1000 Tawadina Road (Wateridge Block 12)

Site Servicing and Stormwater Management Report Revision 1

Stantec

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1 Introduction

Mattamy (Rockcliffe II) Inc. has commissioned Stantec Consulting Ltd. to prepare this Servicing and Stormwater Management Report for their development site identified as within the northeast quadrant of Block 12 with a site address of 1000 Tawadina Road within Phase 2 of the Wateridge Village Subdivision in the City of Ottawa.

The 0.52 ha subject site is zoned H2I H(30) – Hub 2 Subzone I, and is bound by Tawadina Road to the north, Bareille-Snow Street to the east, future development sites to the west and south, and LCol William G Barker VC Park to the southwest, as outlined in **Figure 1.1**. The site will be constructed as part of Phase 2 of the Wateridge Subdivision development.

Figure 1.1: Site Location



The Site Plan Concept Plan, developed by Korsiak Urban Planning, proposes a residential development that will consist of a 6-unit row (rear-lane) townhouse block and a five-storey mixed-use building with ground floor commercial space for a total of 62 residential units. The concept also includes a private access lane for site access from Bareille-Snow Street and surface parking.

The objective of this report is to provide a servicing and stormwater management scenario for the site to support the Site Plan Control application. The servicing is to be free of conflicts, provide on-site servicing in accordance with City of Ottawa design guidelines, and utilize the existing local infrastructure in accordance with the various background studies outlined in **Section 2**.

The preliminary residential unit type breakdown for the mixed-use building is summarized in **Table 1.1**.

Table 1.1: Building A Unit Type Breakdown

Apartment Unit Type	Quantity
1-Bedroom	40
2-Bedroom	16

2 References

The following documents were referenced in the preparation of this report:

- *Former CFB Rockcliffe Master Servicing Study*, IBI, June 2020
- *Former CFB Rockcliffe Redevelopment Stormwater Management Existing Conditions & LID Pilot Project Scoping*, Aquafor Beech Limited, August 2015
- *Design Brief Wateridge Village at Rockcliffe Phase 2B*, IBI, April 2019
- *City of Ottawa Design Guidelines – Water Distribution*, Infrastructure Services Department, City of Ottawa, Second Edition, December 2025
- *City of Ottawa Sewer Design Guidelines*, 4th Ed., City of Ottawa, December 2025.
- *Environmental Compliance Approval No. 0824-A8CR5H*, Ministry of the Environment and Climate Change, April 2016
- *Servicing Due Diligence – Parcel 4, Block 12 of Wateridge Village Subdivision Phase 2B*, Stantec Consulting Ltd., January 2022
- *Geotechnical Investigation – Proposed Mixed-Use Development – Wateridge Village – Block 12, Ottawa, Ontario,* Paterson Group, June 8, 2026
- *Low Impact Development Technical Guidance Report (Draft)* – City of Ottawa, prepared by Dillon Consulting and Aquafor Beech Ltd., November 2019.
- *Low Impact Development Stormwater Management Guidance Manual* – Draft for Consultation, Ministry of the Environment, Conservation and Parks (MECP), January 2022.
- *Stormwater Management Planning and Design Manual*, Ministry of the Environment, Conservation, and Parks (MECP), March 2003.
- *Pre-Consultation Meeting Feedback*, City of Ottawa, May 7, 2026.
- *Stormwater Management Criteria,* Version 1, Toronto and Region Conservation Authority, August 2012.

3 Water Servicing

3.1 Background

The proposed site is within the MONT pressure zone of the City of Ottawa's water distribution network. The site is expected to be serviced through the existing 200 mm diameter watermains within Bareille-Snow Street. The existing mains were constructed as part of the Wateridge subdivision and have multiple connections to the distribution network in adjacent phases.

3.2 Design Criteria

3.2.1 Water Demand and Allowable Pressure

The domestic water demand and allowable water pressure are assessed using the City of Ottawa Water Distribution Guidelines (2025).

Residential Apartment Population Density	
1 Bedroom Apartment	1.4 persons / unit
2 Bedroom Apartment	2.1 persons / unit
Townhouse	2.7 persons / unit

Residential Apartment Demand	
Average Daily (AVDY)	280 L/cap/day
Maximum Daily (MXDY)	2.5 × AVDY
Peak Hour (PKHR)	2.2 × MXDY

Commercial Demand	
Average Daily (AVDY)	28,000 L/ha/day
Maximum Daily (MXDY)	1.5 × AVDY
Peak Hour (PKHR)	1.8 × MXDY

Allowable Water Pressure	
MXDY Flow	345 kPa (50 psi) to 552 kPa (80 psi)
PKHR Flow Minimum	276 kPa (40 psi)
MXDY + Fire Flow	140 kPa (20 psi)
Maximum Allowable for Occupied Area	552 kPa (80 psi)

3.2.2 Fire Flow and Hydrant Capacity

Detailed fire flow requirements are assessed using the Fire Underwriters Survey (FUS) methodology (2020). Site specific criteria considered are noted in Section 2.3.2.

The minimum number of fire hydrants required to meet the fire flow is assessed using Section 18.5 of the National Fire Protection Agency (NFPA) Fire Code document.

- The aggregate fire flow capacity of all fire hydrants within 305 m of the building cannot be less than the required fire flow (RFF)
- Table 18.5.4.3 provides the maximum fire flow capacity for which an individual fire hydrant can be credited based on the unobstructed distance from the hydrant to the building.

Table 3.1: Table 18.5.4.3 of the NFPA - Maximum Fire Hydrant Fire Flow Capacity

Distance to Building (m)	Maximum Capacity (L/min)
≤76	5,678
>76 and ≤152	3,785
>152 and ≤305	2,839

Furthermore, per Section 3.2.5.15 of the Ontario Building Code, the unobstructed distance between the hydrant and a building's fire department connection (FDC) cannot exceed 45 m.

3.3 Proposed Watermain Sizing and Layout

The proposed development will be serviced by a looped private watermain network fed by two connections to the 200 mm diameter watermains in Bareille-Snow Street.

3.3.1 Water Demands

Based on the site layout and the unit type breakdown provided in **Table 1.1**, the proposed development is estimated to have a total population of 106 persons and Building A is to have a Commercial Floor Area of 897m^2. The estimated demand for the proposed development is summarized in **Table 3.2** and detailed in **Appendix A.1**.

Table 3.2: Estimated Domestic and Commercial Water Demands

Population	AVDY (L/s)	MXDY (L/s)	PKHR (L/s)
106	0.4	0.9	2.0

3.3.2 Fire Flow Demands

The fire flow requirements for the mixed-use properties were determined using the 2020 Fire Underwriters Survey (FUS), in combination with requirements for Part 9 buildings within the Ontario Building Code (OBC), which caps the building area of the townhouse block at 600 m^2.

Through Sections 3.2.2.52 and 3.2.2.65 of the Ontario Building Code and correspondence with the architect, the FUS estimate for the mixed-use building (Building A) is based on the following characteristics, as confirmed through correspondence with the architect attached in **Appendix A.2**.

1. The building is to be of Ordinary Construction. As a result, the 'effective floor area' was determined to be the sum of all floor areas as per page 22 of the *Fire Underwriters Survey's Water Supply for Public Fire Protection*, 2020.

2. The building will be equipped with an automatic sprinkler system that is fully supervised and conforms to the NFPA 13 standard.

Building B, a 6-unit row townhouse, was established to be of Wood Frame construction and not sprinklered. As a result, the 'effective floor area' was determined to be the sum of all floor areas.

Based on the FUS calculations, the site has a fire flow demand of 150 L/s (9,000 L/min) applicable to both buildings. while detailed fire flow calculations per the FUS methodology are included in **Appendix A.2**.

3.3.3 Boundary Conditions

The estimated domestic water and fire flow demands were submitted to City of Ottawa staff to assess the level of servicing available from the adjacent municipal watermains and hydrants. **Table 3.3** outlines the boundary conditions received from the City of Ottawa's modelling group on May 7th, 2026 (see **Appendix A.3**)

Table 3.3: Boundary Conditions

Connection	Tawadina Road	Bareille-Snow Street
Minimum HGL (m)	143.3	143.3
Maximum HGL (m)	143.6	143.6
Max. Day + FF (150 L/s) (m)	142.3	140.3

3.4 Hydraulic Assessment

A hydraulic model was built by Stantec using the boundary conditions for the connections on Bareille-Snow Street to assess the anticipated pressures to meet the minimum servicing requirements. A fire flow analysis was also performed under maximum day conditions.

3.4.1 Model Development

New watermains were added to the hydraulic model to simulate the proposed distribution system. Hazen-Williams coefficients ("C-Factors") were applied to the new watermain in accordance with the City of Ottawa's Water Distribution Design Guidelines (**Table 3.4**).

Table 3.4: C-Factors Applied Based on Watermain Diameter

Pipe Diameter (mm)	C-Factor
150	100
200 to 250	110
300 to 600	120
> 600	130

3.4.2 Hydraulic Modeling Results

PCSWMM by Computational Hydraulics Inc. (CHI) was used to conduct the watermain hydraulic analysis. The model was evaluated for AVDY, PKHR and MXDY+FF demands using the boundary conditions provided by the City of Ottawa.

3.4.2.1 Average Day & Peak Hour

The hydraulic model results shown in Figure 3.1 and Figure 3.2 illustrate that the maximum pressures (AVDY condition) are anticipated to be approximately 523 to 526 kPa (76.0 to 76.3 psi), while minimum pressures during PKHR are anticipated to be approximately 521 to 523 kPa (75.6 to 75.9 psi). the results for the Block 12 site can be seen in Nodes 2-5. These pressures are well above the minimum allowable pressure of 276 kPa (40 psi). A portion of the network pressures exceed the maximum allowable pressure of 552 kPa (80 psi), so pressure reducing valves may be required as determined by the Mechanical Consultant at a later phase of design.

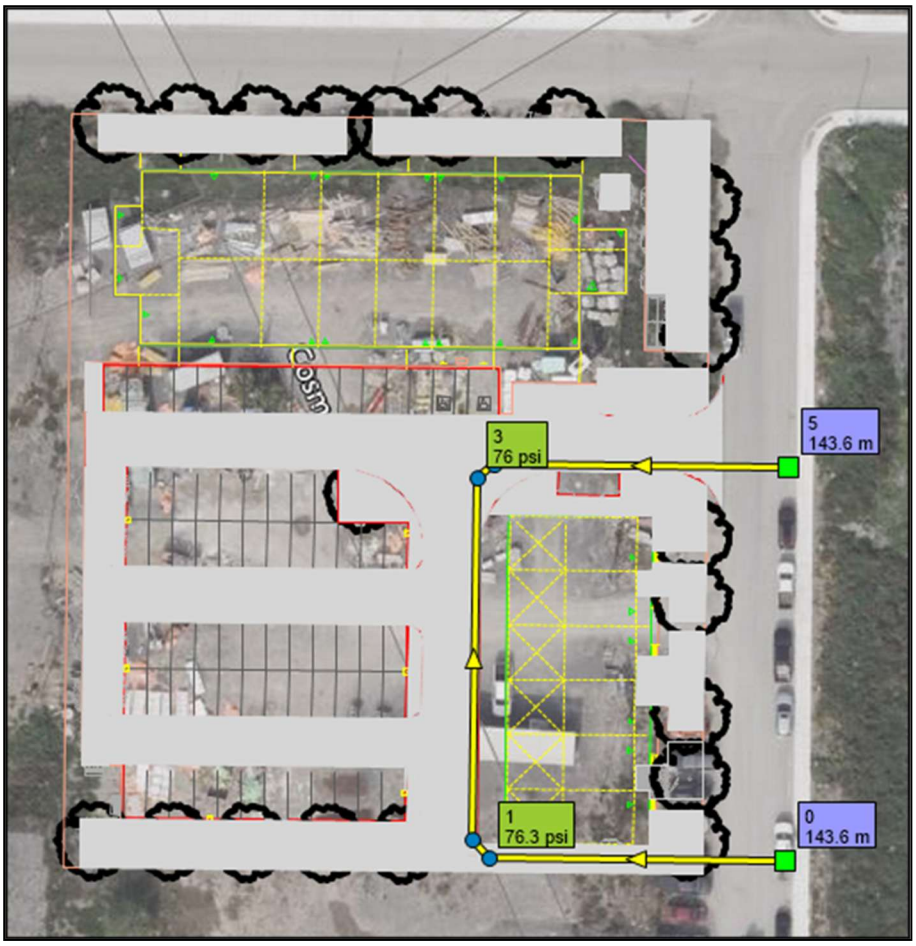

Figure 3.1: Maximum Pressures During AVDY Conditions

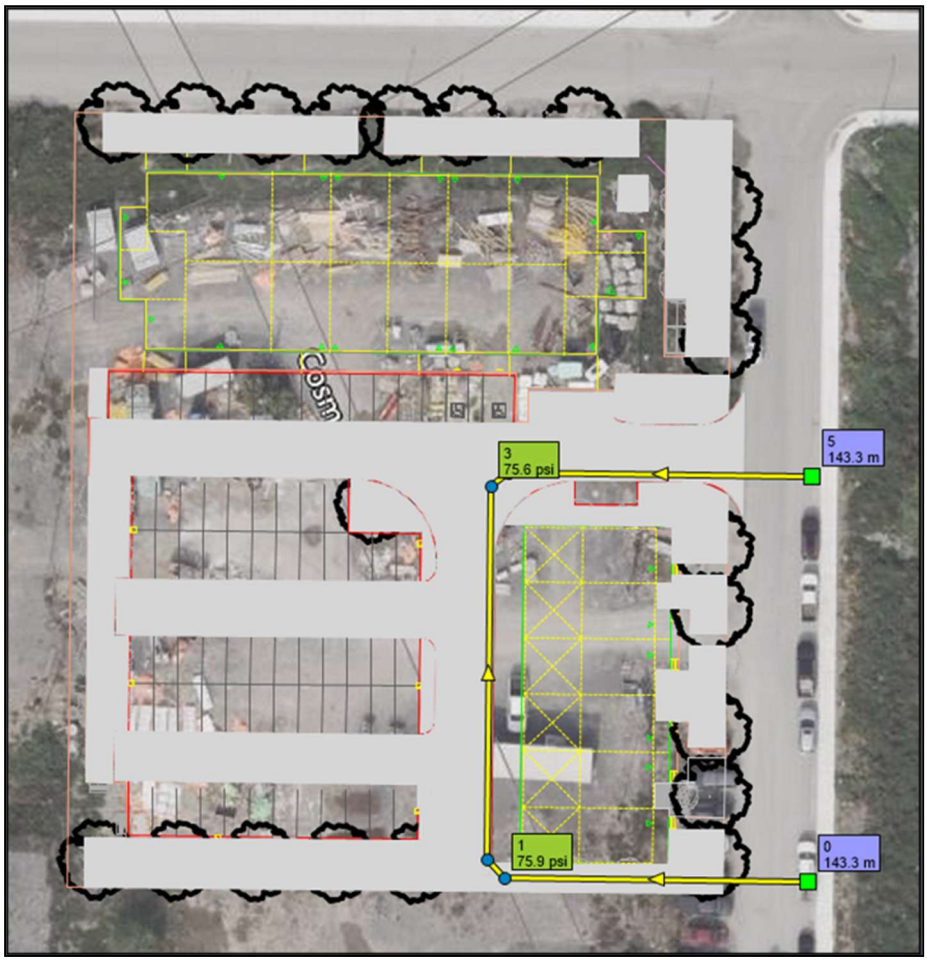

Figure 3.2: Minimum Pressures During PKHR Conditions

3.4.2.2 Maximum Day & Fire Flow

An analysis was conducted using the hydraulic model to determine if the development, under maximum day demands, can achieve a fire flow of 9,000 L/min (150 L/s) to the site. This was accomplished using a steady-state maximum day demand scenario along with the automated fire flow simulation feature of the software.

Results of the modeling analysis, shown in Figure 3.3, indicate that adequate flows are available under emergency fire demand conditions while still maintaining a residual pressure of 140 kPa (20 psi). Results of the hydraulic modeling are included in **Appendix A.4**.

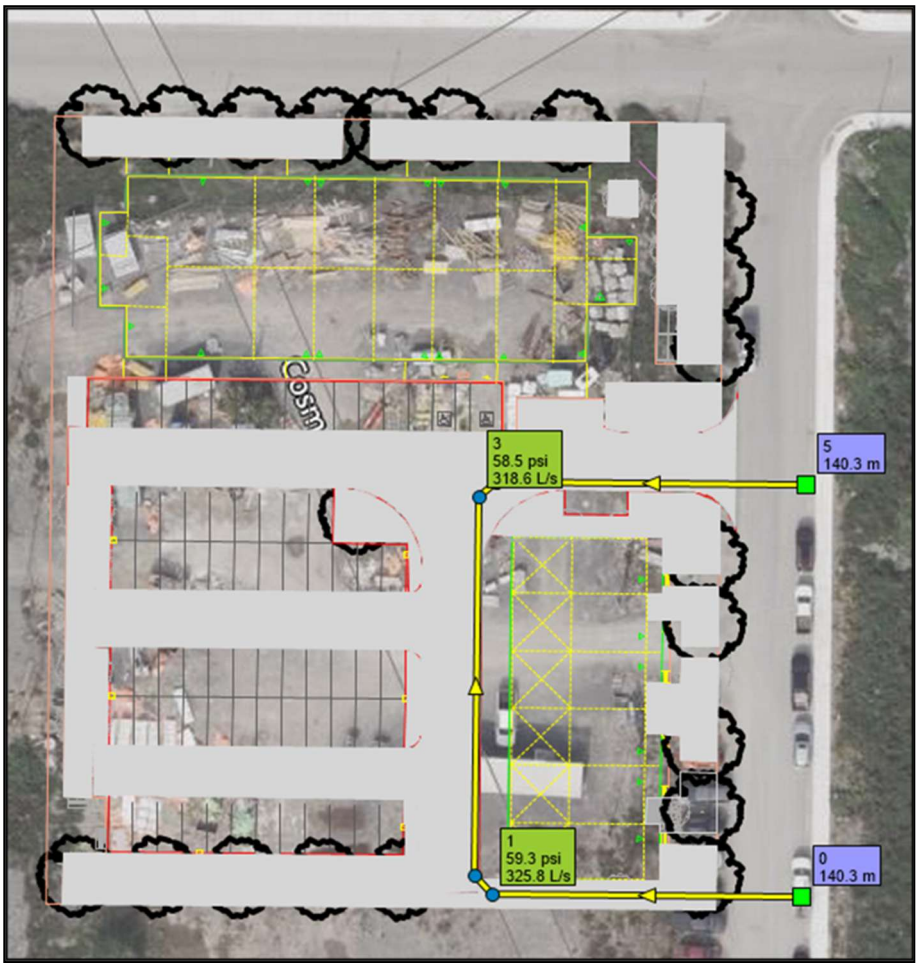

Figure 3.3: Residual Pressures and Available Fire Flows during MXDY Conditions

3.4.2.3 Fire Hydrant Coverage

There are two (2) existing fire hydrants within the vicinity of the site, as shown in **Drawing SSP-1.**

The fire hydrant layout provides for two existing hydrants to be within 76 m and one existing hydrant to be within 85 m of the buildings. According to the NFPA 1 Table 18.5.4.3, the two hydrants combined can accommodate the worst-case fire flow demand of 150 L/s for the subject site. See **Appendix A.5** for fire hydrant coverage table calculations and the fire hydrant coverage figure.

3.5 Summary of Findings

Based on the findings of the hydraulic analysis, the subdivision watermain network and the proposed internal network are capable of servicing the development area and is expected to meet all servicing

requirements as per the City of Ottawa standards under typical demand conditions (average day and peak hour conditions) as well as under emergency fire demand conditions (maximum day + fire flow).

Adequate fire hydrant coverage has been provided for the Block 12 Site Plan. Each townhouse unit is to have a unique 19 mm diameter water service connection to the proposed on-site, private, looped 150 mm diameter watermain, which is to be fed off the existing 200 mm diameter watermain in Bareille-Snow Street. The mixed-use building will be serviced by a single 150 mm diameter water service connection to the on-site watermain.

4 Wastewater Servicing

4.1 Background

The Phases 2A and 2B Servicing Brief for the Wateridge Subdivision indicates that wastewater flows from Block 12 are to be directed to the Ottawa Interceptor Trunk Sewer via a connection to the municipal sanitary sewer within Codd's Road. Under the Servicing Brief's drainage area plan, Block 12 (Area MH340A) is to contribute a total of 6.1 L/s of sanitary peak flow based on an assumed total population of 500 persons over an area of 1.78 ha. Weighting this available capacity by area, the Block 12 site has an approved available capacity of 1.81 L/s to the Codd's Road sewer connection.

Due to the development progression of Area MH340A, this Block 12 development could no longer be serviced from Codd's Road. The connection was shifted to the existing 250mm diameter Sanitary Sewer located in the Bareille-Snow Street ROW. The downstream capacity of the sewer was evaluated and was found to be able to accommodate the approved 1.81 L/s peak sanitary flows. The Phases 2A and 2B Servicing Brief Sanitary Drainage Area Plan has been included in **Appendix B.1**.

4.2 Design Criteria

As outlined in the City's Sewer Design Guidelines, the following design parameters were used to calculate estimated wastewater flow rates and to size on-site sanitary sewers for the proposed development:

- Minimum Full Flow Velocity – 0.6 m/s
- Maximum Full Flow Velocity – 3.0 m/s
- Manning's roughness coefficient for all smooth walled pipes – 0.013
- 1 Bedroom Apartment Persons per unit – 1.4
- 2 Bedroom Apartment Persons per unit – 2.1
- Townhouse Persons per unit – 2.7
- Extraneous Flow Allowance – 0.33 L/s/ha
- Residential Average Flows – 280 L/cap/day
- Commercial Average Flows – 28,000 L/ha/day
- Manhole Spacing – 120 m
- Minimum Cover – 2.5 m

4.3 Proposed Servicing

Peak design flows from the site are calculated to be 1.4 L/s based on the residential and commercial demands and peaking factors, and the estimated infiltration flows. The peak flow rate is less than the approved 1.81 L/s capacity for the site, consequently, the proposed sanitary servicing scheme can adequately be serviced from the adjacent and downstream municipal infrastructure.

As shown on **Drawing SA-1** and detailed in the sanitary sewer design sheet attached in **Appendix B.2**, the Block 12 development, with a projected population of 106 persons and ground floor commercial uses in Building A, will be serviced by a network of 200 mm diameter private sanitary sewers discharging to the existing 250 mm diameter sanitary sewer within Bareille-Snow Street. Block A is to be serviced by a single 200mm diameter sanitary sewer lateral and Block B is to be serviced with individual sanitary services (135mm diameter laterals) to each townhome unit with connection to the internal (private) sanitary sewer. All services are proposed to be gravity drained. A sanitary monitoring manhole has been provided near the property line.



5 Stormwater Management

5.1 Objectives

The goal of this storm servicing and stormwater management (SWM) plan is to determine the measures necessary to control the quantity and quality of stormwater released from the proposed development to meet the design criteria established for the site, and to provide the details required for Site Plan Approval.

5.2 Existing Conditions

The existing site has a gentle slope that drains approximately east to west. The lot is vacant, with existing conditions presenting as poorly vegetated and gravel parking/laydown/storage. Stormwater generated on the site is subject to the requirements outlined in the former CFB Rockcliffe Master Servicing Study (MSS) and the Phases 2A and 2B Design Brief for the Wateridge Subdivision (IBI, 2019). The Phases 2A and 2B Design Brief outlines that stormwater minor system contributions from the site are to be restricted to the 1:5-year storm event and directed to the Eastern Stormwater Management Facility (Eastern Wet Pond) for quality control. Runoff exceeding the minor system capture rate is to be directed overland through the major drainage system to the Eastern Dry Pond. Drainage area plans from the MSS and the 2025 Design Brief are included in **Appendix C.1**.

Minor system flows from the Block 12 site will be directed to the existing 525mm diameter storm sewer flowing north to south on Bareille-Snow Street, which connects to the 1200/1350mm diameter sewer flowing from east to west on Codd's Road, and ultimately discharges to the Eastern Wet Pond. The major system flows will be directed east to the Eastern Dry Pond in Phase 8.

The stormwater management design for the site shall also meet the Low Impact Development (LID) design criteria outlined in the Aquafor Beech Former CFB Rockcliffe Redevelopment Stormwater Management Existing Conditions & LID Pilot Project Scoping report.

5.3 SWM Criteria and Constraints

The following summarizes the SWM criteria and constraints that will govern the detailed design of the proposed site as per the latest revision of the City of Ottawa Sewer Design Guidelines as well as the conclusions made in the MSS and Design Brief.

- Design using the dual drainage principle.
- Where there is footing drainage connected to the storm collection system, separation of at least 0.3 m between the 100-year storm hydraulic grade line (HGL) and building under side of footing (USF) must be provided.
- Total maximum depth of flow under static and dynamic conditions shall be less than 0.35 m.
- Design storm sewers along local roadways to convey the 5-year peak flow respectively under free-flow conditions using 2004 City of Ottawa I-D-F parameters and an inlet time of 10 minutes.

- Building openings to be above the 100-year water level.
- There must be at least 30 cm of vertical clearance between the spill elevation on the private street and the lowest building opening that is in the proximity of the flow route or ponding area.
- Provide adequate emergency overflow conveyance off-site.
- Low Impact Development (LID) required to provide infiltration equivalent to the detention of 4 mm rainfall runoff over the developable site area.

Per the 2019 IBI Design Brief, minor system outflow to the Codd's Road sewer is defined by subarea B340, which has a 5-year allowable discharge rate of 204 L/s for all events up to and including the 100-year storm event to MH231 on Codd's Road. Area B340 (2.17ha, C=0.79) is attributed a peak design flow rate of 338.13 L/s, based on a runoff coefficient of 0.8 for residential areas, and 0.7 for streets. Weighted on an A*C basis to the Block 12 site (0.53ha), the downstream sewers have been designed to accommodate 82.88 L/s peak flows from this site.

As per the sanitary servicing, the stormwater sewer servicing for this quadrant of Block 12 must be serviced from Bareille-Snow Street. Although a portion of the flows from the site (uncontrolled flows to Tawadina Road) will flow into the storm sewer on Codd's road, the principal flows will be to the 525mm diameter sewer on Bareille-Snow Street. Regardless, all the minor system flows from this site outlet through the manhole at the intersection of Codd's Road and Hemlock Road (MH 179) which is consistent with the 2019 IBI Design Brief. The available capacity (2019 IBI Report, Storm Sewer Design Sheet) was utilized to confirm the Tawadina Road, Bareille-Snow and downstream sewers have the capacity to convey the 5-year stormwater runoff from this site.

5.4 Stormwater Management Design

The post-development site has been divided into drainage areas based on the proposed buildings, grading restrictions, minor system tributary inlets, and uncontrolled areas, as shown in **Drawing SD-1.** The north and east portions of the site sheet drain, uncontrolled, along the frontages of Bareille-Snow Street and Tawadina Road into the adjacent municipal rights-of-way (ROWs) and 5-year flows are then to be captured in the existing municipal catch basins. The proposed buildings have peaked roofs, which splits the drainage between the uncontrolled areas along the roadway frontages and the site's internal (controlled) drainage areas.

The internal site drainage areas include catchments L1 and L2 which outlet to the site's private, internal storm sewer system via catch basins, and LID-1, the bioswale area along the south site of the parking lot. The stormwater management requirements for the development will be achieved with the following methodologies:

1. Quantity control is achieved through surface and subsurface storage including surface ponding in the parking lot, surface ponding in the bioswale, subsurface storage in the bioswale soils and granular base (above the outgoing pipe invert), and subsurface storage in the oversized pipes beneath the parking lot.

2. The restricted 5-year pre-development outflow rate is achieved using Inlet Control Devices (ICDs) onsite to restrict the inlet rate at select catch basins, and to restrict the overall outflow rate of the site to the target level.

3. Infiltration targets are achieved by directing surface flows south to the bioswale. Detention storage occurs in the granular materials in the bioswale structure below the outgoing pipe invert.

4. Quality control is achieved onsite for the 15mm event noted in background studies via treatment train through use of CB Shield inserts in catch basin manholes which are not subject to surcharge (refer to Drawing SSP-1), and onsite filtration via bioswale granular layer and bioretention media. CB Shield devices include a deflection plate and shield that improves sediment and grit retention in the CBMH sump by preventing re-suspension and provide pre-treatment benefits upstream of the LID. Additional quality control treatment is achieved in the downstream Eastern Wet Pond to meet enhanced (80% TSS removal) levels of control. Since the bioswale and CB Shields are contributing to the quality control treatment for this site, a maintenance program will be required for solids management within the bioswale, subdrains, and on-site catch basin structure sumps.

Drawing SD-1 outlines the proposed storm sewer alignment, drainage areas, and labels. The storm sewer design sheet is also included in **Appendix C.3**.

The rational method was used to assess the flow rate and volume of runoff generated under post-development conditions as follows:

$Q = 2.78\ CiA$

Where:
Q = peak flow rate, L/s
A = drainage area, ha
i = rainfall intensity, mm/hr (per Ottawa IDF curves)
C = site runoff coefficient

5.4.1 Uncontrolled Areas

The uncontrolled subcatchment area, UNC-1 will sheet drain to the adjacent municipal ROWs (Tawadina Road and Rue Bareille-Snow), where the 5-year pre-development flow will enter the minor system though the street catch basins, and the excess flow will be conveyed by the major system. Due to sloped roofs and grading restrictions, this area can't be captured or controlled by the proposed stormwater management system. The uncontrolled release rate was determined using the Rational Method, as shown in **Table 5.1.** Refer to **Appendix C.2** for detailed stormwater management calculations.

Table 5.1: Uncontrolled Release Rate

Area IDs	Tributary ROWs	Area (ha)	5-year C	100-year C	5-year Release (L/s)	100-year Release (L/s)
UNC-1	Bareille-Snow Street and Tawadina Road	0.15	0.83	1.00	35.6	73.6

5.4.2 Target Release Rates

The peak post-development minor system discharge from the subject site is to be limited to the A*C weighted 5-year event discharge as indicated in the 2019 IBI Design Brief and **Section 5.3** of this report, 82.9L/s.

In the 2019 IBI Design Brief, Table 5-3 provides the Minor Flow Capture Rates (ICD L/s) and Major System Flow Allowances by area, as determined by the DDSWMM simulation. For Drainage Area B340 (1.24 ha, 86% imperviousness, as per Drawing 750), the allowable major system flow is 257 L/s. The area-weighted major system flow rate for the Block 12 (0.53ha) is calculated to be **107.25 L/s**. In comparison, the 100-year uncontrolled release rate from UNC-1 is 76.1 L/s. Consequently, the uncontrolled release rate from the site was found to be within the allocated major system limit. Refer to **Appendix C.1** for excerpts from the 2019 IBI Design Brief, including Table 5-3 and Drawing 750.

To determine the site target release rate to the minor system, we have considered the controlled post-development drainage area of 0.38ha (L1, L2, and LID-1). Hence, the target release rate for the stormwater management system on this site is limited to **59.6 L/s**. Refer to **Appendix C.2** for detailed stormwater management calculations.

5.4.3 Quantity Control Design

The modified rational method is used to determine the volume of stormwater generated under various rainfall design events and to evaluate the onsite storage requirements. Refer to **Appendix C.2** for detailed stormwater management calculations in the MRM design sheet.

Stormwater runoff from post-development drainage catchment areas L1 and L2 are collected through catch basins and catch basin manholes and inlet the onsite private stormwater sewers. Catchment area L2 has an ICD-restricted inlet and provides stormwater detention via surface ponding in the parking lot. The onsite stormwater sewers direct flows south into the bioswale area. Drainage catchment LID-1 sheet drains to the south and enters the bioswale through a curb cut.

Table 5.2: Onsite Stormwater Storage

Tributary Area ID	Storage Type	Detention Storage Volume Provided (m^3)
LID-1, L1, L2	Bioswale (surface ponding and storage in media voids above sewer outlet)	41.7
L1, L2	Surcharged storm sewers (oversized pipes, 600mm diameter) and structures	19.5
L2	Surface Ponding above CB6	41.3

Outflow from the onsite storm sewer system is restricted by an ICD located in CBMH5. The restricted outflow causes the system to surcharge. Stormwater runoff is surcharged and retained in the void space of the bioswale storage media (granulars and topsoil) as well as surface ponding up to the elevation of the raised CB grate, prior to spilling back into the minor system. 600mm diameter oversized pipes are located between CBMH2 and STM3; and between STM8 and STM3. These also become surcharged and provide additional subsurface stormwater detention storage. The onsite detention storage provided by this stormwater management plan is summarized in **Table 5.2,** while detailed calculations are provided in **Appendix C.2.**

The ICD on CB6 was designed to maximize the use of the available surface (ponding) storage above the CB during the 100-year event and ensure no surface ponding during the 2-year event, while the ICD on CBMH5 was designed to restrict the outflow to the overall target release rate of the site, and to increase the detention storage in the bioswale. ICD design in CBMH5 considered the downstream 100-year hydraulic grade line provided in **Appendix C.1.** The ICD design in CB6 considered the HGL in the private storm sewer system at CBMH3. Detailed MRM calculations are provided in **Appendix C.2** and the release rates and storage requirements are summarized in **Table 5.3.**

Table 5.3: Stormwater Management Onsite Storage and Release Rates

Structure ID	Tributary Area ID	ICD Type	5-yr Head (m)	5-year Release (L/s)	100-yr Head (m)	100-year Release (L/s)	Volume Required (m^3)	Volume provided (m^3)
CB 6	L2	95mm Orifice	0.84	16.4	0.69	14.9	11.4	41.3
CBMH5	L1, L2, LID-1	193mm Orifice	0.03	13.8	0.51	53.0	71.0	78.9

5.4.4 Low Impact Development (LID) Practices

The water balance targets for the site (retention of 4mm of runoff as defined by background reports) are proposed to be met via retention within the proposed bioswale, located on the south side of the site. The void space in the granular materials located below the outgoing pipe invert will provide onsite retention

storage and infiltration. Quality control for the site is principally provided for the minor system through the downstream Eastern Wet Pond; hence Quality control through LID practices is not required on this site.

Table 5.4: Infiltration Volume Requirement

Water Balance Target (mm)	Controlled Site Area (ha)	Incident Rainfall Volume (m^3)	Required Infiltration Volume (m^3)
4mm	0.38	15.1	11.6

The MECP SWM Planning Design Manual (2003) and the City of Ottawa Draft Low Impact Development Technical Guidance Report (2019) provide design guidance for LIDs and physical constraints for SWMP types. For an infiltration basin, these considerations include:

- Drainage Area: <5ha
- Minimum soil percolation rate: loam (infiltration rate ≥60 mm/hr)
- Bedrock: situated ≥1.0m below the bottom of the infiltration bed for detention requirements
- Groundwater: situated ≥1.0m below the bottom of the infiltration bed for quality control requirements.

The Block 12 Site meets both the drainage area and bedrock clearance criteria for an infiltration basin; hence the proposed bioswale is adequate.

5.4.4.1 Bedrock and Groundwater Considerations

Bedrock and groundwater levels have been established in the Geotechnical Investigation Report (Paterson, 2026) and are shown on **Drawing SSP-1** and **SD-1**. Bedrock is assumed to be as reported or inferred from auger refusal. Borehole BH 5-23 is situated next to the proposed bioswale area and shows sufficient depth to bedrock. Based on the ground water levels encountered during the initial geotechnical drilling investigation (July 2023), borehole BH5-23 was found to be dry, however the groundwater levels varied across the site. Long-term groundwater monitoring is not yet available for this site, so the seasonal high groundwater elevations are not known. This LID design is not intended for quality control purposes, so the 1.0m clearance of groundwater from the bottom of the infiltration bed is not required.

The bedrock elevations are summarized in **Table 5.5** and included in **Appendix C.2** on the infiltration calculations sheet. The soil strata information from the geotechnical report was sufficient to inform the storm sewer design and select a location for the bioswale (infiltration basin) where the bottom (invert) of the infiltration bed is at least one meter above the native bedrock.



Table 5.5: Bedrock Considerations

Borehole Location ID	Inferred Elevation of Bedrock (mASL)	Invert of Infiltration Basin (mASL)	Clearance Between Invert and Bedrock (m)
BH5-23	87.12	88.12	1.0
BH7-23	86.05		2.1

5.4.4.2 Infiltration Rates

In June 2026, Paterson conducted a field investigation to evaluate the infiltration rates on the Block 12 site. Four penetration test locations (PT 1-26 to PT 4-26) were evaluated, as shown in **Drawing SSP-1** and **SD-1**. The results of the infiltration testing will be incorporated into the next revision of the geotechnical report, however; a summary email including the findings is included in **Appendix C.4.** The infiltration testing results do not include a safety correction factor. At each location, the permeameter testing was conducted at 2 different depths. Testing locations were selected based on site conditions such as pooled water or engineered fill.

Location PT1-26 was nearest to the proposed bioswale area, but testing at this location could not be completed due to water infiltration at approximately 0.3m bgs. PT 4-26 was also relatively close to the bioswale area and consequently was utilized for the key infiltration information.

Table 5.6: Unfactored Infiltration Rates at Test Pits (Paterson, 2026)

Test Pit	Surface Elevation (m)	Permeameter Testing Elevation (m)	Saturated Hydraulic Conductivity (m/s)	Estimated Unfactored Infiltration Rate (mm/hr)
PT 4-26	88.59	88.29	1.4×10^{-6}	51
		87.99	6.4×10^{-6}	76

To obtain the design infiltration rates, the unfactored infiltration rates were averaged and then compared to the unfactored infiltration rate closest to the invert depth to obtain a ratio and corresponding factor of safety per Table C 3 from the Toronto and Region Conservation Authority SWM Criteria (2012), shown in **Figure 5.1**. This factor of safety is then applied to the unfactored infiltration rate closest to the invert depth.

Table C 3: Safety correction factors for calculating design infiltration rates

Ratio of Mean Measured Infiltration Rates[1]	Safety Correction Factor[2]
≤ 1	2.5
1.1 to 4.0	3.5
4.1 to 8.0	4.5
8.1 to 16.0	6.5
16.1 or greater	8.5

***Source**: Wisconsin Department of Natural Resources. 2004. Conservation Practice Standards. Site Evaluation for Stormwater Infiltration (1002). Madison, WI.*

***Notes**:*

1. *Ratio is determined by dividing the geometric mean measured infiltration rate at the proposed bottom elevation of the BMP by the geometric mean measured infiltration rate of the least permeable soil horizon within 1.5 metres below the proposed bottom elevation of the BMP.*
2. *The design infiltration rate is calculated by dividing the geometric mean measured infiltration rate at the proposed bottom elevation of the BMP by the safety correction factor.*

Figure 5.1: Safety Correction Factors (TRCA, 2012)

At the bioswale, the invert of the detention storage layer is proposed to be 88.12 m, the PT 4-26 unfactored infiltration rate (51 mm/hr) at the elevation of 88.29m is applied against the geometric mean (62.26 mm/hr) to obtain a ratio of 1.3 and therefore a factor of safety of 2.5 per Table C 3. As such, the design infiltration rate for the bioswale is determined to be 24.9 mm/hr. A summary of the infiltration calculations is provided in **Table 5.7** and detailed in **Appendix C.2** on the infiltration calculation sheet.

Table 5.7: Infiltration Basin Design Requirements

LID	Maximum Drawdown Time (hours)	Minimum Contact Area (m^2)	Design Infiltration Rate (mm/hr)	Required Infiltration Volume (m^3)
Infiltration Basin (Bioswale)	24	48.5	24.9	11.6

5.4.4.3 LID Retention Storage

The infiltration volume requirement, 11.6m^3 for the 4mm event, was previously determined. To obtain the retention storage volume available for infiltration, a granular porosity of 40% is assumed. The granular detention layer (19mm – Type 2 Clearstone) is designed to be 470mm below the LID outlet invert, with a bed area (contact area) of 94.7m^2. A summary of the infiltration design is provided in **Table 5.8** and detailed in **Appendix C.2** on the infiltration calculation sheet. The proposed design satisfies the LID requirements for drawdown time, minimum bed area, and the storage volume provided in the LID retention layer to infiltrate the 4mm event.

Table 5.8: Infiltration Basin Design

LID	Storage Media	Porosity	Depth of Storage Media (mm)	Contact (Bed) Area (m^2)	Retention Storage Volume (Voids) (m^3)	Drawdown Time (hr)
Infiltration Basin (Bioswale)	19mm Type II Clearstone	0.4	470	94.7	17.8	12.3

5.4.5 Water Quality Control

Runoff from the development site will be conveyed through the minor system to the Eastern Wet Pond. Per the 2019 Design Brief, the pond will provide an enhanced level of protection for the noted site. CB Shields are proposed onsite upstream of the proposed bioswale to provide an additional level of quality control. This approach will facilitate sediment removal/maintenance, prevent fines from becoming entrapped in the LID granular bed, and enhance the longevity of the bioswale. T

Per Table 3.2 of the MECP's Stormwater Management Planning and Design Manual, quality control volume requirements for 80% TSS removal would be approximately 40m^3/ha of impervious area at the current site's anticipated level of imperviousness. Based on a site area of 0.53ha and imperviousness of approximately 83.6%, a quality control volume of 17.7m^3 would typically be required for on-site quality control to meet the 80% TSS removal criteria. As demonstrated above, the retention volume storage within the infiltration basin downstream of the majority of paved runoff of 17.8m^3 exceeds this value, thus meeting the intent of providing quality control for the 15mm rainfall event noted in background studies.

5.5 Proposed Stormwater Servicing

As shown in **Drawings SD-1** and **SSP-1** and detailed in the storm sewer design sheet in **Appendix C.2**, drainage from the parking lot and stormwater management systems are to be conveyed by an onsite private storm sewer that conveys stormwater runoff to the minor system. Storm services are proposed for both Buildings A (200mm diameter) and B (150mm diameter) for foundation drains only. These services connect to the onsite storm sewer system, which provides a single 300mm diameter pipe connection for Block 12 to the 525mm diameter municipal sewer main in the Bareille-Snow Street ROW. A new storm maintenance hole is proposed at the connection to the municipal sewer.

The proposed buildings have peaked roofs with approximately half the roof areas draining to the internal areas of the site (catchment areas L1 and L2). The Building A roof is to be equipped with gutters and downspouts at the locations indicated in Drawing SSP-1 and as shown in the architectural drawings. Building A has sidewalks along the building perimeter, so flows from the downspouts are to be conveyed to at-grade trench drains that cross the sidewalks, and discharge at the curb, where feasible. For trench drain details refer to the architectural drawings.

Due to the bedrock constraints limiting the bioswale inverts, the internal storm sewer system (draining south to the bioswale) do not have sufficient cover and require insulation. The portion of the private storm sewer downstream of manhole STM 1, including the building services, have sufficient cover.

Full port backwater valves are required on all storm service laterals within the site to prevent impacts to the foundation drainage from any potential surcharge in the downstream sewer system. Backwater valve and sump pump/pit design are to be completed by the mechanical engineer at a later stage of the design.

6 Grading

The proposed Block 12 development site measures approximately 0.53 ha in area. The topography across the site under existing conditions slopes gently towards the southwest corner of the site. The objective of the grading design is to satisfy the stormwater management requirements, adhere to permissible grade raise restrictions, and meet cover or insulation requirements for sewers.

The grading plan (**Drawing GP-1**) was prepared considering the 3.0 m grade raise restrictions identified in the geotechnical investigation (Paterson 2026). If the thin silty clay deposit layer is fully removed for the townhouse block excavation, then the grade raise restriction will not apply to the building. Areas where grades are expected to exceed the maximum permissible grade raise will be subject to either a pre-loading/surcharge program, or lightweight fill and/or other approved means outside of the proposed rights-of-way to reduce the risks of unacceptable long-term post-construction differential settlements.

The adjacent (assumed existing at the time of construction) properties to the south and west of Block 12 are graded to be more than two meters higher than the existing grades. Block 12 will need to be raised to match these elevations to the south and west, and to tie-in to the existing roadway ROW grades along the north and east. A curb wall is required along the northwest property line to account for an additional 0.15m grade difference. The internal site grading includes barrier curbs, dropped curbs, and grading for surface ponding (<0.3m) within the parking lot.

Site grading has been established to provide accessibility to all Building A entrances and provide emergency overland flow routes along the south side of Building B and at the principal site access out to Bareille-Snow Street, in accordance with the City of Ottawa requirements. The Building B townhomes have at-grade garages along the rear building access, but multiple risers (5R-6R) along the building frontage.

The finished floor elevation is consistent across Building B (91.10m), and the top of foundation (90.70m) is consistently a minimum of 150mm above the adjacent finished surface grades. Building A, with a finished floor elevation of 90.72m, may require a stepped foundation to accommodate grading at the northeast building corner including curb and trench drains.

7 Utilities

As the subject site lies within a new residential development community, Hydro, Bell, Gas, and Cable servicing for the proposed site will be readily available from the subsurface infrastructure within the adjacent municipal rights-of-way. A transformer pad location is proposed north of the site access as shown in **Drawing SSP-1** and **GP-1**. The exact size, location and routing of hydro utilities will be finalized after design circulation. The site currently includes two hydro poles identified in the topographic survey that appear to provide temporary power to the modular buildings onsite. Relocation of the two poles is to be coordinated with Hydro Ottawa prior to construction. The relocation of all existing onsite utility plant should likewise be coordinated directly with the utility companies.

8 Approvals

An Ontario Ministry of Environment, Conservation, and Parks (MECP) Environmental Compliance Approval (ECA), under the *Ontario Water Resources Act* is not required for the proposed site, since it is not located on industrial land, the proposed private sewer works are anticipated to be under single ownership during construction and approval, and drain to a municipal separated sewer.

The stormwater infrastructure will be reviewed, approved, permitted, and constructed under single ownership, and in compliance with the existing City of Ottawa CLI ECA. On that basis, the works are to be implemented and regulated as a single system serving one development parcel at the time of approval and construction. Severance/Part Lot Control of the property will not occur until after construction. Consequently, this site satisfies all criteria under Section 3 of O. Reg. 525/98 Approval Exemptions, and an ECA through the direct submission process is not anticipated. Stormwater infrastructure will be included in a Joint Use and Maintenance Agreement (JUMA) for shared amenities and private servicing will be required following the severance of the townhome parcel from the condominium parcel.

It is similarly anticipated that the building permit and approval will be obtained from the Chief Building Official for the private water and wastewater systems for the construction of these services under single ownership, which meets the one lot/parcel of land requirements of O. Reg. 525/98 (as amended through O. Reg. 250/26) – ECA Not Required. Hence, an ECA is not anticipated for the private sanitary sewers proposed onsite. Severance/Part Lot Control of the property will occur after construction, at which time a JUMA will be required for the shared water and wastewater systems.

A Ministry of Environment Conservation and Parks (MECP) Permit to Take Water (PTTW) or reporting on the Environmental Activity and Sector Registry (EASR) for construction excavations may be required for the site as some of the proposed works may be below the groundwater elevation shown in the geotechnical report. The geotechnical investigation report has confirmed that the PTTW may be required if more than 400,000 L/day of ground and/or surface water are to be pumped during the construction phase. For ground or surface water volumes pumped at between 50,000 to 400,000 L/day during construction, it is required to register on the EASR.

9 Erosion and Sediment Control During Construction

To protect downstream water quality and prevent sediment build-up in catch basins and storm sewers, erosion and sediment control measures must be implemented during construction. The following recommendations will be included in the contract documents and communicated to the Contractor. **Drawing ECDS-1** provides an erosion and sediment control (ESC) concept plan. Development and implementation of a detailed erosion and sediment control plan will be the responsibility of the Contractor.

1. Implement best management practices to provide appropriate protection of the existing and proposed drainage system and the receiving water course(s).
2. Limit the extent of the exposed soils at any given time.
3. Re-vegetate exposed areas as soon as possible.
4. Minimize the area to be cleared and grubbed.
5. Protect exposed slopes with geotextiles, geogrid, or synthetic mulches.
6. Install silt barriers/fencing around the perimeter of the site as indicated in **Drawing ECDS-1** to prevent the migration of sediment offsite.
7. Install trackout control mats (mud mats) at the entrance/egress to prevent migration of sediment into the public ROW.
8. Provide sediment traps and basins during dewatering works.
9. Install sediment traps (such as SiltSack® by Terrafix) between catch basins and frames.
10. Schedule the construction works at times which avoid flooding due to seasonal rains.

The Contractor will also be required to complete inspections and guarantee the proper performance of their erosion and sediment control measures at least after every rainfall. The inspections are to include:

- Verification that water is not flowing under silt barriers.
- Cleaning and changing the sediment traps placed on catch basins.

Refer to **Drawing ECDS-1** for the proposed location of silt fences, sediment traps, and other erosion control measures.

The proposed bioswale shall have additional protections throughout construction. Vehicular travel on, or across, the LID feature shall be strictly prohibited. The bioswale shall be protected throughout construction and maintained free of construction debris, sediment, and other materials that may impair its function. Curb cuts serving the bioswales shall be temporarily blocked during construction to prevent sediment-laden

stormwater runoff from entering the bioswale. Temporary blockages shall be maintained until contributing areas are stabilized and the risk of sediment-laden runoff has been eliminated. Any accumulated sediment or debris shall be removed, and affected bioswales shall be restored to their design condition prior to acceptance.

10 Geotechnical Investigation

A geotechnical investigation for the development was completed by Paterson Group Inc. in June 2026. The report summarizes the existing soil conditions within the Block 12 Site Plan area and provides construction recommendations. For details which are not summarized below, please see the Paterson report and memo included in the submission package.

Subsurface soil conditions within the study area were determined through field investigations conducted from May 25 to May 26, 2023, in addition to supplemental field programs completed in June 2026 for infiltration testing. Eleven (11) boreholes were drilled in the 2023 investigation, in addition to four (4) infiltration testing locations (test pits) in 2026.

In general, soil stratigraphy consisted of 0.3 to 1.1m fill material generally observed to consist of brown silty clay with sand, gravel and crushed stone. The fill is underlain by silty sand and/or glacial till of depths from 0.7 to 2.2m and generally observed to be a layer of loose to dense brown silty sand. Glacial till was encountered underlying the silty layer from 0.8 to 2.8m and was observed to include loose to dense brown silty sand with gravel cobbles and boulders. A layer of hard, brown, silty clay was encountered at BH 7-23 at the southwest of the site from 1.1 to 1.5m depth.

Based on practical auger refusal, the bedrock is assumed to be at depths ranging from 0.8 to 2.8m below the existing ground surface. Measurements recorded June 2, 2023, showed the groundwater levels at geodetic elevations ranging from 84.82m to 87.52m, varying considerably across the site. Some monitoring wells were observed to be dry at that time. As the groundwater levels fluctuate seasonally, they could vary at the time of construction. Based on the colour, consistency and moisture content of the soil sampling program, Paterson estimates the long-term groundwater table may be below the bedrock surface.

Based on the observed soil conditions, Paterson has deemed the site suitable for the proposed development. The buildings are anticipated to be founded over conventional shallow footings placed on placed on an undisturbed, compact to dense silty sand, hard brown silty clay, compact to very dense glacial till, or clean, surface-sounded bedrock bearing surface. A permissible grade raise restriction of 3.0m has been established for portions of the development due to the presence of the low to medium sensitivity silty clay layer.

Tree-planting restrictions outlined in the geotechnical report include:

- Large trees can be planted where the tree to foundation setback is at least to the full height of the mature tree (over 14m).
- Tree planting setback limits may be reduced to 4.5 m for small (mature height up to 7.5 m) and medium size trees (mature tree height 7.5 to 14 m), provided that the conditions noted below relating to the civil design are met:

- A minimum cover of 2.1 m is required over the underside of footing (USF) elevations within 10m of tree planting.
- Grading surrounding the tree must promote drainage to the tree root zone (in such a manner as not to be detrimental to the tree).

The report recommends pavement structures, as presented in

Table 10.1.

Table 10.1: Recommended Pavement Structure

Material	Driveways and Car-only Parking Areas	Local Residential Roadways
Wear Course –Superpave 12.5 Asphaltic Concrete	50 mm	40 mm
Binder Course –Superpave 19.0 Asphaltic Concrete	-	50 mm
BASE – OPSS Granular A Crushed Stone	150 mm	
SUBBASE – OPSS Granular B Type II	300 mm	400 mm

The geotechnical report also makes the following construction recommendations for other items pertaining to the civil servicing scope:

- Excavation, backfill, and engineered fill requirements.
- Pipe bedding and backfill requirements.
- Minimum 1.5m soil cover or equivalent insulation shall be provided over USF for frost protection (unless near to tree planting, as previously described).
- Foundation perimeter drains are recommended.
- All excess soil must be handled as per Ontario Regulation 406/19: On-Site and Excess Soil Management.

The geotechnical memo pertaining to the infiltration is further discussed in **Section 5.4.4.2** of this report.

11 Conclusion

This Site Servicing and Stormwater Management report assessed the servicing conditions within (proposed) and immediately adjacent to (existing) the Block 12 project site and evaluated the feasibility of new stormwater management infrastructure to meet LID infiltration targets and flow rate restrictions to the minor system. Other SPC design requirements appeared in this report including:

- potable water and fire flow servicing,
- sanitary servicing,
- stormwater servicing,
- grading and drainage,
- geotechnical considerations,
- utilities considerations,
- best management practices for erosion and sediment control during construction, and
- approvals considerations.

We trust that the information, servicing strategies, and the proposed stormwater management systems presented in this report are adequate to support the Site Plan Control Application re-submission for this development. Please contact the author or engineer of record of this report if you have any questions or concerns.

Appendices

Appendix A Water Servicing

A.1 Domestic Water Demands

Wateridge Block 12, Ottawa, ON - Domestic Water Demand Estimates

Site Plan provided by Korsiak Urban Planning (2026-06-03)

Project No. 160402294 Designed by: MW

Date: 2026-04-22 Checked by:

Revision: 01 City File No. PC2026-0074

Population densities per Table 4.1 City of Ottawa Water Design Guidelines:		
1 Bedroom Apartment	1.4	ppu
2 Bedroom Apartment	2.1	ppu
Townhouse	2.7	ppu
Demand conversion factors per Table 4.2 of the City of Ottawa Water Design Guidelines:		
Residential	280	L/cap/day
Commercial	28000	L/ha/day

Building ID	Commercial Floor Area (m²)	No. of Units	Population	Avg Day Demand		Max Day Demand [1 2]		Peak Hour Demand [1 2]	
				(L/min)	(L/s)	(L/min)	(L/s)	(L/min)	(L/s)
Block A									
1 Bedroom		40	56	10.9	0.2	27.2	0.5	59.9	1.0
2 Bedroom		16	34	6.5	0.1	16.3	0.3	35.9	0.6
Commercial	897			1.7	0.0	2.6	0.0	4.7	0.1
Block A Subtotal	*897*	*56*	*90*	*19.2*	*0.3*	*46.2*	*0.8*	*100.5*	*1.7*
Block B									
Rear Lane Townhouses		6	16	3.2	0.1	7.9	0.1	17.3	0.3
Residential Subtotal		*62*	*106*	*20.6*	*0.3*	*51.4*	*0.9*	*113.1*	*1.9*
Commerical Subtotal	*897*			*1.7*	*0.0*	*2.6*	*0.0*	*4.7*	*0.1*
Total Site :	**897**	**62**	**106**	**22.3**	**0.4**	**54.0**	**0.9**	**117.9**	**2.0**

1 The City of Ottawa water demand criteria used to estimate peak demand rates for residential areas are as follows:

maximum day demand rate = 2.5 x average day demand rate

peak hour demand rate = 2.2 x maximum day demand rate (as per Technical Bulletin ISD-2010-02)

2 Water demand criteria used to estimate peak demand rates for commercial areas are as follows:

maximum daily demand rate = 1.5 x average day demand rate

peak hour demand rate = 1.8 x maximum day demand rate (as per Technical Bulletin ISD-2010-02)

A.2 Fire Flow Demands (2020 FUS)

Wu, Michael

From: Katie Doucette <Katie.Doucette@mattamycorp.com>
Sent: April 22, 2026 15:43
To: Annie Pham; Wu, Michael
Cc: Conor Sutherland; Johnston, Anthony; Moroz, Peter
Subject: RE: [EXTERNAL] Wateridge Block 12 Building A Construction Type Confirmation

You don't often get email from katie.doucette@mattamycorp.com. Learn why this is important

Hi Michael,

The building will be 5 storey mixed-use, wood frame (panels). The building will be fully sprinklered.

Thanks,
Katie

Katie Doucette
Project Manager
c (613) 240-8267
mailto:katie.doucette@mattamycorp.com

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From: Annie Pham <annie.pham@mattamycorp.com>
Sent: Wednesday, April 22, 2026 2:53 PM
To: Wu, Michael <Michael.Wu@stantec.com>; Katie Doucette <Katie.Doucette@mattamycorp.com>
Cc: Conor Sutherland <Conor.Sutherland@mattamycorp.com>; Johnston, Anthony <Anthony.Johnston@stantec.com>; Moroz, Peter <peter.moroz@stantec.com>
Subject: RE: [EXTERNAL] Wateridge Block 12 Building A Construction Type Confirmation

Hi Michael,

I'll let @Katie confirm your points below.

Thanks,

Annie Pham (she/her), B. Eng.
Land Development Coordinator
C (343) 961-6015.
Annie.Pham@mattamycorp.com
Ottawa Office: 50 Hines Road, Suite 100, Ottawa, ON Canada K2K 2M5

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From: Wu, Michael <Michael.Wu@stantec.com>
Sent: Wednesday, April 22, 2026 1:45 PM
To: Annie Pham <annie.pham@mattamycorp.com>
Cc: Conor Sutherland <conor.sutherland@mattamycorp.com>; Johnston, Anthony <Anthony.Johnston@stantec.com>; Moroz, Peter <peter.moroz@stantec.com>
Subject: [EXTERNAL] Wateridge Block 12 Building A Construction Type Confirmation

Good afternoon, Annie:

Could you reach out to the architect to confirm the following information for the proposed mixed-use Building A in Block 12 of Wateridge? We would require the information to confirm the fire flow requirements for water boundary conditions from the City.

1. Construction type.
2. Confirmation that the vertical openings (between floors) are going to be **protected** per the fire code requirements outlined in the Ontario and National Building Codes and whether the building will be sprinklered.

Thanks,

Michael Wu, EIT
Civil Engineering Intern
He, him

Direct: (613) 738 6033
michael.wu@stantec.com





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Stantec

FUS Fire Flow Calculation Sheet - 2020 FUS Guidelines

Stantec Project #: 160402294
Project Name: Wateridge Block 12
Date: 2026-04-23
Fire Flow Calculation #: 1
Description: Building A: 5-storey mixed-use building

Notes: Building footprint of 1049.8 m², sprinklered. Construction type per OBC Sections 3.2.2.52 and 3.2.2.65 and confirmation from architect.

Step	Task	Notes										Value Used	Req'd Fire Flow (L/min)
1	Determine Type of Construction	Type III - Ordinary Construction / Type IV-C - Mass Timber Construction										1	-
2	Determine Effective Floor Area	Sum of All Floor Areas										NO	-
		1050	1050	1050	1050	1050						5249	-
3	Determine Required Fire Flow	($F = 220 \times C \times A^{1/2}$). Round to nearest 1000 L/min										-	16000
4	Determine Occupancy Charge	Limited Combustible										-15%	13600
5	Determine Sprinkler Reduction	Conforms to NFPA 13										-30%	-6800
		Standard Water Supply										-10%	
		Fully Supervised										-10%	
		% Coverage of Sprinkler System										100%	
6	Determine Increase for Exposures (Max. 75%)	Direction	Exposure Distance (m)	Exposed Length (m)	Exposed Height (Stories)	Length-Height Factor (m x stories)	Construction of Adjacent Wall	Firewall / Sprinklered ?				-	-
		North	> 30	30	1	21-49	Type V	NO				0%	2584
		East	> 30	10	2	0-20	Type V	NO				0%	
		South	10.1 to 20	14	2	21-49	Type V	NO				11%	
		West	20.1 to 30	20	5	81-100	Type V	NO				8%	
7	Determine Final Required Fire Flow	Total Required Fire Flow in L/min, Rounded to Nearest 1000L/min											9000
		Total Required Fire Flow in L/s											150.0
		Required Duration of Fire Flow (hrs)											2.00
		Required Volume of Fire Flow (m^3)											1080

Stantec

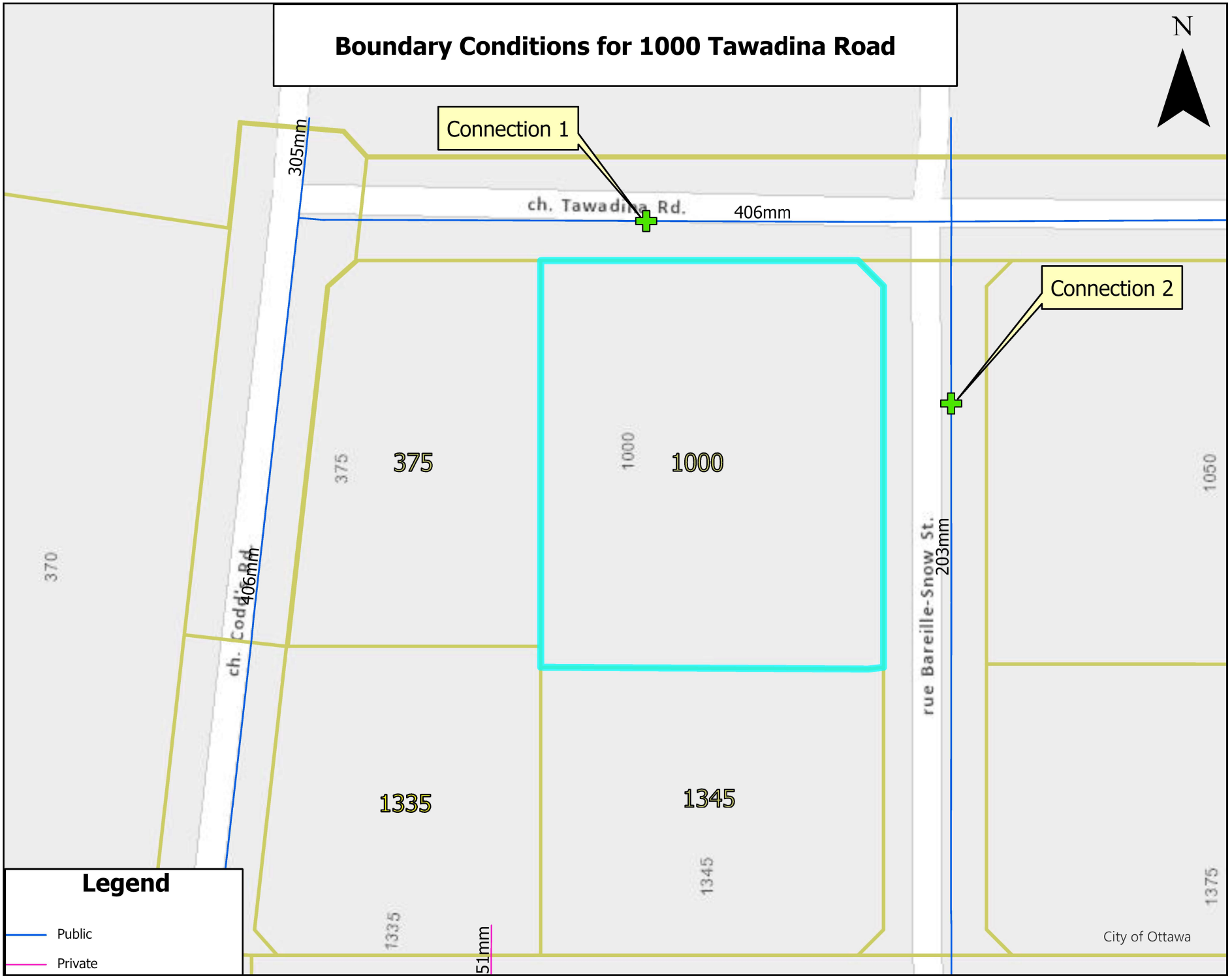
FUS Fire Flow Calculation Sheet - 2020 FUS Guidelines

Stantec Project #: 160402294
Project Name: Wateridge Block 12
Date: 2026-04-23
Fire Flow Calculation #: 2
Description: Building B: 2-storey 6-unit row townhouse block

Notes: Building footprint of 529.4 m².

Step	Task	Notes										Value Used	Req'd Fire Flow (L/min)
1	Determine Type of Construction	Type V - Wood Frame / Type IV-D - Mass Timber Construction										1.5	-
2	Determine Effective Floor Area	Sum of All Floor Areas										YES	-
		529	529									1059	-
3	Determine Required Fire Flow	($F = 220 \times C \times A^{1/2}$). Round to nearest 1000 L/min										-	11000
4	Determine Occupancy Charge	Limited Combustible										-15%	9350
5	Determine Sprinkler Reduction	None										0%	0
		Non-Standard Water Supply or N/A										0%	
		Not Fully Supervised or N/A										0%	
		% Coverage of Sprinkler System										0%	
6	Determine Increase for Exposures (Max. 75%)	Direction	Exposure Distance (m)	Exposed Length (m)	Exposed Height (Stories)	Length-Height Factor (m x stories)	Construction of Adjacent Wall	Firewall / Sprinklered ?				-	-
		North	10.1 to 20	14	2	21-49	Type III-IV - Protected Openings	YES				0%	0
		East	> 30	0	0	0-20	Type V	NO				0%	
		South	> 30	0	0	0-20	Type V	NO				0%	
		West	> 30	0	0	0-20	Type V	NO				0%	
7	Determine Final Required Fire Flow	Total Required Fire Flow in L/min, Rounded to Nearest 1000L/min											9000
		Total Required Fire Flow in L/s											150.0
		Required Duration of Fire Flow (hrs)											2.00
		Required Volume of Fire Flow (m^3)											1080

A.3 Hydraulic Boundary Conditions


Boundary Conditions for 1000 Tawadina Road
N
Connection 1
Connection 2
ch. Tawadina Rd.
406mm
305mm
406mm
ch. Cobden Rd
203mm
rue Bareille-Snow St.
51mm
375
1000
1335
1345
370
1050
1375
Legend
Public
Private
City of Ottawa

Wu, Michael

From: Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent: May 7, 2026 14:18
To: Wu, Michael
Cc: Moroz, Peter; Johnston, Anthony; Thiffault, Dustin
Subject: Re: 1000 Tawadina Road (Wateridge Block 12) Boundary Conditions Request
Attachments: 1000 Tawadina Road April 2026.pdf

Good afternoon, Michael.

Please find BC as requested, below:

The following are boundary conditions, HGL, for hydraulic analysis at 1000 Tawadina Road (zone MONT) assumed to be connected via two (2) connections as identified below: (see attached PDF for location).

Connection 1 – 406mm on Tawadina Road

Minimum HGL = 143.3 m

Maximum HGL = 143.6 m

Max Day + Fire Flow (150 L/s) = 142.3 m

Connection 2 – 203mm on Bareille-Snow Street

Minimum HGL = 143.3 m

Maximum HGL = 143.6 m

Max Day + Fire Flow (150 L/s) = 140.3 m

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

Notes:

Any connection to a watermain 406 mm or larger should be approved by DWS as per the Water Design Guidelines Section 2.4.

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.

Thank you

Regards,

Shawn Wessel, A.Sc.T.,rcji
Pronouns: he/him | Pronom: il
Project Manager - Infrastructure Approvals
Gestionnaire de projet – Approbation des demandes d'infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale
Planning, Development & Building Services Department (PDBS) | Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)
City of Ottawa | Ville d'Ottawa
110 Laurier Ave. W. | 110, avenue Laurier Ouest, Ottawa ON K1P 1J1
(613) 580 2424 Ext. | Poste 33017
Int. Mail Code | Code de Courrier Interne 01-14
shawn.wessel@ottawa.ca
Please consider the environment before printing this email

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Une Ville, deux langues
One City, two languages

Classified as City of Ottawa - Internal / Ville d'Ottawa - classé interne

---

From: Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent: Wednesday, April 29, 2026 11:17 AM
To: Wu, Michael <michael.wu@stantec.com>
Cc: Moroz, Peter <peter.moroz@stantec.com>; Johnston, Anthony <Anthony.Johnston@stantec.com>; Thiffault, Dustin <dustin.thiffault@stantec.com>
Subject: Re: 1000 Tawadina Road (Wateridge Block 12) Boundary Conditions Request

Thank you, Michael.

Request has been forwarded to Water Dept. for comments and BC info.

Regards,

Shawn Wessel, A.Sc.T.,rcji
Pronouns: he/him | Pronom: il
Project Manager - Infrastructure Approvals
Gestionnaire de projet – Approbation des demandes d'infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale
Planning, Development & Building Services Department (PDBS) | Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

City of Ottawa | Ville d'Ottawa
110 Laurier Ave. W. | 110, avenue Laurier Ouest, Ottawa ON K1P 1J1
(613) 580 2424 Ext. | Poste 33017
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One City, two languages

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---

From: Wu, Michael <Michael.Wu@stantec.com>
Sent: Wednesday, April 29, 2026 10:57 AM
To: Wessel, Shawn <shawn.wessel@ottawa.ca>
Cc: Moroz, Peter <peter.moroz@stantec.com>; Johnston, Anthony <Anthony.Johnston@stantec.com>; Thiffault, Dustin <dustin.thiffault@stantec.com>
Subject: 1000 Tawadina Road (Wateridge Block 12) Boundary Conditions Request

CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.
ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Good morning, Shawn:

We are requesting hydraulic boundary conditions from the existing 400 mm diameter watermain on Tawadina Road and the 200 mm diameter watermain on Bareille Snow Street. The request is in support of a site plan control (SPC) application for the proposed development at 1000 Tawadina Road (Block 12 Wateridge), which will see mixed-use development and service a total population of 117 persons and commercial space of around 897 m^2.

The locations for which we are requesting boundary conditions are circled in **red** in the attached map.

The water and fire flow demands for the development are as follows:

- Average Day Demands (AVDY): 0.4 L/s
- Maximum Day Demands (MXDY): 1.0 L/s
- Peak Hour Demands (PKHR): 2.2 L/s
- Fire Flow Demands: 150 L/s (9,000 L/min)

Attached are the calculation sheets for your reference.

We appreciate you taking the time to look into the matter, please let us know if you have any questions or require further information.

Thank you,

Michael Wu, EIT
Civil Engineering Intern
He, him

Direct: (613) 738 6033
michael.wu@stantec.com





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Atención: Este correo electrónico proviene de fuera de Stantec. Por favor, tome precauciones adicionales.

A.4 Hydraulic Model Results

Junction Results - Basic Day

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (m)	Pressure (psi)2	Pressure (kPa)
1	0.00	89.94	143.60	53.66	76.31	526.11
2	0.10	90.16	143.60	53.45	76.00	523.98
3	0.00	90.17	143.60	53.44	75.98	523.88
4	0.30	90.17	143.60	53.43	75.98	523.84

Link Results - Basic Day

ID	FROM	TO	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)
1000	1	0	32.72	150	100	-0.183	0.010
1001	2	1	2.59	150	100	-0.183	0.010
1002	3	2	39.85	150	100	-0.083	0.005
1003	4	3	2.60	150	100	-0.083	0.005
1004	5	4	32.71	150	100	0.217	0.012

Junction Results - Peak Hour

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (m)	Pressure (psi)2	Pressure (kPa)
1	0.00	89.94	143.30	53.36	75.88	523.16
2	0.30	90.16	143.30	53.14	75.57	521.02
3	0.00	90.17	143.30	53.13	75.55	520.92
4	1.70	90.17	143.30	53.13	75.55	520.86

Link Results - Peak Hour

ID	FROM	TO	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)
1000	1	0	32.72	150	100	-0.863	0.049
1001	2	1	2.59	150	100	-0.863	0.049
1002	3	2	39.85	150	100	-0.563	0.032
1003	4	3	2.60	150	100	-0.563	0.032
1004	5	4	32.71	150	100	1.137	0.064

Fire Flow Results - Max Day + 150 L/s

ID	Static Demand (L/s)	Static Pressure (m)	Static Pressure (psi)	Static Pressure (kPa)	Static Head (m)	Fire Flow Demand (L/s)	Residual Pressure (m)	Residual Pressure (psi)	Available Flow (L/s)	Available Pressure (psi)
1	0.00	50.36	71.61	493.76	140.30	150.00	41.71	59.31	325.83	20
2	0.10	50.15	71.30	491.63	140.30	150.00	41.20	58.59	319.02	20
3	0.00	50.13	71.29	491.52	140.30	150.00	41.15	58.52	318.61	20
4	0.80	50.13	71.28	491.47	140.30	150.00	41.43	58.92	324.30	20

A.5 Fire Hydrant Coverage Table and Sketch

Stantec	Project: **Wateridge Block 12**	160402294
	TABLE 1: FIRE HYDRANT COVERAGE TABLE	
	Revision: 01	Prepared By: MW
	Revision Date: 2026-06-25	Checked By:

Description	Hydrants[1]			Total Available Fire Flow (L/min)	Total Required Fire Flow[2] (L/min)
	EX HYD-01	**EX HYD-02**			
Building A					
Distance from building (m)	5.4	52.7	-	-	-
Maximum fire flow capacity[3] (L/min)	5,678	5,678	-	**11,356**	9,000

NFPA 1 Table 18.5.4.3	
Distance to Building (m)	Maximum Capacity (L/min)
≤ 76	**5,678**
> 76 and ≤ 152	**3,785**
> 152 and ≤ 305	**2,839**

Notes:

1. Hydrant locations as per Drawing SSP-1. Refer to fire hydrant coverage sketch (Appendix A.5).
2. See FUS Calculations, Appendix A.2 for fire flow requirements.
3. See NFPA 1 Table 18.5.4.3 for maxiumim fire flow capacity of hydrants by distance to building.

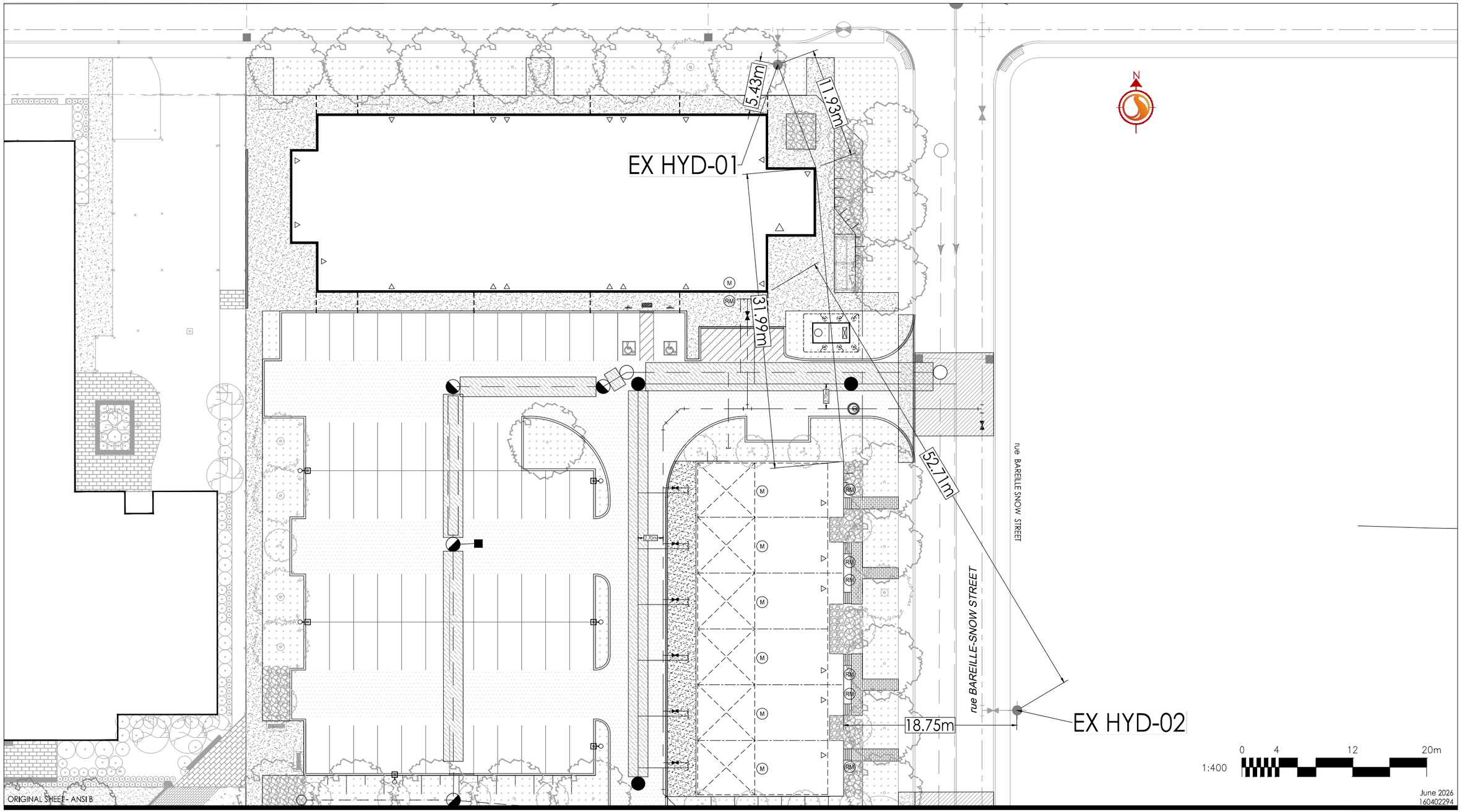
Stantec	Project:	**Wateridge Block 12**	160402294
	TABLE 1: FIRE HYDRANT COVERAGE TABLE		
	Revision: 01	Prepared By: MW	
	Revision Date: 2026-06-25	Checked By:	

Description	Hydrants[1]			Total Available Fire Flow (L/min)	Total Required Fire Flow[2] (L/min)
	EX HYD-01	**EX HYD-02**			
Building B					
Distance from building (m)	43.9	18.8	-	-	-
Maximum fire flow capacity[3] (L/min)	5,678	5,678	-	**11,356**	9,000

NFPA 1 Table 18.5.4.3	
Distance to Building (m)	Maximum Capacity (L/min)
≤ 76	**5,678**
> 76 and ≤ 152	**3,785**
> 152 and ≤ 305	**2,839**

Notes:

1. Hydrant locations as per Drawing SSP-1. Refer to fire hydrant coverage sketch (Appendix A.5).
2. See FUS Calculations, Appendix A.2 for fire flow requirements.
3. See NFPA 1 Table 18.5.4.3 for maxiumim fire flow capacity of hydrants by distance to building.



V:\01-604 active\160402294 design\drawing\160402294 FA.dwg
2026/06/30 4:38 PM By: WU, Michael

ORIGINAL SHEET - ANSI B

Legend

Notes

PRELIMINARY
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Stantec
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300 - 1331 Clyde Avenue
Ottawa ON
Tel. 613.722.4420
www.stantec.com

Client/Project
MATTAMY HOMES LTD.
WATERIDGE BLOCK 12
OTTAWA, ON

Figure No.
1.0

Title
FIRE HYDRANT COVERAGE SKETCH

June 2026
160402294

Appendix B Wastewater Servicing

B.1 Background Report Excerpts

CANADA LANDS COMPANY
SOCIÉTÉ IMMOBILIÈRE DU CANADA

REPORT
Project: 118863-5.2.2

DESIGN BRIEF
WATERIDGE VILLAGE AT ROCKCLIFFE PHASE 2B

Prepared for CANADA LANDS COMPANY
by IBI GROUP
APRIL 2019

3 Wastewater Disposal

3.1 Existing Conditions

The existing wastewater collection system for the Wateridge Village at Rockcliffe property consists of the new Phase 1A and 1B sanitary sewers together with the remaining older combined sewers not already impacted by the re-development of the property. All wastewater flow from the former air base development was directed to the Ottawa Interceptor Sewer (IOS). That sewer is a 2.4 mm diameter trunk facility which bisects the Rockcliffe site about 40 meters below ground. The IOS is a large combined sewer which services a large portion of the City of Ottawa.

Combined wastewater flow from the former development was directed to the IOS via one of two existing connections. **Figure 1.5** shows the existing wastewater network in and around the subject site. Prior to the re-development of the Rockcliffe Base site, generally wastewater flow from lands located west of Codd's Road was directed to the IOS sewer via the Air Base and Alvin Heights pull-back sewers. Wastewater flows east of Codd's Road were routed and connected to the IOS via the RCAF pull back sewer.

There are also three external areas which pass wastewater flows through the CLC lands and also outlet to the IOS. The Montfort Hospital is located adjacent to and immediately southwest of the CLC property. Sanitary wastewater flow from the hospital outlets to an existing combined sewer located near the west portion of the CLC lands which in turn outlets to the Air Base Pull back sewer and the Alvin Heights sewer. That pull back sewer system will remain in service and will not be impacted by the early phases of development of Wateridge Village, including Phases 2A and 2B.

The National Research Council (NRC) campus abuts the CLC property to the east. Combined wastewater from the NRC campus was previously collected in a 750 mm diameter combined sewer and routed through the CLC property to the NRC Shaft at the IOS. In 2017, the NRC completed a sewer separation plan and the 750 mm diameter sewer is no longer in service. Therefore, the development of Phases 2A and 2B will not impact the NRC outlet sewer.

The Thorncliffe Community is located south of the Wateridge Village at Rockcliffe site. Wastewater from the community was originally routed in a dedicated sanitary sewer through the CLC property and connected to the IOS combined sewer at the Codd's Road Shaft which is located near the middle of the property. The Thorncliffe Village Sanitary sewer was intercepted by Phase 1 development and the wastewater flows from the Thorncliffe Village as well as Phases 1A and 1B are re-routed to the IOS sewer via the Codd's Road Shaft. The Codd's Road Shaft location is indicated on **Figure 1.5**. This connection to the Interceptor Outfall Sewer was added in 1991 as part of the development of the Thorncliffe Village community and subsequently upgraded as part of Phase 1A.

3.2 Master Servicing Study

Canada Lands Company completed a Community Design Plan (CDP) in 2015. To support that plan, a number of technical reports were prepared including the 'Former CFB Rockcliffe Master Servicing Study, August, 2015' (MSS). That report recommended that the existing combined sewers on the subject site be abandoned in favour of dedicated sanitary and storm sewer systems.

In particular, the MSS recommended that future wastewater flow from Phase 2B be directed to the Codd's Road Shaft. Accordingly, wastewater flows from the subject site will be designed to outlet to that location. The previous Phase 1A design included the new connection to that shaft and the proposed Phase 2B sanitary sewers will connect to the Phase 1B system. For reference, a copy of Figure 5.1, Recommended Wastewater Plan, from the MSS document is included in **Appendix C**.

The current Phase 2B design along Tawadina Road includes one minor change to the wastewater plan shown on **Figure 5.1**. The Phase 2B wastewater plan includes a local sewer in Tawadina Road between nodes 314A and 201A where there were no sanitary sewers identified in that location in the MSS report. The reason for the change is that there is now a possibility that an on-street housing product, which would require a nearby local sewer, may be included in the development proposals in this location.

3.3 Design Criteria

The City of Ottawa recently revised its wastewater design criteria in 2018. The MSS Report, which was completed in 2015, recommended that the wastewater system proposed for the re-development of the Rockcliffe Airbase site be designed with the City's criteria in effect in 2015. However, because of the recent changes, the Phase 2B sanitary sewers are proposed to be designed with the current criteria. Table 3.1 shows a comparison of the two criteria. Because the new criteria predicts less wastewater flows, the existing downstream sewers will have sufficient capacity for predicted flows from Phase 2B.

Table 3.1 – Comparison of City of Ottawa Wastewater Criteria

	CITY OF OTTAWA DESIGN CRITERIA	
	PRE 2018	2018
Minimum Velocity	0.60 m/s	0.60 m/s
Maximum Velocity	3.00 m/s	3.00 m/s
Roughness Coefficient	0.013	0.013
Average Residential Flow	350 l/c/r	280 l/c/d
Residential Peaking Factor	Harmon (2.00 – 4.00)	Harmon (0.60)
Commercial Flow	50,000 l/ha/d	27,000 l/ha/d
Institutional Flow	50,000 l/ha/d	23,000 l/ha/d
Commercial/Institutional Peaking Factor	1.5	1.5
Infiltration Rate	0.28 l/s/ha	0.33 l/s/ha

Minimum allowable slopes as listed below remain unchanged:

DIAMETER (mm)	SLOPE (%)
250	0.240
300	0.186
375	0.140
450	0.111
525 and larger	0.100

Where practical and where there are less than 10 residential connections, the first lengths of sanitary sewers are designed as 250 mm diameter pipes with a minimum slope of 0.65%.

The population densities identified in the CFB Rockcliffe MSS are:

- Single Family Units 3.4 ppu

- Semi Detached Units 2.7 ppu
- Freehold Townhouses 2.7 ppu
- Apartments 1.8 ppu

3.4 Proposed Wastewater Plan

The recommended wastewater plan for Phase 2B is shown on **Figure 3.1** which is included in **Appendix C**. All wastewater flows will be directed and connected to the Phase 1B sewers. In accordance with the MSS report, the Phase 2B sanitary sewer will be oversized to provide capacity for future developments within the CLC property including Phase 2C and part of Phase 2D. All sanitary sewers proposed for the current phases will be 250 mm diameter.

3.5 Local Extraneous Flows

Ground water levels are expected to be in a clay or rock stratum. All new sanitary sewers will be tested to the City of Ottawa standards prior to being put into service. For the subject site, there are no unusual local conditions that are expected to contribute to extraneous flows that are higher than those noted in the City's guidelines.

3.6 Wastewater Outlet

As stated above, the wastewater outlet for the subject site will be the Ottawa Interceptor Sewer. That sewer bisects the CLC property and previously accepted combined flows from the site and wastewater from the Thorncliffe Village Community. The Phase 1A and 1B wastewater plan included new local sewers that were routed to the reconstructed Codd's Road Shaft. Wastewater flows from Phase 2B are proposed to connect to the upper reaches of the Phase 1B sewer system.

3.7 Sewer Calculations

Detailed sewer design spreadsheets, using MOE and City design criteria, together with Sanitary Drainage Area Plan Drawing 118863-400 are included in **Appendix C**. In accordance with the recommendations of the MSS document, wastewater flows from the Phase 2B site will be routed to the IOS trunk sewer via the Phase 1B sewers. The Phase 2B sanitary sewers will also provide capacity for future phases of development including 2C and a part of Phase 2D. Those external areas are identified on the Drainage Area Plans, and relevant design elements for these external areas, such as areas and population estimates, were interpreted from the MSS document.

3.8 Environmental Constraints

There are limited environmental constraints for the development of Phase 2B. Any SAR vegetation will be protected on defined park blocks such as Block 4 and 9. Other than scattered road side ditches remaining from the former airbase development, there are no significant water courses on the subject site which will be impacted by the development of Phase 2B.

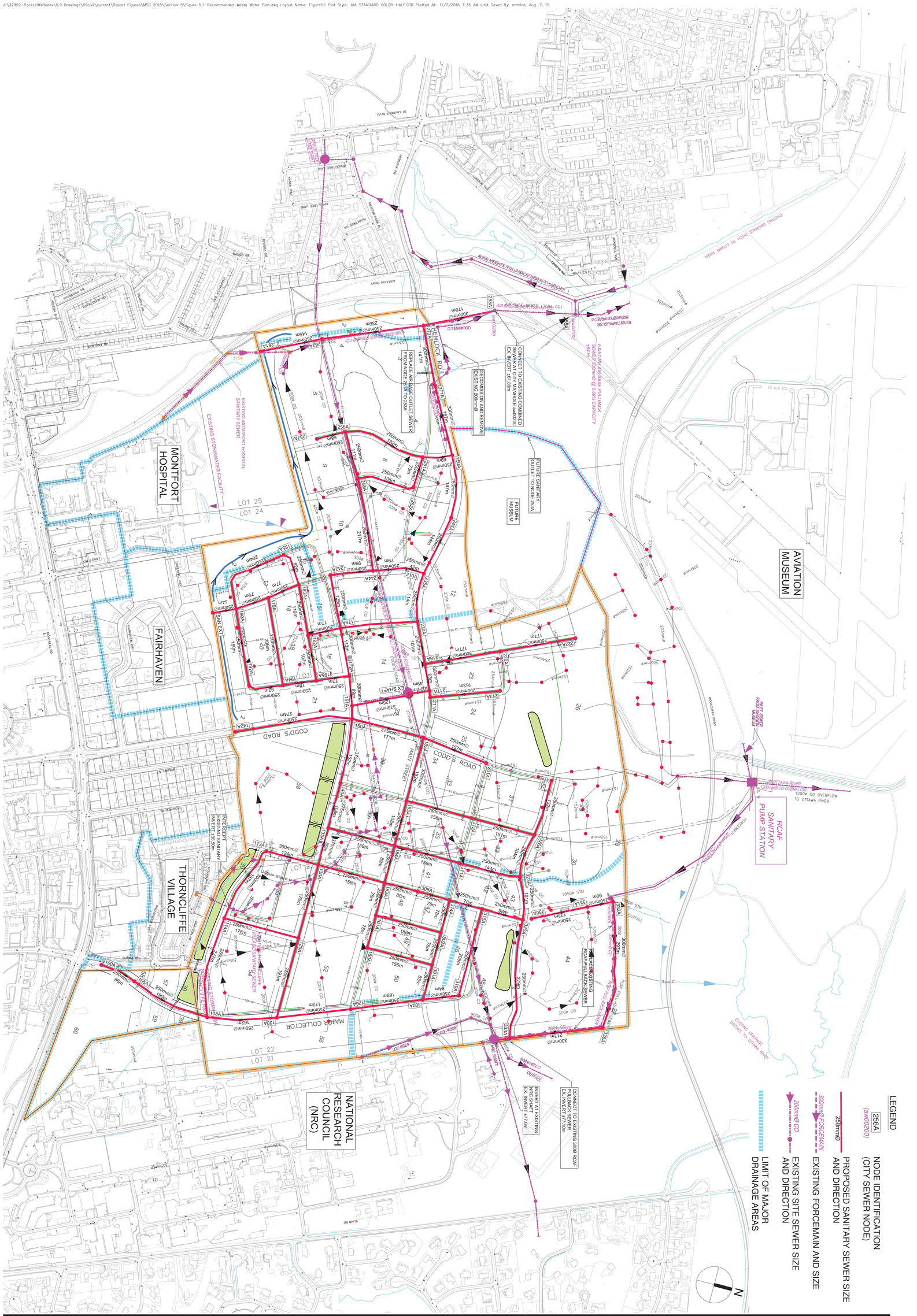
3.9 Emergency Overflow

All wastewater flows from the Wateridge Village at Rockcliffe site, including Phase 2B, are proposed to be directed to their outlets by gravity. Therefore, no pumping stations and related emergency overflows are needed for this development.

APPENDIX C

- **Figure 5.1 – Recommended Wastewater Plan (MSS)**
- **Figure 3.1 – Recommended Wastewater Plan**
- **Sanitary Sewer Design Sheets**
- **Sanitary Drainage Area Plans - Drawings 118863-400**

J:\32952-RockcliffeRedev\5.9 Drawings\59civil\current\Report Figures\MSS 2015\Section 5\Figure 5.1-Recommended Waste Water Plan.dwg Layout Name: Figure5.1 Plot Style: AIA STANDARD COLOR-HALF.CTB Plotted At: 11/7/2016 7:35 AM Last Saved By: mmline, Aug. 7, 15



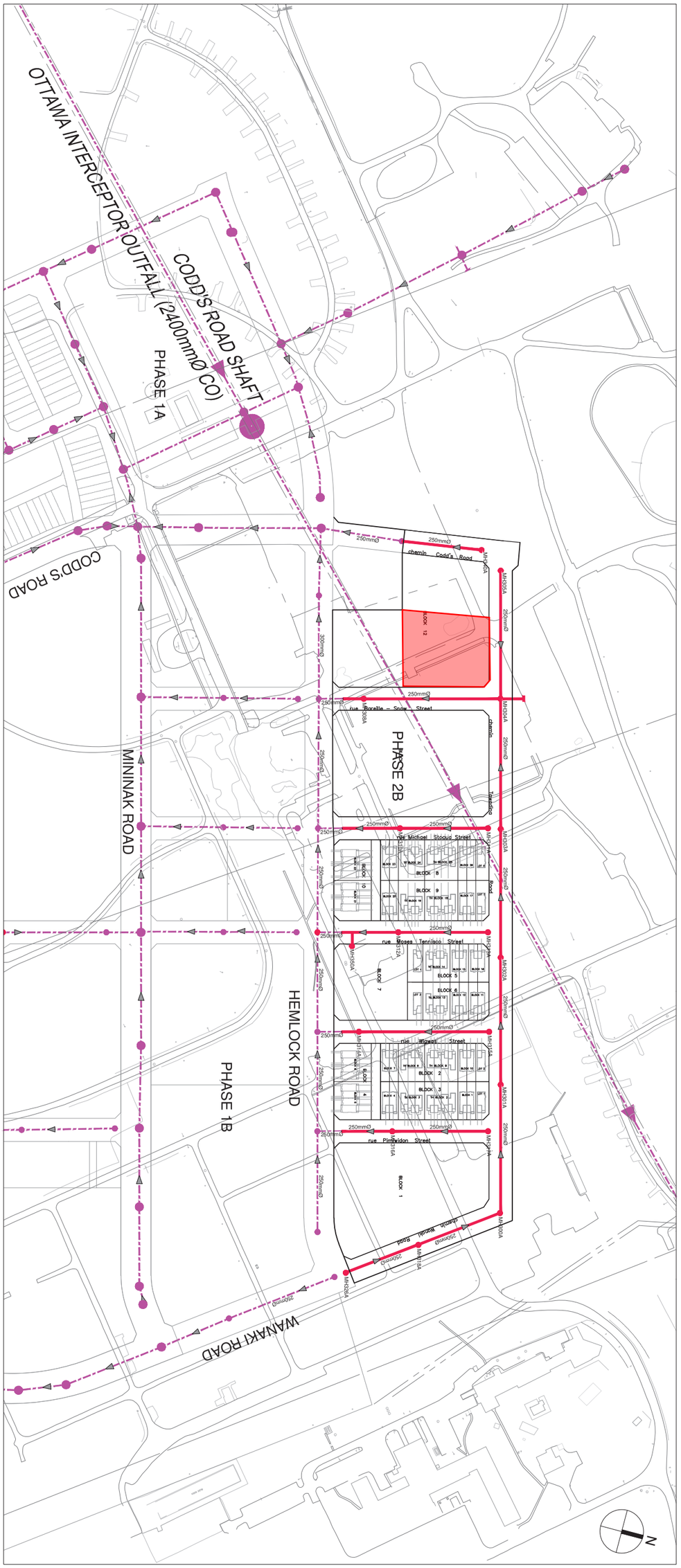
LEGEND

- 256A (aw00200) — NODE IDENTIFICATION (CITY SEWER NODE)
- 250mmØ — PROPOSED SANITARY SEWER SIZE AND DIRECTION
- 300mmØ FORCEMAIN — EXISTING FORCEMAIN AND SIZE
- 200mmØ CO — EXISTING SITE SEWER SIZE AND DIRECTION
- LIMIT OF MAJOR DRAINAGE AREAS

Sheet No.	Drawing Title	Project Title	Scale
FIGURE 5.1	RECOMMENDED WASTEWATER PLAN	FORMER CFB ROCKCLIFFE MASTER SERVICING STUDY	0 100 200

IBI

J:\118863_Wtridge2A2B\5.9 Drawings\59civil\current\Design Brief\Figure 3.1 Recommended Wastewater Plan.dwg Layout Name: FIGURE 3.1 Plot Style: AIA STANDARD COLOR-HALF.CTB Plot Scale: 1:0.969 Plotted At: 4/16/2019 12:09 PM Last Saved By: mmilne Last Saved At: Apr. 16, 19



LEGEND

EXISTING SEWER AND DIRECTION

PROPOSED SANITARY SEWER SIZE AND DIRECTION

Sheet No.	Drawing Title	Project Title	Scale
FIGURE 3.1	RECOMMENDED WASTEWATER PLAN	DESIGN BRIEF WATERIDGE VILLAGE AT ROCKCKIFFE PHASE 2B	0 100 200

IBI

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400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
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LEGEND
MH231A Existing infrastructure (shown for information only)

SANITARY SEWER DESIGN SHEET

Wateridge at Rockcliffe - Phase 2B
City of Ottawa
Canada Lands Company

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN						
				AREA w/ Units (Ha)	UNIT TYPES				AREA w/o Units (Ha)	POPULATION		RES PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)						ICI PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)		FLOW				CAPACITY	LENGTH	DIA	SLOPE	VELOCITY (full)	AVAILABLE CAPACITY	
														INSTITUTIONAL		COMMERCIAL		INDUSTRIAL																
STREET	AREA ID	FROM MH	TO MH		SF	SD / TH/F	TH/S	APT		IND	CUM			IND	CUM	IND	CUM	IND	CUM			IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(m/s)	L/s	(%)
Pimiwidon Street	MH317-1, MH317-2	MH317A	MH316A	1.50	1	104				284.2	284.2	3.47	3.20	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.50	1.50	0.50	0.00	0.00	3.69	41.62	83.50	250	0.45	0.821	37.93	91.13%
Pimiwidon Street	MH316A	MH316A	BULK202AN	0.16		1				2.7	286.9	3.47	3.23	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.16	1.66	0.55	0.00	0.00	3.77	41.62	43.56	250	0.45	0.821	37.84	90.93%
Pimiwidon Street	-	*BULK202AN*	*MH202A*							*0.0*	*286.9*	*3.47*	*3.23*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*1.00*	*0.00*	*0.00*	*1.66*	*0.55*	*0.00*	*0.00*	*3.77*	*40.68*	*21.00*	*250*	*0.43*	*0.803*	*36.91*	*90.72%*
Wigwas Street	MH315A	MH315A	MH314A	0.79	2	18				55.4	55.4	3.64	0.65	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.79	0.79	0.26	0.00	0.00	0.92	50.02	113.00	250	0.65	0.987	49.10	98.17%
Wigwas Street	MH314A	MH314A	BULK203AN	0.06						0.0	55.4	3.64	0.65	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.06	0.85	0.28	0.00	0.00	0.93	80.17	15.00	250	1.67	1.582	79.24	98.83%
Wigwas Street	-	*BULK203AN*	*MH203A*							*0.0*	*55.4*	*3.64*	*0.65*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*1.00*	*0.00*	*0.00*	*0.85*	*0.28*	*0.00*	*0.00*	*0.93*	*80.17*	*21.00*	*250*	*1.67*	*1.582*	*79.24*	*98.83%*
Moses Tennisco Street	MH313A	MH313A	MH312A	0.66	2	16				50.0	50.0	3.65	0.59	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.66	0.66	0.22	0.00	0.00	0.81	75.98	78.00	250	1.50	1.500	75.17	98.93%
Moses Tennisco Street	MH312A, PARK	MH312A	BULK204AN	0.21		2				5.4	55.4	3.64	0.65	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.21	0.87	0.29	0.00	0.00	0.94	89.90	48.98	250	2.10	1.774	88.96	98.95%
Park	PARK	MH350A	pipe	0.42						0.0	0.0	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.42	0.42	0.14	0.00	0.00	0.14	48.39	11.00	200	2.00	1.492	48.25	99.71%
Moses Tennisco Street	-	*BULK204AN*	*MH204A*							*0.0*	*55.4*	*3.64*	*0.65*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*1.00*	*0.00*	*0.00*	*0.87*	*0.29*	*0.00*	*0.00*	*0.94*	*89.90*	*21.00*	*250*	*2.10*	*1.774*	*88.96*	*98.95%*
Michael Stoqua Street	MH311A	MH311A	MH310A	0.44	1	9				27.7	27.7	3.69	0.33	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.44	0.44	0.15	0.00	0.00	0.48	70.74	78.00	250	1.30	1.396	70.26	99.33%
Michael Stoqua Street	MH310A	MH310A	BULK205AN	0.21		2				5.4	33.1	3.68	0.39	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.21	0.65	0.21	0.00	0.00	0.61	66.24	48.95	250	1.14	1.307	65.63	99.08%
Michael Stoqua Street	-	*BULK205AN*	*MH205A*							*0.0*	*33.1*	*3.68*	*0.39*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*1.00*	*0.00*	*0.00*	*0.65*	*0.21*	*0.00*	*0.00*	*0.61*	*66.24*	*21.00*	*250*	*1.14*	*1.307*	*65.63*	*99.08%*
Wanaki Road	MH200A	MH200A	MH318A							0.0	0.0	3.80	0.00	0.00	0.00	1.01	1.01	0.00	0.00	1.50	0.49	1.01	1.01	0.33	0.00	0.00	0.82	43.91	68.65	250	0.50	0.867	43.09	98.12%
Wanaki Road	MH318A	MH318A	MH300A							0.0	0.0	3.80	0.00	0.00	0.00	0.95	1.96	0.00	0.00	1.50	0.95	0.95	1.96	0.65	0.00	0.00	1.60	43.87	76.95	250	0.50	0.866	42.27	96.35%
Tawadina Road	MH300A	MH300A	MH301A	0.47		15				40.5	40.5	3.67	0.48	0.00	0.00	0.00	1.96	0.00	0.00	1.50	0.95	0.47	2.43	0.80	0.00	0.00	2.24	31.02	110.00	250	0.25	0.612	28.78	92.79%
Tawadina Road	MH301A	MH301A	MH302A	0.54		14				37.8	78.3	3.62	0.92	0.00	0.00	0.00	1.96	0.00	0.00	1.50	0.95	0.54	2.97	0.98	0.00	0.00	2.85	58.86	110.00	250	0.90	1.162	56.00	95.16%
Tawadina Road	MH302A	MH302A	MH303A	0.26		2				5.4	83.7	3.61	0.98	0.00	0.00	0.00	1.96	0.00	0.00	1.50	0.95	0.26	3.23	1.07	0.00	0.00	3.00	73.41	112.50	250	1.40	1.449	70.41	95.92%
Tawadina Road	MH303A	MH303A	MH304A	0.21						0.0	83.7	3.61	0.98	0.00	0.00	0.00	1.96	0.00	0.00	1.50	0.95	0.21	3.44	1.14	0.00	0.00	3.07	31.02	111.99	250	0.25	0.612	27.95	90.11%
Tawadina Road	MH305A	MH305A	MH304A	0.24						0.0	0.0	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.24	0.24	0.08	0.00	0.00	0.08	50.02	111.50	250	0.65	0.987	49.94	99.84%
Bareille-Snow Street	EXT-1	BULK304AN	MH304A	7.35				905		1629.0	1629.0	3.12	16.49	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	7.35	7.35	2.43	0.00	0.00	18.91	31.02	20.00	250	0.25	0.612	12.11	39.04%
Bareille-Snow Street	MH304A-1, MH304A-2	MH304A	MH308A	1.47				190		342.0	2054.7	3.06	20.38	0.00	0.00	0.00	1.96	0.00	0.00	1.00	0.64	1.47	12.50	4.13	0.00	0.00	25.14	31.02	119.13	250	0.25	0.612	5.87	18.94%
Bareille-Snow Street	MH308A	MH308A	BULK206AN	0.07						0.0	2054.7	3.06	20.38	0.00	0.00	0.00	1.96	0.00	0.00	1.00	0.64	0.07	12.57	4.15	0.00	0.00	25.17	88.83	17.00	250	2.05	1.753	63.66	71.67%
Bareille-Snow Street		BULK206AN	MH206A							0.0	2054.7	3.06	20.38	0.00	0.00	0.00	1.96	0.00	0.00	1.00	0.64	0.00	12.57	4.15	0.00	0.00	25.17	88.83	21.00	250	2.05	1.753	63.66	71.67%
Codd's Road	MH340A	MH340A	BLK231AN	1.78				278		500.4	500.4	3.38	5.48	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.78	1.78	0.59	0.00	0.00	6.07	75.98	70.00	250	1.50	1.500	69.91	92.01%
Codd's Road	*MH231A*	*MH231A*	*BULK176AN*							*0.0*	*500.4*	*3.38*	*5.48*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*1.00*	*0.00*	*0.00*	*1.78*	*0.59*	*0.00*	*0.00*	*6.07*	*83.92*	*50.22*	*250*	*1.83*	*1.656*	*77.86*	*92.77%*

Design Parameters:

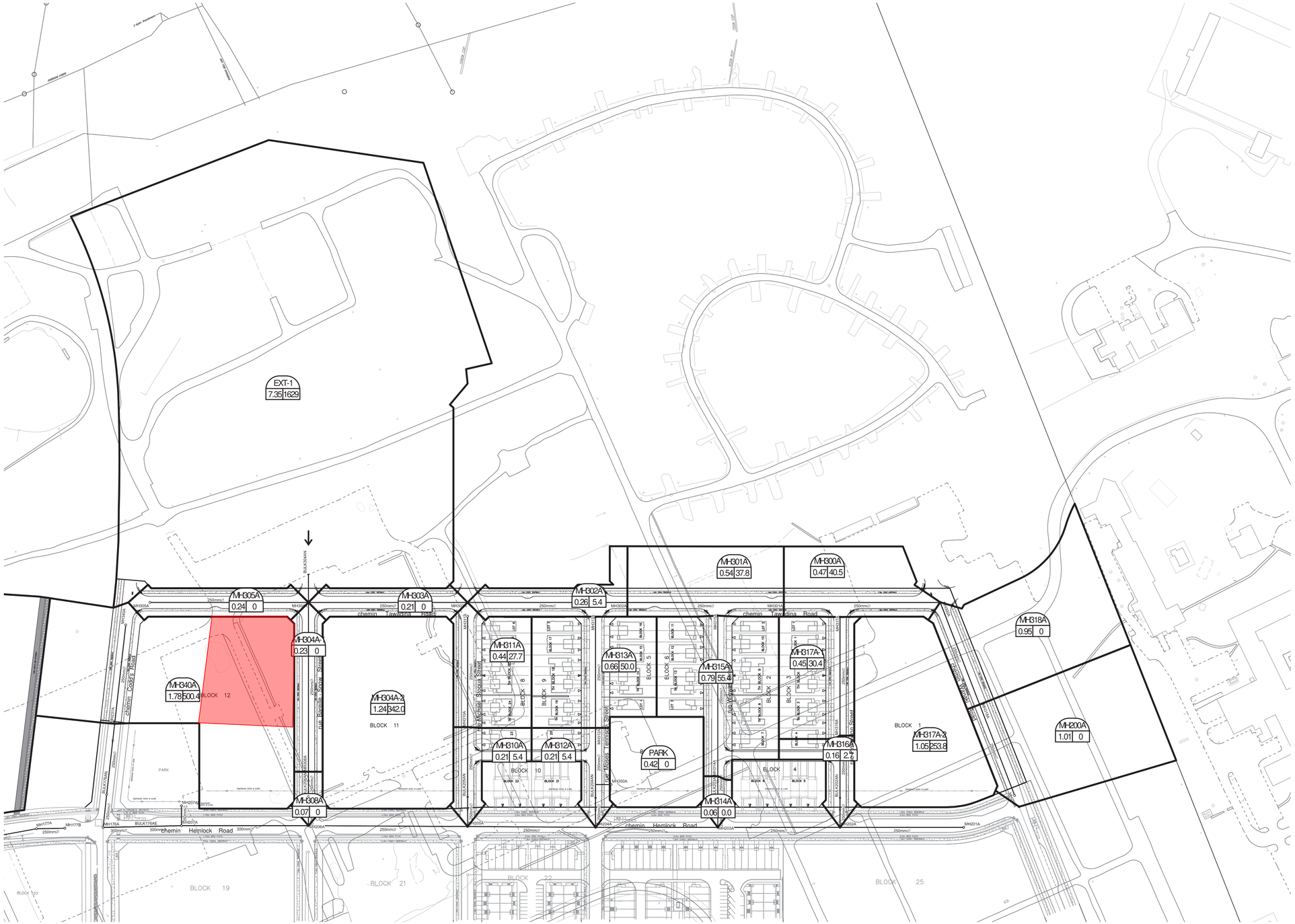
Residential			ICI Areas			
SF	3.4	p/p/u				
TH/F/SD	2.7	p/p/u	INST	28,000	L/Ha/day	
TH/S	2.3	p/p/u	COM	28,000	L/Ha/day	
APT	1.8	p/p/u	IND	35,000	L/Ha/day	MOE Chart
Other	60	p/p/Ha		17000	L/Ha/day	

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day 200 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
Harmon Formula = 1+(14/(4+(P/1000)^0.5))0.8
where K = 0.8 Correction Factor
5. Commercial and Institutional Peak Factors based on total area,
1.5 if greater than 20%, otherwise 1.0

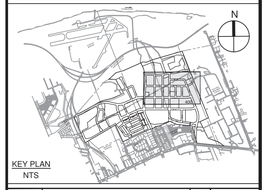
Designed: KH
Checked: JIM
Dwg. Reference: 118863-400

No.	Revision	Date
1	Submission No. 1 for City Review	2018-12-20
2	Submission No. 2 for City Review	2019-03-15
3	MECP Submission	2019-04-17

File Reference: 118863.5.7.1
Date: 2019-04-17
Sheet No: 1 of 1



SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS



KEY PLAN
NTS

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4			
3	MECP SUBMISSION	J.I.M.	2019/04/17
2	SUBMISSION NO. 2 FOR CITY REVIEW	J.I.M.	2019/03/15
1	SUBMISSION NO. 1 FOR CITY REVIEW	J.I.M.	2018/12/20

CANADA LANDS COMPANY
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Project Title

WATERIDGE VILLAGE AT ROCKCLIFFE

PHASE 2B

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
2019/04/17
PROVINCE OF ONTARIO

N

Drawing Title

SANITARY DRAINAGE AREA PLAN

Scale: 1:1500

Design	Date
K.H./S.T.	DECEMBER 2018
Drawn	Checked
M.M.	J.I.M.
Project No.	Drawing No.
118863	400

D07-16-15-0003

#17063

J:\118863_Wridge2428\3.0 Drawings\3Dc\a\Layouts\400 SANITARY.dwg Layout Name: 400 Plot Style: AIA STANDARD-FULL.CTB Plot Scale: 1:50.8 Plotted At: 4/17/2019 10:19 AM Last Saved By: MMLNE Last Saved At: Apr 16, 19

B.2 Sanitary Sewer Design Sheet

Stantec

SUBDIVISION: **1000 Tawadina Road**

DATE: 2026-06-23
REVISION: 1
DESIGNED BY: AJ
CHECKED BY: MW

SANITARY SEWER DESIGN SHEET
(City of Ottawa)

FILE NUMBER: 160402294

DESIGN PARAMETERS

MAX PEAK FACTOR (RES.)=	4.0	AVG. DAILY FLOW / PERSON	280 l/p/day	MINIMUM VELOCITY	0.60 m/s
MIN PEAK FACTOR (RES.)=	2.0	COMMERCIAL	28,000 l/ha/day	MAXIMUM VELOCITY	3.00 m/s
PEAKING FACTOR (INDUSTRIAL):	2.4	INDUSTRIAL (HEAVY)	55,000 l/ha/day	MANNINGS n	0.013
PEAKING FACTOR (ICI >20%):	1.5	INDUSTRIAL (LIGHT)	35,000 l/ha/day	BEDDING CLASS	B
PERSONS / 1 BEDROOM	1.4	INSTITUTIONAL	28,000 l/ha/day	MINIMUM COVER	2.50 m
PERSONS / 2 BEDROOM	2.1	INFILTRATION	0.33 l/s/Ha	HARMON CORRECTION FACTOR	0.8
PERSONS / TOWNHOUSE	2.7				

LOCATION			RESIDENTIAL AREA AND POPULATION									COMMERCIAL		INDUSTRIAL (L)		INDUSTRIAL (H)		INSTITUTIONAL		GREEN / UNUSED		C+I+I	INFILTRATION			TOTAL	PIPE							
AREA ID NUMBER	FROM M.H.	TO M.H.	AREA	UNITS 1 BED	2 BED	TOWNHOUSE	POP.	CUMULATIVE AREA	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	PEAK FLOW	TOTAL AREA	ACCU. AREA	INFILT. FLOW	FLOW	LENGTH	DIA	MATERIAL	CLASS	SLOPE	CAP. (FULL)	CAP. V PEAK FLOW	VEL. (FULL)
			(ha)					(ha)			(l/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(l/s)	(ha)	(ha)	(l/s)	(l/s)	(m)	(mm)			(%)	(l/s)	(%)	(m/s)
R2A	SAN 2	SAN 1	0.12	0	0	6	16	0.12	16	3.71	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.12	0.12	0.0	0.2	43.3	200	PVC	SDR 35	0.40	21.1	**1.10%**	0.67
R1A	SAN 1	EX SAN	0.41	40	16	0	90	0.53	106	3.59	1.2	0.09	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.41	0.53	0.2	1.4	34.4	200	PVC	SDR 35	0.40	21.1	**6.78%**	0.67

Appendix C Stormwater Management

C.1 Background Report Excerpts

CANADA LANDS COMPANY
SOCIÉTÉ IMMOBILIÈRE DU CANADA

REPORT
Project: 118863-5.2.2

DESIGN BRIEF
WATERIDGE VILLAGE AT ROCKCLIFFE PHASE 2B

Prepared for CANADA LANDS COMPANY
by IBI GROUP
APRIL 2019

5 Stormwater Management

5.1 Background

Wateridge Phase 2B is part of the larger development referred to as the Former CFB Rockcliffe. The stormwater management strategy was outlined in the "Former CFB Rockcliffe Master Servicing Study" (MSS) (IBI Group, August 2015). Phase 2B is located between Hemlock Road and Tawadina Road (refer to **Figure 1.7**). As part of the Phase 2B development, the design of downstream Phase 2A has been completed.

The subject site is part of the drainage area that ultimately discharges to the Eastern SWM Facility. The trunk storm sewer to the pond and the pond itself were constructed as part of Wateridge Phase 1A.

5.2 Objective

The purpose of this evaluation is to prepare the dual drainage design, including the minor and major system, of Phase 2A and 2B.

The dual drainage evaluation includes assessment of the on-site detention versus cascading major flow, maximum depth and velocity of flow on the street segments, sizing of inlet control devices and hydraulic grade line analysis.

The design takes into consideration the August 2015 MSS, the "Design Brief Wateridge Village at Rockcliffe Phase 1B" (IBI Group, June 2017), the "Design Brief Wateridge Village at Rockcliffe Phase 1A" (IBI Group, April 2016), the City of Ottawa Sewer Design Guidelines (OSDG) (October 2012), and the February 2014 Technical Bulletin ISDTB-2014-01.

5.3 Stormwater Management Design

The site was designed with dual drainage features, accommodating minor and major system flow. Minor flow will be conveyed through storm sewer connections to the existing trunk storm sewer to the Eastern SWM Facility. There are multiple major flow outlets, outlined in detail this section.

5.3.1 Dual Drainage System

Due to the flat topography of the majority of street segments within the site, on-site detention is available to facilitate ponding in street sags (see **Drawings 600** and **601**). Inlet control devices (ICDs) are proposed to minimize the surcharge in the minor system during infrequent storm events and maximize use of available on-site storage. The minor system capture of ICDs is generally based on the 5 year simulated flow for individual catchments, consistent with the MSS. The balance of the surface flow not captured by the minor system will be conveyed via the major system.

The dual drainage system has been evaluated using the DDSWMM hydrological model, while the minor system hydraulic grade line analysis has been evaluated using the XPSWMM dynamic model and is discussed in **Section 5.5**.

Street segments

As noted, the site includes a combination of continuous and saw-tooth road grade pattern. The saw-tooth road grade pattern is based on maximum 350 mm separation between the low point at the catchbasin and the high overflow point at the downstream end of the segment. Inflow into the minor system will be controlled by ICDs to meet the flow allowance of the downstream system. **Table 5-3** indicates whether a street segment is continuous or sawtoothed.

Further details regarding the street segment minor and major system design are presented in **Section 5.4.2**.

Rear yards

Rear yards have minor system inflow restriction with major flow cascading to a street segment. ICDs will control the inflow into the minor system from rear yards. Further discussion regarding the rear yard minor and major system design is presented in **Section 5.4.2**.

Development Blocks

Development blocks have minor system inflow restriction with major flow cascading to a street segment. At the time of detailed design of each block, the developer's engineering consultant will be required to limit the minor system inflow in accordance with **Table 5-2**.

External Areas

Areas external to Phase 2B considered in this design submission are downstream Phase 2A. Phase 2A has been modeled at a detailed level,

Phases 2C and 2D have been included at a semi-lumped level, with minor system inflow taken as the 5 year simulated flow and an on-site storage unit rate comparable to that of Phase 2B. Minor flow will be conveyed to the Eastern SWM Facility via a future storm sewer. Major flow from the majority of the area is tributary to the future park dry pond in Phase 2D (identified as the Eastern Dry Pond in the MSS). Major flow from the remainder area will cascade north.

Summary of dual drainage design

The sewer design and rational method spreadsheet for the subject site for the 5 year storm event is enclosed in **Appendix D** (and corresponding drainage areas indicated on **Drawing 500**). The rational method design indicates that the 5 year rational flow for local roads is conveyed to the storm sewer under free flow conditions. For the subject site, ICD sizing has been based on a 5 year level of service for all local streets and development blocks, consistent with the MSS.

With respect to the minor system, runoff from Phase 2B is conveyed to the pond via the existing storm sewer on Hemlock Road (itself tributary to the trunk storm sewer on Ooshedinaw Street). Runoff from Phase 2A is conveyed to the Eastern SWM Facility via the existing trunk storm sewer on Ooshedinaw Street.

The minor system inflow was increased above the 5 year in some locations to satisfy downstream major system constraints, as summarized in **Table 5-3**.

Major flow from the majority of Phase 2B is tributary to Phase 1B. The exception is the eastern half of Tawadina Street, which cascades overland to the future park dry pond in Phase 2D (identified as the Eastern Dry Pond in the MSS). Major flow from the majority of Phase 2A is conveyed north on Ooshedinaw Street towards Kishkabika Park. Major flow from the blocks west of Ooshedinaw Street drains west.

As part of the stormwater evaluation, where major flow from Phases 2A and 2B enters existing development, the surface conveyance of flow was evaluated and is reported in **Tables 5.6 and 5.7**.

5.4 Hydrological Analysis

Hydrological analysis of the proposed dual drainage system of the subject site was conducted using DDSWMM. This technique offers a single storm event flow generation and routing. Land use, selected modeling routines, and input parameters are discussed in the following sections. A drainage area plan is presented in **Drawing 750** and the model files are included in **Appendix F**.

The double routing method noted above, and applied to DDSWMM, is a recommended double routing method presented within the February 2014 City of Ottawa Technical Bulletin.

The dummy segments for major system routing were applied to the analysis of the subject site. The segments are referenced as D1, D2, D3, etc. within the DDSWMM modelling file. The DDSWMM schematic presented in **Drawing 750** does not show the dummy segments, but DDSWMM computer output file shows the dummy segments immediately following the corresponding major segment which cascades into that dummy segment.

Street segments

Where surface storage is available, the storage-outflow characteristics for each low point were taken into consideration. The evaluation was undertaken assuming static conditions. The ponding plan for the subject site is presented on **Drawings 600** and **601**.

For continuous grade profiles, the computer simulations were based on the approach-capture characteristics of the catchbasin with the constraint that during the critical storms the maximum cascading flow would not exceed 350 mm.

Rear yards

Rear yards were considered independently of street segments. DDSWMM simulations were based on the total interception of runoff by the storm inlets. This was done by specifying a one-to-one relationship between approach flow and capture flow. No storage volume was accounted for in rear yards. Overflow from the rear yards cascades to a major system road segment via swales.

Development blocks

Development blocks were considered independently. As previously noted, DDSWMM simulations were generally based on a minor system capture between the 5 and 100 year, with major flow cascading to an adjacent street segment. No on-site storage has been assumed.

The below table summarizes the main hydrological parameters used in the DDSWMM model. The storm drainage area plan (**Drawing 750**) is provided in **Appendix F**, along with the model files.

Table 5-2 Hydrological Parameters

DRAINAGE AREA ID	AREA (HA)	D/S SEGMENT ID	XPSWMM NODE ID	IMP RATIO [TP (H)]	SEGMENT LENGTH (M)	SUBCATCHMENT WIDTH (M)	AVAILABLE STATIC PONDING (M^3)
Phase 2B							
B326	1.57	S318	MH326	0.86	181	363	0[(1)]
S326	0.152	S318	MH326	0.71	76	153	0
S318	0.132	EXTA	MH318	0.71	66	132	0
S317A	0.034	S300	MH317	0.66	38	38	0.02
S300	0.149	EXTA	MH300	0.71	71	141	6.41
S317	0.059	S301	MH317	0.66	38	38	0.02
S301	0.13	S302	MH301	0.71	73	145	0
S315A	0.038	S302	MH315	0.66	23	23	0.82
S315	0.028	S302	MH315	0.66	23	23	0.05
S302	0.13	EXTA	MH302	0.71	86	172	0
S313	0.107	EXTA	MH313	0.66	31	62	12.65

DRAINAGE AREA ID	AREA (HA)	D/S SEGMENT ID	XPSWMM NODE ID	IMP RATIO [TP (H)]	SEGMENT LENGTH (M)	SUBCATCHMENT WIDTH (M)	AVAILABLE STATIC PONDING (M^3)
B317	1.054	S201B	MH317	0.86	123	245	0[1]
S316B	0.063	S316A	MH316	0.66	63	63	0
S316A	0.132	S202A	MH316	0.66	57	114	4.61
R315	0.413	S314B	MH315	0.41	94	187	0
S315B	0.233	S314A	MH315	0.66	60	120	0
S314B	0.07	S314A	MH314	0.66	96	96	0
S314A	0.366	S203A	MH314	0.66	122	243	15.48
R313	0.289	S312C	MH313	0.41	66	133	0
P312	0.442	S312A	MH312	0.14	56	112	0
S312B	0.036	S312A	MH312	0.66	19	19	0
S312A	0.19	DS212[4]	MH312	0.66	102	204	29.27
R311	0.449	S310B	MH311	0.41	94	188	0
S311A	0.179	S310A	MH311	0.66	60	119	0
S310B	0.07	S310A	MH310	0.66	97	97	0
S310A	0.305	DS210[4]	MH310	0.66	115	230	61.39
S302A	0.151	S303	MH302	0.71	63	126	0
S311	0.039	S303	MH311	0.66	24	24	0.24
S303	0.179	S308	MH303	0.71	84	167	28.17
S304	0.18	S309	MH304	0.71	115	229	1.58
S309	0.1	S308	MH309	0.71	65	131	0
S308	0.106	S308A	MH308	0.71	53	106	0
S308A	0.139	DS208[4]	MH308	0.71	53	106	40.38
B309	1.238	S308A	MH309	0.86	135	270	0[1]
S312C	0.22	S312A	MH312	0.66	58	116	0
S316C	0.137	S316A	MH316	0.66	69	69	3.64
S300A	0.04	S301	MH300	0.71	37	37	0
S301A	0.04	S302	MH301	0.71	38	38	0
S304A	0.05	S304	MH304	0.71	49	49	0
Future Phase 2A							
S340	0.167	S231	MH305	0.71	86	171	0
B340	1.237	S207	MH305	0.86	173	346	0[1]
B340A	0.66	S176D	MH305	0.86	145	290	0[1]
S319	0.134	S176D	MH319	0.71	66	131	46.17
B319	1.024	S176D	MH319	0.86	152	304	0[1]
S320	0.166	S322	MH320	0.71	83	166	0
S322	0.164	S191A	MH322	0.71	85	171	0
B180	0.947	S190B	MH180	0.86	153	306	0[1]
S190	0.168	S190B	MH190	0.71	88	176	0
S190A	0.103	S191B	MH190	0.71	103	103	0
S190B	0.114	S191A	MH190	0.71	113	113	0.34
S191A	0.045	S191	MH191	0.71	38	38	0
S191B	0.032	S191	MH191	0.71	26	26	0
S191	0.11	S192	MH191	0.71	55	109	0
S192	0.137	S193	MH192	0.71	49	98	0
S193	0.125	P193	MH193	0.71	39	78	5.68
P191	0.816	P193	MH191	0.00	110	219	0
P193	1.941	DESWM2[5]	MH193	0.14	297	594	0
B180A	0.552	DNCC[6]	MH180	0.86	121	241	0[1]

DRAINAGE AREA ID	AREA (HA)	D/S SEGMENT ID	XPSWMM NODE ID	IMP RATIO [TP (H)]	SEGMENT LENGTH (M)	SUBCATCHMENT WIDTH (M)	AVAILABLE STATIC PONDING (M^3)
B325A	0.151	DNCC[6]	MH325	0.86	51	102	0[1]
S325	0.072	DNCC[6]	MH325	0.71	36	72	0
B325	0.16	DNCC[6]	MH325	0.86	54	107	0[1]
B191	0.761	DESWM2[5]	MH191	0.86	134	268	0[1]
P331	6.15	ESWM1[5]	EXSTMH	0.14	320	640	0
B9	0.12	S176D	MH305	0.07	151	302	0[1]
Future Phases 2C and 2D							
S305	0.3	P331	MH305	0.71	161	321	7.50[1]
EXTA	8.01	DEDP[2]	EXSTMH	0.86	901	1802	200.25[1]
EXTB	3.68	DEDP[2]	EXSTMH	0.86	414	828	0
Relevant Existing Phases 1A and 1B							
S201A1	0.08	S201B	MH201	0.71	63	63	0
S201A2	0.08	S201B	MH201	0.71	63	63	0
S201B	0.15	S202A	MH202	0.86	65	65	21.20
S202A	0.12	S203A	MH202	0.71	41	41	0
S203A	0.16	DS212	MH203	0.71	90	90	0
S204A	0.22	DS210[4]	MH204	0.71	58	115	0
S205B	0.0379	DS210[4]	MH205	0.71	13	26	0
S205C	0.148	DS208[4]	MH205	0.71	58	58	0
P207	0.32	S207	MH207	0.14	36	72	0
S231	0.22	DS142[4]	MH231	0.71	61	61	0
S207	0.22	DS142[4]	MH207	0.71	90	90	0
S176D	0.13	DS142[4]	MH176	0.76	95	95	2.60
S176E	0.09	DS142[4]	MH176	0.76	80	80	0
S206B	0.0382	DS208[4]	MH206	0.71	11	22	0
S176C	0.05	DS142[4]	MH176	0.76	40	40	1.14
S180	0.16	DNCC[6]	MH180	0.76	68	68	0

(1) Assumed ponding volume
(2) Future dry pond; major flow from a portion of EXTB will cascade north per MSS
(3) Adjustment to drainage area at interface of Phase 2B
(4) Existing Phase 1B
(5) North towards existing SWM facility
(6) West to external

Table 5-3 Minor Flow Capture

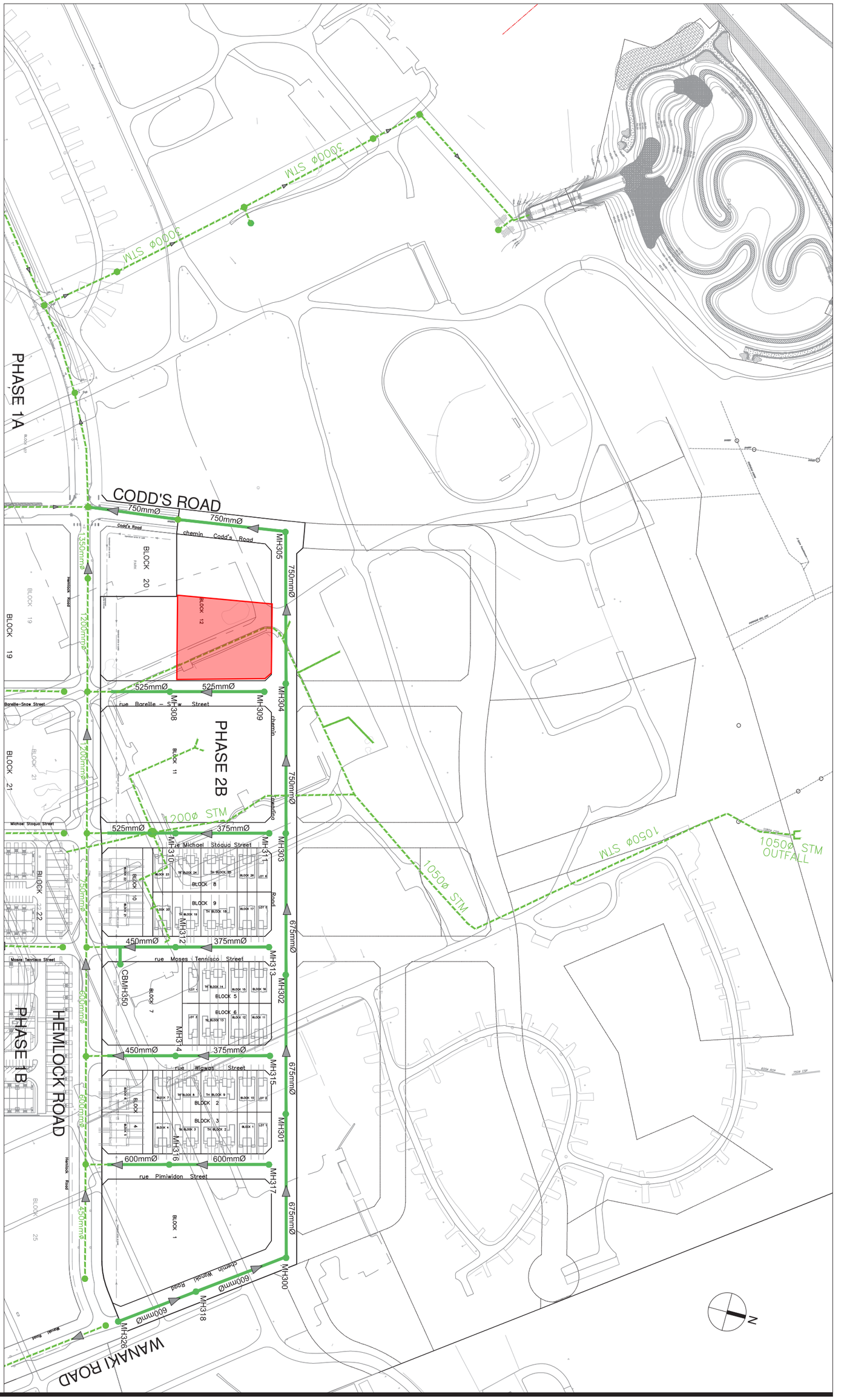
DRAINAGE AREA ID	CONTINUOUS/ SAG[1],[2]	ROAD TYPE	MINOR SYSTEM DESIGN TARGET	GENERATED FLOW ON INDIVIDUAL SEGMENT (DDSWMM SIMULATION) (L/S)	ICD (L/S)	NOTE
Phase 2B						
B326	Block	N/A	5	318	318	Minor system restriction for future development block

DRAINAGE AREA ID	CONTINUOUS/ SAG[1],[2]	ROAD TYPE	MINOR SYSTEM DESIGN TARGET	GENERATED FLOW ON INDIVIDUAL SEGMENT (DDSWMM SIMULATION) (L/S)	ICD (L/S)	NOTE
S310A	Sag	20m Row, 8.5m asphalt	5	54	107	
S302A	Continuous	20m Row, 8.5m asphalt	5	29	12	
S311	Sag	20m Row, 8.5m asphalt	5	7	19	
S303	Sag	20m Row, 8.5m asphalt	5	33	56	
S304	Sag	20m Row, 8.5m asphalt	5	35	48	
S309	Continuous	20m Row, 8.5m asphalt	5	20	12	
S308	Continuous	20m Row, 8.5m asphalt	5	19	12	
S308A	Sag	20m Row, 8.5m asphalt	5	24	52	
B309	Block	N/A	5	249	370	Minor system restriction for future development block
S312C	Continuous	20m Row, 8.5m asphalt	5	38	12	
S316C	Block	N/A	5	24	24	Minor system restriction for future development block
S300A	Block	N/A	5	8	6	Minor system restriction for future development block
S301A	Continuous	20m Row, 8.5m asphalt	5	8	6	
S304A	Block	N/A	5	10	6	Minor system restriction for future development block
Future Phase 2A						
S340	Continuous	20m Row, 8.5m asphalt	5	32	12	
B340	Rear Yard	N/A	5	257	366	
B340A	Block	N/A	5	144	204	Minor system restriction for future development block
S319	Sag	20m Row, 8.5m asphalt	5	26	38	
B319	Rear Yard	N/A	100	395	490	
S320	Continuous	20m Row, 8.5m asphalt	5	32	12	
S322	Continuous	20m Row, 8.5m asphalt	5	30	25	
B180	Block	N/A	5	200	200	Minor system restriction for future development block
S190	Continuous	20m Row, 8.5m asphalt	5	33	12	

APPENDIX D

- **Figure 6.7 – Recommended Storm Sewer System (MSS)**
- **Runoff Coefficient Calculations**
- **Figure 4.1 – Proposed Minor Storm Plan**
- **Storm Sewer Design Sheets**
- **Storm Drainage Area Plans - Drawings 118863-500**
- **Figure 4.3 – Temporary Ditch Inlet Drainage Areas and Time of Concentration Calculations**
- **Temporary Ditch Inlet Time of Concentration Calculations**
- **Temporary Ditch Inlet ICD Calculations**

J:\118863_Wtridge2A2B\5.9 Drawings\59civil\current\Design Brief\Figure 4.1 Recommended Minor Storm Plan.dwg Layout Name: FIGURE 4.1 Plot Style: AIA STANDARD COLOR-HALF.CTB Plot Scale: 1:0.969 Plotted At: 4/16/2019 12:03 PM Last Saved By: mmline Last Saved At: Apr. 16, 19



Sheet No.

FIGURE 4.1

Drawing Title

RECOMMENDED MINOR STORM PLAN

Project Title

DESIGN BRIEF
WATERIDGE VILLAGE
AT ROCKCLIFFE
PHASE 2B

Scale

0 100 200

IBI

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
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LEGEND

Black text	5 year event curve design
Blue text	100 year event curve design
MH206	Existing infrastructure (shown for information only)

STORM SEWER DESIGN SHEET

Wateridge at Rockcliffe - Phase 2B
City of Ottawa
Canada Lands Company

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW													SEWER DATA									
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.30	C= 0.40	C= 0.49	C= 0.57	C= 0.65	C= 0.66	C= 0.70	C= 0.73	C= 0.80	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	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) DIA	W	H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	(%)
Pimiwidon Street	S317A, B317	MH317	MH316							0.09			1.05	2.50	2.50	10.00	0.85	10.85	76.81	104.19	122.14	178.56		260.52				260.52	452.94	78.86	600			0.50	1.552	192.43	42.48%
Pimiwidon Street	S316A-B	MH316	BLK202N							0.33				0.61	3.11	10.85	0.74	11.59	73.70	99.92	117.11	171.17		310.34				310.34	320.28	49.00	600			0.25	1.097	9.94	3.10%
Pimiwidon Street		*BULK202N*	*MH202*											0.00	3.11	11.59	0.24	11.83	71.19	96.48	113.06	165.21		299.64				299.64	320.28	*16.00*	*600*			*0.25*	1.097	20.64	6.44%
Wigwas Street	S315, S315A-B, R315	MH315	MH314				0.41			0.31				1.13	1.13	10.00	0.99	10.99	76.81	104.19	122.14	178.56		117.46				117.46	141.68	73.88	375			0.60	1.243	24.23	17.10%
Wigwas Street	S314A-B	MH314	BULK203N							0.44				0.81	1.93	10.99	0.48	11.47	73.20	99.24	116.30	169.98		191.98				191.98	310.53	54.00	450			1.09	1.891	118.55	38.18%
Wigwas Street		*BULK203N*	*MH203*											0.00	1.93	11.47	0.18	11.64	71.60	97.04	113.71	166.18		187.73				187.73	247.07	*16.00*	*450*			*0.69*	1.505	59.34	24.02%
Moses Tennisco St	S313, R313	MH313	MH312				0.31			0.11				0.62	0.62	10.00	0.80	10.80	76.81	104.19	122.14	178.56		65.03				65.03	112.79	73.88	300			1.25	1.546	47.76	42.35%
Moses Tennisco St	S312A-C	MH312	BULK204N							0.45				0.83	1.45	10.80	0.37	11.17	73.88	100.17	117.40	171.59		145.22				145.22	400.16	54.00	450			1.81	2.437	254.94	63.71%
Park Block 7	P312	CBMH350	pipe	0.42										0.23	0.23	10.00	0.13	10.13	76.81	104.19	122.14	178.56		24.33				24.33	87.74	13.50	250			2.00	1.731	63.40	72.27%
Moses Tennisco St		*BULK204N*	*MH204*											0.00	1.68	11.17	0.11	11.28	72.60	98.41	115.33	168.56		165.66				165.66	400.16	*16.00*	*450*			*1.81*	2.437	234.50	58.60%
Michael Stoqua St	S311, S311A, R311	MH311	MH310				0.45			0.22				1.02	1.02	10.00	0.81	10.81	76.81	104.19	122.14	178.56		105.93				105.93	173.52	73.88	375			0.90	1.522	67.60	38.96%
Michael Stoqua St	S310A-B	MH310	BLK205N							0.37				0.68	1.70	10.81	0.53	11.34	73.83	100.11	117.33	171.49		169.73				169.73	279.02	53.99	450			0.88	1.700	109.29	39.17%
Michael Stoqua St		*BLK205N*	*MH205*											0.00	1.70	11.34	0.16	11.50	72.02	97.62	114.40	167.18		165.51				165.51	279.02	*16.00*	*450*			*0.88*	*1.700*	*113.50*	*40.68%*
Bareille-Snow St	S309, B309	MH309	MH308								0.10		1.24	2.95	2.95	10.00	0.74	10.74	76.81	104.19	122.14	178.56		307.62				307.62	375.37	74.73	525			0.70	1.680	67.76	18.05%
Bareille-Snow St	S308, S308A	MH308	BULK206N								0.25			0.49	3.44	10.74	0.32	11.06	74.07	100.43	117.71	172.05		345.38				345.38	536.52	46.47	525			1.43	2.401	191.14	35.63%
Bareille-Snow St		*BULK206N*	*MH206*											0.00	3.44	11.06	0.12	11.19	72.95	98.89	115.90	169.38		340.07				340.07	536.52	*17.50*	*525*			*1.43*	2.401	196.45	36.62%
Wanaki Road	B200, S200A	MH326	MH318								0.15		1.57	3.78	3.78	10.00	0.71	10.71	76.81	104.19	122.14	178.56		394.22				394.22	452.94	65.85	600			0.50	1.552	58.72	12.96%
Wanaki Road	S318	MH318	MH300								0.13			0.25	4.04	10.71	0.82	11.53	74.19	100.60	117.91	172.34		406.08				406.08	452.94	76.32	600			0.50	1.552	46.87	10.35%
Tawadina Road	S300, S300A	MH300	MH301								0.19			0.37	4.41	11.53	1.59	13.11	71.40	96.77	113.39	165.71		426.38				426.38	438.47	113.03	675			0.25	1.187	12.09	2.76%
Tawadina Road	S301, S301A	MH301	MH302								0.17			0.33	4.74	13.11	0.86	13.97	66.61	90.19	105.66	154.35		427.25				427.25	788.75	110.00	675			0.81	2.135	361.51	45.83%
Tawadina Road	S302, S302A	MH302	MH303								0.28			0.54	5.28	13.97	0.69	14.66	64.30	87.03	101.94	148.89		459.70				459.70	1,004.08	111.92	675			1.31	2.718	544.38	54.22%
Tawadina Road	S303	MH303	MH304								0.18			0.35	5.63	14.66	1.55	16.21	62.58	84.68	99.17	144.83		476.92				476.92	580.71	118.37	750			0.25	1.273	103.79	17.87%
Tawadina Road	S304, S304A	MH304	MH305								0.23			0.45	6.08	16.21	1.57	17.78	59.06	79.85	93.49	136.49		485.46				485.46	580.71	120.00	750			0.25	1.273	95.25	16.40%
Codd's Road	S340, B340, B340A	MH305	MH231								0.17		2.02	4.82	10.90	17.78	0.49	18.27	55.90	75.54	88.42	129.06		823.59				823.59	1,324.21	85.55	750			1.30	2.904	500.62	37.81%
Codd's Road	S231	MH231	*MH176*								0.12			0.23	11.14	18.27	0.45	18.72	54.99	74.29	86.96	126.92		827.38				827.38	1,218.10	71.97	750			1.10	2.671	390.72	32.08%
Block 1	-	DICB1	Pipe	1.05										0.58	0.58	61.68	0.20	61.88	24.06	32.28	37.67	54.75				31.97		31.97	62.04	14.59	250			1.00	1.224	30.07	48.47%
Block 11	-	DICB3	Pipe	1.24										0.69	0.69	81.62	0.19	81.81	19.53	26.16	30.52	44.31				30.55		30.55	62.04	13.63	250			1.00	1.224	31.49	50.76%
Block 12	-	DICB4	Pipe	1.24										0.69	0.69	80.96	0.23	81.19	19.65	26.32	30.70	44.58				30.74		30.74	60.47	16.78	250			0.95	1.193	29.73	49.17%
Block 8	-	DICB5	Pipe	0.66										0.37	0.37	28.47	0.15	28.62	41.47	55.87	65.32	95.20				34.93		34.93	62.04	11.20	250			1.00	1.224	27.11	43.69%

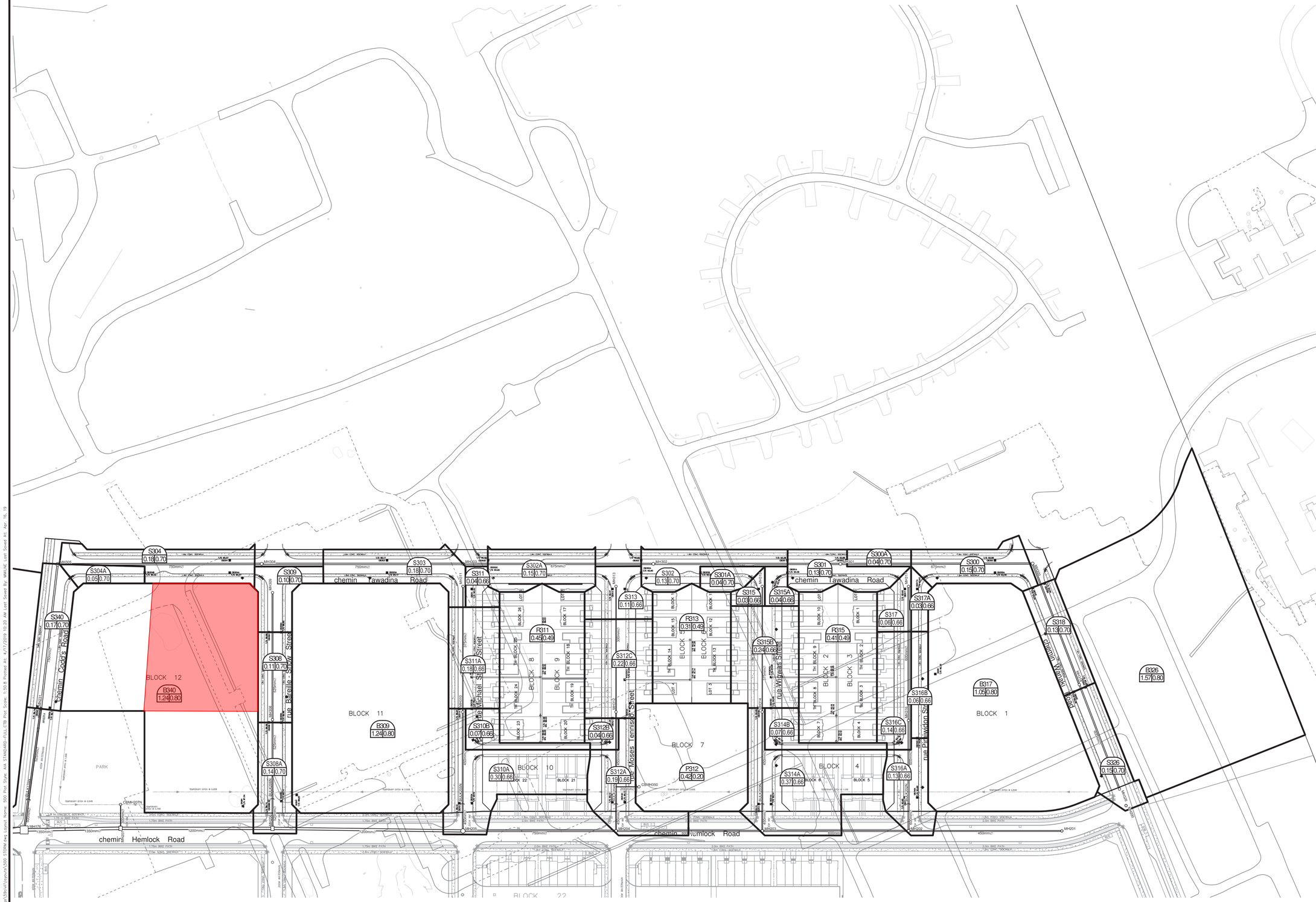
Definitions:
Q = 2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 732.951 / (TC+6.199)^0.810] 2 YEAR
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) = 0.013

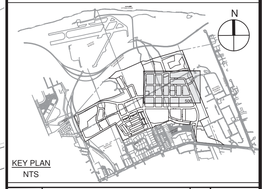
Designed: KH
Checked: JIM
Dwg. Reference: 118863-500

No.	Revision	Date
1	Submission No. 1 for City Review	2018-12-20
2	Submission No. 2 for City Review	2019-03-15
3	MECP Submission	2019-04-17

File Reference: 118863.5.7.1
Date: 2019-04-17
Sheet No: 1 of 1



SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS



KEY PLAN
NTS

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4			
3	MECP SUBMISSION	J.I.M.	2019:04:17
2	SUBMISSION NO. 2 FOR CITY REVIEW	J.I.M.	2019:03:15
1	SUBMISSION NO. 1 FOR CITY REVIEW	J.I.M.	2018:12:20

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Project Title

WATERIDGE VILLAGE AT ROCKCLIFFE

PHASE 2B

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
2019/04/17
PROVINCE OF ONTARIO

N

Drawing Title

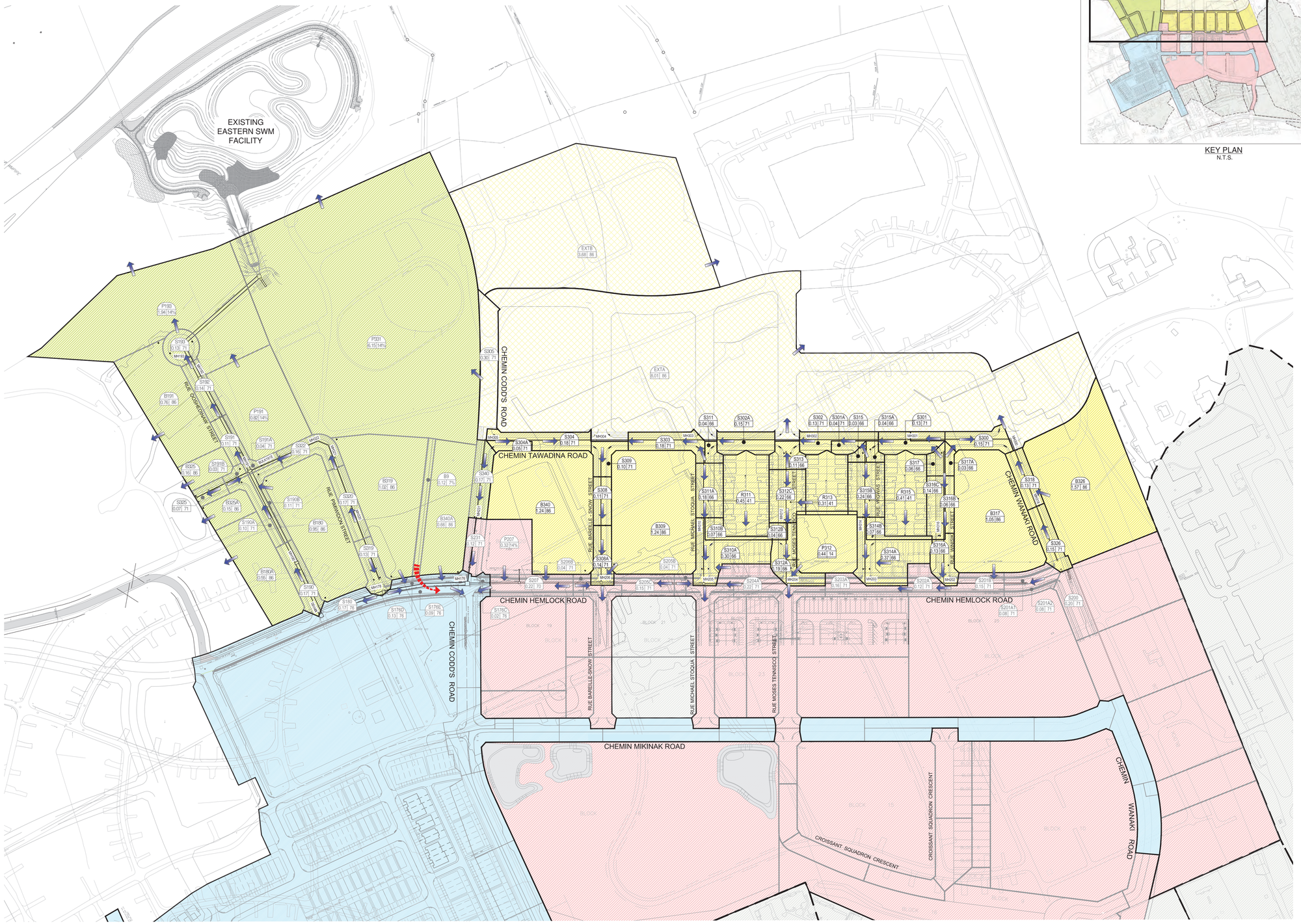
STORM DRAINAGE AREA PLAN

Scale
1:1000

Design	Date
K.H./S.T.	DECEMBER 2018
Drawn	Checked
M.M.	J.I.M.
Project No.	Drawing No.
118863	500

D07-16-15-0003

#17063


EXISTING
EASTERN SWM
FACILITY
CHEMIN CODD'S ROAD
CHEMIN TAWADINA ROAD
CHEMIN HEMLOCK ROAD
CHEMIN MIKINAK ROAD
CHEMIN WANAKI ROAD
RUE BARELLE-SNOW STREET
RUE MICHEL-STOQUA STREET
RUE MOSES TENNISCO STREET
RUE VICKARS STREET
RUE WARNER STREET
RUE PAWNDON STREET
RUE BANNATYNE STREET
CROISSANT SQUADRON CRESCENT
BLOCK 18
BLOCK 19
BLOCK 20
BLOCK 21
BLOCK 22
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BLOCK 36
BLOCK 37
BLOCK

HGL

XPSWMM NODE ID	PROPOSED GROUND ELEVATION (M)	USF (M)	100 YEAR 3 HOUR CHICAGO		100 YEAR 3 HOUR CHICAGO + 20%		100 YEAR 24 HOUR SCS TYPE II		JULY 1 1979		AUGUST 1988		AUGUST 1996	
			HGL (M)	USF - HGL (M)	HGL (M)	USF - HGL (M)	HGL (M)	USF - HGL (M)	HGL (M)	USF - HGL (M)	HGL (M)	USF - HGL (M)	HGL (M)	USF - HGL (M)
Phase 2B														
MH317	94.08	91.88	91.16	0.72	91.18	0.70	91.14	0.74	91.15	0.73	91.14	0.74	91.11	0.77
MH316	94.09	91.89	90.96	0.93	90.96	0.93	90.94	0.95	90.95	0.94	90.94	0.95	90.92	0.97
MH315	93.39	91.36	90.27	1.09	90.29	1.07	90.24	1.12	90.24	1.12	90.28	1.08	90.22	1.14
MH314	93.00	91.16	89.90	1.26	89.91	1.25	89.90	1.26	89.91	1.25	89.91	1.25	89.89	1.27
MH313	92.62	90.71	89.34	1.37	89.35	1.36	89.34	1.37	89.34	1.37	89.34	1.37	89.33	1.38
MH312	91.36	89.68	88.41	1.27	88.42	1.26	88.41	1.27	88.41	1.27	88.42	1.26	88.38	1.30
MH311	90.69	88.49	87.38	1.11	87.44	1.05	87.33	1.16	87.34	1.15	87.39	1.10	87.34	1.15
MH310	90.04	87.84	86.94	0.90	87.25	0.59	86.83	1.01	86.84	1.00	86.85	0.99	86.80	1.04
MH309	90.15	87.95	87.29	0.66	87.32	0.63	87.18	0.77	87.19	0.76	87.19	0.76	87.11	0.84
MH308	89.68	87.48	86.65	0.83	86.65	0.83	86.59	0.89	86.61	0.87	86.61	0.87	86.56	0.92
MH326	94.76	92.56	91.33	1.23	91.33	1.23	91.32	1.24	91.32	1.24	91.32	1.24	91.33	1.24
MH318	94.40	92.20	91.03	1.17	91.03	1.17	91.00	1.20	91.00	1.20	91.00	1.20	91.00	1.20
MH300	94.00	91.80	90.71	1.09	90.70	1.10	90.67	1.13	90.68	1.12	90.68	1.12	90.68	1.12
MH301	93.73	91.53	90.20	1.33	90.21	1.32	90.20	1.33	90.20	1.33	90.20	1.33	90.20	1.33
MH302	92.80	90.60	88.63	1.97	88.63	1.97	88.63	1.97	88.63	1.97	88.63	1.97	88.63	1.97
MH303	90.67	88.47	87.69	0.78	87.85	0.62	87.59	0.88	87.68	0.79	87.66	0.81	87.62	0.85
MH304	90.30	88.10	87.32	0.78	87.44	0.66	87.27	0.83	87.32	0.78	87.31	0.79	87.29	0.81
MH305	91.00	88.80	86.81	1.99	86.91	1.89	86.70	2.10	86.79	2.01	86.72	2.08	86.71	2.09
Phase 2A														
MH319	88.81	86.61	86.21	0.40	86.58	0.03	85.82	0.79	85.83	0.78	85.92	0.69	85.77	0.84
MH320	88.77	86.57	85.16	1.41	85.23	1.34	85.09	1.48	85.09	1.48	85.11	1.46	85.08	1.49
MH321	87.67	85.47	84.46	1.01	84.51	0.96	84.40	1.07	84.40	1.07	84.42	1.05	84.39	1.08
MH322	87.50	85.30	84.15	1.15	84.19	1.11	84.11	1.19	84.11	1.19	84.12	1.18	84.10	1.20
MH323	86.57	84.37	83.19	1.18	83.28	1.09	83.11	1.26	83.11	1.26	83.13	1.24	83.09	1.28
MH325	86.19	83.99	83.14	0.85	83.14	0.85	83.13	0.86	83.13	0.86	83.13	0.86	83.13	0.86
Existing Phase 1B Trunk														
MH201	94.29	91.89	90.72	1.17	90.73	1.16	90.72	1.17	90.72	1.17	90.72	1.17	90.71	1.18
MH202	93.91	91.51	90.42	1.09	90.43	1.08	90.41	1.10	90.41	1.10	90.41	1.10	90.39	1.12
MH203	92.38	89.98	88.65	1.33	88.68	1.30	88.63	1.35	88.63	1.35	88.64	1.34	88.60	1.38
MH204	90.40	88.00	87.07	0.93	87.10	0.90	87.05	0.95	87.06	0.94	87.06	0.94	87.02	0.98
MH205	89.35	86.95	85.80	1.15	85.85	1.10	85.77	1.18	85.78	1.17	85.79	1.16	85.72	1.23
MH206	89.10	86.70	85.59	1.11	85.62	1.08	85.56	1.14	85.57	1.13	85.57	1.13	85.52	1.18
MH207	88.53	86.13	84.60	1.53	84.63	1.50	84.58	1.55	84.58	1.55	84.59	1.54	84.54	1.59
MH231	89.81	87.41	85.81	1.59	85.83	1.58	85.70	1.70	85.80	1.61	85.74	1.67	85.70	1.70
Existing Phase 1A Trunk														
MH176	88.03	85.63	83.77	1.86	83.86	1.77	83.67	1.96	83.75	1.88	83.72	1.91	83.48	2.15
MH178	89.00	86.60	83.41	3.19	83.48	3.12	83.32	3.28	83.40	3.20	83.37	3.23	83.16	3.44
MH180	88.23	N/A	82.21	N/A	82.69	N/A	81.93	N/A	82.20	N/A	82.07	N/A	81.46	N/A
MH190	86.96	N/A	81.91	N/A	82.16	N/A	81.65	N/A	81.90	N/A	81.78	N/A	81.22	N/A
MH191	86.36	N/A	81.68	N/A	81.88	N/A	81.43	N/A	81.67	N/A	81.55	N/A	81.06	N/A
MH192	85.76	N/A	81.41	N/A	81.60	N/A	81.21	N/A	81.41	N/A	81.30	N/A	80.89	N/A
MH193	84.99	N/A	81.09	N/A	81.24	N/A	80.91	N/A	81.08	N/A	80.99	N/A	80.60	N/A
MH194	82.05	N/A	80.44	N/A	80.53	N/A	80.34	N/A	80.45	N/A	80.39	N/A	80.12	N/A

C.2 Modified Rational Method (MRM) Design Sheet

Stormwater Management Calculations

File No: **160402294**
Project: **WATERIDGE BLOCK 12**
Date: **13-Nov-26**

SWM Approach:
Post-development to Pre-development flows

Post-Development Site Conditions:

Overall Runoff Coefficient for Site and Sub-Catchment Areas

Runoff Coefficient Table

Catchment Type	Sub-catchment Area ID / Description		Area (ha) "A"	Runoff Coefficient "C"	"A x C"		Overall Runoff Coefficient
Controlled - Tributary	LID-1	Hard	0.102	0.9	0.092		
		Soft	0.033	0.2	0.007		
		Subtotal	0.135			0.098	0.730
Controlled - Tributary	L1	Hard	0.143	0.9	0.129		
		Soft	0.033	0.2	0.007		
		Subtotal	0.176			0.135	0.770
Controlled - Tributary	L2	Hard	0.062	0.9	0.055		
		Soft	0.007	0.2	0.001		
		Subtotal	0.068			0.057	0.830
Uncontrolled - Non-Tributary	UNC-1	Hard	0.133	0.9	0.120		
		Soft	0.015	0.2	0.003		
		Subtotal	0.148			0.123	0.830
Total			**0.527**			**0.413**	
Overall Runoff Coefficient= C:							**0.78**

Total Tributary Surface Areas (Controlled and Uncontrolled)	**0.38 ha**	
Total Tributary Area to Outlet	**0.38 ha**	**0.77**
Total Uncontrolled Areas (Non-Tributary)	**0.15 ha**	
Total Site	**0.53 ha**	

Stormwater Management Calculations

Project #160402294, WATERIDGE BLOCK 12
Modified Rational Method Calculations for Storage

5 yr Intensity
City of Ottawa

$I = a/(t + b)^c$

a =	998.071
b =	6.053
c =	0.814

t (min)	I (mm/hr)
5	141.18
10	104.19
15	83.56
20	70.25
25	60.90
30	53.93
35	48.52
40	44.18
45	40.63
50	37.65
55	35.12
60	32.94

5 YEAR Predevelopment Target Release from Portion of Site

Subdrainage Area: **B340**, B340A, S340 (2019 IBI Report, Drawing 500)
Area (ha): 2.17 (2019 IBI Report, Drawing 500)
C: 0.79 (2019 IBI Reporta: 0.70 for roadways, 0.80 for townhomes)
Peak Design Flow (L/s): 338.1 (2019 IBI Report, Storm Sewer Design Sheet)

Drainage Area: Block 12 - Overall Site
Area (ha): 0.53
C: 0.80 (2019 IBI Report)
A*C Weighted Flow (L/s): 82.9

Subdrainage Area: Block 12 - Controlled Tributary Area to Outlet
Area (ha): 0.38
C: 0.80 (2019 IBI Report)
A*C Weighted Flow (L/s): 59.6

tc (min)	I (5 yr) (mm/hr)	Qtarget (L/s)
10	104.19	**59.6**

LID STORAGE - CONTROLLED AREA
Area (ha): 0.38
C: 0.77

Rainfall Event (mm)	Rainfall Volume (m^3)	Target Infiltration Volume (m^3)
4mm	15.14	11.61

5 YEAR Modified Rational Method for Post-Development Conditions

Subdrainage Area: Bioswale - LID-1, L1, L2 (Controlled) Controlled - Tributary
Area (ha): 0.31
C: 0.75

tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qcontrol (L/s)	Qtotal (L/s)
10	104.19	67.6	16.4	84.0
20	70.25	45.6	11.1	56.7
30	53.93	35.0	8.5	43.5
40	44.18	28.7	7.0	35.6
50	37.65	24.4	5.9	30.4
60	32.94	21.4	5.2	26.6
70	29.37	19.1	4.6	23.7
80	26.56	17.2	4.2	21.4
90	24.29	15.8	3.8	19.6
100	22.41	14.5	3.5	18.1
110	20.82	13.5	3.3	16.8
120	19.47	12.6	3.1	15.7

Storage: **LID (Bioswale) Soil and Granular Layers and Surface Ponding**

Overall LID Features
LID Surface Area: 94.7 m^2
Outlet Invert Elevation: 88.59 m
Total Detention Storage: **41.65** m^3
Total LID Storage: **59.45** m^3

Surface Ponding
T/G (Spill) Elevation: 89.80 m
Surface Ponding Volume: **8.03** m^3

Bioretention Media (Topsoil) Detention Storage
Top of Media Elevation: 89.59 m
Depth Media (Topsoil): 600 mm
Porosity of Media: 0.35
Void Volume of Media: **19.89** m^3

	Stage	Head (m)	Vreq (cu. m)	Vavail (cu. m)
5-year Water Level	41.65	0.60	22.7	59.5

Project #160402294, WATERIDGE BLOCK 12
Modified Rational Method Calculations for Storage

100 yr Intensity
City of Ottawa

$I = a/(t + b)^c$

a =	1735.688
b =	6.014
c =	0.820

t (min)	(mm/hr)
5	242.70
10	178.56
15	142.89
20	119.95
25	103.85
30	91.87
35	82.58
40	75.15
45	69.05
50	63.95
55	59.62
60	55.89

100 YEAR Predevelopment Target Release from Portion of Site

100 YEAR Modified Rational Method for Post-Development Conditions

Subdrainage Area: Bioswale - LID-1, L1, L2 (Controlled) Controlled - Tributary
Area (ha): 0.31
C: 0.94

tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qcontrol (L/s)	Qtotal (L/s)
10	178.56	144.8	14.9	159.7
20	119.95	97.3	14.9	112.2
30	91.87	74.5	14.9	89.4
40	75.15	60.9	14.3	75.2
50	63.95	51.9	12.2	64.0
60	55.89	45.3	10.6	56.0
70	49.79	40.4	9.5	49.8
80	44.99	36.5	8.6	45.0
90	41.11	33.3	7.8	41.2
100	37.90	30.7	7.2	37.9
110	35.20	28.5	6.7	35.2
120	32.89	26.7	6.3	32.9

Storage: **LID (Bioswale) Soil and Granular Layers and Surface Ponding**

Sand Filter Detention Storage
Top of Sand Filter Elevation: 88.99 m
Thickness of Sand Filter: 150 mm
Porosity of Sand: 0.30
Void Volume of Sand: **4.26** m^3

Clearstone Detention Storage
Top of Clearstone Elevation: 88.84 m
Clearstone Layer Thickness: 250 mm
Porosity of Clearstone: 0.40
Void Volume of Clearstone: **9.47** m^3

Clearstone Retention Storage
Top of Retention Elevation: 88.59 m
Clearstone Layer Thickness: 470 mm
Porosity of Clearstone: 0.40
Void Volume of Clearstone (Retention): **17.80** m^3

	Stage	Head (m)	Vreq (cu. m)	Vavail (cu. m)
100-year Water Level	89.80	1.21	59.5	59.5

Stormwater Management Calculations

Project #160402294, WATERIDGE BLOCK 12
Modified Rational Method Calculations for Storage

Subdrainage Area: LID, L1, L2 (controlled) — Controlled - Tributary
Area (ha): 0.31
C: 0.75

tc (min)	I (5 yr) (mm/hr)	Qtotal (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	104.19	84.0	13.8	70.3	42.2
20	70.25	56.7	13.8	42.9	51.5
30	53.93	43.5	13.8	29.7	53.5
40	44.18	35.6	13.8	21.9	52.5
50	37.65	30.4	13.8	16.6	49.8
60	32.94	26.6	13.8	12.8	46.1
70	29.37	23.7	13.8	9.9	41.6
80	26.56	21.4	13.8	7.6	36.7
90	24.29	19.6	13.8	5.8	31.4
100	22.41	18.1	13.8	4.3	25.8
110	20.82	16.8	13.8	3.0	19.9
120	19.47	15.7	13.8	1.9	13.9

Storage: **Bioswale and Oversized 600mm Pipe Storage - ICD in CBMH5**

Pipe Storage Volume Used: **15.34** m^3
Bioswale Storage Volume Used: **38.16** m^3
53.50
0.00

Orifice Equation: Q = CdA(2gh)^0.5 — Where C = 0.572
Orifice Diameter: 193 mm
Invert Elevation: 89.06 m
Elevation @ 1/2D: 89.16
T/G Elevation: 90.12 m
Max Water Depth: 0.13 m
Downstream W/L: 86.44 m

	Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check
5-year Water Level	89.19	0.03	13.8	53.5	78.9	OK
					25.44	

Subdrainage Area: L2 — Controlled - Tributary
Area (ha): 0.07
C: 0.83

tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	104.19	16.4	16.4	0.0	0.0
20	70.25	11.1	11.1	0.0	0.0
30	53.93	8.5	8.5	0.0	0.0
40	44.18	7.0	7.0	0.0	0.0
50	37.65	5.9	5.9	0.0	0.0
60	32.94	5.2	5.2	0.0	0.0
70	29.37	4.6	4.6	0.0	0.0
80	26.56	4.2	4.2	0.0	0.0
90	24.29	3.8	3.8	0.0	0.0
100	22.41	3.5	3.5	0.0	0.0
110	20.82	3.3	3.3	0.0	0.0
120	19.47	3.1	3.1	0.0	0.0

Storage: **Surface Storage Above CB**

Where C = 0.572
Orifice Diameter: 95 mm
Invert Elevation: 89.02 m
Elevation @ 1/2D: 89.07
T/G Elevation: 90.02 m
Max Water Depth: 1.01 m
Max Ponding Depth: 0.34 m
Downstream W/L: 89.19 m

	Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check
5-year Water Level	90.03	0.84	16.4	0.0	0.4	OK
			0.0		0.4	

Subdrainage Area: UNC-1 — Uncontrolled - Non-Tributary
Area (ha): 0.15
C: 0.83

tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)
10	104.2	35.6	35.6
20	70.3	24.0	24.0
30	53.9	18.4	18.4
40	44.2	15.1	15.1
50	37.7	12.9	12.9
60	32.9	11.3	11.3
70	29.4	10.0	10.0
80	26.6	9.1	9.1
90	24.3	8.3	8.3
100	22.4	7.7	7.7
110	20.8	7.1	7.1
120	19.5	6.7	6.7

SUMMARY TO OUTLET

		Vrequired	Vavailable*	
Tributary Area	0.689 ha			
Total 5yr Flow to Sewer	30 L/s	53	120 m^3	Ok
Total 5yr Flow From Controlled Area	13.8 L/s			
Target	59.6 L/s			
Non-Tributary Area	0.148 ha			
Total 5yr Flow Uncontrolled to ROW	35.6 L/s			

Project #160402294, WATERIDGE BLOCK 12
Modified Rational Method Calculations for Storage

Subdrainage Area: LID, L1, L2 (controlled) — Controlled - Tributary
Area (ha): 0.31
C: 0.94

tc (min)	I (100 yr) (mm/hr)	Qtotal (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	178.56	159.7	53.0	106.7	64.0
20	119.95	112.2	53.0	59.2	71.0
30	91.87	89.4	53.0	36.4	65.5
40	75.15	75.2	53.0	22.2	53.2
50	63.95	64.0	53.0	11.0	32.9
60	55.89	56.0	53.0	2.9	10.5
70	49.79	49.8	49.8	0.0	0.0
80	44.99	45.0	45.0	0.0	0.0
90	41.11	41.2	41.2	0.0	0.0
100	37.90	37.9	37.9	0.0	0.0
110	35.20	35.2	35.2	0.0	0.0
120	32.89	32.9	32.9	0.0	0.0

Storage: **Bioswale and Oversized 600mm Pipe Storage - ICD in CBMH5**

Oversized Pipe Storage
Oversized Pipe Length: 31.10 m — **Pipe Storage Volume*:** **18.81** m^3
375mm Pipe Length: 44.00 m — *assuming full pipes
No. 1500mm Structures: 1 — **Max Pipe Storage:** **19.49** m^3
No. 1200mm Structures: 3

Orifice Equation: Q = CdA(2gh)^0.5 — Where C = 0.572
Orifice Diameter: 193 mm
Invert Elevation: 89.06 m
Elevation @ 1/2D: 89.16 m
T/G Elevation: 90.12 m
Max Head: 0.64 m
Downstream W/L: 86.97 m

	Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check
100-year Water Level	89.67	0.51	53.0	**71.0**	78.9	OK
					7.95	

Storage Area: L2 — Controlled - Tributary
Area (ha): 0.07
C: 1.00

tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	178.56	34.0	14.9	19.0	11.4
20	119.95	22.8	14.9	7.9	9.5
30	91.87	17.5	14.9	2.5	4.6
40	75.15	14.3	14.3	0.0	0.0
50	63.95	12.2	12.2	0.0	0.0
60	55.89	10.6	10.6	0.0	0.0
70	49.79	9.5	9.5	0.0	0.0
80	44.99	8.6	8.6	0.0	0.0
90	41.11	7.8	7.8	0.0	0.0
100	37.90	7.2	7.2	0.0	0.0
110	35.20	6.7	6.7	0.0	0.0
120	32.89	6.3	6.3	0.0	0.0

Storage: **Surface Storage Above CB**

Where C = 0.572
Orifice Diameter: 95 mm
Invert Elevation: 89.02 m
Elevation @ 1/2D: 89.07 m
T/G Elevation: 90.02 m
Spill Elevation: 90.36
Max Ponding Depth: 0.34 m
Downstream W/L: 89.67 m

	Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check
100-year Water Level	90.36	0.69	14.9	11.4	41.3	OK
					29.9	

Subdrainage Area: UNC-1 — Uncontrolled - Non-Tributary
Area (ha): 0.15
C: 1.00

tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)
10	178.56	73.6	73.6
20	119.95	49.4	49.4
30	91.87	37.9	37.9
40	75.15	31.0	31.0
50	63.95	26.4	26.4
60	55.89	23.0	23.0
70	49.79	20.5	20.5
80	44.99	18.5	18.5
90	41.11	16.9	16.9
100	37.90	15.6	15.6
110	35.20	14.5	14.5
120	32.89	13.6	13.6

SUMMARY TO OUTLET

		Vrequired	Vavailable*
Tributary Area	0.689 ha		
Total 100yr Flow to Sewer	14.9 L/s	82	120 m^3
Total 5yr Flow From Controlled Area	53.0 L/s		
Target	59.6 L/s		
Non-Tributary Area	0.148 ha		
Total 100yr Flow Uncontrolled to ROW	73.6 L/s		

Stantec	Project:	WATERIDGE BLOCK 12	160402294
		INFILTRATION CALCULATIONS	
	Prepared By: AG	Revision No: 1	Checked By: DT
	Date Prepared: 26-Jun-2026	Date Revised: 13-Nov-2026	Date Checked: 3-Jul-2026

Summary of Geotechnical Information for Bedrock and Groundwater

AUGER REFUSAL		SEASONAL HIGH GW LEVELS			
		W BH 5-23		E BH 7-23	
AR W BH5-23 (m)	AR E BH7-23 (m)	(m)	DATE	(m)	DATE
87.12	86.05	Dry	Jul-23	87.52	Jul-23

Storage Media Design

Design Clearance from AR to INV Stone (m)	Top of LID Storage Media (m)	Depth of Media Below Outlet (mm)	Inv. Elev. of Storage Media (m)	Depth Media Above Unit[1] (mm)	Bed Area (m^2)
1.0	88.59	470	88.12	150	94.7

Soils Infiltration Assessment

LID AREA	Test Pit ID	Test Elevation (m)	Vertical Hydraulic Conductivity[3] (m/s)	Estimated Unfactored Infiltration Rate	Geometric Mean Infiltration Rate	Safety Correction Factor [4]	Design Infiltration Rate (mm/hr)
Bioswale (LID-1)	PT 4-26	88.29	1.40E-06	51	62.26	2.50	24.9
	PT 4-26	87.99	6.40E-06	76			

Infiltration Basin Design

LID AREA	Required Infiltration Volume[2] (m^3)	Porosity of the Storage Media (Clearstone)	Maximum Retention Time (hours)	Minimum Required Bed Area[5] (m^2)	Available Void Volume Below Outgoing Pipe Invert[6] (m^3)	Actual Retention/ Drawdown Time (hours)
Bioswale (LID-1)	11.6	0.4	24	48.5	17.8	12.3

Notes:

1. Minimum stone depth per S29.
2. Required infiltration volume determined for 4mm rainfall event for developable area.
3. Infiltration testing information obtained from location ID: PT 4-26, by Paterson Group June 2026
4. Source Table C3 from the Toronto and Region Conservation Authority SWM Criteria (2012)
5. Calculation of required bottom area of trench/bed as per Equation 4.3 of the MECP SWM Planning Design Manual.
6. Available void volume does not include space within subdrain pipes, conservative estimate.

C.3 Storm Sewer Design Sheet

Stantec

Wateridge Block 12

DATE: 2026-11-13
REVISION: 2
DESIGNED BY: AJ
CHECKED BY: AG

STORM SEWER DESIGN SHEET
(City of Ottawa)

FILE NUMBER: 160402294

DESIGN PARAMETERS

$I = a / (t+b)^c$ (As per City of Ottawa Guidelines, 2012)

	1:2 yr	1:5 yr	1:10 yr	1:100 yr
a =	732.951	998.071	1174.184	1735.688
b =	6.199	6.053	6.014	6.014
c =	0.810	0.814	0.816	0.820

MANNING'S n = 0.013
MINIMUM COVER: 2.00 m
TIME OF ENTRY 10 min
BEDDING CLASS = B

LOCATION			DRAINAGE AREA																					PIPE SELECTION										
AREA ID	FROM	TO	AREA	AREA	AREA	AREA	AREA	C	C	C	C	A x C	ACCUM	A x C	ACCUM.	A x C	ACCUM.	A x C	ACCUM.	T of C	$I_{2\text{-YEAR}}$	$I_{5\text{-YEAR}}$	$I_{10\text{-YEAR}}$	$I_{100\text{-YEAR}}$	$Q_{CONTROL}$	ACCUM.	Q_{ACT}	LENGTH	PIPE WIDTH	PIPE	PIPE	MATERIAL	CLASS	SLOPE	Q_{CAP}	% FULL	VEL.	VEL.	TIME OF
NUMBER	M.H.	M.H.	(2-YEAR)	(5-YEAR)	(10-YEAR)	(100-YEAR)	(ROOF)	(2-YEAR)	(5-YEAR)	(10-YEAR)	(100-YEAR)	(2-YEAR)	AxC (2YR)	(5-YEAR)	AxC (5YR)	(10-YEAR)	AxC (10YR)	(100-YEAR)	AxC (100YR)						$Q_{CONTROL}$	(CIA/360)		OR DIAMETEI	HEIGHT	SHAPE				(FULL)		(FULL)	(ACT)	FLOW
			(ha)	(ha)	(ha)	(ha)	(ha)	(-)	(-)	(-)	(-)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	(L/s)	(L/s)	(L/s)	(m)	(mm)	(mm)	(-)	(-)	(-)	%	(L/s)	(-)	(m/s)	(m/s)	(min)
L1	CBMH5	CBMH2	0.18	0.00	0.00	0.00	0.00	0.77	0.00	0.00	0.00	0.135	0.135	0.000	0.000	0.000	0.000	0.000	0.000	10.00	76.81	104.19	122.14	178.56	0.0	0.0	28.8	33.4	375	375	CIRCULAR	PVC	-	0.25	87.7	**32.89%**	0.79	0.60	0.94
L2	CBMH2	STM3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.135	0.000	0.000	0.000	0.000	0.000	0.000	10.94	73.39	99.50	116.61	170.44	0.0	0.0	27.6	33.4	375	375	CIRCULAR	PVC	-	0.25	87.7	**31.43%**	0.79	0.59	0.95
LID-1	STM3	CBMH4	0.20	0.00	0.00	0.00	0.00	0.76	0.00	0.00	0.00	0.155	0.290	0.000	0.000	0.000	0.000	0.000	0.000	11.88	70.26	95.20	111.55	163.00	0.0	0.0	56.6	27.7	375	375	CIRCULAR	PVC	-	0.25	87.7	**64.59%**	0.79	0.73	0.63
	CBMH5	STM1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.94	73.39	99.50	116.61	170.44	58.8	58.8	58.8	3.0	300	300	CIRCULAR	PVC	-	0.50	68.0	**86.48%**	0.97	0.97	0.05
	STM1	EX STM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.99	73.21	99.25	116.32	170.01	0.0	58.8	58.8	34.0	300	300	CIRCULAR	PVC	-	0.50	68.0	**86.48%**	0.97	0.97	0.58

C.4 Infiltration Testing Preliminary Results (Paterson, 2026)

COORDINATES: MTM ZONE 9

TAWADINA ROAD

CODD'S ROAD

ACCESS ROAD

BH 59-22
88.03
(86.00)

FH-1
T/S= 91.16m

PROPOSED
BUILDING BLOCK A

PT 3-26
89.30

BH 2A-23
88.84
(86.04)

BH 2-23
89.27
[87.69]

BH 8-23
89.36
[88.04]

BH 9-23
89.01
[87.71]

BH 1-23
89.00
[87.58]

BH 2A-23
88.84

PT 2-26
90.01

375 CODD'S ROAD

WATERIDGE VILLAGE
BLOCK 12

BH 6-23
88.73
(87.92)

BH 4-23
89.22
(87.60)

BH 3-23
89.14
[87.74]

PROPOSED
TOWNHOUSES
BLOCK B

BH 7A-23
88.79
(86.12)

BH 7-23
88.79
[86.05]

BH 5-23
88.39
(87.12)

PT 1-26
88.33

PT 4-26
88.59

BAREILLE-SNOW STREET

1050 TAWADINA ROAD
BLOCK 11

FH

LEGEND:

- PROPOSED INFILTRATION AREAS
- EXISTING PERMEAMETER TESTING
- EXISTING BOREHOLE LOCATION (PATERSON REPORT PG6688, 2023)
- EXISTING BOREHOLE LOCATION (PATERSON REPORT PG6331, 2022)
- 89.00 GROUND SURFACE ELEVATION (m)
- (87.71) PRACTICAL REFUSAL TO AUGERING ELEVATION (m)
- [87.58] BEDROCK SURFACE ELEVATION (m)

IMPORTANT NOTES:

PLAN COORDINATES ARE REFERENCED FROM GEOOTTAWA IN MTM COORDINATES

PLEASE NOTE THAT DXF PLANS CONTAIN SOME MARGIN OF ERROR IN ACCURACY, AND THEREFORE, SETTING CONTROL BY VERIFYING A COORDINATE / BENCHMARK MUST BE DONE BEFORE PROCEEDING WITH THE FIELD PROGRAM.

DRAFTING : YAZAN AL DANI

SCALE: 1:500

0 5 10 15 20 25 30m

11x17

p:\autocad drawings\hydrogeology\ph5\2xx\ph5272\ph5272- georef help.dwg

Gladish, Alyssa

From: Oliver Blume <OBlume@patersongroup.ca>
Sent: Tuesday, June 23, 2026 2:17 PM
To: Johnston, Anthony; Annie Pham; Moroz, Peter; Shahzadeh, Serene
Cc: Wagar, Barrett; Wu, Michael; Gladish, Alyssa; Mike Laflamme; Zavian Buchanan
Subject: RE: [EXTERNAL] RE: Block 12 - HydroG and Water Budget
Attachments: PH5272- GEOREF (MTMs) (with aerial).pdf

Hi Anthony,

Outlook sent out the email before I finished drafting the text. Below is the correct email message.

The table below shows a summary of our infiltration testing results. Please note that the results do not include a safety correction factor. The testing locations were selected based on site conditions (pooled water, engineered fill, etc.) at the time of the field investigation and are shown on the attached plan. We were unable to complete the tests at location PT1-26 due to water infiltration at approximately 0.3 m bgs.

Test ID	Testing Elevation (m)	Material	Field Saturated Hydraulic Conductivity (m/s)	Estimated Unfactored Infiltration Rate (mm/hr)
PT2-26	89.36	Fill - Brown silty clay with gravel and trace sand	4.1×10^{-7}	36
	89.06	Fill - Brown silty clay with gravel and trace sand	2.1×10^{-7}	31
PT3-26	88.95	Fill - Brown silty clay with gravel and trace sand	2.7×10^{-7}	33
PT4-26	88.29	Fill - Brown silty sand with gravel	1.4×10^{-6}	51
	87.99	Fill - Brown sand with gravel	6.4×10^{-6}	76

Let us know if you have any questions.

Cheers,

PATERSON GROUP 70
SOLUTION ORIENTED ENGINEERING

OLIVER BLUME, M.Sc., P.Geo.
Hydrogeologist/Project Manager
Hydrogeology Division
OFFICE: (613) 226-7381 ext. 105
DIRECT: (613) 701-6498
CELL: (613) 218-0697
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www.patersongroup.ca

BUILDING TRUST THROUGH QUALITY ENGINEERING SINCE 1956
OTTAWA • GREATER TORONTO AREA • NORTHERN ONTARIO

Appendix D Pre-Consultation Notes

File No.: PC2026-0074

May 15, 2026

Serene Shahzadeh
Stantech Consulting Ltd.
Via email: serene.shahzadeh@stantec.com

Subject: **Pre-Consultation: Meeting Feedback**
Proposed Zoning By-law Amendment and Site Plan Control Application – 1000 Tawadina Road

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on May 7, 2026.

Pre-Consultation Preliminary Assessment

Next Steps

1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken. For your next submission, please submit the required Application Form, together with the necessary studies and/or plans to planningcirculations@ottawa.ca, copy (cc:) to the file lead and planning support.

2. In your subsequent pre-consultation or application submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed is requested with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.

3. Please note, if your development proposal changes significantly in scope, design, or density it is recommended that a subsequent pre-consultation application be submitted.

Supporting Information and Material Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either required (R) or advised (A) as part of a future complete application submission.

    a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

1. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Planning

Policy Framework

Official Plan

- Inner Urban Transect
- Neighbourhood Designation

Secondary Plan

- Low-rise to Mid-rise Mixed-Use Designation
- Maximum height of 30 metres.
- Density target of 143 units per net hectare

Old Zoning By-law

- GM31 H(30)

New Zoning By-law

- H2I H(30)

Comments:

Policy/ Zoning:

1. Section 6.2 5) of the Secondary Plan notes "…Within the area described by the master concept plan, certain individual buildings may have densities lower than the minimum required, however, the overall average density for the area covered by the master concept plan must meet the minimums identified in this secondary plan." As such, please demonstrate how the density targets of Phase 2b of the Wateridge Subdivision are being met.

2. Dwelling units, in the form of vertically attached dwellings exceeding two principal dwelling units are prohibited in the new (2026-50) Zoning By-law and townhomes are prohibited I the old (2008-250) Zoning By-law. A Zoning By-law Amendment will be required to permit the townhome block.

Articulation and Built Form

3. Staff appreciate that the buildings are designed close to the curb and define the street edge. Consider the relationship of the apartment block with the neighbouring property to the west (375 Codd's) in terms of setbacks to create a high-quality and continuous public realm along Tawadina Road. 375 Codd's is setback 5-metres from Tawadina Road and includes landscaping at the corner.

4. A 2-metre setback is required at the fourth-floor level of the building as per the new Zoning By-law ((902-9 (2)) for Building A. If this cannot be provided, ensure that the building is articulated to established to a human scale to promote a comfortable pedestrian realm.

5. Ensure that the façade of Building A, if greater than 40 metres long, is broken to reduce the visual mass of the building by using color, materiality and setbacks to establish distinct volumes along all public frontages (CDP. S.6.5.2).

    a. Consider alternating between inset and projecting balconies to create visual interest and fill in area's on the sides.

6. Ensure that the at minimum one active entrance at ground floor is provided per public frontage. Staff ask that you consider building exits to relate to the north-south pedestrian pathway provided on the site as well.

7. Ensure that the at-grade commercial uses are well-designed to establish a strong commercial frontage along Tawadina Road and meet the Zoning requirement for 50% of glazing for ground floor containing non-residential uses (902-9(7))., and at minimum 40% for height of up to 4-metres measured from average grade otherwise (902(3)). Provide similar glazing treatment at the rear commercial units to limit low-quality, back-of-house condition here.

8. Staff have concerns with the blank wall condition on the east and western facades of Building A. Ensure that the corner facades activate the public frontage at Bareille-Snow and facing the pedestrian walkway connection to the park.

9. Consider using large windows and upper storey balconies facing the internal parking lot and other amenity areas to promote passive surveillance of these areas and increase pedestrian safety through the day (CDP. S. 6.5.2).

10. Ensure that a 23-metre separation distance between portions of buildings above four-storeys is being provided with adjacent buildings (ZBL. 902-9(5)).

11. Consider the strategic use of light-coloured materials to minimize the visual mass of the building.

Landscaping and Amenity:

12. Ensure that landscaped areas within the front and corner side yards are meaningful. Consider pedestrian experience along these areas and designing them to support at-grade commercial uses by providing street furniture or commercial patios.

13. Consolidate landscape features to provide meaningful outdoor amenity spaces that can be enjoyed by residents. As a whole, soft landscaping should be maximized throughout the site wherever possible.

14. Please consider an increased landscaped area abutting the rear façade of Building A to support meaningful landscaping and improve pedestrian safety by creating distance between vehicles and unit entrances.

15. Please consider adding more landscaping within the interior of the lot including tree planting within the parking lot area. Reduce the amount of hard landscaping that is provided by including more landscaped medians and consider their function. Ensure that you are meeting, or surpassing, the minimum 15% requirement for landscaping within the parking lot area (S. 607 (8)(a)(i). Consider options for tree planting on site including within landscaped medians and along the rear property line.

16. Explore opportunities for one-way drive-aisles through the site to reduce the need for wide drive-aisles and capture space for landscaping. Doing this will also improve vehicle circulation on site and avoid dead-ends that require wider turn around requirements for drivers.

17. Pedestrian movement through the site specifically mid-block connection to 1345 Hemlock Road and to LCol. William G Barker, VC Park remain high priorities for the site. Staff would like to see a meaningful and well-designed north-south pedestrian access through the site and a well-designed connection to the park opening. Consider use of soft and hard landscaping, planter beds, pavement markers and lighting to create inviting space that forms this connection and contributes to the run-way feature previously proposed at this development. Further, it was noted in the pre-consultation that an east-west pedestrian connection would also be provided. Please show this feature on the plans.

18. The previous plans showed a landing strip design that creates a visual and physical extension of the runway landing strip feature in the adjacent park. This feature is intended to pay homage to the former armed bases where the subdivision is located. This feature and mid-block connections through adjacent sites were result of collaboration between Mattamy and Bayview Group (owners of 375 Codd's and 1345 and 1375 Hemlock Avenue), and form part of pedestrian connections through multiple sites that are also anticipated by the Master Concept Plan for Phase 2B of the subdivision. The CDP also plans for active frontages along the park block (S. 5.6). Please demonstrate how this feature and

pedestrian mid-block connections are being integrated into the site design. Ensure that the visual and physical connection to the runway feature at the park block is being maintained.

19. With regards to the public park to the southwest.

    a. The Master Concept Plan for the Phase 2b show this site and the neighboring sites contributing to this park through extensions of the design and various pathways providing mid-block connections. Consider how the proposed development can achieve the intent of the concepts and allow for pedestrian spill-over from the park into soft-landscaped and pathed areas of the site.

    b. Staff would like to see meaningful pedestrian amenity space at-grade. Areas of opportunity include this space adjacent to the city park and at-grade adjacent to the commercial uses to provide for potential “parkettes/gazebos” landscaping, and patio spaces.

20. Currently, the proposed mid-block connection going north/south, and especially the pathway in front of the mixed-use units at-grade appear narrow – explore opportunities to widen these pathways. For example, consider how a larger vehicle may spill over onto the 1.5m pathway and further reduce the path of travel.

21. Easements will be sought to secure pedestrian access from Tawadina Road southwards to connect to the 1345 Hemlock Street and the adjacent park.

22. The CDP requires that active frontages be provided along the park block. Staff would like to see improved landscaping features near the park connection. Consider pedestrian comfort, and visibility from CPTED perspective.

23. Tree planting is a priority, both within the ROW and internal to the site.

Parking

24. Staff have concerns with the amount of parking provided, and the amount of hard surfaces on the interior of the lot.

    a. Consider the availability of on-street parking supply in the general vicinity of the site, and its contribution towards availability of commercial and visitor parking to the area. Tawadina Road currently permits vehicle parking spaces. Consider on-street parking for commercial uses.

    b. Explore opportunities to reduce parking on-site to provide for greater functionality of the site for residents while still finding a balance of adequate parking for residents.

c. Explore opportunities to reduce the turning radii at the intersection where the townhouse lane meets the primary drive aisle into/off of the site.

25. The Secondary Plan has policies which require that surface parking areas are to be located within the interior of development blocks and separated on a minimum of three sides from public rights of way, parks and open spaces with built form.

    a. As such, please explore opportunities to screen the loading bay from Bareille-Snow. Are there opportunities to internalize it within the building massing?

    b. Ensure the public park is also being adequately screened from the parking lot.

26. Ensure that all long-term, and half of the required short-term bicycle parking is provided indoors either within the principal building or an accessory building.

Loading and Waste management

27. Provide loading space internally within the building or further away from the exterior side yard to minimize its visual impact from Bareille-Snow Street.

28. Clarify where waste will be managed and stored on site for pick-up. Consider consolidating these areas with loading areas to find efficiencies in building design.

Feel free to contact Haris Khan - Planner I, Jack Smith - Planner II, or Jean-Charles Renaud – Planner III with follow-up questions.

Urban Design

Comments:

29. Please explore opportunities to further break up the massing along Tawadina Road. This could include additional articulation measures such as inset balconies, increased façade modulation, and material variation to create greater visual interest and reduce the perceived scale of the building.

30. Please ensure the side elevations of Block A are designed to appropriately engage both Barielle-Snow Street and the proposed pedestrian connection. These elevations should include active architectural treatment, glazing, entrances, and/or other design measures to avoid blank façades and support a strong public realm condition.

31. Please provide increased ground floor heights for the proposed retail units and enhance the building's street presence to support flexible, high-quality commercial space and improved animation along the public realm.

32. Please review the extent and configuration of the surface parking area and explore opportunities to reduce parking and improve the overall landscape design. In particular, the proposal should provide strong, clearly defined pedestrian connections (recommended minimum 3.0 m wide walkway) linking LCol William G. Barker VC Park through the site to Tawadina Road and Barielle-Snow Street. These connections should be designed as prominent landscaped pedestrian corridors with appropriate tree planting, planting beds, lighting, and pedestrian amenity features.

33. Surface parking areas should be appropriately screened from the public realm and from views adjacent to LCol William G. Barker VC Park through enhanced landscaping and planting.

34. Please provide a contextual site plan and massing plan illustrating the proposal in relation to adjacent existing and approved developments to better understand how the site integrates with the surrounding development blocks.

Feel free to contact Nader Kadri, Urban Designer, for follow-up questions.

Engineering

Comments:

35. The Stormwater Management Criteria, for the subject site, is to be based on the following:

    a. Application of the IDF information derived from the Meteorological Services of Canada rainfall data, taken from the MacDonald Cartier Airport, collected 1966 to 1997.

    b. For separated sewer systems built up until 2016, the design of the storm sewers were based on a 5-year storm; storm systems after such time are, generally, based on a 2-year level-of-service.

    a. In separated areas, the pre-development runoff shall be the lower of the existing coefficient or a maximum equivalent ‘C’ of 0.5, whichever is less (§ 8.3.7.3).

    c. A calculated time of concentration (cannot be less than 10 minutes).

    d. Flows to the storm sewer in excess of the 2-year storm release rate, up to and including the 100-year storm event, must be detained on site.

    e. Storm sewer outlets should not be submerged.

    b. The quantity control criteria fpor this site will be 100-year post-development to 5-year pre-development with a C=0.5, or can be calculated.

c. Quality control criteria require an OGS system due to large surface parking area. Sanitary requires a monitoring MH on private property.

36. Deep Services (Storm, Sanitary and/or Water Supply), if applicable:

a. Provide existing servicing information and the recommended location for the proposed connections. Services should ideally be grouped in a common trench to minimize the number of road cuts.

b. Connections to trunk sewers and easement sewers are typically not permitted.

c. Provide information on the monitoring manhole requirements – should be located in an accessible location on private property near the property line (ie. Not in a parking area).

d. Review provision of a high-level sewer.

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

i. Std Dwg S11.1 for flexible main sewers – connections made using approved tee or wye fittings.

ii. Std Dwg S11 (For rigid main sewers) – lateral must be less that 50% the diameter of the sewermain,

iii. Std Dwg S11.2 (for rigid main sewers using bell end insert method) – for larger diameter laterals where manufactured inserts are not available; lateral must be less that 50% the diameter of the sewermain,

i. Connections to manholes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain. – Connect obvert to obvert with the outlet pipe unless pipes are a similar size.

37. Water

a. Capacity – Refer to MSS and Phase 2B Design Brief

a. Water Data Card (future requirement)

b. Water Boundary condition requests must include the location of the service (map or plan with connection location(s) indicated) and the expected loads required by the proposed development, including calculations. Please provide the following information:

i. Location of service

ii. Type of development

iii. The amount of fire flow required (per OBC or FUS).

iv. Average daily demand: ___ l/s.

v. Maximum daily demand: ___l/s.

vi. Maximum hourly daily demand: ___ l/s.

38. Sewer (sanitary and storm)

    a. Capacity – See MSS and Phase 2B Design Brief. Sanitary flows must meet allocated rates within this phase and in-line with MSS.

39. Stormwater

    a. See MSS and Phase 2B Design Brief. LID features are recommended.

40. Hydrogeological and terrain analysis requirements (private servicing only):

    Note that Fairhaven Community, with private wells, is in the area and located south of Wateridge Village. These wells may be affected by rock removal activities and dewatering operations.

Feel free to contact Shawn Wessel, Infrastructure Project Manager, for follow-up questions.

Noise

Comments:

41. A traffic noise study is required.

Feel free to contact Shawn Wessel, Infrastructure Project Manager, for follow-up questions.

Transportation

Comments:

42. Maintain the existing corner triangle of 5x5.

43. A TIA study is not required for 58 units.

44. The sidewalk must be continuous and depressed through the new private approach.

Feel free to contact Mike Giampa, Transportation Project Manager, for follow-up questions.

Environment

Comments:

45. There are no triggers for an Environmental Impact Study.

46. Bird-Safe Design Guidelines - Please review and incorporate bird safe design elements, where feasible and applicable. Some of the risk factors include glass and related design traps such as corner glass and fly-through conditions, ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here: https://documents.ottawa.ca/sites/documents/files/birdsafedesign_guidelines_en.pdf

47. Please consider if there are features that can be added reduce the urban heat island effect (see OP 10.3). For example, this impact can be reduced by adding large canopy trees in parking islands, permeable pavers, green rooves or vegetation walls, or incorporating building with low heat absorbing materials.

Feel free to contact Matthew Hayley Environmental Planner, for follow-up questions.

Forestry

Comments:

48. A Landscape Plan is a submission requirement of this Site Plan Control Application.

49. Tree planting must be incorporated along the street frontages and within the subject site (OP Section 4.8.2)

    a. Prioritize large canopy tree planting wherever feasible

    b. Plant trees along the pedestrian pathway

    c. Regular space for trees must be provided in surface parking lots (OP Section 4.1.4.). The plan needs to be updated to align with this policy.

50. The City of Ottawa is working towards a 40% canopy cover target. Design the site with this in mind.

51. The Landscape Plan must be prepared in conjunction with the Geotechnical Investigation.

Landscape Plan (LP) requirements.

52. Landscape Plan Terms of Reference must be adhered to for all tree planting: Click Here. For more information on these requirements please contact hayley.murray@ottawa.ca

Additional Elements for Tree Planting in the Right of Way:

53. Please ensure any retained trees are shown on the LP

54. Sensitive Marine Clay - Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines.

55. Soil Volume - Please demonstrate as per the Landscape Plan Terms of Reference that the available soil volumes for new plantings will meet or exceed the minimum soil volumes requested.

56. The city requests that consideration be given to planting native species wherever there is a high probability of survival to maturity.

57. Efforts shall be made to provide as much future canopy cover as possible at a site level, through tree planting and tree retention. The Landscape Plan shall show/document that the proposed tree planting and retention will contribute to the City's overall canopy cover over time. Please provide a projection of the future canopy cover for the site to 40 years

Minimum Setbacks

58. Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.

59. Maintain 2.5m from curb

60. Coniferous species require a minimum 4.5m setback from curb, sidewalk, or MUP/cycle track/pathway.

61. Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas.

62. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

Tree specifications

63. Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.

64. Maximize the use of large deciduous species wherever possible to maximize future canopy coverage.

65. Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and if possible, include watering and warranty as described in the specification.

66. No root barriers, dead-man anchor systems, or planters are permitted.

67. No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

Hard surface planting

68. If there are hard surface plantings, a planting detail must be provided.

69. Curb style planters are highly recommended.

70. No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.

71. Trees are to be planted at grade.

Feel free to contact Hayley Murray, Planning Forester, for follow-up questions.

Parkland

Comments:

72. Parkland Dedication By-law No. 2022-280, in the form of conveyance of land or cash-in-lieu of conveyance of land.

Parkland Dedication

73. The residential unit number has increased and commercial use added to the site changing the required parkland dedication/CILP and requires further reviewed by Park Planning.

74. The previous application proposed 52 dwelling units in three stacked dwelling buildings. The application has changed to 1 stacked dwelling building with Commercial use on the ground floor and an increase in residential units. The density remains greater than 18 units/hectare, therefore the alternative rate applies for parkland dedication at 1ha per 600 units.

75. The parkland dedication requirement for this site plan application was previously calculated at approximately 0.086 hectares (866.7 m2) of required parkland. Because

76. The owner/applicant will need to confirm that parkland dedication requirements for this parcel have been meet and previously satisfied through the associated registration of plan of subdivision.

77. If there is a discrepancy between parkland dedication owning, the owner will provide cash-in-lieu of parkland. The value of the land to be determined by the City's Realty Services Branch. The owner is responsible for any appraisal costs incurred by the City.

Site Plan Comments

78. The property is adjacent to Lt. Cl. William G. Barker Park that has been designed as a town square and central gathering area for the Wateridge community. The proposed site plan has not considered how the buildings and proposed hardscaping and landscaping interface with the park.

79. The park design has a prominent desire line/visual line from the corner of Hemlock Road/Codd's Road diagonally across the site terminating at the subject property. The aircraft run-way design onto the Mattamy site has been removed.

80. The challenge remains however to brings the public to the corner private drive aisle of the subject property. This is a safety concern bringing the public from the park into the private drive aisle. It would be better to direct pedestrian movement to the north-south pathway along the western property boundary to Tawadina Road.

81. Preference from Parks is for any waste receptacle area to not be located near the park.

82. The proposed site plan illustrates a pathway tying into the park block. The proposed site plan is encouraging pedestrian movement between the public park and the private site. As a result, the site plan will need a clear/safe and accessible route over the site to the adjacent municipal streets (Tawadina Road).

83. As a condition of site plan, a pedestrian easement over the subject property will be required to enable movement across the site between the park and adjacent municipal streets.

84. Please review and create a pedestrian route that does not direct users onto the vehicle access route for the site. Pedestrian routes are to meet minimum accessible width of 1.8 meters, 2 meters is preferable.

85. Staging/construction access is prohibited from the public park block.

86. The site plan will need to be graded to meet park block grades. The park block is not to be encumbered by stormwater from the proposed site plan development and will need to show positive surface drainage away from the park parcel.

87. Please note that the park comments are preliminary and subject to change upon receipt of a formal development application.

Feel free to contact.Louise.Cerveny@ottawa.ca, Parks Planner, for follow-up questions.

Community issues

Comments:

General Comments

88. The Wateridge Village Community Association welcomes and greatly appreciates the overall concept of this proposal and its design evolution into a plan that would provide needed additional residential density to the core of the community, and the inclusion of commercial units, as there has been a strong demand for these in the neighbourhood. Together these two aspects provide very good functionality.

Parking Design

89. The community appreciates the inclusion of sufficient (1:1) residential parking, along with visitor and commercial spaces. This has been something that has been noted to be lacking in the community. Our community also lacks full 7 day a week OC Transpo service at this time, in addition to the well documented equipment and labour shortages and budgetary challenges OC Transpo is currently working through. Together, these situations lead to more vehicle ownership and usage here than was originally planned for.

90. Much of the site in this proposal is occupied by the surface parking lot. While surface parking is certainly required for commercial and visitor uses, we recommend incorporating a single-level underground parking facility for residential use and devoting more of the site to amenity greenspace and connections to the Town Square park. An underground level could also provide a place for residential storage rooms and bicycle parking. A larger mixed-use building could also work in this scenario. The surface parking lot is producing a constraint on the unit yield of the site. We also note that the current grading of the site is sitting considerably below William Barker Park (Town Square) and the neighbouring development to the west and will require a significant amount of fill to bring the grades to a reasonable level.

Pedestrian Connections

91. We applaud the agreement and co-operation between the neighbouring landowners (Mattamy Homes and the Bayview Group) with respect to the pedestrian connections running north-south and east-west. As noted in the meeting, it is important to ensure the pathways are of sufficient width, and not placed such that they are obstructed by overhanging bumpers and trailer hitches from adjacent parked vehicles.

92. Appropriateness of the Townhouse Block

93. The townhomes are not a good fit with the urban fabric here in the mid-rise core of the neighbourhood, surrounded as they will be by 6 to 9 story buildings on all sides.

94. The rear decks of the townhomes will overlook a parking lot, and be overlooked by many other buildings, making them unpleasant outdoor spaces.

95. An expanded mixed-use building having, for example, an L shape around the street corner might be a more appropriate design. The larger structure would produce a better economy of scale, allowing for benefits such as dual elevators, along with the improved economics of a better unit yield.

Mixed-use Building Design

96. We support the inclusion of a variety of livable unit sizes in this proposal.

97. We would like to ensure that the commercial units on at least the ends of the mixed-use building are provided with adequate exhaust ventilation ducting in support of future restaurant kitchen exhaust hood usage - something that is currently lacking in all the other commercial units in the neighbourhood, and for which there has been a demand. Looking at many developments around the city with ground floor commercial space, there seems to be a fairly high demand for take-out type food establishments.

98. The lower floor around the commercial units would look better if it was built from a different material, such as brick, than the upper floors. This would also add to the long term durability of that higher traffic area.

99. This proposed development is situated on a designated mixed-use block within Wateridge Village. The Wateridge Village Community Design Plan (CDP), an official City of Ottawa planning policy document, lists in Section 6.5.2 the policies pertaining to the design of low- to mid-rise residential and mixed-use buildings. Among others, it sets forth the following requirements:

    a. “Street level unit entrances should be expressed within modulated, articulated building façades.”

    b. “Ground-floor setbacks, and recessed entrances, should be included in building design to provide weather protected storefronts and entrances.”

    c. “Corners should be emphasized with distinct architectural elements such as bay windows, turrets or wrap around porches.”

        i. None of these three design requirements are met in the current proposal.

    d. “No building should have any length greater than 40 metres without some form of articulation that achieves a break in the visual appearance.”

i. The proposed building presents 49m of façade without any articulation.

e. “The façade of buildings that are less than 20 metres in height should incorporate some form of articulation such as using different building materials to create a transition between upper and lower storeys. This transition should be placed at an elevation that compliments adjacent buildings and helps create a cohesive visual pattern along the street frontage.”

i. The proposed building is under 20m in height and lacks any vertical articulation. The buildings adjacent to this one provide vertical articulation in the form of a step-back at the 4th floor. This building should probably do the same.

f. “Two to three exterior materials per building should be used to introduce texture and visual diversity to building surfaces.”

i. This building is proposed to be clad in 3 different colours of the same exterior metal planking material, not 3 different materials.

100. The use of metal planking for the entirety of the façade is also a contravention of the Wateridge Village Urban Design Guidelines And Architectural Controls For Phases 2a And 2b, in which this block is situated, which states that "Appropriate primary materials must include masonry, brick, stone, and wood and should occupy approximately 60% of each building façade."

101. Mattamy is currently constructing mixed-use residential buildings with retail at grade at their "Locale" development on 10th Line Rd in Orleans. They are designed by the same architect (Kohn), have virtually the same footprint, the same residential unit count per floor, and include all of the required, but missing, exterior design elements listed above. We would like to suggest that the Locale building should be used as the basis for a redesign of the proposed mixed-use building here at Wateridge, instead of the current design.

Feel free to contact the Wateridge Community Association for follow-up questions.

Other

102. The High Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design and will be applicable to Site Plan Control and Plan of Subdivision applications.

a. The HPDS was passed by Council on April 13, 2022, but is not in effect at this time, as Council has referred the 2023 HPDS Update Report back to staff with the direction to bring forward an updated report to Committee at

a later date. The timing of an updated report to Committee is unknown at this time, and updates will be shared when they are available.

b. Please refer to the HPDS information at ottawa.ca/HPDS for more information.

103. Under the Affordable Housing Community Improvement Plan, a Tax Increment Equivalent Grant (TIEG) program was created to incentivize the development of affordable rental units. It provides a yearly fixed grant for 20 years. The grant helps offset the revenue loss housing providers experience when incorporating affordable units in their developments.

a. To be eligible for the TIEG program you must meet the following criteria:

i. the greater of five units OR 15 per cent of the total number of units within the development must be made affordable

ii. provide a minimum of 15 per cent of each unit type in the development as affordable

iii. enter into an agreement with the city to ensure the units maintain affordable for a minimum period of 20 years at or below the city-wide average market rent for the entire housing stock based on building form and unit type, as defined by the Canada Mortgage and Housing Corporation

iv. must apply after a formal Site Plan Control submission, or Building Permit submission for projects not requiring Site Plan Control, and prior to Occupancy Permit issuance

b. Please refer to the TIEG information *at Affordable housing community improvement plan / Plan d'améliorations communautaires pour le logement abordable for more details or contact the TIEG coordinator via email at affordablehousingcip@ottawa.ca.*

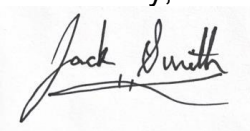
Submission Requirements and Fees

1. Zoning By-law Amendment (Major) and Site Plan Control (Complex) applications will be required.
    a. Additional information regarding fees related to planning applications can be found here.
2. The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission.
    a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

3. All of the above comments or issues should be addressed to ensure the effectiveness of the application submission review.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly,



Jack Smith, Planner II

Encl. Studies and Plans Identification List
Supplementary Development Information
List of Technical Agencies
HPDS Overview for Applicants
HPDS Example Checklist
ADS Site Plan Checklist

c.c. Jean-Charles Renaud, Planner III, Development Review Central
Haris Khan, Planner I, Development Review Central
Nader Kadri, Urban Designer,
Shawn Wessel, Infrastructure Project Manager
Matthew Hayley, Environmental Planner
Hayley Murray, Planning Forester

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