AGK Multi Res – Michael Kosziwka 30663J – Functional Servicing Report – 16 to 18 Mill St, Georgetown, Ontario





Layout Of Site Proposed, Source Drawing: SRM Architects, File 20052, March 2023

## Functional Servicing Report Rev 8 November 04, 2024 16-18 Mill St, Georgetown, Ontario

Prepared For: AGK Multi Res 16 Bridlewood Blvd Limehouse, ON 519-217-2892 Michael@cleanwave.ca Michael Kosziwka

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## **1** Introduction

Egmond Associates Ltd (EAL) was retained to prepare a report outlining the preliminary servicing requirements for the re-development of a residential site at 16 to 18 Mill St, Georgetown, Ontario as shown on the cover.

This report fulfils the requirements of the Functional Servicing Report, as well as the Stormwater Management Brief and Water Balance Assessment and references SRM Architects Project Number 20052, Plans A 1.1 to A 3.3 dated February 2023.

The Site, which consists of 16 to 18 Mill St, Georgetown, ON, is located on the North West side of Mill St, between Dayfoot Dr and McNabb St. It is  $2272m^2$  (0.227 ha) in area. Mill Street is planned to be widened in the future, which will remove 5m from the eastern property frontage, resulting in a future site area of  $2071m^2$  (0.207ha).

For ease of communication, the Project North is identified in the true North East direction such that Mill Street is on the Project East side of the property (Drawing 1). All following directions will be identified relative to Project North.

There are currently two multi unit residential buildings (Res 1 and 2) and a small outbuilding (Garage) on the Site which are to be demolished for the development of two new structure(s) as shown in the Google Aerial.

A geotechnical investigation was conducted on the Site by EAL in July 2020 (with revisions April 2022), and a Phase I Environmental Assessment was conducted by Watters Environmental Group Inc in September 2019.



A site layout was prepared by SRM Architects Inc. in February 2023, which is used as a basis for the design calculations in this report. The two buildings are expected to be constructed at the same time.

This report is based on the site plans and concepts as understood by EAL up to August 08, 2024.

## 2 **Proposed Development**

The proposed two structures as of February, 2023 are to be 4 storey residential buildings with 2 levels of underground parking. The northern building footprint is to be 477.2 m<sup>2</sup> with a gross floor area of 1,673.68 m<sup>2</sup>. The southern building footprint is to be 441.1 m<sup>2</sup> with a gross floor area of 1,410.42 m<sup>2</sup>. The total buildings footprint is to be 918.3 m<sup>2</sup> with a gross floor area of 3,084.1 m<sup>2</sup>. There are planned to be 30 units (16 units North Building 1, 14 units South Building 2), which are to be a mix of 1 and 2 bedroom units. For servicing estimates, it is assumed that the average unit occupancy is to be 3 persons, for a total site occupancy or 102 persons (3 persons per unit\*34 units).

The landscaped area is to be 29 % of the total site area, 596.4 m<sup>2</sup>.

### 2.1 Site Grading

Based on the topographic survey by J. R. Finnie, the general slope of the property is from West to East. The highest elevation on the site was 245.5m Above Sea Level (ASL) in the South West corner of the site. The South East corner at Mill St was approximately 244.5 m ASL and the North East corner at Mill St is approximately 242.8 m ASL. The North West corner adjacent to a green space is approximately 244.8 m ASL.

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Proposed overland storm water flow routes are overland to Mill St in the East and to the green space on the North side of the site.

On the south side is a proposed 9.2 m building setback (driveway and greenspace area) and a 7.5 m setback from the canopy to the property line.

On the east side is a 5000 mm landscaped area (designated future road widening), is proposed a 1.5 m canopy set back and a 3 m front yard setback.

A 6m deep rear yard is proposed to be on the West side of the property. A 3.5m deep side yard is proposed to be on the North side of the property.

### 2.2 Access

Access to the site is provided via Mill Street on the north and south parts of the lot. Current driveway and parking area creates a "circular" path surrounding the structures. A small green space is between the existing buildings.

49 Parking residential, 4 barrier free, and 8 visitor parking spaces are to be provided. Residential spaces are mainly below ground. The proposed driveway access is to be near the south east corner of the site at Mill Street (see the Site Plan). Access ramps to the underground parking proposed are at the south west corner southern building.

### 2.3 Water Supply

Halton Region requires the community system to the site shall be capable of meeting maximum daily demand plus fire flow or maximum hourly demand.

Water supply for the site is provided from the municipal water supply via connection to an existing 300mm water main on Mill St (See the SS1 Drawing). The two existing structures are connected to the municipal water supply via individual water service lateral connections to the water main on Mill St. The condition and size of the existing lateral connections are not known, though we have not received complaints or notice of supply issues from the current owner.

There is an existing municipal fire hydrant on Mill St at the South East corner of the Site.

The water services for the proposed development will provide two lateral connections for the site to provide domestic supply and fire protection.

Usage rates and peaking factors of water consumption and allowable pressures are based on the Sustainable Halton Water and Wastewater Master Plan (AECOM, 2011). The domestic water requirements are based on 275 L/c/d (Litres/capita/day) as per the Master Plan.

Table 1: Anticipated Water Demands for Re-development										
	Existing(12 Units)	Proposed(34 Units)	Increase							
Population	36	102								
Average Day domestic	0.11 L/s	0.38 L/s	0.27L/s							
Demand										
Max Day Demand (1.9x	0.33 L/s	.72 L/s	0.39 L/s							
daily Demand)										
Peak Hour Demand (3.0x	0.52 L/s	1.14 L/s	062 L/s							
Daily Demand)										
Fire Flow (C fire – 0.8), use	Unavailable	100.65/s (1 building)	Unavailable							
North Building										

Based on these calculations, the available water supply from the 300mm watermain on Mill St should be adequate to supply the required flows. The lateral connection(s) to the Site should be at least a 200mm pipe to meet these flow requirements. One or both of the existing lateral connections to the Site may be re-used if they are in good condition and meet the size requirements. The final connection design is beyond the FSR.

#### 2.3.1 Fire Supply

The fire flow would be required for both buildings. EAL have assumed at any time, only a single building would be on fire, the north or larger building. The necessary water supply for fire flow(plus maximum domestic demand) is then determined to be 100.65 L/s.( Refer to Appendix 'A'). The Fire Hydrant test are attached in **Appendix 'A'**. The hydrant test shows flow of 5467 US GPM(344L/sec) at 20 psi. Therefore, the pressure and capacity satisfy the requirements for the firewater.

As per the Regional Municipality of Halton Water and Wastewater Linear Design Manual (2019, Version 4.0), the minimum spacing for fire hydrants for high density developments is 90m. There is an existing hydrant at the South East corner of the Site at Mill St, which is less than 90m from the furthest corner of the Site and therefore appears to be adequate at this time.

As part of the site plan approval process, the fire flow criteria shall be calculated and verified in accordance with the Ontario Building Code by the mechanical engineering consultant. Each building is being proposed with a Siamese connection. The North Building Siamese is 31m from the existing hydrant and the South building Siamese is 25m, thus fulfilling the requirement of OBC.

## 2.4 Sanitary Service

Sanitary service for 16 to 18 Mill St is provided by connection to the existing 300mm diameter (D) sanitary sewer on Mill St, with a hydraulic radius taken to be Diameter divided by 4 (D/4) or 75mm. The 300 sewer discharges to a 600mm diameter trunk sanitary sewer near Silver Creek. There is also a 375mm diameter sanitary sewer running between the site and Silver Creek. (Refer SS1 Drawing).

The peak factor on average sewage is based on the Water and Wastewater Linear Design Manual (April 2019, V4.0, 3.2.3,P22) Harmon Formula. For the present and proposed site the peaking factor was estimated to be 4.24.

Usage rates for the sanitary sewer usage from the site at present and as proposed are taken from Water and Wastewater Linear Design Manual (April 2019, V4.0, Table 3-1,P21) to be  $0.003183*10^{-3}$  m<sup>3</sup>/person-sec. Using this value, the following average and peak usage is estimated for the Site in Table 3.

Table 3: Anticipated Sanitary Design flows for Re-development											
	Existing(12)	Proposed(34)	Increase in flow								
Population	36	102									
Wastewater demand	0.11 L/s (0.00011 m <sup>3</sup> /sec)	0.38 L/s (0.00038 m <sup>3</sup> /sec)	0.27 L/s (0.00027 m <sup>3</sup> /sec)								
average											
Peak demand	0.47 L/s (0.00047 m <sup>3</sup> /sec)	1.61L/s(0.00161 m <sup>3</sup> /sec)	1.14 L/s(0.00114 m <sup>3</sup> /sec)								

The design capacity of the existing sewers was estimated using the Manning Formula as specified in the Water and Wastewater Linear Design Manual (April 2019, V4.0, 3.3.1, P22) where Q ( $m^3/s$ ) =  $(1/n)(R^{2/3})*(S^{1/2})*A$  and where n = 0.13, R is the hydraulic radius (m), S is the slope (m/m), r is the pipe diameter, and where A is the section of the pipe ( $\pi*r^2$ ). For the 300mm sanitary sewer with a slope of 0.58% the flow was estimated to be 0.095m<sup>3</sup>/s or 95 L/s.

The design capacity of the 600m trunk sewer with a slope of approximately 0.35% was estimated to be  $0.363m^3/s$  or 363 L/s.

The peak demand quantity represents a possible increase of 1.2 % to the total peak flow in the 300mm diameter sewer on Mill St. The peak demand quantity increase represents an increase of about 0.31 % increase of the total peak flow of the 600mm diameter trunk sanitary sewer. It is expected that the existing

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sewers have sufficient capacity to absorb the additional flow without upgrades. One expects the new sewers on Mill would facilitate the present development plans.

The sanitary sewer on site should be connected to the 300mm diameter sewer on Mill St with a lateral connection of minimum 150mm diameter. The Sanitary Design Sheet is attached in **Appendix 'B'** 

## 2.5 Storm Service

There are no known storm drains on the Site. Storm water is discharged by overland sheet flow to Mill St and to the green space to the North.

There is an 850mm diameter storm sewer in Mill St which should be used to discharge post-development flows. Pre-Development and Post Development Drainage Plans are attached in **Appendix 'C'**. The runoff flows are calculated using Halton Town Rainfall Intensity Duration Frequency parameters. Modified Rational formula is used to calculate the flows. Storm Design Sheet is attached in **Appendix 'D'** The proposed Storm System is shown in the Site Servicing Plan SS1

## 3.0 Stormwater Management

The Storm system is discussed separately in Stormwater Management Report. Quantity and Quality control will be provided before discharging rainwater into existing 850mm diameter available storm sewer connection. Control roof drains are proposed to detain rainwater for quantity control. The post development flows will be controlled to respective pre-development flows. The proposed Storm System is shown in the Site Servicing Plan, DWG SS1

## 4.0 Construction Erosion and Sediment Control

Erosion and sediments must be controlled during the construction phase. During site grading, there is a possibility for runoff containing high levels of sediments to be directed towards adjoining properties, Mill St, and the existing storm infrastructure. Therefore, prior to grading, sediment control fences must be installed along the site perimeter where runoff may discharge from the site. Material stockpiles are to be placed in appropriate locations to minimum erosion. The proposed erosion control plan is in Appendix 'A'.

When catchbasins and manholes are installed, they must be protected with inlet sediment control devices such as woven geotextile filter cloth. The inlet protection must be in place until all building and landscaping work has been completed.

Inspection of maintenance of the silt fences and inlet protection shall be carried out weekly while construction is underway, as well as after every rainfall event of at least 13mm (10 minutes of 2-year design storm.

After construction and landscaping is completed, silt fences and inlet protection may be removed along with any accumulated settlement. The Erosion and Sediment Control Plan is shown in Drawing ESC

## 5.0 Utilities

The site is in an urban area serviced by Halton Hills Hydro, Enbridge Gas, Cogeco Cable, and Bell Canada. The size and type of connection within the Mill Street right-of-way for each utility will be confirmed as part of the site plan approval process for the development.

Bell, Cogeco, Turris Communications of Georgetown nor other providers for cell, tv, internet have been contacted as we expect currently these can all serve the site.

The electrical design and Halton Hills Hydro servicing application have been completed by the mechanical engineer, Millenium Engineering, which will be submitted separately from this report.

Gas loadings and design are underway by Millenium Engineering and will be submitted separately from this report.

For heating and cooling an alternate energy source one might consider is geothermal using closed loop vertical wells stretching to about 180 m in depth each. Based on local climate a subsurface conditions a possible thermal profile is below. A thermal conductivity in the range of 2 to 4 W/(m\*K) and a thermal diffusivity in the range of 0.07 m<sup>2</sup>/day might



be possible (a field thermal conductivity test would be needed).

## 6.0 Conclusions

The proposed development will see the construction of a new residential building at 16 to 18 Mill St, Georgetown, Ontario. The proposed development can be serviced utilizing the existing and proposed infrastructure. Our conclusions and recommendations for servicing of the proposed development are summarized as follows:

Water Servicing

- The calculated domestic flow demand due to the proposed development is 0.38 L/s average,
  0.72 L/sec maximum per day, peak demand hour 1.14L/s and
- This represents an increase of **0.17 L/s** average, **0.33 L/s** over maximum per day, and **0.52 L/s** over peak demand hour over the existing site usage.
- The calculated fire flow demand due to the proposed development is 100 L/s.
- The proposed development will be serviced by at minimum a 200 mm lateral service connection to the 300 mm diameter watermain on Mill St. Both the building have separate water connection.
- The existing watermain is expected to be capable of handling the increased flows due to the development.
- Additional confirmation of the fire and domestic branch sizing and fire flow requirements should be provided by the mechanical engineering consultant at the building permit stage of approval.

Sanitary Servicing

- The estimated peak demand in sanitary flow of the proposal is 1.61 L/s
- This represents an increase of 1.14 L/s over the existing site usage.
- The proposed development will be serviced by at minimum a 150mm lateral service connection to the 300 mm sanitary sewer on Mill St.
- The existing sanitary sewer appears is capable of handling the increased flows due to the development, noting a new sewer appears to be under construction on mill street.

Stormwater Servicing

• The existing storm water flow is via sheet flow to Mill St and to the green space to the North.

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- Storm Flow to Mill Street for the Post-Development condition will be increased as more area is draining to Mill Street as compare to the Pre-Development conditions. To reduce or equal the post-development flows to pre-development levels, we are proposing roof control drains on the fourth story of both buildings.
- To fulfil Water balance requirements can't be fully implemented.
- The soil conditions at the site have high potential for infiltration. It is recommended that runoff generated on the landscaped areas be infiltrated on site.
- The Site is in Well Head Protection Area E and WHPA-Q1/Q2-C
- An oil-grit separator, Stormceptor Model EF04, is being proposed which will remove 93% of TSS And will capture more than 90% of runoff volume.
- A diameter minimum pipe should be used for connecting on-site stormwater management facilities to the 850 mm storm sewer on Mill St.
- The existing storm sewer is expected to be capable of handling the flows due to the development.

A proposed layout for utility connections is shown in the Site Servicing Plan SS1. Closure

## 7.0 Contract

The client authorized EAL to carry out the work set out in the report in accordance with the scope of work as set out herein.

## 8.0 Limitations

The present work is for the sole use of EAL, and the client in the Spring/Summer 2022 Site evaluation. Others with an interest in the Site such as contractors, purchasers, etc., must undertake their own investigations respecting the Site, and are advised that the work is to the terms of reference only. Neither EAL nor the client warrant or represent the report has found, detected or reported on all Site conditions or Site environmental conditions. All documents cited, photos other than taken by EAL, drawings reviewed and reproduced are provided at no markup cost beyond 5% to cover insurances and are provided at original cost only. Copyright belongs to the original source. Refer and obtain to original documents at libraries, publishers, etc. for use of these materials, as the present work using the materials for ease of reference using artistic standards in not intended to negate any commercial use or value of the works by others.

## 9.0 Thanks

The client is thanked for retaining EAL for the present project. Please call us if you have questions regarding the report.Egmond Associates Ltd Premier Engineering Solutions Inc

Environmental & Geotechnical Engineers Julie vanderMeulen, B.Eng. MaSc, Project Technical Works John Van Egmond, P.Eng., P.E., Principal

Civil Engineers Muhammad Ismail P.Eng. Principal



(9)

#### Egmond Associates Ltd - Terms of Engagement

#### GENERAL

Egmond Associates Ltd (EAL or The Consultant herein and may include subcontractors shall render the Services, as specified in the attached Scope of Services or set out in the final report to the Client, and agreed by the Client for project in accordance with the following terms of engagement. If required, in EAL's opinion, to respond to a subpoena, EAL, its staff, etc. will be paid at their normal charge out rates by the Client. The Client will pay for the amounts invoiced by the consultant on receipt of the invoice.

#### COMPENSATION

Charges for the service(s rendered will be made in accordance with the Consultant's Schedule of Fees and Disbursements as the services are rendered. Consultant's current schedule of fees is as published to Clients periodically and available on request or as attached hereto. All Charges will be payable in Canadian Dollars unless specified. Invoices will be due and payable on receipt from the date of the invoice without holdback. Interest on overdue accounts is prime plus 10%, collection fees being extra and payable on collection (where allowed. If the account is not paid the reports may not be used or released, and if released all liabilities are the sole responsibility of the Client and the reader and user of the report and he/she/they shall bear all liability and shall save and hold harmless EAL, its staff, shareholders, suppliers, etc. against any and all costs, claims, etc. EAL's limitations shall apply. REPRESENTATIVES

Each party shall designate a representative who is able to act on behalf of that party and receive notices under this Agreement (default President, if individual then individual.

#### TERMINATION

Either party may terminate the contract without cause upon thirty (30 days' notice in writing, the engagement terminating by default after 180 days following the final report, unless extended by ongoing work (storing of samples extends lien rights. Payment is due for all costs and expenses to the consultant immediately upon termination. If either party breaches this contract, the non defaulting party, may terminate the agreement after giving seven (7 days' notice (email, writing, verbal to remedy or begin remediation of the breach. Payment is due for all costs and expenses to the consultant immediately on termination of the contract if the consultant elects to exercises termination under this paragraph.

#### COOPERATION

The consultant's field, laboratory and other work and engineering do not include herein a duty or duty of care to deal with issues other than those set out in the terms of engagement, or as stated in the final report submitted by the Consultant. The Consultant will co-operate, as the Consultant deems appropriate, with the Client's other team members as applicable during portion of work which coincide.

LIMITATION OF LIABILITY

EAL shall not be responsible for the costs, consequences, etc. of:

- (1) the failure of others, retained by the Client, to perform work to the satisfaction of the Client;
- the design, use or defects of reports, equipment, etc. supplied by the (2) Client<sup>.</sup>
- (3) interactions of other systems, damage to other systems resulting from investigations:
- (4) damages to utilities, which were identified and located, or which were not identified by the Client:
- any decisions made by the Client (if for example made contrary to the (5) Consultant's advice;
- any consequential loss, injury, or damages suffered by the Client, (6)including but not limited to loss of use,
- earnings and or business interruption. (7)

the unauthorized distribution of any confidential document or report (8) prepared by or on behalf of the Consultant for the exclusive use of the Consultant and the Client.

the EAL limitations, general soils terms, and report further set out in the limitations. The total amount of all claims the Client may have against the Consultant or any present or former partner, executive, shareholder, employee, or employee thereof under this engagement, including, but not limited to claims for negligence, negligent misrepresentation and breach of contract, shall be strictly limited to half the amount of any professional or other liability insurance the Consultant may have available for such claims. If the client has no paid its bills in full the limitation shall be the unpaid amount only as at the date of the last invoice. The Client agrees its claims can only be against the Consultant under this contract, and not against the employees, shareholders, executives, etc. No claim may be brought against the Consultant in contract or tort by the Client or those who rely on the report more than (2 years after the services were completed or terminated under this engagement. Those who may not rely on the report have no rights in contract or under tort.

#### DOCUMENTS

All of the documents prepared by the Consultant or on behalf of the Consultant in connection with the Project are instruments of service for the execution of the Project. The Consultant retains the property and copyright in these documents, whether the Client advances to further projects on the matter of the engineering or not. These documents are not for use on other projects or in ways contrary to the report.

#### FIELD SERVICES DURING CONSTRUCTION

Where applicable, field services where recommended by the Consultant for the Client's project are the minimum thought necessary by the Consultant, whether the Consultant is retained or not. If not retained, EAL shall have no liability, and those responsible for engaging and or providing the field services shall be responsible. Where the Consultant's services are limited, the extent of such limitations may be in the report, or as set out in the limitations, or as set out herein, or as set out in subsequent correspondence, but in no event shall EAL be liable for field services beyond the extent retained by the Client nor for any actual or other damages if subsequent work shows the material conditions were not as expected or work was done improperly, and EAL shall not be a proximate cause of failure, if others fail to carry out any portion of their work or responsibilities.

#### DISPUTE RESOLUTION

If requested in writing by either the Client or the Consultant, the Client and the Consultant shall attempt to resolve any dispute between them arising out of or in connection with these Terms of Engagement or other vehicle for services between the Client and the Consultant, by entering into structured non-binding negotiations with a mediating (Peter Wallace, P.Eng. on a without prejudice basis. The mediating party shall be appointed by agreement of the parties. It the matter cannot be settled within a period of thirty (30 calendar days with the mediator, the dispute shall be finally resolved by arbitration under the rules of Ontario or by an arbitrator appointed by agreement of the parties or by reference to a Judge of the Courts in Mississauga, Ontario, Canada.

SCHEDULE OF FEES (Base year is July 2020, rates will be adjusted based on inflation:

Principals - \$400/hr

Engineers/Technical Consultants - \$220hr Junior Engineer - \$150/hr Scientists - \$220/hr Technical Staff - \$125/hr Others on Pavroll x 3 Expenses - over \$10,000 per invoice, payable directly by the Client Expenses - cost plus 15 % (except as agreed by the Client Travel Cost (Portal to Portal - regular airline or car (0.5 x price of

gasoline x kilometres plus expenses

Court Time Multiply by 4

Minimum Contract \$1000

Rates in Canadian Dollars.

Other rates available as needed upon request.



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#### Egmond Associates Ltd – Limitations

This document describes the limitations of the report and contract, which may have impact on the use and reading of the documents provided by Egmond Associates Ltd (EAL herein, regarding interpretations, uses, liabilities, etc. Others than EAL and the Client are notified that use of the EAL reports, etc. by said same others, may be or is subject to the restrictions of use, limitations of liabilities, etc. as set out in the contract and its general conditions.

#### SECTION 1: RESPONSIBILITIES

1.1 Technical Arbiter - EAL was retained to provide the Professional Services described as outlined in the report. Tests and observations were conducted using standard test procedures and laboratory protocols as defined and applied by EAL or its suppliers. EAL are the sole arbiter of technical matters pertaining to the work undertaken in the contract.

1.2 Terms of Reference - EAL provided the Client with written reports meeting the terms of reference as outlined in the report for the use of EAL and the Client in the period identified in the report, or for six months after completion of the report, whichever is shorter. The normal EAL Terms of Engagement shall apply. Any contract by the Client, which uses absolute terms that would negate insurance coverage, etc., shall be taken to mean "reasonable" as defined by EAL periodically. Contracts written by the Client or almost exclusively, that is where the Client input is over 5% of the document or where absolute terms are used, shall be subject to completion and interpretation as determined solely by EAL periodically for either the contract or the technical matters pertaining thereto, particularly as the contract may include any absolute terms.

1.3 Reference Points - Where reference points are used by EAL, EAL has referenced its data and observations to reference points set as part of surveying or construction staking by others.

1.4 Directing Work - Except as specifically provided for in the contract, the Client has not made EAL responsible for directing the work of contractors or others.

1.5 Safety - Nothing in EAL's responsibilities or work shall construe to make EAL responsible for job or site safety after the EAL field work or for other than its own activities when on site. Site safety is the sole responsibility of others, for example the contractor controlling the site. Where EAL makes recommendations for safety in the case of imminent danger as determined by EAL, others than EAL shall pay for such actions as may be required and agree to hold and save harmless the Client and EAL against any and all costs, etc.

1.6 Performance - EAL was not, is not, and will not be responsible for the failure of others to perform in accordance with their particular contract documents. EAL services shall in no way relieve others of their (i.e. the others responsibilities.

1.7 Change in Information - The Client (and others using the EAL report was and is responsible to provide EAL with all known information regarding existing and proposed conditions of the site and undertaking. Any new information, which becomes available to the Client (and others, which differs materially from that used to prepare any reports and information by EAL, in the EAL report and documents it prepared will also be provided. The Client holds harmless EAL, its affiliates, and the respective directors, officers, employees, agents and subcontractors, from all claims, damages, losses, related expenses, etc., involving subterranean structures, movements, contamination, etc. which were not called to EAL's attention, that were not shown on plans, or that were shown in documents not provided to EAL.

1.8 Agreements with Contractors - EAL must be a beneficiary in any hold harmless or indemnity agreements, etc. between the Client and its contractors.

1.9 Approvals - The Client agreed that public officials and authorities and even codes may be interpreted differently by public officials etc., than interpreted by EAL or the Client, and that this difference is neither predictable or within responsibility of EAL and shall not be cause for claim or extras.

1.10 Tender Period - Contractors bidding work shall normally be given not less than 45 days for carrying out their own investigations on matters pertaining to the site, and when changed in the contract, shall notify the contractors and EAL.

1.11 Valid Reports - Valid EAL reports are embossed and signed and stamped as original, and other reports are not valid for any purpose.

1.12 Error - The Client and EAL agreed that design professionals strive to be correct when developing reports, plans and designs, and that even so errors, etc. may arise where there is no negligence, etc., and as such no error is actionable in that circumstance. Others, by making use of EAL reports outside of the contract accept this agreement as binding and valid. Others using the report do so then at their sole risk. The reader of our reports, acknowledge that engineering judgment, based on given data, may vary from individual to individual, and may change with time, and that changing engineering judgment and opinion and that varied engineering judgment, is a weighing of facts and reaching a conclusion, and that such EAL judgments and opinions and resultant impacts on schedules, costs, etc. are not actionable.

#### SECTION 2: REPORTS AND RECORDS

2.1 Copies - As agreed, EAL furnished copies of each report to the Client. If no comments were received from the Client within 15 days of the issuing of a report, it was agreed and understood, without further comment, that the report was entirely satisfactory for the Client's use and for its intended purpose, and this limits comments in any post completion phase without further engineering consideration and investigation.

2.2 Use of Report in Event of Non Payment - The Client and EAL agreed, if the Client does not pay for EAL services as agreed (in whole and in part, that the Client would return all reports and other work to EAL on demand, and that reports and other work will not be used by the Client or its suppliers or others for any purpose whatsoever. Use of these materials by others than EAL in the event of non payment, are at the sole and total risk of the user.

2.3 Reports - The Client and EAL agreed that the reports, notes, and other documents, as instruments of service, remain the property of EAL. 2.4 Disclosure Required by Law - Nothing in this project shall make EAL liable in law to report any or all conditions, except those conditions which EAL believes in capacity pertains to items of imminent danger.

**SECTION** 3: CONTINUITY OF SERVICES, DISPUTES, CARE 3.1 Continuity - It is customary for the consultant, EAL in this case, who provides recommendations to be retained, to provide observation and related services during further, construction, etc. If EAL is not retained to provide continuing services the Client agreed to hold EAL harmless from all claims, damages, losses and expenses, including attorneys' fees, arising out of any interpretations, clarifications, substitutions or modifications provided by the Client or others. Others using the report do so at their total and sole liability, and by using the report agree to save and hold harmless EAL and the Client against all and any consequences of the use of the report, etc.

3.2 ADR - The Client and EAL agree that the Client will use Alternative Dispute Resolution (ADR in its contracts and disputes with contractors on the project. When disputes result, due to use by others, the dispute shall be submitted to EAL and its legal provider for binding resolution using their prevailing rates.

3.3 Čare - The Client and EAL agreed that EAL used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession, as interpreted and determined by EAL periodically, and that this standard is determined solely by EAL for this project.



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3.4 Risk - The Client and EAL agreed, many risks potentially affect EAL by virtue of entering into an agreement to provide services on behalf of the Client. For the Client to obtain the benefit of a fee, which included a reasonable allowance for dealing with EAL liability, the Client agreed to limit the liability as allowed by law of EAL to the Client and to all others for claims arising out of the services. Further, others than the Client and EAL, by making use of the report accept all risks, liabilities, etc. that may arise from that use.

3.5 Contractor - The Client and EAL agreed, that if EAL are retained to provide for job site services during construction, the Client agreed that it is good practice that the contractor (subcontractor is completely and solely responsible for maintaining and implementing legal working conditions methods, means, techniques sequences, procedures, acts, etc., as the contractor controls the site. EAL's work is not intended to be, nor is it, a review of the safety practices or compliance to any particular code. EAL's presence does not relieve the contractor from adhering to all applicable laws, codes and good practice.

3.6 Life - The Client and EAL agreed that if imminently hazardous or potentially hazardous conditions or chemical conditions are found or interpreted by EAL during the provision of EAL services, EAL shall be entitled, without liability and without concern for claims by the Client or others for damages, to take all steps it solely deems reasonable to protect human life first, and the environment second, and will be reimbursed for such activities as needed. Others using the report by that non allowed use agree to fully protect and save harmless EAL and the Client. 3.7 Extras and Extra Work - For work in excess of the contract, the EAL standard Fee Schedule in the Terms of Engagement will apply (prices subject to change.

#### SECTION 4: WORK INCLUDED

4.1 Work included shall be as set out by EAL in the report or proposal, and shall be as interpreted by EAL. Not covered are moulds, asbestos, soils, environmental matters, structural matters, etc. unless specifically part of the project. Further, some issues which are specifically part of the project may be costly or intractable to resolution and the client shall not hold EAL responsible for the successful resolution.

#### SECTION 5: SUMMARY OF LIMITATIONS

5.1 The user/reader of the EAL report is warned that the Client and EAL have agreed to specific limitations on liabilities, etc. Others than EAL and the Client, agree their use or release of the report is at their sole risk, cost, etc. In general the Client and EAL agreed that EAL is the sole arbitrator of technical matters pertaining to the project and methods for the purpose of the report. The report may set out further limitations. Any clauses found non enforceable in the contract or above, may be severed without impacting the applicability of the rest of the contract or the above by EAL at its discretion.



# Appendix A

- Fire Demand Calculations
- Fire Hydrant Test

### FIRE FLOW CALCULATIONS 160-18 MILL STREET, HALTON HILLS

Client: **Building.:** 

2024-08-07

Fire Flow Calculation Procedure per Water Supply for Public Fire Protection, 1999 by Fire Underwriter Survey, p 20.

$$F = 220 \ C \sqrt{A}$$

where

F = Fire flow in Litres per minute (Lpm)

**Determine Type of Construction** 

C = coefficient related to the type of construction

0.80

- A = total floor area in the building being considered in square metres
- Α.

=> Fire Resistance Construction Minimum fire resistance 1.0 hour Non-Combustible Construction

#### В. **Determine Ground Floor Area**

Therefore C = (

As per the Site Statistic we have:

Floor Areas:

North Building:

448.8m <sup>2</sup>
448.8m <sup>2</sup>
448.8m <sup>2</sup>
448.8m <sup>2</sup>

South Building:

First Floor	440.8m <sup>2</sup>
Second Floor	440.8m <sup>2</sup>
Third Floor	440.8m <sup>2</sup>
Forth Floor	335.8m <sup>2</sup>

As the North Building floor are is greater than the South Building we will consider North Building in calculations of the floor area.

For Fire resistance buildings, cosider two largrest adjoining floors plus 50 percent of each of any floors immediately above them up to eight, when the vertical openings are inadequately protected. If the vertical openings and exterior vertical communications are properly proteced (one hour rating), consider only the area of the largest floor plus 25 percent of each of the two immediately adjoining floors.

For conservative approach we are considering the first condition:

 $A = 448.8 + 448.8 + 448.8 \times 0.50 + 448.8 \times 0.50$ = 1,346.40 m<sup>2</sup>

D. **Determined the Fire Flow** 

> $F = 220x0.80x(1346.40)^{0.50}$ F = 6,458 Lpm

Ε. **Determine Increase or Decrease for Occupancy** As the Building is low Hazard, a factor of -25% can be applied but on conservative

Side we	are considering it	to a lir	nited combustit	ole, thus w	e apply 15% redu	ction factor
to the Fire	e Flow calculated in	'D'				
	Fire Flow =		6458x(1-0.15)		Lpm	
		=	5,489	Lpm		
F. Determi	ne Decrease for A	Autom	atic Sprinkler	Protection	n	
25% Re	duction for Sprin	ker Pr	otected			
		=	5489x0.25		Lpm	
		=	1,646.8		Lpm	
G. Determi	ne the Total Incre	ease F	or Exposures			
Fac	e Distance	(m)	Charge			
West	Side More than	45m	0%			
East	Side	16	15%			
North	Side More ta	h 45m	0'%			
South	Side	6	20%			
		Total	35%	of	5,489	
				:	= 1921.15	Lpm
H. Req'd F	ire Flow = E - F +	G				
	=+5489-16	46.8+	1921.45			
	5,764		Lpm			
	F = 5,764 L	om	(2,000 Lpm < F	- < 45,000	Lpm; OK)	
Rounding to nearest 1	,000L/s 6,000 L	om ODM				
	F = 1,003 US	GPIVI				
	- 100.0 L	/5				
G. Fire	Demand + Maxim	um di	aly Demand			
	= 100.0+0	.65	(See FSR Sec	tion 2.3.1	)	
	= 100.65 L/S	ec				
	= 100.65 L/S	ec				
	= 1596 US G	PM				
Fire Hydrant test :						

Test #	Number of Outlets	Orifice Size (in)	Pitot Reading (psig)	EquivInt Flow (usgpm)	Total Flow (usgpm)	Projected flow at 20psi (usgpm)	Gauge Pressure (psig)	Discharg e Coef'nt
Static	N/A	N/A	N/A	N/A	0	N/A	80	N/A
1	1	2.47	62	1146	1146	4948	76	0.8
2	2	2.47	40	921	1842	5467	72	0.8

Discharge available at 20 psi = 5467 US GPM > 1596 US GPM (Okay)

( Headlosses in the proposed water are neglibible)





## GENERAL INFORMATION:

PROJECT ID PROJECT NAME BUILDING ADDRESS 1618MS 16-18 Mill Street 16-18 Mill Street Halton Hills, Ontario TESTED BY: AA/RS DATE Apr 20-23 TIME 1:00:00 PM

## WATER MAIN INFORMATION:

MAIN SIZE / MATERIAL CONFIGURATION

└ Looped

## HYDRANT LOCATION:





## FINAL RESULTS:

Test #	Number	Orifice	Pitot	EquivInt	Total	Projected	Gauge	Discharg
	of	Size (in)	Reading	Flow	Flow	flow at	Pressure	e Coef'nt
	Outlets		(psig)	(usgpm)	(usgpm)	20psi	(psig)	
						(usgpm)		
Static	N/A	N/A	N/A	N/A	0	N/A	80	N/A
1	1	2.47	62	1146	1146	4948	76	0.8
2	2	2.47	40	921	1842	5467	72	0.8



## Appendix B

Sanitary Design Sheet



## APPENDIX B SANITARY SEWER DESIGN SHEET 16-18 MILL STREET HALTON HILLS

Project: 16-18 Mill Street, Georgetown

Project Name Apartment Building

Persons/Unit 3 (Conservative)

	R	RESIDENTI	AL	COMMERCIAL				FLOW							
LOCATION	Area	Number of Units	Population	Commercial Floor Area (ha)	Total Cumulative Population	Residential @ 275 L/day	Commercial 180,000L/ha/d ay	Harmon Peaking Factor Residential(Only)*	Residential Peak Flow	Commercia I Peak Flow	Extraneous Flow	Total Design Flow	PIPE DIA	SLOPE	FULL CAP (n=
								Flow (L/s)	(L/s)	(L/s)	L/sec	(L/s)	(mm)		
Proposed Condition															
Residential	0.2071	30	90		90	24750	0	4.26	1.22		0.05	1.28	150	2.0%	
Existing Residenti *Harmon Peaking I/I(Infiltration Inflov	al Flow Factor = v) =	1+[14/(4+ 0.26	275c/day P <sup>0.50</sup> )] S L/ha/sec	y :									-		

Calc by	MFI	Project:	Sheet No.
Checked	MFI	16-18 MILL STREET	
Date	22-Jul-21	HALTON HILLS	
			/

% of Design Capacity (%)
5.94
1 of 1

# Appendix C

- C1 Pre-Development Drainage Plan
- C2 Post-Development Drainage Plans





# Appendix D

Storm System Design Sheet

## Appendix D STORM SEWER DESIGN SHEET

Q= 2.78AIR

Where

A area in hectares

I rainfall in millimetres per hour (mm/hr)

Q peak flow in litres per second (L/s)

= 946.46/(tc+7)<sup>0.788</sup> 5 Year Storm

where : tc is in minutes

R runoff coefficient

STREET			A	REAS (ŀ	na)				Rainfall	Peak				SEWE	ER DATA		
						Indivi.	Accum	Time of	Intensity	Flow	Diameter	Slope	Length	Capacity	Velocity	Time of	Remarks
STREET	FROM	то	R=	R=	R=	2.78AR	2.78AR	Conc.	1	Q (L/s)	(mm)	%	(m)	(L/s)	(m/s)	Flow	
			0.25	0.5	0.9									n= .013	m/s	(minutes)	
Private	PROP CB 1	PROP STM	0.012			0.01	0.01	10.00	101.5	3.83	200	2.00	3.00	47.00	1.50	0.03	
Private	PROP STM MH1	PROP STORMCEPTOR			0.11	0.28	0.29	10.03	101.4	29.02	250	2.00	43.50	85.28	1.74	0.42	
Private	Building	PROP STORMCEPTOR			0.09	0.21	0.21	10.00	101.5	21.59	200	1.00	1.50	33.23	1.06	0.02	
Private	PROP STORMCEPTOR	PROP STM MH2			0.00	0.00	0.50	10.45	99.4	52.60	300	2.00	3.00	138.76	1.96	0.03	
Mill Street	PROP STM MH2	EX STM			0.00	0.00	0.50	10.48	99.3	52.54	250	2.00	14.00	85.28	1.74	0.13	
Calc by	•	MFI	•			•	Project:	•	•	-		•	-	•	Sheet No.	1 of 1	•
Checked		MFI					RESIDENTIA	AL DEVELOP	MENT								
Date		21-Feb-23					16-18 MILL S	STREET, HAL	TON HILLS								