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# The Gateway Centre

**PRELIMINARY FUNCTIONAL SERVICING REPORT**

Charis Developments

# Document Control

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Issue	Date	Description
1	April 6, 2022	OPA/ZBA 1 <sup>st</sup> Submission
2	September 16, 2024	Revised Site Plan
3	July 8, 2025	Revised Site Plan
4	December 22, 2025	2 <sup>nd</sup> Submission

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**Drawings**

**Richard Ziegler Architect Inc.**

A101: Site Plan - Option C4B

**Tatham Engineering Limited**

SAN.1: Sanitary Layout Plan

WAT.1: Watermain Layout Plan

STM.1: Storm Layout Plan

**Appendices**

Appendix A: Water Demand & Sanitary Calculations

Appendix B: Water & Sanitary Service Calculations

Appendix C: FUS Fire Flow Calculations

Appendix D: Sanitary Design Sheet



# 1 Introduction

Tatham Engineering has been retained by Charis Developments to prepare a Preliminary Functional Servicing Report to support an official plan amendment (OPA) and zoning by-law amendment (ZBA) for the proposed Gateway Centre Commercial Development in the Town of Collingwood, County of Simcoe.

## 1.1 OBJECTIVES

The primary objective of this report is to address the servicing requirements of the Town of Collingwood and Simcoe County with respect to the existing and proposed sanitary servicing, water supply and distribution, drainage and stormwater management (SWM), safe vehicular access to the site and utilities commonly required to support a commercial development (phone, hydro, cable, TV, gas, etc.).

## 1.2 GUIDELINES & BACKGROUND REPORTS

This report was prepared recognizing municipal and provincial guidelines, including the following publications:

- *Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Authorized under Environmental Compliance Approval*, Ministry of the Environment, Conservation and Parks (2023);
- *Town of Collingwood Development Standards* (2007, Amended 2022);
- *Water Supply for Public Fire Protection, Fire Underwriters Survey* (2020);
- *Ontario Building Code Compendium* (2024);
- *Town of Collingwood 2024 Annual Wastewater Performance Report* (2025);
- *Collingwood Drinking Water System 2024 Annual Compliance Report* (2025);
- 2024 Year End: Water and Wastewater Uncommitted Hydraulic Reserve Capacity Update (2025); and
- 869 Hurontario Street Development (Draft), Watermain Hydraulic Analysis, (February 2025) by CIMA+.

Additional reports have been prepared in conjunction with this report in support of the proposed commercial development and are summarized below:

- *Geotechnical Investigation Proposed Commercial Development - 839, 853 and 869 Hurontario Street & 7564 Poplar Sideroad, Collingwood* (July 2025) by G2S Consulting Inc.;



- *L - The Gateway Centre Feature Based Water Balance*, (December 2025) by Tatham Engineering;
- *Preliminary Stormwater Management Report* (December 2025) by Tatham Engineering; and
- *The Gateway Centre Traffic Impact Study* (December 2025) by Tatham Engineering.



## 2 Development Site

### 2.1 SITE LOCATION & DESCRIPTION

The subject property consists of approximately 3.75 ha of mostly undeveloped land located northeast of the Hurontario Street and Poplar Sideroad intersection in the Town of Collingwood. The proposed development incorporates four properties, the municipal addresses being part of 839 Hurontario Street, 853 Hurontario Street, 869 Hurontario Street and 7564 Poplar Sideroad. The subject property is bounded by Poplar Sideroad to the south, Hurontario Street to the west, residential homes to the east and a pedestrian path and the Hamilton Drain to the north. Figure 1 illustrates the location of the subject property.

### 2.2 SURFACE CONDITIONS

Information regarding the existing topography, ground cover and drainage patterns were obtained through collection of detailed topographic survey data and aerial imagery.

The topographic information (survey completed by J.D. Barnes Ltd. on September 13, 2023) indicates the majority of the site gently slopes north towards the Hamilton Drain via overland flow. The Hamilton Drain flows east towards the Pretty River Estates subdivision, ultimately discharging into the Pretty River.

There is an existing wetland at the northeast corner of the site regulated by the Nottawasaga Valley Conservation Authority (NVCA). The wetland includes an area of approximately 0.197 ha on-site and 0.094 ha offsite on adjacent private lands.

The remainder of the site drains to the roadside ditch along the north side of Poplar Sideroad and the east side of Hurontario Street. The ditch along the north side of Poplar Sideroad flows east to west, tying into the Hurontario Street ditch which flows north. A 500x660 mm CSPA culvert and a 900 mm diameter culvert bring external drainage from the south side of Poplar Sideroad into this ditch system, and ultimately towards the Hamilton Drain north of the subject property.

The site is currently vacant, and primarily grass covered. The centre of the site includes a vegetated 1.2 ha fill pad, and an overgrown wooded portion occupies the northern and eastern sections of the property. An existing single family residential dwelling is located on 853 Hurontario Street.



### 2.3 SUBSURFACE CONDITIONS

A geotechnical investigation, submitted under a separate cover, was completed by G2S Consulting Inc. dated July 2025. Fieldwork was conducted between September 30 and October 22, 2021, consisting of 23 exploratory sampled boreholes. Two more boreholes were conducted on June 4 and 5, 2024. The boreholes extended to depths ranging from 2.1 m to 8.2 m below existing grade. Subsurface conditions are as follows:

- 75 to 360 mm of surficial topsoil;
- 9 boreholes indicated a clayey silt fill layer ranging from depths of 0.8 m to 1.2 m below grade;
- 8 boreholes indicated a granular fill (sand and gravel) layer ranging from depths of 0.9 m to 1.6 m below grade;
- a layer of clayey silt extending 1.5 m to 4.6 m below grade was identified below the fill (17 applicable boreholes) or topsoil (6 applicable boreholes);
- silt deposits were identified below the clayey silt layer at 11 borehole locations. The silt deposit depths ranged from 3.1 m to 6.1 m below grade;
- lower clayey silt deposits were encountered beneath the silt deposits in two borehole locations, extending to depths between 4.6 m and 6.1 m below grade;
- sandy silt till was encountered below the silt deposits in 12 locations with depths ranging from 5.2 m to 8.2 m below grade;
- sandy gravel till was encountered beneath the sandy silt till in both of the additional boreholes with depths ranging from 6.9 m to 7.5 m below grade; and
- limestone/dolostone was encountered at depths ranging from 6.9 m to 7.5 m below grade, and bedrock was encountered at depths ranging from 7.5 m to 11.1 m below grade.

For the purposes of hydrologic modelling, the soil has been classified as silt loam (Type BC).

Groundwater monitoring wells were previously installed in seven boreholes. Two new monitoring wells were installed in the additional boreholes. The groundwater was found to be approximately 0.4 m to 1.4 m below existing grade.

### 2.4 PROPOSED DEVELOPMENT

The proposed development will consist of the following facilities, as shown on the attached Site Plan. The site will be constructed in two phases, as summarized below.



## **PHASE 1**

- Building 1 - Starbucks
- Building 2 - Dollarama
- Building 5 - Grocery Store - No Frills
- Building 6 - Shopper's Drug Mart and Retail
- Building 7 - McDonald's
- Building 8 - Restaurant/Commercial, Pet Valu and Commercial/Office

## **PHASE 2**

- Building 3 - 12-storey mixed-used building including a commercial area, 165 two-bedroom apartment units, rooftop amenity space and underground parking
- Building 4 - Retail building with offices above

## **SITE PARKING**

- 285 parking stalls required for commercial use
- 294 parking stalls provided for commercial use
- 125 parking stalls required for residential use
- 213 parking stalls provided for residential use
- 10 accessible spaces required (2% of required parking)
- 14 accessible spaces provided



# 3 Sanitary Sewage Collection & Conveyance

## 3.1 EXISTING INFRASTRUCTURE

An existing 200 mm diameter sanitary stub extends off an existing 200 mm diameter sanitary sewer flowing north underneath Hurontario Street. The stub extends into the subject site 70 m north of Poplar Sideroad. Additionally, an existing 250 mm diameter sanitary sewer flowing east to west is located north of the property, under the Hamilton Trail, which also connects to the existing 200 mm diameter Hurontario Street sanitary sewer. Ultimately sewage is discharged to the Collingwood Wastewater Treatment Plant (WWTP). The existing sanitary sewer network is depicted in drawing *SAN.1: Sanitary Layout Plan*.

In reviewing the *Town of Collingwood 2024 Annual Wastewater Performance Report*, the plant has an average day flow rated capacity of 24,548 m<sup>3</sup>/day and a maximum day flow rate capacity of 60,900 m<sup>3</sup>/day. The report shows an average day flow and maximum day flow of 16,792 m<sup>3</sup>/day and 39,567 m<sup>3</sup>/day respectively, operating at 68% of its average day flow rated capacity and 65% of its maximum day flow rated capacity. The available average day and maximum day surplus capacities are 7,756 m<sup>3</sup> and 21,333 m<sup>3</sup> respectively. The 2024 Year End: Water and Wastewater Uncommitted Hydraulic Reserve Capacity Update, establishes an uncommitted hydraulic reserve capacity of 4,522 m<sup>3</sup>, accounting for existing capacity commitments and a 5% factor of safety.

## 3.2 PROPOSED INFRASTRUCTURE

### 3.2.1 Sewage Loading

The *Town of Collingwood Development Standards (2007)*, *MOE Design Guidelines for Sewage Works (2008)* and the *Ontario Building Code* were used as a guide to determine the expected sanitary sewage flow from this site. The commercial and residential sewage flows were calculated separately. In the absence of flow data, the average sewage generation from the commercial buildings was estimated using Table 8.2.1.3.B in the Ontario Building Code and the sewage generation from the apartment building was calculated using the Town design standards of 1.9 cap/unit and 260 L/cap/day. The peak factor for the site was calculated using the Harmon Formula. The total sewage generated by the commercial and residential development and extraneous flow results in an estimated peak flow of 8.22 L/s. Supporting calculations are attached in Appendix A.



### 3.2.2 Sanitary Sewer

It is anticipated that a proposed 200 mm PVC sanitary sewer will flow north through the site's service corridor. The sanitary sewer will be sized at detailed design to accommodate the proposed development. A sanitary sewer stub near the southeast corner of the subject property was also provided. Refer to drawing *SAN.1: Sanitary Layout Plan* for further details pertaining to the proposed sanitary sewer. A preliminary sanitary sewer design sheet is attached in Appendix D.

The proposed sanitary sewer will be installed as part of Phases 1 and 2. No additional sanitary sewer will need to be installed as part of Phase 3.

### 3.2.3 Sanitary Sewer Connection

The sewer will connect to the existing 250 mm diameter sanitary sewer north of the subject site. An additional maintenance structure at the connection will be required. The sanitary flows from the neighbouring Pretty River Estates development to the east utilizes the 250 mm sanitary sewer. In reviewing the Functional Servicing Report completed by exp Services (July 2012), a total of 1,383 residents in the Pretty River Estates contribute to the sanitary sewer, resulting in a peak flow of 32.4 L/s of sewage, utilizing the Town's previous standards of 2.9 cap/unit and 450 L/cap/day. Utilizing the Town's current design standards, Pretty River Estates and the Gateway development will generate a combined peak sanitary flow of 28.6 L/s, which is 56% of the existing sewer's 50.8 L/s capacity. Thus, the existing sanitary sewer has sufficient capacity to accommodate the peak flows from the proposed development. Refer to the Sanitary Sewer Design Sheets in Appendix D for further details.

The connection point to the trunk sewer was investigated and confirmed that the existing sanitary sewer is at sufficient depth for a sanitary service connection to the proposed buildings.

The presence of a sanitary stub 70 m north of Poplar Sideroad to the subject site indicates that the Hurontario Street sanitary sewer considers loading from the proposed site. While this stub is not planned to be utilized, the sanitary flows from the site will connect to the Hurontario Street sanitary sewer 157 m north of the stub. The Town of Collingwood operates a hydraulic model of their sanitary sewer system. We request that the Town add the proposed development to their model and confirm that the downstream sewer system can accommodate the proposed development.

### 3.2.4 Sanitary Service Connections

Each building will connect to the proposed 200 mm diameter sanitary sewer main via a 125 mm diameter PVC sanitary service. The minimum required slope of these services is 1.0%. The required flow and maximum capacity of the sanitary services is summarized in Appendix B. The capacity



of the sanitary services exceeds the flow requirements of each building, and therefore the services are of sufficient size.



# 4 Water Supply & Distribution

## 4.1 EXISTING INFRASTRUCTURE

An existing 200 mm water service stub with a main and curb stop valve enters the subject site approximately 70 m north of Poplar Sideroad. The water service stub connects to an existing 200 mm diameter ductile iron watermain running north-south on the west side of Hurontario Street across from the proposed development. The watermain terminates immediately south of the water service stub connection with a plug, thrust block and 25 mm blow off valve. North of the proposed development there is an existing 500 mm watermain running under and parallel to the Hamilton Trail. There is no existing watermain on Poplar Side Road. East of the Site there is a 150 mm diameter watermain running north-south on Huges Street. The existing water distribution network is depicted in drawing *WAT.1: Water Layout Plan*.

The Collingwood Water Treatment Plant has a rated capacity of 31,140 m<sup>3</sup>/ day per the *Town of Collingwood 2024 Annual Summary Report*. The report showed maximum day flow of 25,476 m<sup>3</sup>/day (82% of rated capacity). The 2024 Year End: Water and Wastewater Uncommitted Hydraulic Reserve Capacity Update, establishes an uncommitted hydraulic reserve capacity of 1,379 m<sup>3</sup>, accounting for existing capacity commitments and a 5% factor of safety.

## 4.2 PROPOSED INFRASTRUCTURE

### 4.2.1 Water Demand

The Town of Collingwood Development Standards (2007) and the Ontario Building Code were used as a guide to determine the expected water demand consumption for this site. The average commercial water consumption demand was calculated using Table 8.2.1.3.B in the Ontario Building Code. The average day commercial flow was calculated to be 80.4 m<sup>3</sup>/day and the average day residential flow was calculated to be 81.5 m<sup>3</sup>/day making the total average day flow 161.9 m<sup>3</sup>/day which is equivalent to 215.5 single detached units. Refer to Appendix A for a breakdown of the expected water demands of each commercial building.

### 4.2.2 Watermain

A proposed 250 mm ductile iron watermain running underneath the subject site's access corridors will service the proposed development. The proposed watermain will connect to the existing 500 mm diameter watermain along the Hamilton Drain, will be reduced to connect to the existing 200 mm diameter stub from the Hurontario Street watermain, and will be further reduced to connect to the existing 150 mm diameter watermain on Huges Street, creating a looping system. Refer to drawing *WAT.1: Water Layout Plan* for further details. The proposed watermain



will be installed as part of the works associated with Phases 1 and 2. No additional watermain will need to be installed as part of Phase 3. Refer to Appendix B for watermain calculations confirming the 250 mm diameter watermain will provide sufficient capacity to achieve the peak hour demand and requisite fire flows.

#### 4.2.3 Watermain Connection

The proposed watermain connects to the existing 200 mm diameter stub from the Hurontario Street watermain, the existing 150 mm diameter watermain on Hughes Street and the existing 500 mm diameter watermain adjacent to the Hamilton Drain. As the Town of Collingwood operates a hydraulic model of their water distribution system, we request that the Town add the proposed development to their model and confirm that the required demand flows can be achieved within the applicable pressure ranges.

#### 4.2.4 Water Service Connections

It is anticipated that Buildings 1, 2, 4, 6, 7 and 8 will connect to the proposed watermain via 50 mm diameter water service lines, whereas Buildings 3 and 5 (grocery store) will connect via 150 mm diameter water services to supplement internal sprinkler systems. The required flow and maximum capacity of the water service lines are summarized in Appendix B.

Water meters will be installed internal to each individual building to record water consumption. The proposed facilities will be provided with backflow prevention devices in accordance with the Ontario Building Code and the Town's water by-law. The backflow prevention devices will also be installed internal to the building to allow for testing and maintenance as may be required.

### 4.3 FIRE PROTECTION

Two fire hydrants exist near the proposed development, located on the west side of Hurontario Street approximately 80 m and 180 m north of Poplar Sideroad, respectively. It is anticipated that internal fire hydrants will be required to provide the requisite fire flows for the development. The proposed fire hydrant locations will be provided at the detailed design stage.

The required fire flows for each building were calculated in accordance with the *Fire Underwriters Survey Water Supply for Public Fire Protection Practices* (2020) and the *Town of Collingwood Development Standards* (2007) are summarized in Appendix C. The preliminary calculations account for a separate fire line for a sprinklered system in Buildings 3 and 5 (grocery store), the fire and domestic services will be separated at the building with isolation valves. These fire lines will not be metered.

Referring to the Watermain Hydraulic Analysis report prepared by CIMA+ for the subject development, the existing water servicing infrastructure combined with the proposed 250 mm



watermain is capable of supplying fire flows between 189 L/s and 193 L/s to the site in the near future condition model. To reduce the fire flow demands, the Fire Underwriters Survey calculations for Building 3 have been revised to reflect the use of non-combustible building materials, resulting in a demand of 150 L/s. Similarly, the wall joining the proposed grocery store (Building 5) and Building 6 will need to consist of a 2-hour rated vertical fire wall, thus reducing the exposure distance between the two buildings. The resulting fire flow demands for the grocery store (Building 5) and Building 6 are 150 L/s and 183 L/s respectively. Supporting calculations are provided in Appendix D.



## 5 Stormwater Management

A separate Stormwater Management (SWM) Report has been prepared by Tatham Engineering to address drainage and stormwater management requirements for the development. A summary of the SWM servicing strategy is as follows:

- Stormwater management quantity control will be provided by a proposed underground storage system under the parking area between Building 2 and the grocery store. Stormwater will be conveyed via an internal storm sewer network to the underground storage system. Additional storage capacity will be provided by rooftop storage on the grocery store which will discharge to a soakaway pit. Major peak flows (up to and including the 100-year storm event) from the site will be attenuated to pre-development levels. Storm flows from the underground storage facility and flows exceeding the capacity of the soakaway pit will discharge into the Hamilton Drain.
- The soakaway pit will receive and infiltrate runoff from the grocery store to satisfy the Nottawasaga Valley Conservation Authority's (NVCA) requirements for a feature-based water budget for the wetland in the northeast corner of the site. The design is further detailed in the document *L - The Gateway Centre Feature Based Water Balance*, (December 2025) prepared by Tatham Engineering.
- Emergency overland flow routes will be designed to convey stormwater to the trail connection east of Building 4 at the northeast corner of the site. Excessive runoff will spill through curb cuts, across the Hamilton Trail and into the Hamilton Drain. The maximum ponding depth will not exceed 250 mm before spilling off-site.
- Stormwater quality control will be provided by a HydroStorm HS10 located downstream of the underground system. The HydroStorm HS10 will provide a minimum of 80% total solids removal and will treat 90% of the surface runoff generated from its contributing drainage area. Additional quality control will be provided by isolator rows as part of the underground storage system. Quality control is not required for runoff from the grocery store roof as it is considered clean.

The SWM report should be read in conjunction with this report.



## 6 Transportation

A Traffic Impact Study has been completed by Tatham Engineering under separate cover. A summary of the conclusions and recommendations are as follows:

- The proposed parking provisions, loading space provisions and circulation are all considered appropriate.
- The study area traffic operations, Poplar/Country Road 32 with Hurontario Street/County Road 124 were analyzed under existing (2024) and future (2026, 2030, 2035 and 2040) conditions with the following recommendations set forth:
  - 2030 Background Conditions - consider a southbound advance green on Hurontario Street at Poplar Sideroad;
  - 2040 Background Conditions - provide an eastbound right turn lane on Poplar;
  - 2026 Total Conditions (Phase 1) - extend the 50 km/h speed zone on Hurontario Street to south of Poplar Sideroad; extend the centre turn lane on Hurontario Street 100 metres to the south; construct a centre turn lane on Poplar Sideroad from Hurontario Street to Portland Street; and construct a westbound right taper (60 metres) at Access 2.
- The proposed drive-thru lanes are considered appropriate.
- The available sight lines along both Poplar Sideroad/County Road 32 and Hurontario Street/County Road 124 exceed the design guidelines for site distance requirements.



# 7 Utilities

## 7.1 ELECTRICAL SERVICES

As part of the detailed design is support of site plan approval, Tatham Engineering will be reviewing the proposed development from an electrical servicing standpoint and will confirm if external plant upgrades are required to service the site following submission of an electrical distribution plan.

## 7.2 GAS SERVICES

Enbridge Gas was contacted about their existing gas mains in the area and their ability to service the proposed development. They advised that they have a 200 mm extra high-pressure gas main adjacent to the proposed development, one on the east side of Hurontario Street and another on the north side of Poplar Sideroad. Enbridge suspects these mains will provide sufficient capacity for the site but will require load information to confirm. Tatham Engineering will be reviewing the proposed development and providing gas load estimations at the detailed design stage.

## 7.3 TELEPHONE & INTERNET SERVICES

Bell has confirmed the site can be serviced with fibre optic cable. Bell advised that eight ducts exist on the east side of Hurontario Street and three ducts exist on the north side of Poplar Sideroad.

Rogers has indicated that they have an existing vault at the northeast corner of Poplar Sideroad and Hurontario Street.

## 7.4 POSTAL SERVICES

Canada Post has confirmed that a lock box assembly supplied by the developer would be required for postal services.



## 8 Summary

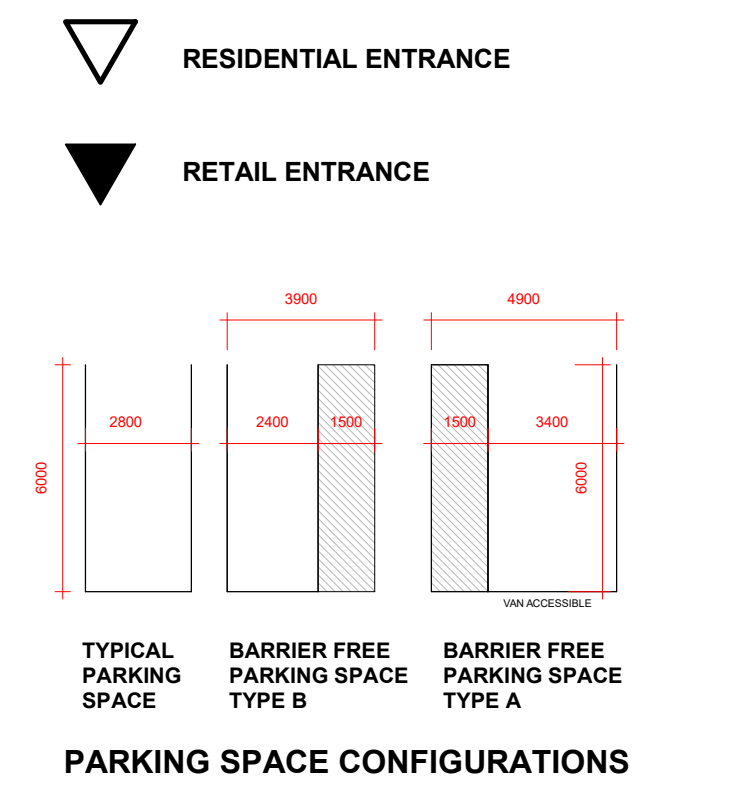
As outlined above, existing infrastructure surrounding the subject property can adequately service the development for sanitary sewage, potable water, stormwater management, hydro, natural gas, and telecommunications. A summary of the servicing strategy is as follows:

- Sanitary sewage from the proposed development will drain to the existing municipal sanitary sewer north of the proposed site via a proposed 200 mm diameter PVC sanitary sewer. An additional maintenance structure will be required to tie into the existing sanitary sewer.
- Potable water will be provided via a 250 mm watermain connecting to the existing 200 mm diameter watermain stub on Hurontario Street, the existing 150 mm diameter watermain on Hughes Street and the existing 500 mm diameter watermain that runs along the Hamilton Drain north of the site.
- Stormwater management quantity control will be provided by a combination of an underground storage system under the parking area, and rooftop storage on the grocery store discharging to a soakaway pit. Stormwater will discharge into the Hamilton Drain.
- The proposed soakaway pit will satisfy the NVCA's feature-based water budget requirements for the wetland in the northeast corner of the site.
- Stormwater management quality control will be provided by isolator rows within the underground storage system and a HydroStorm HS10, providing at least 80% total solids removal and treatment of 90% of the surface runoff generated from its contributing drainage area.
- Hydro, natural gas, Bell and cable TV will be extended from their existing plants to service the proposed development.
- Postal services require a lock box assembly supplied by the developer.

Detailed drawings will be completed for approval by the Town and relevant regulatory agencies in support of Site Plan Approval.



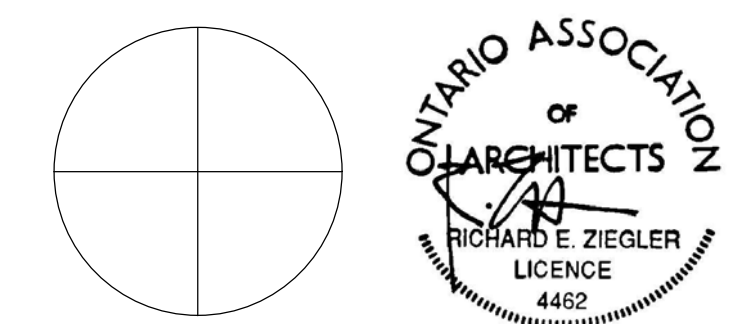
ISSUED FOR DISCUSSION  
2025-12-22 9:33:43 AM



02	ISSUED FOR PLANNING APPROVALS	2025.07.03
01	ISSUED FOR CLIENT APPROVALS	2025.05.29
NO.	ISSUANCE	DATE

THE GENERAL CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ALL ERRORS AND OMISSIONS TO THE ARCHITECT. DO NOT SCALE THE DRAWINGS. DO NOT USE THIS DRAWING FOR CONSTRUCTION UNLESS SIGNED AND SEALED BY THE ARCHITECT.

NORTH STAMP



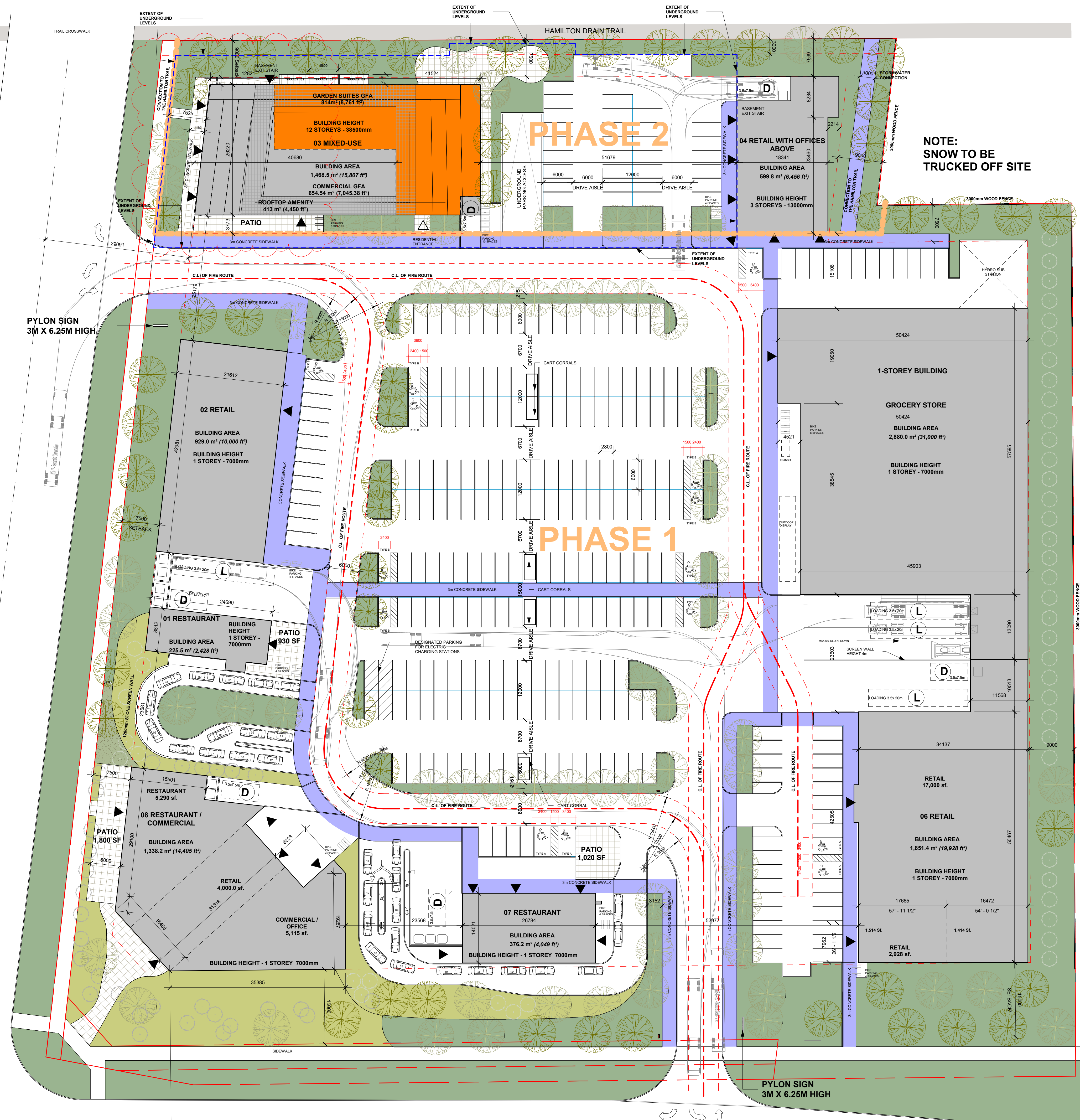
**THE GATEWAY CENTRE**

CHARIS DEVELOPMENTS  
HIGHWAY 124 & POPLAR SIDE ROAD  
COLLINGWOOD, ONTARIO

**SITE PLAN - OPTION C4B**

SCALE	As Indicated	PROJECT NUMBER
DATE	2025-12-22 9:33:43 AM	202022
DRAWN	SO	CHECKED
CHECKED	REZ	REVISION

**A101**



**PARKING - COMMERCIAL**

Parking aisle minimum width of 6.0 metres  
Parking space minimum dimensions of 2.8 m x 6.0 m  
Accessible parking space minimum dimensions 4.5 m x 6.0 m  
Dual accessible parking spaces at 3.4 m x 6.0 m with 1.5 m shared aisle

Building	Rate	Gross Area	Gross Floor Area*	Required	Provided
<b>Phase 1</b>					
01 Restaurant	8/100 m2	225.5 m2	157.85 m2		
02 Commercial	3/100 m2	929 m2	836.1 m2		
Grocery Store	3/100 m2	2,880.0 m2	2,016.2 m2		
06 Commercial	3/100 m2	1,851.4 m2	1,666.26 m2		
07 Restaurant	8/100 m2	376.2 m2	263.3 m2		
08 Commercial	3/100 m2	846.8 m2	762.12 m2		
09 Restaurant	8/100 m2	491.5 m2	344.05 m2		
Total Phase 1 Commercial		6,507.2 m2	5,856.5 m2	176	
Total Phase 1 Restaurant		1,093.2 m2	765.24 m2	62	
<b>Total Phase 1</b>		<b>7920.8</b>	<b>6259.62</b>	<b>218</b>	<b>264</b>
<b>Phase 2</b>					
03 Commercial	3/100 m2	654.54 m2	589.1 m2		
04 Commercial	3/100 m2	1,799.4 m2	1,619.46 m2		
<b>Total Phase 2</b>		<b>2,453.94</b>	<b>2,208.56</b>	<b>67</b>	<b>30</b>
<b>Total</b>				<b>Required 285</b>	<b>Provided 294</b>
<b>Total Phase 1 &amp; 2</b>		<b>10,374.74</b>	<b>8,468.18</b>		

\*Gross Floor Area as defined by the Town of Collingwood ZBL and is based on Gross Area -10% for general commercial uses and -30% for grocery store and restaurant uses.

**DELIVERY SPACES - LOADING SPACES**

1 Delivery Space for GFA between 460 and 2,500  
1 Loading Space for GFA between 2,501 and 7,000  
Delivery Spaces at 3.5 m (w) x 7.5 m (l) x 3.0 (v)  
Loading Spaces at 3.5 m (w) x 20.0 m (l) x 4.5 m (v)

Building	Use	Gross Area	Gross Floor Area	Type Required	Type Provided
Building 01	Restaurant	225.5 m2	157 m2	N/A	1 Delivery Space
Building 02	Commercial	929 m2	836.1 m2	1 Delivery Space	1 Loading Space
Building 03	Mixed-Use	654.54 m2	589.1 m2	1 Delivery Space	1 Delivery Space
Building 04	Commercial	1,799.4 m2	1,619.46 m2	1 Delivery Space	1 Delivery Space
Grocery Store	Commercial	2,880 m2	2,106 m2	1 Delivery Space	2 Loading Spaces
Building 06	Commercial	1,851.4 m2	1,666.26 m2	1 Delivery Space	1 Del & 1 Ldg Space
Building 07	Restaurant	376.2 m2	263.3 m2	N/A	1 Del Space
Building 08	Commercial & Rest.	1,338.3 m2	1,106.17 m2	1 Delivery Space	1 Delivery Space

\*Gross Floor Area as defined by the Town of Collingwood Zoning By-law and is based on Gross Area -10% for general commercial uses and -30% for grocery store and restaurant uses.

**QUEUING AISLES**

Parking space minimum dimensions of 2.8 m x 6.0 m

Building	Use	# of Spaces Required	# of Spaces Provided	Comments
Building 01	Restaurant	10	12	Add'l Spaces Beyond Pick-up Window
Building 07	Restaurant	10	13	Add'l Spaces Beyond Pick-up Window

**THE GATEWAY CENTRE - ZONE PROVISIONS**

Provision	C4 Zone Reqmnt / 2024 OP...	Proposed	Compliance
Minimum Lot Area	1,000 m2	37,604.1 m2	Y
Minimum Lot Frontage (Huronario Street)	30.0 m	193.98 m	Y
Minimum Front Yard (Huronario Street)	6.0 m	0.0 m / 7.525 m (1)	No
Minimum Exterior Side Yard (Poplar Sideroad)	9.0 m	15.0 m	Y
Minimum County Setback @ Poplar Sideroad	15.0 m	15.0 m	Y
Minimum Interior Side Lot Line (North Lot Line)	0.0 m	0.0 m / 9.0 m (2)	No
Minimum Rear Yard (East Lot Line)	7.5 m	9.0 m	Y
Maximum Height	15.0 m	39.0 m	No
Minimum Height	7.0 m	>= 7.0 m	Y
Minimum Gnd Fir Height	4.25 m	>= 4.25 m	Y
Minimum Gnd Fir NRGFA	75%	45%	No
Maximum Lot Coverage	40%	27%	Y
Minimum Landscape Open Space	10%	23%	Y
Minimum Huronario Street CL Setback	15.0 m	42.5 m	Y
45° Ang Plane from CL of Huronario	45°	Within 45°	Y
Minimum Poplar Sideroad CL Setback	18.0 m	29.3	Y
Minimum Parking Space Setback	6.0 metres	> 6.0 m	Y
Entrance Width	7.5 m to 15.0 m	9.0 m	Y
Maximum Number of Dwelling Units/Rooms	FSI Max 7.5 x Lot Area	< 7.5 FSI / 165 units/rooms	Y

- Notes:  
(1) 0.00 m @ U/G Garage & 7.525 m to Bldg 03  
(2) 0.00 m @ U/G Garage & 9.0 m to Bldg 03  
(3) FLL = Defined as Huronario Street  
(4) Phase 1 & 2 = To be deemed to be 1 Lot

**PARKING - RESIDENTIAL**

Parking aisle minimum width of 6.0 and 6.7 metres  
Parking space minimum dimensions of 2.8 m x 6.0 m  
Accessible parking spaces per IASR

Building	Rate	# of Units	Resident Parking Required	Visitor Parking Required	Total Required	Total Provided
Building 03	1/unit + 0.25/unit for Visitors	165	83	42	125	213

Note: Parking for the Mixed-Use Building to be provided at the 'Dwelling, Apartment' Rate (ZBLA Required)

# **Appendix A: Water Demand & Sanitary Calculations**



Project:	The Gateway Village	Date:	8-Jul-25
File No.:	120119	Designed:	JB
Subject:	Water Demand and Sanitary Calculations	Checked:	JN

**Commercial Water Demand Calculations**

**PHASE 1**

**Building 1 - Starbucks**

Donut Shop 400 L/d per seat - OBC Table 8.2.1.3.B. Item 12 e)  
 157.0 m<sup>2</sup> 400 L/d \* 40 seats = **16,000 L/d**

**Building 2 - Dollarama**

Retail 5 L/d per m<sup>2</sup> of floor space - OBC Table 8.2.1.3.B. Item 22 a)  
 836.1 m<sup>2</sup> 5 L/d \* 836.1 m<sup>2</sup> = **4,181 L/d**

**Building 7 - McDonalds**

Paper Service Restaurant 60 L/d per seat - OBC Table 8.2.1.3.B. Item 12 a)  
 287.0 m<sup>2</sup> 60 L/d \* 70 seats = **4,200 L/d**

**Building 8**

Restaurant 125 L/d per seat - OBC Table 8.2.1.3.B. Item 12 a)  
 344.0 m<sup>2</sup> 125 L/d \* 70 seats = **8,750 L/d**

AND  
 Retail 5 L/d per m<sup>2</sup> of floor space - OBC Table 8.2.1.3.B. Item 22 a)  
 334.3 m<sup>2</sup> 5 L/d \* 334.3 m<sup>2</sup> = **1,672 L/d**

AND  
 Commercial/Office 5 L/d per m<sup>2</sup> of floor space - OBC Table 8.2.1.3.B. Item 22 a)  
 427.8 m<sup>2</sup> 5 L/d \* 427.8 m<sup>2</sup> = 2,139 L/d

OR  
 75 L/d per employee 8 hour shift - OBC Table 8.2.1.3.B. Item 15 a)  
 75 L/d \* 45 shifts = 3,375 L/d

OR  
 75 L/d per 9.3 m<sup>2</sup> of floor space - OBC Table 8.2.1.3.B. Item 22 a)  
 75 L/d \* 46 m<sup>2</sup> = **3,450 L/d**

**TOTAL PHASE 1 = 38,252 L/d**

**PHASE 2**

**Building 6:**

Retail 5 L/d per m<sup>2</sup> of floor space - OBC Table 8.2.1.3.B. Item 22 a)  
 1666 m<sup>2</sup> 5 L/d \* 1666 m<sup>2</sup> = **8,330 L/d**

**Building 5:**

Grocery Store 40 L/d per 9.25m<sup>2</sup> of floor space - OBC Table 8.2.1.3.B. Item 12 j(i)  
 1716 m<sup>2</sup> 40 L/d \* 1716 /9.25m<sup>2</sup> of floor space : **7,421 L/d**

AND  
 Deli Department 190 L/d per 9.25m<sup>2</sup> of Deli Dept. floor space - OBC Table 8.2.1.3.B. Item 12 j(ii)  
 100 m<sup>2</sup> 190 L/d \* 100 /9.25m<sup>2</sup> of floor space : **2,054 L/d**

AND  
 Bakery Department 190 L/d per 9.25m<sup>2</sup> of Bakery Dept. floor space - OBC Table 8.2.1.3.B. Item 12 j(iii)  
 100 m<sup>2</sup> 190 L/d \* 100 /9.25m<sup>2</sup> of floor space : **2,054 L/d**

AND  
 Meat Department 380 L/d per 9.25m<sup>2</sup> of Meat Dept. floor space - OBC Table 8.2.1.3.B. Item 12 j(iv)  
 100 m<sup>2</sup> 380 L/d \* 100 /9.25m<sup>2</sup> of floor space : **4,108 L/d**

AND  
 950 L/d per water closet - OBC Table 8.2.1.3.B. Item 12 j(v)  
 950 L/d \* 4 water closets = **3,800 L/d**

**TOTAL PHASE 2 = 27,767 L/d**

**PHASE 3**

**Building 3**

Retail 5 L/d per m<sup>2</sup> of floor space - OBC Table 8.2.1.3.B. Item 22 a)  
 589 m<sup>2</sup> 5 L/d \* 589 m<sup>2</sup> = **2,945 L/d**

**Building 4**

Retail 5 L/d per m<sup>2</sup> of floor space - OBC Table 8.2.1.3.B. Item 22 a)  
 540 m<sup>2</sup> 5 L/d \* 540 m<sup>2</sup> = **2,699 L/d**

Office 75 L/d per employee 8 hour shift - OBC Table 8.2.1.3.B. Item 15 a)  
 1080 m<sup>2</sup> 75 L/d \* 90 shifts = 6,750 L/d

OR  
 75 L/d per 9.3 m<sup>2</sup> of floor space - OBC Table 8.2.1.3.B. Item 15 b)  
 75 L/d \* 116 m<sup>2</sup> = **8,710 L/d**

**TOTAL PHASE 3 = 14,354 L/d**



Project: The Gateway Village	Date: 8-Jul-25
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Subject: Water Demand and Sanitary Calculations	Checked: JN

**Average Commercial Daily Demand**  
 = 80,373 L/d  
 = 80.4 m<sup>3</sup>/d or 0.93 L/s

**Maximum Commercial Daily Demand**  
 Maximum Commercial Daily Demand = Assumed maximum day factor (2.0) \* Average Commercial Daily Demand  
 = 2.0 \* 80,373 L/d = 160,745 L/d  
 = 160.7 m<sup>3</sup>/d or 1.86 L/s

**Peak Commercial Hour Demand**  
 Peak Commercial Hour Demand = Assumed peak hour factor (3.0) \* Average Commercial Daily Demand  
 = 3.0 \* 80,373 L/d = 241,118 L/d  
 = 241.1 m<sup>3</sup>/d or 2.79 L/s

**SDU Equivalent Calculation in accordance with the ICBL Exemption and Process Report**

SDU Equivalent = Average Commercial Daily Demand / 0.754  
 = 80.4 / 0.754 m<sup>3</sup>/d = 106.6 SDUs

Public works has identified the following water servicing demand requirements based on dwelling type. The use of the metric SDU (Single Detached Unit) provides a common term of reference for quantifying water and wastewater system capacity relative to building type. Non-residential water servicing capacity demands will also be communicated in SDUs for consistency.

Dwelling Type	Average Demand (m <sup>3</sup> /unit/day) <sup>1)</sup>	SDU Equivalents
Single Detached	0.754	1.00
Semi-detached	0.702	0.93
Townhouse	0.624	0.83
Apartment	0.494	0.66

This table demonstrates the greater servicing efficiencies on a unit basis associated with apartments, townhomes and semi-detached homes compared to single detached homes. For example: a 100 unit apartment building would require 66 SDU of servicing capacity whereas 100 single detached houses would require 100 SDU.

Project: The Gateway Village	Date: 8-Jul-25
File No.: 120119	Designed: JB
Subject: Water Demand and Sanitary Calculations	Checked: DC

### Residential Water Demand Calculations

#### Population Density & Design Flows

Population Density = 1.9 capita/unit - per Amendment to Town of Collingwood Development Standards (2007)  
 Design Flow = 260 L/capita/day - per Amendment to Town of Collingwood Development Standards (2007)

#### Building 3

Average Residential Daily Demand = Population Density \* Design Flow \* No. of Units  
 165 (2 bedroom units) = 1.9 capita/unit \* 260 L/capita/day \* 165 units = **81,510 L/d**  
 = **81.5 m<sup>3</sup>/d** or **0.94 L/s**

#### Average Residential Daily Demand

= **81,510 L/d**  
 = **81.5 m<sup>3</sup>/d** or **0.94 L/s**

#### Maximum Residential Daily Demand

Maximum Day Factor = 1.77 - per Amendment to Town of Collingwood Development Standards (2007)  
 Maximum Commercial Daily Demand = Max. Day Factor \* Average Residential Daily Demand  
 = 1.77 \* 81,510 L/d = **144,273 L/d**  
 = **144.3 m<sup>3</sup>/d** or **1.67 L/s**

#### Peak Residential Hour Demand

Peak Hour Factor = 2.70 - per Amendment to Town of Collingwood Development Standards (2007)  
 Peak Residential Hour Demand = Peak Hour Factor \* Average Residential Daily Demand  
 = 2.70 \* 81,510 L/d = **220,077 L/d**  
 = **220.1 m<sup>3</sup>/d** or **2.55 L/s**

#### SDU Equivalent Calculation in accordance with the ICBL Exemption and Process Report

SDU Equivalent = 0.660 \* Total No. of Units  
 = 0.660 \* 165 Units = **108.9 SDUs**

#### Commercial + Residential Water Demand

Average Daily Demand = 80.4 m<sup>3</sup>/d + 81.5 m<sup>3</sup>/d = **161.9 m<sup>3</sup>/d** or **1.87 L/s**  
 Maximum Daily Demand = 160.7 m<sup>3</sup>/d + 144.3 m<sup>3</sup>/d = **305.0 m<sup>3</sup>/d** or **3.53 L/s**  
 Peak Hour Demand = 241.1 m<sup>3</sup>/d + 220.1 m<sup>3</sup>/d = **461.2 m<sup>3</sup>/d** or **5.34 L/s**  
 SDU Equivalent = 106.6 SDU + 108.9 SDU = **215.5 SDU**

Project:	The Gateway Village	Date:	8-Jul-25
File No.:	120119	Designed:	JB
Subject:	Water Demand and Sanitary Calculations	Checked:	DC

### Sewage Generation Calculations

#### Infiltration

$$\begin{aligned}
 \text{Infiltration Rate} &= 0.23 \text{ L/ha/s} && \text{- per Town of Collingwood Development Standards (2007) Sec. 4.3.3.1} \\
 \text{Site Area} &= 3.76 \text{ ha} \\
 \text{Infiltration} &= \text{Infiltration Rate} * \text{Site Area} \\
 &= 0.23 \text{ L/ha/s} * 3.76 \text{ ha} = 0.86 \text{ L/s}
 \end{aligned}$$

#### Equivalent Population

$$\begin{aligned}
 \text{Water Design Flow} &= 260 \text{ L/cap/day} && \text{- per Amendment to Town of Collingwood Development Standards} \\
 \text{Average Commercial Daily Flow} &= \text{Average Commercial Daily Demand} - \text{Daily Irrigation Demand} \\
 &= 80,373 \text{ L/day} \\
 \text{Commercial Equivalent Population} &= 80,373 \text{ L/day} \div 260 \text{ L/cap/day} = 309.1 \text{ capita}
 \end{aligned}$$

$$\begin{aligned}
 \text{Population Density} &= 1.9 \text{ capita/unit} && \text{- per Amendment to Town of Collingwood Development Standards} \\
 \text{Total No. of Units} &= 165 \text{ units} \\
 \text{Residential Population} &= 1.90 \text{ capita/unit} * 165 \text{ units} = 313.5 \text{ capita}
 \end{aligned}$$

$$\begin{aligned}
 \text{Equivalent Population} &= \text{Commercial Population} + \text{Residential Population} \\
 &= 309.1 \text{ capita} + 313.5 \text{ capita} = 622.6 \text{ capita}
 \end{aligned}$$

#### Harmon's Peaking Factor

$$\begin{aligned}
 \text{Harmon's Peaking Factor} &= 1 + 14 \div (4 + \sqrt{[\text{Population}/1000]}) \\
 &= 1 + 14 \div (4 + \sqrt{[622.6 / 1000]}) = 3.92
 \end{aligned}$$

#### Maximum Daily Flow

$$\begin{aligned}
 \text{Average Daily Flow} &= 161.9 \text{ m}^3/\text{d} = 1.87 \text{ L/s} \\
 \text{Maximum Daily Flow} &= \text{Harmon's Peaking Factor} * \text{Average Daily Demand} + \text{Infiltration} \\
 &= 3.92 * 1.87 \text{ L/s} + 0.86 \text{ L/s} = \mathbf{8.22 \text{ L/s}} \text{ or } \mathbf{709.8 \text{ m}^3/\text{d}}
 \end{aligned}$$

# **Appendix B: Water & Sanitary Service Calculations**

	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	JN
	<b>Revision:</b>	4

**BUILDING 1 - PHASE 1**

**Calculation of Water Flow Rates for Water Services**

Hazen Williams Equation as used in this spreadsheet:  
 $Q = (3.763 \times 10^{-6}) C D^{2.63} (DP/L)^{0.54}$   
 where Q is the water flow rate in m<sup>3</sup>/hr  
 D is the pipe diameter in mm  
 L is the pipe length in m  
 DP is the pressure difference across pipe length L in kN/m<sup>2</sup>

Pipe Material: Copper  
 Hazen Williams Coefficient, C = 140  
 Pressure drop over the pipe length, DP = 275 kN/m<sup>2</sup>

Pipe Length (m)	Water Flow Rate (m <sup>3</sup> /hr)									
	Pipe Diameter (mm)									
	12	20	25	40	50	65	75	100	130	150
14	1.8	6.9	12.5	43.0	<b>77.3</b>	154.2	224.6	478.6	954.3	1390.3

**Flow rate provided by 50 mm diameter water service**

Q<sub>provided</sub> = 77.3 m<sup>3</sup>/hr  
 Q<sub>provided</sub> = 21.48 L/s

**Water Demand (from Water Demand and Sanitary Calculations)**

Average Day Demand 16000 L/d  
 Peak Hour Factor 3.0  
 Peak Hour Demand, Q<sub>required</sub> = 0.56 L/s

Q <sub>provided</sub> = 21.48 L/s	>	Q <sub>required</sub> = 0.56 L/s	Acceptable
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	<b>Project:</b>	The Gateway Centre
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	<b>Date:</b>	8-Jul-25
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	<b>Checked:</b>	JN
	<b>Revision:</b>	4

**BUILDING 1 - PHASE 1**

**Calculation of Sewage Flow Rates for Sanitary Services**

Manning's Equation as used in this spreadsheet:

$$Q = (A \cdot R^{2/3} \cdot S^{1/2}) / n$$

where Q is the water flow rate in m<sup>3</sup>/s  
A is the pipe area in m<sup>2</sup>  
R is the pipe hydraulic radius in m  
S is the slope of the pipe  
n is the Manning's Coefficient

**Flow rate provided by 125 mm diameter sanitary service**

Pipe Material: PVC  
Manning's Coeff. = 0.013  
Slope = 0.01 m/m  
Diameter = 0.125 m  
Area = 0.012 m<sup>2</sup>  
Perimeter = 0.39 m  
Hydraulic Radius = 0.03 m

Flow Rate, Q<sub>provided</sub> = 0.009 m<sup>3</sup>/s  
Flow Rate, Q<sub>provided</sub> = 9.37 L/s

**Sanitary Loading**

Average Day Flow = 16000 L/d = 0.19 L/s (As per Water Demand Calculation)  
Harmon's Peaking Factor = 3.9 (As per Town of Collingwood Standards)  
Extraneous Flow Criteria = 0.23 L/ha-s (As per Town of Collingwood Standards)  
Contributing Area = 0.36 ha (Based on SAN.1 - Sanitary Layout Plan )  
Extraneous Flow = 0.08 L/s

Required Flow, Q<sub>required</sub> = Av. Day Flow • Peak Factor + Extraneous Flow = 0.81 L/s

**Check: Q<sub>provided</sub> = 9.37 L/s > Q<sub>required</sub> = 0.81 L/s Acceptable**

	<b>Project:</b>	The Gateway Centre
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	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

**BUILDING 2 - PHASE 1**

**Calculation of Water Flow Rates for Water Services**

Hazen Williams Equation as used in this spreadsheet:  
 $Q = (3.763 \times 10^{-6}) C D^{2.63} (DP/L)^{0.54}$   
 where Q is the water flow rate in m<sup>3</sup>/hr  
 D is the pipe diameter in mm  
 L is the pipe length in m  
 DP is the pressure difference across pipe length L in kN/m<sup>2</sup>

Pipe Material: Copper  
 Hazen Williams Coefficient, C = 140  
 Pressure drop over the pipe length, DP = 275 kN/m<sup>2</sup>

Pipe Length (m)	Water Flow Rate (m <sup>3</sup> /hr)									
	Pipe Diameter (mm)									
	12	20	25	40	50	65	75	100	130	150
17	1.6	6.3	11.2	38.7	69.6	138.8	202.2	431.0	859.3	1251.9

**Flow rate provided by 50 mm diameter water service**

Q<sub>provided</sub> = 69.6 m<sup>3</sup>/hr  
 Q<sub>provided</sub> = 19.34 L/s

**Water Demand (from Water Demand and Sanitary Calculations)**

Average Day Demand 4181 L/d  
 Peak Hour Factor 3.0  
 Peak Hour Demand, Q<sub>required</sub> = 0.15 L/s

<b>Check:</b> Q <sub>provided</sub> = 19.34 L/s > Q <sub>required</sub> = 0.15 L/s <b>Acceptable</b>
--

	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
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	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

### BUILDING 2 - PHASE 1

#### Calculation of Sewage Flow Rates for Sanitary Services

Manning's Equation as used in this spreadsheet:

$$Q = (A \cdot R^{2/3} \cdot S^{1/2}) / n$$

where Q is the water flow rate in m<sup>3</sup>/s  
A is the pipe area in m<sup>2</sup>  
R is the pipe hydraulic radius in m  
S is the slope of the pipe  
n is the Manning's Coefficient

#### Flow rate provided by 125 mm diameter sanitary service

Pipe Material: PVC  
Manning's Coeff. = 0.013  
Slope = 0.01 m/m  
Diameter = 0.125 m  
Area = 0.012 m<sup>2</sup>  
Perimeter = 0.39 m  
Hydraulic Radius = 0.03 m

Flow Rate, Q<sub>provided</sub> = 0.009 m<sup>3</sup>/s  
Flow Rate, Q<sub>provided</sub> = 9.37 L/s

#### Sanitary Loading

Average Day Flow = 4181 L/d = 0.05 L/s (As per Water Demand Calculation)  
Harmon's Peaking Factor = 3.9 (As per Town of Collingwood Standards)  
Extraneous Flow Criteria = 0.23 L/ha-s (As per Town of Collingwood Standards)  
Contributing Area = 0.75 ha (Based on SAN.1 - Sanitary Layout Plan )  
Extraneous Flow = 0.17 L/s

Required Flow, Q<sub>required</sub> = Av. Day Flow • Peak Factor + Extraneous Flow = 0.36 L/s

**Check: Q<sub>provided</sub> = 9.37 L/s > Q<sub>required</sub> = 0.36 L/s Acceptable**

	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

**BUILDING 7 - PHASE 1**

**Calculation of Water Flow Rates for Water Services**

Hazen Williams Equation as used in this spreadsheet:  
 $Q = (3.763 \times 10^{-6}) C D^{2.63} (DP/L)^{0.54}$   
 where Q is the water flow rate in m<sup>3</sup>/hr  
 D is the pipe diameter in mm  
 L is the pipe length in m  
 DP is the pressure difference across pipe length L in kN/m<sup>2</sup>

Pipe Material: Copper  
 Hazen Williams Coefficient, C = 140  
 Pressure drop over the pipe length, DP = 275 kN/m<sup>2</sup>

Pipe Length (m)	Water Flow Rate (m <sup>3</sup> /hr)									
	Pipe Diameter (mm)									
	12	20	25	40	50	65	75	100	130	150
16	1.7	6.5	11.6	40.0	71.9	143.4	209.0	445.3	887.9	1293.6

**Flow rate provided by 50 mm diameter water service**

Q<sub>provided</sub> = 71.9 m<sup>3</sup>/hr  
 Q<sub>provided</sub> = 19.98 L/s

**Water Demand (from Water Demand and Sanitary Calculations)**

Average Day Demand 4200 L/d  
 Peak Hour Factor 3.0  
 Peak Hour Demand, Q<sub>required</sub> = 0.15 L/s

Q <sub>provided</sub> = 19.98 L/s	>	Q <sub>required</sub> = 0.15 L/s	Acceptable
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	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

**BUILDING 7 - PHASE 1**

**Calculation of Sewage Flow Rates for Sanitary Services**

Manning's Equation as used in this spreadsheet:

$$Q = (A \cdot R^{2/3} \cdot S^{1/2}) / n$$

where Q is the water flow rate in m<sup>3</sup>/s  
A is the pipe area in m<sup>2</sup>  
R is the pipe hydraulic radius in m  
S is the slope of the pipe  
n is the Manning's Coefficient

**Flow rate provided by 125 mm diameter sanitary service**

Pipe Material: PVC  
Manning's Coeff. = 0.013  
Slope = 0.01 m/m  
Diameter = 0.125 m  
Area = 0.012 m<sup>2</sup>  
Perimeter = 0.39 m  
Hydraulic Radius = 0.03 m

Flow Rate, Q<sub>provided</sub> = 0.009 m<sup>3</sup>/s  
Flow Rate, Q<sub>provided</sub> = 9.37 L/s

**Sanitary Loading**

Average Day Flow = 4200 L/d = 0.05 L/s (As per Water Demand Calculation)  
Harmon's Peaking Factor = 3.9 (As per Town of Collingwood Standards)  
Extraneous Flow Criteria = 0.23 L/ha-s (As per Town of Collingwood Standards)  
Contributing Area = 0.63 ha (Based on SAN.1 - Sanitary Layout Plan )  
Extraneous Flow = 0.14 L/s

Required Flow, Q<sub>required</sub> = Av. Day Flow • Peak Factor + Extraneous Flow = 0.34 L/s

**Check: Q<sub>provided</sub> = 9.37 L/s > Q<sub>required</sub> = 0.34 L/s Acceptable**

	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

**BUILDING 8 - PHASE 1**

**Calculation of Water Flow Rates for Water Services**

Hazen Williams Equation as used in this spreadsheet:  
 $Q = (3.763 \times 10^{-6}) C D^{2.63} (DP/L)^{0.54}$   
 where Q is the water flow rate in m<sup>3</sup>/hr  
 D is the pipe diameter in mm  
 L is the pipe length in m  
 DP is the pressure difference across pipe length L in kN/m<sup>2</sup>

Pipe Material: Copper  
 Hazen Williams Coefficient, C = 140  
 Pressure drop over the pipe length, DP = 275 kN/m<sup>2</sup>

Pipe Length (m)	Water Flow Rate (m <sup>3</sup> /hr)									
	Pipe Diameter (mm)									
	12	20	25	40	50	65	75	100	130	150
22	1.4	5.4	9.8	33.7	60.6	120.8	176.0	375.0	747.6	1089.2

**Flow rate provided by 50 mm diameter water service**

Q<sub>provided</sub> = 60.6 m<sup>3</sup>/hr  
 Q<sub>provided</sub> = 16.83 L/s

**Water Demand (from Water Demand and Sanitary Calculations)**

Average Day Demand = 8750 L/d + 1672 L/d + 3450 L/d  
 Average Day Demand = 13872 L/d  
 Peak Hour Factor = 3.0  
 Peak Hour Demand, Q<sub>required</sub> = 0.48 L/s

Q <sub>provided</sub> = 16.83 L/s	>	Q <sub>required</sub> = 0.48 L/s	Acceptable
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	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

### BUILDING 8 - PHASE 1

#### Calculation of Sewage Flow Rates for Sanitary Services

Manning's Equation as used in this spreadsheet:

$$Q = (A \cdot R^{2/3} \cdot S^{1/2}) / n$$

where Q is the water flow rate in m<sup>3</sup>/s  
A is the pipe area in m<sup>2</sup>  
R is the pipe hydraulic radius in m  
S is the slope of the pipe  
n is the Manning's Coefficient

#### Flow rate provided by 125 mm diameter sanitary service

Pipe Material: PVC  
Manning's Coeff. = 0.013  
Slope = 0.01 m/m  
Diameter = 0.125 m  
Area = 0.012 m<sup>2</sup>  
Perimeter = 0.39 m  
Hydraulic Radius = 0.03 m

Flow Rate, Q<sub>provided</sub> = 0.009 m<sup>3</sup>/s  
Flow Rate, Q<sub>provided</sub> = 9.37 L/s

#### Sanitary Loading

Average Day Flow = 13872 L/d = 0.16 L/s (As per Water Demand Calculation)  
Harmon's Peaking Factor = 3.9 (As per Town of Collingwood Standards)  
Extraneous Flow Criteria = 0.23 L/ha-s (As per Town of Collingwood Standards)  
Contributing Area = 0.30 ha (Based on SAN.1 - Sanitary Layout Plan )  
Extraneous Flow = 0.07 L/s

Required Flow, Q<sub>required</sub> = Av. Day Flow • Peak Factor + Extraneous Flow = 0.70 L/s

**Check: Q<sub>provided</sub> = 9.37 L/s > Q<sub>required</sub> = 0.70 L/s Acceptable**

	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

**PHASE 2 - Grocery Building**

**Calculation of Water Flow Rates for Water Services**

Hazen Williams Equation as used in this spreadsheet:  
 $Q = (3.763 \times 10^{-6}) C D^{2.63} (DP/L)^{0.54}$   
 where Q is the water flow rate in m<sup>3</sup>/hr  
 D is the pipe diameter in mm  
 L is the pipe length in m  
 DP is the pressure difference across pipe length L in kN/m<sup>2</sup>

Pipe Material: Copper  
 Hazen Williams Coefficient, C = 140  
 Pressure drop over the pipe length, DP = 275 kN/m<sup>2</sup>

Pipe Length (m)	Water Flow Rate (m <sup>3</sup> /hr)									
	Pipe Diameter (mm)									
	12	20	25	40	50	65	75	100	130	150
6	2.9	11.0	19.7	67.9	122.2	243.6	354.9	756.3	1507.9	<b>2197.0</b>

**Flow rate provided by 150 mm diameter water service**

Q<sub>provided</sub> = 2197.0 m<sup>3</sup>/hr  
 Q<sub>provided</sub> = 610.26 L/s

**Water Demand (from Water Demand and Sanitary Calculations)**

Average Day Demand = 7421 L/d + 2054 L/d + 2054 L/d + 4108 L/d  
 + 3800 L/d  
 Average Day Demand = 19437 L/d  
 Peak Hour Factor = 3.0  
 Peak Hour Demand, Q<sub>required</sub> = 0.67 L/s

Q <sub>provided</sub> = 610.26 L/s	>	Q <sub>required</sub> = 0.67 L/s	Acceptable
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	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

**PHASE 2 - Grocery Building**

**Calculation of Sewage Flow Rates for Sanitary Services**

Manning's Equation as used in this spreadsheet:

$$Q = (A \cdot R^{2/3} \cdot S^{1/2}) / n$$

where Q is the water flow rate in m<sup>3</sup>/s  
A is the pipe area in m<sup>2</sup>  
R is the pipe hydraulic radius in m  
S is the slope of the pipe  
n is the Manning's Coefficient

**Flow rate provided by 125 mm diameter sanitary service**

Pipe Material: PVC  
Manning's Coeff. = 0.013  
Slope = 0.01 m/m  
Diameter = 0.125 m  
Area = 0.012 m<sup>2</sup>  
Perimeter = 0.39 m  
Hydraulic Radius = 0.03 m

Flow Rate, Q<sub>provided</sub> = 0.009 m<sup>3</sup>/s  
Flow Rate, Q<sub>provided</sub> = 9.37 L/s

**Sanitary Loading**

Average Day Flow = 19437 L/d = 0.22 L/s (As per Water Demand Calculation)  
Harmon's Peaking Factor = 3.9 (As per Town of Collingwood Standards)  
Extraneous Flow Criteria = 0.23 L/ha-s (As per Town of Collingwood Standards)  
Contributing Area = 0.75 ha (Based on SAN.1 - Sanitary Layout Plan )  
Extraneous Flow = 0.17 L/s

Required Flow, Q<sub>required</sub> = Max. Daily Flow • Peak Factor + Extraneous Flow = 1.06 L/s

**Check: Q<sub>provided</sub> = 9.37 L/s > Q<sub>required</sub> = 1.06 L/s Acceptable**

	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

**PHASE 2 - Building 6**

**Calculation of Water Flow Rates for Water Services**

Hazen Williams Equation as used in this spreadsheet:  
 $Q = (3.763 \times 10^{-6}) C D^{2.63} (DP/L)^{0.54}$   
 where Q is the water flow rate in m<sup>3</sup>/hr  
 D is the pipe diameter in mm  
 L is the pipe length in m  
 DP is the pressure difference across pipe length L in kN/m<sup>2</sup>

Pipe Material: Copper  
 Hazen Williams Coefficient, C = 140  
 Pressure drop over the pipe length, DP = 275 kN/m<sup>2</sup>

Pipe Length (m)	Water Flow Rate (m <sup>3</sup> /hr)									
	Pipe Diameter (mm)									
	12	20	25	40	50	65	75	100	130	150
12	2.0	7.5	13.6	46.7	84.0	167.5	244.1	520.2	1037.1	1511.0

**Flow rate provided by 50 mm diameter water service**

Q<sub>provided</sub> = 84.0 m<sup>3</sup>/hr  
 Q<sub>provided</sub> = 23.34 L/s

**Water Demand (from Water Demand and Sanitary Calculations)**

Average Day Demand 8330 L/d  
 Peak Hour Factor 3.0  
 Peak Hour Demand, Q<sub>required</sub> = 0.29 L/s

Q <sub>provided</sub> = 12.00 L/s	>	Q <sub>required</sub> = 0.29 L/s	Acceptable
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	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

**PHASE 2 - Building 6**

**Calculation of Sewage Flow Rates for Sanitary Services**

Manning's Equation as used in this spreadsheet:

$$Q = (A \cdot R^{2/3} \cdot S^{1/2}) / n$$

where Q is the water flow rate in m<sup>3</sup>/s  
A is the pipe area in m<sup>2</sup>  
R is the pipe hydraulic radius in m  
S is the slope of the pipe  
n is the Manning's Coefficient

**Flow rate provided by 125 mm diameter sanitary service**

Pipe Material: PVC  
Manning's Coeff. = 0.013  
Slope = 0.01 m/m  
Diameter = 0.125 m  
Area = 0.012 m<sup>2</sup>  
Perimeter = 0.39 m  
Hydraulic Radius = 0.03 m

Flow Rate, Q<sub>provided</sub> = 0.009 m<sup>3</sup>/s  
Flow Rate, Q<sub>provided</sub> = 9.37 L/s

**Sanitary Loading**

Average Day Flow = 8330 L/d = 0.10 L/s (As per Water Demand Calculation)  
Harmon's Peaking Factor = 3.9 (As per Town of Collingwood Standards)  
Extraneous Flow Criteria = 0.23 L/ha-s (As per Town of Collingwood Standards)  
Contributing Area = 0.75 ha (Based on SAN.1 - Sanitary Layout Plan )  
Extraneous Flow = 0.17 L/s

Required Flow, Q<sub>required</sub> = Max. Daily Flow • Peak Factor + Extraneous Flow = 0.55 L/s

**Check: Q<sub>provided</sub> = 9.37 L/s > Q<sub>required</sub> = 0.55 L/s      Acceptable**

	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

**BUILDING 3 - PHASE 3**

**Calculation of Water Flow Rates for Water Services**

Hazen Williams Equation as used in this spreadsheet:  
 $Q = (3.763 \times 10^{-6}) C D^{2.63} (DP/L)^{0.54}$   
 where Q is the water flow rate in m<sup>3</sup>/hr  
 D is the pipe diameter in mm  
 L is the pipe length in m  
 DP is the pressure difference across pipe length L in kN/m<sup>2</sup>

Pipe Material: Copper  
 Hazen Williams Coefficient, C = 140  
 Pressure drop over the pipe length, DP = 275 kN/m<sup>2</sup>

Pipe Length (m)	Water Flow Rate (m <sup>3</sup> /hr)									
	Pipe Diameter (mm)									
	12	20	25	40	50	65	75	100	130	<b>150</b>
<b>15</b>	1.7	6.7	12.0	41.4	74.5	148.5	216.4	461.1	919.4	<b>1339.5</b>

**Flow rate provided by 150 mm diameter water service**

Q<sub>provided</sub> = 1339.5 m<sup>3</sup>/hr  
 Q<sub>provided</sub> = 372.07 L/s

**Water Demand (from Water Demand and Sanitary Calculations)**

	Commercial	Residential
Average Day Demand	2945 L/d	81510 L/d
Peak Hour Factor	3.0	2.7
Peak Hour Demand=	0.10 L/s	2.55 L/s
Total Peak Hour Demand, Q <sub>required</sub> =	<b>2.65</b>	

<b>Check:</b> Q <sub>provided</sub> = <b>372.07</b> L/s > Q <sub>required</sub> = <b>2.65</b> L/s <b>Acceptable</b>
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	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

### BUILDING 3 - PHASE 3

#### Calculation of Sewage Flow Rates for Sanitary Services

Manning's Equation as used in this spreadsheet:

$$Q = (A \cdot R^{2/3} \cdot S^{1/2}) / n$$

where Q is the water flow rate in m<sup>3</sup>/s  
A is the pipe area in m<sup>2</sup>  
R is the pipe hydraulic radius in m  
S is the slope of the pipe  
n is the Manning's Coefficient

#### Flow rate provided by 125 mm diameter sanitary service

Pipe Material: PVC  
Manning's Coeff. = 0.013  
Slope = 0.01 m/m  
Diameter = 0.125 m  
Area = 0.012 m<sup>2</sup>  
Perimeter = 0.39 m  
Hydraulic Radius = 0.03 m

Flow Rate, Q<sub>provided</sub> = 0.009 m<sup>3</sup>/s  
Flow Rate, Q<sub>provided</sub> = 9.37 L/s

#### Sanitary Loading

Average Day Flow = 84455 L/d = 0.98 L/s (As per Water Demand Calculation)  
Harmon's Peaking Factor = 3.9 (As per Town of Collingwood Standards)  
Extraneous Flow Criteria = 0.23 L/ha-s (As per Town of Collingwood Standards)  
Contributing Area = 0.38 ha (Based on SAN.1 - Sanitary Layout Plan )  
Extraneous Flow = 0.09 L/s

Required Flow, Q<sub>required</sub> = Av. Day Flow • Peak Factor + Extraneous Flow = 3.93 L/s

**Check: Q<sub>provided</sub> = 9.37 L/s > Q<sub>required</sub> = 3.93 L/s Acceptable**

	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

**BUILDING 4 - PHASE 3**

**Calculation of Water Flow Rates for Water Services**

Hazen Williams Equation as used in this spreadsheet:  
 $Q = (3.763 \times 10^{-6}) C D^{2.63} (DP/L)^{0.54}$   
 where Q is the water flow rate in m<sup>3</sup>/hr  
 D is the pipe diameter in mm  
 L is the pipe length in m  
 DP is the pressure difference across pipe length L in kN/m<sup>2</sup>

Pipe Material: Copper  
 Hazen Williams Coefficient, C = 140  
 Pressure drop over the pipe length, DP = 275 kN/m<sup>2</sup>

Pipe Length (m)	Water Flow Rate (m <sup>3</sup> /hr)									
	Pipe Diameter (mm)									
	12	20	25	40	50	65	75	100	130	150
11	2.1	7.9	14.2	49.0	88.1	175.6	255.8	545.2	1087.0	1583.7

**Flow rate provided by 50 mm diameter water service**

Q<sub>provided</sub> = 88.1 m<sup>3</sup>/hr  
 Q<sub>provided</sub> = 24.46 L/s

**Water Demand (from Water Demand and Sanitary Calculations)**

Average Day Demand = 2699 L/d + 8710 L/d  
 Average Day Demand 11409 L/d  
 Peak Hour Factor 3.0  
 Peak Hour Demand, Q<sub>required</sub> = 0.40 L/s

<b>Check:</b> Q <sub>provided</sub> = 24.46 L/s > Q <sub>required</sub> = 0.40 L/s <b>Acceptable</b>
--

	<b>Project:</b>	The Gateway Centre
	<b>File No.:</b>	120119
	<b>Date:</b>	8-Jul-25
	<b>Design:</b>	JB
	<b>Checked:</b>	AS
	<b>Revision:</b>	3

**BUILDING 4 - PHASE 3**

**Calculation of Sewage Flow Rates for Sanitary Services**

Manning's Equation as used in this spreadsheet:  

$$Q = (A \cdot R^{2/3} \cdot S^{1/2}) / n$$
 where Q is the water flow rate in m<sup>3</sup>/s  
 A is the pipe area in m<sup>2</sup>  
 R is the pipe hydraulic radius in m  
 S is the slope of the pipe  
 n is the Manning's Coefficient

**Flow rate provided by 125 mm diameter sanitary service**

Pipe Material: PVC  
 Manning's Coeff. = 0.013  
 Slope = 0.01 m/m  
 Diameter = 0.125 m  
 Area = 0.012 m<sup>2</sup>  
 Perimeter = 0.39 m  
 Hydraulic Radius = 0.03 m  
 Flow Rate, Q<sub>provided</sub> = 0.009 m<sup>3</sup>/s  
 Flow Rate, Q<sub>provided</sub> = 9.37 L/s

**Sanitary Loading**

Maximum Daily Flow = 11409 L/d = 0.13 L/s (As per Water Demand Calculation)  
 Harmon's Peaking Factor = 3.9 (As per Town of Collingwood Standards)  
 Extraneous Flow Criteria = 0.23 L/ha-s (As per Town of Collingwood Standards)  
 Contributing Area = 0.21 ha (Based on SAN.1 - Sanitary Layout Plan )  
 Extraneous Flow = 0.05 L/s

Required Flow, Q<sub>required</sub> = Av. Day Flow • Peak Factor + Extraneous Flow = 0.57 L/s

**Check: Q<sub>provided</sub> = 9.37 L/s > Q<sub>required</sub> = 0.57 L/s Acceptable**



**Project:** The Gateway Centre  
**File No.:** 120119  
**Date:** 8-Jul-25  
**Design:** JB  
**Checked:** AS  
**Revision:** 3

**SITE - MAIN WATERMAIN**  
 Calculation of Water Flow Rates for Different Pipe Sizes  
 (Hazen Williams Formula - S.I. units)

Pipe Material: Ductile Iron Hazen Williams Coefficient, **C** = 150  
 Pressure drop over the pipe length, DP = 275 kN/m<sup>2</sup>

Pipe Length (m)	Water Flow Rate (m <sup>3</sup> /hr)									
	Pipe Diameter (mm)									
	12	20	25	40	50	75	100	130	150	250
332	0.4	1.3	2.4	8.3	15.0	43.5	92.8	185.0	269.5	<b>1032.8</b>

**Flow rate provided by 250 mm dia. water service** = 1032.8 m<sup>3</sup>/hr  
 = **286.90 L/s**

**Water Demand (from Water Demand and Sanitary Calculations)**  
**Commercial**

Average Day Demand = 80373 L/d  
 Maximum Day Factor = 2.0  
 Maximum Day Demand = **1.86 L/s**

**Residential**

Average Day Demand = 81510 L/d  
 Maximum Day Factor = 1.8  
 Maximum Day Demand = **1.67 L/s**

**Total Maximum Day Demand** = **3.53 L/s**

**Total Fire Flow Demand** = **183 L/s**

**Total Demand (MDD +FF)** = **186.86 L/s**

Hazen Williams Equation as used in this spreadsheet:

$$Q = (3.763 \times 10^{-6}) C D^{2.63} (DP/L)^{0.54}$$

where Q is the water flow rate in m<sup>3</sup>/hr  
 D is the pipe diameter in mm  
 L is the pipe length in m  
 DP is the pressure difference across pipe length L in kN/m<sup>2</sup>

## **Appendix C: FUS Fire Flow Calculations**

Project:	The Gateway Centre - Building 1	Date:	September 16, 2024
File No.:	120119	Designed:	JB
Subject:	Fire Flow Calculations	Checked:	AS
Revisions:			

### BUILDING 1

Fire Underwriters Survey Fire Flow Calculations  
Long Method

Calculation Based on 1999 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated with Option	Choose	Value used	Unit	Total Fire Flow (L/min)	
<b>Framing Material</b>									
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C)	Wood Frame	1.5	Ordinary Construction	1	-	N/A	
			Ordinary Construction	1					
			Non-combustible construction	0.8					
			Fire resistive construction (< 2 hrs)	0.7					
			Fire resistive construction (> 2 hrs)	0.6					
<b>Floor Space Area</b>									
2	Type of Occupancy	Type of Occupancy	Single Family	1			Units	N/A	
			Townhouse / Apartment- inform # of units	1					
			Other (Comm. Ind., etc.)	1		1			
2.1	Number of Storeys	Number of Floors / Storeys in the unit (do not include basement)				1	Storeys	N/A	
3	Floor Area	Total Floor Area (A) - for all storeys excluding basement					157	m <sup>2</sup>	N/A
		Measurement Units	Square Feet (ft <sup>2</sup> )	0.093	1	157			
			Square Metres (m <sup>2</sup> )	1					
			Hectares (ha)	10000					
4	Required Fire Flow without Reductions or Increases	Required Fire Flows without Reductions or Increases per FUS): (FF= 220 x C x A <sup>0.5</sup> )					L/min	3,000	
5	Factors Affecting Burning	<b>Reductions / Increases Due to Factors Affecting Burning</b>							
5.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Combustible	0.00	N/A	3000	
			Limited combustible	-0.15					
			Combustible	0.00					
			Free burning	0.15					
			Rapid burning	0.25					
5.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	Complete automatic sprinkler protection	-0.3	None	0.00	N/A	0	
			Standard hoses for both system & Fire Department	-0.10					
			Supervised system	-0.1					
5.3	Separation Distance Between Units	Exposure distance between units	North Side	3.1-10	0.20	0.20	N/A	600	
			East Side	>30	0.00				
			South Side	>30	0.00				
			West Side	>30	0.00				
Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:								4000	
6	Required Fire Flow, Duration and Volume	Total Required Fire Flow (above) in L/s:						67	
		Required Duration of Fire Flow of 4,000 L/min (hrs):						2	
		Required Volume for Fire Flow of 4,000 L/min (m <sup>3</sup> ):						480	

Project:	The Gateway Centre - Building 2	Date:	September 16, 2024
File No.:	120119	Designed:	JB
Subject:	Fire Flow Calculations	Checked:	AS
Revisions:			

### BUILDING 2

Fire Underwriters Survey Fire Flow Calculations  
Long Method

Calculation Based on 1999 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated with Option	Choose	Value used	Unit	Total Fire Flow (L/min)	
<b>Framing Material</b>									
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C)	Wood Frame	1.5	Ordinary Construction	1	-	N/A	
			Ordinary Construction	1					
			Non-combustible construction	0.8					
			Fire resistive construction (< 2 hrs)	0.7					
			Fire resistive construction (> 2 hrs)	0.6					
<b>Floor Space Area</b>									
2	Type of Occupancy	Type of Occupancy	Single Family	1			Units	N/A	
			Townhouse / Apartment- inform # of units	1					
			Other (Comm. Ind., etc.)	1		1			
2.1	Number of Storeys	Number of Floors / Storeys in the unit (do not include basement)				1	Storeys	N/A	
3	Floor Area	Total Floor Area (A) - for all storeys excluding basement					m <sup>2</sup>	836	N/A
		Measurement Units	Square Feet (ft <sup>2</sup> )	0.093	1	836	m <sup>2</sup>		
			Square Metres (m <sup>2</sup> )	1					
			Hectares (ha)	10000					
4	Required Fire Flow without Reductions or Increases	Required Fire Flows without Reductions or Increases per FUS): (FF= 220 x C x A <sup>0.5</sup> )					L/min	6,000	
5	Factors Affecting Burning	<b>Reductions / Increases Due to Factors Affecting Burning</b>							
5.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Free burning	0.15	N/A	6900	
			Limited combustible	-0.15					
			Combustible	0.00					
			Free burning	0.15					
			Rapid burning	0.25					
5.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	Complete automatic sprinkler protection	-0.3	None	0.00	N/A	0	
			Standard hoses for both system & Fire Department	-0.10					
			Supervised system	-0.1					
5.3	Separation Distance Between Units	Exposure distance between units	North Side	20.1-30	0.10	0.30	N/A	2070	
			East Side	>30	0.00				
			South Side	3.1-10	0.20				
			West Side	>30	0.00				
Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:								9000	
6	Required Fire Flow, Duration and Volume	Total Required Fire Flow (above) in L/s:						150	
		Required Duration of Fire Flow of 9,000 L/min (hrs):						2	
		Required Volume for Fire Flow of 9,000 L/min (m <sup>3</sup> ):						1,080	



Project: The Gateway Centre - Building 3

Date: July 8, 2025

File No.: 120119

Designed: JB

Subject: Fire Flow Calculations

Checked AS

Revisions:

Fire Underwriters Survey Fire Flow Calculations

Calculation Based on 2020 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated with Option	Choose	Value used	Unit	Total Fire Flow (L/min)		
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C)	<b>Framing Material</b>						%	N/A
			Type V - Wood Frame Construction	1.5	Non-combustible Construction	0.8				
			Type IVA - Mass Timber Construction	0.8						
			Type IVB - Mass Timber Construction	0.9						
			Type IVC - Mass Timber Construction	1.0						
			Type IVD - Mass Timber Construction	1.5						
			Ordinary Construction	1.0						
			Non-combustible Construction	0.8						
Fire Resistive Construction	0.6									
2	Total Effective Area	Largest Floor Area				1403	m <sup>2</sup>	N/A		
		Percentage of the Total Area of the Other Floors for Coefficient 1.0 to 1.5		100%						
		Percentage of the Total Area of the Other Floors for Coefficient below 1.0:								
		a) If any vertical opening in the building are unprotected, consider the two largest adjoining floor areas plus 50% of all floors immediately above them up to a maximum of eight, <b>or</b>		50%	4070					
		b) If all vertical openings and exterior vertical communications are properly protected in accordance with the National Building Code, consider only the single largest Floor Area plus 25% of each of the two immediately adjoining floors.		25%						
		Total Effective Area				5473				
3	Required Fire Flow without Reductions or Increases	Required Fire Flows without Reductions or Increases per FUS): (RFF= 220 x C x A <sup>0.5</sup> )						13,000		
4	Factors Affecting Burning	<b>Reductions / Increases Due to Factors Affecting Burning</b>								
4.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Limited combustible	-0.15	%	(1,950)	11,050	
			Limited combustible	-0.15						
			Combustible	0.00						
			Free burning	0.15						
			Rapid burning	0.25						
4.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	For a fully supervised system the conditions a), b) and c) below must be met.			-0.3	%	(3,315)	7,735	
			a) Automatic sprinkler protection designed and installed in accordance with NFPA 13	-0.3	Yes					
			b) Water supply is standard for both the system and the Fire Department hose lines	-0.1	No					
			c) Fully supervised system	-0.1	No					
			None	0.0	No					
4.3	Separation Distance Between Units (Use 10% for 2 hour Fire Separation between adjacent units)	Exposure distance between units	North Side	Greater than 30.0 m	0.00	0.1	%	1,105	8,840	
			East Side	Greater than 30.0 m	0.00					
			South Side	20.1 to 30.0 m	0.10					
			West Side	Greater than 30.0 m	0.00					
4.4	Combustibility of Wood Shingle or Shake Roof Material	Surcharge for potential to spread fire	Non-combustible roofing material	0	Non-combustible roofing material	0	L/min	0	8,840	
			Low risk of fire spread	2000						
			Moderate risk of fire spread	3000						
			High risk of fire spread	4000						
Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:								9,000		
5	Required Fire Flow, Duration and Volume	Total Required Fire Flow (above) in L/s:						150		
		Required Duration of Fire Flow of 9,000 L/min (hrs):						3		
		Required volume for Fire Flow of 9,000 L/min (m <sup>3</sup> ):						1,620		

Project:	The Gateway Centre - Building 4	Date:	September 16, 2024
File No.:	120119	Designed:	JB
Subject:	Fire Flow Calculations	Checked:	AS
Revisions:			

### BUILDING 4

Fire Underwriters Survey Fire Flow Calculations  
Long Method

Calculation Based on 1999 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated with Option	Choose	Value used	Unit	Total Fire Flow (L/min)	
<b>Framing Material</b>									
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C)	Wood Frame	1.5	Ordinary Construction	1	-	N/A	
			Ordinary Construction	1					
			Non-combustible construction	0.8					
			Fire resistive construction (< 2 hrs)	0.7					
			Fire resistive construction (> 2 hrs)	0.6					
<b>Floor Space Area</b>									
2	Type of Occupancy	Type of Occupancy	Single Family	1			Units	N/A	
			Townhouse / Apartment- inform # of units	1					
			Other (Comm. Ind., etc.)	1		1			
2.1	Number of Storeys	Number of Floors / Storeys in the unit (do not include basement)				3	Storeys	N/A	
3	Floor Area	Total Floor Area (A) - for all storeys excluding basement				m <sup>2</sup>	1620	m <sup>2</sup>	N/A
		Measurement Units	Square Feet (ft <sup>2</sup> )	0.093	1	1620			
			Square Metres (m <sup>2</sup> )	1					
			Hectares (ha)	10000					
4	Required Fire Flow without Reductions or Increases	Required Fire Flows without Reductions or Increases per FUS): (FF= 220 x C x A <sup>0.5</sup> )					L/min	9,000	
5	Factors Affecting Burning	<b>Reductions / Increases Due to Factors Affecting Burning</b>							
5.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Limited	-0.15	N/A	7650	
			Limited combustible	-0.15					
			Combustible	0.00					
			Free burning	0.15					
			Rapid burning	0.25					
5.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	Complete automatic sprinkler protection	-0.3	Complete automatic sprinkler protection	-0.30	N/A	-2295	
			Standard hoses for both system & Fire Department	-0.10					
			Supervised system	-0.1					
5.3	Separation Distance Between Units	Exposure distance between units	North Side	>30	0.00	0.10	N/A	765	
			East Side	>30	0.00				
			South Side	20.1-30	0.10				
			West Side	>30	0.00				
Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:								6000	
6	Required Fire Flow, Duration and Volume	Total Required Fire Flow (above) in L/s:						100	
		Required Duration of Fire Flow of 6,000 L/min (hrs):						2	
		Required Volume for Fire Flow of 6,000 L/min (m <sup>3</sup> ):						720	



Project: The Gateway Centre - Grocery Store

Date: July 8, 2025

File No.: 120119

Designed: JB

Subject: Fire Flow Calculations

Checked AS

Revisions:

Fire Underwriters Survey Fire Flow Calculations

Calculation Based on 2020 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated with Option	Choose	Value used	Unit	Total Fire Flow (L/min)			
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C)	<b>Framing Material</b>							%	N/A
			Type V - Wood Frame Construction	1.5	Ordinary Construction	1.0					
			Type IVA - Mass Timber Construction	0.8							
			Type IVB - Mass Timber Construction	0.9							
			Type IVC - Mass Timber Construction	1.0							
			Type IVD - Mass Timber Construction	1.5							
			Ordinary Construction	1.0							
			Non-combustible Construction	0.8							
Fire Resistive Construction	0.6										
2	Total Effective Area	Largest Floor Area				2016	m <sup>2</sup>	N/A			
		Percentage of the Total Area of the Other Floors for Coefficient 1.0 to 1.5				0%			0		
		Percentage of the Total Area of the Other Floors for Coefficient below 1.0:									
		a) If any vertical opening in the building are unprotected, consider the two largest adjoining floor areas plus 50% of all floors immediately above them up to a maximum of eight, <b>or</b>				50%					
		b) If all vertical openings and exterior vertical communications are properly protected in accordance with the National Building Code, consider only the single largest Floor Area plus 25% of each of the two immediately adjoining floors.				25%					
		Total Effective Area				2016					
3	Required Fire Flow without Reductions or Increases	Required Fire Flows without Reductions or Increases per FUS): (RFF= 220 x C x A <sup>0.5</sup> )							10,000		
4	Factors Affecting Burning	<b>Reductions / Increases Due to Factors Affecting Burning</b>									
4.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Limited combustible	-0.15	%	(1,500)	8,500		
			Limited combustible	-0.15							
			Combustible	0.00							
			Free burning	0.15							
			Rapid burning	0.25							
4.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	For a fully supervised system the conditions a), b) and c) below must be met.				-0.3	%	(2,550)	5,950	
			a) Automatic sprinkler protection designed and installed in accordance with NFPA 13	-0.3	Yes						
			b) Water supply is standard for both the system and the Fire Department hose lines	-0.1	No						
			c) Fully supervised system	-0.1	No						
			None	0.0	No						
4.3	Separation Distance Between Units (Use 10% for 2 hour Fire Separation between adjacent units)	Exposure distance between units	North Side	10.1 to 20.0 m	0.15	0.4	%	3,400	9,350		
			East Side	10.1 to 20.0 m	0.15						
			South Side	20.1 to 30.0 m	0.10						
			West Side	Greater than 30.0 m	0.00						
4.4	Combustibility of Wood Shingle or Shake Roof Material	Surcharge for potential to spread fire	Non-combustible roofing material	0	Non-combustible roofing material	0	L/min	0	9,350		
			Low risk of fire spread	2000							
			Moderate risk of fire spread	3000							
			High risk of fire spread	4000							
Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:									9,000		
5	Required Fire Flow, Duration and Volume	Total Required Fire Flow (above) in L/s:							150		
		Required Duration of Fire Flow of 9,000 L/min (hrs):							2		
		Required volume for Fire Flow of 9,000 L/min (m <sup>3</sup> ):							1,080		



Project: The Gateway Centre - Building 6

Date: July 8, 2025

File No.: 120119

Designed: JB

Subject: Fire Flow Calculations

Checked AS

Revisions:

Fire Underwriters Survey Fire Flow Calculations

Calculation Based on 2020 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated with Option	Choose	Value used	Unit	Total Fire Flow (L/min)		
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C)	<b>Framing Material</b>						%	N/A
			Type V - Wood Frame Construction	1.5	Ordinary Construction	1.0				
			Type IVA - Mass Timber Construction	0.8						
			Type IVB - Mass Timber Construction	0.9						
			Type IVC - Mass Timber Construction	1.0						
			Type IVD - Mass Timber Construction	1.5						
			Ordinary Construction	1.0						
			Non-combustible Construction	0.8						
Fire Resistive Construction	0.6									
2	Total Effective Area	Largest Floor Area					1666	m <sup>2</sup>	N/A	
		Percentage of the Total Area of the Other Floors for Coefficient 1.0 to 1.5			0%	0				
		Percentage of the Total Area of the Other Floors for Coefficient below 1.0:								
		a) If any vertical opening in the building are unprotected, consider the two largest adjoining floor areas plus 50% of all floors immediately above them up to a maximum of eight, <b>or</b>			50%					
		b) If all vertical openings and exterior vertical communications are properly protected in accordance with the National Building Code, consider only the single largest Floor Area plus 25% of each of the two immediately adjoining floors.			25%					
Total Effective Area					1666					
3	Required Fire Flow without Reductions or Increases	Required Fire Flows without Reductions or Increases per FUS): (RFF= 220 x C x A <sup>0.5</sup> )							9,000	
4	Factors Affecting Burning	<b>Reductions / Increases Due to Factors Affecting Burning</b>								
4.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Combustible	0	%	-	9,000	
			Limited combustible	-0.15						
			Combustible	0.00						
			Free burning	0.15						
			Rapid burning	0.25						
4.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	For a fully supervised system the conditions a), b) and c) below must be met.				0	%	-	9,000
			a) Automatic sprinkler protection designed and installed in accordance with NFPA 13	-0.3	No					
			b) Water supply is standard for both the system and the Fire Department hose lines	-0.1	No					
			c) Fully supervised system	-0.1	No					
			None	0.0	Yes					
4.3	Separation Distance Between Units (Use 10% for 2 hour Fire Separation between adjacent units)	Exposure distance between units	North Side	20.1 to 30.0 m	0.10	0.25	%	2,250	11,250	
			East Side	10.1 to 20.0 m	0.15					
			South Side	Greater than 30.0 m	0.00					
			West Side	Greater than 30.0 m	0.00					
4.4	Combustibility of Wood Shingle or Shake Roof Material	Surcharge for potential to spread fire	Non-combustible roofing material	0	Non-combustible roofing material	0	L/min	0	11,250	
			Low risk of fire spread	2000						
			Moderate risk of fire spread	3000						
			High risk of fire spread	4000						
Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:								11,000		
5	Required Fire Flow, Duration and Volume	Total Required Fire Flow (above) in L/s:						183		
		Required Duration of Fire Flow of 11,000 L/min (hrs):						2		
		Required volume for Fire Flow of 11,000 L/min (m <sup>3</sup> ):						1,320		

Project:	The Gateway Centre - Building 7	Date:	September 16, 2024
File No.:	120119	Designed:	JB
Subject:	Fire Flow Calculations	Checked:	AS
Revisions:			

### BUILDING 7

Fire Underwriters Survey Fire Flow Calculations  
Long Method

Calculation Based on 1999 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated with Option	Choose	Value used	Unit	Total Fire Flow (L/min)	
<b>Framing Material</b>									
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C)	Wood Frame	1.5	Ordinary Construction	1	-	N/A	
			Ordinary Construction	1					
			Non-combustible construction	0.8					
			Fire resistive construction (< 2 hrs)	0.7					
			Fire resistive construction (> 2 hrs)	0.6					
<b>Floor Space Area</b>									
2	Type of Occupancy	Type of Occupancy	Single Family	1			Units	N/A	
			Townhouse / Apartment- inform # of units	1					
			Other (Comm. Ind., etc.)	1		1			
2.1	Number of Storeys	Number of Floors / Storeys in the unit (do not include basement)				1	Storeys	N/A	
3	Floor Area	Total Floor Area (A) - for all storeys excluding basement					368	m <sup>2</sup>	N/A
		Measurement Units	Square Feet (ft <sup>2</sup> )	0.093	1	368			
			Square Metres (m <sup>2</sup> )	1					
			Hectares (ha)	10000					
4	Required Fire Flow without Reductions or Increases	Required Fire Flows without Reductions or Increases per FUS): (FF= 220 x C x A <sup>0.5</sup> )					L/min	4,000	
5	Factors Affecting Burning	<b>Reductions / Increases Due to Factors Affecting Burning</b>							
5.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Free burning	0.15	N/A	4600	
			Limited combustible	-0.15					
			Combustible	0.00					
			Free burning	0.15					
			Rapid burning	0.25					
5.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	Complete automatic sprinkler protection	-0.3	None	0.00	N/A	0	
			Standard hoses for both system & Fire Department	-0.10					
			Supervised system	-0.1					
5.3	Separation Distance Between Units	Exposure distance between units	North Side	>30	0.00	0.00	N/A	0	
			East Side	>30	0.00				
			South Side	>30	0.00				
			West Side	>30	0.00				
Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:								5000	
6	Required Fire Flow, Duration and Volume	Total Required Fire Flow (above) in L/s:						83	
		Required Duration of Fire Flow of 5,000 L/min (hrs):						2	
		Required Volume for Fire Flow of 5,000 L/min (m <sup>3</sup> ):						600	



Project: The Gateway Centre - Building 8

Date: July 8, 2025

File No.: 120119

Designed: JB

Subject: Fire Flow Calculations

Checked AS

Revisions:

Fire Underwriters Survey Fire Flow Calculations

Calculation Based on 2020 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated with Option	Choose	Value used	Unit	Total Fire Flow (L/min)		
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C)	<b>Framing Material</b>						%	N/A
			Type V - Wood Frame Construction	1.5	Ordinary Construction	1.0				
			Type IVA - Mass Timber Construction	0.8						
			Type IVB - Mass Timber Construction	0.9						
			Type IVC - Mass Timber Construction	1.0						
			Type IVD - Mass Timber Construction	1.5						
			Ordinary Construction	1.0						
			Non-combustible Construction	0.8						
Fire Resistive Construction	0.6									
2	Total Effective Area	Largest Floor Area					1106	m <sup>2</sup>	N/A	
		Percentage of the Total Area of the Other Floors for Coefficient 1.0 to 1.5			0%		0			
		Percentage of the Total Area of the Other Floors for Coefficient below 1.0:								
		a) If any vertical opening in the building are unprotected, consider the two largest adjoining floor areas plus 50% of all floors immediately above them up to a maximum of eight, <b>or</b>			50%					
		b) If all vertical openings and exterior vertical communications are properly protected in accordance with the National Building Code, consider only the single largest Floor Area plus 25% of each of the two immediately adjoining floors.			25%					
Total Effective Area					1106					
3	Required Fire Flow without Reductions or Increases	Required Fire Flows without Reductions or Increases per FUS): (RFF= 220 x C x A <sup>0.5</sup> )							7,000	
4	Factors Affecting Burning	<b>Reductions / Increases Due to Factors Affecting Burning</b>								
4.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Combustible	0	%	-	7,000	
			Limited combustible	-0.15						
			Combustible	0.00						
			Free burning	0.15						
			Rapid burning	0.25						
4.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	For a fully supervised system the conditions a), b) and c) below must be met.				0	%	-	7,000
			a) Automatic sprinkler protection designed and installed in accordance with NFPA 13	-0.3	No					
			b) Water supply is standard for both the system and the Fire Department hose lines	-0.1	No					
			c) Fully supervised system	-0.1	No					
			None	0.0	Yes					
4.3	Separation Distance Between Units (Use 10% for 2 hour Fire Separation between adjacent units)	Exposure distance between units	North Side	20.1 to 30.0 m	0.10	0.2	%	1,400	8,400	
			East Side	20.1 to 30.0 m	0.10					
			South Side	Greater than 30.0 m	0.00					
			West Side	Greater than 30.0 m	0.00					
4.4	Combustibility of Wood Shingle or Shake Roof Material	Surcharge for potential to spread fire	Non-combustible roofing material	0	Non-combustible roofing material	0	L/min	0	8,400	
			Low risk of fire spread	2000						
			Moderate risk of fire spread	3000						
			High risk of fire spread	4000						
Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:									8,000	
5	Required Fire Flow, Duration and Volume	Total Required Fire Flow (above) in L/s:							133	
		Required Duration of Fire Flow of 8,000 L/min (hrs):							2	
		Required volume for Fire Flow of 8,000 L/min (m <sup>3</sup> ):							960	

# Appendix D: Sanitary Design Sheet

Version Number: 1

Version Date: July 8, 2025

**Project Information**

The Gateway Centre Option C.06-L	120119
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**Drawing Reference**

GS02	July 08/25
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**Prepared By**

John Birchard	July 08/25
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**Reviewed By**

Joshua Nemisz	July 08/25
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**Municipality**

Town of Collingwood
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**Population Density**

Capita per Unit	Low	Medium	High
	1.90	2.90	-

**Infiltration**

Infiltration (L/s/ha)	0.23
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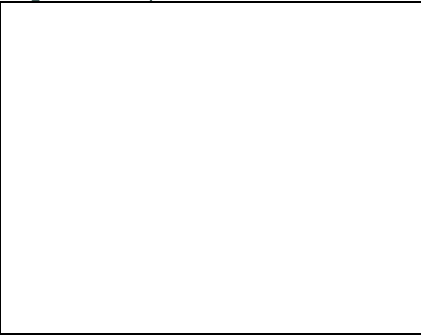
**Flow**

Development Type	Average (L/cap/day)	Peaking Factor
Residential	260	Harmon
Development Type	Average (L/ha/day)	Peaking Factor
Institution	-	-
Commercial	-	3
Industrial High Intensity	-	-
Industrial Low Intensity	-	-

**Manning's Coefficient**

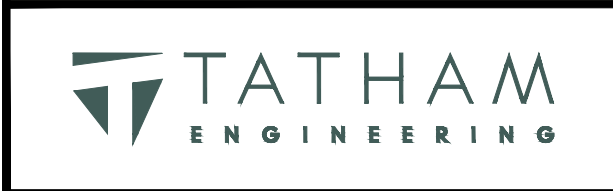
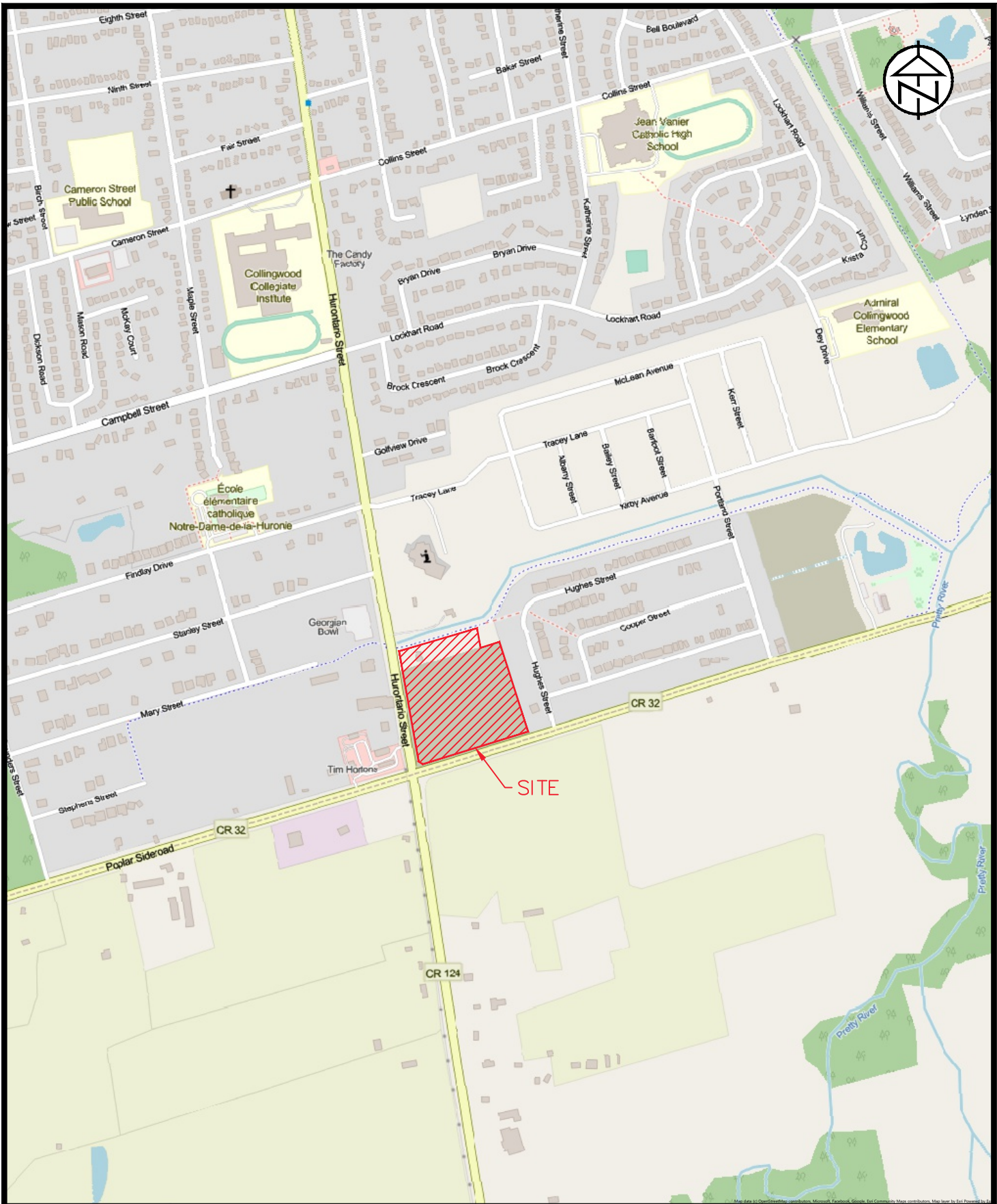
Pipe Material	Value
Concrete	0.013
PVC	0.013
Applied	0.013

**Engineer Stamp**


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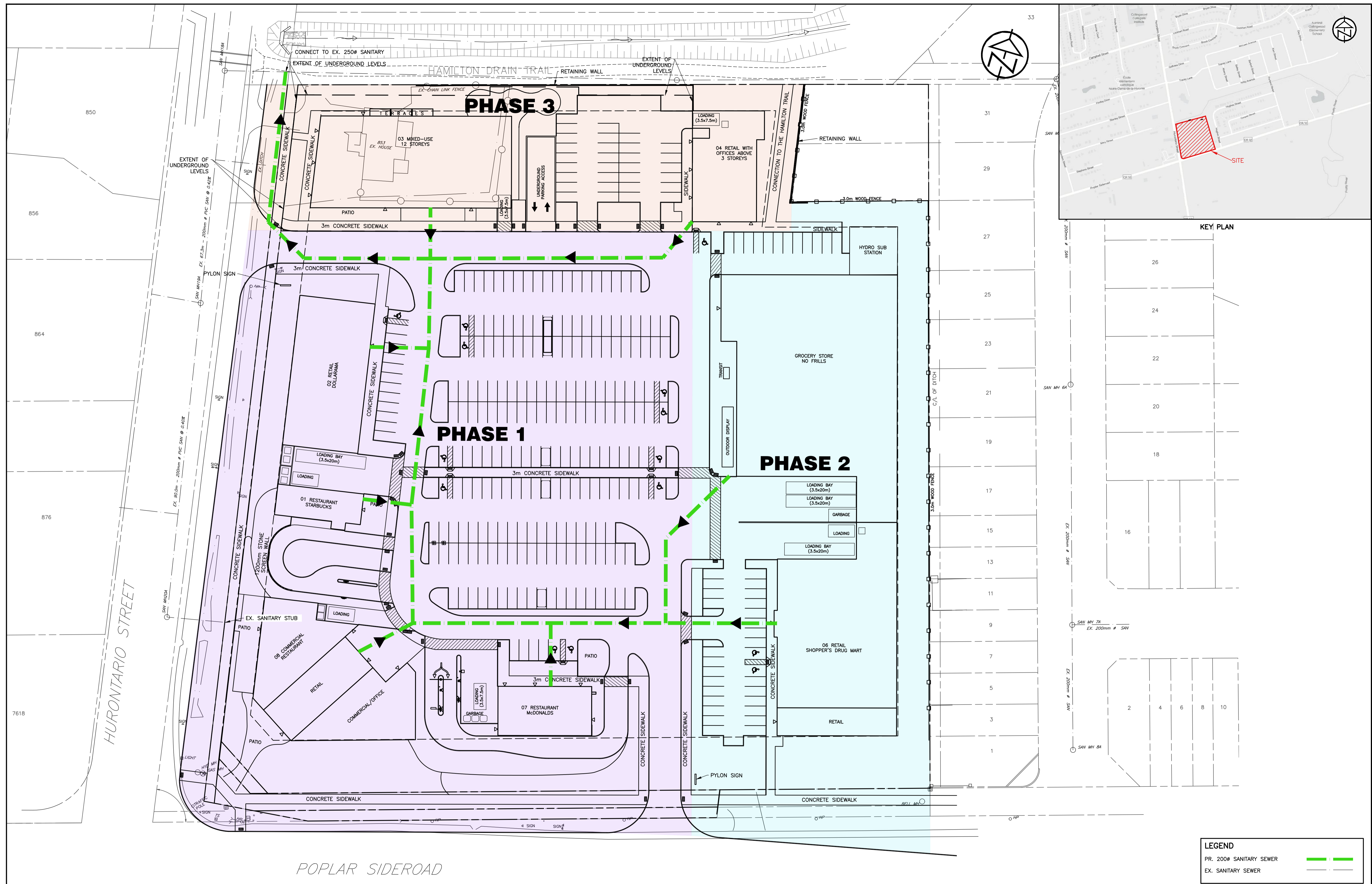
Street Name	Area Label/ID	Upstream Maintenance Hole	Downstream Maintenance Hole	Development Type	Population Density	Number of Units	Population (cap)	Accumulated Population (cap)	Peaking Factor	Area (ha)	Cumulative Area (ha)	Average Flow (L/s)			Peak Flow (L/s)			Proposed Sanitary Sewer								
												Development	Infiltration	Total	Development	Infiltration	Total	Sewer Length (m)	Sewer Slope (%)	Actual Sewer Diameter (mm)	Full Flow Velocity (m/s)	Full Flow Capacity (L/s)	Actual Velocity (m/s)	Calculated Sewer Diameter (mm)	Percentage of Full Flow Capacity (%)	
The Gateway Centre - Commercial	-	-	MH6B	Commercial		-		0.0	3.00	3.76	3.76	0.93	0.86	1.79	2.79	0.86	3.65	220.0	0.8%	200	0.90	28.40	0.60	93	12.9%	
The Gateway Centre - Residential	-	-	MH6B	Residential	Low	165	313.5	313.5	4.07	0.00	0.00	0.94		0.94	3.84		3.84	75.0	0.8%	200	0.90	28.40	0.61	94	13.5%	
Flow From Pretty River Estates	201	MH2A	MH1A	Residential	Med.	477	1383.3	1383.3	3.70	24.62	24.62	4.16	5.66	9.83	15.42	5.66	21.08	108.5	0.4%	250	0.78	38.08	0.76	200	55.4%	
Hamilton Drain Easement	202	MH1A	MH6B	Residential	Med.	0	0.0	1383.3	3.70	0.03	24.65	4.16	5.67	9.83	15.42	5.67	21.09	41.9	0.4%	250	0.74	36.17	0.73	204	58.3%	
Hamilton Drain Easement	203	MH6B	MH62A	Residential	Med.	0	0.0	1696.8	3.64	0.04	28.45	6.04	6.54	12.58	22.05	6.54	28.60	69.6	0.4%	250	0.74	36.17	0.74	229	79.1%	
Hamilton Drain Easement	204	MH62A	MH18A	Residential	Med.	0	0.0	1696.8	3.64	0.01	28.46	6.04	6.55	12.58	22.05	6.55	28.60	17.7	2.4%	200	1.62	50.81	1.59	161	56.3%	

1. See Appendix A of The Gateway Centre Functional Servicing Report (March 2022) for Commercial Water Demand Calculations  
 2. Flow rates from Pretty River Estates obtained from Sanitary Design Sheet completed by exp (No. 1584-ADD3 June 2012)



**THE GATEWAY CENTRE**  
**KEYPLAN**

DWG. No.  
**FIG. 1**  
 SCALE: NTS | DRAWN: KH | DATE: JUN 2025 | JOB NO. 120119



LEGEND	
PR. 200# SANITARY SEWER	
EX. SANITARY SEWER	

**DISCLAIMER AND COPYRIGHT**  
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**BENCHMARKS**  
 ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM AND ARE DERIVED FROM BENCH MARK NO. 001196S9504 HAVING A PUBLISHED ELEVATION OF 177.873 METRES.

**NOTES**  
 LEGAL SURVEY INFORMATION AND LOT DIMENSIONS SHOWN ON THIS PLAN ARE TAKEN FROM A SURVEY PLAN PREPARED BY J.D. BARNES LIMITED, DATED SEPTEMBER 22, 2021 WHICH MAY NOT BE FINAL AND ARE NOT GUARANTEED. THE FINAL REGISTERED PLAN OF SUBDIVISION SHALL BE REFERRED TO FOR CONFIRMATION OF THE DATA.  
 TOPOGRAPHIC INFORMATION SHOWN ON THIS PLAN FROM SURVEY PREPARED BY J.D. BARNES LIMITED DATED SEPTEMBER 22, 2021.

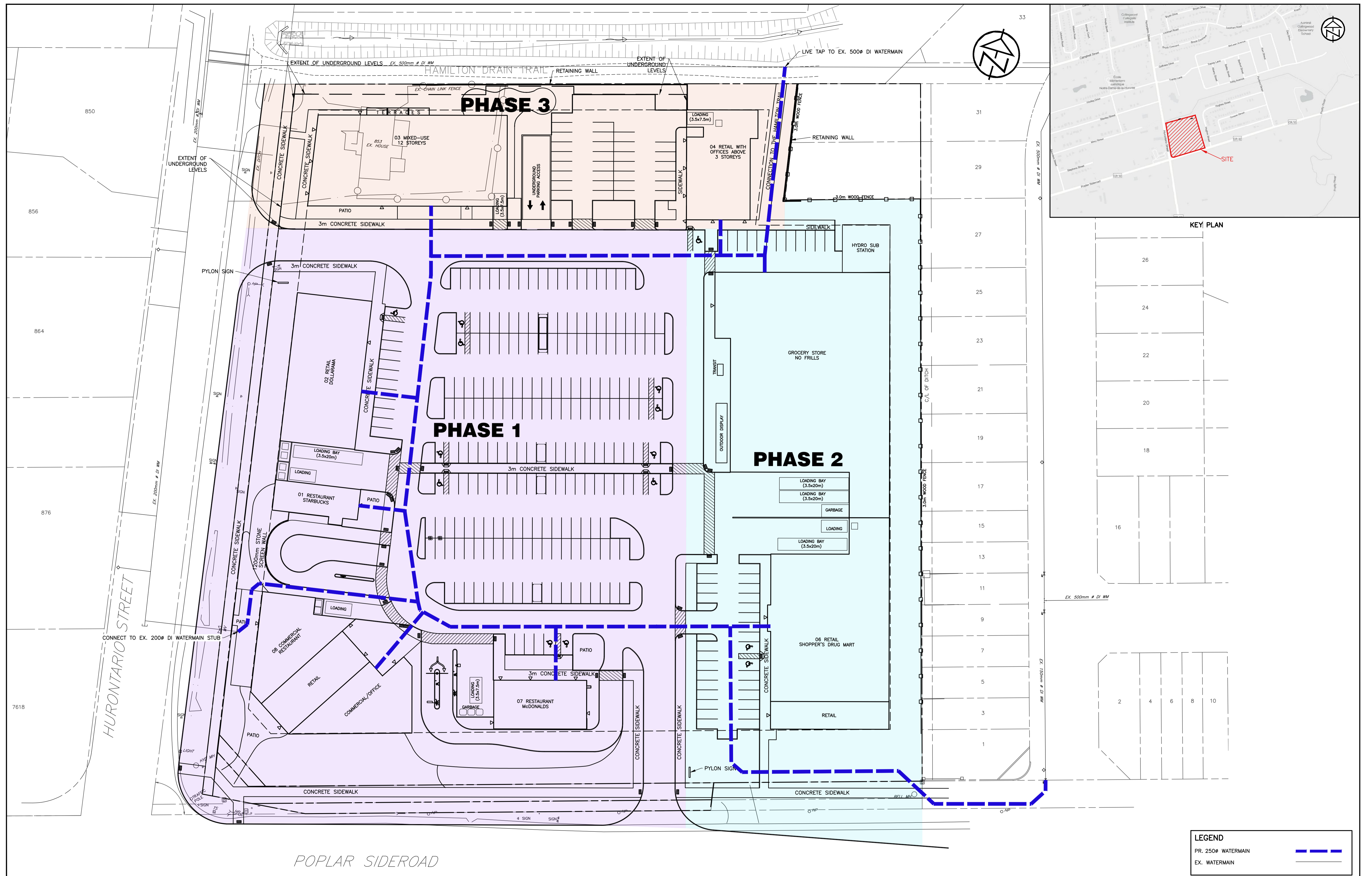
No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP	TOWN APPROVAL
1.	FOR CIRCULATION	JUN 2025		

**THE GATEWAY CENTRE**  
**COLLINGWOOD, ON**

**SANITARY LAYOUT PLAN**

**TATHAM ENGINEERING**

DESIGN: AS	FILE: 120119	DWG:
DRAWN: KH	DATE: MAY 2025	<b>SAN.1</b>
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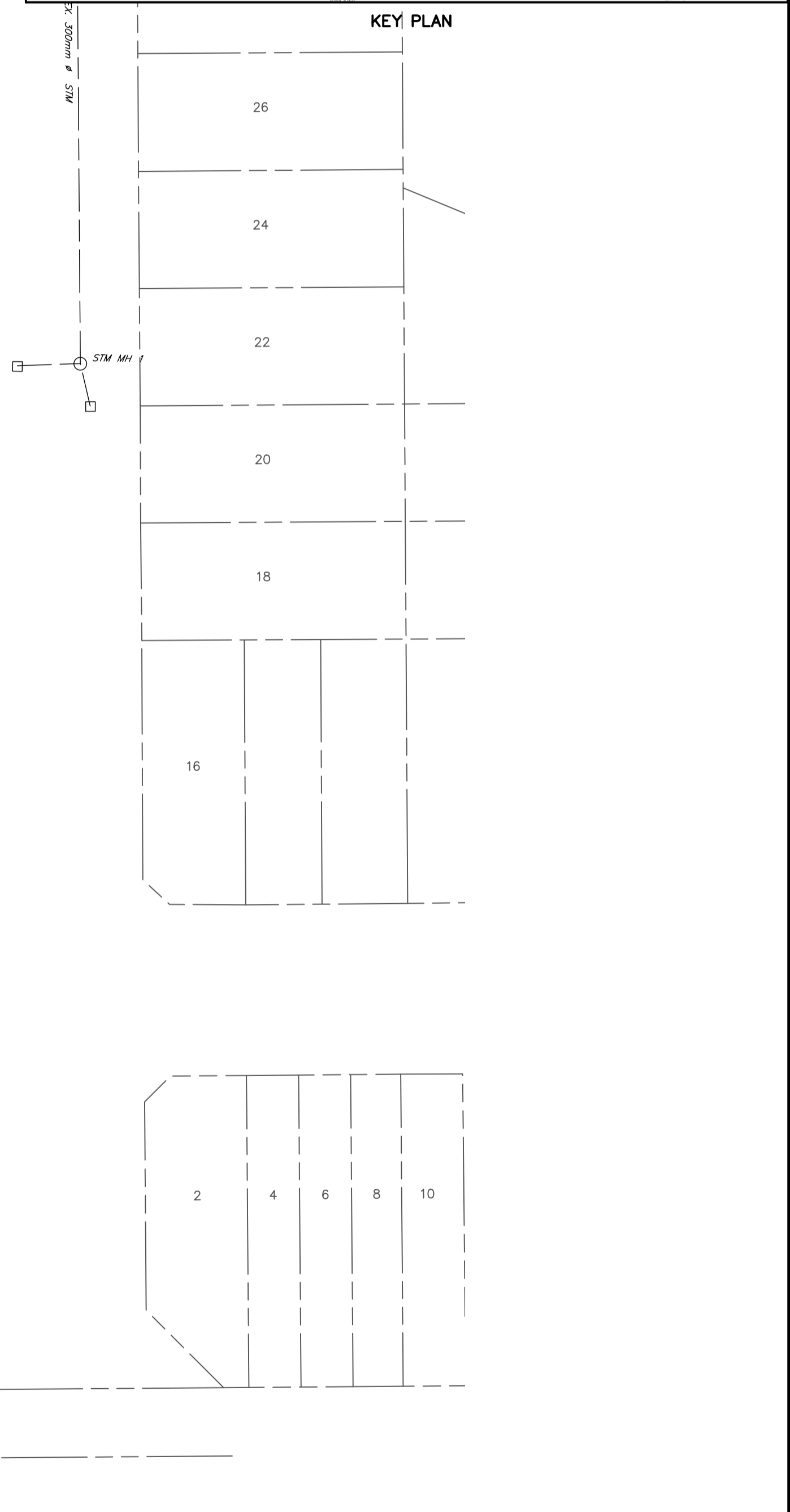
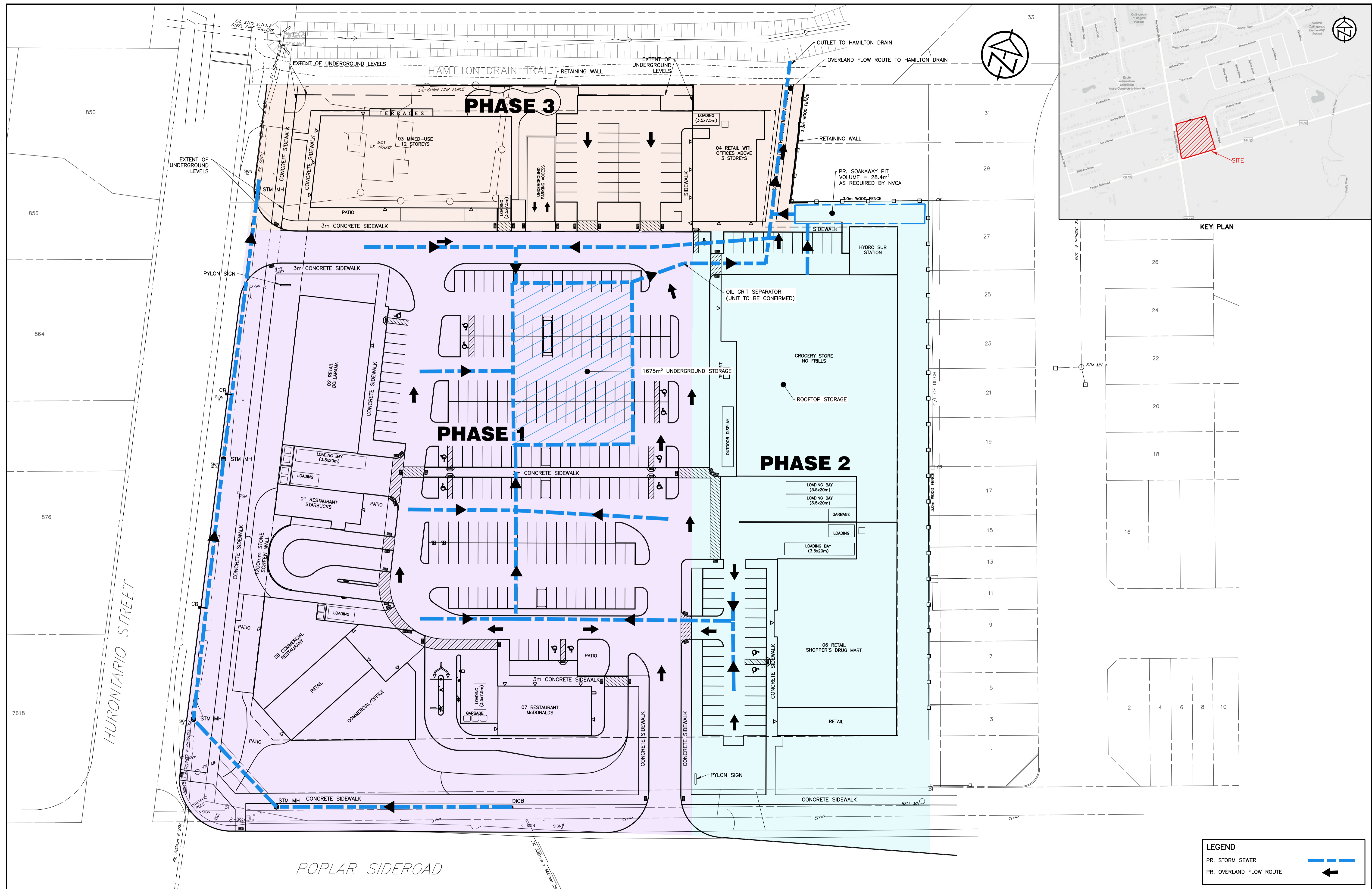
No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP	TOWN APPROVAL
1.	FOR CIRCULATION	JUN 2025		

**THE GATEWAY CENTRE**  
**COLLINGWOOD, ON**

**WATERMAIN LAYOUT PLAN**

**TATHAM ENGINEERING**

DESIGN: AS      FILE: 120119      DWG:  
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No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP	TOWN APPROVAL
1.	FOR CIRCULATION	JUN 2025		

**THE GATEWAY CENTRE**  
**COLLINGWOOD, ON**

**STORM LAYOUT PLAN**

**TATHAM ENGINEERING**

DESIGN: AS	FILE: 120119	DWG:
DRAWN: KH	DATE: MAY 2025	<b>STM.1</b>
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