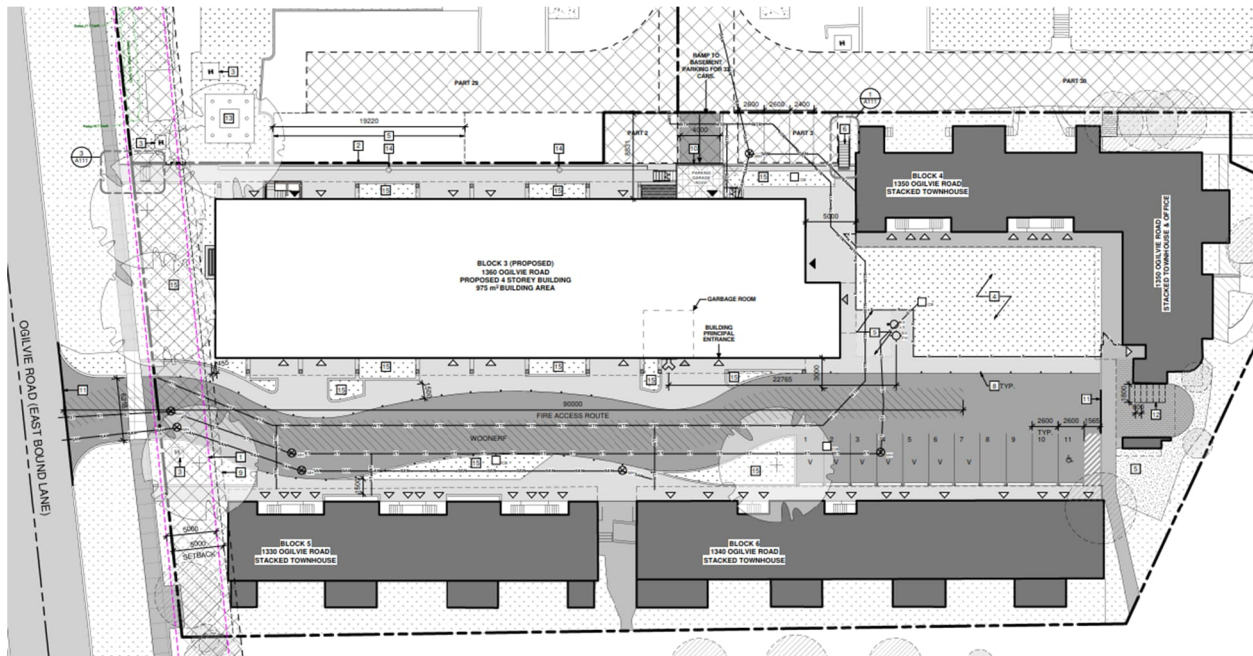


# SERVICING & STORMWATER MANAGEMENT REPORT

## BLOCK 3 REDEVELOPMENT – 1360 OGILVIE ROAD



Project No.: CCO-23-3120

City File No.: D07-12-24-0061

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## 1.0 PROJECT DESCRIPTION

### 1.1 Purpose

Egis Canada (Egis) has been retained by CSV Architects to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control process for the proposed Block 3 redevelopment located at 1360 Ogilvie Road within the City of Ottawa.

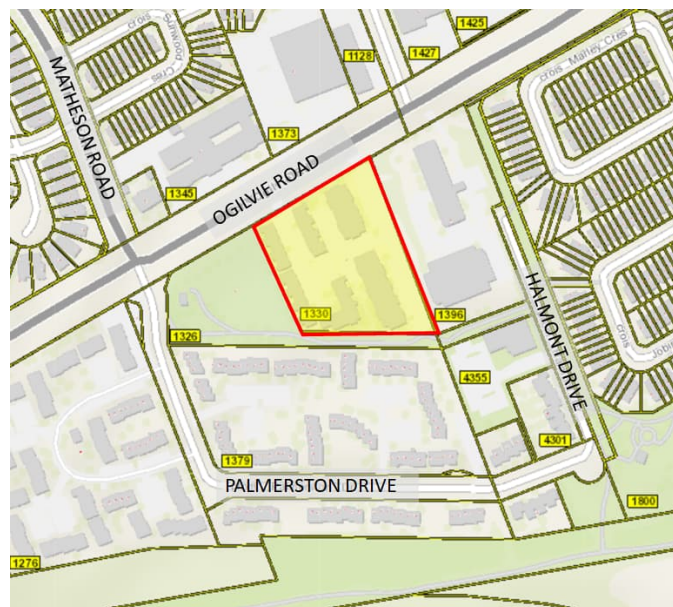
The main purpose of this report is to present a servicing design for the development in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Rideau Valley Conservation Authority (RVCA), and the Ministry of the Environment, Conservation and Parks (MECP). This report will address the water, sanitary, and storm sewer servicing for the development, ensuring that existing and available services will adequately service the proposed development.

This report should be read in conjunction with the following drawings:

- CCO-23-3120, C100 – Removals, Erosion & Sediment Control Plan,
- CCO-23-3120, C101 – Lot Grading and Drainage Plan,
- CCO-23-3120, C102 – Site Servicing Plan,
- CCO-23-3120, PRE – Pre-Development Drainage Area Plan (Appendix 'E'), and
- CCO-23-3120, POST – Post-Development Drainage Area Plan (Appendix 'F').

### 1.2 Site Description

Figure 1: Site Map



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[info.north-america@egis-group.com](mailto:info.north-america@egis-group.com) | [www.egis-group.com](http://www.egis-group.com)

The property is located at 1360 Ogilvie Road within the City of Ottawa. It is described as Blocks C, D and L, Registered Plan 4M-172, City of Ottawa. The land in question covers approximately 1.29 ha and is located along Ogilvie Road between Palmerston Drive and Halmont Drive. See Site Location Plan in Appendix 'A' for more details.

### 1.3 Proposed Development and Statistics

The proposed development consists of a new 975m<sup>2</sup> four-storey apartment building. Parking and drive aisles will be provided throughout the site along with landscaping around the perimeter of the development area. The site will have one level of underground parking. The development will be accessed via the existing entrance from Ogilvie Road.

### 1.4 Existing Conditions and Infrastructure

The existing site is currently developed with multiple townhome and apartment blocks, as well as parking, drive aisles, and landscaped area. The existing site has sanitary, water and storm services. The existing Block 3 building was approximately 332 m<sup>2</sup> in area but has been demolished due to fire damage.

Sewer and watermain mapping collected from the City of Ottawa indicate that the following services exist across the property frontages within the adjacent municipal rights-of-way(s):

➤ OGILVIE ROAD

- 1500mm diameter storm sewer with Ogilvie Road
- 610mm diameter water main within Ogilvie Road
- 525mm diameter sanitary sewer within Ogilvie Road
- 250mm diameter sanitary sewer within Ogilvie Road

As the site is developed, there are existing water, sanitary, and storm services on site. The watermain on site has two connections to the existing 610mm diameter watermain within Ogilvie Road. The sanitary sewer on site is connected to the existing 250mm diameter sanitary sewer within Ogilvie Road. The storm sewer system on site is connected to an existing 2300mm diameter storm sewer adjacent to the site to the east, draining from Ogilvie Road to the Cyrville Drain.

### 1.5 Approvals

The proposed development is subject to the City of Ottawa site plan control approval process. Site plan control requires the City to review, provided concurrence and approve the engineering design package. Permits to construct can be requested once the City has issued a site plan agreement.

An Environmental Compliance Approval (ECA) through the Ministry of Environment, Conservation and Parks (MECP) is not anticipated to be required since the proposed storm sewer system services one parcel of land, does not propose industrial use, and does not outlet to a combined sewer.

## 2.0 BACKGROUND STUDIES, STANDARDS, AND REFERENCES

### 2.1 Background Reports / Reference Information

Background studies that have been completed for the proposed site include a topographical survey, a Phase I Environmental Site Assessment, and two geotechnical reports. A CCTV investigation was also completed.

A topographic survey of the site was completed by Annis, O'Sullivan, Vollebakk Ltd.

The following reports have previously been completed and are available under separate cover:

- Phase I Environmental Site Assessment, 1360 Ogilvie Road, completed by Paterson Group, dated June 23, 2023.
- Limited Geotechnical Investigation, prepared for Deck Construction, 1360 Ogilvie Road, completed by LRL Associates, dated July 2017.
- Geotechnical Investigation, Proposed Residential Development, completed by Paterson Group, dated June 27, 2023.

A CCTV Report for the site was completed by Veolia, dated October 6, 2023. We have reviewed the CCTV report and have determined that all privately owned pipes are in good working order. Therefore, there is no concern for our design.

### 2.2 Applicable Guidelines and Standards

City of Ottawa:

- ◆ Ottawa Sewer Design Guidelines, City of Ottawa, SDG002, October 2012. (*Ottawa Sewer Guidelines*)
  - Technical Bulletin ISTB-2014-01 City of Ottawa, February 2014. (*ISTB-2014-01*)
  - Technical Bulletin PIEDTB-2016-01 City of Ottawa, September 2016. (*PIEDTB-2016-01*)
  - Technical Bulletin ISTB-2018-01 City of Ottawa, January 2018. (*ISTB-2018-01*)
  - Technical Bulletin ISTB-2018-04 City of Ottawa, March 2018. (*ISTB-2018-04*)
  - Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. (*ISTB-2019-02*)
- ◆ Ottawa Design Guidelines – Water Distribution City of Ottawa, July 2010. (*Ottawa Water Guidelines*)
  - Technical Bulletin ISD-2010-2 City of Ottawa, December 15, 2010. (*ISD-2010-2*)
  - Technical Bulletin ISDTB-2014-02 City of Ottawa, May 2014. (*ISDTB-2014-02*)
  - Technical Bulletin ISTB-2018-02 City of Ottawa, March 2018. (*ISTB-2018-02*)
  - Technical Bulletin ISTB-2021-03 City of Ottawa, August 2021. (*ISTB-2021-03*)

Ministry of Environment, Conservation and Parks:

- ◆ Stormwater Planning and Design Manual, Ministry of the Environment, March 2003. (*MECP Stormwater Design Manual*)
- ◆ Design Guidelines for Sewage Works, Ministry of the Environment, 2008. (*MECP Sewer Design Guidelines*)

Other:

- ◆ Water Supply for Public Fire Protection, Fire Underwriters Survey, 2020. (*FUS Guidelines*)

### 3.0 PRE-CONSULTATION SUMMARY

A pre-consultation meeting was conducted on August 8<sup>th</sup>, 2023, regarding the proposed site. Specific design parameters to be incorporated within this design include the following:

- Control post-development roof drainage to the 2-year pre-development peak flow rate with  $C=0.5$  or existing, whichever is lesser, for all storms up to and including the 100-year storm event.
- As the proposed building will occupy most of the development area and roof water is considered clean, it is anticipated that the proposed development will not require any quality treatment.

The notes from the City of Ottawa can be found in Appendix 'B'.

## 4.0 WATER SERVICING

### 4.1 Existing Watermain

The site is located within the 1E pressure zone, as per the Water Distribution System mapping included in Appendix C. There are existing private on-site watermain connections (dual) to the existing 610mm watermain located within Ogilvie Road.

Figure 2: GeoOttawa Existing Water Services



### 4.2 Proposed Water Servicing

There is an existing 152-200mm diameter water lateral within the site available to service the development. Due to the location of the proposed building, the existing watermain is impacted and will need to be partially realigned. A new 150mm diameter PVC water service is proposed to service the proposed building, which will be connected to the realigned 152 mm diameter watermain on site. The water service is designed to have a minimum of 2.4m cover and will be insulated where required per City standards. Refer to drawing C102 for a detailed servicing layout.

The Fire Underwriters Survey 2020 (FUS) method and Ontario Building was utilized to determine the required fire flow for the site.

The 'C' factor (type of construction) for the FUS calculation was determined to be 1.5 (wood frame construction). The total floor area ('A' value) for the FUS calculation was determined to be 3,900 m<sup>2</sup>. The sprinkler type was identified as "Fully Supervised" by the Architect. The "Fully Supervised" sprinkler system requires a supervisory signal to indicate conditions that could impair the operation of the system, as well as a water flow alarm to indicate the sprinkler system has been activated. The alarms must be sent to approved receiving facilities identified by the Fire Underwriters Survey.

The results of the FUS calculations yielded a required fire flow of 17,000 L/min. A fire flow of 9,000 L/min was calculated using the Ontario Building Code (OBC) method. The detailed calculations for the FUS and OBC can be found in Appendix 'C'.

The water demands for the proposed building have been calculated to adhere to the Ottawa Design Guidelines – Water Distribution manual and can be found in Appendix C. The results have been summarized in Table 1, below.

Table 1: Water Supply Design Criteria and Water Demands

| Proposed Building + Existing Development |                  |
|------------------------------------------|------------------|
| Site Area                                | 1.29 ha          |
| Residential                              | 280 L/person/day |
| 1 Bedroom Apartment                      | 1.4 persons/unit |
| 2 Bedroom Apartment                      | 2.1 persons/unit |
| 3 Bedroom Apartment                      | 3.1 persons/unit |
| Maximum Daily Peaking Factor             | 3.4 x avg day    |
| Maximum Hour Peaking Factor              | 5.1 x avg day    |
| Average Day Demand (L/s)                 | 1.13             |
| Maximum Daily Demand (L/s)               | 3.86             |
| Peak Hourly Demand (L/s)                 | 5.78             |

|                                 |                    |
|---------------------------------|--------------------|
| FUS Fire Flow Requirement (L/s) | 283 (17,000 L/min) |
| OBC Fire Flow Requirement (L/s) | 150 (9,000 L/min)  |

The City provided the estimated water pressures at both for the average day scenario, peak hour scenario and the max day plus fire flow scenario for the demands indicated by the correspondence in Appendix C. The resulting pressures for the boundary conditions results are shown in *Table 2*, below.

Table 2: Boundary Conditions Results

|              |                                   | Total HGL (m) | Head Pressure*<br>(m H <sub>2</sub> O)  | Head Pressure** (psi) | Pressure (kPa) |
|--------------|-----------------------------------|---------------|-----------------------------------------|-----------------------|----------------|
| Connection 1 | Peak Hourly (Minimum HGL)         | 110.2         | 40.5                                    | 57.6                  | 397.3          |
|              | Average Day (Maximum HGL)         | 117.7         | 48.0                                    | 68.3                  | 470.9          |
|              | Max Day + Fire Flow (150L/sec)    | 112.8         | 43.1                                    | 61.3                  | 422.8          |
|              | Max Day + Fire Flow (283.33L/sec) | 112.2         | 42.5                                    | 60.5                  | 416.9          |
|              |                                   | Total HGL (m) | Head Pressure**<br>(m H <sub>2</sub> O) | Head Pressure** (psi) | Pressure (kPa) |
| Connection 2 | Peak Hourly (Minimum HGL)         | 110.2         | 39.6                                    | 56.4                  | 388.7          |
|              | Average Day (Maximum HGL)         | 117.7         | 47.1                                    | 67.0                  | 462.2          |
|              | Max Day + Fire Flow (150L/sec)    | 112.7         | 42.1                                    | 59.9                  | 413.2          |
|              | Max Day + Fire Flow (283.33L/sec) | 112.1         | 41.5                                    | 59.1                  | 407.3          |

\*Adjusted for an estimated watermain elevation of 69.7m.

\*\*Adjusted for an estimated watermain elevation of 70.6m.

The normal operating pressure range is anticipated to be 388.7 kPa to 470.9 kPa and will not be less than 275 kPa (40 psi) or exceed 689 kPa (100 psi). The proposed watermains will meet the minimum required 20 psi (140 kPa) from the *Ottawa Water Guidelines* at the ground level under maximum day demand and fire flow conditions.

To confirm the adequacy of fire flow to protect the proposed development, public and private fire hydrants within 150m of the proposed buildings were analysed per City of Ottawa *ISTB 2018-02* Appendix I Table 1. The results are summarized below.

Table 3: Fire Protection Confirmation

| Building                    | Fire Flow Demand (L/min.) | Class AA and Unrated Fire Hydrant(s) within 75m (5,700 L/min) | Class AA Fire Hydrant(s) within 150m (3,800 L/min) | Combined Fire Flow (L/min.) |
|-----------------------------|---------------------------|---------------------------------------------------------------|----------------------------------------------------|-----------------------------|
| 1360 Ogilvie Road – Block 3 | 17,000                    | 2 Private (H1 + H2)<br>1 Public (H3)                          | 1 Public (H4)                                      | 20,900                      |

Based on City guidelines (*ISTB-2018-02*), the existing hydrants provide adequate protection for the proposed development. A hydrant coverage figure can be found in *Appendix C*.

## 5.0 SANITARY SERVICING

### 5.1 Existing Sanitary Sewers

There is an existing 525mm diameter sanitary sewer and an existing 250mm diameter sanitary sewer within Ogilvie Road. Additionally, a 250mm diameter municipally owned sewer extends through the site to the housing complex on Palmerston Drive. A private 200mm diameter sanitary sewer collects flows from blocks 3 through 6 of the existing development before directing flows to the municipally owned 250mm diameter sanitary sewer within the site.

Based on CCTV inspection, the existing privately owned 200mm sanitary sewers are in acceptable condition for reuse. A blockage was however noted in the municipally owned 250mm sanitary sewer within the site. It is recommended that the City Operations group review the CCTV footage and add maintenance of this sewer to their inventory.

Figure 3: GeoOttawa Existing Sanitary Services



## 5.2 Proposed Sanitary Servicing

There is an existing 200mm diameter sanitary lateral within the site available to service the development. As the existing sanitary services run under the proposed building location, the sanitary services will be realigned.

The proposed building connection will tie into a proposed sanitary maintenance hole east of the proposed building. The proposed maintenance hole will convey flows to the existing sanitary network.

The sanitary services on the west side of the site will be redirected towards Ogilvie Road via a proposed 200 mm diameter sanitary sewer. Flows from the proposed building that cannot be conveyed to the existing network because of mechanical restraints will be directed to the new 200 mm diameter sanitary sewer. Refer to drawing C102 for a detailed servicing layout.

The peak design flows for the proposed building were calculated using criteria from the *Ottawa Sewer Guidelines* and are summarized in Table 4, below. Based on the unit occupancy statistics provided by the architect, the proposed Block 3 redevelopment will generate a flow of 1.28 L/s. See Appendix 'D' of this report for more details.

Table 4: Sanitary Design Criteria

| Design Parameter           | Value                         |
|----------------------------|-------------------------------|
| Site Area                  | 1.29 ha                       |
| Residential                | 280 L/c/day                   |
| Residential Peaking Factor | 3.44 (Site)<br>3.62 (Block 3) |
| Extraneous Flow Allowance  | 0.33 L/s/ha                   |

Table 4, below, summarizes the estimated wastewater flow from the proposed development. Refer to Appendix 'D' for detailed calculations.

Table 5: Summary of Estimated Sanitary Flow

| Design Parameter                         | Total Flow<br>Block 3 (L/s) | Total Flow<br>Full Site (L/s) |
|------------------------------------------|-----------------------------|-------------------------------|
| Total Estimated Average Dry Weather Flow | 0.30                        | 1.20                          |
| Total Estimated Peak Dry Weather Flow    | 0.92                        | 3.97                          |
| Total Estimated Peak Wet Weather Flow    | 1.28                        | 4.33                          |

## 6.0 STORM SEWER SERVICING

### 6.1 Existing Storm Sewers

There are existing storm sewers throughout the subject site. A private 300mm diameter storm sewer collects storm runoff from the site and connects to a municipally owned 2300mm diameter trunk sewer on the east side of the site, flowing towards the south. Based on the CCTV inspection, the existing 300 mm diameter storm sewer proposed for reuse is in acceptable condition.

Figure 4: GeoOttawa Existing Storm Services



### 6.2 Proposed Storm Servicing

Runoff from the proposed development will be collected by existing and proposed catch basins. A new storm sewer is proposed throughout the subject property, which will connect to the existing storm sewer system within Ogilvie Road.

The new system will collect storm flows from the drive aisle and parking areas on the west side of the proposed building, as well as the existing townhouse buildings along the west property line. A proposed 200mm storm service conveying foundation drainage as well as roof drainage will be directed from the proposed building to a

proposed maintenance hole east of the building. A secondary storm service will convey the remainder of the roof drainage to the proposed maintenance hole west of the building.

A storm sewer design sheet was created using the rational method and City of Ottawa 5-year storm event. The storm design sheet calculates the proper sizing of the storm pipes within the development. Drainage area information, along with respective pipe slopes and other necessary information was utilized to evaluate the performance of the storm sewer network. The time of concentration calculated for the storm sewer system is based on a 10-minute inlet time at the uppermost sewer run. Within the design sheet, pipe capacities and associated full flow velocities have been calculated. Storm runoff will be controlled by roof drains on the proposed building to limit flows and improve existing conditions. The proposed storm sewers will range from 200 to 375mm in diameter throughout the subject property.

See CCO-23-3120 - *POST* in Appendix 'F' of this report and drawing *C102* for more details. The Stormwater Management design for the subject property will be outlined in Section 7.0.

## 7.0 PROPOSED STORMWATER MANAGEMENT

### 7.1 Design Criteria and Methodology

Stormwater management for the site will be maintained through positive drainage away from the proposed building and towards the catch basins on site. The proposed storm system will capture the entrance and parking lot runoff from the west side of the property and direct the flow to the storm sewer within Ogilvie Road. The emergency overland flow route for the proposed site will be directed north towards Ogilvie Road.

The quantitative and qualitative properties of the storm runoff for both the pre & post development flows are further detailed below. Stormwater Best Management Practices (SWM BMP's) will be implemented at the "Lot level", "Conveyance" and "End of Pipe" locations. These concepts will be explained further in Section 7.6.

In summary, the following design criteria have been employed in developing the stormwater management design for the site as directed by the RVCA and City:

#### Quality Control

- It has been confirmed with the City of Ottawa that quality control of storm runoff will not be required as the building will occupy most of the development area and roof water is considered clean.

#### Quantity Control

- Control post-development roof drainage to the 2-year pre-development peak flow rate with  $C=0.5$  or existing, whichever is lesser, for all storms up to and including the 100-year storm event.

### 7.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \text{ (L/s)}$$

|        |   |                                                           |
|--------|---|-----------------------------------------------------------|
| Where: | C | = Runoff coefficient                                      |
|        | I | = Rainfall intensity in mm/hr (City of Ottawa IDF curves) |
|        | A | = Drainage area in hectares                               |

It is recognized that the Rational Method tends to overestimate runoff rates. As a result, the conservative calculation of runoff ensures that any SWM facility sized using this method is expected to function as intended.

The following coefficients were used to develop an average C for each area:

|                        |      |
|------------------------|------|
| Roofs/Concrete/Asphalt | 0.90 |
| Gravel                 | 0.60 |
| Undeveloped and Grass  | 0.20 |

As per the *City of Ottawa - Sewer Design Guidelines*, the 5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

### 7.3 Pre-Development Drainage

The existing site drainage limits are demonstrated on the Pre-Development Drainage Area Plan included in Appendix E. The site is 1.3 ha overall, but for the purposes of this report, the pre-development drainage is focused on the northwest portion of the site where the four-storey building is proposed. The existing site is serviced by maintenance holes and catch basins that capture and convey stormwater runoff to the existing 2300mm diameter storm sewer adjacent to the site. A summary of the Pre-Development Runoff Calculations can be found below.

Table 6: Pre-Development Runoff Summary

| Drainage Area | Area (ha) | Runoff Coefficient (5-Year) | Runoff Coefficient (100-Year) | 2-Year Peak Flow (L/s) | 5-Year Peak Flow (L/s) | 100-Year Peak Flow (L/s) |
|---------------|-----------|-----------------------------|-------------------------------|------------------------|------------------------|--------------------------|
| A1            | 0.10      | 0.87                        | 0.97                          | 18.15                  | 24.63                  | 46.94                    |
| A2            | 0.21      | 0.87                        | 0.97                          | 39.50                  | 53.58                  | 102.14                   |
| Total         | 0.31      |                             |                               | 57.65                  | 78.21                  | 149.08                   |

### 7.4 Post-Development Drainage

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan included in Appendix F. The post-development drainage calculations are focused on the proposed building footprint represented by area A1, where the area used to establish the allowable release rate of 10.39 L/s is 0.10 ha.

Roof runoff is proposed to drain into the existing and proposed storm sewers, while runoff from the rest of the proposed development will be captured and conveyed by a proposed storm sewer system that will connect to the 1500mm diameter storm sewer within Ogilvie Road. As the majority of runoff from the proposed development will be redirected to a new storm sewer, there will be a reduction in flows to the existing network.

See CCO-23-3120 - POST in Appendix 'F' of this report for more details.

## 7.5 Quantity Control

After discussing the stormwater management criteria for the site with City staff, the post-development runoff from the roof is restricted to the 2-year pre-development peak flow rate for each storm event up to the 100-year storm. (See Appendix 'B' for pre-consultation notes), with a maximum C-value of 0.50. These values create the following allowable release rate for the proposed building roof.

Table 7: Required Release Rate Summary

| Drainage Area | Area (ha) | Runoff Coefficient (5-Year) | 2-Year Peak Flow (L/s) |
|---------------|-----------|-----------------------------|------------------------|
| A1            | 0.10      | 0.50                        | 10.39                  |
| Total         | 0.10      |                             | 10.39                  |

Reducing site flows will be achieved using flow restrictions and will create the need for onsite storage. Runoff from areas B1 will be restricted as shown in the table below and the onsite storage will be provided via roof storage. See Appendix 'G' for calculations.

Table 8: Post-Development Runoff Summary

| Drainage Area | Area (ha) | 5-year Peak Flow (L/s) | 100-year Peak Flow (L/s) | 100-year Storage Required (m <sup>3</sup> ) | 100-year Storage Available (m <sup>3</sup> ) |
|---------------|-----------|------------------------|--------------------------|---------------------------------------------|----------------------------------------------|
| B1            | 0.10      | 3.03                   | 5.68                     | 35.17                                       | 36.50                                        |
| Total (Roof)  | 0.10      | 3.03                   | 5.68                     | 35.17                                       | 36.50                                        |
| B2            | 0.01      | 1.22                   | 2.36                     | -                                           | -                                            |
| B3            | 0.05      | 8.48                   | 16.47                    | -                                           | -                                            |
| B4            | 0.15      | 38.20                  | 72.89                    | -                                           | -                                            |
| Total (Site)  | 0.31      | 50.94                  | 97.40                    | 35.17                                       | 36.50                                        |

Runoff from area B1 will be restricted by three roof drains and the required storage will be provided on the roof of the proposed buildings. Roof drains will restrict the outflow below the 2-year pre-development peak flow rate for all storms up to and including the 100-year event. See Table 9, below, for details of the required and provided storage volumes.

Table 9: Storage Summary

| Drainage Area | Depth of Ponding (m) 5-year | Storage Required (m <sup>3</sup> ) | Depth of Ponding (m) 100-year | Storage Required (m <sup>3</sup> ) | Storage Available (m <sup>3</sup> ) |
|---------------|-----------------------------|------------------------------------|-------------------------------|------------------------------------|-------------------------------------|
| B1            | 0.08                        | 18.56                              | 0.15                          | 35.17                              | 36.50                               |
| Total         | 0.08                        | 18.56                              | 0.15                          | 35.17                              | 36.50                               |

## 7.6 Quality Control

As the building will encompass most of the development area, it is assumed that the roof drainage is considered clean and therefore quality control will not be required.

The development of this lot will employ Best Management Practices (BMP's) wherever possible. The intent of implementing stormwater BMP's is to ensure that water quality and quantity concerns are addressed at all stages of development. Lot level BMP's typically include temporary retention of the parking lot runoff, minimizing ground slopes and maximizing landscaped areas.

## 8.0 EROSION AND SEDIMENT CONTROL

### 8.1 Temporary Measures

Before construction begins, temporary silt fence, straw bale or rock flow check dams will be installed at all natural runoff outlets from the property. It is crucial that these controls be maintained throughout construction and inspection of sediment and erosion control will be facilitated by the Contractor or Contract Administration staff throughout the construction period.

Silt fences will be installed where shown on the final engineering plans, specifically along the downstream property limits. The Contractor, at their discretion or at the instruction of the City, Conservation Authority or the Contract Administrator shall increase the quantity of sediment and erosion controls on-site to ensure that the site is operating as intended and no additional sediment finds its way off site. The rock flow, straw bale & silt fence check dams and barriers shall be inspected weekly and after rainfall events. Care shall be taken to properly remove sediment from the fences and check dams as required. Fibre roll barriers are to be installed at all existing curb inlet catch basins and filter fabric is to be placed under the grates of all existing catch basins and maintenance holes along the frontage of the site and any new structures immediately upon installation. The measures for the existing/proposed structures is to be removed only after all areas have been paved. Care shall be taken at the removal stage to ensure that any silt that has accumulated is properly handled and disposed of. Removal of silt fences without prior removal of the sediments shall not be permitted.

Although not anticipated, work through winter months shall be closely monitored for erosion along sloped areas. Should erosion be noted, the Contractor shall be alerted and shall take all necessary steps to rectify the situation. Should the Contractor's efforts fail at remediating the eroded areas, the Contractor shall contact the City and/or Conservation Authority to review the site conditions and determine the appropriate course of action. As the ground begins to thaw, the Contractor shall place silt fencing at all required locations as soon as ground conditions warrant. Please see the *Site Grading, Drainage Plan* and *Sediment & Erosion Control Plan* for additional details regarding the temporary measures to be installed and their appropriate OPSD references.

### 8.2 Permanent Measures

Rip-rap will be placed at all locations that have the potential for concentrated flow. It is crucial that the Contractor ensure that the geotextile is keyed in properly to ensure runoff does not undermine the rip rapped area. Additional rip rap is to be placed at erosion prone locations as identified by the Contractor / Contract Administrator / City or Conservation Authority.

It is expected that the Contractor will promptly ensure that all disturbed areas receive topsoil and seed/sod and that grass be established as soon as possible. Any areas of excess fill shall be removed or levelled as soon as possible and must be located a sufficient distance from any watercourse to ensure that no sediment is washed out into the watercourse. As the vegetation growth within the site provides a key component to the control of sediment for the site, it must be properly maintained once established. Once the construction is complete, it will

be up to the landowner to maintain the vegetation and ensure that the vegetation is not overgrown or impeded by foreign objects.

## 9.0 SUMMARY

- A new 975m<sup>2</sup> four storey apartment building will be constructed in Block 3 at 1360 Ogilvie Road.
- A new watermain connection will be installed to service the proposed building.
- A new sanitary connection will be installed to service the proposed building. The service will convey flow to the existing and proposed sanitary networks.
- A new sanitary sewer will be installed within the driving aisle of the development to service existing Blocks 5 and 6. The proposed sewer will connect to the existing 525mm diameter sanitary sewer within Ogilvie Road.
- New storm connections will be installed to service the proposed building. The services will connect to the existing and proposed storm sewer networks.
- Storage for the 5- through 100-year storm events will be provided by roof drains installed on the proposed building roof.
- A new storm sewer will be installed within the driving aisle of the development to service the remainder of the development area. The proposed sewer will connect to the existing 1500mm diameter storm sewer within Ogilvie Road.

## 10.0 RECOMMENDATIONS

Based on the information presented in this report, we recommend that City of Ottawa approve this Servicing and Stormwater Management Report in support of the proposed 1360 Ogilvie Road.

This report is respectfully being submitted for approval.

Regards,

Egis Canada Ltd.



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u:\ottawa\01 project - proposals\2023 jobs\pco\pco-23-3120 csv\_better living co-op\_1360 ogilvie rd\03 - servicing\report\subm3\co-23-3120\_servicing report egis.docx

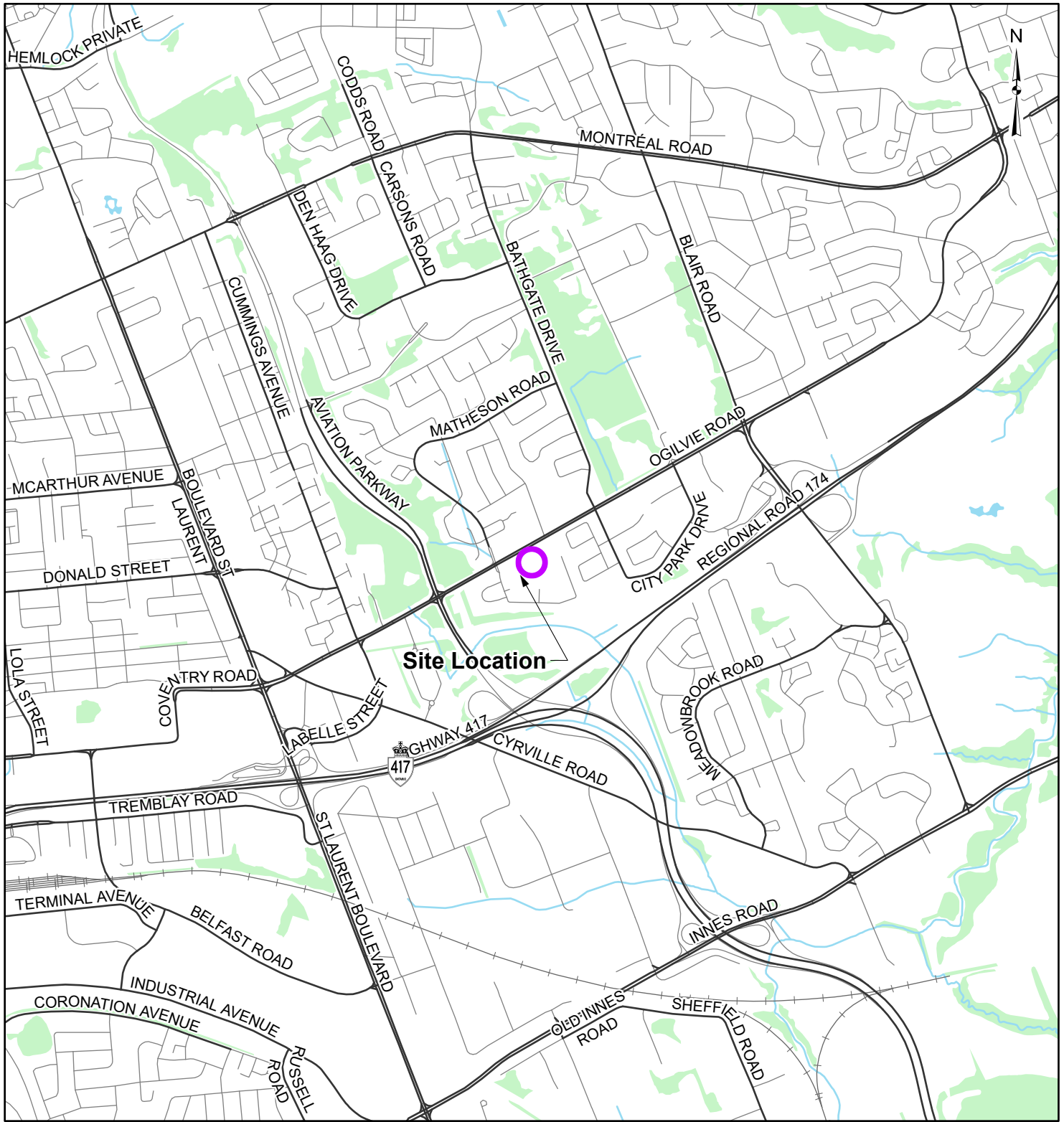
## 11.0 STATEMENT OF LIMITATIONS

This report was produced for the exclusive use of CSV Architects. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment, Conservation and Parks, City of Ottawa and local approval agencies. Egis Canada reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by Egis Canada and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. Egis Canada accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, Egis Canada should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

## APPENDIX A KEY PLAN



#### LEGEND

- Site Location
- Local Road
- Major Road
- Railroad
- Watercourse
- Waterbody
- Wooded Area

#### REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2023.

|                                                                                                                                  |  |                                              |                |
|----------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------|----------------|
| CLIENT:                                                                                                                          |  | CSV ARCHITECTS                               |                |
| PROJECT:                                                                                                                         |  | 1360 OGILVIE ROAD -<br>BLOCK 3 REDEVELOPMENT |                |
| TITLE:                                                                                                                           |  | SITE LOCATION                                |                |
| <b>McINTOSH PERRY</b><br>115 Walgreen Road, RR3, Carp, ON K0A1L0<br>Tel: 613-836-2184 Fax: 613-836-3742<br>www.mcintoshperry.com |  | PROJECT NO: CCO-23-3120                      | FIGURE:        |
|                                                                                                                                  |  | Date                                         | Nov., 15, 2023 |
|                                                                                                                                  |  | GIS                                          | AH             |
|                                                                                                                                  |  | Checked By                                   | FV             |
|                                                                                                                                  |  | 1                                            |                |

## **APPENDIX B BACKGROUND DOCUMENTS**

# MEMO

Date:

|                      |                                                                                                                                          |                      |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| To /<br>Destinataire | Shoma Murshid, Planner II                                                                                                                |                      |
| From /<br>Expéditeur | Cam Elsby, Project Manager, Infrastructure Approvals                                                                                     |                      |
| Subject /<br>Objet   | <b>Pre-Application Consultation</b><br><b>1330 (1360) Ogilvie Road</b><br>Proposed 4-storey apartment building with underground parking. | File No. PC2023-0117 |

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

## Water:

Accessible Water Main: direct access to private 152mm UCI municipal watermain within site.

Submission documents must include:

- Boundary Conditions - civil consultant to request boundary conditions from the City's assigned Project Manager, Development Review. Water boundary conditions request must include the location of the service and the expected loads required by the proposed development. Please provide all the following information:
  - Location of service (show on a plan or map)
  - Type of development
  - Average daily demand: \_\_\_\_ l/s.
  - Maximum daily demand: \_\_\_\_ l/s.
  - Maximum hourly daily demand: \_\_\_\_ l/s.
  - Required fire flow and completed FUS Design Declaration if applicable
  - Supporting Calculations for all demands listed above and required fire flow as per Ontario Building Code or Fire Underwriter Surveys (See technical Bulletin ISTB-2021-03.
- Watermain system analysis demonstrating adequate pressure as per section 4.2.2 of the Water Distribution Guidelines.
- Demonstrate adequate hydrant coverage for fire protection. Please review Technical Bulletin ISTB-2018-02, Appendix I table 1 – maximum flow to be considered from a given hydrant
- Any proposed emergency route (to be satisfactory to Fire Services)

## Sanitary Sewers:

Accessible Sanitary Sewer: direct access to private 200mm PVC sanitary sewer within site.

- Provide an analysis to demonstrate that there is adequate residual capacity in the receiving and downstream wastewater system to accommodate the proposed development.
- Please apply the wastewater design flow parameters in Technical Bulletin PIEDTB-2018-01.

### **Storm Water Management:**

Accessible Storm Sewer: direct access to private 200mm concrete storm sewer within site. Adequate capacity must be clearly demonstrated in order to connect into the smaller 200mm sewer, otherwise a separate connection to the larger 300mm concrete sewer should be provided, contingent on its own capacity.

- Quality Control:
  - Conservation Authority to provide quality control requirements. Please reach out to the Conservation Authority prior to submission and include correspondence in the Stormwater Management Report
- Quantity Control:
  - Control post-development roof drainage to the 2-year pre-development peak flow rate with  $C=0.5$  or existing, whichever is lesser, for all storms up to and including the 100-year storm event.

### **MECP ECA Requirements**

Dependent on the utilization of shared sanitary and/or storm servicing or drainage, an MECP Environmental Compliance Approval (Municipal/Private Sewage Works) may be required for the proposed development. Please contact Ontario Ministry of the Environment and Climate Change, Ottawa District Office to arrange a pre-submission consultation.

---

### **Additional Notes:**

- No Capital Work Project that would impact the application has been identified at this time
  - No road moratorium that would impact the application has been identified
  - Any easement identified should be shown on all plans
  - For any proposed exterior light fixtures, please provide certification from a licensed professional engineer confirming lighting has been designed only using fixtures that meet the criteria for full cut-off classification as recognized by the Illuminating Engineering Society of North America and result in minimal light spillage onto adjacent properties (maximum allowable spillage is 0.5 fc). Additionally, include in the submission the location of the fixtures, fixture type (make, model, part number and mounting height
  - Sensitive Marine Clay (SMC) is widely found across Ottawa- geotechnical reports should include Atterberg Limits, consolidation testing, sensitivity values, and vane
  - Note that CCTV videos and an accompanying report will be required for any existing services that are proposed to be re-used, to which must recommend the re-use of the existing services and must be signed and stamped by a relevant professional (P.Eng., CET, or OLS).
-

***Refer to following list of required supporting plans and studies required for the infrastructure component of your submission***

Site Plan application

1. Geotechnical Study
2. Environmental Site Assessment Report(s)
3. Site Servicing Study
4. Stormwater Management Report
5. Site Servicing Plan
6. Grade Control and Drainage Plan
7. Erosion and Sediment Control Plan

For information on preparing required studies and plans refer to:

<http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans>

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)

Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at [InformationCentre@ottawa.ca](mailto:InformationCentre@ottawa.ca) or by phone at (613) 580-2424 x.44455

Should you have any questions or require additional information, please contact me directly at (613) 580-2424, ext. 21443 or by email at [Cam.Elsby@ottawa.ca](mailto:Cam.Elsby@ottawa.ca).

## SITE PLAN GENERAL NOTES:

- ALL GENERAL SITE INFORMATION AND CONDITIONS COMPILED FROM EXISTING PLANS AND SURVEYS
- DO NOT SCALE THIS DRAWING
- REPORT ANY DISCREPANCIES PRIOR TO COMMENCING WORK. NO RESPONSIBILITY IS BORN BY THE CONSULTANT FOR UNKNOWN SUBSURFACE CONDITIONS
- CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY ERRORS AND/OR OMISSIONS TO THE CONSULTANT
- REINSTATE ALL AREAS AND ITEMS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO THE SATISFACTION OF THE CONSULTANT
- CONTRACTOR TO LAYOUT PLANTING BEDS, PATHWAYS ETC. TO APPROVAL OF CONSULTANT PRIOR TO ANY JOB EXCAVATION
- THE ACCURACY OF THE POSITION OF UTILITIES IS NOT GUARANTEED - CONTRACTOR TO VERIFY PRIOR TO EXCAVATION
- INDIVIDUAL UTILITY COMPANY MUST BE CONTACTED FOR CONFIRMATION OF UTILITY EXISTENCE AND LOCATION PRIOR TO DIGGING
- ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE NOTED

## SITE PLAN KEYNOTES:

- OTTAWA HYDRO SETBACK / CLEARANCES
- NEW RETAINING WALL PER 1/A111
- EXISTING HYDRO TRANSFORMER ON CONCRETE PAD
- PLAYGROUND AREA (N.I.C)
- SNOW STORAGE
- NEW LANDSCAPE STAIR
- NOT IN USE
- BOLLARDS ALONG PROPOSED WOONERF, REFER TO LANDSCAPE
- ROW EASEMENT
- LOCATION OF TRAFFIC SIGNAL
- DEPRESSED CURB
- NEW BIKE RACKS (5 TOTAL)
- NEW TRANSFORMER PER ELECTRICAL DOCUMENTS
- AREA DRAIN. REFER TO CIVIL DOCUMENTS
- SOFT LANDSCAPING PER LANDSCAPE

## SITE PLAN LEGEND:

- EXISTING BUILDING (NOT IN SCOPE)
- FIRE ACCESS ROUTE
- EXTENT OF EASEMENT
- ASPHALT PAVING - NEW
- ASPHALT PAVING - EXISTING
- CONCRETE SIDEWALK - NEW
- CONCRETE SIDEWALK - EXISTING
- GRASS - NEW
- GRASS - EXISTING
- PAVER TYPE 1 - NEW
- CONCRETE PAD

- PROPERTY LINE
- EASEMENT
- OTTAWA HYDRO SETBACK
- FENCING PER LANDSCAPE
- NEW DOMESTIC WATER
- NEW SANITARY
- NEW STORM
- NEW ELECTRICAL SERVICE BELOW GRADE
- CATCH BASIN
- FIRE HYDRANT
- MANHOLE
- SIAMESE CONNECTION
- EMERGENCY EXIT
- SERVICE DOORS
- BUILDING MAIN ENTRANCE / TOWN ENTRANCE

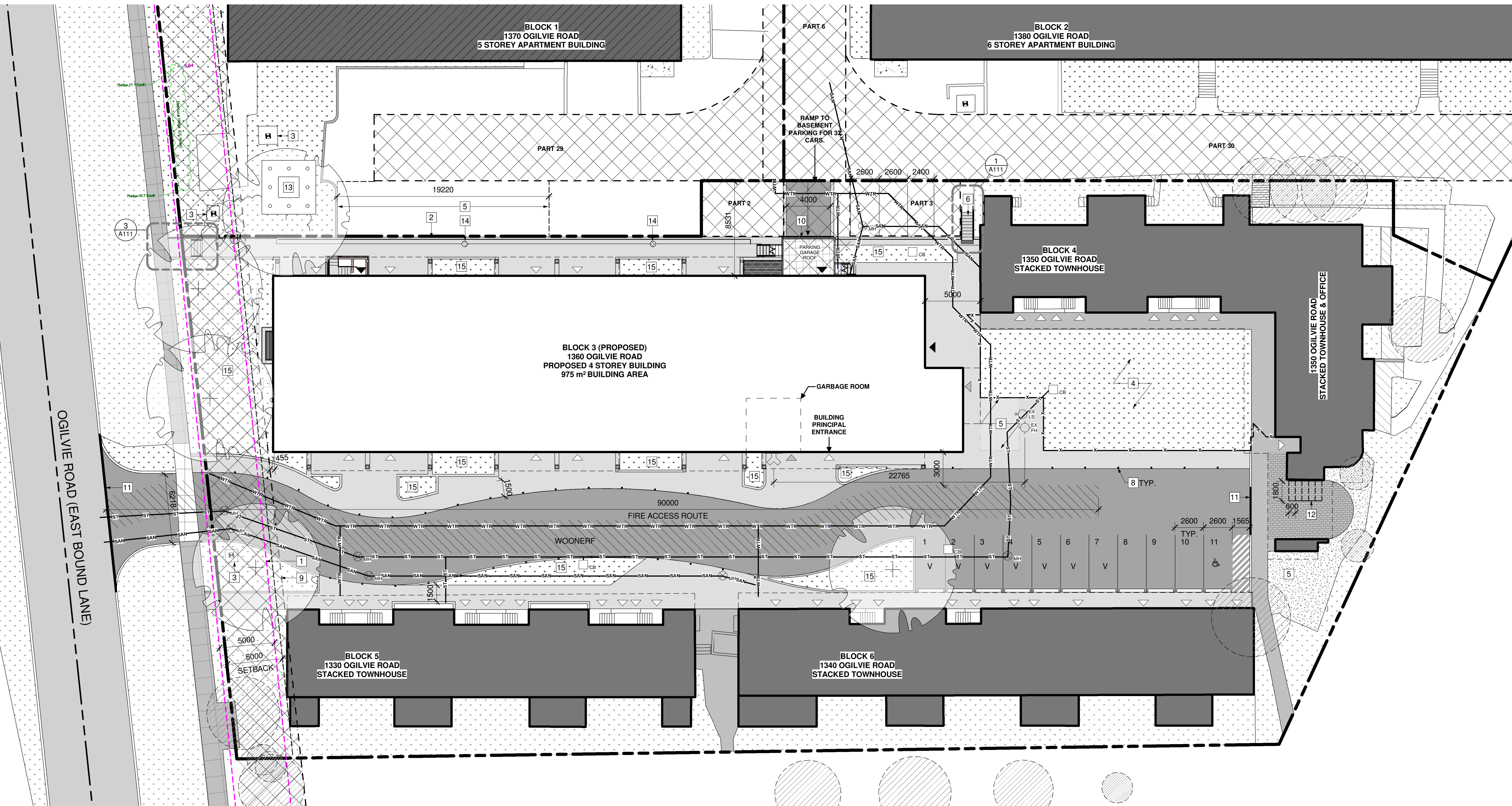
## NOTES:

- PARKING FIGURES IN TABLE REFLECT BLC SITE ONLY
- TOTAL SITE PARKING:  
A. INCLUDING OFFICE, RESIDENT, AND VISITOR PARKING SPACES: 170 SPACES  
B. INCLUDING ONLY RESIDENT AND VISITOR, EXCLUDING OFFICE: 154 SPACES

| DWELLING UNIT TYPE | ACCOMODATIONS LEGEND |    |    |    | TOTAL |
|--------------------|----------------------|----|----|----|-------|
|                    | 3(NEW)               | 4  | 5  | 6  |       |
| BACHELOR           | 1                    |    |    |    | 1     |
| 1-BEDROOM          | 25                   |    |    | 0  | 25    |
| 2-BEDROOM          | 4                    | 7  | 6  | 6  | 23    |
| 3-BEDROOM          | 9                    | 7  | 6  | 4  | 26    |
| 4-BEDROOM          |                      |    |    | 1  | 1     |
| 5-BEDROOM          |                      |    |    | 1  | 1     |
| 1-B(SENIOR)        |                      |    |    |    | 0     |
| 2-B(SENIOR)        |                      |    |    |    | 0     |
| TOTAL              | 39                   | 14 | 12 | 12 | 77    |

| DWELLING UNIT TYPE    | PARKING LEGEND |    |    |    | TOTAL | TOTAL REQUIRED PARKING | TOTAL PARKING PROVIDED |
|-----------------------|----------------|----|----|----|-------|------------------------|------------------------|
|                       | 3(NEW)         | 4  | 5  | 6  |       |                        |                        |
| APARTMENT (1.2)       | 39             |    |    |    | 39    | 47                     |                        |
| STACKED (1.2)         | 0              | 14 | 12 | 12 | 38    |                        | 36                     |
| VISITOR PARKING (0.2) |                |    |    |    |       | 15                     | 7                      |
|                       |                |    |    |    |       | 108                    | total: 43              |

| DWELLING UNITS | AMENITY LEGEND |    |    |    | TOTAL | TOTAL REQUIRED AMENITY SPACE (m2) | TOTAL AMENITY SPACE PROVIDED (m2) |
|----------------|----------------|----|----|----|-------|-----------------------------------|-----------------------------------|
|                | 3(NEW)         | 4  | 5  | 6  |       |                                   |                                   |
|                | 39             | 14 | 12 | 12 | 77    | 462                               | 552                               |



1 PROPOSED SITE PLAN  
A110 1 : 200



| DEVELOPMENT INFO                                                                                                        |  | ZONING INFO                                                                                 |  | ZONING PROVISION                                                                                                                                                                                                                         |  | PARKING QUEING + LOADING                               |  |
|-------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------|--|
| LEGAL DESCRIPTION                                                                                                       |  | ZONING PROVISION                                                                            |  | REQUIRED                                                                                                                                                                                                                                 |  | REQUIRED                                               |  |
| BLOCKS C, D, AND L REGISTERED PLAN 4M-172 CITY OF OTTAWA                                                                |  | MIN. LOT WIDTH                                                                              |  | No minimum                                                                                                                                                                                                                               |  | 43                                                     |  |
| REFERENCE SURVEY<br>BASED ON INFORMATION FROM A SURVEY PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. DATED JULY 5, 2023 |  | MIN. LOT AREA                                                                               |  | No minimum                                                                                                                                                                                                                               |  | 7                                                      |  |
| MUNICIPAL ADDRESS<br>1360 OGILVIE RD, OTTAWA, ON K1J 9M6                                                                |  | MIN. FRONT YARD SETBACK                                                                     |  | Minimum: 0m                                                                                                                                                                                                                              |  | 3                                                      |  |
| SITE AREAS<br>BETTER LIVING CO-OP 5323.54m²<br>COMMUNITY WORKS 2558.69m²<br>BIRCHWOOD 5028.37m²<br>TOTAL 12,910.6m²     |  | MIN. INTERIOR SIDE YARD SETBACK                                                             |  | No minimum                                                                                                                                                                                                                               |  | 44                                                     |  |
| BUILDING AREA 975m²                                                                                                     |  | MIN. REAR YARD SETBACK                                                                      |  | 7.5m                                                                                                                                                                                                                                     |  | 4m for single traffic lane, driveway to parking garage |  |
| GROSS FLOOR AREA 3,900m²                                                                                                |  | MAX. HEIGHT 40m                                                                             |  | 40m                                                                                                                                                                                                                                      |  | 6m @ double traffic lane                               |  |
| BUILDING HEIGHT 14.15m, 4 STOREYS                                                                                       |  | AMENITY AREA 462m²                                                                          |  | 552m²                                                                                                                                                                                                                                    |  | 6m for double traffic lane, parking lot                |  |
| ZONE AM10 H(40)                                                                                                         |  | LANDSCAPED AREA no minimum                                                                  |  | 349.5m²                                                                                                                                                                                                                                  |  |                                                        |  |
|                                                                                                                         |  | MIN. FRONTAGE 4.5m                                                                          |  | 4.3m                                                                                                                                                                                                                                     |  |                                                        |  |
|                                                                                                                         |  | FRONTAGE CALCULATION: 43.5m OF BUILDING WALLS / 109.7m OF ENTIRE FRONTAGE = 39% OF FRONTAGE |  | AMENITY BREAKDOWN<br>Ground Floor Amenity: 83m²<br>Balconies: 227m²<br>Playground: 242m²                                                                                                                                                 |  |                                                        |  |
|                                                                                                                         |  |                                                                                             |  | The ground floor facade facing a public street of a building located within 4.5 m of the front lot line must include: a minimum of one active entrance from each individual occupancy located immediately adjacent to the front lot line |  |                                                        |  |
|                                                                                                                         |  |                                                                                             |  | MINIMUM GLAZING OF GROUND FLOOR FACADE                                                                                                                                                                                                   |  |                                                        |  |
|                                                                                                                         |  |                                                                                             |  | REQUIRED                                                                                                                                                                                                                                 |  |                                                        |  |
|                                                                                                                         |  |                                                                                             |  | PROVIDED                                                                                                                                                                                                                                 |  |                                                        |  |
|                                                                                                                         |  |                                                                                             |  | 50% of the surface area of the ground floor facade facing Ogilvie, from the average grade up 4.5 metres, must be comprised of transparent glazing and active customer or resident entrance access doors                                  |  |                                                        |  |
|                                                                                                                         |  |                                                                                             |  | 7.7 m2/ 72m2 = 10.7% glazing                                                                                                                                                                                                             |  |                                                        |  |

## APPENDIX C WATERMAIN CALCULATIONS

# CITY OF OTTAWA - WATER DISTRIBUTION SYSTEM FACILITIES & FEEDERMAINS

FOREST RIDGE P.S.

ORLEANS RES.

MONTREAL ROAD P.S.

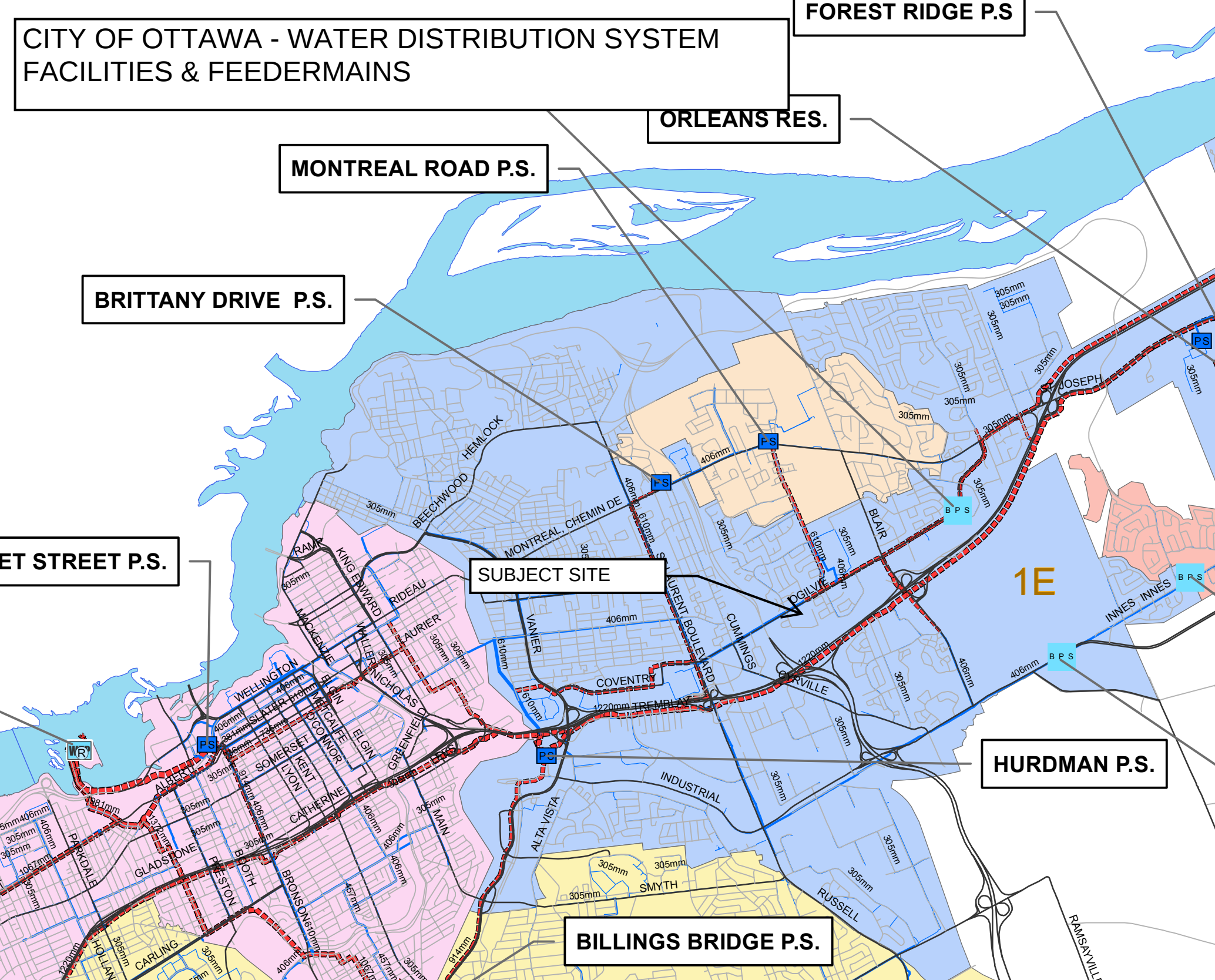
BRITTANY DRIVE P.S.

ET STREET P.S.

SUBJECT SITE

HURDMAN P.S.

BILLINGS BRIDGE P.S.



## CCO-23-3120 - 1360 Ogilvie Road - Block 3 Redevelopment - Site Water Demands

|              |                                           |
|--------------|-------------------------------------------|
| Project:     | 1360 Ogilvie Road - Block 3 Redevelopment |
| Project No.: | CCO-23-3120                               |
| Designed By: | FV                                        |
| Checked By:  | AB                                        |
| Date:        | October 3, 2024                           |
| Site Area:   | 1.29 gross ha                             |

| Residential                     | NUMBER OF UNITS | UNIT RATE |              |
|---------------------------------|-----------------|-----------|--------------|
| Existing (Blocks 1, 2, 4, 5, 6) |                 |           |              |
| Average Apartment               | 154 units       | 1.8       | persons/unit |
| Proposed (Block 3):             |                 |           |              |
| 1 Bedroom Apartment             | 26 units        | 1.4       | persons/unit |
| 2 Bedroom Apartment             | 4 units         | 2.1       | persons/unit |
| 3 Bedroom Apartment             | 9 units         | 3.1       | persons/unit |
| Total Population                | 350 persons     |           |              |

### AVERAGE DAILY DEMAND

| DEMAND TYPE                   | AMOUNT                              | UNITS                    |     |
|-------------------------------|-------------------------------------|--------------------------|-----|
| Residential                   | 280                                 | L/c/d                    |     |
| Industrial - Light            | 35,000                              | L/gross ha/d             |     |
| Industrial - Heavy            | 55,000                              | L/gross ha/d             |     |
| Shopping Centres              | 2,500                               | L/(1000m <sup>2</sup> /d |     |
| Hospital                      | 900                                 | L/(bed/day)              |     |
| Schools                       | 70                                  | L/(Student/d)            |     |
| Trailer Park with no Hook-Ups | 340                                 | L/(space/d)              |     |
| Trailer Park with Hook-Ups    | 800                                 | L/(space/d)              |     |
| Campgrounds                   | 225                                 | L/(campsite/d)           |     |
| Mobile Home Parks             | 1,000                               | L/(Space/d)              |     |
| Motels                        | 150                                 | L/(bed-space/d)          |     |
| Hotels                        | 225                                 | L/(bed-space/d)          |     |
| Tourist Commercial            | 28,000                              | L/gross ha/d             |     |
| Other Commercial              | 28,000                              | L/gross ha/d             |     |
| AVERAGE DAILY DEMAND          | Residential                         | 1.13                     | L/s |
|                               | Commercial/Industrial/Institutional | 0.00                     | L/s |

### MAXIMUM DAILY DEMAND

| DEMAND TYPE          | AMOUNT                              | UNITS      |              |
|----------------------|-------------------------------------|------------|--------------|
| Residential          | 3.4                                 | x avg. day | L/c/d        |
| Industrial           | 1.5                                 | x avg. day | L/gross ha/d |
| Commercial           | 1.5                                 | x avg. day | L/gross ha/d |
| Institutional        | 1.5                                 | x avg. day | L/gross ha/d |
| MAXIMUM DAILY DEMAND | Residential                         | 3.86       | L/s          |
|                      | Commercial/Industrial/Institutional | 0.00       | L/s          |

### MAXIMUM HOUR DEMAND

| DEMAND TYPE         | AMOUNT                              | UNITS      |              |
|---------------------|-------------------------------------|------------|--------------|
| Residential         | 5.1                                 | x avg. day | L/c/d        |
| Industrial          | 1.8                                 | x max. day | L/gross ha/d |
| Commercial          | 1.8                                 | x max. day | L/gross ha/d |
| Institutional       | 1.8                                 | x max. day | L/gross ha/d |
| MAXIMUM HOUR DEMAND | Residential                         | 5.78       | L/s          |
|                     | Commercial/Industrial/Institutional | 0.00       | L/s          |

WATER DEMAND DESIGN FLOWS PER UNIT COUNT  
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

|                      |      |     |
|----------------------|------|-----|
| AVERAGE DAILY DEMAND | 1.13 | L/s |
| MAXIMUM DAILY DEMAND | 3.86 | L/s |
| MAXIMUM HOUR DEMAND  | 5.78 | L/s |

## CCO-23-3120 - 1360 Ogilvie Road - Block 3 Redevelopment - Block 3 Water Demands

|              |                                           |
|--------------|-------------------------------------------|
| Project:     | 1360 Ogilvie Road - Block 3 Redevelopment |
| Project No.: | CCO-23-3120                               |
| Designed By: | FV                                        |
| Checked By:  | AB                                        |
| Date:        | October 3, 2024                           |
| Site Area:   | 1.29 gross ha                             |

| Residential                | NUMBER OF UNITS | UNIT RATE |              |
|----------------------------|-----------------|-----------|--------------|
| <i>Proposed (Block 3):</i> |                 |           |              |
| 1 Bedroom Apartment        | 26 units        | 1.4       | persons/unit |
| 2 Bedroom Apartment        | 4 units         | 2.1       | persons/unit |
| 3 Bedroom Apartment        | 9 units         | 3.1       | persons/unit |
| Total Population           | 73 persons      |           |              |

### AVERAGE DAILY DEMAND

| DEMAND TYPE                   | AMOUNT                              | UNITS                    |
|-------------------------------|-------------------------------------|--------------------------|
| Residential                   | 280                                 | L/c/d                    |
| Industrial - Light            | 35,000                              | L/gross ha/d             |
| Industrial - Heavy            | 55,000                              | L/gross ha/d             |
| Shopping Centres              | 2,500                               | L/(1000m <sup>2</sup> /d |
| Hospital                      | 900                                 | L/(bed/day)              |
| Schools                       | 70                                  | L/(Student/d)            |
| Trailer Park with no Hook-Ups | 340                                 | L/(space/d)              |
| Trailer Park with Hook-Ups    | 800                                 | L/(space/d)              |
| Campgrounds                   | 225                                 | L/(campsite/d)           |
| Mobile Home Parks             | 1,000                               | L/(Space/d)              |
| Motels                        | 150                                 | L/(bed-space/d)          |
| Hotels                        | 225                                 | L/(bed-space/d)          |
| Tourist Commercial            | 28,000                              | L/gross ha/d             |
| Other Commercial              | 28,000                              | L/gross ha/d             |
| AVERAGE DAILY DEMAND          | Residential                         | 0.24 L/s                 |
|                               | Commercial/Industrial/Institutional | 0.00 L/s                 |

### MAXIMUM DAILY DEMAND

| DEMAND TYPE          | AMOUNT                              | UNITS        |
|----------------------|-------------------------------------|--------------|
| Residential          | 7.9 x avg. day                      | L/c/d        |
| Industrial           | 1.5 x avg. day                      | L/gross ha/d |
| Commercial           | 1.5 x avg. day                      | L/gross ha/d |
| Institutional        | 1.5 x avg. day                      | L/gross ha/d |
| MAXIMUM DAILY DEMAND | Residential                         | 1.86 L/s     |
|                      | Commercial/Industrial/Institutional | 0.00 L/s     |

### MAXIMUM HOUR DEMAND

| DEMAND TYPE         | AMOUNT                              | UNITS        |
|---------------------|-------------------------------------|--------------|
| Residential         | 11.8 x avg. day                     | L/c/d        |
| Industrial          | 1.8 x max. day                      | L/gross ha/d |
| Commercial          | 1.8 x max. day                      | L/gross ha/d |
| Institutional       | 1.8 x max. day                      | L/gross ha/d |
| MAXIMUM HOUR DEMAND | Residential                         | 2.80 L/s     |
|                     | Commercial/Industrial/Institutional | 0.00 L/s     |

WATER DEMAND DESIGN FLOWS PER UNIT COUNT  
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

|                      |      |     |
|----------------------|------|-----|
| AVERAGE DAILY DEMAND | 0.24 | L/s |
| MAXIMUM DAILY DEMAND | 1.86 | L/s |
| MAXIMUM HOUR DEMAND  | 2.80 | L/s |

## CCO-23-3120 - 1360 Ogilvie Road - Block 3 Redevelopment - OBC Fire Calculations

|              |                                           |
|--------------|-------------------------------------------|
| Project:     | 1360 Ogilvie Road - Block 3 Redevelopment |
| Project No.: | CCO-23-3120                               |
| Designed By: | FV                                        |
| Checked By:  | AB                                        |
| Date:        | October 3, 2024                           |

### Ontario 2006 Building Code Compendium (Div. B - Part 3)

#### Water Supply for Fire-Fighting - Block 3 Apartment Building

Building is classified as Group : C - Residential

Building is of combustible construction with fire separations and fire resistance ratings provided in accordance with Subsection 3.2.2., including loadbearing walls, columns and arches. Noncombustible construction may be used in lieu of fire-resistance rating

From Div. B A-3.2.5.7. of the Ontario Building Code - 3. Building On-Site Water Supply:

$$(a) Q = K \times V \times Stot$$

where:

Q = minimum supply of water in litres

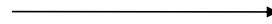
K = water supply coefficient from Table 1

V = total building volume in cubic metres

Stot = total of spatial coefficient values from the property line exposures on all sides as obtained from the formula:

$$Stot = 1.0 + [S_{side1} + S_{side2} + S_{side3} + \dots \text{etc.}]$$

|      |              |                                                                       |
|------|--------------|-----------------------------------------------------------------------|
| K    | 18           | (from Table 1 pg A-31) (Worst case occupancy {E / F2} 'K' value used) |
| V    | 13,650       | (Total building volume in m³.)                                        |
| Stot | 1.4          | (From figure 1 pg A-32)                                               |
| Q =  | 343,980.00 L |                                                                       |



|        |       |   | From Figure 1 (A-32) |
|--------|-------|---|----------------------|
| Snorth | 6.2   | m | 0.4                  |
| Seast  | 61    | m | 0.0                  |
| Ssouth | 37.2  | m | 0.0                  |
| Swest  | 26.96 | m | 0.0                  |

\*approximate distances

From Table 2: Required Minimum Water Supply Flow Rate (L/s)

9000 L/min if Q > 270,000 L  
2378 gpm

## CCO-23-3120 - 1360 Ogilvie Road - Block 3 Redevelopment - Fire Underwriters Survey

Project: 1360 Ogilvie Road - Block 3 Redevelopment  
 Project No.: CCO-23-3120  
 Designed By: FV  
 Checked By: AB  
 Date: October 3, 2024

### From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:  
 City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

#### A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x v<sup>A</sup> Where:  
 F = Required fire flow in liters per minute  
 C = Coefficient related to the type of construction.  
 A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type **Wood Frame**

|                                                                    |     |                        |                                |
|--------------------------------------------------------------------|-----|------------------------|--------------------------------|
| C                                                                  | 1.5 | A                      | 3,900.0 m <sup>2</sup>         |
| Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) |     | 3,900.0 m <sup>2</sup> | *Unprotected Vertical Openings |

|                      |                |
|----------------------|----------------|
| Calculated Fire Flow | 20,608.5 L/min |
|                      | 21,000.0 L/min |

#### B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:  
 Limited Combustible -15%

|           |                |
|-----------|----------------|
| Fire Flow | 17,850.0 L/min |
|-----------|----------------|

#### C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered -50%

|           |                |
|-----------|----------------|
| Reduction | -8,925.0 L/min |
|-----------|----------------|

#### D. INCREASE FOR EXPOSURE (No Rounding)

|            | Separation Distance (m) | Cons. of Exposed Wall | Length Exposed<br>Adjacent Wall (m) | Height<br>(Stories) | Length-Height<br>Factor |             |     |
|------------|-------------------------|-----------------------|-------------------------------------|---------------------|-------------------------|-------------|-----|
| Exposure 1 | Over 30 m               | Wood frame            | 116                                 | 2                   | 232.0                   | 0%          | N   |
| Exposure 2 | 10.1 to 20              | Wood frame            | 41.1                                | 6                   | 246.6                   | 15%         | E   |
| Exposure 3 | 3.1 to 10               | Wood frame            | 7.9                                 | 3                   | 23.7                    | 16%         | S   |
| Exposure 4 | 10.1 to 20              | Wood frame            | 36.9                                | 3                   | 110.7                   | 15%         | W   |
|            |                         |                       |                                     |                     |                         | % Increase* | 46% |

|           |               |
|-----------|---------------|
| Increase* | 8,211.0 L/min |
|-----------|---------------|

#### E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

|                      |                |
|----------------------|----------------|
| Fire Flow            | 17,136.0 L/min |
| Fire Flow Required** | 17,000.0 L/min |

\*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%

\*\*In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min



## CCO-23-3120 - 1360 Ogilvie Road - Block 3 Redevelopment - Boundary Condition Unit Conversion

Project: 1360 Ogilvie Road - Block 3 Redevelopment  
Project No.: CCO-23-3120  
Designed By: FV  
Checked By: AB  
Date: October 3, 2024

### Boundary Conditions Unit Conversion

#### 1360 Ogilvie Road

##### Connection 1

| Scenario                                   | Height (m) | Elevation (m) | m H <sub>2</sub> O | PSI  | kPa   |
|--------------------------------------------|------------|---------------|--------------------|------|-------|
| Avg. DD                                    | 117.7      | 69.7          | 48.0               | 68.3 | 470.9 |
| OBC Fire Flow (150 L/s or 9,000 L/min)     | 112.8      | 69.7          | 43.1               | 61.3 | 422.8 |
| FUS Fire Flow (283.33 L/s or 17,000 L/min) | 112.2      | 69.7          | 42.5               | 60.5 | 416.9 |
| Peak Hour                                  | 110.2      | 69.7          | 40.5               | 57.6 | 397.3 |

##### Connection 2

| Scenario                                   | Height (m) | Elevation (m) | m H <sub>2</sub> O | PSI  | kPa   |
|--------------------------------------------|------------|---------------|--------------------|------|-------|
| Avg. DD                                    | 117.7      | 70.6          | 47.1               | 67.0 | 462.2 |
| OBC Fire Flow (150 L/s or 9,000 L/min)     | 112.7      | 70.6          | 42.1               | 59.9 | 413.2 |
| FUS Fire Flow (283.33 L/s or 17,000 L/min) | 112.1      | 70.6          | 41.5               | 59.1 | 407.3 |
| Peak Hour                                  | 110.2      | 70.6          | 39.6               | 56.4 | 388.7 |

## Alison Gosling

---

**From:** Elsby, Cam <Cam.Elsby@ottawa.ca>  
**Sent:** December 4, 2023 9:08 AM  
**To:** Francis Valenti  
**Cc:** Curtis Melanson; Andrea Bishop  
**Subject:** RE: 23-3120 - Boundary Condition Request - 1360 Ogilvie Road  
**Attachments:** 1360 Ogilvie Road November 2023.pdf

Hi Francis,

Perfect timing, I just received the results!

The following are boundary conditions, HGL, for hydraulic analysis at 1360 Ogilvie Road (zone 1E) assumed a dual connection to the 610 mm watermain on Ogilvie Road via existing connections 1 and 2 (see attached PDF for location).

### Both Connections:

Minimum HGL = 110.2 m

Maximum HGL = 117.7 m

### Fire Flow:

#### Connection 1

Max Day+FireFlow (150 L/s-OBC) = 112.8 m

Max Day+FireFlow (283.33 L/s-FUS) = 112.2 m

#### Connection 2

Max Day+FireFlow (150 L/s-OBC) = 112.7 m

Max Day+FireFlow (283.33 L/s-FUS) = 112.1 m

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.*

Kind regards,

**Cam Elsby**

Project Manager, Infrastructure Approvals

Planning, Real Estate and Economic Development Department | Services de la planification, des biens immobiliers et du développement économique

Development Review – East 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 21443

[cam.elsby@ottawa.ca](mailto:cam.elsby@ottawa.ca)

---

**From:** Francis Valenti <F.Valenti@McIntoshPerry.com>

**Sent:** December 04, 2023 8:54 AM

**To:** Elsby, Cam <Cam.Elsby@ottawa.ca>

**Cc:** Curtis Melanson <c.melanson@mcintoshperry.com>; Andrea Bishop <a.bishop@mcintoshperry.com>

**Subject:** RE: 23-3120 - Boundary Condition Request - 1360 Ogilvie Road

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Good morning Cam,

I'm just following up on the boundary condition request below. Has there been any update from the water resources team?

Thank you,

**Francis Valenti, EIT**

Engineering Intern

T. 613.714.6895 | C. 613.808.2123

[F.Valenti@McIntoshPerry.com](mailto:F.Valenti@McIntoshPerry.com) | [www.mcintoshperry.com](http://www.mcintoshperry.com)



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**From:** Elsby, Cam <[Cam.Elsby@ottawa.ca](mailto:Cam.Elsby@ottawa.ca)>

**Sent:** November 7, 2023 12:15 PM

**To:** Francis Valenti <[F.Valenti@McIntoshPerry.com](mailto:F.Valenti@McIntoshPerry.com)>

**Cc:** Curtis Melanson <[c.melanson@mcintoshperry.com](mailto:c.melanson@mcintoshperry.com)>; Andrea Bishop <[a.bishop@mcintoshperry.com](mailto:a.bishop@mcintoshperry.com)>

**Subject:** RE: 23-3120 - Boundary Condition Request - 1360 Ogilvie Road

Hi Francis,

Thank you for the detailed information. I've reviewed and found no issues, so I've forwarded your request to our water resources team for processing. Please note that the fire flow is quite high, and may be flagged by our model to be reduced.

Please don't hesitate to reach out should you have any questions or concerns.

Kind regards,

**Cam Elsby**

Project Manager, Infrastructure Approvals

Planning, Real Estate and Economic Development Department | Services de la planification, des biens immobiliers et du développement économique

Development Review – East 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 21443

[cam.elsby@ottawa.ca](mailto:cam.elsby@ottawa.ca)

---

**From:** Francis Valenti <[F.Valenti@McIntoshPerry.com](mailto:F.Valenti@McIntoshPerry.com)>

**Sent:** November 06, 2023 4:04 PM

**To:** Elsby, Cam <[Cam.Elsby@ottawa.ca](mailto:Cam.Elsby@ottawa.ca)>

**Cc:** Curtis Melanson <[c.melanson@mcintoshperry.com](mailto:c.melanson@mcintoshperry.com)>; Andrea Bishop <[a.bishop@mcintoshperry.com](mailto:a.bishop@mcintoshperry.com)>

**Subject:** 23-3120 - Boundary Condition Request - 1360 Ogilvie Road

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Good afternoon Cam,

We would like to request boundary conditions for the proposed development located at 1360 Ogilvie Road. The proposed development consists of a 4-storey apartment building, complete with underground parking and drive aisles with street access from Ogilvie Road. The proposed building will be serviced by a private on-site watermain with existing connections (dual) to the existing 610 mm watermain located within Ogilvie Road.

Please note we weren't sure if you wanted the existing development included in the boundary condition request, so we've included one set of calculations for just the proposed building and one set which includes the existing development. Please find attached a map showing the connection locations and calculations prepared for the demands listed below.

- The estimated fire flow is 9,000 L/min based on the OBC method
- The estimated fire flow is 17,000 L/min based on the FUS method

Proposed Building + Existing Development:

- Average Daily Demand: 1.11 L/s
- Maximum Daily Demand: 3.80 L/s

- Maximum hourly daily demand: 5.70 L/s

Proposed Building:

- Average Daily Demand: 0.21 L/s
- Maximum Daily Demand: 1.74 L/s
- Maximum hourly daily demand: 2.62 L/s

Regards,

**Francis Valenti, EIT**

**Engineering Intern**

T. 613.714.6895 | C. 613.808.2123

[F.Valenti@McIntoshPerry.com](mailto:F.Valenti@McIntoshPerry.com) | [www.mcintoshperry.com](http://www.mcintoshperry.com)



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Boundary Conditions for 1360 Ogilvie Road



1360 Ogilvie Road  
Hydrant Coverage Figure



## APPENDIX D SANITARY CALCULATIONS

## CCO-23-3120 - 1360 Ogilvie Road - Total Site - Sanitary Demands

|              |                                |
|--------------|--------------------------------|
| Project:     | 1360 Ogilvie Road - Total Site |
| Project No.: | CCO-23-3120                    |
| Designed By: | FV                             |
| Checked By:  | AB                             |
| Date:        | Oct-24                         |

|                  |      |                       |
|------------------|------|-----------------------|
| Site Area        | 1.29 | Gross ha              |
| Existing:        |      |                       |
| Apartment        | 154  | 1.80 Persons per unit |
| Proposed:        |      |                       |
| 1 Bedroom        | 26   | 1.40 Persons per unit |
| 2 Bedroom        | 4    | 2.10 Persons per unit |
| 3 Bedroom        | 9    | 3.10 Persons per unit |
| Total Population | 350  | Persons               |

### DESIGN PARAMETERS

|                                         |                                                                                                                                       |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Institutional/Commercial Peaking Factor | 1.5                                                                                                                                   |
| Residential Peaking Factor              | 3.44 * Using Harmon Formula = $1 + (14 / (4 + P^{0.5})) * 0.8$<br>where P = population in thousands, Harmon's Correction Factor = 0.8 |
| Mannings coefficient (n)                | 0.013                                                                                                                                 |
| Demand (per capita)                     | 280 L/day                                                                                                                             |
| Infiltration allowance                  | 0.33 L/s/Ha                                                                                                                           |

### EXTRANEOUS FLOW ALLOWANCES

| Infiltration / Inflow | Flow (L/s) |
|-----------------------|------------|
| Dry                   | 0.06       |
| Wet                   | 0.36       |
| Total                 | 0.43       |

### AVERAGE DAILY DEMAND

| DEMAND TYPE                | AMOUNT | UNITS                       | POPULATION / AREA | Flow (L/s) |
|----------------------------|--------|-----------------------------|-------------------|------------|
| Residential                | 280    | L/c/d                       | 350               | 1.13       |
| Industrial - Light**       | 35,000 | L/gross ha/d                |                   | 0          |
| Industrial - Heavy**       | 55,000 | L/gross ha/d                |                   | 0          |
| Commercial / Amenity       | 2,800  | L/(1000m <sup>2</sup> / d ) | 0.00              | 0.00       |
| Hospital                   | 900    | L/(bed/day)                 |                   | 0          |
| Schools                    | 70     | L/(Student/d)               |                   | 0          |
| Trailer Parks no Hook-Ups  | 340    | L/(space/d)                 |                   | 0          |
| Trailer Park with Hook-Ups | 800    | L/(space/d)                 |                   | 0          |
| Campgrounds                | 225    | L/(campsite/d)              |                   | 0          |
| Mobile Home Parks          | 1,000  | L/(Space/d)                 |                   | 0          |
| Motels                     | 150    | L/(bed-space/d)             |                   | 0          |
| Hotels                     | 225    | L/(bed-space/d)             |                   | 0          |
| Office                     | 75     | L/7.0m <sup>2</sup> /d      |                   | 0          |
| Tourist Commercial         | 28,000 | L/gross ha/d                |                   | 0          |
| Other Commercial           | 28,000 | L/gross ha/d                |                   | 0          |

|                                    |      |     |
|------------------------------------|------|-----|
| AVERAGE RESIDENTIAL FLOW           | 1.13 | L/s |
| PEAK RESIDENTIAL FLOW              | 3.90 | L/s |
|                                    |      |     |
| AVERAGE ICI FLOW                   | 0.00 | L/s |
| PEAK INSTITUTIONAL/COMMERCIAL FLOW | 0.00 | L/s |
| PEAK INDUSTRIAL FLOW               | 0.00 | L/s |
| TOTAL PEAK ICI FLOW                | 0.00 | L/s |

### TOTAL SANITARY DEMAND

|                                          |      |     |
|------------------------------------------|------|-----|
| TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW | 1.20 | L/s |
| TOTAL ESTIMATED PEAK DRY WEATHER FLOW    | 3.97 | L/s |
| TOTAL ESTIMATED PEAK WET WEATHER FLOW    | 4.33 | L/s |

## CCO-23-3120 - 1360 Ogilvie Road - Block 3 Redevelopment - Sanitary Demands

|                  |                                           |                       |
|------------------|-------------------------------------------|-----------------------|
| Project:         | 1360 Ogilvie Road - Block 3 Redevelopment |                       |
| Project No.:     | CCO-23-3120                               |                       |
| Designed By:     | FV                                        |                       |
| Checked By:      | AB                                        |                       |
| Date:            | Oct-24                                    |                       |
| Site Area        | 1.29                                      | Gross ha              |
| 1 Bedroom        | 26                                        | 1.40 Persons per unit |
| 2 Bedroom        | 4                                         | 2.10 Persons per unit |
| 3 Bedroom        | 9                                         | 3.10 Persons per unit |
| Total Population | 73                                        | Persons               |

### DESIGN PARAMETERS

|                                         |       |                                                                                                                                  |
|-----------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------|
| Institutional/Commercial Peaking Factor | 1.5   |                                                                                                                                  |
| Residential Peaking Factor              | 3.62  | * Using Harmon Formula = $1 + (14 / (4 + P^{0.5})) * 0.8$<br>where P = population in thousands, Harmon's Correction Factor = 0.8 |
| Mannings coefficient (n)                | 0.013 |                                                                                                                                  |
| Demand (per capita)                     | 280   | L/day                                                                                                                            |
| Infiltration allowance                  | 0.33  | L/s/Ha                                                                                                                           |

### EXTRANEOUS FLOW ALLOWANCES

| Infiltration / Inflow | Flow (L/s) |
|-----------------------|------------|
| Dry                   | 0.06       |
| Wet                   | 0.36       |
| Total                 | 0.43       |

### AVERAGE DAILY DEMAND

| DEMAND TYPE                | AMOUNT | UNITS                      | POPULATION / AREA | Flow (L/s) |
|----------------------------|--------|----------------------------|-------------------|------------|
| Residential                | 280    | L/c/d                      | 73                | 0.24       |
| Industrial - Light**       | 35,000 | L/gross ha/d               |                   | 0          |
| Industrial - Heavy**       | 55,000 | L/gross ha/d               |                   | 0          |
| Commercial / Amenity       | 2,800  | L/(1000m <sup>2</sup> /d ) | 0.00              | 0.00       |
| Hospital                   | 900    | L/(bed/day)                |                   | 0          |
| Schools                    | 70     | L/(Student/d)              |                   | 0          |
| Trailer Parks no Hook-Ups  | 340    | L/(space/d)                |                   | 0          |
| Trailer Park with Hook-Ups | 800    | L/(space/d)                |                   | 0          |
| Campgrounds                | 225    | L/(campsite/d)             |                   | 0          |
| Mobile Home Parks          | 1,000  | L/(Space/d)                |                   | 0          |
| Motels                     | 150    | L/(bed-space/d)            |                   | 0          |
| Hotels                     | 225    | L/(bed-space/d)            |                   | 0          |
| Office                     | 75     | L/7.0m <sup>2</sup> /d     |                   | 0          |
| Tourist Commercial         | 28,000 | L/gross ha/d               |                   | 0          |
| Other Commercial           | 28,000 | L/gross ha/d               |                   | 0          |

|                                    |      |     |
|------------------------------------|------|-----|
| AVERAGE RESIDENTIAL FLOW           | 0.24 | L/s |
| PEAK RESIDENTIAL FLOW              | 0.86 | L/s |
| AVERAGE ICI FLOW                   | 0.00 | L/s |
| PEAK INSTITUTIONAL/COMMERCIAL FLOW | 0.00 | L/s |
| PEAK INDUSTRIAL FLOW               | 0.00 | L/s |
| TOTAL PEAK ICI FLOW                | 0.00 | L/s |

### TOTAL SANITARY DEMAND

|                                          |      |     |
|------------------------------------------|------|-----|
| TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW | 0.30 | L/s |
| TOTAL ESTIMATED PEAK DRY WEATHER FLOW    | 0.92 | L/s |
| TOTAL ESTIMATED PEAK WET WEATHER FLOW    | 1.28 | L/s |

SANITARY SEWER DESIGN SHEET

PROJECT:Block 3 Redevelopment

LOCATION:1360 Ogilvie Road

Client:CSV Architects

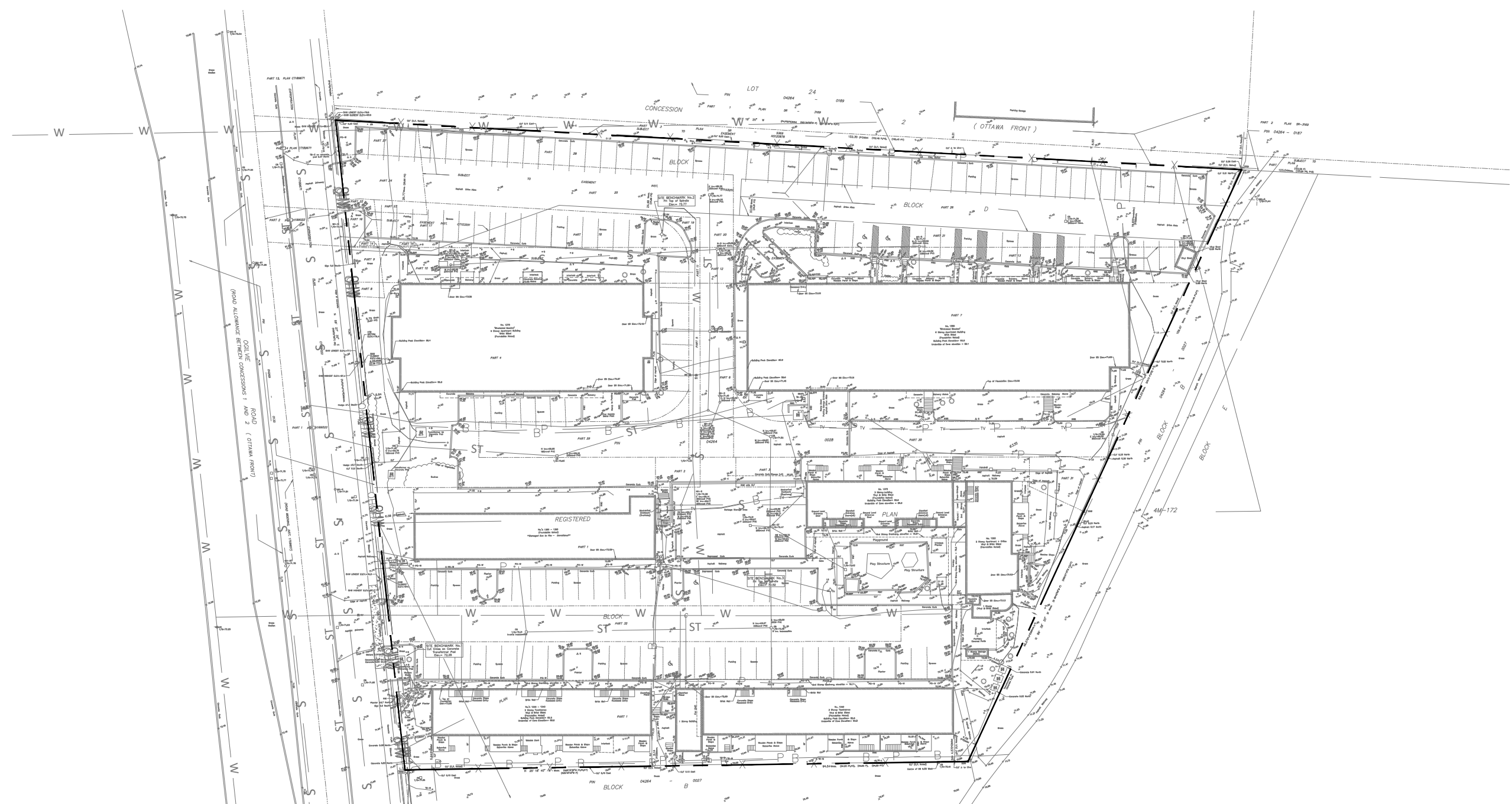
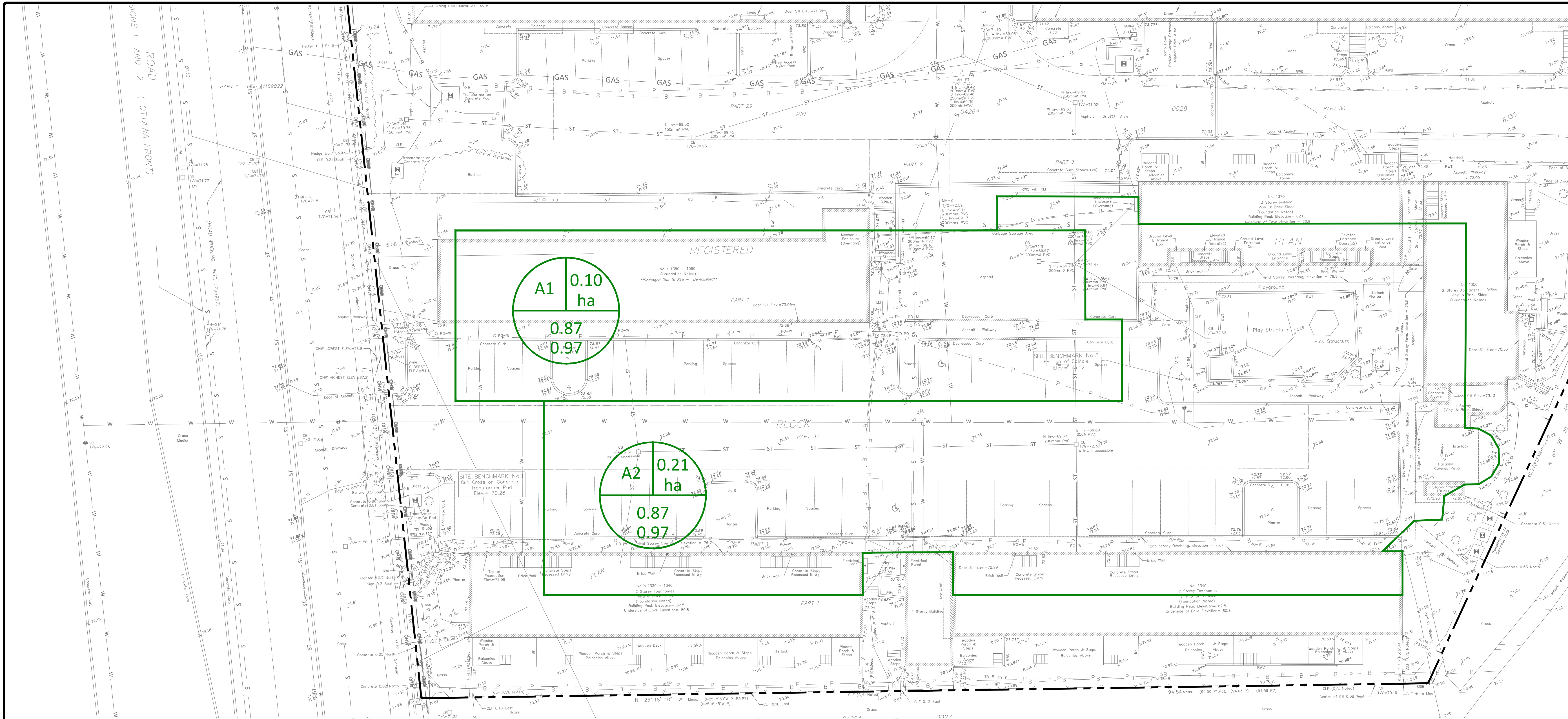


| LOCATION           |                 |              |           | RESIDENTIAL                            |       |       |     |           |            |     |             |                 | ICI AREAS                |     |            |     |            |     |                 | INFILTRATION ALLOWANCE |      |            | FLOW              | SEWER DATA     |            |                  |           |                       |                    |       |     |     |
|--------------------|-----------------|--------------|-----------|----------------------------------------|-------|-------|-----|-----------|------------|-----|-------------|-----------------|--------------------------|-----|------------|-----|------------|-----|-----------------|------------------------|------|------------|-------------------|----------------|------------|------------------|-----------|-----------------------|--------------------|-------|-----|-----|
| 1                  | 2               | 3            | 4         | 5                                      | 6     | 7     | 8   | 9         | 10         | 11  | 12          | 13              | 14                       | 15  | 16         | 17  | 18         | 19  | 20              | 21                     | 22   | 23         | 24                | 25             | 26         | 27               | 28        | 29                    | 30                 | 31    |     |     |
| STREET             | AREA ID         | FROM MH      | TO MH     | UNIT TYPES                             |       |       |     | AREA (ha) | POPULATION |     | PEAK FACTOR | PEAK FLOW (L/s) | AREA (ha)                |     |            |     |            |     | PEAK FLOW (L/s) | AREA (ha)              |      | FLOW (L/s) | DESIGN FLOW (L/s) | CAPACITY (L/s) | LENGTH (m) | DIA (mm)         | SLOPE (%) | VELOCITY (full) (m/s) | AVAILABLE CAPACITY |       |     |     |
|                    |                 |              |           | 1-Bed                                  | 2-Bed | 3-Bed | APT |           | IND        | CUM |             |                 | INSTITUTIONAL            |     | COMMERCIAL |     | INDUSTRIAL |     |                 | IND                    | CUM  |            |                   |                |            |                  |           |                       | IND                | CUM   | L/s | (%) |
|                    |                 |              |           | IND                                    | CUM   | IND   | CUM |           | IND        | CUM |             |                 | IND                      | CUM | IND        | CUM | IND        | CUM |                 | IND                    | CUM  |            |                   |                |            |                  |           |                       | IND                | CUM   | IND | CUM |
| Ogilvie Road       | Proposed Outlet | Ex. MH       | MH3A      |                                        |       |       | 25  |           | 58         | 58  | 3.64        | 0.68            |                          |     |            |     |            |     |                 | 0.42                   | 0.42 | 0.14       | 0.82              | 41.91          | 2.49       | 200              | 1.50      | 1.292                 | 41.09              | 98.05 |     |     |
|                    |                 | MH3A         | MH2A      |                                        |       |       |     |           |            | 58  | 3.64        | 0.68            |                          |     |            |     |            |     |                 |                        | 0.42 | 0.14       | 0.82              | 34.22          | 32.09      | 200              | 1.00      | 1.055                 | 33.40              | 97.61 |     |     |
|                    |                 | MH2A         | MH1A      |                                        |       |       |     |           |            | 58  | 3.64        | 0.68            |                          |     |            |     |            |     |                 |                        | 0.42 | 0.14       | 0.82              | 34.22          | 12.88      | 200              | 1.00      | 1.055                 | 33.40              | 97.61 |     |     |
|                    |                 | Prop Bldg.   | MH1A      | 20                                     | 1     | 9     |     |           | 59         | 59  | 3.64        | 0.70            |                          |     |            |     |            |     |                 |                        | 0.42 | 0.14       | 0.84              | 31.78          | 8.55       | 150              | 4.00      | 1.742                 | 30.94              | 97.37 |     |     |
|                    |                 | MH1A         | EX. 525mm |                                        |       |       |     |           |            | 117 | 3.58        | 1.35            |                          |     |            |     |            |     |                 |                        | 0.42 | 0.14       | 1.49              | 34.22          | 8.43       | 200              | 1.00      | 1.055                 | 32.73              | 95.64 |     |     |
|                    |                 |              |           |                                        |       |       |     |           |            |     |             |                 |                          |     |            |     |            |     |                 |                        |      |            |                   |                |            |                  |           |                       |                    |       |     |     |
|                    | Existing Outlet |              |           |                                        |       |       |     |           |            |     |             |                 |                          |     |            |     |            |     |                 |                        |      |            |                   |                |            |                  |           |                       |                    |       |     |     |
|                    |                 | Prop Bldg.   | MH4A      | 6                                      | 3     |       |     |           | 15         | 15  | 3.72        | 0.18            |                          |     |            |     |            |     |                 | 0.52                   | 0.52 | 0.17       | 0.35              | 22.47          | 3.22       | 150              | 2.00      | 1.232                 | 22.12              | 98.44 |     |     |
|                    |                 | Block 4 Bldg | MH4A      |                                        |       |       | 14  |           | 32         | 32  | 3.68        | 0.38            |                          |     |            |     |            |     |                 | 0.52                   | 0.52 | 0.17       | 0.56              | 16.12          | 10.72      | 150              | 1.03      | 0.884                 | 15.57              | 96.55 |     |     |
|                    |                 | MH4A         | MHSA60770 |                                        |       |       |     |           |            | 47  | 3.66        | 0.56            |                          |     |            |     |            |     |                 |                        | 0.52 | 0.17       | 0.73              | 24.19          | 13.79      | 200              | 0.50      | 0.746                 | 23.47              | 96.99 |     |     |
|                    |                 | MHSA60770    | MHSA41903 |                                        |       |       |     |           |            | 47  | 3.66        | 0.56            |                          |     |            |     |            |     |                 |                        | 0.52 | 0.17       | 0.73              | 24.44          | 25.69      | 200              | 0.51      | 0.754                 | 23.71              | 97.02 |     |     |
|                    |                 |              |           |                                        |       |       |     |           |            |     |             |                 |                          |     |            |     |            |     |                 |                        |      |            |                   |                |            |                  |           |                       |                    |       |     |     |
|                    |                 |              |           |                                        |       |       |     |           |            |     |             |                 |                          |     |            |     |            |     |                 |                        |      |            |                   |                |            |                  |           |                       |                    |       |     |     |
| Design Parameters: |                 |              |           | Notes:                                 |       |       |     |           |            |     |             |                 | Designed: FV             |     |            |     |            |     | No.             | Revision               |      |            |                   |                |            | Date             |           |                       |                    |       |     |     |
| Residential        |                 |              |           | 1. Mannings coefficient (n) = 0.013    |       |       |     |           |            |     |             |                 |                          |     |            |     |            |     | 1.              | Issued for Review      |      |            |                   |                |            | 2024-10-03       |           |                       |                    |       |     |     |
| ICI Areas          |                 |              |           | 2. Demand (per capita): 280 L/day      |       |       |     |           |            |     |             |                 |                          |     |            |     |            |     |                 |                        |      |            |                   |                |            |                  |           |                       |                    |       |     |     |
| 1-Bed              | 1.4             | p/p/u        |           | 3. Infiltration allowance: 0.33 L/s/Ha |       |       |     |           |            |     |             |                 |                          |     |            |     |            |     |                 |                        |      |            |                   |                |            |                  |           |                       |                    |       |     |     |
| 2-Bed              | 2.1             | p/p/u        |           |                                        |       |       |     |           |            |     |             |                 | Checked: AG              |     |            |     |            |     |                 |                        |      |            |                   |                |            |                  |           |                       |                    |       |     |     |
| 3-Bed              | 3.1             | p/p/u        |           |                                        |       |       |     |           |            |     |             |                 |                          |     |            |     |            |     |                 |                        |      |            |                   |                |            |                  |           |                       |                    |       |     |     |
| APT                | 2.3             | p/p/u        |           |                                        |       |       |     |           |            |     |             |                 |                          |     |            |     |            |     |                 |                        |      |            |                   |                |            |                  |           |                       |                    |       |     |     |
| Other              | 60              | p/p/Ha       |           |                                        |       |       |     |           |            |     |             |                 | Project No.: CCO-23-3120 |     |            |     |            |     |                 |                        |      |            |                   |                |            | Sheet No: 1 of 1 |           |                       |                    |       |     |     |

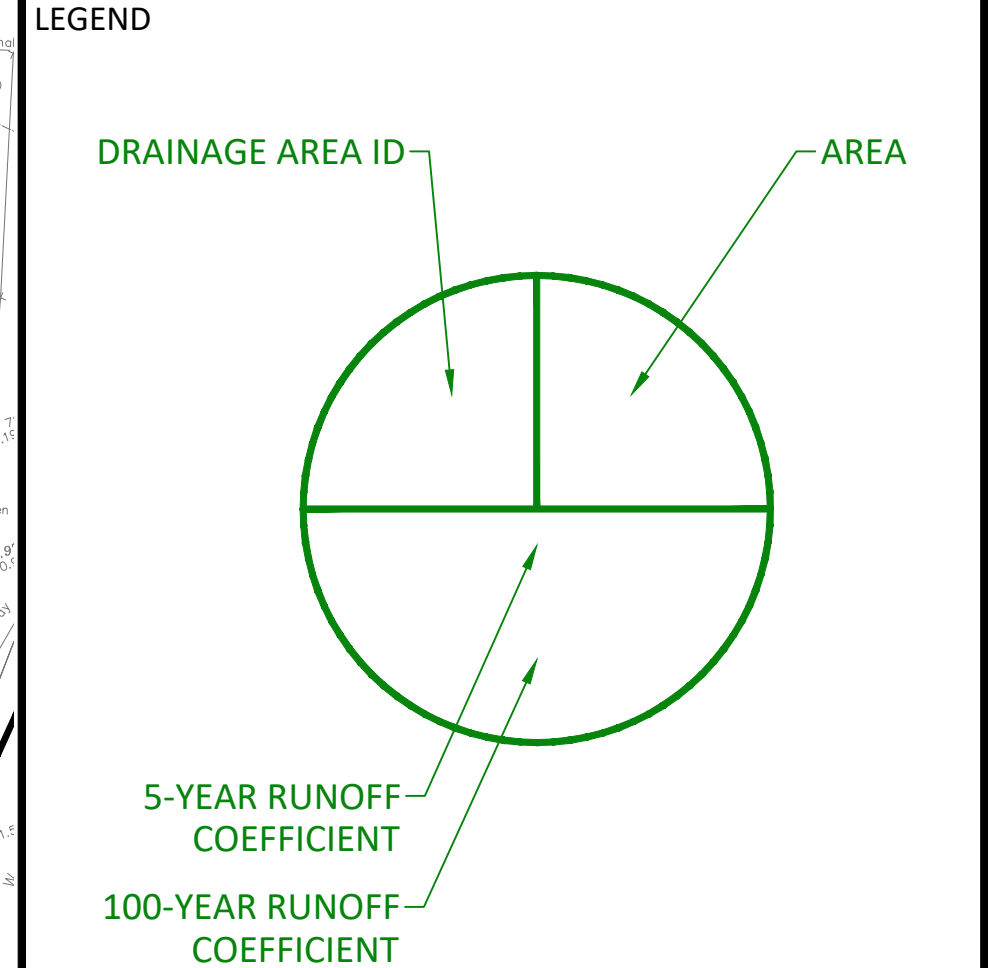
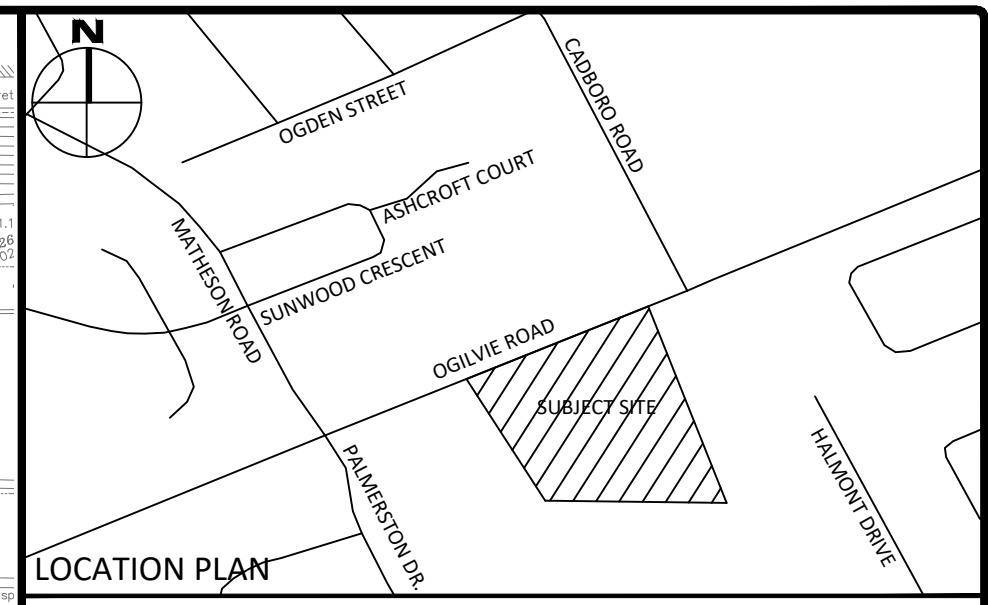
## **APPENDIX E**

### **PRE-DEVELOPMENT DRAINAGE PLAN**

FILENAME: \\Ottawa\01 Project - Proposals\2023\Sub\PC\CO-23-3120\CV - Better Living Co-op\_1360 Ogilvie Rd12 - Drawings\CO-23-3120 - Presentation.dwg  
LAST SAVED: Tuesday, October 08, 2024 1:51:45 PM BY: J. Valenti  
LAST PLOTTED: Tuesday, October 08, 2024 1:51:45 PM BY: J. Valenti  
CITE FILE USED: MP CO STANDARD.ctb



1 KEY MAP  
1:750



**FOR REVIEW ONLY**  
**NOT FOR CONSTRUCTION**

|                                                                 |                                |               |
|-----------------------------------------------------------------|--------------------------------|---------------|
|                                                                 |                                |               |
|                                                                 |                                |               |
|                                                                 |                                |               |
|                                                                 |                                |               |
|                                                                 |                                |               |
|                                                                 |                                |               |
|                                                                 |                                |               |
|                                                                 |                                |               |
|                                                                 |                                |               |
|                                                                 |                                |               |
| 2                                                               | REISSUED FOR SITE PLAN CONTROL | OCT. 09, 2024 |
| 1                                                               | ISSUED FOR SITE PLAN CONTROL   | AUG. 01, 2024 |
| No.                                                             | Revisions                      | Date          |
| Check and verify all dimensions before proceeding with the work |                                |               |
| Do not scale drawings                                           |                                |               |

SCALE 1 : 200  
0 10 20 Metres



Stamp:

Client: CSV ARCHITECTS  
190 O'CONNOR STREET, SUITE 100  
OTTAWA, ON K2P 2R3

Project: BLOCK 3 REDEVELOPMENT  
1360 OGILVIE ROAD

Drawing Title: PRE-DEVELOPMENT DRAINAGE AREA PLAN

|              |       |                 |             |
|--------------|-------|-----------------|-------------|
| Scale:       | 1:200 | Project Number: | CCO-23-3120 |
| Drawn By:    | FV    |                 |             |
| Checked By:  | AG    | Drawing Number: |             |
| Designed By: | FV    |                 |             |

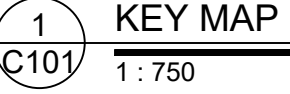
PRE

#19156

D07-12-24-0061

## **APPENDIX F**

### **POST-DEVELOPMENT DRAINAGE PLAN**



Check and verify all dimensions before proceeding with the work Do not scale drawings



|              |       |                 |             |
|--------------|-------|-----------------|-------------|
| Scale:       | 1:200 | Project Number: | CCO-23-3120 |
| Drawn By:    | FV    |                 |             |
| Checked By:  | AG    | Drawing Number: | POST        |
| Designed By: | FV    |                 |             |

## **APPENDIX G**

### **STORMWATER MANAGEMENT CALCULATIONS**

| Tc<br>(min) | Intensity<br>(mm/hr) |        |          |
|-------------|----------------------|--------|----------|
|             | 2-Year               | 5-Year | 100-Year |
| 20          | 52.03                | 70.3   | 120.0    |
| 10          | 76.81                | 104.2  | 178.6    |

| C-Values   |      |
|------------|------|
| Impervious | 0.90 |
| Gravel     | 0.60 |
| Pervious   | 0.20 |

#### Pre-Development Runoff Coefficient

| Drainage Area | Impervious Area (m <sup>2</sup> ) | Gravel (m <sup>2</sup> ) | Pervious Area (m <sup>2</sup> ) | Average C (5-year) | Average C (100-year) |
|---------------|-----------------------------------|--------------------------|---------------------------------|--------------------|----------------------|
| A1            | 936                               | 0                        | 37                              | 0.87               | 0.97                 |
| A2            | 2,038                             | 0                        | 80                              | 0.87               | 0.97                 |

#### Pre-Development Runoff Calculations

| Drainage Area | Area (ha) | C 5-Year | C 100-Year | Tc (min) | Q (L/s) |        |          |
|---------------|-----------|----------|------------|----------|---------|--------|----------|
|               |           |          |            |          | 2-Year  | 5-Year | 100-Year |
| A1            | 0.10      | 0.87     | 0.97       | 10       | 18.15   | 24.63  | 46.94    |
| A2            | 0.21      | 0.87     | 0.97       | 10       | 39.50   | 53.58  | 102.14   |
| Total         | 0.31      |          |            |          | 57.65   | 78.21  | 149.08   |

#### Post-Development Runoff Coefficient

| Drainage Area | Impervious Area (m <sup>2</sup> ) | Gravel (m <sup>2</sup> ) | Pervious Area (m <sup>2</sup> ) | Average C (5-year) | Average C (100-year) |
|---------------|-----------------------------------|--------------------------|---------------------------------|--------------------|----------------------|
| B1            | 973                               | 0                        | 0                               | 0.90               | 1.00                 |
| B2            | 42                                | 0                        | 22                              | 0.66               | 0.75                 |
| B3            | 273                               | 0                        | 236                             | 0.58               | 0.65                 |
| B4            | 1,443                             | 0                        | 103                             | 0.85               | 0.95                 |

Proposed Bldg Roof

#### Post-Development Runoff Calculations

| Drainage Area | Area (ha) | C 5-Year | C 100-Year | Tc (min) | Q (L/s) |        |          |
|---------------|-----------|----------|------------|----------|---------|--------|----------|
|               |           |          |            |          | 2-Year  | 5-Year | 100-Year |
| B1            | 0.10      | 0.90     | 1.00       | 10       | 18.70   | 25.37  | 48.31    |
| B2            | 0.01      | 0.66     | 0.75       | 10       | 0.90    | 1.22   | 2.36     |
| B3            | 0.05      | 0.58     | 0.65       | 10       | 6.25    | 8.48   | 16.47    |
| B4            | 0.15      | 0.85     | 0.95       | 10       | 28.16   | 38.20  | 72.89    |
| Total         | 0.31      |          |            |          | 54.02   | 73.28  | 140.03   |

Bldg Roof

#### Required Restricted Roof Flow for Area B1

| Drainage Area | Area (ha) | C 5-Year | Tc (min) | Q (L/s) |
|---------------|-----------|----------|----------|---------|
|               |           |          |          | 2-Year  |
| A1            | 0.10      | 0.50     | 10       | 10.39   |

#### Post-Development Restricted Runoff Calculations

| Drainage Area | Unrestricted Flow (L/S) |          | Restricted Flow (L/S) |          | Storage Required (m <sup>3</sup> ) |          | Storage Provided (m <sup>3</sup> ) |          |
|---------------|-------------------------|----------|-----------------------|----------|------------------------------------|----------|------------------------------------|----------|
|               | 5-year                  | 100-Year | 5-Year                | 100-Year | 5-Year                             | 100-Year | 5-Year                             | 100-Year |
| B1            | 25.37                   | 48.31    | 3.03                  | 5.68     | 18.56                              | 35.17    | 19.46                              | 36.50    |
| Total (Roof)  | 25.37                   | 48.31    | 3.03                  | 5.68     | 18.56                              | 35.17    | 19.46                              | 36.50    |
| B2            | 1.22                    | 2.36     | 1.22                  | 2.36     | -                                  | -        | -                                  | -        |
| B3            | 8.48                    | 16.47    | 8.48                  | 16.47    | -                                  | -        | -                                  | -        |
| B4            | 38.20                   | 72.89    | 38.20                 | 72.89    | -                                  | -        | -                                  | -        |
| Total (Site)  | 73.28                   | 140.03   | 50.94                 | 97.40    | 18.56                              | 35.17    | 19.46                              | 36.50    |

## 5-Year Storm Event

| Tc<br>(min) | I<br>(mm/hr) | B1 Runoff<br>(L/s) | Allowable        | Runoff to          | Storage                       |
|-------------|--------------|--------------------|------------------|--------------------|-------------------------------|
|             |              |                    | Outflow<br>(L/s) | be Stored<br>(L/s) | Required<br>(m <sup>3</sup> ) |
| 10          | 104.2        | 25.37              | 3.03             | 22.34              | 13.41                         |
| 20          | 70.3         | 17.12              | 3.03             | 14.09              | 16.91                         |
| 30          | 53.9         | 13.12              | 3.03             | 10.10              | 18.17                         |
| 40          | 44.2         | 10.76              | 3.03             | 7.73               | 18.56                         |
| 50          | 37.7         | 9.18               | 3.03             | 6.15               | 18.45                         |
| 60          | 32.9         | 8.01               | 3.03             | 4.98               | 17.94                         |
| 70          | 29.4         | 7.16               | 3.03             | 4.13               | 17.35                         |
| 80          | 26.6         | 6.48               | 3.03             | 3.45               | 16.55                         |

|                                                     |       |
|-----------------------------------------------------|-------|
| Maximum Storage Required 5-Year (m <sup>3</sup> ) = | 18.56 |
|-----------------------------------------------------|-------|

## 100-Year Storm Event

| Tc<br>(min) | I<br>(mm/hr) | B1 Runoff<br>(L/s) | Allowable        | Runoff to          | Storage                       |
|-------------|--------------|--------------------|------------------|--------------------|-------------------------------|
|             |              |                    | Outflow<br>(L/s) | be Stored<br>(L/s) | Required<br>(m <sup>3</sup> ) |
| 10          | 178.6        | 48.31              | 5.68             | 42.63              | 25.58                         |
| 20          | 120.0        | 32.45              | 5.68             | 26.77              | 32.13                         |
| 30          | 91.9         | 24.85              | 5.68             | 19.18              | 34.52                         |
| 40          | 75.1         | 20.33              | 5.68             | 14.65              | 35.17                         |
| 50          | 64.0         | 17.30              | 5.68             | 11.62              | 34.87                         |
| 60          | 55.9         | 15.12              | 5.68             | 9.44               | 34.00                         |
| 70          | 49.8         | 13.47              | 5.68             | 7.79               | 32.73                         |
| 80          | 45.0         | 12.17              | 5.68             | 6.49               | 31.17                         |

|                                                       |       |
|-------------------------------------------------------|-------|
| Maximum Storage Required 100-Year (m <sup>3</sup> ) = | 35.17 |
|-------------------------------------------------------|-------|

| Storage Parameters                 |     |
|------------------------------------|-----|
| Roof Area (m <sup>2</sup> )        | 973 |
| Usable Roof Area (%)               | 75% |
| Usable Roof Area (m <sup>2</sup> ) | 730 |

| 5-Year Storage Summary                   |       |
|------------------------------------------|-------|
| Max. Storage Available (m <sup>3</sup> ) | 19.46 |
| Storage Required (m <sup>3</sup> )       | 18.56 |
| Max. Ponding Depth (m)                   | 0.08  |

| 100-Year Storage Summary                    |       |
|---------------------------------------------|-------|
| Max. Storage Available (m <sup>3</sup> )    | 36.50 |
| 100-Year Storage Required (m <sup>3</sup> ) | 35.17 |
| Max. Ponding Depth (m)                      | 0.150 |

# CCO-23-3120 - 1360 Ogilvie Road - Roof Storage

Roof Drain Flow (B1)

3 of 3

| Roof Drains Summary                         |                                |          |
|---------------------------------------------|--------------------------------|----------|
| Type of Control Device                      | Watts Drainage - Accutrol Weir |          |
| Number of Roof Drains                       | 3                              |          |
| Roof Drain Position                         | Open                           |          |
|                                             | 5-Year                         | 100-Year |
| Rooftop Storage Available (m <sup>3</sup> ) | 19.46                          | 36.50    |
| Rooftop Storage Required (m <sup>3</sup> )  | 18.56                          | 35.17    |
| Storage Depth (m)                           | 0.080                          | 0.150    |
| Flow (Per Roof Drain) (L/s)                 | 1.01                           | 1.89     |
| Total Flow (L/s)                            | 3.03                           | 5.68     |

| Flow Rate Vs. Build-Up<br>(Individual Drain) |            |
|----------------------------------------------|------------|
| Depth (mm)                                   | Flow (L/s) |
| 0                                            | 0.00       |
| 5                                            | 0.06       |
| 10                                           | 0.13       |
| 15                                           | 0.19       |
| 20                                           | 0.25       |
| 25                                           | 0.32       |
| 30                                           | 0.38       |
| 35                                           | 0.44       |
| 40                                           | 0.50       |
| 45                                           | 0.57       |
| 50                                           | 0.63       |
| 55                                           | 0.69       |
| 60                                           | 0.76       |
| 65                                           | 0.82       |
| 70                                           | 0.88       |
| 75                                           | 0.95       |
| 80                                           | 1.01       |
| 85                                           | 1.07       |
| 90                                           | 1.14       |
| 95                                           | 1.20       |
| 100                                          | 1.26       |
| 105                                          | 1.32       |
| 110                                          | 1.39       |
| 115                                          | 1.45       |
| 120                                          | 1.51       |
| 125                                          | 1.58       |
| 130                                          | 1.64       |
| 135                                          | 1.70       |
| 140                                          | 1.77       |
| 145                                          | 1.83       |
| 150                                          | 1.89       |

5-Year

100-Year

| Roof Drain Flow          |                       |                       |
|--------------------------|-----------------------|-----------------------|
| Individual Flow<br>(l/s) | Storage Depth<br>(mm) | Cumulative Flow (l/s) |
| 0.00                     | 0                     | 0.00                  |
| 0.06                     | 5                     | 0.19                  |
| 0.13                     | 10                    | 0.38                  |
| 0.19                     | 15                    | 0.57                  |
| 0.25                     | 20                    | 0.76                  |
| 0.32                     | 25                    | 0.95                  |
| 0.38                     | 30                    | 1.14                  |
| 0.44                     | 35                    | 1.32                  |
| 0.50                     | 40                    | 1.51                  |
| 0.57                     | 45                    | 1.70                  |
| 0.63                     | 50                    | 1.89                  |
| 0.69                     | 55                    | 2.08                  |
| 0.76                     | 60                    | 2.27                  |
| 0.82                     | 65                    | 2.46                  |
| 0.88                     | 70                    | 2.65                  |
| 0.95                     | 75                    | 2.84                  |
| 1.01                     | 80                    | 3.03                  |
| 1.07                     | 85                    | 3.22                  |
| 1.14                     | 90                    | 3.41                  |
| 1.20                     | 95                    | 3.60                  |
| 1.26                     | 100                   | 3.79                  |
| 1.32                     | 105                   | 3.97                  |
| 1.39                     | 110                   | 4.16                  |
| 1.45                     | 115                   | 4.35                  |
| 1.51                     | 120                   | 4.54                  |
| 1.58                     | 125                   | 4.73                  |
| 1.64                     | 130                   | 4.92                  |
| 1.70                     | 135                   | 5.11                  |
| 1.77                     | 140                   | 5.30                  |
| 1.83                     | 145                   | 5.49                  |
| 1.89                     | 150                   | 5.68                  |

\*Roof Drain model to be Accutrol Weirs, See attached sheets  
 \*Roof Drain Flow information taken from Watts Drainage website

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

STORM SEWER DESIGN SHEET



PROJECT: CCO-23-3120  
LOCATION: 1360 Ogilvie Road  
CLIENT: CSV Architects

| LOCATION                                                                                                                                                                                                   |         |         |            | CONTRIBUTING AREA (ha) |      |          |          | RATIONAL DESIGN FLOW |              |             |               |                |                 |                     |                      |                       |                  | SEWER DATA        |                |            |                |    |    |           |                |                 |        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|------------|------------------------|------|----------|----------|----------------------|--------------|-------------|---------------|----------------|-----------------|---------------------|----------------------|-----------------------|------------------|-------------------|----------------|------------|----------------|----|----|-----------|----------------|-----------------|--------|
| 1                                                                                                                                                                                                          | 2       | 3       | 4          | 5                      | 6    | 7        | 8        | 9                    | 10           | 11          | 12            | 13             | 14              | 15                  | 16                   | 17                    | 18               | 19                | 20             | 21         | 22             | 23 | 24 | 25        | 26             | 27              | 28     |
| STREET                                                                                                                                                                                                     | AREA ID | FROM MH | TO MH      | C-VALUE                | AREA | INDIV AC | CUMUL AC | INLET (min)          | TIME IN PIPE | TOTAL (min) | i (5) (mm/hr) | i (10) (mm/hr) | i (100) (mm/hr) | 5yr PEAK FLOW (L/s) | 10yr PEAK FLOW (L/s) | 100yr PEAK FLOW (L/s) | FIXED FLOW (L/s) | DESIGN FLOW (L/s) | CAPACITY (L/s) | LENGTH (m) | PIPE SIZE (mm) |    |    | SLOPE (%) | VELOCITY (m/s) | AVAIL CAP (5yr) |        |
|                                                                                                                                                                                                            |         |         |            |                        |      |          |          |                      |              |             |               |                |                 |                     |                      |                       |                  |                   |                |            | DIA            | W  | H  |           |                | (L/s)           | (%)    |
| Existing Outlet                                                                                                                                                                                            | B1B     | BLDG    | CBMH6      | 0.90                   | 0.03 | 0.03     | 0.03     | 10.00                | 0.09         | 10.09       | 104.19        | 122.14         | 178.56          | 9.41                |                      |                       |                  | 9.41              | 34.22          | 5.66       | 200            |    |    | 1.00      | 1.055          | 24.81           | 72.50% |
|                                                                                                                                                                                                            | B2      | CBMH6   | EX. CB     | 0.66                   | 0.01 | 0.01     | 0.04     | 10.09                | 0.16         | 10.25       | 103.72        | 121.59         | 177.75          | 11.20               |                      |                       |                  | 11.20             | 31.55          | 9.40       | 200            |    |    | 0.85      | 0.973          | 20.34           | 64.49% |
|                                                                                                                                                                                                            |         |         |            |                        |      |          |          |                      |              |             |               |                |                 |                     |                      |                       |                  |                   |                |            |                |    |    |           |                |                 |        |
| Proposed Outlet                                                                                                                                                                                            | B3      | EX. CB  | MH5        | 0.58                   | 0.05 | 0.03     | 0.03     | 10.00                | 0.13         | 10.13       | 104.19        | 122.14         | 178.56          | 8.54                |                      |                       |                  | 8.54              | 68.43          | 16.16      | 200            |    |    | 4.00      | 2.110          | 59.89           | 87.52% |
|                                                                                                                                                                                                            | B4      | MH5     | MH2        | 0.85                   | 0.15 | 0.13     | 0.16     | 10.13                | 1.23         | 11.35       | 103.52        | 121.35         | 177.40          | 46.45               |                      |                       |                  | 46.45             | 91.46          | 59.04      | 375            |    |    | 0.25      | 0.802          | 45.01           | 49.22% |
|                                                                                                                                                                                                            |         | MH2     | MH1        |                        |      |          | 0.16     | 11.35                | 0.27         | 11.62       | 97.55         | 114.31         | 167.06          | 43.76               |                      |                       |                  | 43.76             | 91.46          | 12.96      | 375            |    |    | 0.25      | 0.802          | 47.69           | 52.15% |
|                                                                                                                                                                                                            | B1A     | BLDG    | MH1        | 0.90                   | 0.06 | 0.06     | 0.06     | 10.00                | 0.08         | 10.08       | 104.19        | 122.14         | 178.56          | 18.78               |                      |                       |                  | 18.78             | 48.39          | 7.51       | 200            |    |    | 2.00      | 1.492          | 29.61           | 61.19% |
|                                                                                                                                                                                                            |         | MH1     | EX. 1500mm |                        |      |          | 0.23     | 11.62                | 0.22         | 11.85       | 96.33         | 112.89         | 164.97          | 60.59               |                      |                       |                  | 60.59             | 91.46          | 10.82      | 375            |    |    | 0.25      | 0.802          | 30.87           | 33.75% |
|                                                                                                                                                                                                            |         |         |            |                        |      |          |          |                      |              |             |               |                |                 |                     |                      |                       |                  |                   |                |            |                |    |    |           |                |                 |        |
| Definitions:<br>Q = 2.78CIA, where:<br>Q = Peak Flow in Litres per Second (L/s)<br>A = Area in Hectares (ha)<br>i = Rainfall intensity in millimeters per hour (mm/hr)<br>[i = 998.071 / (TC+6.053)^0.814] |         |         |            |                        |      |          |          |                      |              |             |               |                |                 |                     |                      |                       |                  |                   |                |            |                |    |    |           |                |                 |        |



## Adjustable Accutrol Weir

Tag: \_\_\_\_\_

## Adjustable Flow Control for Roof Drains

### ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

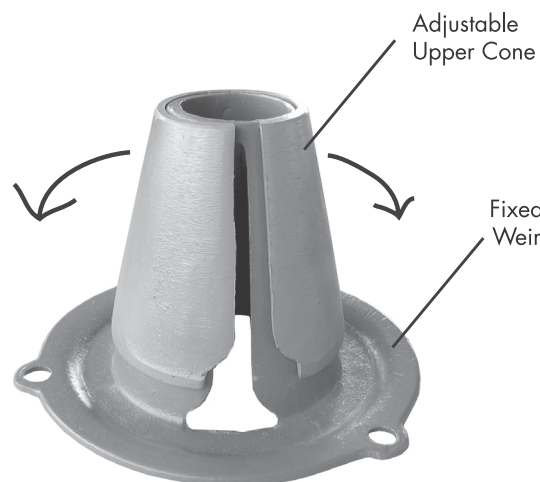
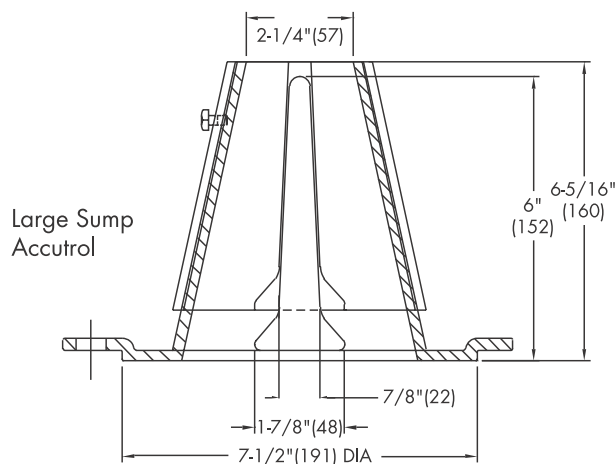
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.

Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

#### EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2" of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3" of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be:  
[ 5 gpm (per inch of head) x 2 inches of head ] + 2-1/2 gpm (for the third inch of head) = 12-1/2 gpm.



1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

| Weir Opening Exposed | 1"                             | 2" | 3"    | 4"   | 5"    | 6" |
|----------------------|--------------------------------|----|-------|------|-------|----|
|                      | Flow Rate (gallons per minute) |    |       |      |       |    |
| Fully Exposed        | 5                              | 10 | 15    | 20   | 25    | 30 |
| 3/4                  | 5                              | 10 | 13.75 | 17.5 | 21.25 | 25 |
| 1/2                  | 5                              | 10 | 12.5  | 15   | 17.5  | 20 |
| 1/4                  | 5                              | 10 | 11.25 | 12.5 | 13.75 | 15 |
| Closed               | 5                              | 5  | 5     | 5    | 5     | 5  |

Job Name \_\_\_\_\_

Contractor \_\_\_\_\_

Job Location \_\_\_\_\_

Contractor's P.O. No. \_\_\_\_\_

Engineer \_\_\_\_\_

Representative \_\_\_\_\_

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A Watts Water Technologies Company

Francis Valenti

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Subject: FW: Quality Control Requirement - 1360 Ogilvie Road Development

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From: Elsby, Cam <[Cam.Elsby@ottawa.ca](mailto:Cam.Elsby@ottawa.ca)>  
Sent: November 30, 2023 4:21 PM  
To: Andrea Bishop <[a.bishop@mcintoshperry.com](mailto:a.bishop@mcintoshperry.com)>  
Cc: Curtis Melanson <[c.melanson@mcintoshperry.com](mailto:c.melanson@mcintoshperry.com)>; Giovannitti, Terenzo <[terenzo.giovannitti@ottawa.ca](mailto:terenzo.giovannitti@ottawa.ca)>  
Subject: RE: Quality Control Requirement - 1360 Ogilvie Road Development

Hi Andrea,

Thanks for your email. To clarify about the conservation authorities' role in water quality review, the original pre-consultation for this application was held earlier this year, when that was in the process of changing. We are now responsible for water quality review, and impose criteria internally.

In this case, I'll waive the 80% TSS removal requirement as the proposed work is comprised of almost all roof surface, which as you mention can be considered clean from a water quality review perspective. We looked into as-builts for the site and only found vague servicing plans, with no signs of any existing water quality control on-site.

Please don't hesitate to reach out should you have any further questions or concerns.

Kind regards,

Cam Elsby  
Project Manager, Infrastructure Approvals  
Planning, Real Estate and Economic Development Department | Services de la planification, des biens immobiliers et du développement économique  
Development Review – East 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 21443  
[cam.elsby@ottawa.ca](mailto:cam.elsby@ottawa.ca)

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From: Andrea Bishop <[a.bishop@mcintoshperry.com](mailto:a.bishop@mcintoshperry.com)>  
Sent: November 28, 2023 10:31 AM  
To: Elsby, Cam <[Cam.Elsby@ottawa.ca](mailto:Cam.Elsby@ottawa.ca)>  
Cc: Curtis Melanson <[c.melanson@mcintoshperry.com](mailto:c.melanson@mcintoshperry.com)>  
Subject: FW: Quality Control Requirement - 1360 Ogilvie Road Development

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Hi Cam,

Please see the email below from Eric Lalande at the RVCA. I contacted him regarding the quality control requirements for the 1360 Ogilvie Road Development.

The information on the project is in my original email to Eric. To reiterate, within our development area (Block 3), we are adding roof area and removing parking area. The area of the development on this site is limited, and due to the changes to the existing site, we assume we are hitting 80% TSS removal. Is this acceptable?

Also, can you let me know if any of the existing manholes on site have a quality treatment unit?

Thank you,

**Andrea Bishop, P.Eng.**

**Project Engineer, Land Development**

T. 343.764.2101 | C. 613.266.5779

[a.bishop@mcintoshperry.com](mailto:a.bishop@mcintoshperry.com) | [www.mcintoshperry.com](http://www.mcintoshperry.com)



*Turning Possibilities Into Reality*

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Platinum  
member

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From: Eric Lalande <[eric.lalande@rvca.ca](mailto:eric.lalande@rvca.ca)>

Sent: November 27, 2023 11:11 AM

To: Andrea Bishop <[a.bishop@mcintoshperry.com](mailto:a.bishop@mcintoshperry.com)>

Subject: RE: Quality Control Requirement - 1360 Ogilvie Road Development

Hi Andrea,

Unfortunately, I will have to defer you to the Municipality for quality control comments, as the RVCA no longer provides comments on water quality controls.

Can you let me know who at the City sent you over to me, as I've informed the City a few times as this change came in Jan 1 (as part of the Provincial changes through Bill 23).

Cheers,

**Eric Lalande, MCIP, RPP**

Senior Planner, Rideau Valley Conservation Authority  
613-692-3571 x1137

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From: Andrea Bishop <[a.bishop@mcintoshperry.com](mailto:a.bishop@mcintoshperry.com)>

Sent: Thursday, November 23, 2023 10:19 AM

To: Eric Lalande <[eric.lalande@rvca.ca](mailto:eric.lalande@rvca.ca)>

Subject: Quality Control Requirement - 1360 Ogilvie Road Development

Hello Eric,

We are working on a proposed Block 3 Redevelopment at 1360 Ogilvie Road in the east end of Ottawa. The City of Ottawa deferred to the RVCA for quality control requirements.

The overall property covers approximately 1.29ha and currently contains four existing residential buildings. The proposed redevelopment includes a new 993m<sup>2</sup> four-storey residential building, to replace an existing 332m<sup>2</sup> building that was lost to a fire.

I have attached the site plan, a map of existing storm services in the vicinity, as well as a figure showing the existing building with an overlay of the proposed building (blue outline). As seen in the attached figure, the proposed building footprint is much larger than the existing building (332m<sup>2</sup> to 993m<sup>2</sup>). Therefore, there is an increase in hardscape for the building. Parking and drive aisles will be provided throughout the site along with landscaping around the perimeter of the development area. The site will have one level of underground parking. There is a decrease in above ground parking spaces on site.

It is anticipated that three roof drains will store stormwater on the proposed roof, which will then outlet to the existing 200mm diameter storm sewer system on the east side of the building. The stormwater runoff from the remainder of the developed portion of the site will be collected by catchbasins and directed to the existing 1500mm diameter storm sewer within Ogilvie Road.

Though there is an increase in hardscape for the building footprint area, the roof runoff is considered to be clean water. Therefore, it is not anticipated that specific quality controls will be required for the development. Can you please review and confirm?

Thank you,

**Andrea Bishop, P.Eng.**

**Project Engineer, Land Development**

**T.** 343.764.2101 | **C.** 613.266.5779

[a.bishop@mcintoshperry.com](mailto:a.bishop@mcintoshperry.com) | [www.mcintoshperry.com](http://www.mcintoshperry.com)



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## APPENDIX H CITY OF OTTAWA DESIGN CHECKLIST

## 4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

### 4.1 General Content

| Criteria                                                                                                                                                                                                                                                                                                        | Location (if applicable)                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <input type="checkbox"/> Executive Summary (for larger reports only).                                                                                                                                                                                                                                           | N/A                                                                       |
| <input type="checkbox"/> Date and revision number of the report.                                                                                                                                                                                                                                                | On Cover                                                                  |
| <input type="checkbox"/> Location map and plan showing municipal address, boundary, and layout of proposed development.                                                                                                                                                                                         | Appendix A                                                                |
| <input type="checkbox"/> Plan showing the site and location of all existing services.                                                                                                                                                                                                                           | Site Servicing Plan (C102)                                                |
| <input type="checkbox"/> Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.                                                                      | 1.1 Purpose<br>1.2 Site Description<br>6.0 Proposed Stormwater Management |
| <input type="checkbox"/> Summary of pre-consultation meetings with City and other approval agencies.                                                                                                                                                                                                            | Appendix B                                                                |
| <input type="checkbox"/> Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defensible design criteria. | 1.1 Purpose<br>1.2 Site Description<br>6.0 Proposed Stormwater Management |
| <input type="checkbox"/> Statement of objectives and servicing criteria.                                                                                                                                                                                                                                        | 3.0 Pre-Consultation Summary                                              |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| <input type="checkbox"/> Identification of existing and proposed infrastructure available in the immediate area.                                                                                                                                                                                                                                                                                                                                                                                                                                      | N/A                                                      |
| <input type="checkbox"/> Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).                                                                                                                                                                                                                                                                                                               | Site Grading Plan (C101)                                 |
| <input type="checkbox"/> Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.                                                                                                                                  | Site Grading Plan (C101)                                 |
| <input type="checkbox"/> Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.                                                                                                                                                                                                                                                                                                                                 | N/A                                                      |
| <input type="checkbox"/> Proposed phasing of the development, if applicable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | N/A                                                      |
| <input type="checkbox"/> Reference to geotechnical studies and recommendations concerning servicing.                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Section 2.0 Background Studies, Standards and References |
| <input type="checkbox"/> All preliminary and formal site plan submissions should have the following information: <ul style="list-style-type: none"> <li>○ Metric scale</li> <li>○ North arrow (including construction North)</li> <li>○ Key plan</li> <li>○ Name and contact information of applicant and property owner</li> <li>○ Property limits including bearings and dimensions</li> <li>○ Existing and proposed structures and parking areas</li> <li>○ Easements, road widening and rights-of-way</li> <li>○ Adjacent street names</li> </ul> | Site Grading Plan (C101)                                 |

## 4.2 Development Servicing Report: Water

| Criteria                                                                                                                                                                                                                                                                                                                          | Location (if applicable)                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Confirm consistency with Master Servicing Study, if available                                                                                                                                                                                                                                            | N/A                                              |
| <input type="checkbox"/> Availability of public infrastructure to service proposed development                                                                                                                                                                                                                                    | N/A                                              |
| <input type="checkbox"/> Identification of system constraints                                                                                                                                                                                                                                                                     | N/A                                              |
| <input type="checkbox"/> Identify boundary conditions                                                                                                                                                                                                                                                                             | Appendix C                                       |
| <input type="checkbox"/> Confirmation of adequate domestic supply and pressure                                                                                                                                                                                                                                                    | N/A                                              |
| <input type="checkbox"/> Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.                                                                                        | Appendix C                                       |
| <input type="checkbox"/> Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.                                                                                                                                                    | N/A                                              |
| <input type="checkbox"/> Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design                                                                                                                                               | N/A                                              |
| <input type="checkbox"/> Address reliability requirements such as appropriate location of shut-off valves                                                                                                                                                                                                                         | N/A                                              |
| <input type="checkbox"/> Check on the necessity of a pressure zone boundary modification.                                                                                                                                                                                                                                         | N/A                                              |
| <input type="checkbox"/> Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range | Appendix C, Section 4.2 Proposed Water Servicing |

|                                                                                                                                                                                                                                                                                                                       |                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <input type="checkbox"/> Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions. | Site Servicing Plan (C101) |
| <input type="checkbox"/> Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.                                             | N/A                        |
| <input type="checkbox"/> Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.                                                                                                                                                                                                | Appendix C                 |
| <input type="checkbox"/> Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.                                                                                                                                                            | N/A                        |

### 4.3 Development Servicing Report: Wastewater

| Criteria                                                                                                                                                                                                                                                                                               | Location (if applicable)                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| <input type="checkbox"/> Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure). | N/A                                     |
| <input type="checkbox"/> Confirm consistency with Master Servicing Study and/or justifications for deviations.                                                                                                                                                                                         | N/A                                     |
| <input type="checkbox"/> Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.                                                       | N/A                                     |
| <input type="checkbox"/> Description of existing sanitary sewer available for discharge of wastewater from proposed development.                                                                                                                                                                       | Section 5.2 Proposed Sanitary Servicing |

|                                                                                                                                                                                                                                                                                                                                                 |                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| <input type="checkbox"/> Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)                                                                                           | Section 5.2 Proposed Sanitary Servicing |
| <input type="checkbox"/> Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.                                                                                                                                                                 | N/A                                     |
| <input type="checkbox"/> Description of proposed sewer network including sewers, pumping stations, and forcemains.                                                                                                                                                                                                                              | Section 5.2 Proposed Sanitary Servicing |
| <input type="checkbox"/> Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality). | N/A                                     |
| <input type="checkbox"/> Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.                                                                                                                                                                         | N/A                                     |
| <input type="checkbox"/> Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.                                                                                                                                                                                                                       | N/A                                     |
| <input type="checkbox"/> Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.                                                                                                                                               | N/A                                     |
| <input type="checkbox"/> Special considerations such as contamination, corrosive environment etc.                                                                                                                                                                                                                                               | N/A                                     |

#### 4.4 Development Servicing Report: Stormwater Checklist

| Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Location (if applicable)                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| <input type="checkbox"/> Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)                                                                                                                                                                                                                                                                          | Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management |
| <input type="checkbox"/> Analysis of available capacity in existing public infrastructure.                                                                                                                                                                                                                                                                                                                                                                        | N/A                                                                            |
| <input type="checkbox"/> A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.                                                                                                                                                                                                                                                                                             | Pre & Post-Development Plans                                                   |
| <input type="checkbox"/> Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5-year event (dependent on the receiving sewer design) to 100-year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects. | Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management |
| <input type="checkbox"/> Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.                                                                                                                                                                                                                                                                        | Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management |
| <input type="checkbox"/> Description of the stormwater management concept with facility locations and descriptions with references and supporting information.                                                                                                                                                                                                                                                                                                    | Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management |
| <input type="checkbox"/> Set-back from private sewage disposal systems.                                                                                                                                                                                                                                                                                                                                                                                           | N/A                                                                            |
| <input type="checkbox"/> Watercourse and hazard lands setbacks.                                                                                                                                                                                                                                                                                                                                                                                                   | N/A                                                                            |
| <input type="checkbox"/> Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.                                                                                                                                                                                                                                                                                      | N/A                                                                            |
| <input type="checkbox"/> Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.                                                                                                                                                                                                                                                                                                                                           | N/A                                                                            |
| <input type="checkbox"/> Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5-year return period) and major events (1:100-year return period).                                                                                                                                                                                                                                                                         | Appendix G                                                                     |

|                                                                                                                                                                                                                             |                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| <input type="checkbox"/> Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.            | Site Grading Plan (C101)                                                       |
| <input type="checkbox"/> Calculate pre-and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions. | Appendix G, Section 7.0 Proposed Stormwater Management                         |
| <input type="checkbox"/> Any proposed diversion of drainage catchment areas from one outlet to another.                                                                                                                     | Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management |
| <input type="checkbox"/> Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.                                                                   | Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management |
| <input type="checkbox"/> If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.         | N/A                                                                            |
| <input type="checkbox"/> Identification of potential impacts to receiving watercourses                                                                                                                                      | N/A                                                                            |
| <input type="checkbox"/> Identification of municipal drains and related approval requirements.                                                                                                                              | N/A                                                                            |
| <input type="checkbox"/> Descriptions of how the conveyance and storage capacity will be achieved for the development.                                                                                                      | Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management |
| <input type="checkbox"/> 100-year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.                                 | Site Grading Plan (C101)                                                       |
| <input type="checkbox"/> Inclusion of hydraulic analysis including hydraulic grade line elevations.                                                                                                                         | N/A                                                                            |

|                                                                                                                                                                                                                                                                                                                                                                        |                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| <input type="checkbox"/> Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.                                                                                                                                                                                                | Section 8.0 Sediment & Erosion Control |
| <input type="checkbox"/> Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions. | N/A                                    |
| <input type="checkbox"/> Identification of fill constraints related to floodplain and geotechnical investigation.                                                                                                                                                                                                                                                      | N/A                                    |

#### 4.5 Approval and Permit Requirements: Checklist

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

| Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Location (if applicable) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <input type="checkbox"/> Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement 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. | N/A                      |
| <input type="checkbox"/> Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.                                                                                                                                                                                                                                                                                                                                                                                                                                                | N/A                      |
| <input type="checkbox"/> Changes to Municipal Drains.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | N/A                      |
| <input type="checkbox"/> Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)                                                                                                                                                                                                                                                                                                                                                                                              | N/A                      |

## 4.6 Conclusion Checklist

| Criteria                                                                                                                                                                                               | Location (if applicable)                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Clearly stated conclusions and recommendations                                                                                                                                | Section 9.0 Summary<br>Section 10.0 Recommendations |
| <input type="checkbox"/> Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency. | All are stamped                                     |
| <input type="checkbox"/> All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario                                                                      | All are stamped                                     |