construction, existing conveyance systems can be exposed to significant sediment loadings. Although construction is only a temporary situation, it is proposed to introduce a number of mitigative construction techniques to reduce unnecessary construction sediment loadings. These will include:

- Installation of filter cloths on open surface structures such as maintenance holes and catchbasins during building construction.
- Installation of silt fence on the site perimeter, where practical.

The proposed Erosion and Sedimentation Control Plan, Drawing 900, is included in Appendix H.

7 APPROVALS AND PERMIT REQUIREMENTS

7.1 City of Ottawa

The City of Ottawa reviews all development documents including this report. Upon completion, the City will approve the service connections and eventually issue a Commence Work Notification. The city has stated in an email that an MECP ECA will not be required for this site. The email can be found in **Appendix B**.

7.2 Province of Ontario

Since the proposed sewer discharge from the site will be directed to a separated sewer network, an Environmental Compliance Approval certificate may not be required. However, if it is required, the certificate will be issued by the provincial Ministry of Environment, Conservation and Parks.

7.3 Conservation Authority

The Rideau Valley Conservation Authority was contacted for this project, and they indicated that they had no comments or concerns for this project as it is not within any RVCA regulated area. A copy of their response can be found in **Appendix B**.

7.4 Federal Government

There are no approvals required from Federal Government agencies for this project.

8 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusion

The municipal infrastructure needed to support the proposed development already exists in Slater Street, immediately adjacent to the property. The City has provided operating conditions for the existing 381 mm diameter watermain in Slater Street. Connection to the Slater Street watermain will provide the new building with a reliable water supply meeting the City of Ottawa design guidelines. The adjacent storm and sanitary sewers also have capacity to service the proposed development since it is likely there will be less total flow from the proposed development than from the current site due to on-site storage. Therefore, existing public services, including water supply and sewage disposal have spare capacity to service the subject site.

8.2 Recommendation

Based on the findings and conclusions of our investigation, IBI recommends that the Site Plan Approval not be withheld because of inadequacy of existing major municipal services. It is recommended that the City of Ottawa acknowledge that there is capacity in the existing municipal water and sewer infrastructure to support the proposed development at 81 Slater Street.

James I. Moffatt, P. Eng. Associate



S. E. Labadie, P. Eng.



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APPENDIX A

Servicing Study Guideline Checklist

General Content

| | ITEM DESCRIPTION | LOCATION |
|--------------|---|-------------------------------|
| | Executive Summary (for larger reports only) | N/A |
| | Date and revision number of the report | Front Cover |
| | Location Map and plan showing municipal address, boundary, and layout of proposed development | Figure 1.1 and |
| | Plan showing the site and location of all existing services | Figure 1.2 |
| V | Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere. | Section 1.3, 2.2, 3.2, 3.3 |
| N | Summary of Pre-consultation Meeting with City and other approval agencies. | Appendix B |
| | 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. | N/A |
| | Statement of objectives and servicing criteria | N/A |
| \checkmark | Identification of existing and proposed infrastructure available in the immediate area. | Section 2.1, 3.1, 4.1 |
| | 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 |
| | <u>Concept level master grading plan</u> 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 |
| \checkmark | Reference to geotechnical studies and recommendations concerning servicing. | Section 1.5 |
| N | 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 | Report Drawings |

Development Servicing Report: Water

| | ITEM DESCRIPTION | LOCATION |
|--------------|---|-------------|
| | Confirm consistency with Master Servicing Study, if available | N/A |
| \checkmark | Availability of public infrastructure to service proposed development | Section 2.4 |
| | Identification of system constraints – external water needed | N/A |
| | Identify boundary conditions | Section 2.2 |
| \checkmark | Confirmation of adequate domestic supply and pressure | Section 2.4 |
| \checkmark | 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 2.2 |
| \checkmark | 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. | Section 2.3 |
| | Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defining 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 |
| V | 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 2.3 |
| | 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 2.2 |
| | Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference. | N/A |

Development Servicing Report: Wastewater

| | ITEM DESCRIPTION | LOCATION |
|--------------|--|----------------------------------|
| V | 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 3.2 and Appendix B |
| | 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 condition of sewers. | N/A |
| \checkmark | Description of existing sanitary sewer available for discharge of wastewater from proposed development. | Section 3.1 |
| V | 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 3.3 |
| V | Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table format. | Appendix B |
| \checkmark | Description of proposed sewer network including sewers, pumping stations and forcemains. | Section 3.4 |
| | 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 |
| | 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 |
| \checkmark | Special considerations such as contamination, corrosive environment, check soils, etc. | Section 1.5 |

Development Servicing Report: Stormwater Checklist

| | ITEM DESCRIPTION | LOCATION |
|--------------|---|-------------------------------|
| | Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property) | N/A |
| \checkmark | Analysis of available capacity in existing public infrastructure. | Section 2.2, 3.2, 4.2 |
| | 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. | N/A |
| | Water quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements. | N/A |
| | Description of the stormwater management concept with facility locations and descriptions with references and supporting information. | N/A |
| | Set-back from private sewage disposal systems. | N/A |
| | Watercourse and hazard lands setbacks. | N/A |
| | Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed. | N/A |
| | Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists. | N/A |
| V | Storage requirements (complete with calculations) and conveyance capacity for minor events (1:2 year return period) and major events (1:100 year return period). | Section 4.2, Drawing C-001 |
| | 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 |
| V | 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 4.2, Drawing C-001 |
| | 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 |

| \checkmark | Descriptions of how the conveyance and storage capacity will be achieved for the development. | Section 4.2 SWM Report |
|--------------|---|-----------------------------|
| | 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading. | Drawing 27399- 200 |
| | Inclusion of hydraulic analysis including hydraulic grade line elevations. | N/A |
| V | Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors. | Section 6.1, Drawing 900 |
| | 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 |

Approval and Permit Requirements: Checklist

| | ITEM DESCRIPTION | LOCATION |
|--------------|--|-------------|
| V | Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act. | Section 7.3 |
| \checkmark | Application for Certification of Approval (CofA) under the Ontario Water resources Act. | Section 7.2 |
| | Changes to Municipal Drains | N/A |
| \checkmark | Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.) | Section 7.4 |

Conclusion Checklist

| | ITEM DESCRIPTION | LOCATION |
|--------------|---|------------------|
| | Clearly stated conclusions and recommendations | Section 8.1, 8.2 |
| | 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. | N/A |
| \checkmark | All draft and final reports shall be signed and stamped by professional Engineer registered in Ontario. | Done |

APPENDIX B

- December 19, 2018 Pre-consultation Meeting Notes
- February 25, 2019 Water Boundary Conditions E-mail from City
- August 9, 2019 Revised Water Boundary Conditions E-mail from City
- August 7, 2019 FH Analysis E-mail from City
- August 6, 2019 RVCA Comments

| From: | Jim Moffatt | | | | | |
|--------------|---|--|--|--|--|--|
| Sent: | Wednesday, March 6, 2019 9:45 AM | | | | | |
| То: | Samantha Labadie | | | | | |
| Subject: | FW: Pre-consult follow up - 81 Slater Street | | | | | |
| Attachments: | image001.gif; Pre-application Consultation Servicing Memo.pdf; | | | | | |
| | albert_slater_recplan_en.pdf; 81 Slater list of plans and studies.pdf | | | | | |

From: Marc-Andre Palerme [mailto:mpalerme@placedoree.com]
Sent: Tuesday, January 8, 2019 4:43 PM
To: Jim Moffatt <jmoffatt@IBIGroup.com
Subject: Fwd: Pre-consult follow up - 81 Slater Street</pre>

Hi Jim,

Firstly, Happy New Year, hope you enjoyed some time off.

Please see below and attached notes from our pre-consult meeting for Slater St. Can you please send us a revised Civil engineering proposal based on the pre-consult memo and notes, by Friday if possible.

Thanks, let me know if you have any questions

Marc



PLACE DORÉE

Marc Andre Palerme Gestion Immobiliere Place Doree 1 Westmount Square, Suite 350 Montreal, QC H3Z 2P9 Cell (514) 867-0685 Bureau (514) 932-5355

Begin forwarded message:

From: Bria Aird <<u>aird@fotenn.com</u>> Date: January 4, 2019 at 8:50:41 AM EST To: "<u>kwaugh@princedev.com</u>" <<u>kwaugh@princedev.com</u>>, "<u>ron@placedoree.com</u>" <<u>ron@placedoree.com</u>>, "<u>DHook@IBIGroup.com</u>" <<u>DHook@IBIGroup.com</u>>, Robert Verch <<u>rverch@rlaarchitecture.ca</u>>, Roderick Lahey <<u>rlahey@rlaarchitecture.ca</u>>

Cc: Jaime Posen <<u>posen@fotenn.com</u>> Subject: FW: Pre-consult follow up - 81 Slater Street

Good morning,

We have received meeting minutes (below) and the plans and study list (attached) from the preconsultation for 88 Albert.

Jaime and I are setting up a meeting with Jenny and the community representative to finish the preconsult and I will forward a meeting invite for those who would also like to attend.

Best,

Bria Aird, M.Pl.

Planner

T 613.730.5709 ext. 224

From: Kluke, Jenny <<u>jennifer.kluke@ottawa.ca</u>> Sent: January-03-19 4:29 PM To: Bria Aird <<u>aird@fotenn.com</u>>; Jaime Posen <<u>posen@fotenn.com</u>> Cc: Buchanan, Richard <<u>Richard.Buchanan@ottawa.ca</u>>; Dubyk, Wally <<u>Wally.Dubyk@ottawa.ca</u>>; Moise, Christopher <<u>christopher.moise@ottawa.ca</u>> Subject: Pre-consult follow up - 81 Slater Street

Hi Bria,

Further to our meeting on December 19, 2018 regarding the proposal to construct a 24-storey residential use building at 81 Slater Street, please find below a summary of what was discussed.

Planning Considerations (Jenny Kluke)

- The property is designated as Central Area in the Official Plan.
- The property is zoned MD S46 (Mixed Use Downtown and is subject to Schedule 46 in the Zoning By-law)
- The property is within the Central Area Secondary Plan area
- Parkland fees will be required.
- The proposed development should take into consideration the Albert Slater Repurposing Plan (attached). Planned construction is expected to be in 2020 (+/-) depending on the location.
- As discussed in the meeting, while staff are happy that you are proposing a residential use building with limited parking, we have strong concerns with the lack of separation distance and the relationship between neighbouring buildings. Section 2.25 of the Urban Design Guidelines for High-rise Buildings states that proper separation distances are to be provided between towers to minimize shadow and wind impacts, and loss of skyviews, and allow natural light into interior spaces. The direction the City is moving in is to ensure there is a 7.5 metre setback from the side and rear lot lines above 6 storeys for new high rise buildings.

Urban Design Comments (Christopher Moise)

- As discussed at the pre-consultation, this proposal has many hurdles to overcome. The prospect of filling in every open space and access to light and sky in the downtown core is a growing issue. In 2018, the City developed guidelines to help guide new high-rise development and to offer clear strategies for mitigating the negative impacts when growth and development is left to market forces alone.
- This proposal will go before the City's Urban Design Review Panel with the hope of finding design solutions that work for both the owner and the neighbours and the public. The proponent should spend some concerted time studying the tall building guidelines to better understand the concerns at play, so that together we may guide the project toward mitigation of problems through creative design solutions.

Engineering Comments (Richard Buchanan)

• See attached comments

Transportation Considerations (Wally Dubyk)

- Slater Street is designated as an Arterial road within the City's Official Plan with a ROW protection limit, the maximum land requirement from property abutting existing ROW is 1.25 metres subject to widening/easement policy. The ROW limits are to be dimensioned and shown on the drawings.
- Widening/easement: Central Area In Table 1, Urban Arterial and City Freeway Rights-of-way, certain streets in the Central Area of the city are identified as being subject to a widening/easement policy. In addition to any proposed right-of-way widening, a surface easement for the use of pedestrians will be required along the full length of property frontages. Unless otherwise determined by the City, this easement will generally consist of dimensions as described in this paragraph. The easement will have a height of 4.5 metres from finished grade surface. The width of this easement measured from the proposed right-of-way varies according to the design of the building. Where a building cantilevers over the easement, a width of 1.5 metres is required. Where columns support the part of a building built over the easement, the width required is 2.5 metres plus the width of the columns. Where a cantilevered building and a column-supported building are located adjacent to each other, there must be a clear passage for pedestrians of 1.5 metres in the easement where the buildings meet.
- Link to the above:

https://ottawa.ca/en/city-hall/planning-and-development/official-planand-master-plans/official-plan/volume-1-official-plan/section-7annexes/annex-1-road-classification-and-rights-way

- The consultant should review the sight distance to the access and any obstructions that may hinder the view of the driver.
- The concrete sidewalks should be 2.0 metres in width and be continuous and depressed through the proposed access (please refer to the City's sidewalk and curb standard drawing.
- No private approach shall be constructed within 0.3 metres of any adjacent property measured at the highway line, and at the curb line or roadway edge.
- The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards.
- The proponent is to provide an access grade that does not exceed 2-6% within the private property for a minimum distance of 6.0 metres from the ROW limits. This is a critical safe distance to allow a driver to stop at the top of the ramp and have a good sight angle of pedestrians.

- The TIA Screening Form identified that Triggers have been met. Please proceed with the TIA Step 2 – Scoping Report.
- The Traffic Management Plan is to be submitted for approval in advance of the Site Plan application.

Centretown Citizens Community Association Representative

• Comments to be provided at a later date

Development Applications Required

To move forward with this proposal, a <u>Site Plan Control, Manager</u> <u>Approval, Public Consultation Application</u> will be required. Please review the fees associated with this <u>here</u>.

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

As you may know, the property is in Ward 14-Somerset, with Councillor Catherine McKenney. It is in your best interest to initiate contact with close neighbours as well as the Councillor and Registered Community Groups. In addition, it may be beneficial to contact key technical agencies that may be involved in this file to discuss the proposal before submitting an application.

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

Please do not hesitate to contact me if you have questions or require clarification on any of the above points.

Regards,

Jenny

Jenny Kluke MCIP, RPP

Planner

,

,

Development Review – Central Branch

Planning, Infrastructure and Economic Development Department

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West, Ottawa, ON K1P 1J1

613.580.2424 ext./poste 27184

E-mail: jenny.kluke@ottawa.ca

ottawa.ca/planning_/ ottawa.ca/urbanisme

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MEMO

Date: Dec 27, 2018

| To / Destinataire | Jenny Kluke, Planner | |
|----------------------|--|----------------------|
| From / Expéditeur | Richard.Buchana, Project Manager, Infrastructure Approvals | |
| Subject / Objet | Pre-Application Consultation 88 Albert/81 Slater, Ward 14. Residential Expansion, Demolish the existing parking structure and develop a 24 storey residential building with 180 dwelling units. | File No. PC2019-0330 |

Please note the following information regarding the engineering design submission for the above noted site:

- The Servicing Study Guidelines for Development Applications are available at the following address: <u>https://ottawa.ca/en/city-hall/planning-and-</u> <u>development/information-developers/development-application-review-</u> <u>process/development-application-submission/guide-preparing-studies-and-</u> plans#servicing-study-guidelines-development-applications
- 2. Servicing and site works shall be in accordance with the following documents:
 - ⇒ Ottawa Sewer Design Guidelines (October 2012)
 - ⇒ Ottawa Design Guidelines Water Distribution (2010)
 - ⇒ Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
 - ⇒ City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
 - ⇒ City of Ottawa Environmental Noise Control Guidelines (January, 2016)
 - ⇒ City of Ottawa Park and Pathway Development Manual (2012)
 - ⇒ City of Ottawa Accessibility Design Standards (2012)



- ⇒ Ottawa Standard Tender Documents (latest version)
- ⇒ Ontario Provincial Standards for Roads & Public Works (2013)
- Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at <u>InformationCentre@ottawa.ca</u> or by phone at (613) 580-2424 x.44455).
- 4. The Stormwater Management Criteria, for the subject site, is to be based on the following:
 - The 5-yr storm event using the IDF information derived from the Meteorological Services of Canada rainfall data, taken from the MacDonald Cartier Airport, collected 1966 to 1997.
 - ii. For separated sewer system built pre-1970 the design of the storm sewers are based on a 2 year storm.
 - iii. The pre-development runoff coefficient <u>or</u> a maximum equivalent 'C' of 0.5, whichever is less (§ 8.3.7.3).
 - iv. A calculated time of concentration (Cannot be less than 10 minutes).
 - v. Flows to the storm sewer in excess of the 5-year storm release rate, up to and including the 100-year storm event, must be detained on site.
 - vi. For a combined sewer system the maximum C= 0.4 or the pre-development C value, whichever is less. In the absence of other information the allowable release rate shall be based on a 2 year storm event.
 - Note: There may be area specific SWM Criteria that may apply. Check for any related SWM &/or Sub-watershed studies that may have been completed.
- 5. Deep Services (Storm, Sanitary & Water Supply)
 - *i.* Provide existing servicing information and the recommended location for the proposed connections. Services should ideally be grouped in a common trench to minimize the number of road cuts.
 - *ii.* Connections to trunk sewers and easement sewers are typically not permitted.



- iii. Provide information on the monitoring manhole requirements should be located in an accessible location on private property near the property line (ie. Not in a parking area).
- iv. Provide information on the type of connection permitted

Sewer connections to be made above the springline of the sewermain as per:

- a. Std Dwg S11.1 for flexible main sewers connections made using approved tee or wye fittings.
- *b.* Std Dwg S11 (For rigid main sewers) *lateral must be less that 50% the diameter of the sewermain,*
- *c.* Std Dwg S11.2 (for rigid main sewers using bell end insert method) for larger diameter laterals where manufactured inserts are not available; lateral must be less that 50% the diameter of the sewermain,
- Connections to manholes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain. – Connect obvert to obvert with the outlet pipe unless pipes are a similar size.
- e. No submerged outlet connections.
- v. Single lot normally requires one service. Existing building facing Albert Street already has a connection. For redundancy purposes, the applicant will be permitted to have a water service off Slater street with the requirement of the existing building connecting to the internal plumbing in the new building.
- 6. Water Boundary condition requests must include the location of the service and the expected loads required by the proposed development. Please provide the following information:
 - i. Location of service
 - ii. Type of development and the amount of fire flow required (as per FUS, 1999).



- iii. Average daily demand: ____ l/s.
- iv. Maximum daily demand: ____l/s.
- v. Maximum hourly daily demand: _____ l/s.
- 7. MOECC ECA Requirements

An MOECC Environmental Compliance Approval Municipal/Private Sewage Works) will be required for the proposed development. Please contact Ontario Ministry of the Environment, Conservation and Parks, Ottawa District Office to arrange a pre-submission consultation:

For I/C/I applications: Christina Des Rochers (613) 521-3450, ext. 231

Christina.Desrochers@ontario.ca

8. Phase 1 ESAs and Phase 2 ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

Should you have any questions or require additional information, please contact me directly at (613) 580-2424, x 27801 or by email at Richard.Buchanan@Ottawa.ca.

| From: | Mottalib, Abdul <abdul.mottalib@ottawa.ca></abdul.mottalib@ottawa.ca> |
|----------|---|
| Sent: | Tuesday, February 26, 2019 12:03 PM |
| То: | Samantha Labadie |
| Cc: | Mottalib, Abdul |
| Subject: | RE: 81 Slater - Boundary Conditions |

Hello Samantha,

Please note it should say zone 1W below, not 1E. Sorry for the typo

Thanks,

Mohammad Abdul Mottalib, P. Eng.

From: Mottalib, Abdul
Sent: February 25, 2019 2:09 PM
To: 'Samantha Labadie' <<u>Samantha.Labadie@ibigroup.com</u>>
Cc: Mottalib, Abdul <<u>Abdul.Mottalib@ottawa.ca</u>>
Subject: FW: 81 Slater - Boundary Conditions

Please see below as requested.

Thanks,

Mohammad Abdul Mottalib, P. Eng.

From: Sent: February 25, 2019 12:55 PM To: Mottalib, Abdul <<u>Abdul.Mottalib@ottawa.ca</u>> Subject: RE: 81 Slater - Boundary Conditions

The following are boundary conditions, HGL, for hydraulic analysis at 81 Slater (zone 1E) assumed to be connected to the 381mm on Slater (see attached PDF for location).

Minimum HGL = 107.0m

Maximum HGL = 115.0m

MaxDay + FireFlow (167 L/s) = 106.8m

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.

From: Samantha Labadie <<u>Samantha.Labadie@ibigroup.com</u>> Sent: February 20, 2019 4:29 PM To: Mottalib, Abdul <<u>Abdul.Mottalib@ottawa.ca</u>> Subject: 81 Slater - Boundary Conditions

Hi Abdul,

We are working on a new proposed 24-storey 196 unit residential building at 81 Slater Street, as shown on the attached, and are requesting watermain boundary conditions. Attached is a water demand calculation and FUS fire flow calculation summarized as follows:

| Average day demand | 1.18 L/s |
|--------------------|----------|
| Max day demand | 2.96 L/s |
| Max hour demand | 6.51 L/s |
| Fire flow | 167 L/s |

As the daily demand is more than 50 m3/day, we will provide two watermain tees with a valve in between. A peak sanitary flow of 4.76 L/s has been calculated.

Thank you,

Samantha Labadie

IBI GROUP Suite 400, 333 Preston Street Ottawa ON K1S 5N4 Canada tel +1 613 225 1311 ext 64062 fax +1 613 225 9868



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,

Samantha Labadie

| essel@ottawa.ca> |
|------------------|
| 45 AM |
| |
| 1 |
| 45 AM , |

Good morning again Ms. Labadie.

Further to my email below and our discussion regarding this proposed development at 88 Albert / 81 Slater, please be advised that an ECA will not be required if the following applies:

- A) The development does not contain multiple parcels of land
- B) The Storm is completely separate and not connected to a combined sewer in any way

The sanitary sewer connecting to a combined in conjunction with items **A** and **B** does not trigger an MECP ECA.

Please note that if the above applies the following conditions would be required:

- Total allowable release rate will be 5 year pre-development rate if: Sewer Pipe is newer than 1970 or within Vanier Area (talk with John Wu) where no less than 450mm dia. - <u>otherwise use 2 year pre-dev. Rate</u>
- Coefficient (C) of runoff will need to be determined **as per existing conditions** but in no case more than 0.5
- TC = 20 minutes or can be calculated TC should be not be less than 10 minutes, since IDF curves become unrealistic at less than 10 min.
- Any storm events greater than 5 year, up to 100 year, and including 100 year storm event must be detained on site.
- Two separate sewer laterals (one for sanitary and other for storm) will be required.

Please note:

Foundation drains are to be independently connected to sewermain (separated or combined) unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.

Roof drains are to be connected downstream of any incorporated ICD within the SWM system.

The Storm sewer on GeoOttawa for Slater St. indicates an install year of 1968. Therefore a C=0.5 and 2 and 100 year events should be used.

Samantha Labadie

| From: | Wessel, Shawn <shawn.wessel@ottawa.ca></shawn.wessel@ottawa.ca> |
|----------|---|
| Sent: | Wednesday, August 7, 2019 12:25 PM |
| То: | Samantha Labadie |
| Subject: | RE: 81 Slater - Review of comments |

Good afternoon Ms. Labadie (Sam)

Please find comments from our Water Distribution Dept. regarding the FH to the East of the site at the Northern and Southern limits.

The total aggregate flow from those two hydrants is 158 L/s. This was based on Table 1, Appendix I of Tech bulletin ISTB-2018-02. A hydrant located within 75m of the building can deliver 5700 L/min (or 95L/s) and a hydrant located between 75 and 150m can deliver 3800 L/min (63L/s).

If you require additional information or clarification, please do not hesitate to contact me anytime.

Thank you

Regards,

Shawn Wessel, A.Sc.T.,rcji Project Manager - Infrastructure Approvals Gestionnaire de projet – Approbation des demandes d'infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale Planning, Infrastructure and Economic Development Department | Direction générale de la planification de l'infrastructure et du développement économique City of Ottawa | Ville d'Ottawa 110 Laurier Ave. W. | 110, avenue Laurier Ouest, Ottawa ON K1P 1J1 (613) 580 2424 Ext. | Poste 33017 Int. Mail Code | Code de Courrier Interne 01-14 shawn.wessel@ottawa.ca

Please consider the environment before printing this email

From: Samantha Labadie <Samantha.Labadie@ibigroup.com>
Sent: August 06, 2019 3:26 PM
To: Wessel, Shawn <shawn.wessel@ottawa.ca>
Subject: RE: 81 Slater - Review of comments

Samantha Labadie

From: Sent: To: Cc: Subject: Hal Stimson <hal.stimson@rvca.ca> Tuesday, August 6, 2019 3:54 PM Samantha Labadie Jim Moffatt RE: 81 Slater - Proposed Redevelopment

Hi Samantha,

RVCA has no comments or concerns for this site.

It is not within any RVCA regulated area.

I have checked with our planners as well and they have no involvement or issues.

Regards,

Hal Stimson Inspector, RVCA <u>hal.stimson@rvca.ca</u> ext. 1127



3889 Rideau Valley Drive PO Box 599, Manotick ON K4M 1A5 T 613-692-3571 | 1-800-267-3504 F 613-692-0831 | www.rvca.ca

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From: Samantha Labadie <Samantha.Labadie@ibigroup.com>
Sent: Tuesday, August 06, 2019 11:50 AM
To: Hal Stimson <hal.stimson@rvca.ca>
Subject: 81 Slater - Proposed Redevelopment

Hi Hal,

There is a proposed redevelopment at 81 Slater Street as per the attached. It will be a 25-storey residential high rise, with 196 units and 18 "underground" parking spaces (parking is on the first and second floor inside the building, but not open-air).

A site servicing study was completed and sent to the city. We received a comment from the city stating "The report did not discuss the quality control measures for stormwater runoff, which is a requirement for a SWM report. Please add a quality control section and add information regarding local RVCA concerns on this issue for this site."

If you could let us know RVCA's concerns for this site, or let us know who to contact to find out, it would be appreciated.

Thank you,

Sam Labadie

IBI GROUP Suite 400, 333 Preston Street Ottawa ON K1S 5N4 Canada tel +1 613 225 1311 ext 64062 fax +1 613 225 9868



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APPENDIX C

Water Demand Calculation Sheet

WATERMAIN DEMAND CALCULATION SHEET



333 PRESTON STREET OTTAWA, ON

PROJECT : 81 Slater LOCATION : City of Ottawa DEVELOPER :

FILE: 119385-5.7.3 DATE PRINTED: 2019-02-20 DESIGN: 2019-02-20 PAGE : 1 OF 1

| | RESIDENTIAL | | | NON-RESIDENTIAL | | | AVERAGE DAILY | | MAXIMUM DAILY | | MAXIMUM HOURLY | | FIRE | | | | |
|----------|-------------|-------|-------|-----------------|--------|-------|-------------------|------|---------------|-------|----------------|----------|-------|--------------|----------|--------|---------|
| NODE | | UNITS | UNITS | | INDTRL | COMM. | RETAIL | D | DEMAND (I/s) | | DEMAND (I/s) | | | DEMAND (l/s) | | DEMAND | |
| NODE | 1bd | 2bd | TH | POP'N | (ha.) | (ha.) | (m ²) | Res. | Non-res. | Total | Res. | Non-res. | Total | Res. | Non-res. | Total | (I/min) |
| | | | | | | | | | | | | | | | | | |
| BUILDING | 171 | 25 | 0 | 292 | | | 81 | 1.18 | 0.00 | 1.18 | 2.96 | 0.00 | 2.96 | 6.50 | 0.01 | 6.51 | 10,000 |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

ASSUMPTIONS

RESIDENTIAL DENSITIES

One-bedroom (1bd) 1.4 p / p / u Two-bedroom (2bd) 2.1 p / p / u Townhouse (TH) 2.7 p/p/u

AVG. DAILY DEMAND Residential: 350 l / cap / day Industrial: l / ha / day Commercial: l / ha / day Retail: 2,500 I / 1000m² / day

| MAA. DAILI DL | | |
|---------------|-------|------------------|
| Residential: | 875 | l / cap / day |
| Industrial: | | l / ha / day |
| Commercial: | | l / ha / day |
| Retail: | 3,750 | l / 1000m² / day |
| | | |

MAX. HOURLY DEMAND

Residential: 1,925 I / cap / day Industrial: l / ha / day Commercial: l / ha / day Retail: 6,750 I / 1000m² / day

FIRE FLOW

From FUS Calculation 16,000 I / min

Fire Flow Requirement from Fire Underwriters Survey - 81 Slater

Building

| | Floor | Area (1 | & 2) | 1,370 | m ² | | | A | rea |
|-------------------|------------|----------------|-------|------------|----------------|---------------|--------------------|-------|--------|
| | 50% Floor | Area (3 | to 8) | 2,030 | m ² | | | 1&2 | 3 to 8 |
| | Tota | l Floor A | Area | 3,400 | m ² | _ | | 8369 | 6240 |
| | | | | | | | | 6369 | 6240 |
| F = 220C | A | | | | | | | | 6240 |
| | | | | | | | | | 6240 |
| С | 0.6 | ; | | C = | 1.5 | wood frame | 9 | | 6240 |
| А | 3,400 | m ² | | | 1.0 | ordinary | | | 6240 |
| | | | | | 3.0 | non-combu | stible | | 6240 |
| F | 7,697 | l/min | | | 0.6 | fire-resistiv | е | 14738 | 43680 |
| use | 8,000 | l/min | | | | | | 1370 | 4060 |
| | | | | | | | | | 2030 |
| Occupanc | y Adjustme | nt | | | -25% | non-combu | stible | | |
| | | | | | -15% | limited com | bustible | | |
| Use | | - | 15% | | 0% | combustible | е | | |
| | | | | | +15% | free burning | g | | |
| Adjustmer | nt | -' | 1200 | l/min | +25% | rapid burnir | ng | | |
| Fire flow | | 6, | 800 | l/min | | | | | |
| Sprinkler / | Adiustment | | | | -30% | system con | forming to NEPA 13 | 1 | |
| | | | | | -50% | complete a | utomatic system | | |
| Use | | | 30% | | | | | | |
| | | | | | | | | | |
| Adjustmer | nt | 2 | 2040 | l/min | | | | | |
| Building | Separation | | Adiac | ent Expose | h Wall | Exposure | I | | |
| Face | (m) | Lend | nth | Stories | I *H Factor | Charge * | | | |
| | () | | | 0.01.00 | 1 | - enange | l | | |
| north | 8.0 |) | 29.0 | 12 | 348 | 19% | | | |
| east | 0.5 | ; | 20.8 | 23 | 478 | 0% | (Blank Wall) | | |
| south | 24.0 | 1 | 29.0 | 3 | 87 | 8% | | | |
| west | 1.0 |) | 20.8 | 18 | 374 | 25% | | | |
| Total | | | | | | 52% | | | |
| Total | | | | | | 52 /0 | | | |
| Adjustment | | | 3,536 | l/min | _ | | | | |
| Total adjustments | | | 1,496 | l/min | | | | | |
| Fire flow | | | | 8,296 | l/min | - | | | |
| Use | | | | 8,000 | l/min | | | | |
| 036 | | | | 133.3 | l/s | | | | |

sqft sqm sqm (50%)

Exposure charges from Techinical Bulletin ISTB 2018-02 Appendix H (ISO Method)

APPENDIX D

• Drawing 001 - Site Servicing Plan

NOTES:

- 1. ALL WORKS TO BE COMPLETED AS PER CURRENT CITY OF OTTAWA STANDARDS AND ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS.
- 3. USE COMMON TRENCH FOR ALL SERVICE LATERALS.

2. SEWER LATERALS TO BE PVC DR 35.

- 4. WATER SERVICES TO BE PVC. DR 18 CL150. MINIMUM COVER OF 2.4m FOR WATER SERVICE IS REQUIRED, USE THERMAL INSULATION AS PER CITY STANDARDS WHEN COVER IS LESS THAN 2.4m.
- 5. ALL SERVICE LATERAL AND SURFACE RESTORATION WORK IN ACCORDANCE WITH CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS.
- 6. FULL PORT BACKWATER VALVE IS REQUIRED ON BOTH THE SANITARY AND STORM SERVICE CONNECTIONS.
- 7. WATER SERVICE CHLORINATION AND TESTING TO BE COMPLETED BY CITY FORCES.
- 8. PROPOSED BUILDING INFORMATION TAKEN FROM RLA ARCHITECTS DRAWINGS.
- 9. AN EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED ON THIS SITE. AS A MINIMUM THAT PLAN WILL INCLUDE A LIGHT DUTY SILT FENCE BARRIER TO OPSD STANDARD 219.110 SURROUNDING THE SITE WHERE PRACTICAL AND SILT SACKS FITTED UNDER EXISTING STREET CATCH BASINS.
- 10. ALL SHOWN UTILITIES ARE APPROXIMATE AND ARE TO BE FIELD

VERIFIED BY CONTRACTOR, ANY DISCREPANCIES ARE TO BE REPORTED TO IBI GROUP PRIOR TO CONTRACTOR MOBILIZING TO SITE.

- 11. CONTRACTOR RESPONSIBLE TO SUPPORT EXISTING UTILITIES THAT MAY BE AFFECTED DURING CONSTRUCTION
- 12. EXISTING CURBS AND SIDEWALKS ARE TO BE REMOVED AND REPLACED AS NOTED ON THE DRAWINGS.
- 13. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATER COURSE, DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL, USING FILTER CLOTH UNDER THE GRATES OF CATCHBASINS AND MANHOLES AND INSTALLING SILT FENCES AND EFFECTIVE SEDIMENT TRAPS. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY
- 14. BEARINGS SHOWN HEREON AND ELEVATIONS ARE INDICATED ON THE LOT SURVEY BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD.

APPLICABLE REGULATORY AGENCIES.

- 15. FOR GEOTECHNICAL INFORMATION AND FOOTING DRAINS SEE PROPOSED MULTI-STOREY BUILDING, 81 SLATER STREET, OTTAWA, ONTARIO' BY PATERSON GROUP.
- 16. CLAY SEAL TO BE INSTALLED IN SERVICE TRENCHES BETWEEN CONNECTION POINT AND CAP.
- 17. LANDSCAPING PLAN COMPLETED BY

XXXXXX REFER TO LANDSCAPE PLANS FOR SURFACE FINISH BETWEEN CONCRETE SIDEWALK AND BUILDING.

- 18. THE EXISTING BUILDING IS TO BE DEMOLISHED. PRIOR TO DEMOLITION THE EXISTING BUILDING SERVICES ARE TO BE FIELD LOCATED AND PRESERVED.
- 19. PROPOSED SIAMESE CONNECTION IS ±18m FROM EXISTING HYDRANT
- 20. OUTLET PIPE FROM THE SITE AREA DRAIN TO BE DIRECTED INTO THE PARKING LEVEL. MECHANICAL DESIGNER TO DESIGN THE INTERNAL DRAINAGE PIPES TO THE CISTERN LOCATION. THE DRAIN IS TO BE EQUIVALENT TO HEAVY DUTY FLOOR DRAIN FIG. 2290 BY JAY R. SMITH MFG.CO.
- 21. MONITORING MANHOLES ARE TO BE INSTALLED ON THE SANITARY AND STORM SEWERS AT THE PROPERTY LINE. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR ENGINEERS REVIEW PRIOR TO CONSTRUCTION.
- 22. THE MECHANICAL ENGINEER IS TO CONNECT BOTH WATERMAINS IN THE MECHANICAL ROOM WITH A TEE AND CREATE ONE WATER SERVICE DESIGNED TO SERVICE THE BUILDING.
- 25. ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO THE CGVD28 GEODETIC DATUM.
- 26. CONTRACTOR IS RESPONSIBLE TO KEEP ROAD FREE AND CLEAR FROM MUD AND DEBRIS.
- 27. A GAS BLOW OFF STATION IS REQUIRED.



| | _ <u>SE</u> SC | CTION B CALE:1:100 C-100 | | |
|-------------|---|--------------------------------|-------------------------------------|--|
| LEGEND | | | | |
| | PROPERTY LINE | | | |
| F.F.= 80.50 | FINISHED FLOOR ELEVATION | | EXISTING TRAFFIC SIGN | |
| DC | DEPRESSED CURB | СВ | EXISTING CATCH BASIN | |
| M | WATER METER (see mech. drwg. for exact location) | MH | EXISTING COMBINED MANHOLE | |
| RM | REMOTE WATER METER | <u>_375¢_STORM</u> | EXISTING STORM SEWER | |
| | (SEE MECH. DRWG. FOR EXACT LOCATION) | 1200ø SANITARY | EXISTING SANITARY SEWER | |
| | (SEE MECH. DRWG. FOR EXACT LOCATION) | 250Ø STORM | PROPOSED STORM SEWER | |
| -G | PROPOSED GAS SERVICE | | EXISTING WATERMAIN | |
| ———H——— | EXISTING UNDERGROUND HYDRO | 2000 SANITARY | PROPOSED SANITARY SEWER | |
| 0/H | EXISTING OVERHEAD HYDRO | 2000 WATERMAIN | PROPOSED WATERMAIN | |
| ⊖ нм−н | EXISTING HYDRO MANHOLE | ⊗ ^{200V&VB} | PROPOSED VALVE AND VALVE BOX | |
| O H/SL | EXISTING HYDRO AND LIGHT POLE | ⊗ ^{375&VC} | PROPOSED VALVE AND | |
| G | EXISTING GAS MAIN | Стен | VALVE CHAMBER | |
| — В — | EXISTING BELL | Q I II | | |
| ○ ВМН | EXISTING BELL MANHOLE | SN | EXISTING SIGN | |
| О тмн | EXISTING TRAFFIC MANHOLE | | EXISTING WATER VALVE | |
| O TL | EXISTING TRAFFIC LIGHT | o SP | EXISTING WATER SERVICE STANDPOST | |
| | PROPOSED CONCRETE SIDEWALK | • WV | EXISTING VALVE BOX | |



#17932

APPENDIX E

- Sanitary Sewer Design Sheet
- Figure 3.1 Sanitary Drainage Area Plan



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| | 1.00471011 | | | RESIDENTIAL | | | | | | | | | ICI AREAS | | | | INFILTRATION ALLOWANCE | | | | | TOTAL | | | | PROPOSED SEWF | | | | | | |
|---------------------|------------|-------------|-----------|-----------------|-------------|---------|----------|-----------|----------|---------|------------|--------|-----------|----------|------|--------|------------------------|-------|-------|------|----------------|-----------------|-----------------|-----------|--------|---------------|--------|------|-------|---------------|-------|--------|
| | LUCATION | | | AREA | | | | AREA | POPL | ILATION | PEAK | PEAK | | | ARE | A (Ha) | | | PEAK | ARE | EA (Ha) | FLOW | FIXED F | LOW (L/S) | FLOW | CAPACITY | LENGTH | DIA | SLOPE | VELOCITY | AVAI | LABLE |
| OTDEET | | FROM | то | w/ Units | 41-4 | 01-1 | | w/o Units | IND | 0.00 | FACTOR | FLOW | INST | TUTIONAL | RE | TAIL | INDUS | TRIAL | FLOW | INID | 0.00 | (1.1-) | INID | 01104 | (1.4-) | (1.4-) | () | (| (0() | (full) | CAP | ACITY |
| STREET | AREA ID | MH | MH | (Ha) | 100 | 200 | IH | (Ha) | IND | COM | | (L/s) | IND | CUM | IND | CUM | IND | CUM | (L/s) | IND | COM | (L/S) | IND | COM | (L/S) | (L/S) | (m) | (mm) | (%) | (m/s) | L/s | (%) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SLATER | 81 SLATER | | | | 171 | 25 | | | 292 | 292 | 4.00 | 4.73 | | | 0.01 | 0.01 | | | 0.00 | 0.09 | 0.09 | 0.03 | | | 4.76 | 91.49 | 12.90 | 200 | 7.15 | 2.821 | 86.74 | 94.80% |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 01.1755 | = | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SLATER | EXISTING | | | | 0 | 0 | | | 0 | 0 | 4.00 | 0.00 | | | 0.03 | 0.03 | | | 0.00 | 0.09 | 0.09 | 0.03 | | | 0.03 | | | | | | | |
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| Design Parameters: | | | | Notes: | | | | 1 | | | Designed | | 51 | | | No | | | | 1 | 1 | Povisio | n | | + | 4 | | | 1 | Dato | | |
| Design i urumeters. | | | | 1 Mannings | coefficient | (n) = | 0.013 | | | | Designed. | | 0L | | | 1 | 1 | | | | Site Servici | a Study lesue | nd for Client R | eview | | | | | | March 26, 201 | 0 | |
| Residential | | ICI Areas | | 2 Demand | per capita) | 350 |) I /day | 300 |) I /dav | | | | | | | 2 | | | | 9 | Site Servicing | 1 Study revised | d per City Cor | nments | | | | | | August 2019 | 0 | |
| | | 10171040 | _ | 3. Infiltration | allowance | : 0.28 | L/s/Ha | | , El ad | | Checked: | | JM | | | - | | | | | | j oladj ronool | | | | | | | | / laguet 2010 | | |
| 1bd 1.4 p/p/u | INST 28.0 | 00 L/Ha/dav | | 4. Residenti | al Peaking | Factor: | 2.0,110 | | | | chicolicul | | 0 | | | | | | | | | | | | | | | | | | | |
| 2bd 2.1 p/p/u | RET 28,0 | 00 L/Ha/day | | | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TH 2.7 p/p/u | IND 35,0 | 00 L/Ha/day | MOE Chart | t | | | | | | | Dwg. Refe | rence: | | | | | 1 | | | | | | | | | | | | | | | |
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SANITARY SEWER DESIGN SHEET

81 Slater CITY OF OTTAWA



APPENDIX F

- Storm Sewer Design Sheet (Existing & Proposed Conditions)
- Figure 4.1 Storm Drainage Area Plan Existing Conditions
- Figure 4.2 Storm Drainage Area Plan Proposed Conditions
- Figure 4.3 SWM Drainage Schematic
- Area A, B and C Drainage Calculations
- Cistern Size Calculation



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| | LOCATION | | | | | | AREA | (Ha) | | | | | | | | | | | F | RATIONAL D | ESIGN FLC | W | | | | | | | | | | | | | | |
|--|-------------------------------|----------|----------|----------|-----------|----------|-------|------|------|------|------|-------|--------|--------|-----------|---------|-------|---------|---------|------------|-----------|-----------|-------------|-------------|-------------|----------------|------------------|------------|--------|-----|--------------|-----|-------|---------------|---------|---|
| | | | C= | C= | C= | C= | C= | C= | C= | C= | C= | C= | IND | CUM | INLET | TIME | TOTAL | i (2) | i (5) | i (10) | i (100) | 2yr PEAK | 5yr PEAK | 10yr PEAK | 100yr PEAH | K FIXED | DESIGN | CAPACITY | LENGTH | Р | PIPE SIZE (n | nm) | SLOPE | VELOCITY | AVAIL C | AP (2yr) |
| | | | 0.20 | 0.25 | 0.40 | 0.50 | 0.57 | 0.65 | 0.69 | 0.70 | 0.80 | .90 2 | 2.78AC | 2.78AC | (min) | IN PIPE | (min) | (mm/hr) | (mm/hr) | (mm/hr) | (mm/hr) | FLOW (L/s |) FLOW (L/s |) FLOW (L/s |) FLOW (L/s | FLOW (L/s | FLOW (L/s) | (L/s) | (m) | DIA | W | н | (%) | (m/s) | (L/s) | (%) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | í – – – – – – – – – – – – – – – – – – – |
| | Proposed Storm | | | | | | | | | | (| .09 | 0.23 | 0.23 | 10.00 | 0.10 | 10.10 | 76.81 | 104.19 | 122.14 | 178.56 | 17.49 | 23.72 | 27.81 | 40.65 | | 17.49 | 48.06 | 5.60 | 250 | | | 0.60 | 0.948 | 30.57 | 63.61% |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| | Proposed Sanitary | | | | | | | | | | | | | | | | | | | | | | | | | | 4.76 | 91.49 | 12.90 | 200 | | | 7.15 | 2.821 | 86.73 | 94.80% |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | | | | | | | 22.25 | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | J |
| Limit for | Storm Flow; C=0.40, 2yr event | | | | | 0.09 | | | | | | | 0.13 | 0.13 | 10.00 | 0.10 | 10.10 | 76.81 | 104.19 | 122.14 | 178.56 | 9.72 | 13.18 | 15.45 | 22.59 | | 9.72 | | | | | | | | | ,J |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | Existing Storm | 1 | | _ | | | | | | | (| 0.09 | 0.23 | 0.23 | 10.00 | 0.19 | 10.19 | 76.81 | 104.19 | 122.14 | 178.56 | 17.49 | 23.72 | 27.81 | 40.65 | | 17.49 | | | | | | | | | ,l |
| | Foriation of Operations | | | | | | | | | | | | | | | - | - | | | | | - | - | | + | | 0.00 | | | | | | | | | , |
| | Existing Sanitary | <u> </u> | | | | | | | | | | | | | | | | | | | | | | | | - | 0.03 | | | | | - | | | | |
| | | | - | | | | | | | | | _ | | | | | | | | | | | | | | | | - | | | | | | | | l |
| Definitions: | | | Notoe | | | | | | | | | | | | Designed | | SEI | | | | No | | | 1 | | | Povision | | | | 1 | | 1 | Dato | | |
| O = 2.78CiA where: | | | 1 Mar | ninge c | officient | (n) = | 0.013 | | | | | | | | Designeu. | | JLL | | | | 1 | | | | Site Serv | icina Study Is | Revision | t Review | | | | - | Ν | Jarch 26, 201 | 0 | |
| Q = 2.700 R, where: Q = Peak Flow in Litres | per Second (L/s) | | 1. Iviai | inings o | Jemelem | . (11) – | 0.015 | | | | | | | | | | | | | | 2 | | | | Site Servic | ing Study rev | vised ner City (| Comments | | | | | N. | August 2019 | 5 | |
| $\Delta = \Delta rea in Hectares (H$ | | | | | | | | | | | | | | | Checked: | | IIM | | | | - | | | | | ing olday io | noed per only c | Johnmente | | | | 1 | | 7 (agast 2010 | | |
| i = Rainfall intensity in r | millimeters per hour (mm/br) | | | | | | | | | | | | | | oneckeu. | | 01111 | | | | | | | | | | | | | | | | | | | |
| [i = 732 951 / (TC+6 | 199)^0 8101 2 YEAR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| i = 998.071 / (TC+6) | .053)^0.8141 5 YEAR | | | | | | | | | | | | | | Dwa. Refe | rence: | N/A | | | | 1 | + | | | | | | | | | | 1 | | | | |
| $i = 1174 \ 184 \ / \ (TC+6)$ | 6 014)^0 8161 10 YEAR | | | | | | | | | | | | | | | | | | | | | File R | eference: | | 1 | | | Date: | | | | | | Sheet No: | | |
| [i = 1735.688 / (TC+6 | 6.014)^0.8201 100 YEAR | ł | | | | | | | | | | | | | | | | | | | | 1193 | 385 5 7 1 | | | | | 2019-08-09 | | | | | | 1 of 1 | | |

STORM SEWER DESIGN SHEET

81 Slater City of Ottawa







0:\119385_88AlbertSt\5.9 Drawings\59civil\current\Figures\Figure 4.3.dwg Layout Name: FIG 4.3

| Stormwater Management | t - Post-development Area A (All roofs) | | | | | | |
|--|---|--|--|--|--|--|--|
| Time of Concentration = | 10 min | | | | | | |
| Area = | 580 m2 | | | | | | |
| Grass Area = | 0 m2 C = 0.20 | | | | | | |
| Shrub Area = | 0 m2 C = 0.40 | | | | | | |
| Asphalt Area = | 580 m2 C = 0.90 | | | | | | |
| Total = | 580 m2 | | | | | | |
| Runoff Coefficient (C) = | (0.20x0 + 0.40x0 + 0.90x580)/580 | | | | | | |
| = | 0.90 | | | | | | |
| Runoff Coefficient (C) + 25% (Max 1.00)= | 1.00 | | | | | | |
| <u>100-Year Storm Event, Tc = 20 min</u> Intensity, i _{100yr} = = | 1735.688/(Tc+6.014) ^{0.82} 178.56 mm/hr | | | | | | |
| Post Development Uncontrolled | 2.78CiA | | | | | | |
| Q _{100yr u/c} = | 28.79 L/s | | | | | | |

| Stormwater Management - Post-c | development Area B (2nd Floor Amenity Deck) | | | | | | | |
|--|---|--|--|--|--|--|--|--|
| Time of Concentration = | 10 min | | | | | | | |
| Area = | 240 m2 | | | | | | | |
| Grass Area = | 0 m2 C = 0.20 | | | | | | | |
| Shrub Area = | 0 m2 C = 0.40 | | | | | | | |
| <u>Asphalt Area =</u> | 240 m2 C = 0.90 | | | | | | | |
| Total = | 240 m2 | | | | | | | |
| Runoff Coefficient (C) = | (0.20x0 + 0.40x0 + 0.90x240)/240 | | | | | | | |
| = | 0.90 | | | | | | | |
| Runoff Coefficient (C) + 25% (Max 1.00)= | 1.00 | | | | | | | |
| <u>100-Year Storm Event, Tc = 20 min</u> Intensity, i _{100yr} = = | 1735.688/(Tc+6.014) ^{0.82} 178.56 mm/hr | | | | | | | |
| Post Development Uncontrolled | 2.78CiA | | | | | | | |
| Q _{100yr u/c} = | 11.91 L/s | | | | | | | |

| Stormwater Management - Post-der | velopment Area C (Uncontrolled Flow to Slater) | | | | | | |
|--|---|--|--|--|--|--|--|
| Time of Concentration = | 10 min | | | | | | |
| Area = | 90 m2 | | | | | | |
| Grass Area = | 0 m2 C = 0.20 | | | | | | |
| Shrub Area = | 0 m2 C = 0.40 | | | | | | |
| Asphalt Area = | 90 m2 C = 0.90 | | | | | | |
| Total = | 90 m2 | | | | | | |
| Runoff Coefficient (C) = | (0.20x0 + 0.40x0 + 0.90x90)/90 | | | | | | |
| = | 0.90 | | | | | | |
| Runoff Coefficient (C) + 25% (Max 1.00)= | 1.00 | | | | | | |
| <u>100-Year Storm Event, Tc = 20 min</u> Intensity, i _{100yr} = = | 1735.688/(Tc+6.014) ^{0.82} 178.56 mm/hr | | | | | | |
| Post Development Uncontrolled | 2.78CiA | | | | | | |
| Q _{100yr u/c} = | 4.47 L/s | | | | | | |

Controlled 100 Year Flow

| Total Area = | 910 m2 |
|---------------------------|---|
| | 0.091 ha |
| | |
| Runoff Coefficient (C) = | 1.00 |
| | |
| Restricted Release Rate = | Q _{maxallowed} - Q _{uncontrolled} |
| = | 9.72 - 4.47 |
| = | 5.25 L/s |
| | |

| Tc Variable | | Qp | Qm | Qp - Qm | Volume |
|-------------|-----------|-------|-------|---------|--------|
| (min) | i (mm/hr) | (L/s) | (L/s) | (L/s) | (m3) |
| 39 | 76.56 | 19.37 | 5.25 | 14.12 | 33.03 |
| 40 | 75.19 | 19.02 | 5.25 | 13.77 | 33.05 |
| 41 | 73.87 | 18.69 | 5.25 | 13.44 | 33.06 |
| 42 | 72.61 | 18.37 | 5.25 | 13.12 | 33.06 |
| 43 | 71.39 | 18.06 | 5.25 | 12.81 | 33.05 |
| 44 | 70.22 | 17.76 | 5.25 | 12.51 | 33.04 |
| 45 | 69.09 | 17.48 | 5.25 | 12.23 | 33.02 |



APPENDIX G

• Drawing 200 – Proposed Grading and Drainage Plan

_B8Abert51\5.9 Drawings\59civil\ayouts\200 SITE GRADING AND DRAINAGE PLAN.dwg Layout Name: 200 SITE GRADING AND DRAINAGE PLAN Plot Style: AIA STANDARD COLOR-FULL.CTB Plot Scale: 1:25.4 Plotted At: 8/15/2019 12:35



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APPENDIX H

• Drawing 900 - Erosion and Sedimentation Control Plan



