Windmill Development Group Ltd.

Assessment of Adequacy of Public Services

384 Arlington Avenue

City of Ottawa, Ontario

CIMA+ file number: A001272
March 10, 2023 (Rev. 1)

Windmill Development Group Ltd.

Assessment of Adequacy of Public Services

384 Arlington Avenue

City of Ottawa, Ontario

Prepared by: _____

Jaymeson Adams, P.Eng.
P.E.O. membership number: 100519478

Verified by: _____

Tim Kennedy, P.Eng.
P.E.O. membership number: 100173201

240 Catherine Street, Suite 110, Ottawa, ON
Canada K2P 2G8

CIMA+ file number: A001272
March 10, 2023 (Rev. 1)

Table of Contents

List of Tables

List of Figures

List of Appendices

1. Introduction

CIMA+ was retained by Windmill Development Group Ltd. to prepare an Assessment of Adequacy of Public Services Report for the proposed construction of a 24-storey residential (ground floor amenity space and 274 residential units) building located at 384 Arlington Avenue in Ottawa, Ontario.

The purpose of this assessment is to confirm that the proposed development can be adequately serviced by the existing municipal infrastructure (water and sewer) surrounding the site. This assessment shall be used in support of a Zoning By-law Amendment (ZBLA), to allow for multi-use development, on the site which is currently zoned for Minor Institutional.

1.1 Site Description and Proposed Development

The site is located along the north side of the Queensway near Bronson Avenue (refer to **Figure 1** below). 384 Arlington Avenue is currently owned and occupied by the Ottawa Korean Church. The site area (384 Arlington Avenue) measures approximately 0.213 ha.

Generally, the site is bounded by Arlington Ave to the North, Bell Street N. to the West, Arthur Lane N. to the East and Raymond Street to the South.

Figure 1: Site Location - Plan View.

The proposed development is a 24-storey, residential tower with 274 residential units, expected to include approximately 461 residents, and two (2) underground parking levels comprising the entire site area. The amenity space (Activity room, Common Area, Gym, Lobby and Yoga) on the ground floor measures approximately 685 m². Refer to **Figure 2** for a conceptual site plan of the proposed development (prepared by NEUF architect(e)s + FOTENN + WINDMILL).

Figure 2: Conceptual Site Plan.

1.2 Review of Available Background Documentation

The following design guidelines have been used to estimate the theoretical servicing requirements for the proposed development; while geoOttawa and the available utility drawings provided by the City of Ottawa Information Centre have been used to determine the existing municipal services fronting the site. Refer to **Appendix A** for available utility plans provided by the City.

- Ottawa Sewer Design Guidelines (October 2012), including
  - Technical Bulletins ISTB-2018-01.
- Ottawa Design Guidelines – Water Distribution (2010), including
  - Technical Bulletins ISTB-2021-03, ISTB-2018-02, ISDTB-2014-02 and ISD 2010-02.
- Ministry of the Environment Design Guidelines for Sewage Works (2008).
- Ministry of the Environment Stormwater Management Planning and Design Manual (2003).
- Ministry of the Environment Design Guidelines for Drinking-Water Systems (2008); and
- Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection (2020).

1.3 Existing Infrastructure

As identified using geoOttawa and the available Utility Record Drawings provided by the City of Ottawa Information Centre, the following municipal infrastructure is available within the right-of-way fronting the proposed development site (refer to **Appendix B** for Existing Conditions Plan).

Arlington Avenue

- 203 mm diameter PVC watermain installed 2003 (**primary water connection point**).
- 300 mm diameter PVC combined sewer.

Bell Street North

- 152 mm diameter PVC watermain (**secondary water connection point**).
- 300 mm diameter PVC combined sewer (**preferred connection point**).

1.4 Consultation and Permits

In response to the pre-consultation requirements defined in the City's Development Servicing Study Checklist, the following agencies were consulted in support of the preparation of this report. The Development Servicing Study Checklist as well as all relevant correspondence with the consulted agencies can be found in **Appendix A**.

City of Ottawa

The City of Ottawa Information Centre was contacted by Stantec to obtain any Reports, Studies, Engineering, and/or Utility Plans including sanitary sewer, storm sewer, watermain, gas, etc. within or adjacent to the site location. The available engineering plans and utility plans were provided and can be found in **Appendix B**.

CIMA+ also contacted Mohammed Fawzi from the City of Ottawa's Planning, Infrastructure and Economic Development Department to obtain any site-specific servicing and stormwater management design criteria for the proposed development. The provided comments and criteria relevant to the Assessment of Adequacy of Public Services are referenced within the appropriate sections of this report.

Rideau Valley Conservation Authority (RVCA)

The subject site falls under the jurisdiction of the Rideau Valley Conservation Authority (RVCA). CIMA+ contacted Eric Lalande from the RVCA to identify any Natural Heritage/Hazards features that may impact the development as well as any Storm Water Management Criteria for the site and required approvals/permits. These criteria are addressed in *Section 4* of this Report.

Ministry of the Environment, Conservation and Parks (MECP)

CIMA+ has determined that the proposed development will require an Environmental Compliance Approval (ECA) as the development does not meet the exemption requirements per O.Reg. 525/98, section 3(b), when considering the property will discharge into a combined sewer.

It is expected that a direct submission to the MECP will be required and that Transfer of Review to the City of Ottawa will not be permitted considering the connection to a combined sewer.

2. Water Servicing

2.1 Water Supply Design Criteria

The design criteria for determining the water demand requirements for the proposed development follow the parameters outlined in the Ottawa Design Guidelines – Water Distribution (2010) and associated technical bulletins, as well as the MOE Design Guidelines for Drinking-Water Systems (2008). Namely, the following parameters have been used in determining the water demands:

Table 2-1: Water Supply Design Criteria

Design Criterion[1]	Residential Areas	Commercial Areas
Average Day Demand	280 L/capita/day	28,000 L/gross hectare/day
Maximum Daily Demand	3.0 × average daily demand[1]	1.5 × average daily demand
Maximum (Peak) Hour Demand	4.5 × average daily demand[1]	1.8 × maximum daily demand
Populations – 1 Bedroom Apartment	1.4 Persons Per Unit	N/A
Populations – 2 Bedroom Apartment	2.1 Persons Per Unit	N/A
Populations – 3 Bedroom Apartment	3.1 Persons Per Unit	N/A
Desired Operating Pressure under Normal Operating Conditions	50 to 70 psi	
Minimum Operating Pressure under Normal Operating Conditions	40 psi	
Maximum Operating Pressure under Normal Operating Conditions	80 psi	
Minimum Operating Pressure under Maximum Daily Demand + Fire Flow	20 psi	

In addition to those design criteria identified in **Table 2-1**, the following comments and criteria identified by the City as part of the pre-consultation must be considered in the water supply servicing strategy:

- The subject site is located within the 1W pressure zone.
- Residential buildings with a basic day demand greater than 50 m³/day (0.57 L/s) are required to be connected to a minimum of two (2) water services separated by an isolation valve to avoid a vulnerable service area.
- Fire flow demand requirements shall be based on the Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection 2000 and Technical Bulletins ISTB-2018-02.
- A primary fire hydrant is required to be within 45 m of the Siamese connection and within 90

[1] Note that residential peaking factors were selected from **Table 3-3** of the MECP Design Guidelines for Drinking-Water Systems for 0 to 500 persons.

- m (travel path not radius) of the front door of each building as per OBC and Ottawa Fire Services requirements.
- Exposure separation distances shall be defined on a figure to support the FUS calculation and required fire flow (RFF).
- Hydrant capacity shall be assessed if relying on any public hydrants to provide fire protection, particularly if high design fire flows are being proposed, to demonstrate the Required Fire Flow (RFF) can be achieved. Identification of which hydrants are being considered to meet the RFF on a fire hydrant coverage figure is required as part of the boundary conditions request.

2.2 Proposed Water Supply Servicing and Calculations

Water Demands

The water supply demands for the proposed development are presented in **Table 2-2** below. The demands were developed utilizing the development statistics (i.e., residential units and commercial floor area) provided by NEUF architect(e)s + FOTENN + WINDMILL and those design criteria identified in *Section 2.1*. Refer to **Appendix D** for detailed calculations.

Table 2-2: Water Demands

Demand Type	Average Daily Demand (L/s)	Maximum Daily Demand (L/s)	Maximum (Peak) Hour Demand (L/s)
Residential	1.494	4.482	6.723
Commercial	0.022	0.033	0.060
Total	**1.52**	**4.52**	**6.78**

Given the basic day demand exceeds 50 m³/day (or 0.57 L/s) a minimum of two (2) water service connections, separated by an isolation valve, are required to provide redundant supply, and avoid a vulnerable service area.

Proposed Water Supply Connection Point(s)

In order to provide redundancy and avoid the installation of a new isolation valve on the City watermain, given the development's position on a corner lot, a primary water service to Arlington Avenue and a secondary connection to Bell Street is proposed. The existing isolation valves between the two connection points will be utilized to avoid a vulnerable service area. Refer to **Appendix C and Appendix D** for proposed connection points.

Primary Hydrant and Siamese Location

The Fire Department (Siamese) Connection is proposed at the northwest corner of the building. The nearest hydrant is located just west of the intersection of Arlington Avenue and Bell Street on the south side of Arlington Avenue, approximately 25 m from the from the proposed Siamese location and is well within 90 m of the front door. Refer to **Appendix D** (Figure 3 – Hydrant Coverage) for location of existing hydrant.

Required Fire Flow (RFF)

The required fire flow for the site was developed using the Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection 2020 and associated City of Ottawa Technical Bulletins.

Due to the recently updated FUS Water Supply for Public Fire Protection document, the City has updated their acceptance criteria for a construction coefficient (C) of 0.6, which has been used for RFF calculations for similar buildings according to the 1999 FUS document. Following a City internal meeting, there was a consensus that, to accept a C value of 0.6, the developer's structural engineer and architect would have to provide verification and sign-off to confirm that the building was designed with all structural elements, walls, arches, floors, and roofs with a minimum two (2) hour fire resistance rating, and all materials used in the construction of the structural elements, walls, arches, floors, and roofs are constructed with noncombustible materials. If these criteria cannot be met or verified at the planning stage, a C value of 0.8 shall be used in all RFF calculations submitted to the City for boundary condition request and hydrant coverage confirmation.

As a result of this decision, for the purposes of this project, CIMA+ had provided the RFF assuming a C value of 0.6 and a C value of 0.8 such that a range of RFF can be assessed at this stage. Upon advancement of the architectural and structural plans during the Site Plan approval process the RFF will then be confirmed. The results are as follows:

- Assuming a C value of 0.6, it was determined that an RFF of **7,000 L/min (116.67 L/s)** would be required to provide adequate protection.
- Assuming a C value of 0.8, it was determined that an RFF of **16,000 L/min (266.67 L/s)** would be required to provide adequate protection.

It was assumed that multiple municipal hydrants would be required to meet the fire flow requirements and a fire hydrant coverage figure was prepared in support of the boundary conditions request from the City. From the hydrant coverage plan it was confirmed that the aggregate flow of hydrants in the area would be sufficient to meet the required fire flow demands for each scenario. Maximum flow to be considered from each hydrant has been determined in accordance with City of Ottawa Technical Bulletin IST-2018-02 Appendix I Table 1. Refer to **Table 2-3** below for a summary of hydrants considered as well as the individual and aggregate flow of the contributing hydrants.

Table 2-3: Hydrant Coverage Summary

Hydrant No./Location	Hydrant Class	Distance to Building (m)	Contributing Flow (L/min)
1 (Arlington at Bell)	AA	< 75	5,700
2 (Raymond at Bell)	AA	< 75	5,700
3 (Cambridge and Arlington)	AA	> 75 and ≤ 150	3,800
4 (Bell at Louisa)	AA	> 75 and ≤ 150	3,800
Total Contributing Flow (L/min)			19,000

Refer to **Appendix D** for detailed calculations, including supporting figures for exposure distances and hydrant coverage.

Municipal Boundary Conditions

Using the proposed demands, required fire flow and supporting figures the City provided boundary conditions for hydraulic analysis for current conditions, based on computer model simulation. The boundary conditions are as follows:

Table 2-4: Watermain Boundary Conditions

Hydraulic Condition (HGL = Hydraulic Grade Line)	Boundary Condition (Head) (m)	
	Arlington Avenue 203 mm dia.	Bell Street N. 152 mm dia.
Minimum HGL	107.3	107.3
Maximum HGL	115.3	115.3
Maximum Day + Fire Flow (166.67 L/s)	107.8	107.3
Maximum Day + Fire Flow (266.67 L/s)	102.2	100.1

Hydraulic Analysis – Water Supply Adequacy

A hydraulic analysis was completed utilizing the boundary condition information provided by the City for the proposed development to confirm that there is adequate flow and pressure in the water distribution system to meet the required water demands. The following Tables summarize the available flow and pressure in the system under each demand scenario:

Table 2-5: Water Supply Adequacy - Hydraulic Analysis – Arlington Connection

Demand Type	Proposed Demand (L/s)	Available Flow/Pressure		Desired Flow/Pressure Objective	Flow/Pressure Objective Achieved?
		Design Operating Pressure (Relative Head) (m)	Design Operating Pressure (psi)		
Average Daily Demand	1.52	43.1	61	50 to 70 psi	Yes
Maximum Day + Fire Flow (166.67 L/s)	171.19	35.6	51	≥ 20 psi	Yes
Maximum Day + Fire Flow (266.67 L/s)	271.19	30.0	43	≥ 20 psi	Yes
Maximum (Peak) Hour Demand	6.78	35.1	50	50 to 70 psi	Yes

NOTES:

1. Boundary conditions at connections assume a ground elevation of 72.2 m.

Table 2-6: Water Supply Adequacy - Hydraulic Analysis – Bell Connection

Demand Type	Proposed Demand (L/s)	Available Flow/Pressure		Desired Flow/Pressure Objective	Flow/Pressure Objective Achieved?
		Design Operating Pressure (Relative Head) (m)	Design Operating Pressure (psi)		
Average Daily Demand	1.52	43.1	61	50 to 70 psi	Yes
Maximum Day + Fire Flow (166.67 L/s)	171.19	35.1	50	≥ 20 psi	Yes
Maximum Day + Fire Flow (266.67 L/s)	271.19	27.9	40	≥ 20 psi	Yes
Maximum (Peak) Hour Demand	6.78	35.1	50	50 to 70 psi	Yes

NOTES:

1. Boundary conditions at connections assume a ground elevation of 72.2 m.

2.3 Water Supply Summary and Conclusions

The water supply design for the proposed development follows the parameters outlined in the Ottawa Design Guidelines – Water Distribution (2010) and associated technical bulletins, as well as the MOE Design Guidelines for Drinking-Water Systems (2008).

There is adequate flow and pressure in the water distribution system to meet the required water demands as well as a sufficient number of contributing hydrants within the area to meet the demands for each fire flow scenario for the proposed development.

3. Sanitary Servicing

3.1 Sanitary Servicing Design Criteria

The design criteria for determining the sanitary peak flow rates for the proposed development follow the parameters outlined in the City of Ottawa Sewer Design Guidelines, 2012 and City of Ottawa Technical Bulletin ISTB-2018-01. Namely, the following parameters have been used in determining the peak sanitary flow rates:

Table 3-1: Sanitary Peak Flow Determination Design Criteria

Design Criterion	Residential Areas	Commercial Areas
Base Flow	280 L/capita/day	28,000 L/gross hectare/day
Populations – 1 Bedroom Apartment	1.4 Persons Per Unit	N/A
Populations – 2 Bedroom Apartment	2.1 Persons Per Unit	N/A
Populations – 3 Bedroom Apartment	3.1 Persons Per Unit	N/A
Peaking Factor	Determined by Harmon Equation $P.F. = 1 + \left[\frac{1}{4 + \left(\frac{P}{1{,}000}\right)^{\frac{1}{2}}}\right] \times 0.8$ (P = population; P.F. = peaking factor) Maximum P.F. = 4.0 Minimum P.F. = 2.0	1.5 if Commercial Contribution > 20% 1.0 if Commercial Contribution < 20%
Dry Weather Infiltration Rate	0.05 L/s/effective gross hectare (for all areas)	
Wet Weather Infiltration	0.28 L/s/effective gross hectare (for all areas)	
Total Infiltration Allowance	0.33 L/s/effective gross hectare (for all areas)	

3.2 Proposed Sanitary Servicing and Calculations

Proposed Sanitary Peak Flows

The estimated peak flows from the proposed development based on the design criteria listed in **Table 3-1** are outlined in the following Table.

Table 3-2: Peak Sanitary Flows

Flow Type	Total Flow Rate (L/s)
Total Estimated Average Dry Weather Flow Rate	1.52
Total Estimate Peak Dry Weather Flow Rate	5.09
Total Estimate Peak Wet Weather Flow Rate	5.16

Refer to **Appendix E** for detailed calculations.

Proposed Sanitary Service Connection Point

The proposed sanitary service will connect to the existing 300 mm diameter PVC combined sewer within the right-of-way of Bell Street. Refer to **Appendix C** for proposed connection points.

Considering the mainline sewer is PVC a new maintenance hole will not be required at the point of connection.

Furthermore, considering the proposed development will abut the property lines the installation of a monitoring maintenance hole would not be feasible. The City confirmed that the installation of a wastewater sampling / inspection chamber on the sanitary connection within the City right-of-way per City Detail S18.1 would be sufficient.

3.3 Sanitary Servicing Summary and Conclusions

The sanitary servicing design for the proposed development conforms to the requirements of the City of Ottawa Sewer Design Guidelines, 2012, and Technical Bulletin ISTB-2018-01.

Peak wastewater demands were provided to the City, who confirmed that there is adequate residual capacity in the city system to accommodate the proposed wastewater flow (refer to **Appendix A**).

4. Storm Servicing and Stormwater Management

4.1 Background

As previously mentioned, the subject site of 384 Arlington Avenue currently occupies the Ottawa Korean Community Church with surface parking. The gradient is from south to north with an approximate change in gradient of 0.7 m across the site. The site is nearly entirely impervious with no existing stormwater measures on site (i.e., catch basins, sewers, etc.) and it is thus assumed that there are no current stormwater management controls on site. As such storm runoff generally sheet flows to the surrounding roadways.

Considering there are no current stormwater systems on site and that it is assumed that there are no flow attenuation controls the anticipated peak flows for the existing site are as follows (refer to **Appendix F**):

Table 4-1: Pre-Development Peak Release Flows – Existing Site

Storm Event	Release Flow (L/s)
2-year	40.96
100-year	105.80

4.2 Storm Servicing Strategy and Design Criteria

The design of the major and minor storm systems must ensure that the following criteria are upheld under post-development conditions, in keeping with the requirements of the City and the Rideau Valley Conservation Authority (refer to **Appendix A**).

- The allowable release rate for the site shall coincide with the 2-year storm event under pre-development conditions.
- The allowable release rate shall take into consideration any increase in uncontrolled runoff from the boulevard being converted to a hard surface (concrete, interlocking paving stone, etc.).

- The pre-development runoff coefficient (C) shall be a maximum equivalent 'C' of 0.40, or the actual existing site runoff coefficient, whichever is less.
- The pre-development Time of Concentration (Tc) shall be calculated using an appropriate method and must not be less than 10 minutes.
- A Tc of 10 minutes shall be used for all post-development calculations.
- Storm runoff in excess of the allowable 2-year pre-development release rate, up to and including the 100-year storm event, must be detained on site.
- Where an underground storage tank or cistern is proposed and calculated utilizing the Modified Rational Method an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume to account for fluctuating head and release rate.
- Alternatively, the cistern may be equipped with backflow prevention as well as a submersible pump to ensure a consistent release rate from the building to ensure the on-site stormwater management controls will not be overwhelmed in the event the 300 mm combined sewer main within Bell Street becomes surcharged. The design of the pump is to be completed by the mechanical engineer.
- To address concerns about roadway drainage spilling into the underground parking, the entrance to the underground parking will be a minimum of 300 mm higher than the spill point to the street.
- Foundation drains will be pumped with appropriate back up power, sufficient sized pump, and back flow prevention, thus negating the need for an independent connection to the sewer main.
- The roof drain leaders will be utilizing a pressurized drainpipe type to provide additional protection in the event of surcharge in the municipal system.
- Considering the site will connect to the municipal combined sewer system, no long-term surface parking spots are being proposed and rainwater from landscaping and rooftop drainage is considered to be clean for the purpose of protecting water quality and aquatic habitat, the RVCA would not require any onsite water quality control measures save and except best management practices.

4.3 Proposed Storm Servicing and Stormwater Management Design and Calculations

Proposed Storm Service Connection Point

Based on communications with the City, the preferred and anticipated stormwater connection from the proposed development will discharge to the existing 300 mm combined sewer on Bell Street. Refer to **Appendix C** for proposed connection points.

Considering the mainline sewer is PVC a new maintenance hole will not be required at the point of connection.

Pre-development (Allowable) Release Rates

The pre-development release rates are summarized in the following Table:

Table 4-2: Pre-development (Allowable) Release Rate (2-year event)

Catchment ID	Area (ha)	Runoff Coefficient (C)	Time of Concentration (Tc) (minutes)	Rainfall Intensity (mm/hr)	Release Rate (L/s)
Subject Site	0.213	0.40	10	76.81	**18.2**

The storm runoff under post-development conditions for the site area must be controlled to the allowable 2-year pre-development release rate of **18.2 L/s**, up to and including the 100-year storm event.

Post Development Flow Rates and Stormwater Quantity Control

The anticipated post-development flow rates and required storage when controlled to the allowable pre-development release rate are summarized in the following Table.

Table 4-3: Post-development Flow Rate and Storage Summary

Control Area	100-year Release Rate – NO PUMP (L/s)	100-year Storage Volume – NO PUMP (m^3)	100-year Release Rate – WITH PUMP (L/s)	100-year Storage Volume – WITH PUMP (m^3)
Building Roof Areas	0.0	0.0	0.0	0.0
Areas to Underground Tank	9.1	86.5	18.2	65.2
Unattenuated Areas	0.0	0.0	0.0	0.0
Total	9.1	86.5	18.2	65.2

As a result of proposed development, the area of hard surface within the boulevard surrounding the site is expected to decrease, further reducing stormwater flows compared to existing conditions.

As demonstrated in **Table 4-3** an anticipated storage volume of **86.5** m^3 shall be required on-site via underground storage (internal cistern) to restrict stormwater discharge to the allowable release rate of **18.2** L/s, while the installation of a pump would allow a reduced storage requirement of **65.2** m^3. Refer to **Appendix F** for detailed stormwater storage calculations.

At this time, it is expected that the storm water tank will be equipped with backflow prevention as well as a pump to meet the SWM design intent and ensure the proposed private storm sewer system will not be overwhelmed in the event the 300 mm diameter combined sewer within Bell Street becomes surcharged. However, this will be confirmed at the Site Plan Control stage.

Actual storage volumes will be finalized at the detailed design stage considering the following factors as required:

- Further analysis will be completed at detailed design addressing the stage-storage relationship within the proposed cistern using a dynamic model.

- Hydraulic grade line (HGL) analysis along the existing municipal storm system during a surcharge event and the impacts on available storage within the cistern will be considered.
- Cistern details and information including detailed cross-section, HWLs, release rate, volume, location, size (dimensions), control device, emergency flow outlet and backflow protection, etc. An appropriate emergency overflow location will need to be determined and documented. Backup power supply will also be necessary if pump controlled.
- Opportunities for surface and/or roof retention will also be considered at the detailed design stage once grading restrictions, available ponding areas, roof drain locations, drain types and scupper locations have been addressed.

Stormwater Quality Control

Rainwater from landscaping and rooftop drainage is considered to be clean for the purpose of protecting water quality and aquatic habitat. Furthermore, the discharge point will rely on municipal infrastructure considering the connection to the combined sewer system.

Through consultation with the Rideau Valley Conservation Authority (RVCA) (refer to **Appendix A**) it was confirmed that they would not require any additional onsite water quality control measures save and except best management practices.

4.4 Storm Servicing and Stormwater Management Summary and Conclusions

The storm servicing design for the proposed development conforms to the requirements of the City of Ottawa Sewer Design Guidelines, 2012, and associated Technical Bulletins.

The proposed discharge to the storm sewer was provided to the City, who confirmed that there is adequate capacity in the city system to accommodate the proposed flow (refer to **Appendix A**).

An anticipated storage volume of **86.5 m³** shall be required on-site via underground storage tank to restrict stormwater discharge to the allowable release rate of **18.2 L/s** and may be further reduced to **65.2 m³** using a pump and appropriate backup power within the system.

5. Conclusion

The purpose of this assessment is to confirm that the proposed development can be adequately serviced using the existing municipal infrastructure (water and sewer) surrounding the site. This assessment shall be used in support of a Zoning By-law Amendment (ZBLA) to allow for the construction of one (1) 24-storey residential tower with ground floor amenity space.

The important information and findings as a result of this assessment are as follows:

- The proposed residential building is expected to include 274 apartment units with a population of approximately 461persons and have a total amenity area of approximately 685 m². There will be two (2) levels of underground parking spanning the entirety of the site area.
- The proposed development will require an Environmental Compliance Approval (ECA) as per O.Reg. 525/98, section 3(c).
- The anticipated water demands for the proposed site are **1.52 L/s** (average day), **271.19 L/s** (max day + fire flow), and **6.78 L/s** (peak hour). The boundary conditions received from the City of Ottawa indicate that the existing watermain network can provide the required water demands for the proposed site. From the hydrant coverage plan it was confirmed that the

aggregate flow of hydrants in the area would be sufficient to meet the required fire flow demands for each scenario.

- The estimated sanitary flow for the proposed development is **1.52 L/s** (average dry weather), **5.09 L/s** (peak dry weather), and **5.16 L/s** (peak wet weather). The City of Ottawa has indicated that the existing sanitary sewer network near the proposed site can accept the peak wet weather sanitary flow of the proposed development.
- Storm runoff in excess of the allowable 2-year pre-development release rate, up to and including the 100-year storm event, will be detained on site via an internal cistern prior to being discharged to the municipal combined sewer system.
- The allowable stormwater release rate for the proposed site is **18.2 L/s**. It is expected that this will be achieved by means of underground retention (cistern). To achieve this release rate, a storage volume of **86.5 m³** is required on-site and may be further reduced to **65.2 m³** using a pump and appropriate backup power within the system. The City of Ottawa has indicated that they have no issue with the proposed discharge rate
- The existing site is nearly entirely impervious with no existing stormwater measures on site (i.e., catch basins, sewers, etc.) and it is thus assumed that there are no current stormwater management controls on site. Thus, stormwater flows from the redeveloped site are anticipated to be considerably less than the stormwater flows from the existing site.
- Quality control of stormwater is not required for the site given rainwater from landscaping and rooftop drainage is considered to be clean for the purpose of protecting water quality and aquatic habitat. Furthermore, the discharge point will rely on municipal infrastructure considering the connection to the combined sewer system.
- As a result of the conclusions drawn by the previous points, it is expected that the proposed development can be serviced by the existing municipal services network surrounding the site.

We trust this Assessment of Adequacy of Public Services Report is to your satisfaction. If you have any questions regarding this report, please do not hesitate to contact any of the signatories.

A

Appendix A
Pre-consultation Correspondence

From:	Fawzi, Mohammed
To:	Jaymeson Adams
Cc:	Tim Kennedy; Gavin Joseph
Subject:	RE: 384 Arlington Av. - Water Demands - Boundary Condition Request
Date:	Friday, July 15, 2022 12:13:02 PM
Attachments:	image002.png 384 Arlington Avenue July 2022.pdf

EXTERNAL EMAIL

Hi Jaymeson,

The following are boundary conditions, HGL, for hydraulic analysis at 384 Arlington Avenue (zone 1W) assumed to be connected to the 152 mm watermain on Bell Street and the 203 mm on Arlington Avenue (see attached PDF for location).

Both Connections:

Minimum HGL: 107.3 m

Maximum HGL: 115.3 m

Max Day + Fire Flow (116.67 L/s): 107.3 m (Connection 1), 107.8 m (Connection 2)

Max Day + Fire Flow (266.67 L/s): 100.1 m (Connection 1), 102.2 m (Connection 2)

-

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

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

From: Fawzi, Mohammed
Sent: July 11, 2022 12:14 PM
To: Jaymeson Adams <Jaymeson.Adams@cima.ca>
Cc: Tim Kennedy <tim.kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: RE: 384 Arlington Av. - Water Demands - Boundary Condition Request

Hi Jaymeson,

Thank you. This is to confirm that your request has been received.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

---

From: Jaymeson Adams <Jaymeson.Adams@cima.ca>
Sent: July 06, 2022 10:21 AM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Tim Kennedy <tim.kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: 384 Arlington Av. - Water Demands - Boundary Condition Request

Hello Mohammed,

We would like to kindly request boundary conditions for the proposed development at **384 Arlington Avenue**. Please find the proposed development information below and detailed calculations and associated figures attached including (1) Water Demand Calculations, (2) Fire Flow Calculations (C = 0.6), (3) Fire Flow Calculations (C = 0.8), (4) Figure 1 – Proposed Water Service Connection Locations, (5) Figure 2 – Exposure Separation Distances, (6) Figure 3 – Fire Hydrant Coverage, and (7) Architectural Concept Plans (for reference):

1. **Type of Development and Units:** The proposed development involves the construction of one (1) 24-storey mixed use building (residential and ground floor commercial space). There is a total of **274**

residential units. An underground 2-level parking garage extending the footprint of the site is also proposed.

2. **Site Address:** 384 Arlington Avenue
3. **Location of Services:** Please see attached Figure 1:
    a. Arlington Avenue – 203 mm diameter PVC watermain.
    b. Bell Street – 203 mm diameter PVC watermain reduces to a 152 mm PVC watermain.
4. **Average Daily Demand:** 1.50 L/s
5. **Maximum Daily Demand:** 4.49 L/s
6. **Peak Hour Demand:** 6.74 L/s
7. **Required Fire Flow (RFF) (C = 0.6):** 7,000 L/min
8. **Required Fire Flow (RFF) (C = 0.8):** 16,000 L/min

We have provided multiple fire flow scenarios as, at this stage of the design, it would not be possible to provide the structural and architectural sign-off to proceed with the C = 0.6.

If you have any questions or concerns, please do not hesitate to contact me.

Best regards,

JAYMESON ADAMS, P.Eng.
Engineer / Infrastructure
Ingénieur / Infrastructures

C 343 204-5387 Contact me on Teams / Contactez-moi sur Teams
110–240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

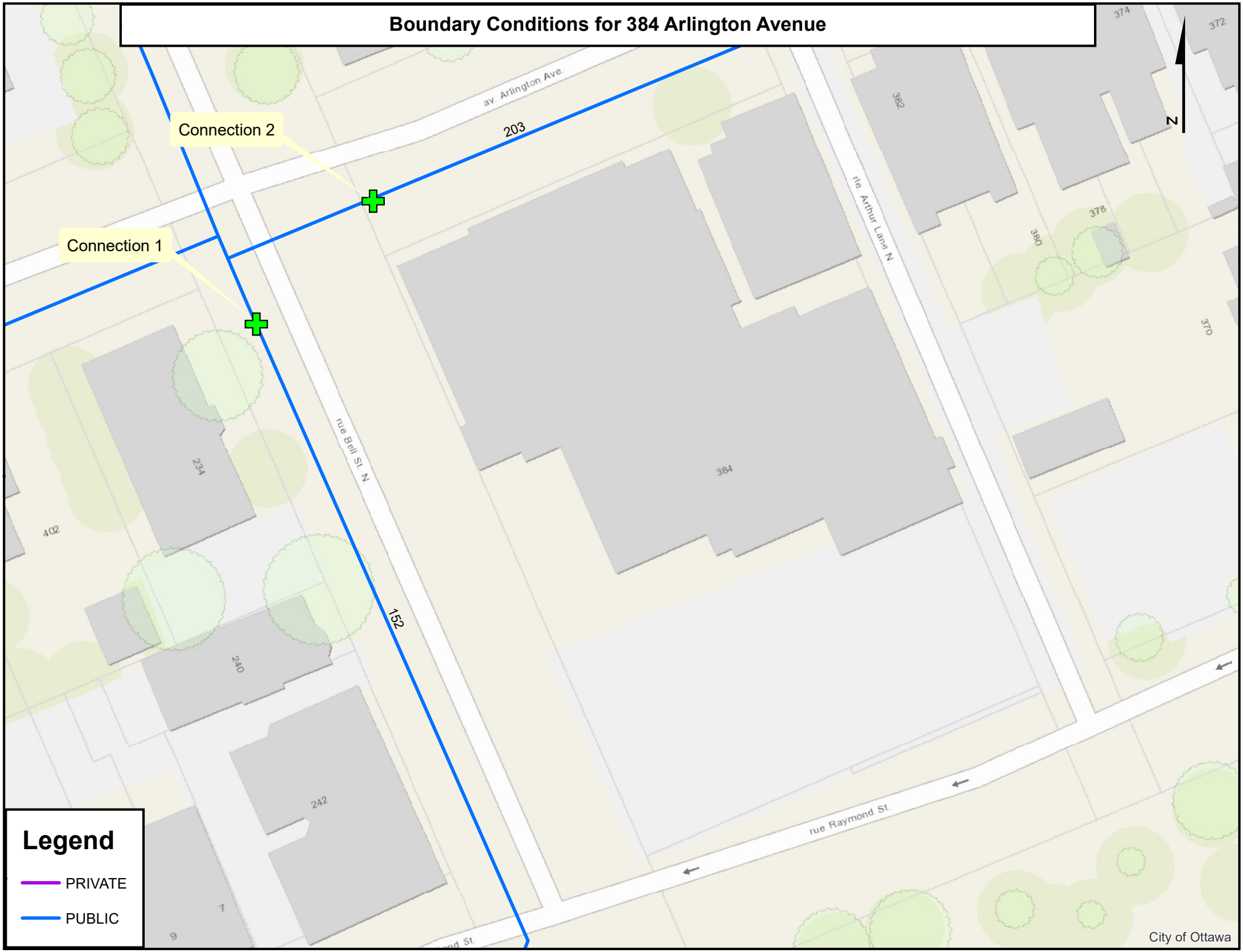
CIMA+ L'humain au centre de l'ingénierie 30 ANS

KINCENTRIC Employeur de choix CANADA 2021

Suivez-nous / Follow us

'

'


Boundary Conditions for 384 Arlington Avenue
Connection 2
Connection 1
av. Arlington Ave.
203
rue Bell St. N.
152
rue Arthur Lane N
rue Raymond St.
384
382
380
378
374
372
370
234
240
242
402
N
Legend
PRIVATE
PUBLIC
City of Ottawa

From: Fawzi, Mohammed
To: Jaymeson Adams
Cc: Tim Kennedy; Gavin Joseph
Subject: RE: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation
Date: Friday, July 15, 2022 12:11:45 PM
Attachments: image002.png

EXTERNAL EMAIL

Hi Jaymeson,

This is to confirm there are no capacity concerns.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

---

From: Fawzi, Mohammed
Sent: July 11, 2022 12:21 PM
To: Jaymeson Adams <Jaymeson.Adams@cima.ca>
Cc: Tim Kennedy <tim.kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: RE: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation

Hi Jaymeson,

Thank you. This is to confirm that I am looking into this.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

---

From: Jaymeson Adams <Jaymeson.Adams@cima.ca>
Sent: July 06, 2022 11:45 AM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Tim Kennedy <tim.kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: RE: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation

Hi Mohammed,

Please see below for storm connection and flows as well as a correction to the sanitary connection in the original email.

1. **Location of Services:** Connection to existing 300 mm diameter PVC combined sewer on Bell Street North with new maintenance hole on sewer main anticipated.
2. **Allowable 2-year pre-development flow rate:** 18.2 L/s

Could you please confirm if there is enough capacity in the City system to accommodate the proposed sanitary and storm flows? And could you also confirm with the City water resources unit if there are any surcharge issues and if so provide the HGL for the existing system?

Thanks,

JAYMESON ADAMS, P.Eng.
Engineer / Infrastructure
Ingénieur / Infrastructures

C 343 204-5387 Contact me on Teams / Contactez-moi sur Teams
110–240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: July 6, 2022 8:50 AM
To: Jaymeson Adams <Jaymeson.Adams@cima.ca>
Cc: Tim Kennedy <Tim.Kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: RE: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation

EXTERNAL EMAIL

Hi Jaymeson,

Thanks for reaching out.

No worries – I'll hold off.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

From: Jaymeson Adams <Jaymeson.Adams@cima.ca>

Sent: July 05, 2022 3:59 PM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Tim Kennedy <tim.kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: RE: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation

Hi Mohammed,

Apologies but please hold on submitting to Water Resources.

We will need to provide you with storm flows as well given we are connecting to a combined sewer.

Thanks,

JAYMESON ADAMS, P.Eng.
Engineer / Infrastructure
Ingénieur / Infrastructures

C 343 204-5387 Contact me on Teams / Contactez-moi sur Teams
110–240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

CIMA+ L'humain au centre de l'ingénierie 30 ANS

KINCENTRIC Employeur de choix CANADA 2021

Suivez-nous / Follow us

From: Jaymeson Adams
Sent: July 4, 2022 3:15 PM
To: mohammed.fawzi@ottawa.ca
Cc: Tim Kennedy <Tim.Kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation

Hello Mohammed,

My name is Jaymeson Adams, and I am one of the Design Engineers working on this project.

We would like to kindly submit the anticipated sanitary demands for the proposed development at **384 Arlington Avenue.** Please find the proposed development information below and detailed calculations attached (I have also attached the Architectural Concept Plans for reference):

1. **Type of Development and Units:** The proposed development involves the construction of one (1) 24-storey mixed-use building (residential and commercial space). There is a total of **274 residential units.** An underground 2-level parking garage extending the majority of the footprint of the site is also proposed.
2. **Site Address:** 384 Arlington Avenue
3. **Location of Services:** Connection to existing 300 mm diameter PVC combined sewer in ~~Arlington Avenue~~ Bell Street North with new maintenance hole on sewer main anticipated.
4. **Total Estimated Average Dry Weather Flow:** 1.50 L/s
5. **Total Estimated Peak Dry Weather Flow:** 5.08 L/s
6. **Total Estimated Peak Wet Weather Flow:** 5.15 L/s

Could you please confirm if there is enough capacity in the City system to accommodate the proposed wastewater flow? Would you also be able to confirm receipt of this request for wastewater capacity confirmation?

Thank you,

JAYMESON ADAMS, P.Eng.
Engineer / Infrastructure
Ingénieur / Infrastructures

C 343 204-5387 Contact me on Teams / Contactez-moi sur Teams
110–240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

Suivez-nous / Follow us 

'

'
'

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

Le présent courriel a été expédié par le système de courriels de la Ville d'Ottawa. Toute distribution, utilisation ou reproduction du courriel ou des renseignements qui s'y trouvent par une personne autre que son destinataire prévu est interdite. Je vous remercie de votre collaboration.

'

l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

---

From: Fawzi, Mohammed
Sent: July 11, 2022 12:31 PM
To: Jaymeson Adams <Jaymeson.Adams@cima.ca>
Cc: Tim Kennedy <tim.kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: RE: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation

Hi Jaymeson,

Please see my comments in red below.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

---

From: Jaymeson Adams <Jaymeson.Adams@cima.ca>
Sent: July 06, 2022 5:24 PM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Tim Kennedy <tim.kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: RE: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation

Hi Mohammed,

Regarding the sanitary and storm connections for the below development, I have a couple questions:

1. The proposed building is expected to encompass the entire site area. Therefore, there would not be space to install a monitoring maintenance hole within the property line. To rectify this, we propose to install a wastewater sampling / inspection chamber on the sanitary connection as per City Detail S18.1. Do you agree with this approach? Agreed.
2. We assume that there would need to be separate sanitary and storm connections to the combined sewer (see attached sketch for proposed connection points) in case the City installs separate sanitary and storm sewers in the area in the future. This would also require two manholes on the combined sewer, one for each connection. Could you please confirm this approach? We have not had many projects in the past where we have had to connect to a combined sewer, so any information you could provide would be helpful and greatly appreciated. Looking into this with Asset Management and will get back to you.

If you would like, I am available for further discussion on these points. Feel free to give me a call on my cell (343-204-5387) or we could organize a Teams meeting.

Thanks,

Upcoming vacation notice: 14 to 22 July 2022

JAYMESON ADAMS, P.Eng.
Engineer / Infrastructure
Ingénieur / Infrastructures

C 343 204-5387 Contact me on Teams / Contactez-moi sur Teams
110–240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

CIMA+ L'humain au centre de l'ingénierie 30 ANS

KINCENTRIC Employeur de choix CANADA 2021

Suivez-nous / Follow us

From: Jaymeson Adams
Sent: July 6, 2022 11:45 AM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Tim Kennedy <Tim.Kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: RE: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation

Hi Mohammed,

Please see below for storm connection and flows as well as a correction to the sanitary connection in the original email.

1. **Location of Services:** Connection to existing 300 mm diameter PVC combined sewer on Bell Street North with new maintenance hole on sewer main anticipated.
2. **Allowable 2-year pre-development flow rate:** 18.2 L/s

Could you please confirm if there is enough capacity in the City system to accommodate the proposed sanitary and storm flows? And could you also confirm with the City water resources unit if there are any surcharge issues and if so provide the HGL for the existing system?

Thanks,

JAYMESON ADAMS, P.Eng.
Engineer / Infrastructure
Ingénieur / Infrastructures

C 343 204-5387 Contact me on Teams / Contactez-moi sur Teams
110–240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

CIMA+ L'humain au centre de l'ingénierie 30 ANS

KINCENTRIC Employeur de choix CANADA 2021

Suivez-nous / Follow us

From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: July 6, 2022 8:50 AM
To: Jaymeson Adams <Jaymeson.Adams@cima.ca>
Cc: Tim Kennedy <Tim.Kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: RE: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation

EXTERNAL EMAIL

Hi Jaymeson,

Thanks for reaching out.

No worries – I'll hold off.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

---

From: Jaymeson Adams <Jaymeson.Adams@cima.ca>
Sent: July 05, 2022 3:59 PM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Tim Kennedy <tim.kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: RE: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation

jointe, excepté si vous connaissez l'expéditeur.

Hi Mohammed,

Apologies but please hold on submitting to Water Resources.

We will need to provide you with storm flows as well given we are connecting to a combined sewer.

Thanks,

JAYMESON ADAMS, P.Eng.
Engineer / Infrastructure
Ingénieur / Infrastructures

C 343 204-5387 Contact me on Teams / Contactez-moi sur Teams
110–240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

CIMA+ L'**humain** au centre de l'ingénierie 30 ANS+ KINCENTRIC Employeur de choix CANADA 2021

Suivez-nous / Follow us

From: Jaymeson Adams
Sent: July 4, 2022 3:15 PM
To: mohammed.fawzi@ottawa.ca
Cc: Tim Kennedy <Tim.Kennedy@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: 384 Arlington Avenue - Peak Wastewater Demand - Capacity Confirmation

Hello Mohammed,

My name is Jaymeson Adams, and I am one of the Design Engineers working on this project.

We would like to kindly submit the anticipated sanitary demands for the proposed development at **384 Arlington Avenue.** Please find the proposed development information below and detailed calculations attached (I have also attached the Architectural Concept Plans for reference):

1. **Type of Development and Units:** The proposed development involves the construction of one (1) 24-storey mixed-use building (residential and commercial space). There is a total of **274 residential units.** An underground 2-level parking garage extending the majority of the footprint of the site is also proposed.
2. **Site Address:** 384 Arlington Avenue
3. **Location of Services:** Connection to existing 300 mm diameter PVC combined sewer in ~~Arlington Avenue~~ Bell Street North with new maintenance hole on sewer main anticipated.
4. **Total Estimated Average Dry Weather Flow:** 1.50 L/s
5. **Total Estimated Peak Dry Weather Flow:** 5.08 L/s
6. **Total Estimated Peak Wet Weather Flow:** 5.15 L/s

Could you please confirm if there is enough capacity in the City system to accommodate the proposed wastewater flow? Would you also be able to confirm receipt of this request for wastewater capacity confirmation?

Thank you,

JAYMESON ADAMS, P.Eng.
Engineer / Infrastructure
Ingénieur / Infrastructures

C 343 204-5387 Contact me on Teams / Contactez-moi sur Teams
110–240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

CIMA+ L'humain au centre de l'ingénierie 30 ANS

KINCENTRIC Employeur de choix CANADA 2021

Suivez-nous / Follow us

'

'

'

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

Le présent courriel a été expédié par le système de courriels de la Ville d'Ottawa. Toute distribution, utilisation ou reproduction du courriel ou des renseignements qui s'y trouvent par une personne autre que son destinataire prévu est interdite. Je vous remercie de votre collaboration.

'

'

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

Le présent courriel a été expédié par le système de courriels de la Ville d'Ottawa. Toute distribution, utilisation ou reproduction du courriel ou des renseignements qui s'y trouvent par une personne autre que son destinataire prévu est interdite. Je vous remercie de votre collaboration.

'

'

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

Le présent courriel a été expédié par le système de courriels de la Ville d'Ottawa. Toute distribution, utilisation ou reproduction du courriel ou des renseignements qui s'y trouvent par une personne autre que son destinataire prévu est interdite. Je vous remercie de votre collaboration.

'

From: Eric Lalande
To: Tim Kennedy
Cc: Jamie Batchelor
Subject: RE: 384 Arlington Av. - Servicing Capacity Assessment - RVCA Pre-consult
Date: Monday, July 18, 2022 3:35:27 PM

EXTERNAL EMAIL

Hi Tim,

Based on the proposed site plan details, and combined sewer outlet, the RVCA has no water quality control requirements, as it will rely on municipal infrastructure. Further, there are no natural features identified on the subject site.

Thanks,

Eric Lalande, MCIP, RPP
Planner, RVCA
613-692-3571 x1137

From: Tim Kennedy <Tim.Kennedy@cima.ca>
Sent: Monday, July 18, 2022 3:24 PM
To: Eric Lalande <eric.lalande@rvca.ca>
Cc: Jamie Batchelor <jamie.batchelor@rvca.ca>
Subject: FW: 384 Arlington Av. - Servicing Capacity Assessment - RVCA Pre-consult
Importance: High

Hi Eric,

Please see below and attached.

Are you able to provide a response in Jamie's absence?

Thanks,
Tim

TIM KENNEDY, P.Eng.
Senior Project Manager / Infrastructure

T 613-860-2462 ext. 6620 **M** 613-462-3627 **F** 613-860-1870
110–240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

Engineering for people

From: Tim Kennedy
Sent: Monday, July 18, 2022 3:19 PM
To: Jamie Batchelor <jamie.batchelor@rvca.ca>
Cc: Jaymeson Adams <Jaymeson.Adams@cima.ca>; Gavin Joseph <Gavin.Joseph@cima.ca>
Subject: 384 Arlington Av. - Servicing Capacity Assessment - RVCA Pre-consult
Importance: High

Hi Jamie,

We are working on another development project in the City of Ottawa, and I wanted to get your input on Natural Heritage/Hazards features that may impact the development as well as any Stormwater Management Criteria for the site and required approvals/permits.

The proposed development involves the construction of a twenty-four (24) storey mixed use commercial and residential development at 384 Arlington Avenue in Ottawa, Ontario, with underground parking (no proposed surface parking spots).

A few specific items for your consideration as follow:

1. The development will connect to the existing 300 mm ø combined sewer within Bell Street North.
2. Stormwater will be stored in an underground tank/cistern. Allowable release rate will be controlled to the 2-year pre-development condition and storage provide up to the 100-year post development condition.
3. The proposed underground parking will encompass the entire site.
4. Considering the above we do not expect that on-site water quality control would be required.

I have attached a key plan with the site location (PDF document) for your reference.

Please do not hesitate to contact me if you have any questions, want to discuss or need clarification. Hoping to have a quick response on this one as I would like to submit the Servicing Report to our client for review by end of this week.

Thanks,
Tim

TIM KENNEDY, P.Eng.
Senior Project Manager / Infrastructure

T 613-860-2462 ext. 6620 **M** 613-462-3627 **F** 613-860-1870
110–240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

Engineering for people

Subject: FW: Pre-con Follow-up - 384 Arlington
Date: Monday, February 7, 2022 at 2:46:31 PM Eastern Standard Time
From: Ghada Zaki
To: Miguel Tremblay, Justin George, Stephen Savell, Kristen Jorgensen
CC: Tamara Nahal
Attachments: 384 Arlington - Study and Plan Identification List.pdf, design_brief_submission requirements_384 Arlington.pdf, torwindanalysis_en.pdf, image001.gif, image003.jpg

Good afternoon,

Please note that we have just received the Pre-con follow-up and minutes. Please see below and attached

Thanks and looking forward to our discussion tomorrow,

Ghada Zaki, RPP, MCIP
Senior Planner
T 613.730.5709 ext. 226 **As I am working remotely, please email me to set up a phone call**

From: Nadeau, Jeff <jeff.nadeau@ottawa.ca>
Sent: February 7, 2022 2:39 PM
To: Ghada Zaki <zaki@fotenn.com>; Tamara Nahal <nahal@fotenn.com>
Cc: Kotarba, Ashley <Ashley.Kotarba@ottawa.ca>; Wang, Randolph <Randolph.Wang@ottawa.ca>; Gervais, Josiane <josiane.gervais@ottawa.ca>; Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>; thesycamore <thesycamore@sympatico.ca>
Subject: Pre-con Follow-up - 384 Arlington

CC: Ashley Kotarba, Randolph Wang, Mohammed Fawzi, Josiane Gervais, David Seaborn

Hello Ghada & Tamara,

Please refer to the below [and/or attached notes] regarding the Pre-Application Consultation ("pre-con") Meeting held on January 14 for the property at 384 Arlington Avenue for Site Plan Control and Zoning By-law Amendment in order to allow the development of a 12-storey residential building by Windmill. I have also attached the required Plans & Study List for application submission.

Below are staff's preliminary comments based on the information available at the time of pre-con meeting:

PLANNING

- Under the current Official Plan, the lands are designated General Urban. Under the new Official Plan, the site is Downtown Core (Section 5.1) / Neighbourhood (Section 6.3). Applications submitted before Ministry approval of the new Official Plan will be evaluated on the basis of the existing Official Plan with regard for the new Official Plan; the more restrictive policies will apply.
  - Policies 2 and 3 of Section 6.3.1 in the new Official Plan stipulate that building heights in Neighbourhood may exceed the generally low-rise format (a) where existing zoning or secondary plans allow for greater heights, or (b) in areas already

characterized by taller buildings. It is thus the view of the Department, based on Policy 2(b), that no OPA is required for this proposal given the proximity of a 12-storey building on Bell Street and that the additional height may be sought through ZBLA.

- The site is zoned I1A. The intent to rezone it as R5 is understood, and staff concur that it is appropriate.
- The massing of the proposed building will need to be resolved.
  - Heritage and Urban Design have raised concerns about the relationship of the proposed building to the existing church, which will be reviewed for potential *Heritage Act* designation during the 60-day notice period described in the Heritage notes below. Pending any designation arising from that process, Planning is neutral with regard to the church. In the absence of a designation, the Department's priority must be a building form and program that contributes to a high-quality urban place and complies with Official Plan direction relating to design and compatibility.
  - Retention of the existing building in a way that adds value to the project would nonetheless be viewed as a positive – Section 6.3.2 of the new Official Plan includes adaptive reuse as an example of innovative building forms to be supported.
  - The relationship to the east lot line, and to neighbouring buildings sharing Arthur Lane should be reconsidered. It appears that this concept treats its parcel as a standalone city block, with Arthur Lane functioning as a street, whereas given that this is a narrow laneway a rear-yard condition would be expected. Consider, for example, the setbacks of the large buildings to the north from Arthur Lane. Another analogous condition, as mentioned in our meeting, would be the lanes between Breezehill, Bayswater and Spadina Avenues in Hintonburg. Lot lines abutting these lands are treated as rear lot lines with the attendant setbacks and landscaping. It is understood that the context for this site is a more urban condition, however some sort of built-form transition would be advisable.
  - As such, staff recommend exploring different expressions of the volume of this building.
  - This application is not subject to the UDRP by default, but we have the option of recommending it. In the event that a follow-up preconsult meeting proves inconclusive, review and comment from the UDRP may illuminate a path forward.
- It seems likely that community benefits ("Section 37") will be triggered by the density increase being proposed.
- For a Zoning By-law Amendment, the Applicant must now provide a proposed strategy for public consultation as directed by Bill 73.

URBAN DESIGN

- A Design Brief is required for the submission. The Terms of Reference of Design Brief is attached for convenience.
  - Please study massing options.
  - Please note wind and shadow studies are required.
- With respect to the preliminary concept presented at the meeting, the incorporation of some aspects of the heritage attributes into the design and the provision of a public accessible space are appreciated. However, the overall site plan and massing appears to be overwhelming for the heritage assets, the site and the surroundings.

        - The 12-storey “slab” does not forester a good relationship with the narrow lane of Author and the adjacent low-rise neighbourhood.
        - The small 20m × 20m “public space” is a little bit squashed comparing with the 9 storey and 12 storey buildings surrounding it.
        - The addition above the proposed reconstructed heritage building is unconvincing.
    - In the new Official Plan, the site is within the Neighbourhood designation of the Downtown Transect. The new OP supports low-rise development in this designation but also allows for opportunities to explore taller building options in an area that is characterized by taller buildings. When exploring options on this site, please consider the following in addition to many policies and practical considerations:
        - Locate taller building away from low-rise residential areas and the narrow lane;
        - Respect the low-rise scale and character of Arlington and Bell, where the heritage building is situated.
        - Provide effective transition from any tall buildings to the low-rise areas, in this case, transition to areas east of Author and west of Bell should both be considered. Please refer to the relevant OP policies for guidance.
        - If a high-rise building is considered, please refer to the Urban Design Guidelines for High-Rise Buildings for guidance, and use angular plane as a tool to guide the design for built form transition.
        - Include a 2 or 3-storey podium to reflect on the scale of the adjacent low-rise residential areas.
        - Incorporate grade-related units to reflect the architectural rhythm of the adjacent low-rise residential areas.
        - Include a publicly accessible space at grade, and make sure optimal microclimate conditions.
        - Allow for landscaping opportunities on all public streets and lane, particularly Raymond Street.
    - The site is not within a designated Design Priority Area and generally it is not subject to the review by the City’s Urban Design Review Panel. However, due to the complexity of the proposed development and the inclusion of heritage resources on site, the applicant can benefit from the review(s) of the UDRP.
    - As indicated above, the currently proposed site plan and massing option is unconvincing and problematic in a number of ways. It is recommended that the applicants explore additional site plan and massing options and return for a second staff preconsultation. The merits and process of UDRP review(s) can be determined at the second staff preconsulation where such alternative site plan and massing options are presented and discussed.

HERITAGE

- The property at 384 Arlington Street is listed on the City's Heritage Register as a non-designated listing. This includes both the church and the manse. The property was added for having potential cultural heritage value or interest. Being listed on the Heritage Register means that the owner needs to provide the City with 60 day's notice of their intention to demolish either building. The owner will need to complete the Form for Buildings Listed on the Heritage Register (link below), and provide supporting documentation (rationale for demolition, any supporting historical documents, photos to document the building). A Heritage Impact Assessment and Conservation Plan may be useful to support the demolition and development applications. These documents should look at the historical and architectural interest of the church and manse, and evaluate how the proposal will impact any each resource. Also, a conservation plan should look at the structural integrity of the church, and recommend an approach that salvages as much original material as possible, while rebuilding areas that are severely compromised.
- Form for Buildings Listed on the Heritage Register (ottawa.ca)
- During the 60 days, staff will determine if the building(s) warrants designation under Part IV of the *Ontario Heritage Act*. If it does not, the 60 days will be allowed to expire. Please note that building/demolition permits cannot be issued until the 60 days have lapsed. For these reasons, it is recommended that the applicant submit the form at the time of the site plan application.
- Heritage staff are pleased to see development on this site, however there is strong concern over the limited conservation of the church building and the massing proposed on top. This is not in alignment with *Parks Canada's Standards and Guidelines for the Conservation of Historic Places*, nor the City's Official Plan.
- Heritage staff encourage the applicant to consider shifting the massing from on top of the church and redistributing it elsewhere on the site. See comments from Urban Design for direction.
- Further, more of the original brick church building should be conserved and integrated into the development. Any parts that are structurally unsound can be rebuilt. See example below of St. Charles Church in Vanier. The new mass is located next to the church, and the entire church building is kept, and integrated into the development.

ENGINEERING

Available Infrastructure:

Arlington Avenue:

Combined: 300mm PVC (Install 2003)

Water: 200mm PVC (Install 2003)

Bell Street North

Combined: 300mm PVC (Install 2002)

Water: 150mm PVC (Install 2002)

Water Boundary Conditions:

Will be provided at request of consultant. Requests must include the location of the service and the expected loads required by the proposed development. Please provide the following and submit Fire Flow Calculation Sheet per FUS method with the request:

- Location of service
- Type of development and amount of required fire flow (per FUS method – include FUS calculation sheet with request)
- Average Daily Demand (l/s)
- Maximum Hourly Demand (l/s)
- Maximum Daily Demand (l/s)
- Water Supply Redundancy – Fire Flow:
  - Applicant to ensure that a second service with an inline valve chamber be provided where the average daily demand exceeds 50 m^3 / day (0.5787 l/s per day)

Water services larger than 19 mm require a Water Data Card. Please complete card and submit.

Stormwater Management:

- Coefficient (C) of runoff determined **as per existing conditions** but in no case more than 0.4.
- TC = To be calculated, minimum 10 minutes
- Any storm events greater than 2 year, up to 100 year, and including 100-year storm event must be detained on site.
- Foundation drains are to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.
- Roof drains are to be connected downstream of any incorporated ICD within the SWM system.

Stormwater Management Criteria (Quality Control)

Include a section in the SWM report concerning quality control requirements. It is the consultant's responsibility to check with the relevant Conservation Authority for quality control issues and include this information in the SWM report.

Noise and Vibration Study:

Noise Study required due to proximity of 417 Highway.

Phase I and Phase II ESA:

- Phase I ESA is required; Phase II ESA may be required depending on the results of the Phase I ESA. Phase I ESA must include an EcoLog ERIS Report.
- Phase I ESA and Phase II ESAs must conform to clause 4.8.4 of the Official Plan that requires

that development applications conform to Ontario Regulation 153/04.

Required Studies

- Stormwater Management Report
- Site Servicing Study
- Geotechnical Study
- Phase I ESA
- Phase II ESA (depends on outcome of Phase I)
- Noise Study

Required Plans

- Site Servicing Plan
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan (Can be combined with grading plan)

ECA Application will be required

Please provide one copy the following (following approval):

- MECP ECA Application Form - TOR or Direct Submission tied to SPC Fees - Certified Cheque made out to “City of Ottawa”
- Proof of Applicant’s Identification
- Certificate of Incorporation (if Applicable)
- NAICS Code (If Applicable)
- Plan & Profile
- Grading and Servicing Plans
- Survey Plan
- Pipe Data Form
- Relevant information

General

1. The Servicing Study Guidelines for Development Applications are available at the following address: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#servicing-study-guidelines-development-applications
2. Servicing and site works shall be in accordance with the following documents:
   - Ottawa Sewer Design Guidelines (October 2012)
   - Ottawa Design Guidelines – Water Distribution (2010)
   - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
   - City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
   - City of Ottawa Environmental Noise Control Guidelines (January, 2016)
   - City of Ottawa Park and Pathway Development Manual (2012)
   - City of Ottawa Accessibility Design Standards (2012)
   - Ottawa Standard Tender Documents (latest version)
   - Ontario Provincial Standards for Roads & Public Works (2013)
3. Record drawings and utility plans are also available for purchase from the City (Contact the City’s Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-

2424 x.44455).

4. Any proposed work in utility easements requires written consent of easement owner.

Feel free to contact the Infrastructure Project Manager, Mohammed Fawzi, at mohammed.fawzi@ottawa.ca, for follow-up questions.

TRANSPORTATION

- Follow Transportation Impact Assessment Guidelines
  - A TIA is required. The scoping report can be submitted together to Josiane.Gervais@ottawa.ca at your earliest convenience.
  - The site is located within the "Urban" area designation, as referenced on the Transportation Master Plan 'Inner Urban' area (i.e. 400m Radius for study area).
  - Start this process asap. The application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).
  - Request base mapping asap if RMA is required. Contact Engineering Services (https://ottawa.ca/en/city-hall/planning-and-development/engineering-services)
  - An update to the *TRANS Trip Generation Manual* has been completed (October 2020). This manual is to be utilized for this TIA. A copy of this document can be provided upon request.
- Corner triangles as per OP Annex 1 - Road Classification and Rights-of-Way at the following locations on the final plan will be required (measure on the property line/ROW protected line; no structure above or below this triangle): Local Road to Local Road: 3 m x 3 m
- Sight triangle as per Zoning by-law Section 57 is to be measured on the curb line.
- Corner clearances should follow minimum distances set out within TAC Figure 8.8.2.
- TMP includes:
  - Future LRT Station at Corso Italia (2031 Affordable Network), this station is located within an 800m radius of the site.
  - Transit Priority Corridor (Isolated Measures) (2031 Affordable Network) along Bronson Ave
  - Transit Priority Corridor (Isolated Measures) (Ultimate Network) along Bronson Ave
- On site plan:
  - Ensure site access meets the City's Private Approach Bylaw.
  - Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
  - Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.
  - Turning movement diagrams required for internal movements (loading areas, garbage) where applicable.
  - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible and fall within TAC guidelines (Figure 8.5.1).
  - Show dimensions for site elements (i.e. lane/aisle widths, access width, parking stalls, sidewalks, pedestrian pathways, etc.)
  - Sidewalk is to be continuous across access as per City Specification 7.1.
  - Show slope of garage ramp on site plan. Note that underground ramps should be limited to a 12% grade and must contain a subsurface melting device when exceeding 6%. Ramp grades greater than 15% can be psychological barriers to some drivers.
  - Parking stalls at the end of dead-end parking aisles require adequate turning around space
  - Grey out any area that will not be impacted by this application.

- As the site proposed is residential, AODA legislation applies for all areas accessible to the public (i.e. outdoor pathways, parking, etc.). Consider using the City's Accessibility Design Standards.

Feel free to contact the Transportation Project Manager, Josiane Gervais, at josiane.gervais@ottawa.ca, for follow-up questions.

CITY SURVEYOR

- The determination of property boundaries, minimum setbacks and other regulatory constraints are a critical component of development. An Ontario Land Surveyor (O.L.S.) needs to be consulted at the outset of a project to ensure properties are properly defined and can be used as the geospatial framework for the development.
- Topographic details may also be required for a project and should be either carried out by the O.L.S. that has provided the Legal Survey or done in consultation with the O.L.S. to ensure that the project is integrated to the appropriate control network.

Questions regarding the above requirements can be directed to the City's Surveyor, Bill Harper, at bill.harper@ottawa.ca.

OTHER

- Plans are to be standard A1 size (594 mm x 841 mm) sheets, utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400 or 1:500).
- All PDF submitted documents are to be unlocked and flattened.
- For sites containing one or more buildings with a total GFA greater than 2000 square metres: a Waste Reduction Workplan Summary is required for the construction project as required by O.Reg. 102/94, being "Waste Audits and Waste Reduction Work Plans" made under the Environmental Protection Act, RSO 1990, c E.19, as amended.
- You are encouraged to contact the Ward Councillor, Councillor McKenney, at catherine.mckenney@ottawa.ca about the proposal. You may also consider contacting the Dalhousie Community Association.

Please refer to the links to Guide to preparing studies and plans and fees for further information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please do not hesitate to contact me if you have any questions.

Regards,

Jeff Nadeau

Planner II | *Urbaniste II*
Development Review, Central | *Examen des projets d'aménagement, Central*
Planning, Real Estate and Economic Development Department | *Services de la planification, des biens immobiliers et du développement économique*
City of Ottawa | *Ville d'Ottawa*
110 Laurier Avenue West. Ottawa, ON | *110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1*
613.580.2424 ext./poste 16802
ottawa.ca/planning / ottawa.ca/urbanisme

*****Please note that, while my work hours may be affected by the current situation, I have regular access to email and check telephone messages periodically. Email is currently the best way to contact me*****

'

'

From: Antoine Cousineau
To: Jaymeson Adams; Hugues Bisson; Kristen Jorgensen
Cc: Samuel Pouliot; Stephen Savell; Tim Kennedy
Subject: RE: A001272 - Redevelopment 384 Arlington - Civil Design Questions and Considerations
Date: Friday, July 15, 2022 7:50:03 AM

EXTERNAL EMAIL

Jaymeson
See my comments in blue bellow within the yellow section

A

ANTOINE COUSINEAU OAQ, OAA, AAA, NCARB, IRAC, LEED, AP
Architecte associé . Partner architect
T 514 847 1117 #250 F 514 847 2287 C 514 515 2048
630, boul. René-Lévesque O. 32e étage, Montréal (QC) H3B 1S6
NEUF ARCHITECTES INC Confidentialité + Transmission
Montréal. Ottawa. Toronto

50 ANS ET TOUJOURS NEUF . 50 YEARS AND STILL NEUF

De : Jaymeson Adams <Jaymeson.Adams@cima.ca>
Envoyé : 13 juillet 2022 14:18
À : Hugues Bisson <Hugues.Bisson@cima.ca>; Kristen Jorgensen <kristen.jorgensen@windmilldevelopments.com>; Antoine Cousineau <antoine@neufarchitectes.com>
Cc : Samuel Pouliot <spouliot@neufarchitectes.com>; Stephen Savell <Stephen.Savell@windmilldevelopments.com>; Tim Kennedy <Tim.Kennedy@cima.ca>
Objet : RE: A001272 - Redevelopment 384 Arlington - Civil Design Questions and Considerations

Bonjour Antoine,

Please see, in the email string below, what we would like to confirm for our fire flow calculations (in yellow highlight).

Merci,

Upcoming vacation notice: 14 to 22 July 2022

JAYMESON ADAMS, P.Eng.
Engineer / Infrastructure
Ingénieur / Infrastructures

- Water and Fire Protection Considerations and Questions:
  - For required fire flow determination (RFF) we will assume the building will be constructed of either Noncombustible Construction or Fire Resistive Construction as follows:
    - Fire Resistive Construction: where all structural elements, walls, arches, floors, and roofs are constructed with a minimum 2-hour fire resistance rating and all materials used in the construction of the structural elements, walls, arches, floors, and roofs are constructed with noncombustible materials. ***[Antoine Cousineau]*** Building will be non combustible with 2h fire- resistance for structural, floors walls and exits
      - Fire Resistive Construction also assumes all vertical openings and exterior vertical communications (ex. Interconnected floor spaces, atria, elevators, escalators, etc.) are properly **protected** in accordance with the National Building Code (NBC). That is (i.) Enclosures have walls of masonry or other limited or noncombustible construction with a fire resistance rating of not less than one hour, (ii.) openings including doors shall be protected with automatic closing devices and (iii.) elevator doors shall be of metal or metal-covered construction, so arranged that the doors must normally be closed for operation of the elevator.
    - Noncombustible Construction: where all structural elements, walls, arches, floors, and roofs are constructed with a minimum 1-hour fire resistance rating and are constructed with noncombustible materials. ***[Antoine Cousineau]*** OK, see above
      - Noncombustible Construction assumes any vertical openings in the building are **unprotected**. That is any opening through horizontal separations that are unprotected or otherwise have closures that do not meet the minimum requirements for protected openings, above.
  - We will assume the building is sprinklered, but system **not fully supervised** (i.e., continuously monitored). For a fully supervised system a supervisory signal is required to ensure that malfunctions of the automatic sprinkler system will be discovered and corrected promptly, while a water flow alarm is required to notify emergency services of the fire as soon as the automatic sprinkler system activates. Some additional information as follows: ***[Antoine Cousineau]*** building is a high rise and will be fully sprinklered, supervised and connected to firestation
    - The supervisory signal is to sound and be displayed, either at a location within the building that is constantly attended by qualified personnel (such as a security room), or at an approved remotely located receiving facility (such as a monitoring facility of the sprinkler system manufacturer); and
    - The water flow alarm must indicate that the sprinkler has been activated, which is to be transmitted to an approved, proprietary alarm-receiving facility, a remote station, a central station or the fire department.

Let me know if you want to discuss any of these items and if we should proceed with communicating directly with the client or through you on this one.

Thanks,
Tim

TIM KENNEDY, P.Eng.
Senior Project Manager / Infrastructure

T 613-860-2462 ext. 6620 **M** 613-462-3627 **F** 613-860-1870
110–240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

Servicing Study Guidelines for Development Applications

4. Development Servicing Study Checklist

4.1 General Content

	Required Content	Reference Location
☐	Executive Summary (for larger reports only).	N/A
☑	Date and revision number of the report.	Cover Sheet
☑	Location map and plan showing municipal address, boundary, and layout of proposed development.	Report Figures
☑	Plan showing the site and location of all existing services.	Appendix B
☑	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 1.1
☑	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.4
☑	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Section 1.2 & 1.4
☑	Statement of objectives and servicing criteria.	Section 1.0, 2.1, 3.1 & 4.2
☑	Identification of existing and proposed infrastructure available in the immediate area.	Section 1.3 & Appendix B
☐	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/A
☐	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	N/A
☐	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
☐	Proposed phasing of the development, if applicable.	N/A
☐	Reference to geotechnical studies and recommendations concerning servicing.	N/A
☐	All preliminary and formal site plan submissions should have the following information: - Metric scale; - North Arrow (including construction North); - Key Plan; - Name and contact information of applicant and property owner; - Property limits including bearings and dimensions; - Existing and proposed structures and parking areas; - Easements, road widening and rights-of-way; - Adjacent street names.	N/A

4.2 Development Servicing Report: Water

	Required Content	Reference Location
☐	Confirm consistency with Master Servicing Study, if available	N/A
☑	Availability of public infrastructure to service proposed development	Section 1.3 & Appendix B
☑	Identification of system constraints	Section 2.1 & 2.2
☑	Identify boundary conditions	Section 2.2
☑	Confirmation of adequate domestic supply and pressure	Section 2.2 & 2.3
☑	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Section 2.2 & 2.3
☐	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	N/A
☐	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☑	Address reliability requirements such as appropriate location of shut-off valves	Section 2.2 & Appendix C
☐	Check on the necessity of a pressure zone boundary modification.	N/A
☑	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	Table 2-4

☐	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	N/A
☐	Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☑	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 2.3
☐	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

Required Content		Reference Location
☑	Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Section 3.1
☐	Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☑	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	Section 3.3, Appendix A & Appendix E
☑	Description of existing sanitary sewer available for discharge of wastewater from proposed development	Section 1.3, 3.2 & Appendix B
☑	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 3.3
☑	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 3.2 & Appendix E
☑	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 3.2
☐	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A
☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐	Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

Required Content		Reference Location
☑	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 4.1
☑	Analysis of available capacity in existing public infrastructure.	Section 4.1
☑	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Appendix C & F
☑	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 4.2
☑	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 4.2
☑	Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 4.3, 4.4 & Appendix C
☐	Set-back from private sewage disposal systems.	N/A
☐	Watercourse and hazard lands setbacks.	N/A
☑	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A
☐	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A

☑	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 4.3 & Appendix F
☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
☑	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 4.1, 4.3 & Appendix F
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
☐	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	N/A
☐	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100 year return period storm event.	N/A
☐	Identification of potential impacts to receiving watercourses	N/A
☐	Identification of municipal drains and related approval requirements.	N/A
☑	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 4.3 and 4.4
☐	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A
☐	Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A
☐	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	N/A
☐	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
☐	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

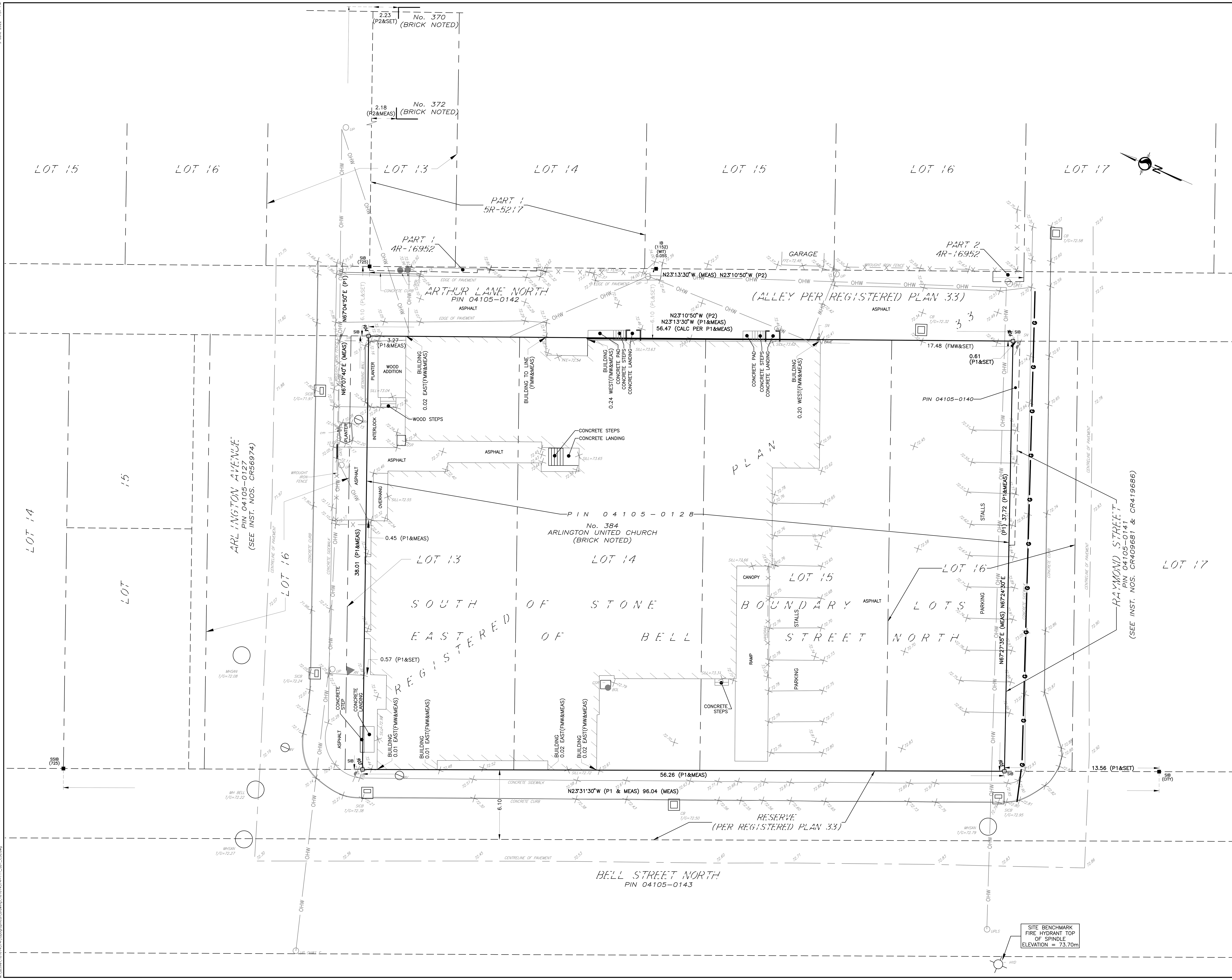
Required Content		Reference Location
☐	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	N/A
☐	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐	Changes to Municipal Drains.	N/A
☐	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

4.6 Conclusion Checklist

Required Content		Reference Location
☑	Clearly stated conclusions and recommendations	Section 5.0
☐	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	N/A
☑	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	Cover Sheet

B

Appendix B
Existing Conditions Plan



Stantec

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

TOPOGRAPHIC SURVEY OF

OF LOTS 14 &15 AND
PART OF LOTS 13 & 16
(SOUTH OF STINE BOUNDARY LOTS)
EAST OF BELL STREET NORTH
REGISTERED PLAN 33

CITY OF OTTAWA

Scale 1:150

2 0 2 4 6 8 10 METRES

Stantec Geomatics Ltd.
ONTARIO LAND SURVEYORS

BEARING NOTE

BEARINGS ARE GRID, DERIVED FROM THE CAN-NET VRS NETWORK OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76°30' WEST LONGITUDE MTM ZONE 9. NAD83 (ORIGINAL) (2010.0).

19773035 N:5006060.00 E:324888.04
19680191 N:5033563.88 E:388064.92

ELEVATION NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CAN-NET VRS NETWORK MONUMENT: OTTAWA ELEVATION=95.230.

METRIC CONVERSION

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

ROTATION NOTE

BEARINGS ARE GRID AND A 0°35'00" ANGLE HAS BEEN APPLIED COUNTERCLOCKWISE TO PLANS P1 AND P2.

LEGEND

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
IBø	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
CC	"	CUT CROSS
CP	"	CONCRETE PIN
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
M/MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
STANTEC	"	STANTEC GEOMATICS LTD.
P1	"	PLAN BY FAIRHALL, MOFFAT & WOODLAND, DATED FEBRUARY 2nd, 1995
P2	"	PLAN BY ANNIS O'SULLIVAN VOLLEBEKK, DATED APRIL 19th ,2021
725	"	R.W. ARNETT O.L.S.
CITY	"	CITY OF OTTAWA
FMW	"	FAIRHALL, MOFFATT AND WOODLAND O.L.S.
◄ AN	"	ANCHOR
● BOL	"	BOLLARD
CB	"	CATCH BASIN
SICB	"	SIDE INLET CB
GSR	"	GAS SERVICE REGULATOR
○ MHSAN	"	MAINTENANCE HOLE SANITARY
SN	"	SIGN
⊖ WV	"	WATER VALVE

—— G —— G —— G ——
GASMAIN

—— OHW —— OHW ——
OVERHEAD WIRE

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THE SURVEY WAS COMPLETED ON THE 30th DAY OF MAY, 2022.

DATE

R. G. BENNETT
ONTARIO LAND SURVEYOR

THIS PLAN OF SURVEY RELATES TO AOLS PLAN SUBMISSION FORM NUMBER V-28656.

DRAWN: RG CHECKED: GB PM: CT FIELD: CA PROJECT No.: 161614574-111

E-10-27

F-10-02

F-10-04

F-10-06

F-10-07

F-10-08

LOUISA STREET

ARLINGTON AVENUE

BELL STREET

ARTHUR LANE

35mm GAS

WALK

12" (300mm) COMBINED SEWER

6" (150mm) WATERMAIN

200mm WM

450mm SAN SEW

300mm SAN SEW

HYDRO ABAND

BELL ABAND

ROGERS (20133

200mm GAS ABAND

8" (200mm) WATERMAIN

100mm GAS

50mm GAS

4" (100mm) GAS

12"COMBINED SEWER

BELL

201

18

231

383

377

373

324

234

240

23

408

406

404

402

382

376

374

380

378

384

Metres

5 4 3 2 1 0 5 10 15 20

0 1 2 3 4 5 10 15 20

REVISIONS / RÉVISIONS

REVISIONS / RÉVISIONS	DATE	BY
3335 - LOUISA (Booth to Bell, DEC. 2003) SEWER, WATER, ROAD REV ON LOUISA	SEPT. 04	DC
3335 - ARLINGTON (Booth to Bronson, DEC. 2003) SEWER, WATER, ROAD REV ON ARLINGTON	SEPT. 04	DC
REVISION BEL05048 SEPT 2008 BELL ADDED TO ARLINGTON AND BELL ST	MAR 2010	AJ
ROG12031-ROGERS (MAR 2012) PANEL/CONDUIT ADDED TO ARLINGTON	NOV 2016	JM
BEL10483-BELL (FEB 2011) ONU/CONDUIT ADDED TO ARLINGTON	NOV 2016	JM
BEL10484-BELL (FEB 2011) ONU/CONDUIT ADDED TO ARLINGTON	NOV 2016	JM
ROG13010803-ROGERS (NOV 2013) MH/CONDUIT ADDED TO ARLINGTON, ARTHUR	NOV 2016	JM
CITY, ALL EXTERNAL AGENCIES DIGITIZED FROM CITY/UTILITY DATA RECEIVED	JUN 2022	DC

LEGEND

- Water Valve, Valve Chamber, Fire Hydrant
- Sewer Manhole, Catch Basin Manhole
- Catch Basin / Drainage, Wing Wall, Head Wall
- Pole, Pole w/ light, Decorative, Lawn Light
- Power Supply, Panel, Pedestal, Transformer, Tower, Regulator (P/S, PED, GR)
- Amp, Hand Hole, Vault, Gas Valve (HH)
- OC Transpo: Bus Shelter-No Power, Energized, Isolated (BUS)
- Streetscape: Planter Box, Grate Square, Eng, Soil (TGS)
- Traffic Connect Box / Disconnect Box, SL Disconnect
- Red Light Hand Hole, Red Light Camera
- Scada: Hand Hole, Monitoring Panel
- Reducer
- Pipe, Duct, Conduit, Lateral
- Culvert
- Ditch
- Abandoned
- Capped
- Buried Cable
- Property Line
- Install Year (2015)

TELECOM GLOSSARY

A.....Allstream	P.....Primus
AT.....Atria	P2P.....Canadian P2P Fibre
B.....Bell	R.....Rogers
BH.....Birch Hill	S.....Sprint
F.....Fibre Noir	SL.....Street Lighting
G.....Globility	T.....Traffic
GT.....Group Telecom	TO.....Telecom Ottawa
H.....Hydro Ottawa	TU.....Telus
H1.....Hydro One	V.....Videotron
L / L3.....Level 3	Z.....Zayo

GLOSSARY - OTHER

DD.....Dept. of Defence	PED.....Pedestal (owner unknown)
MH.....Manhole (owner unknown)	PW.....Public Works
O/OC.....OCTranspo	UP.....Utility Pole (owner unknown)
SCD.....Scada	

CAUTION/ATTENTION

Although utility locations are established using the best available information, they cannot be guaranteed.
Property lines were compiled from plans and documents recorded in the Land Registry System and are for indexing purposes only.

Bien que l'emplacement des services publics soient établis en utilisant la meilleure information disponible, ils ne peuvent pas être garantis.
Des lignes de propriété ont été compilées en utilisant des plans et des documents enregistrés dans le système de cadastre et sont pour l'indexation seulement.

Ottawa

Right of Way, Heritage, and Urban Design Services /
Gestionnaire, Services des emprises, du patrimoine, et du design urbain
Planning, Infrastructure and Economic Development Department /
Direction generale de la planification, de l'infrastructure et du developpement economique
100 Constellation Cres., 6th Floor East / 6ème Etage Est, Ottawa, ON K2G 6J8

OTTAWA UTILITY COORDINATING COMMITTEE
CENTRAL REGISTRY
COMITÉ DE COORDINATION DES SERVICES PUBLICS D'OTTAWA
ENREGISTREMENT CENTRAL

UTILITY COORDINATING COMMITTEE U C C Ottawa C C S P COMITÉ DE COORDINATION DES SERVICES PUBLICS

PRODUCED BY: GIS & DATA MANAGEMENT BRANCH
INFORMATION CENTRE UNIT

SCALE: 1:250

SHEET NUMBER
F-10-03

F-10-03

F-10-06

F-10-08

F-10-10

F-10-11

F-10-12

RAYMOND STREET

BELL STREET

ARTHUR LANE

HIGHWAY 417

417 ON RAMP

ORANGEVILLE ST

OFF RAMP FROM 417

Metres

REVISIONS / RÉVISIONS	DATE	BY
2907 - BELL S. (Carling to Orangeville, JUNE 1997) SEWER, WATER, ROAD REVISED ON BELL	SEPT. 04	DC
3335 - BELL N. (Gladstone - Raymond, DEC. 2003) SEWER, WATER, ROAD REVISED ON BELL N.	SEPT. 04	DC
3335 - RAYMOND (Booth to Cambridge N., DEC. 2003) SEWER, WATER, ROAD REV ON RAYMOND	SEPT. 04	DC
CITY, ALL EXTERNAL AGENCES DIGITIZED FROM CITY/UTILITY DATA RECEIVED	JUN 2022	DC

LEGEND

- Water Valve, Valve Chamber, Fire Hydrant
- Sewer Manhole, Catch Basin Manhole
- Catch Basin / Drainage, Wing Wall, Head Wall
- Pole, Pole w/ light, Decorative, Lawn Light
- Power Supply, Panel, Pedestal, Transformer, Tower, Regulator (P/S, PED, GR)
- Amp, Hand Hole, Vault, Gas Valve
- OC Transpo: Bus Shelter-No Power, Energized, Isolated (BUS, BUS, BUS)
- Streetscape: Planter Box, Grate Square, Eng, Soil (TGS)
- Traffic Connect Box / Disconnect Box, SL Disconnect (TCB, TDB, SDB)
- Red Light Hand Hole, Red Light Camera (THH)
- Scada: Hand Hole, Monitoring Panel
- Reducer
- Pipe, Duct, Conduit, Lateral
- Culvert
- Ditch
- Abandoned
- Capped
- Buried Cable
- Property Line
- Install Year (2015)

TELECOM GLOSSARY

A.....Allstream	P.....Primus
AT.....Atria	P2P.....Canadian P2P Fibre
B.....Bell	R.....Rogers
BH.....Birch Hill	S.....Sprint
F.....Fibre Noir	SL.....Street Lighting
G.....Globility	T.....Traffic
GT.....Group Telecom	TO.....Telecom Ottawa
H.....Hydro Ottawa	TU.....Telus
H1.....Hydro One	V.....Videotron
L / L3.....Level 3	Z.....Zayo

GLOSSARY - OTHER

DD.....Dept. of Defence	PED.....Pedestal (owner unknown)
MH.....Manhole (owner unknown)	PW.....Public Works
O/OC.....OCTranspo	UP.....Utility Pole (owner unknown)
SCD.....Scada	

CAUTION/ATTENTION

Although utility locations are established using the best available information, they cannot be guaranteed.
Property lines were compiled from plans and documents recorded in the Land Registry System and are for indexing purposes only.

Bien que l'emplacement des services publics soient établis en utilisant la meilleure information disponible, ils ne peuvent pas être garantis.
Des lignes de propriété ont été compilées en utilisant des plans et des documents enregistrés dans le système de cadastre et sont pour l'indexation seulement.

Ottawa
Right of Way, Heritage, and Urban Design Services / Gestionnaire, Services des emprises, du patrimoine, et du design urbain
Planning, Infrastructure and Economic Development Department / Direction generale de la planification, de l'infrastructure et du developpement economique
100 Constellation Cres., 6th Floor East / 6ème Etage Est, Ottawa, ON K2G 6J8

OTTAWA UTILITY COORDINATING COMMITTEE
CENTRAL REGISTRY
COMITÉ DE COORDINATION DES SERVICES PUBLICS D'OTTAWA
ENREGISTREMENT CENTRAL

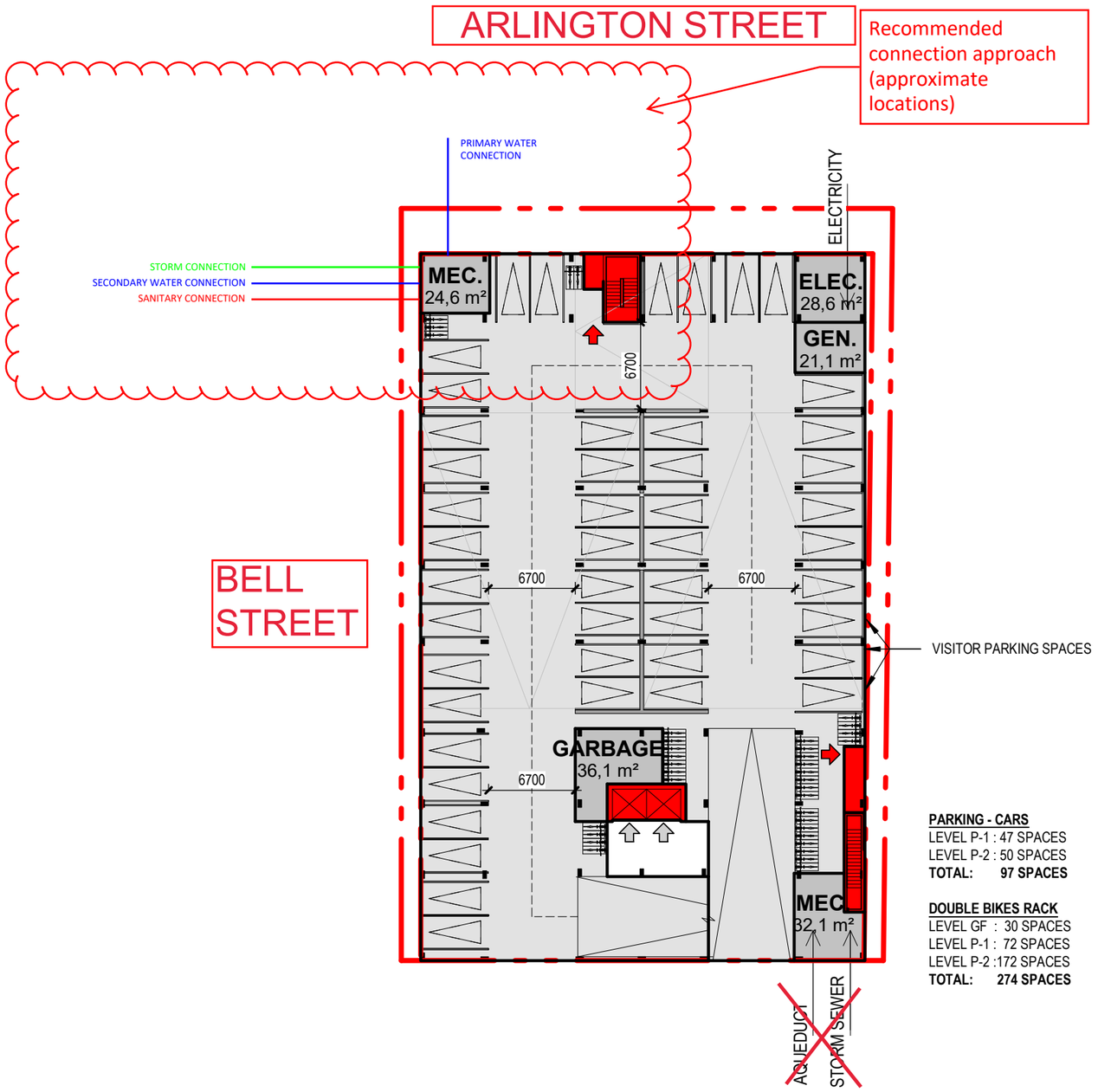
PRODUCED BY: GIS & DATA MANAGEMENT BRANCH
INFORMATION CENTRE UNIT

SCALE: 1:250

SHEET NUMBER
F-10-07

C

Appendix C
Conceptual Site Servicing Plan



PARKING - CARS
LEVEL P-1 : 47 SPACES
LEVEL P-2 : 50 SPACES
TOTAL: 97 SPACES

DOUBLE BIKES RACK
LEVEL GF : 30 SPACES
LEVEL P-1 : 72 SPACES
LEVEL P-2 :172 SPACES
TOTAL: 274 SPACES

DATA - BASEMENT P-1	
Name	Surface
ELEC.	28,6 m²
GARBAGE	36,1 m²
GEN.	21,1 m²
MEC.	56,7 m²
PARKING AREA	1 643,2 m²
VERTICAL CIRCULATION	57,1 m²
LOBBY	33,8 m²
Total	1 876,6 m²

Prepared by: Jaymeson Adams, P.Eng.
Project No.: A001272
Date: 2022-07-05

BASEMENT - PARKING P1

SCALE 1:400

D

Appendix D
Water Supply Design Calculations

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

WATER CONSUMPTION CALCULATIONS

APPLICABLE DESIGN GUIDELINES:

1. Ottawa Design Guidelines - Water Distribution (2010)
2. City of Ottawa Technical Bulletin ISTB-2021-03, ISTB-2018-02, ISDTB-2014-02 and ISD-2010-02
3. MOE Design Guidelines for Drinking-Water Systems

RESIDENTIAL AND COMMERCIAL WATER DEMANDS:

RESIDENTIAL DESIGN CRITERIA:

Residential Average Day Demand:	280	L/c/day
Maximum Day Peaking Factor:	3.0	x Average Daily Demand
Maximum (Peak Hour) Peaking Factor:	4.5	x Average Daily Demand

EQUIVALENT POPULATION :

Unit Type	Number of Units	Persons Per Unit	Population
Bachelor Apartments	28	1.4	39
1-Bedroom Apartments	120	1.4	168
1-Bedroom + Den Apartments	19	1.4	27
2-Bedroom Apartments	98	2.1	206
2-Bedroom + Den Apartments	7	2.1	15
3-Bedroom Apartments	2	3.1	6
Total	**274**		**461**

Per Unit Populations:

Table 4.1 Per Unit Populations

Unit Type	Persons Per Unit
Single Family	3.4
Semi-detached	2.7
Duplex	2.3
Townhouse (row)	2.7
Apartments:	
Bachelor	1.4
1 Bedroom	1.4
2 Bedroom	2.1
3 Bedroom	3.1
Average Apt.	1.8

COMMERCIAL DESIGN CRITERIA:

Contributing Commercial Area:	0.069	gross ha (including activities room, gym and yoga)
Commercial Average Day Demand:	28,000	L/gross ha/d
Maximum Day Peaking Factor:	1.5	x Average Daily Demand
Maximum (Peak Hour) Peaking Factor:	1.8	x Maximum Daily Demand

WATER DEMANDS:

Demand Type	Average Daily Demand (L/s)	Maximum Daily Demand (L/s)	Maximum (Peak) Hour Demand (L/s)
Residential	1.494	4.482	6.723
Commercial	0.022	0.033	0.060
Total	**1.52**	**4.52**	**6.78**

NOTES:

1. Maximum Day and Maximum Hour residential peaking factors determined using Table 3-3 of the MOE Design Guidelines for Drinking-Water System for 0 to 500 persons.

2. Given basic day demand greater than 50 m³/day (0.57 L/s), two connections, separated by an isolation valve required.

Prepared by: Jaymeson Adams, P.Eng. Date: 2022/06/14
PEO# 100519478

Verified by: Tim Kennedy, P.Eng. Date: 2023/03/10
PEO# 100173201

PROJECT NAME: Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER: A001272
CLIENT: Windmill Development Group Ltd.
PROJECT STATUS: Preliminary Design (Assessment of Adequacy of Public Services)

FIRE FLOW ASSESSMENT

APPLICABLE DESIGN GUIDELINES:

1. Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection, 2020
2. Ottawa Design Guidelines - Water Distribution (2010) including Appendix H per ISTB-2018-02
3. City of Ottawa Technical Bulletin ISTB-2021-03 and ISTB-2018-02
4. MOE Design Guidelines for Drinking-Water Systems

STEP A - DETERMINE THE TYPE OF CONSTRUCTION

Type of Construction	Coefficient (C)	Value Selected (C)
Fire-resistive Construction (> 2 hours)	**0.6**	**0.6**
Non-combustible Construction	0.8	
Ordinary Construction	1.0	
Wood Frame Construction	1.5	

STEP B - DETERMINE THE FLOOR AREA

Floor/Level	Floor Area Per Level (sq. ft.)	Floor Area Per Level (m^2)	Fire Resistive Building	Protected Openings (one hour rating)	Area of Structure Considered (m^2)
Gross Floor Area (GFA) Ground Level:	19,009	1,766	YES	YES	1,766
GFA Level 2:	15,806	1,468			367
GFA Level 3:	16,115	1,497			374
GFA Level 4:	16,267	1,511			-
GFA Level 5:	14,950	1,389			-
GFA Level 6:	14,950	1,389			-
GFA Level 7:	14,950	1,389			-
GFA Level 8:	14,950	1,389			-
GFA Level 9:	7,631	709			-
GFA Level 10:	7,747	720			-
GFA Level 11:	7,747	720			-
GFA Level 12:	7,747	720			-
GFA Level 13:	7,747	720			-
GFA Level 14:	7,747	720			-
GFA Level 15:	7,747	720			-
GFA Level 16:	7,747	720			-
GFA Level 17:	7,747	720			-
GFA Level 18:	7,747	720			-
GFA Level 19:	7,747	720			-
GFA Level 20:	7,747	720			-
GFA Level 21:	7,747	720			-
GFA Level 22:	7,747	720			-
GFA Level 23:	7,747	720			-
GFA Level 24:	7,747	720			-
TOTAL FLOOR AREA (A):	**250,829**	**23,303**			**2,507**

PROJECT NAME: Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER: A001272
CLIENT: Windmill Development Group Ltd.
PROJECT STATUS: Preliminary Design (Assessment of Adequacy of Public Services)

FIRE FLOW ASSESSMENT

STEP C - DETERMINE THE HEIGHT IN STOREYS

Floor/Level	Number of Storeys	Percent of Floor Area Considered
Ground Level:	1	100%
Level 2:	1	25%
Level 3:	1	25%
Level 4:	1	-
Level 5:	1	-
Level 6:	1	-
Level 7:	1	-
Level 8:	1	-
Level 9:	1	-
Level 10:	1	-
Level 11:	1	-
Level 12:	1	-
Level 13:	1	-
Level 14:	1	-
Level 15:	1	-
Level 16:	1	-
Level 17:	1	-
Level 18:	1	-
Level 19:	1	-
Level 20:	1	-
Level 21:	1	-
Level 22:	1	-
Level 23:	1	-
Level 24:	1	-
HEIGHT IN STOREYS:	**24**	

STEP D - DETERMINE BASE FIRE FLOW (ROUND TO NEAREST 1,000 L/min)

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

Where:
F is the required fire flow in L/min
C is the coefficient related to the type of construction, and;
A is the total floor area of the building in m^2

Coefficient Related to Type of Construction (C) = **0.6**
Floor Area Considered (A) = **2,507 m^2**

REQUIRED (BASE) FIRE FLOW (F) = **7,000** **L/min** (Rounded to Nearest 1,000 L/min)

STEP E - DETERMINE THE INCREASE OR DECREASE FOR OCCUPANCY AND APPLY TO STEP D (STEP D x STEP E, DO NOT ROUND)

Occupancy Class	Occupancy Factor	Value Selected (C)
Non-combustible	0.75	
Limited combustible	0.85	
Combustible	**1.00**	**1.00**
Free burning	1.15	
Rapid burning	1.25	

REQUIRED (BASE) FIRE FLOW (F) = **7,000** **L/min** (Not rounded)

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

FIRE FLOW ASSESSMENT

STEP F - DETERMINE THE DECREASE, IF ANY, FOR AUTOMATIC SPRINKLER PROTECTION AND APPLY TO VALUE IN STEP D ABOVE (DO NOT ROUND)

Sprinkler System Design	Sprinkler Design Charge	Value Selected (C)	Total Charge
Automatic sprinkler system conforming to NFPA standards	-30%	Yes	-30%
Standard water supply	-10%	Yes	-10%
Fully supervised system	-10%	No	0%
TOTAL CHARGE FOR SPRINKLER SYSTEM			**-40%**

DECREASE FOR SPRINKLER PROTECTION =	**-2,800**	**L/min** (Not rounded)

STEP G - DETERMINE THE TOTAL INCREASE FOR EXPOSURES AND APPLY TO VALUE IN STEP D ABOVE (DO NOT ROUND)

Façade	Separation Distance (m)	Length-height Factor of Exposed Wall (m-storeys)	Assumed Construction of Exposed Wall of Adjacent Structure	Total Charge
North Façade	15.5	27	Fire Resistive or Ordinary with Unprotected Openings	10%
East Façade	4.4	26	Fire Resistive or Ordinary with Unprotected Openings	15%
South Façade	0.0	0	N/A	0%
West Façade	19.6	64	Fire Resistive or Ordinary with Unprotected Openings	13%
TOTAL CHARGE FOR EXPOSURES				**38%**

INCREASE FOR EXPOSURES =	**2,660**	**L/min** (Not rounded)

STEP H - DETERMINE FIRE FLOW INCLUDING ALL INCREASES AND REDUCTIONS ((STEP E + STEP F + STEP G, ROUND TO NEAREST 1,000 L/min)

TOTAL REQUIRED FIRE FLOW (RFF) =	**7,000**	**L/min** (Rounded to Nearest 1,000 L/min)
	116.67	**L/s**
	1,849	**USGPM**

NOTES/COMMENTS:

STEP A - DETERMINE THE TYPE OF CONSTRUCTION

1. No notes or comments

STEP B - DETERMINE THE FLOOR AREA

1. Assumed vertical openings and exterior vertical communications are properly protected in accordance with the National Building Code, thus only the area of the largest floor plus 25% of each of the two immediately adjoining floors accounted for per Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection, 2020

STEP C - DETERMINE THE HEIGHT IN STOREYS

1. Two levels of underground parking not considered as they are at least 50% below grade (Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection, 2020)

STEP D - DETERMINE BASE FIRE FLOW (ROUND TO NEAREST 1,000 L/min)

1. No notes or comments.

STEP E - DETERMINE THE INCREASE OR DECREASE FOR OCCUPANCY AND APPLY TO STEP D (STEP D x STEP E, DO NOT ROUND)

1. Occupancy selected assuming commercial establishment will fall under C-3 occupancy type.

STEP F - DETERMINE THE DECREASE, IF ANY, FOR AUTOMATIC SPRINKLER PROTECTION AND APPLY TO VALUE IN STEP D ABOVE (DO NOT ROUND)

1. Assumes sprinkler system will not be fully supervised.

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

FIRE FLOW ASSESSMENT

STEP G - DETERMINE THE TOTAL INCREASE FOR EXPOSURES AND APPLY TO VALUE IN STEP D ABOVE (DO NOT ROUND)

1. No notes or comments.

STEP H - DETERMINE FIRE FLOW INCLUDING ALL INCREASES AND REDUCTIONS ((STEP E + STEP F + STEP G, ROUND TO NEAREST 1,000 L/min)

1. No notes or comments.

Prepared by: Jaymeson Adams, P.Eng.
PEO# 100519478
Date: 2022-06-14

Verified by: Tim Kennedy, P.Eng.
PEO# 100173201
Date: 2022-07-04

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

FIRE FLOW ASSESSMENT

APPLICABLE DESIGN GUIDELINES:

1. Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection, 2020
2. Ottawa Design Guidelines - Water Distribution (2010) including Appendix H per ISTB-2018-02
3. City of Ottawa Technical Bulletin ISTB-2021-03 and ISTB-2018-02
4. MOE Design Guidelines for Drinking-Water Systems

STEP A - DETERMINE THE TYPE OF CONSTRUCTION

Type of Construction	Coefficient (C)	Value Selected (C)
Fire-resistive Construction (> 2 hours)	0.6	**0.8**
Non-combustible Construction	**0.8**	
Ordinary Construction	1.0	
Wood Frame Construction	1.5	

STEP B - DETERMINE THE FLOOR AREA

Floor/Level	Floor Area Per Level (sq. ft.)	Floor Area Per Level (m^2)	Fire Resistive Building	Protected Openings (one hour rating)	Area of Structure Considered (m^2)
Gross Floor Area (GFA) Ground Level:	19,009	1,766	YES	YES	1,766
GFA Level 2:	15,806	1,468			1,468
GFA Level 3:	16,115	1,497			749
GFA Level 4:	16,267	1,511			756
GFA Level 5:	14,950	1,389			694
GFA Level 6:	14,950	1,389			694
GFA Level 7:	14,950	1,389			694
GFA Level 8:	14,950	1,389			694
GFA Level 9:	7,631	709			354
GFA Level 10:	7,747	720			360
GFA Level 11:	7,747	720			-
GFA Level 12:	7,747	720			-
GFA Level 13:	7,747	720			-
GFA Level 14:	7,747	720			-
GFA Level 15:	7,747	720			-
GFA Level 16:	7,747	720			-
GFA Level 17:	7,747	720			-
GFA Level 18:	7,747	720			-
GFA Level 19:	7,747	720			-
GFA Level 20:	7,747	720			-
GFA Level 21:	7,747	720			-
GFA Level 22:	7,747	720			-
GFA Level 23:	7,747	720			-
GFA Level 24:	7,747	720			-
TOTAL FLOOR AREA (A):	**250,829**	**23,303**			**8,231**

PROJECT NAME: Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER: A001272
CLIENT: Windmill Development Group Ltd.
PROJECT STATUS: Preliminary Design (Assessment of Adequacy of Public Services)

FIRE FLOW ASSESSMENT

STEP C - DETERMINE THE HEIGHT IN STOREYS

Floor/Level	Number of Storeys	Percent of Floor Area Considered
Ground Level:	1	100%
Level 2:	1	100%
Level 3:	1	50%
Level 4:	1	50%
Level 5:	1	50%
Level 6:	1	50%
Level 7:	1	50%
Level 8:	1	50%
Level 9:	1	50%
Level 10:	1	50%
Level 11:	1	-
Level 12:	1	-
Level 13:	1	-
Level 14:	1	-
Level 15:	1	-
Level 16:	1	-
Level 17:	1	-
Level 18:	1	-
Level 19:	1	-
Level 20:	1	-
Level 21:	1	-
Level 22:	1	-
Level 23:	1	-
Level 24:	1	-
HEIGHT IN STOREYS:	**24**	

STEP D - DETERMINE BASE FIRE FLOW (ROUND TO NEAREST 1,000 L/min)

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

Where:
F is the required fire flow in L/min
C is the coefficient related to the type of construction, and;
A is the total floor area of the building in m^2

Coefficient Related to Type of Construction (C) = **0.8**
Floor Area Considered (A) = **8,231 m^2**

REQUIRED (BASE) FIRE FLOW (F) =	**16,000**	**L/min** (Rounded to Nearest 1,000 L/min)

STEP E - DETERMINE THE INCREASE OR DECREASE FOR OCCUPANCY AND APPLY TO STEP D (STEP D x STEP E, DO NOT ROUND)

Occupancy Class	Occupancy Factor	Value Selected (C)
Non-combustible	0.75	
Limited combustible	0.85	
Combustible	**1.00**	**1.00**
Free burning	1.15	
Rapid burning	1.25	

REQUIRED (BASE) FIRE FLOW (F) =	**16,000**	**L/min** (Not rounded)

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

FIRE FLOW ASSESSMENT

STEP F - DETERMINE THE DECREASE, IF ANY, FOR AUTOMATIC SPRINKLER PROTECTION AND APPLY TO VALUE IN STEP D ABOVE (DO NOT ROUND)

Sprinkler System Design	Sprinkler Design Charge	Value Selected (C)	Total Charge
Automatic sprinkler system conforming to NFPA standards	-30%	Yes	-30%
Standard water supply	-10%	Yes	-10%
Fully supervised system	-10%	No	0%
TOTAL CHARGE FOR SPRINKLER SYSTEM			**-40%**

DECREASE FOR SPRINKLER PROTECTION =	**-6,400**	**L/min** (Not rounded)

STEP G - DETERMINE THE TOTAL INCREASE FOR EXPOSURES AND APPLY TO VALUE IN STEP D ABOVE (DO NOT ROUND)

Façade	Separation Distance (m)	Length-height Factor of Exposed Wall (m-storeys)	Assumed Construction of Exposed Wall of Adjacent Structure	Total Charge
North Façade	15.5	27	Fire Resistive or Ordinary with Unprotected Openings	10%
East Façade	4.4	26	Fire Resistive or Ordinary with Unprotected Openings	15%
South Façade	0.0	0	N/A	0%
West Façade	19.6	64	Fire Resistive or Ordinary with Unprotected Openings	13%
TOTAL CHARGE FOR EXPOSURES				**38%**

INCREASE FOR EXPOSURES =	**6,080**	**L/min** (Not rounded)

STEP H - DETERMINE FIRE FLOW INCLUDING ALL INCREASES AND REDUCTIONS ((STEP E + STEP F + STEP G, ROUND TO NEAREST 1,000 L/min)

TOTAL REQUIRED FIRE FLOW (RFF) =	**16,000**	**L/min** (Rounded to Nearest 1,000 L/min)
	266.67	**L/s**
	4,227	**USGPM**

NOTES/COMMENTS:

STEP A - DETERMINE THE TYPE OF CONSTRUCTION

1. No notes or comments

STEP B - DETERMINE THE FLOOR AREA

1. Assumed some vertical openings in the building are unprotected, thus only the area of the two largest adjoining floors plus 50% of all floors immediately above them to a maximum of eight (8) floors accounted for per Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection, 2020

STEP C - DETERMINE THE HEIGHT IN STOREYS

1. Two levels of underground parking not considered as they are at least 50% below grade (Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection, 2020)

STEP D - DETERMINE BASE FIRE FLOW (ROUND TO NEAREST 1,000 L/min)

1. No notes or comments.

STEP E - DETERMINE THE INCREASE OR DECREASE FOR OCCUPANCY AND APPLY TO STEP D (STEP D x STEP E, DO NOT ROUND)

1. Occupancy selected assuming commercial establishment will fall under C-3 occupancy type.

STEP F - DETERMINE THE DECREASE, IF ANY, FOR AUTOMATIC SPRINKLER PROTECTION AND APPLY TO VALUE IN STEP D ABOVE (DO NOT ROUND)

1. Assumes sprinkler system will not be fully supervised.

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

FIRE FLOW ASSESSMENT

STEP G - DETERMINE THE TOTAL INCREASE FOR EXPOSURES AND APPLY TO VALUE IN STEP D ABOVE (DO NOT ROUND)

1. No notes or comments.

STEP H - DETERMINE FIRE FLOW INCLUDING ALL INCREASES AND REDUCTIONS ((STEP E + STEP F + STEP G, ROUND TO NEAREST 1,000 L/min)

1. No notes or comments.

Prepared by: Jaymeson Adams, P.Eng. PEO# 100519478 Date: 2022-06-14

Verified by: Tim Kennedy, P.Eng. PEO# 100173201 Date: 2022-07-04

CIMA+

T: 613-860-2462
110-240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

PROPOSED WATER SERVICE CONNECTION LOCATION(S)

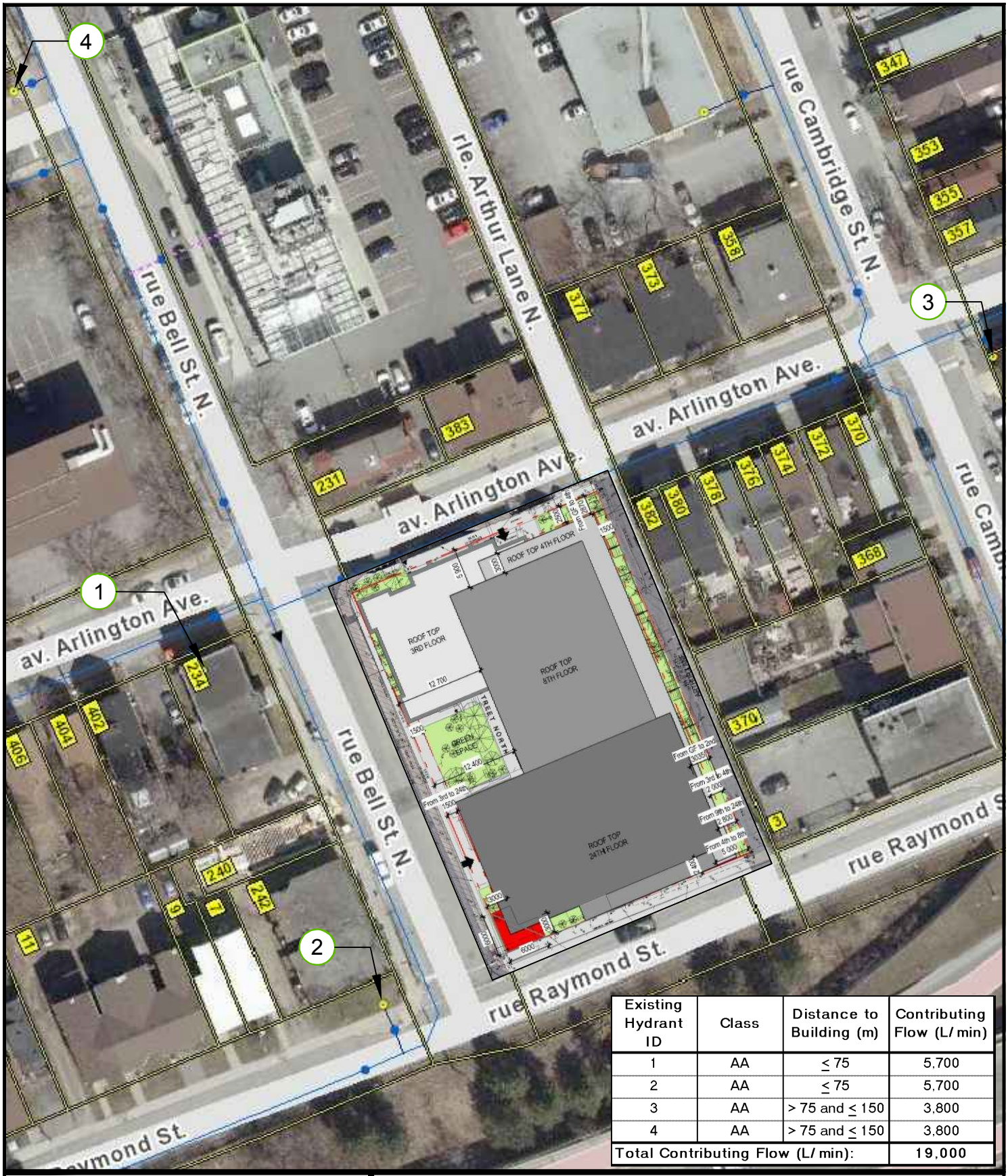
DRAWN BY:	DESIGNED BY:	APPROVED BY:	SCALE:	DATE:	PROJECT No:	SHEET No:	FIGURE No:
G. Joseph	----	T. Kennedy	NTS	2022/07/28	A001272	1 of 1	1

CIMA+

T: 613-860-2462
110-240 Catherine Street, Ottawa, ON K2P 2G8 CANADA

EXPOSURE SEPARATION DISTANCES

DRAWN BY:	DESIGNED BY:	APPROVED BY:	SCALE:	DATE:	PROJECT No:	SHEET No:	FIGURE No:
G. Joseph	----	T. Kennedy	NTS	2022/07/28	A001272	1 of 1	2



Existing Hydrant ID	Class	Distance to Building (m)	Contributing Flow (L/ min)
1	AA	≤ 75	5,700
2	AA	≤ 75	5,700
3	AA	> 75 and ≤ 150	3,800
4	AA	> 75 and ≤ 150	3,800
Total Contributing Flow (L/ min):			19,000

T: 613-860-2462
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

FIRE HYDRANT COVERAGE

DRAWN BY:	DESIGNED BY:	APPROVED BY:	SCALE:	DATE:	PROJECT No:	SHEET No:	FIGURE No:
G. Joseph	----	T. Kennedy	NTS	2023/03/10	A001272	1 of 1	3

E

Appendix E
Sanitary Servicing Design Calculations

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

WASTEWATER PEAK FLOW DETERMINATION

APPLICABLE DESIGN GUIDELINES:

1. City of Ottawa Sewer Design Guidelines, 2012

2. City of Ottawa Technical Bulletin ISTB-2018-01

DOMESTIC CONTRIBUTIONS:

RESIDENTIAL DESIGN CRITERIA:

Residential Average Flow: (1) 280 L/c/day

Residential Peak Factor (P.F.): Harmon Equation (Min 2.0 and Max 4.0)

$$P.F. = 1 + \left(\frac{14}{4 + \left(\frac{P}{1000} \right)^{\frac{1}{2}}} \right) * K$$

where:

P=Population

K=Correction Factor =0.8

Per Unit Populations:

Table 4.2 Per Unit Populations

Unit Type	Persons Per Unit
Single Family	3.4
Semi-detached	2.7
Duplex	2.3
Townhouse (row)	2.7
Apartments:	
Bachelor	1.4
1 Bedroom	1.4
2 Bedroom	2.1
3 Bedroom	3.1
Average Apt.	1.8

AVERAGE FLOW - DOMESTIC:

Unit Type	Number of Units	Persons Per Unit	Population	Average Flow (L/s)
Bachelor Apartments	28	1.4	39	0.13
1-Bedroom Apartments	120	1.4	168	0.54
1-Bedroom + Den Apartments	19	1.4	27	0.09
2-Bedroom Apartments	98	2.1	206	0.67
2-Bedroom + Den Apartments	7	2.1	15	0.05
3-Bedroom Apartments	2	3.1	6	0.02
Total	274		461	**1.49**

PEAK FLOW - DOMESTIC:

Population: (2)	461	persons
Average Dry Weather Flow: (3) = (1) x (2)	1.49	L/s
Peaking Factor (P.F.): (4)	3.39	
Peak Domestic Flow: (5) = (3) x (4)	**5.07**	L/s

COMMERCIAL & INSTITUTIONAL CONTRIBUTIONS:

COMMERCIAL AND INSTITUTIONAL DESIGN CRITERIA:

Commercial Average Flow: (6)	28,000	L/gross ha/d
Commercial Peak Factor:	1.5	if commercial contribution >20%, otherwise use 1.0

AVERAGE FLOW - COMMERCIAL:

Contributing Commercial Area: (7)	0.069	gross ha (including activities room, gym and yoga)
Average Dry Weather Flow: (8) = (6) x (7)	0.02	L/s

PEAK FLOW - COMMERCIAL:

Percent Commercial Area Contribution:	5%	(GFA/Commercial Floor Area)
Peaking Factor: (9)	1.00	
Peak Commercial Flow: (10) = (8) x (9)	**0.02**	L/s

EXTRANEOUS FLOW CONTRIBUTION - INFLOW AND INFILTRATION:

EXTRANEOUS DESIGN CRITERIA:

Dry Weather Infiltration:	0.05	L/s/effective gross ha (for all areas)
Wet Weather Infiltration:	0.28	L/s/effective gross ha (for all areas)

PEAK FLOW - EXTRANEOUS:

Effective Gross Area: (11)	0.22	ha
Total Infiltration Allowance: (12)	0.33	L/s/effective gross ha (for all areas)
Peak Extraneous Flow: (13) = (11) x (12)	**0.07**	L/s

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

WASTEWATER PEAK FLOW DETERMINATION

Total Estimated Avg. Dry Weather Flow Rate:	**1.52**	**L/s**
Total Estimated Peak Dry Weather Flow Rate:	**5.09**	**L/s**
Total Estimated Peak Wet Weather Flow Rate:	**5.16**	**L/s**

Prepared by: Jaymeson Adams, P.Eng. Date: 2022/06/13
PEO# 100519478

Verified by: Tim Kennedy, P.Eng. Date: 2023/03/10
PEO# 100173201

F

Appendix F
Storm Servicing and Stormwater Management Calculations

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

STORM RUNOFF COEFFICIENT DETERMINATION (PRE-DEVELOPMENT)

APPLICABLE DESIGN GUIDELINES:

1. City of Ottawa Sewer Design Guidelines, 2012

PRE-DEVELOPMENT RUNOFF COEFFICIENT DETERMINATION:

Area	Pervious Area m²	Pervious Area Runoff Coefficient	Impervious Area m²	Impervious Area Runoff Coefficient	Total Area m²	Weighted Runoff Coefficient (2-year)	Weighted Runoff Coefficient (100-year)
A1	12	0.20	2121	0.90	2133	**0.90**	**1.00**
TOTAL	**12**	**0.20**	**2121**	**0.90**	**2133**	**0.90**	**1.00**

NOTES:

For 25 year storms add 10% to C value
For 50 year storms add 20% to C value
For 100 year storms add 25% to C value

Prepared by: Jaymeson Adams, P.Eng. PEO# 100519478 **Date:** 2022/07/07

Verified by: Tim Kennedy, P.Eng. PEO# 100173201 **Date:** 2022/07/21

https://cimao365.sharepoint.com/sites/A001272-Redevelopment384ArlingtonAvenue/Documents partages/General/300_DESIGN/360_Calc/220613_Adequacy of Servicing Calculations/02_STM/1. Pre-development/[1_220706_ Storm Runoff Coefficients_Pre-dev_revuJA.xlsx]TABLEAU

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

STORM PRE-DEVELOPMENT FLOW

APPLICABLE DESIGN GUIDELINES:

1. City of Ottawa Sewer Design Guidelines, 2012

PRE-DEVELOPMENT FLOW DETERMINATION:

DESIGN CRITERIA:

Design Storm (year):	2	
IDF Regression Constants: (a)	732.951	
(b)	6.199	
(c)	0.810	
IDF Curve Equation (mm/hr):	$I = a / (\text{Time in min} + b)^c$	
Rational Formula (L/s):	Q = 2.78C*I*A	where: Q = Flow (L/s) C = Runoff Coefficient I = Rainfall Intensity (mm/hr) A = Area (hectares)

ALLOWABLE RELEASE RATE - SUMMARY:

Catchment ID	Area (A) ha	Runoff Coefficient (C)	Time of Concentration (tc) min	Intensity (I) mm/hr	Allowable Release Rate (Q) L/s	Release Flow Per Unit Area (Q/ha) L/s/ha
A1	0.213	0.40	10	76.81	**18.2**	**85.3**
Total	**0.213**				**18.2**	**85.3**

NOTES:

1. Calculated Time of Concentration (tc) using Bransby Williams (C > 0.4) is 3 min. Minimum Tc of 10 min used per City Standard.
2. IDF Parameters per City of Ottawa Sewer Design Guidelines, 2012 (Macdonald-Cartier International Airport)

Prepared by: Jaymeson Adams, P.Eng. Date: 2022-07-06
PEO# 100519478

Verified by: Tim Kennedy, P.Eng. Date: 2022-07-06
PEO# 100173201

PROJECT NAME: Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER: A001273
CLIENT: Windmill Development Group Ltd.
PROJECT STATUS: Preliminary Design (Assessment of Adequacy of Public Services)

STORM PRE-DEVELOPMENT FLOW - EXISTING SITE FLOWS

APPLICABLE DESIGN GUIDELINES:

1. City of Ottawa Sewer Design Guidelines, 2012

PRE-DEVELOPMENT FLOW DETERMINATION - 2-YEAR EVENT:

DESIGN CRITERIA:

Design Storm (year):	2	
IDF Regression Constants: (a)	732.951	
(b)	6.199	
(c)	0.810	
IDF Curve Equation (mm/hr):	$I = a / (\text{Time in min} + b)^c$	
Rational Formula (L/s):	Q = 2.78C*I*A	where: Q = Flow (L/s) C = Runoff Coefficient I = Rainfall Intensity (mm/hr) A = Area (hectares)

EXISTING RELEASE RATE - SUMMARY:

Catchment ID	Area (A) ha	Runoff Coefficient (C)	Time of Concentration (tc) min	Intensity (I) mm/hr	Release Rate (Q) L/s	Release Flow Per Unit Area (Q/ha) L/s/ha
Subject Site	0.213	0.90	10	76.81	**40.96**	**192.01**

PRE-DEVELOPMENT FLOW DETERMINATION - 5-YEAR EVENT:

DESIGN CRITERIA:

Design Storm (year):	5	
IDF Regression Constants: (a)	998.071	
(b)	6.053	
(c)	0.814	

EXISTING RELEASE RATE - SUMMARY:

Catchment ID	Area (A) ha	Runoff Coefficient (C)	Time of Concentration (tc) min	Intensity (I) mm/hr	Release Rate (Q) L/s	Release Flow Per Unit Area (Q/ha) L/s/ha
Subject Site	0.213	0.90	10	104.19	**55.56**	**260.48**

PRE-DEVELOPMENT FLOW DETERMINATION - 100-YEAR EVENT:

DESIGN CRITERIA:

Design Storm (year):	100	
IDF Regression Constants: (a)	1735.688	
(b)	6.014	
(c)	0.820	

EXISTING RELEASE RATE - SUMMARY:

Catchment ID	Area (A) ha	Runoff Coefficient (C)	Time of Concentration (tc) min	Intensity (I) mm/hr	Release Rate (Q) L/s	Release Flow Per Unit Area (Q/ha) L/s/ha
Subject Site	0.213	1.00	10	178.56	**105.80**	**496.00**

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001273
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

STORM PRE-DEVELOPMENT FLOW - EXISTING SITE FLOWS

NOTES:

1. Calculated Time of Concentration (tc) using Bransby Williams (C > 0.4) is 3 min. Minimum Tc of 10 min used per City Standard.
2. Calculated runoff coefficient (C) equal to 0.88 for 2-year event and 1.00 for 100-year event.
3. IDF Parameters per City of Ottawa Sewer Design Guidelines, 2012 (Macdonald-Cartier International Airport)

Prepared by: Jaymeson Adams, P.Eng. Date: 2022/07/07
PEO# 100519478

Verified by: Tim Kennedy, P.Eng. Date: 2022/07/21
PEO# 100173201

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

STORM RUNOFF COEFFICIENT DETERMINATION (POST-DEVELOPMENT)

APPLICABLE DESIGN GUIDELINES:

1. City of Ottawa Sewer Design Guidelines, 2012

POST-DEVELOPMENT RUNOFF COEFFICIENT DETERMINATION:

Area	Pervious Area m²	Pervious Area Runoff Coefficient	Impervious Area m²	Impervious Area Runoff Coefficient	Total Area m²	Weighted Runoff Coefficient (2-year)	Weighted Runoff Coefficient (100-year)
A1	0	0.20	2133	0.90	2133	**0.90**	**1.00**
TOTAL	**0**	**0.20**	**2133**	**0.90**	**2133**	**0.90**	**1.00**

NOTES:

For 25 year storms add 10% to C value
For 50 year storms add 20% to C value
For 100 year storms add 25% to C value

Prepared by: Jaymeson Adams, P.Eng. Date: 2022/07/07
PEO# 100519478

Verified by: Tim Kennedy, P.Eng. Date: 2022/07/21
PEO# 100173201

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

RETENTION CALCULATIONS FOR SITE AREA - HALF RELEASE RATE

APPLICABLE DESIGN GUIDELINES:

1. City of Ottawa Sewer Design Guidelines, 2012

REQUIRED STORAGE VOLUME DETERMINATION:

DESIGN CRITERIA:

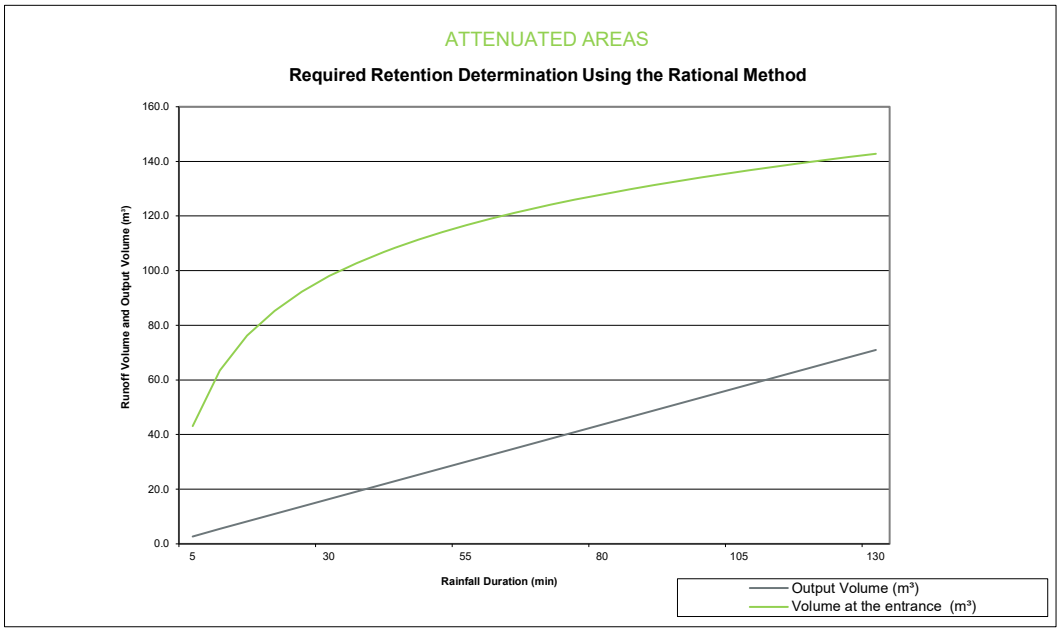
Rainfall Station:	City of Ottawa Sewer Design Guidelines, 2012 (Macdonald-Cartier Airport)
Release Rate Per Unit Area (Q/ha):	42.66 L/s/ha
Area (A):	0.21 ha
Runoff Coefficient (C):	1.00
Rainfall Event:	100 year
Release Rate (Q):	0.0091 m³/s
Discharge Factor (K):	1

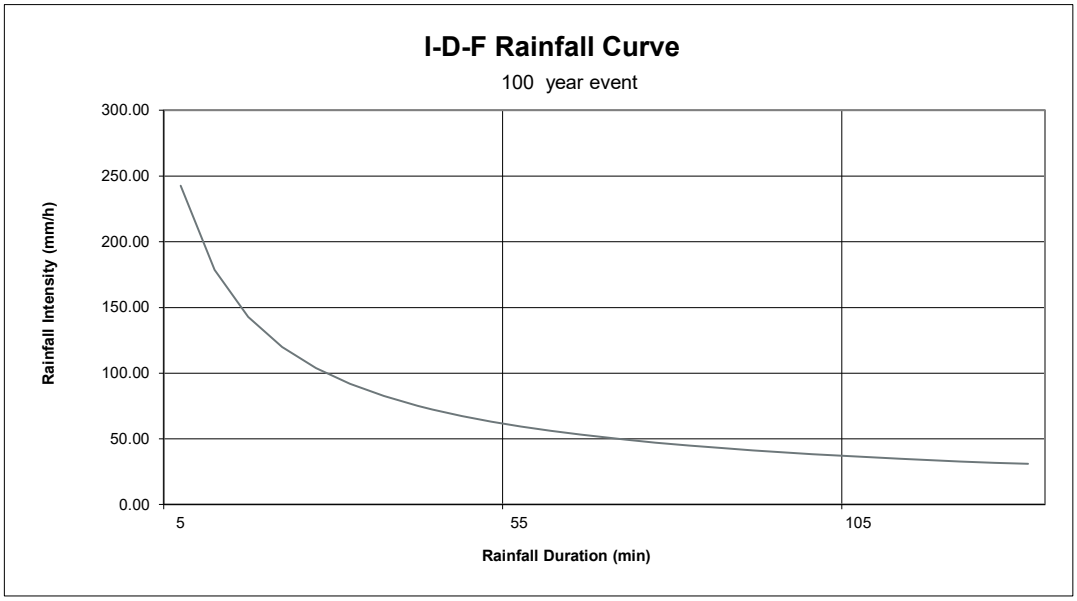
Regression Constants	2 year	5 year	10 year	25 year	50 year	100 year
A	732.951	998.071	1174.184	1402.844	1569.58	1735.688
B	6.199	6.053	6.014	6.018	6.014	6.014
C	0.810	0.814	0.816	0.819	0.82	0.82

Required Retention Volume: **86.5** m³

Rainfall Duration (min) *T* (1)	Rainfall Intensity (mm/h) *I* (2)	Runoff Volume (m³) *CIAT* (3)	Output Volume (m³) *kQT* (4)	Retention Volume (m³) *(3)-(4)* (5)
5.0	242.7	43.1	2.7	40.4
10.0	178.6	63.5	5.5	58.0
15.0	142.9	76.2	8.2	68.0
20.0	120.0	85.3	10.9	74.4
25.0	103.8	92.3	13.7	78.6
30.0	91.9	98.0	16.4	81.6
35.0	82.6	102.7	19.1	83.6
40.0	75.1	106.9	21.8	85.0
45.0	69.1	110.5	24.6	85.9
50.0	64.0	113.7	27.3	86.4
55.0	**59.6**	**116.6**	**30.0**	**86.5**
60.0	55.9	119.2	32.8	86.5
65.0	52.6	121.7	35.5	86.2
70.0	49.8	123.9	38.2	85.7
75.0	47.3	126.0	41.0	85.0
80.0	45.0	128.0	43.7	84.3
85.0	43.0	129.8	46.4	83.4
90.0	41.1	131.5	49.1	82.4
95.0	39.4	133.2	51.9	81.3
100.0	37.9	134.7	54.6	80.1
105.0	36.5	136.2	57.3	78.9
110.0	35.2	137.7	60.1	77.6
115.0	34.0	139.0	62.8	76.2
120.0	32.9	140.3	65.5	74.8
125.0	31.9	141.6	68.3	73.3
130.0	30.9	142.8	71.0	71.8
Design Volume:				**86.5**

Init._____





Prepared by: Jaymeson Adams, P.Eng. Date: 2022/07/07
PEO# 100519478

Verified by: Tim Kennedy, P.Eng. Date: 2022/07/11
PEO# 100173201

Init._____

PROJECT NAME:	Redevelopment of 384 Arlington Ave
CIMA+ PROJECT NUMBER:	A001272
CLIENT:	Windmill Development Group Ltd.
PROJECT STATUS:	Preliminary Design (Assessment of Adequacy of Public Services)

RETENTION CALCULATIONS FOR SITE AREA

APPLICABLE DESIGN GUIDELINES:

1. City of Ottawa Sewer Design Guidelines, 2012

REQUIRED STORAGE VOLUME DETERMINATION:

DESIGN CRITERIA:

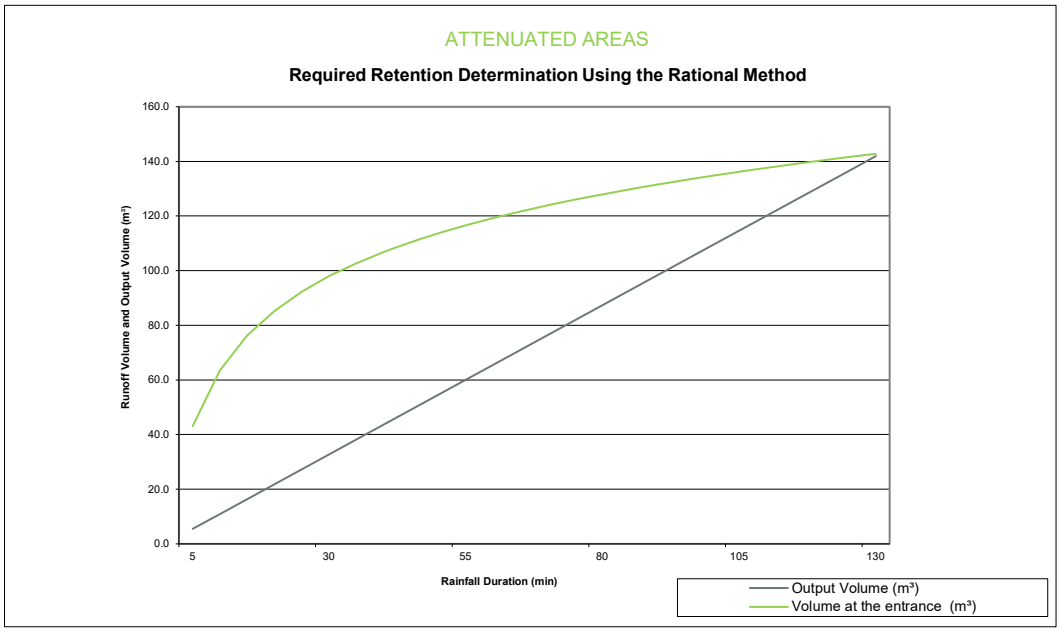
Rainfall Station:	City of Ottawa Sewer Design Guidelines, 2012 (Macdonald-Cartier Airport)
Release Rate Per Unit Area (Q/ha):	85.33 L/s/ha
Area (A):	0.21 ha
Runoff Coefficient (C):	1.00
Rainfall Event:	100 year
Release Rate (Q):	0.0182 m³/s
Discharge Factor (K):	1

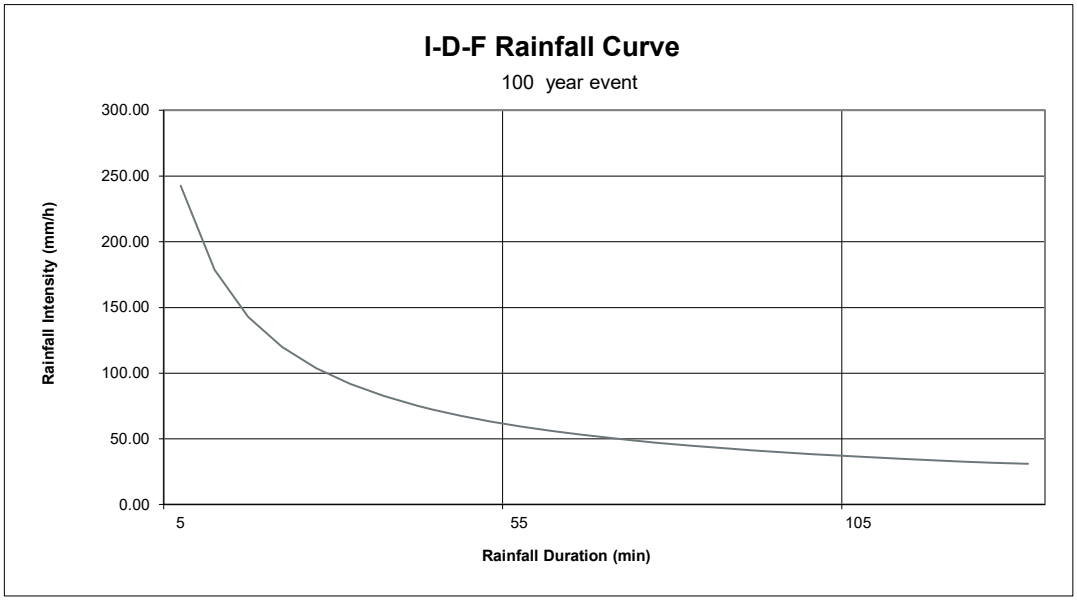
Regression Constants	2 year	5 year	10 year	25 year	50 year	100 year
A	732.951	998.071	1174.184	1402.844	1569.58	1735.688
B	6.199	6.053	6.014	6.018	6.014	6.014
C	0.810	0.814	0.816	0.819	0.82	0.82

Required Retention Volume: **65.2** m³

Rainfall Duration (min) *T* (1)	Rainfall Intensity (mm/h) *I* (2)	Runoff Volume (m³) *CIAT* (3)	Output Volume (m³) *kQT* (4)	Retention Volume (m³) *(3)-(4)* (5)
5.0	242.7	43.1	5.5	37.7
10.0	178.6	63.5	10.9	52.6
15.0	142.9	76.2	16.4	59.8
20.0	120.0	85.3	21.8	63.4
25.0	103.8	92.3	27.3	65.0
30.0	**91.9**	**98.0**	**32.8**	**65.2**
35.0	82.6	102.7	38.2	64.5
40.0	75.1	106.9	43.7	63.2
45.0	69.1	110.5	49.1	61.3
50.0	64.0	113.7	54.6	59.1
55.0	59.6	116.6	60.1	56.5
60.0	55.9	119.2	65.5	53.7
65.0	52.6	121.7	71.0	50.7
70.0	49.8	123.9	76.4	47.5
75.0	47.3	126.0	81.9	44.1
80.0	45.0	128.0	87.4	40.6
85.0	43.0	129.8	92.8	37.0
90.0	41.1	131.5	98.3	33.3
95.0	39.4	133.2	103.7	29.4
100.0	37.9	134.7	109.2	25.5
105.0	36.5	136.2	114.7	21.6
110.0	35.2	137.7	120.1	17.5
115.0	34.0	139.0	125.6	13.4
120.0	32.9	140.3	131.0	9.3
125.0	31.9	141.6	136.5	5.1
130.0	30.9	142.8	142.0	0.8
Design Volume:				**65.2**

Init._____





Prepared by: Jaymeson Adams, P.Eng. Date: 2022/07/07
PEO# 100519478

Verified by: Tim Kennedy, P.Eng. Date: 2022/07/21
PEO# 100173201

Init._____