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ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES

FOR

WINDMILL DEVELOPMENT GROUP LTD.
1040 BANK STREET

CITY OF OTTAWA

MAY 2017 – REV 1

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
FOR
WINDMILL DEVELOPMENT GROUP LTD.

1040 BANK STREET

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ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
FOR
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1040 BANK STREET
MAY 2017 – REV 1

CITY OF OTTAWA

1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained to prepare an Assessment of Adequacy of Public Services report in support of the application for a Zoning By-law Amendment (ZBLA) of a contemplated residential development adjacent to the existing Southminster United Church. The subject property is bound by Bank Street, Aylmer Avenue and Galt Street, as illustrated in ***Figure 1***.

The property is located within the City of Ottawa urban boundary, in the Capital ward. Comprised of a single parcel of land, the subject property measures approximately ***0.32ha*** and is zoned as Minor Institutional (I1A).

Figure 1: Site Location

The proposed ZBLA would allow for the development of a 6-storey mid-rise residential building and four townhomes to the west of the existing Southminster church. The contemplated development would also include one storey of underground parking, with access from Galt Street. The residential component is comprised of approximately ***18 units***.

The proposed limits of work would only encompass the western edge of the property, where the existing 2-storey events hall is located. The existing Hall would be demolished to allow for the residential development. No changes are proposed for the eastern portion of the property or the existing church.

It is contemplated to severe the property at the limits of works such that the contemplated residential re-development and existing church are separate properties. A copy of the conceptual site plan is included in ***Drawings/Figures***.

The objective of this report is to provide sufficient detail to demonstrate that the contemplated residential development is supported by existing municipal services.

1.1 Existing Conditions

The site consists of the existing Southminster church and attached 2-storey Hall with associated parking, and landscape areas. Overhead hydro and telecommunication wires exist along the south side of Aylmer Avenue and the east side of Galt Street.

Sewer and watermain mapping collected from the City of Ottawa indicate that the following services exist across the property frontages within the adjacent municipal right-of-ways:

Bank Street

- A 300mm diameter watermain
- A 300mm storm sewer
- A 300mm sanitary sewer

Aylmer Avenue

- A 200mm diameter watermain
- A 300mm storm sewer
- A 300mm sanitary sewer

Galt Street

- A 150mm diameter watermain
- A 300mm storm sewer
- A 300mm sanitary sewer

1.2 Required Permits / Approvals

The contemplated development is subject to the site plan control approval process. The City of Ottawa must approve the engineering design drawings and reports prior to the issuance of site plan control.

The subject property contains existing trees. Development, which may require removal of existing trees, may be subject to the City of Ottawa Urban Tree Conservation By-law No. 2009-200.

The contemplated development is a single parcel of land that is not industrial and would outlet to a storm sewer. The subject site may be severed along the limits of the residential development, it is anticipated that stormwater management will only service the residential development. Runoff from the existing church property would not be serviced by the proposed stormwater management system. As a result, the stormwater management system is exempt from sections 53(1) and (3) of the Ontario Water Resources Act under Ontario Regulation 525/98.

1.3 Pre-consultation

Pre-consultation correspondence, along with the servicing guidelines checklist are located in ***Appendix A***.

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

The following studies were utilized in the preparation of this report.

- **Ottawa Sewer Design Guidelines**,
  City of Ottawa, *SDG002***,** October 2012
  (City Standards)

- **Ottawa Design Guidelines – Water Distribution**
  City of Ottawa, July 2010.
  (Water Supply Guidelines)

  - **Technical Bulletin ISD-2010-2**
    City of Ottawa, December 15, 2010.
    (*ISD-2010-2*)

  - **Technical Bulletin ISDTB-2014-02**
    City of Ottawa, May 27, 2014.
    (*ISDTB-2014-02*)

- **Design Guidelines for Sewage Works,**
  Ministry of the Environment, 2008.
  (MOE* Design Guidelines*)

- **Stormwater Planning and Design Manual,**
  Ministry of the Environment, March 2003.
  (SWMP Design Manual)

- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch,
  January 1, 2010 Update
  (OBC)

- **Water Supply for Public Fire Protection**
  Fire Underwriters Survey, 1999.
  (FUS)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 1W pressure zone as shown by the Pressure Zone map in ***Appendix B***.

It is anticipated that the church is currently serviced by the existing 200mm watermain within the Aylmer Avenue right-of-way. There is also a local 300mm diameter watermain within the Bank Street right-of-way and an existing 150mm watermain within the Galt Street right-of-way. Existing services in the surrounding areas are shown by the City Water Distribution Mapping in ***Appendix B***.

3.2 Water Supply Servicing Design

It is anticipated that the contemplated development will be serviced via a connection to the existing 150mm diameter watermain within Galt Street.

Table 1 summarizes the ***Water Supply Guidelines*** employed in the preparation of the preliminary water demand estimate.

Table 1
Water Supply Design Criteria

Design Parameter	Value
Residential Townhouse	2.7 P/unit
Residential Average Apartment	1.8 P/unit
Residential Average Daily Demand	350 L/d/P
Residential Maximum Daily Demand	4.9 x Average Daily *
Residential Maximum Hourly	7.4 x Average Daily *
Church with Kitchen Facility	30.0 L/seat/d
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350kPa and 480kPa
During normal operating conditions pressure must not drop below	275kPa
During normal operating conditions pressure must not exceed	552kPa
During fire flow operating pressure must not drop below	140kPa

Daily average based on Appendix 4-A from **Water Supply Guidelines*
*** Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.*
-Table updated to reflect ISD-2010-2

Table 2 summarizes the anticipated water supply demand and boundary conditions for the contemplated development based on the ***Water Supply Guidelines***.

Table 2
Water Demand and Boundary Conditions
Proposed Conditions

Design Parameter	Anticipated Demand[1] from Southminster Church (L/min)	Anticipated Demand[1] from Re-development (L/min)	Boundary Condition[2] (m H_2O / kPa)	
Average Daily Demand	11.5	9.0	43.7	428.7
Max Day + Fire Flow (Townhomes)	17.2	44.1 + 10,000	11,100 L/min @ 140 kPa	
Max Day + Fire Flow (Mid-Rise Residence)	17.2	44.1 + 9,000		
Peak Hour	30.9	66.5	31.6	310.0

1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.
2) Boundary conditions supplied by the City of Ottawa for the demands indicated in the correspondence; assumed ground elevation 73.3m. See ***Appendix B.***

Fire flow requirements are to be determined in accordance with Local Guidelines (***FUS***), City of Ottawa ***Water Supply Guidelines***, and the Ontario Building Code.

Required fire flow has been established, using the ***FUS***, for the contemplated 6-storey residential building and the 3-storey townhomes. A fire flow of ***10,000 L/min*** for the townhomes and ***9,000 L/min*** for the 6-storey mid-rise residence was estimated using the assumptions provided by the Architect, see ***Appendix A*** for correspondence. These assumptions are summarized below:

- Type of construction – Wood frame for the townhomes and non-combustible construction for the mid-rise residence
- Occupancy type – Limited combustible for the townhomes and the mid-rise residence
- Sprinkler Protection – Non-sprinklered system for the townhomes and sprinklered system for the mid-rise residence

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand as indicated in the boundary request correspondence included in ***Appendix A***.

The City provided both the anticipated minimum and maximum water pressures, as well as the estimated water pressure during fire flow as indicated by the correspondence in ***Appendix A***. The minimum and maximum pressures fall within the required range identified in ***Table 1***. Based on boundary conditions provided by the City, ***11,100 L/min*** at ***140 kPa*** is available for fire flow.

It is anticipated the church will continue to be serviced by the existing connection to Aylmer Avenue.

3.3 Water Supply Conclusion

The anticipated water demand was submitted to the City of Ottawa for establishing boundary conditions. As demonstrated by ***Table 1***, based on the City's model, the municipal system is capable of delivering water within the ***Water Supply Guidelines*** pressure range. Based on the FUS calculation, the subject site has adequate fire protection.

The contemplated water supply design conforms to all relevant ***City Guidelines*** and Policies.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject site lies within the Rideau River Interceptor catchment area, as shown by the Sewer Collection System map included in ***Appendix C***. It is anticipated that the church is currently serviced by the existing 300mm sanitary sewer within Aylmer Avenue, with an estimated peak wet weather flow of ***0.34 L/s.***

A sanitary capacity analysis was completed for the local sanitary sewer extending from the Aylmer Avenue that discharges to the 1200mm trunk sanitary sewer within Bank Street. The most restrictive section of sewer within Bank Street between Aylmer Avenue and Euclid Avenue has an available capacity of ***55.1 L/s.*** Refer to ***Appendix C*** for the sanitary design sheet and existing sanitary drainage figure.

4.2 Wastewater Design

It is anticipated that the contemplated residential development will be serviced via a connection to the existing 300mm sanitary sewer within Galt Street.

Table 3 summarizes the ***City Standards*** employed in the design of the proposed wastewater sewer system.

Table 3
Wastewater Design Criteria

Design Parameter	Value
Residential Townhouse	2.7 P/unit
Residential Average Apartment	1.8 P/unit
Average Daily Demand	350 L/d/P
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0
Church with Kitchen Facility	30 L/seat/d
Infiltration and Inflow Allowance	0.28 L/s/ha
Commercial Peaking Factor	1.50 per City of Ottawa Sewer Design Guidelines Appendix 4B
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	250mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012.	

Table 4 demonstrates the anticipated peak flow from the contemplated development. See ***Appendix C*** for associated calculations.

Table 4
Summary of Estimated Peak Wastewater Flow

Design Parameter	Total Flow from Southminster Church (L/s)	Total Flow from Re-development (L/s)
Estimated Average Dry Weather Flow	0.19	0.15
Estimated Peak Dry Weather Flow	0.29	0.60
Estimated Peak Wet Weather Flow	0.34	0.64

The estimated sanitary flow based on the concept plan provide in ***Drawings/Figures*** anticipates a peak wet weather flow of ***0.34 L/s*** from the Church and ***0.64 L/s*** from the 6-storey mid-rise residence and the townhomes.

As shown in the analysis of the existing sanitary sewers, the existing infrastructure can convey the additional ***0.64 L/s*** anticipated wastewater flow from the subject site.

It is anticipated that the church will continue to be serviced through the existing sanitary connection to Aylmer Avenue.

4.3 Wastewater Servicing Conclusions

The site is tributary to the Rideau River Interceptor; based on the existing sanitary analysis, the local sanitary sewers have the capacity to convey the additional ***0.64 L/s*** of flow anticipated from the proposed development. It is anticipated that the church will continue to be serviced through the existing connection to Aylmer Avenue.

The proposed wastewater design conforms to all relevant ***City Standards***.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater flows from the existing church and hall are assumed to release uncontrolled flows and discharge into the catchbasins within Bank Street, Echo Drive, Aylmer Avenue and Galt Street. The drainage directed to Echo Drive from the existing church discharges directly to the Rideau Canal. Drainage directed to Bank Street, Aylmer and Galt Street are conveyed south within local storm sewers and eventually discharge to the Rideau River.

Refer to the drainage figure in ***Appendix D*** for further detail on the existing drainage patterns.

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system located within the Ottawa Central sub-watershed, which discharges to the Rideau River. As such, approvals for contemplated development within this area are under the approval authority of the City of Ottawa.

Flows that influence the watershed in which the subject property is located are further reviewed by the principal authority. The subject property is located within the Ottawa River watershed, and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA).

A time of concentration for the existing site was calculated to be less than 1 minute, because runoff is quickly released to eavestroughs and downspouts and directed overland off-site. Calculations for the time of concentration can be found in ***Appendix D.*** A minimum time of concentration of 10 minutes was used as per ***City Standards.***

The estimated pre-development peak flows for the 2, 5, and 100-year are summarized in ***Table 5***.

Table 5
Summary of Existing Peak Storm Flow Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate to Echo Drive and Bank Street (L/s)	Estimated Peak Flow Rate to Aylmer Avenue and Bank Street (L/s)	Estimated Peak Flow Rate from Limits of Re-Development (L/s)
2-year	9.6	15.8	24.5
5-year	13.0	21.5	33.2
100-year	27.9	46.0	71.1

5.2 Post-development Stormwater Management Target

Stormwater management requirements for the contemplated development were reviewed with the City of Ottawa, where the development is required to:

- Attenuate to an allowable release rate based on a Rational Method Coefficient of 0.50, employing the City of Ottawa IDF parameters for a 5-year storm with a calculated time of concentration equal to or greater than 10 minutes;
- Control all storms up to and including the City of Ottawa 100-year design event are to be attenuated on site;
- Stormwater management will only be employed within the limits of re-development; the existing church will continue to drain as existing to Echo Drive, Aylmer Avenue and Bank Street;
- A pre-consultation email was sent to the RVCA, and no response was received at the time of this publication. It is anticipated that stormwater quality controls are not required since runoff from the development would be primarily from the rooftop and landscape areas, and there is no contemplated surface parking.

5.3 Proposed Stormwater Management System

It is contemplated that the stormwater outlet for the townhomes and the 6-storey residence within the limits of re-development will be from a connection to the 300mm diameter storm sewer within Galt Street. The stormwater flows from the church outside of the limits of re-development will remain the same as the existing conditions, as uncontrolled flow that will discharge to catch basins within Aylmer Avenue, Bank Street and Echo Drive.

To meet the stormwater objectives the mid-rise residence and townhomes may contain a combination of roof top flow attenuation along with cistern storage. ***Table 6*** estimates post-development flow rates assuming ***10%*** of the area will be uncontrolled. These areas will be compensated for in areas with flow attenuation controls.

Table 6
Stormwater Flow Rate Summary

Control Area	5-Year Release Rate (L/s)	5-Year Storage (m^3)	100-Year Release Rate (L/s)	100-Year Storage (m^3)
Limits of Re-development				
Unattenuated Areas	3.52	0.0	6.70	0.0
Attenuated Areas	6.78	17.60	12.84	33.3
Total	**10.3**	**17.58**	**19.54**	**33.3**
Existing Church				
To Echo	**0**	**0**	**0**	**0**
To Aylmer / Bank	**0**	**0**	**0**	**0**

It is anticipated that approximately ***33.3 m^3*** of storage will be required on site to attenuate flow to the established release rate of ***19.5 L/s***; storage calculations are contained within ***Appendix D***.

5.4 Stormwater Servicing Conclusions

Post development stormwater runoff will be required to be restricted to the allowable target release rate for storm events up to and including the 100-year storm in accordance with City of Ottawa ***City Standards***. The post-development allowable release rate was calculated as ***19.5 L/s***. It is estimated that ***33.3 m^3*** will be required to meet this release rate.

A pre-consultation email has been sent to the RVCA regarding stormwater quality controls; a response has not been received at the time of this publication. It is anticipated that quality controls are not required as there is no contemplated surface parking.

The proposed stormwater design conforms to all relevant ***City Standards*** and Policies for approval.

6.0 UTILITIES

Streetlights, gas and hydro services currently exist within Galt Street, Aylmer Avenue and Bank Street. Overhead hydro and telecommunication wires exist along the south side of Aylmer Avenue and the east side of Galt Street. Utility servicing will be coordinated with the individual utility companies prior to site development.

7.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained to prepare an Assessment of Adequacy of Public Services report in support of the application for a Zoning By-law Amendment (ZBLA) for the Southminster United Church property, at 1040 Bank Street. The preceding report outlines the following:

- Based on boundary conditions provided by the City the existing municipal water infrastructure is capable of providing the contemplated development with water within the City's required pressure range;
- The contemplated development is anticipated to have a peak wet weather flow of ***0.34 L/s*** from the church and ***0.64 L/s*** from the mid-rise residence and townhomes; based on the sanitary analysis conducted the existing municipal sewer infrastructure has sufficient capacity to support the development;
- Based on the ***City Standards***, the contemplated development will be required to attenuate post development flows to an equivalent release rate of ***19.5 L/s*** for all storms up to and including the 100-year storm event;
- It is contemplated that stormwater objectives may be met through storm water retention via roof top and cistern storage, it is anticipated that ***33.3 m^3*** of onsite storage will be required to attenuate flow to the established release rate above;
- It is anticipated that stormwater quality controls are not required for the subject property.

Prepared by,
David Schaeffer Engineering Ltd.

Per: Steven L. Merrick, P.Eng.

Reviewed by,
David Schaeffer Engineering Ltd.

Per: Adam D. Fobert, P.Eng.

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APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

05/01/2017

4.1 General Content		
☐	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	Report Cover Sheet
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Drawings/Figures
☒	Plan showing the site and location of all existing services.	Figure 1
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 1.0
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.3
☒	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 2.1
☒	Statement of objectives and servicing criteria.	Section 1.0
☒	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3.1, 4.1, 5.1
☐	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		
☐	Confirm consistency with Master Servicing Study, if available	N/A
☒	Availability of public infrastructure to service proposed development	Section 3.1
☒	Identification of system constraints	Section 3.1
☒	Identify boundary conditions	Section 3.1, 3.2
☒	Confirmation of adequate domestic supply and pressure	Section 3.3

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	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 3.2
☐	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	N/A
☐	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	Section 3.2, 3.3
☐	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 3.2
☐	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

☒	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 4.2
☐	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.	N/A
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 4.1
☒	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 4.2
☒	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 4.2, Appendix C
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2
☐	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

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☐	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

☒	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.1
☒	Analysis of available capacity in existing public infrastructure.	Section 5.1, Appendix D
☐	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	N/A
☒	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 5.2
☒	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.2
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3
☐	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 5.3
☐	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 5.1, 5.3
☐	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

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3
☐	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

☒	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 ct. 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.	Section 1.2
☐	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

☒	Clearly stated conclusions and recommendations	Section 7.0
☐	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.	
☐	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

From: "Hamlin, Allison" <Allison.Hamlin@ottawa.ca>
Subject: 15 Aylmer Avenue and 1040 Bank Street - Follow-up email and meeting minutes
Date: January 10, 2017 at 3:19:10 PM EST
To: 'Rodney Wilts' <rodney@windmilldevelopments.com>
Cc: "Moise, Christopher" <christopher.moise@ottawa.ca>, "Dubyk, Wally" <Wally.Dubyk@ottawa.ca>
"Coutts, Sally" <Sally.Coutts@ottawa.ca>, "Hayley, Matthew" <Matthew.Hayley@ottawa.ca>, 'Steve' ·

Hello Rodney and Ben,

Following our pre-application consultation meeting on December 21, 2016 for a 22-unit, mid-rise, residential dev use at 15 Aylmer Avenue and 1040 Bank Street, I offer below a summary of our comments. Minutes of the meet

Thank you to Steve Mennill for attending and providing comments on behalf of the Old Ottawa South Communit program.

Concept plans were provided in advance of the meeting.

1. **Official Plan -** designated "Traditional Mainstreet".
   a. Please reference height limits on Traditional Mainstreets within OPA 150. The application will be rev application.
   b. Sections 2.5.1 and 4.11 of the Official Plan provide more guidance on design.

2. **Zoning Information and Planning Comments**
   a. The property is zoned Minor Institutional Zone Subzone A (I1A), in the City of Ottawa Zoning By-law. apartment building and townhouses is a not permitted use.
   b. I understand you intend to rezone the lands to a site-specific TM zone. Please consider the following
      - Approaches to transition, such as setbacks, stepbacks, and angular planes;
      - The general direction of the TM2 zone;
      - Average yard setbacks within neighbouring blocks;
      - Improved pedestrian connections, including sidewalks and pathways on NCC lands;
      - Bicycle parking (Section 111);
      - Relief required for the existing building (such as front yard setback or percentage of glaz
      - Adding provisions for one lot for zoning purposes.

3. **Infrastructure/Servicing – Contact Josh White (extension 15843)**
   a. Please see the minutes and attached list of plans and studies.
   b. If potential contamination is identified through the Phase 1 ESA, a Phase 2 ESA will be required. As tl institutional to residential), a Record of Site Condition will be required.

4. **Design Comments – Contact Christopher Moise**
   a. The proposal is within a Design Priority Area and an application to the UDRP will be required. A pre- would be required:
   - Applicant project summary sheet (separate from the rest of the package)
   - Photographs to illustrate existing site conditions and surrounding contexts
   - Context map and a simple contextual analysis that illustrates abutting properties, key destinations ar
   - Models and/or illustrations that show the project massing in its context
   - Any design alternatives, preliminary sketches, etc, that may help the panel to understand the though
   - Site plan (showing setbacks)
   - And, the following may be useful, as well:
     - Draft landscape plan
     - Draft elevations, showing thoughts on materiality
     - Draft floor plans

   b. If commercial uses are proposed in the front yard, another pre-application meeting is required.
   c. Generally speaking, sensitivity is required to the existing building and the existing low-density reside impacts to the existing houses of typical "back-of-house" aspects such as loading and refuse collecti
   d. Please refer to the minutes and the City's design guidelines for Traditional Mainstreets.

5. **Heritage – Contact Sally Coutts**
   a. Please refer to the minutes.

6. **Transportation – Contact Wally Dubyk**
   a. Please refer to the minutes.
   b. Bank Street is designated as an Arterial road within the City's Official Plan with a ROW protection of drawings and the offset distance (11.5 metres) is to be dimensioned from the existing centerline of p
   c. ROW interpretation – Land for a road widening will be taken equally from both sides of a road, measured from required by the City. The centreline is a line running down the middle of a road surface, equidistant from both shoulders, bus lay-bys, auxiliary lanes, turning lanes and other special circumstances are not included in the ro

1040 Bank Street – MEETING MINUTES
Pre-Application Consultation Meeting
Date: December 21, 2016
Time 1:00pm – 2:00 pm
Location: Room 4103, 4th Floor, City Hall (110 Laurier Ave W.)
Present: Allison Hamlin, Sally Coutts, Christopher Moise, Wally Dubyk, Josh White, Steve Mennill (involved in community association and church), Rodney Wilts, Benoit Maranda (Barry Hobin and Associates Architects)

1.0 Introductions & Non Disclosure Agreement Process

1.1	• Windmill has been working with the church for two years. • Church approached Windmill for redevelopment, knowing Cathedral Hill and other examples • It currently functions with community programming and is still an active church. • The building has a lot of deferred maintenance costs. • Six/seven years ago, a study was done indicating approx $1 million in deferred maintenance • The principle of the redevelopment to help with deferred maintenance and keeps the main sanctuary • The church was built in 1930s; the hall was built in the 1950s and would be demolished. **NDA** Expanded pilot program in Central Wards • The non-disclosure agreement was signed by Steve Mennill but has been waived by Windmill. • Steve Mennill (SM): agreed it would be beneficial to meet with community association as a whole.	

2.0 Overview of Proposal

2.1	**Overview** • Ben: similar study for six storeys completed before. • Three storey towers (freehold) and 22 total units • Rodney Wilts (RW): There will be coordination with the old building and the character of the neighbourhood. Originally, it was designed as a massive six storey building which used the entire space, but it did not feel like the right fit within the neighbourhood fabric. • Therefore, the response is towers to respect the streetscape. There is a trade off of eight storeys, since the original six storey building had more units.	

	• RW: There is a good demand for downsized accommodations. • Windmill proposes a rezoning and doing something on Bank Street, for which they have received different feedback; 1. More rhythm on Bank Street 2. Try to get best of both maintaining the view of existing church and bringing the building out to sidewalk • Discussion of how it relates to rezoning	
2.2	**Planning** • Parking will be provided underground. One garage will be provided if it is condo towers, and separate garages will be provided if the townhouses are freehold. • Approximately 28 parking spaces will be provided. • The Church currently has eight parking spaces. • The Church does not want parking due to the cost of underground.	
2.3	**Land Use** • Will the church remain as a church? • RW: The sanctuary and place of worship remains, and the two storey/basement hall would be used for more community events.	
2.4	**TM – Rezoning TM** • Visitor parking spaces are required. • Parking credits may be used. • Ben: underground parking plan has to be updated. • Allison Hamlin (AH): confirms that existing parking is to be removed.	
2.5	**Design** • Relationship with existing roads – Bank, Echo, Galt • The relationship between the church and new uses needs to be described. • UDRP is required, and can be done as a pre-consult to gain preliminary comments. • RW: open to discussions and working on design	**Action:** AH to confirm that there is space on the February 2 agenda and that the materials submitted are sufficient. **Follow-up:**

		More context information is required.
2.6	**Height** • AH: Within in the Tradition Mainstreet designation, a maximum of six storeys is permitted under OPA 150. This OPA is not yet in full force and effect, but when it is an OPA may be required. • There are OP policies relating transitions and built form which will need to be addresses in justifying the extra height. • There is an option of pursuing a severance through the condo application. • A rezoning is required, for height and probably other performance standards. • OP 4.11 outlines the design and compatibility requirements • Christopher Moise (CM): include surrounding blocks, and establish an appropriate setback (possibly average). • AH: You should speak with the NCC about impacts to their lands (canal side).	

3.0 Preliminary Comments from City

3.1	**Right-of-Way (ROW)** • 23 m protection, 11.5 m from the existing centreline. • Corner site triangle is required • 5x5 at signalized intersection	
3.2	**Transportation** • A Transportation Overview is required. • There is concern over visitor parking • Providing more parking than the existing eight spaces is not expected for the existing use, but new use would have to meet current parking requirements. • A 2.0 metre sidewalk is required on all streets. • Please check with NCC directly for ROW protection on Echo Drive, and improvements and temporary access during constriction for the NCC pathway from Galt.	
3.3	**Engineering** • Better understanding required of development being proposed in the front	**Follow-up:**

	• A freehold impact on services is required . • SWM → based on pre-existing C-value, probably 0.5, may come down with grass area • Sewers on Aylmer Avenue are quite deep. • Six inch watermain on Galt → need to meet FSU → concern to meet fire flows, 200 mm on Aylmer, all depends on demand and expected flows • Geotech: careful with old church and digging impact • Slope stability must be addressed due to its significant slope. • Phase I ESA to O.Reg. 153/04 • A record of site condition is required with a change of use to residential. • Noise Study: impacts from Bank and Colonel By must be addressed • If there is an intention to sever, the noise study may need to address impacts from the church on residential (i.e. HVAC), depending on programming. Notices to owners may be required in agreements of purchase and sale. • A wind impact analysis will be provided in a follow-up, if required.	A **Type 1: Preliminary Wind Analysis** is required for the Zoning By-law amendment application. Additional analysis may be required for the site plan application if warranted.
3.4	**Heritage** • It is not a designated heritage building, but there may be people requesting heritage designation. Staff are unable to say at this point if the building merits designation. • Designation does not limit adjacent development. • And there may be no need if through the redevelopment, the older building is protected. • The Cultural Heritage Impact Study is required to address impacts on the Rideau Canal. • The use is not designated under the Heritage Act, only the physical building.	

4.0 Preliminary Comments from Community Association Representative

4.1	**Steve Mennill: Community Association** • There is community concern about the proposed height, especially as almost all buildings in old Ottawa South are less than four storeys.	

	• The community will have concerns with the amount of parking provided and parking overflow into teh neighbourhood.	

5.0 Next Steps

5.1	• AH: An updated list of required plans and studies will be provided.	**Action:** AH to provide follow up email.

Hannah Pepper

From: White, Joshua [mailto:Joshua.White@ottawa.ca]
Sent: Wednesday, April 26, 2017 4:35 PM
To: Steve Merrick <SMerrick@dsel.ca>
Cc: Mottalib, Abdul <Abdul.Mottalib@ottawa.ca>
Subject: RE: Westminster Church Redevelopment - Water Boundary Condition Request

Hi Steve,

Here is the boundary conditions below. In your request you stated that you are not far enough along to be able to complete the FUS Calculations. We will like to see those calcs as a part of your submission. The contact for the file will be Abdul, he will forward it on the PM that will be taking the file.

Josh

The following are boundary conditions, HGL, for hydraulic analysis at 1040 Hunt Club (zone 1W) assumed to be connected to the 152 mm on Galt Street (see attached PDF for location).

Minimum HGL = 104.9 m

Maximum HGL = 117.0 m

Available Flow @ 20psi = 185 L/s

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.

From: Steve Merrick [mailto:SMerrick@dsel.ca]
Sent: Wednesday, April 26, 2017 2:56 PM
To: White, Joshua
Subject: RE: Westminster Church Redevelopment - Water Boundary Condition Request

Hi Josh,

Just following up on this request, we are trying to submit this as soon as possible and would really like to include and analyze the pressures. Also do you know who our new contact will be?

Thanks,

Steve Merrick, P.Eng.
Project Manager / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 561
cell: (613) 222-7816
email: smerrick@DSEL.ca

From: White, Joshua [mailto:Joshua.White@ottawa.ca]
Sent: Wednesday, April 19, 2017 1:01 PM
To: Steve Merrick <SMerrick@dsel.ca>
Subject: RE: Westminster Church Redevelopment - Water Boundary Condition Request

Hi Steve,

I have forwarded your boundary condition request to our modeling group. Please note that I won't be taking the file as I am no longer in the Central Group.

Joshua White, P.Eng.
Senior Engineer, Infrastructure Approvals
Development Review, East Branch, City of Ottawa
Please consider the environment before printing this e-mail.

City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 15843
Email: joshua.white@ottawa.ca
ottawa.ca/planning / ottawa.ca/urbanisme

From: Steve Merrick [mailto:SMerrick@dsel.ca]
Sent: Wednesday, April 19, 2017 11:24 AM
To: White, Joshua
Subject: Westminster Church Redevelopment - Water Boundary Condition Request

Hi Josh,

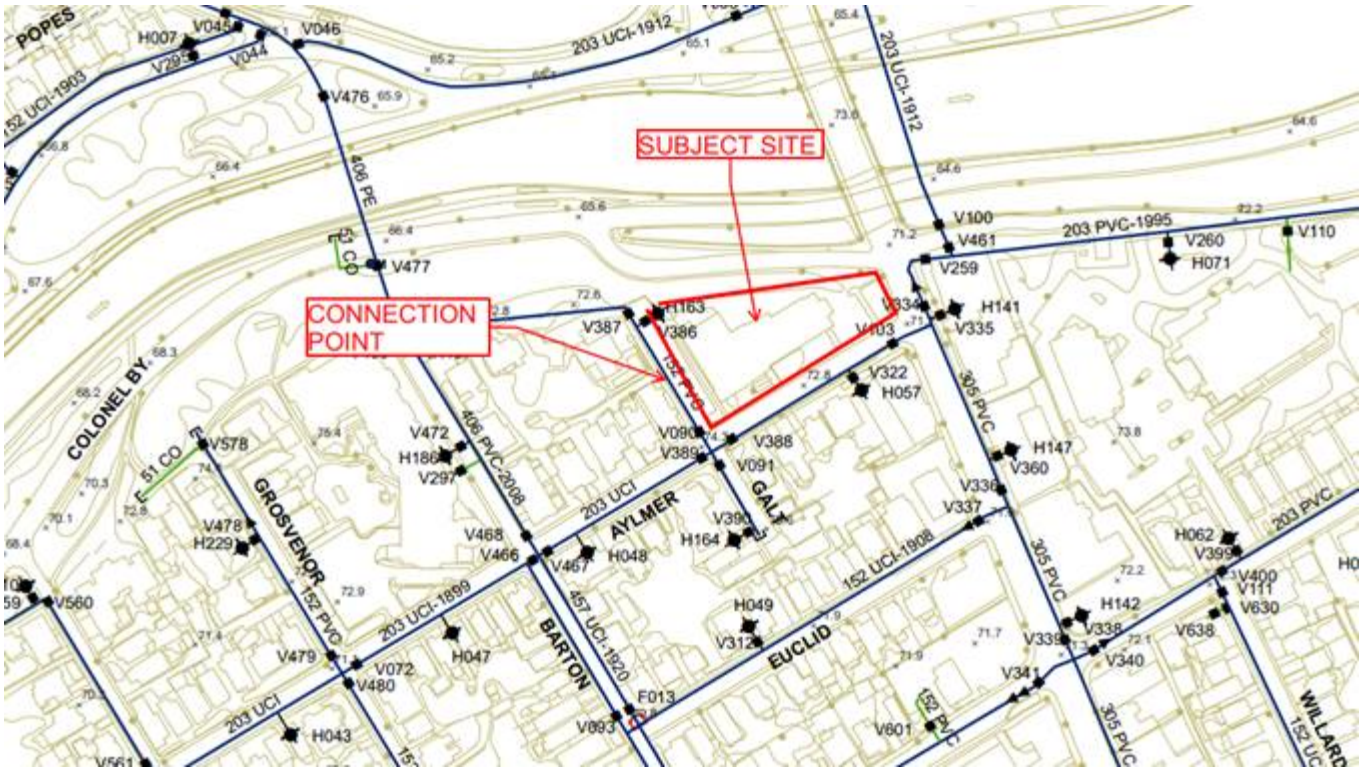
We would like to request water boundary conditions for a proposed re-development of the Westminster Church:

1. Location of Service / Street Number: 1040 Bank Street

2. Type of development and the amount of fire flow required for the proposed development:

- The proposed development will retain the existing church with a total of 550 seats and proposes a 6 storey residential development consisting of 18 residential units
- It is anticipated that the development will connect to the 150mm PVC pipe within Galt Street.
- Fire demand based on FUS will be used to calculate fire demand, sufficient information is unavailable at this time to complete a calculation we would request that the available fire flow at 140 kPa be provided for later comparison and for water data card purposes.

	L/min	L/s
Avg. Daily	19.5	0.32
Max Day	56.5	0.94
Peak Hour	90.3	1.50



Steve Merrick, P.Eng.
Project Manager / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 561
cell: (613) 222-7816
email: smerrick@DSEL.ca

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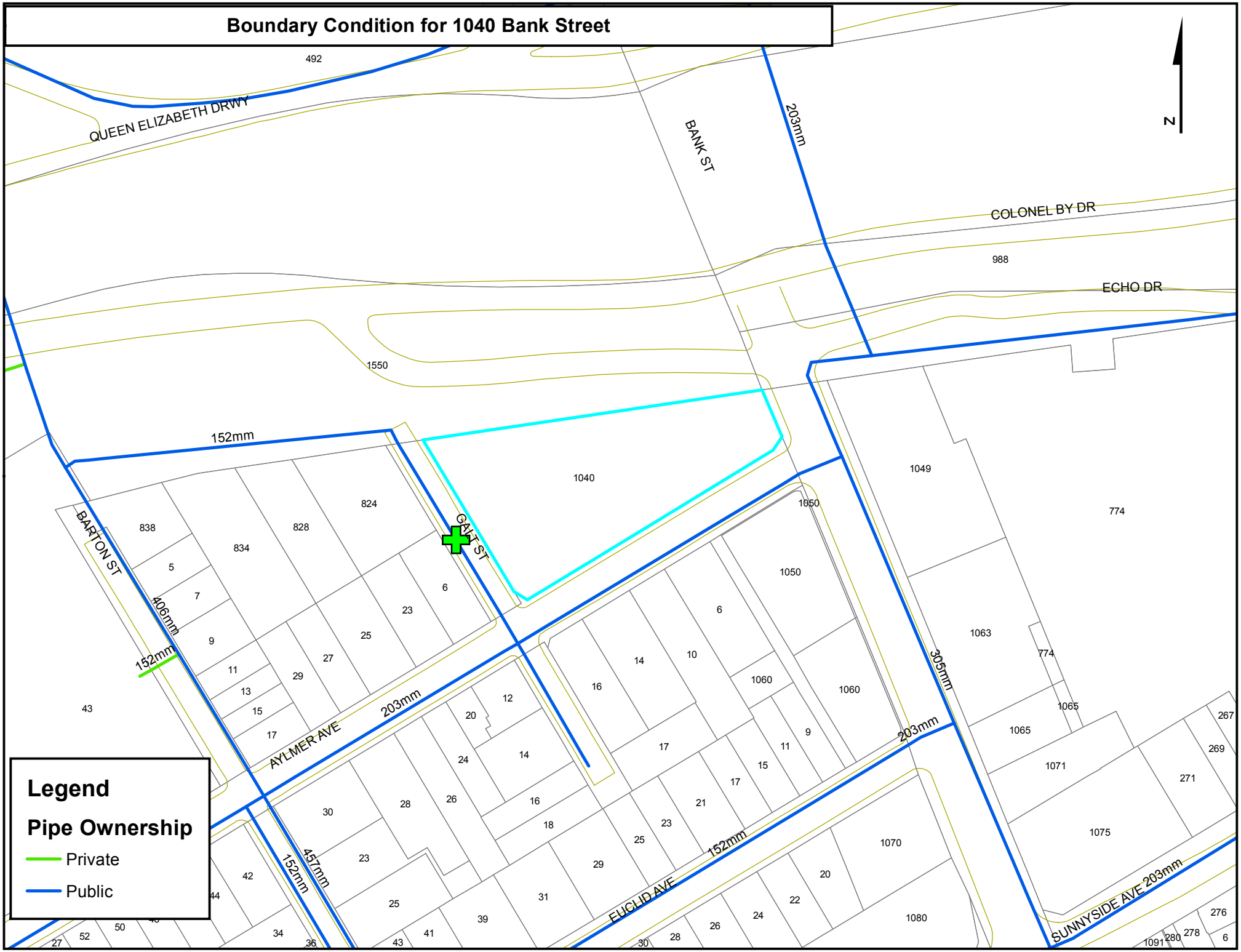
Boundary Condition for 1040 Bank Street



APPENDIX B

Water Supply

Windmill Development Group Ltd.
Southminster Church Development
Existing Site Conditions
Church

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	0	0.0	0.0	0.0	0.0	0.0	0.0

Institutional / Commercial / Industrial Demand

				Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**		**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Church w/ Kitchen Facility*	30.0	L/seat/day	550	16.50	11.5	24.8	17.2	44.6	30.9
Office	75	L/9.3m^2/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000	L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000	L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
		Total I/CI Demand		16.5	11.5	24.8	17.2	44.6	30.9
		Total Demand		**16.5**	**11.5**	**24.8**	**17.2**	**44.6**	**30.9**

*Water Demand for Church with Kitchen Facility from City of Ottawa Sewer Design Guidelines, Appendix 4A

Windmill Development Group Ltd.
Southminster Church
Proposed Site Conditions
Residences

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7	4	11
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8	14	26

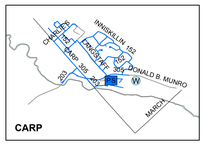
	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	37	13.0	9.0	63.5	44.1	95.8	66.5

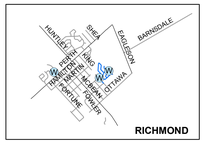
Institutional / Commercial / Industrial Demand

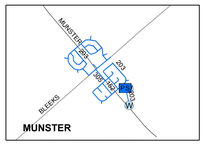
			Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**	**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Church w/ Kitchen Facility*	30.0 L/seat/day		0.00	0.0	0.0	0.0	0.0	0.0
Office	75 L/9.3m^2/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
		Total I/CI Demand	0.0	0.0	0.0	0.0	0.0	0.0
		Total Demand	**13.0**	**9.0**	**63.5**	**44.1**	**95.8**	**66.5**

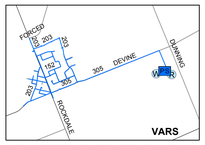
*Water Demand for Church with Kitchen Facility from City of Ottawa Sewer Design Guidelines, Appendix 4A

City of Ottawa - Water Distribution System
Facilities & Feedermains



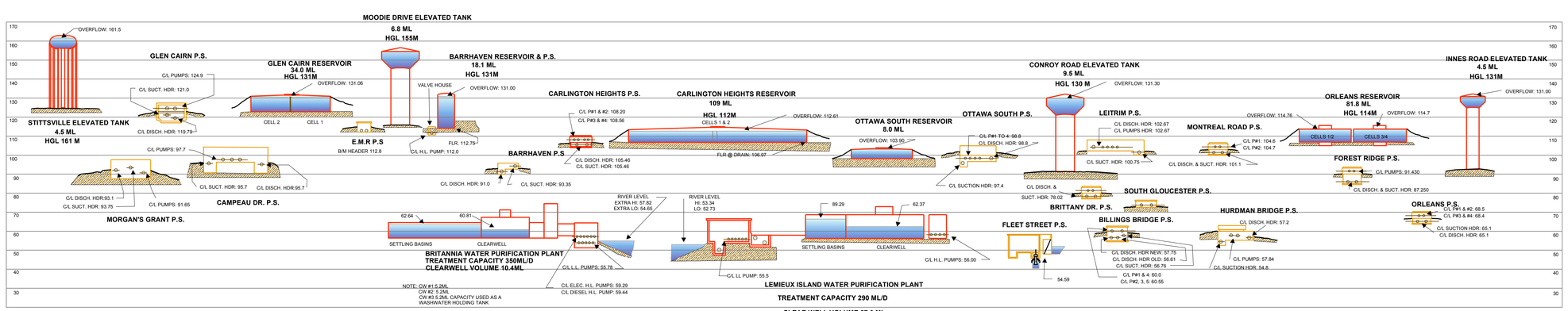






ORLEANS P.S.
FOREST RIDGE P.S
Ogilvie Rd. Backup P.S.
ORLEANS RES.
MONTREAL ROAD P.S.
BRITTANY DRIVE P.S.
FLEET STREET P.S.
LEMIEUX ISLAND PURIFICATION PLANT & P.S. & RES.
INNES RD ELEVATED TANK
Innes Rd/BearBrook Rd Backup P.S.
HURDMAN P.S.
Innes Rd Backup P.S.
BRITANNIA PURIFICATION PLANT & P.S. & RES.
BILLINGS BRIDGE P.S.
MORGAN'S GRANT P.S.
CAMPEAU DR. P.S.
ENERGY MINES & RESOURCES P.S.
CARLINGTON HEIGHTS P.S. & RES.
CONROY RD ELEVATED TANK
SOUTH GLOUCESTER P.S. (INACTIVE)
LEITRIM P.S.
GLEN CAIRN P.S. & RES
BARRHAVEN P.S.
Merivale Rd. Backup P.S.
OTTAWA SOUTH P.S & RES.
STITTSVILLE ELEVATED TANK
BARRHAVEN RES. & P.S.
Abbott/Iber St. Backup P.S.
MOODIE ELEVATED TANK
Shadow Ridge
SHADOW RIDGE P.S. & WELLS
SHADOW RIDGE WELL

1E 1W 2C 2E 2W 3C 3W 4C MONT ME MG EMR BARR SHAD



Legend

Water System Structure

- Pump Station
- Backup Pump Station
- Water Treatment Plant
- Well
- Elevated Tank
- Reservoir

WATERMAINS

Priority, Internal Diameter

- Backbone 1524mm - 1981mm
- Backbone 1067mm - 1372mm
- Backbone 610mm - 914mm
- Backbone 406mm - 508mm
- Backbone 152mm - 305mm
- Distribution 1676mm - 1981mm
- Distribution 1067mm - 1372mm
- Distribution 610mm - 914mm
- Distribution 406mm - 508mm
- Distribution 305mm - 381mm

PRESSURE ZONES

- 1E
- 1W
- 2C
- 2E
- 2W
- 3C
- 3W
- 4C
- BARR
- EMR
- ME
- MG
- MONT
- SHAD

N W E S

Ottawa

Infrastructure Services & Community Sustainability
Infrastructure Services

0 1,000 2,000 4,000 6,000

Meters

FIGURE 1-1

DRAWN BY: D. HESS

DATE: 03 Feb 2015

CN1

2015 Water Distribution System

Department of Infrastructure Services

This map was compiled from existing & collected engineering Information from the City of Ottawa Geographic Information System and is protected by copyright. The location of Infrastructure is approximate and should not be used for construction purposes.

Scale 1:2500

Ottawa

1W

368-028

1E

2C

Legend

- Public Hydrant
- Private Hydrant
- Summer only Flusher Hydrant
- Flusher Hydrant
- Acoustic Fibre Optic
- Gate Valve
- Tapping Valve
- Butterfly Valve
- Buried Valve
- Drain Pipe
- Check Valve
- Closed Valve
- Drain-Out Valve
- Left Hand Valve
- Spot Elevation
- Pressure Reducing Valve
- Air Relief Valve
- Bypass Valve
- Feedermain Valve
- Inspection Plate
- Cap
- Reducer
- Jump
- Water Meter
- Water Service
- Backbone Pipe
- 203 PVC-1981 Watermain with Pipe Diameter, Material and Install Year
- Pipe Casing
- 2W Pressure Zone Delineation and Identifier
- Well
- Elevated Tank
- PS Water Pumping Station
- Water Reservoir
- WTP Water Treatment Plant

Pipe Equivalents

nominal (mm)	actual (inches)	nominal (mm)	actual (inches)	nominal (mm)	actual (inches)
100	4	675	27	1800	72
150	6	750	30	1950	78
200	8	825	33	2025	80
250	10	900	36	2100	84
300	12	975	39	2250	90
375	15	1050	42	2400	96
400	16	1200	48	2550	102
450	18	1350	54	2700	108
525	21	1500	60	2850	114
600	24	1650	66	3000	120

Pipe Materials

A - ASBESTOS
CI - CAST IRON
CO - COPPER
CO0 - AWWA C300
CO1 - AWWA C301
CO2 - AWWA C302
CO3 - AWWA C303
DI - DUCTILE IRON
PE - POLYETHYTLENE (DR11 TO DR21)
PVC - POLYVINYL CHLORIDE
STC - CONCRETE LINED STEEL PIPE
UCI - UNLINED CAST IRON
UNK - UNKNOWN MATERIAL

366-030	368-030	370-030
366-029	368-029	370-029
366-028	368-028	370-028
366-027	368-027	370-027
366-026	368-026	370-026

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required

1. Base Requirement

$F = 220C\sqrt{A}$ L/min *Where **F** is the fire flow, **C** is the Type of construction and **A** is the Total floor area*

Type of Construction: Wood Frame

C	1.5		*Type of Construction Coefficient per FUS Part II, Section 1*
A	445.0	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	6961.4	L/min	
	7000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Limited Combustible	-15%
Fire Flow	**5950.0 L/min**

3. Reduction for Sprinkler Protection

Non-Sprinklered	0%
Reduction	**0 L/min**

4. Increase for Separation Distance

N	10.1m-20m	15%	
S	20.1m-30m	10%	
E	0m-3m	25%	
W	10.1m-20m	15%	
	% Increase	**65%**	*value not to exceed 75% per FUS Part II, Section 4*
	Increase	**3867.5 L/min**	

Total Fire Flow

Fire Flow	9817.5	L/min	*fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section*
	10000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Notes:
-Type of construction, Occupancy Type and Sprinkler Protection information provided by Hobin Architects April 27, 2017.
-Calculations based on Fire Underwriters Survey - Part II

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required

1. Base Requirement

$F = 220C\sqrt{A}$ L/min *Where **F** is the fire flow, **C** is the Type of construction and **A** is the Total floor area*

Type of Construction: Non-Combustible Construction

C	0.8		*Type of Construction Coefficient per FUS Part II, Section 1*
A	3071.0	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	9753.3	L/min	
	10000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Limited Combustible	-15%	
Fire Flow	**8500.0**	**L/min**

3. Reduction for Sprinkler Protection

Sprinklered	-50%	
Reduction	**-4250**	**L/min**

4. Increase for Separation Distance

N	>45m	0%	
S	10.1m-20m	15%	
E	0m-3m	25%	
W	10.1m-20m	15%	
	% Increase	**55%**	*value not to exceed 75% per FUS Part II, Section 4*
	Increase	**4675.0**	**L/min**

Total Fire Flow

Fire Flow	8925.0	L/min	*fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section*
	9000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Notes:
-Type of construction, Occupancy Type and Sprinkler Protection information provided by Hobin Architects April 27, 2017.
-Calculations based on Fire Underwriters Survey - Part II

APPENDIX C

Wastewater Collection

Windmill Development Group Ltd.
1040 Bank Street - Southminster Church
Existing Site Conditions

Existing Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012

Site Area	0.32	**ha**

Extraneous Flow Allowances

Infiltration / Inflow	**0.09**	**L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Duplex	2.3		0
Townhouse	2.7		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

Total Pop	**0**	
Average Domestic Flow	**0.00**	**L/s**
Peaking Factor	**4**	
Peak Domestic Flow	**0.00**	**L/s**

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate		No. of Units	Avg Wastewater (L/s)
Commercial floor space*	5	$L/m^2/d$		0.00
Church w/ Kitchen Facility**	30.0	L/seat/day	550	0.19
School	70	L/student/d		0.00

Average I/C/I Flow	**0.19**
Peak Institutional / Commercial Flow	0.29
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**0.29**

** assuming a 12 hour commercial operation*

*** Church w/ Kitchen Facility Flow per City of Ottawa Sewer Design Guidelines Appendix 4A*

Total Estimated Average Dry Weather Flow Rate	**0.19**	**L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.29**	**L/s**
Total Estimated Peak Wet Weather Flow Rate	**0.38**	**L/s**

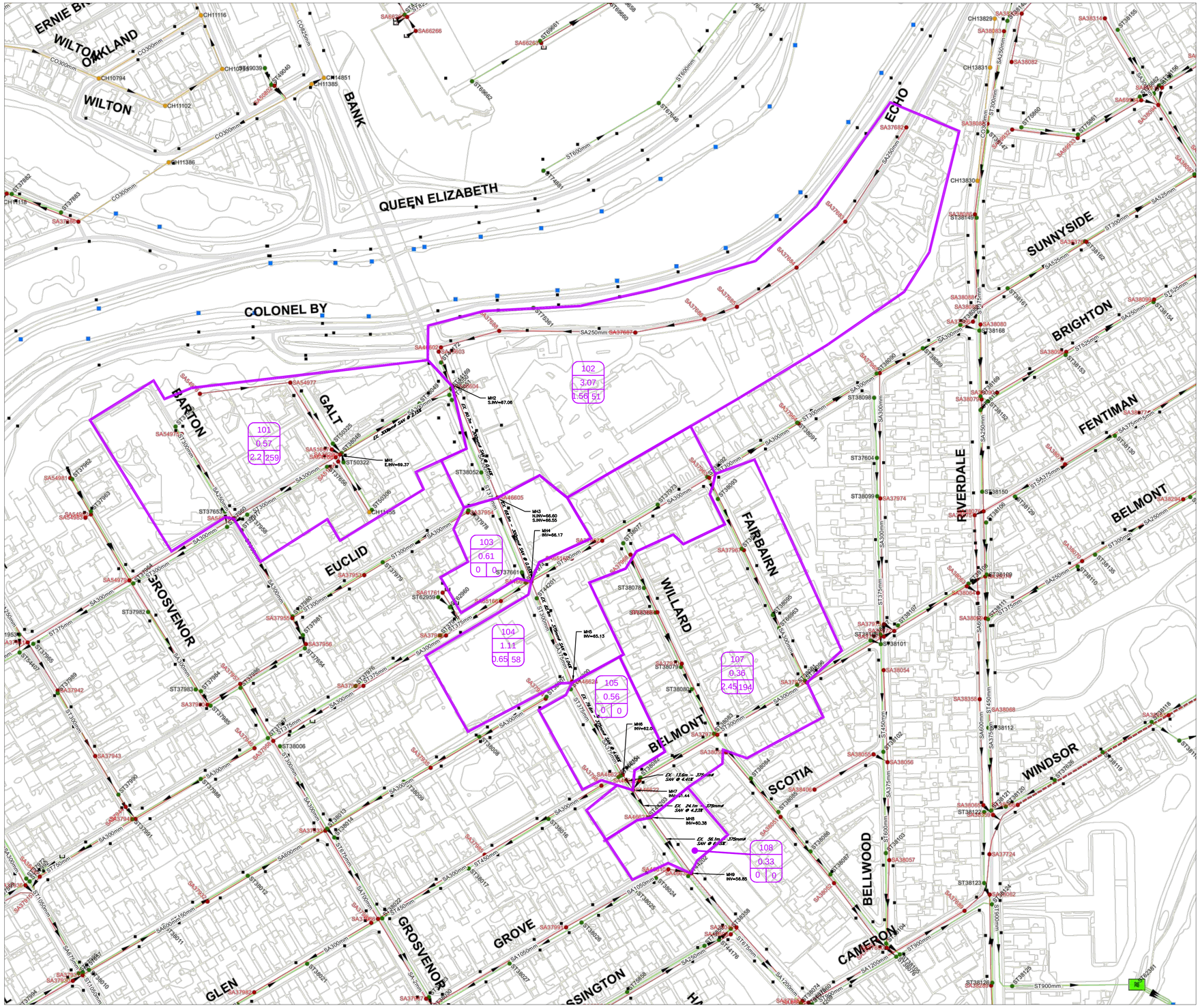
SANITARY SEWER CALCULATION SHEET

PROJECT: **Southminster Church Redevelopment**
LOCATION: **1040 Bank Street**
FILE REF:
DATE: **01-May-17**

DESIGN PARAMETERS

Avg. Daily Flow Res.	300	L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0		Infiltration / Inflow	0.28	L/s/ha
Avg. Daily Flow Comn	17,000	L/ha/d	Peak Fact. Comm.	1	Min. Pipe Velocity	0.60	m/s full flowing
Avg. Daily Flow Instit.	10,000	L/ha/d	Peak Fact. Instit.	1	Max. Pipe Velocity	3.00	m/s full flowing
Avg. Daily Flow Indust	10,000	L/ha/d	Peak Fact. Indust. per MOE graph		Mannings N	0.013	

Location			Residential Area and Population									Commercial		Institutional		Industrial			Infiltration				Pipe Data							
Area ID	Up	Down	Area	Number of Units by type				Pop.	Cumulative Area	Cumulative Pop.	Peak. Fact.	Q_{res}	Area	Accu. Area	Area	Accu. Area	Area	Accu. Area	Q_{C+I+I}	Total Area	Accu. Area	Infiltration Flow	Total Flow	DIA	Slope	Length	$A_{hydraulic}$	R	Velocity	Q_{cap}	Q / Q full
			(ha)	Singles	Semi's	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m^2)	(m)	(m/s)	(L/s)	(-)
101	1	2	2.220	26		7	84	259.0	2.220	259.0	4.00	3.60	0.12	0.12	0.45	0.45		0.00	0.5	2.790	2.790	0.781	4.87	300	2.15		0.071	0.075	2.01	141.8	0.03
102	2	3	1.560	15				51.0	3.780	310.0	4.00	4.31	0.28	0.40	2.34	2.79		0.00	2.8	4.180	6.970	1.952	9.03	300	0.44	90.7	0.071	0.075	0.91	64.1	0.14
103	3	4	0.000					0.0	3.780	310.0	4.00	4.31	0.61	1.01		2.79		0.00	3.3	0.610	7.580	2.122	9.73	300	0.55	68.5	0.071	0.075	1.01	71.7	0.14
104	4	5	0.000	17				58.0	3.780	368.0	4.00	5.11	0.77	1.78	0.49	3.28		0.00	4.4	1.260	8.840	2.475	11.98	375	1.04	82.4	0.110	0.094	1.62	178.8	0.07
105	5	6	2.060					0.0	5.840	368.0	4.00	5.11	0.56	2.34		3.28		0.00	4.9	2.620	11.460	3.209	13.20	375	4.00	79.6	0.110	0.094	3.17	350.7	0.04
	6	7	0.000					0.0	5.840	368.0	4.00	5.11		2.34		3.28		0.00	4.9	0.000	11.460	3.209	13.20	375	4.41	13.6	0.110	0.094	3.33	368.2	0.04
107	7	8	2.450	57				194.0	8.290	562.0	3.95	7.70	0.22	2.56	0.14	3.42		0.00	5.2	2.810	14.270	3.996	16.89	375	4.23	24.1	0.110	0.094	3.26	360.6	0.05
108	8	9	0.000					0.0	8.290	562.0	3.95	7.70	0.33	2.89		3.42		0.00	5.5	0.330	14.600	4.088	17.27	375	4.23	24.1	0.110	0.094	3.26	360.6	0.05



LEGEND:

EXISTING DRAINAGE DIVIDE

207 — DRAINAGE AREA ID
0.260 — COMMERCIAL / INDUSTRIAL AREA IN Ha
10 | 36 — POPULATION | RESIDENTIAL AREA IN Ha

david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
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www.DSEL.ca

EXISTING SANITARY DRAINAGE
1040 Bank Street
Windmill Developments

PROJECT No. :	17-###
SCALE:	NTS
DATE:	MAY 2017
DRAWING No.	SAN-1
SHEET NO.	1

z:\projects\17-###_windmill_1040-bank-southminster\b_design\b2_drawings\b2-5_sketches and figures\2017-04-20_san\2017-04-21-###-ex-san-dainage.dwg

Windmill Development Group Ltd.
Southminster Church
Proposed Site Conditions
Church

Existing Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012

Site Area	0.19	**ha**

Extraneous Flow Allowances

Infiltration / Inflow	**0.05**	**L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Duplex	2.3		0
Townhouse	2.7		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

Total Pop	**0**	
Average Domestic Flow	**0.00**	**L/s**
Peaking Factor	**4**	
Peak Domestic Flow	**0.00**	**L/s**

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate		No. of Units	Avg Wastewater (L/s)
Commercial floor space*	5	$L/m^2/d$		0.00
Church w/ Kitchen Facility**	30.0	L/seat/day	550	0.19
School	70	L/student/d		0.00

Average I/C/I Flow	**0.19**
Peak Institutional / Commercial Flow	0.29
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**0.29**

** assuming a 12 hour commercial operation*

*** Church w/ Kitchen Facility Flow per City of Ottawa Sewer Design Guidelines Appendix 4A*

Total Estimated Average Dry Weather Flow Rate	**0.19 L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.29 L/s**
Total Estimated Peak Wet Weather Flow Rate	**0.34 L/s**

Windmill Development Group Ltd.
1040 Bank Street - Southminster Church
Proposed Site Conditions
Residences

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012

Site Area	0.13	**ha**

Extraneous Flow Allowances

Infiltration / Inflow	**0.04**	**L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7	4	11
Stacked Townhouse	2.3		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8	14	26

Total Pop	**37**	
Average Domestic Flow	**0.15**	**L/s**
Peaking Factor	**4.00**	
Peak Domestic Flow	**0.60**	**L/s**

Institutional / Commercial / Industrial Contributions

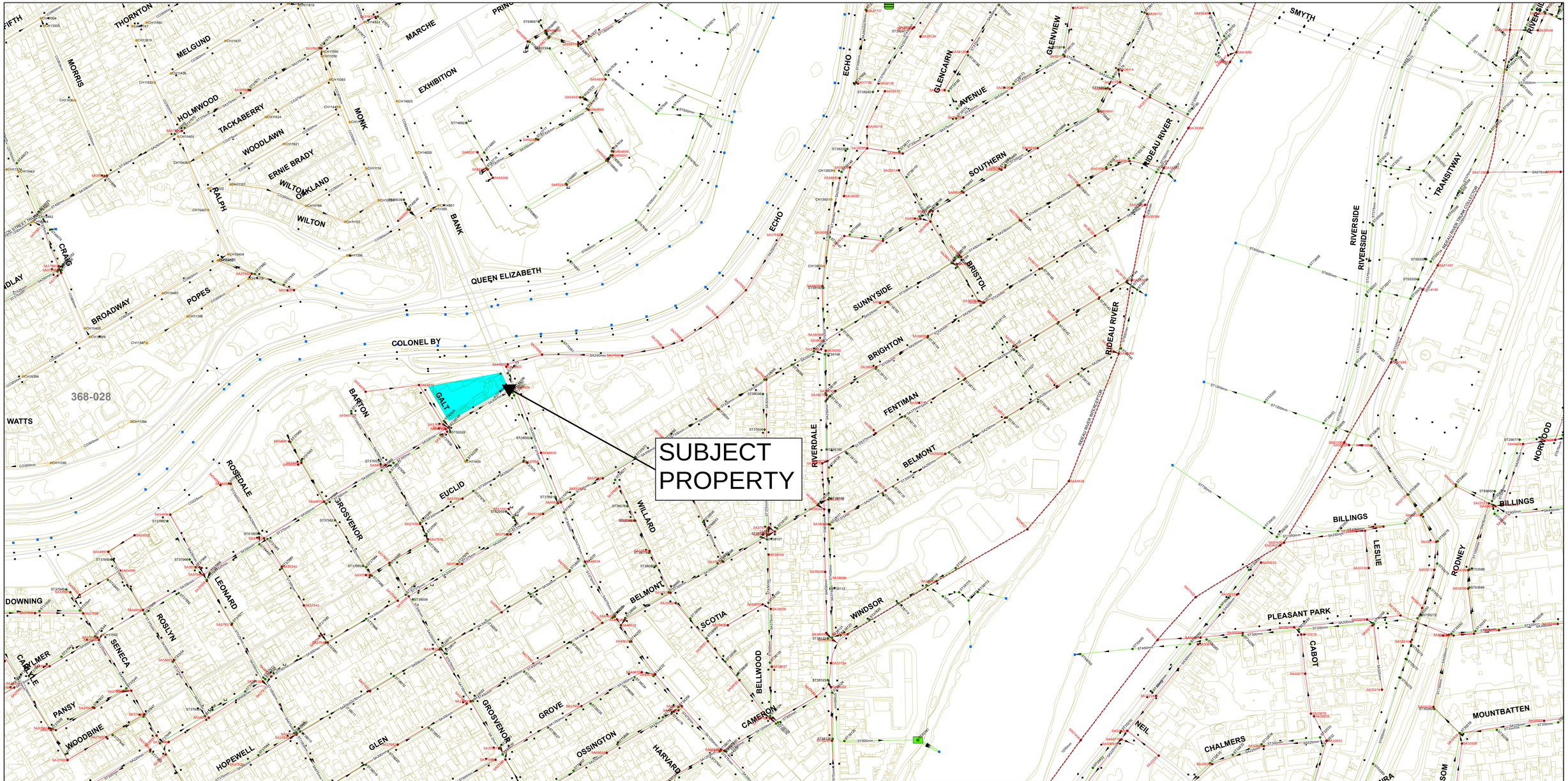
Property Type	Unit Rate		No. of Units	Avg Wastewater (L/s)
Commercial floor space*	5	$L/m^2/d$		0.00
Church w/ Kitchen Facility**	30.0	L/seat/day		0.00
School	70	L/student/d		0.00

Average I/C/I Flow	**0.00**
Peak Institutional / Commercial Flow	0.00
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**0.00**

** assuming a 12 hour commercial operation*

*** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B*

Total Estimated Average Dry Weather Flow Rate	**0.15**	**L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.60**	**L/s**
Total Estimated Peak Wet Weather Flow Rate	**0.64**	**L/s**



2015 Sewer Collection System

Department of Infrastructure Services

This map was compiled from existing & collected engineering Information from the City of Ottawa Geographic Information System and is protected by copyright. The location of Infrastructure is approximate and should not be used for construction purposes.

Scale 1:2500

Ottawa

Legend

- Storm Inlet
- Storm Outlet
- Storm Manhole
- Sanitary Manhole
- Combined Manhole
- Combined Pipe
- Sanitary Pipe
- Storm Pipe
- Pipe Cap
- Combined Trunk Sewer
- Sanitary Trunk Sewer
- Storm Trunk Sewer
- Regulator
- PS Storm Pumping Station
- Storm Water Management Pond
- PS Sanitary Pumping Station
- WTP Treatment Plant

Pipe Equivalents

nominal (mm)	actual (inches)	nominal (mm)	actual (inches)	nominal (mm)	actual (inches)
100	4	675	27	1800	72
150	6	750	30	1950	78
200	8	825	33	2025	80
250	10	900	36	2100	84
300	12	975	39	2250	90
375	15	1050	42	2400	96
400	16	1200	48	2550	102
450	18	1350	54	2700	108
525	21	1500	60	2850	114
600	24	1650	66	3000	120

Pipe Materials

A - ASBESTOS
CI - CAST IRON
CO - COPPER
CO0 - AWWA C300
CO1 - AWWA C301
CO2 - AWWA C302
CO3 - AWWA C303
DI - DUCTILE IRON
PE - POLYETHYLENE (DR11 TO DR21)
PVC - POLYVINYL CHLORIDE
STC - CONCRETE LINED STEEL PIPE
UCI - UNLINED CAST IRON
UNK - UNKNOWN MATERIAL

368-028

APPENDIX D

Stormwater Management

Windmill Development Group Ltd.
Southminster Church
Time of Concentration

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2012

Existing Church Drainage Characteristics North to Echo Drive and Bank Street

Slope of Roof	1.00	assumed slope of church roof
Length	7.9	m
Velocity*	4.9	m/s
t_c	0.03	min
Up Elevation	72.1	m
Down Elevation	69.5	m
Slope of Grass	0.11	
Length	22.3	m
Velocity*	0.7	m/s
t_c	0.5	min
Total t_c	0.6	min

Existing Church Drainage Characterstics South to Aylmer Avenue and Bank Street

Slope Roof	1.00	assumed slope of church roof
Length	7.9	m
Velocity*	4.9	m/s
t_c	0.03	min
Up Elevation	73.0	m
Down Elevation	72.7	m
Slope of Grass	0.03	
Length	9.9	m
Velocity*	0.4	m/s
t_c	0.4	min
Total t_c	0.4	min

Existing Drainage Characteristics from Limits of Re-Development

Slope of Roof	0.02	assumed slope of hall roof
Length	17.5	m
Velocity*	0.8	m/s
t_c	0.4	min
Up Elevation	72.6	m
Down Elevation	69.0	m
Slope of Grass	0.18	
Length	20.4	m
Velocity*	0.9	m/s
t_c	0.4	min
Total t_c	0.7	min

**As per National Engineering Handbook, United States Department of Agriculture*

Figure 15–4 Velocity versus slope for shallow concentrated flow

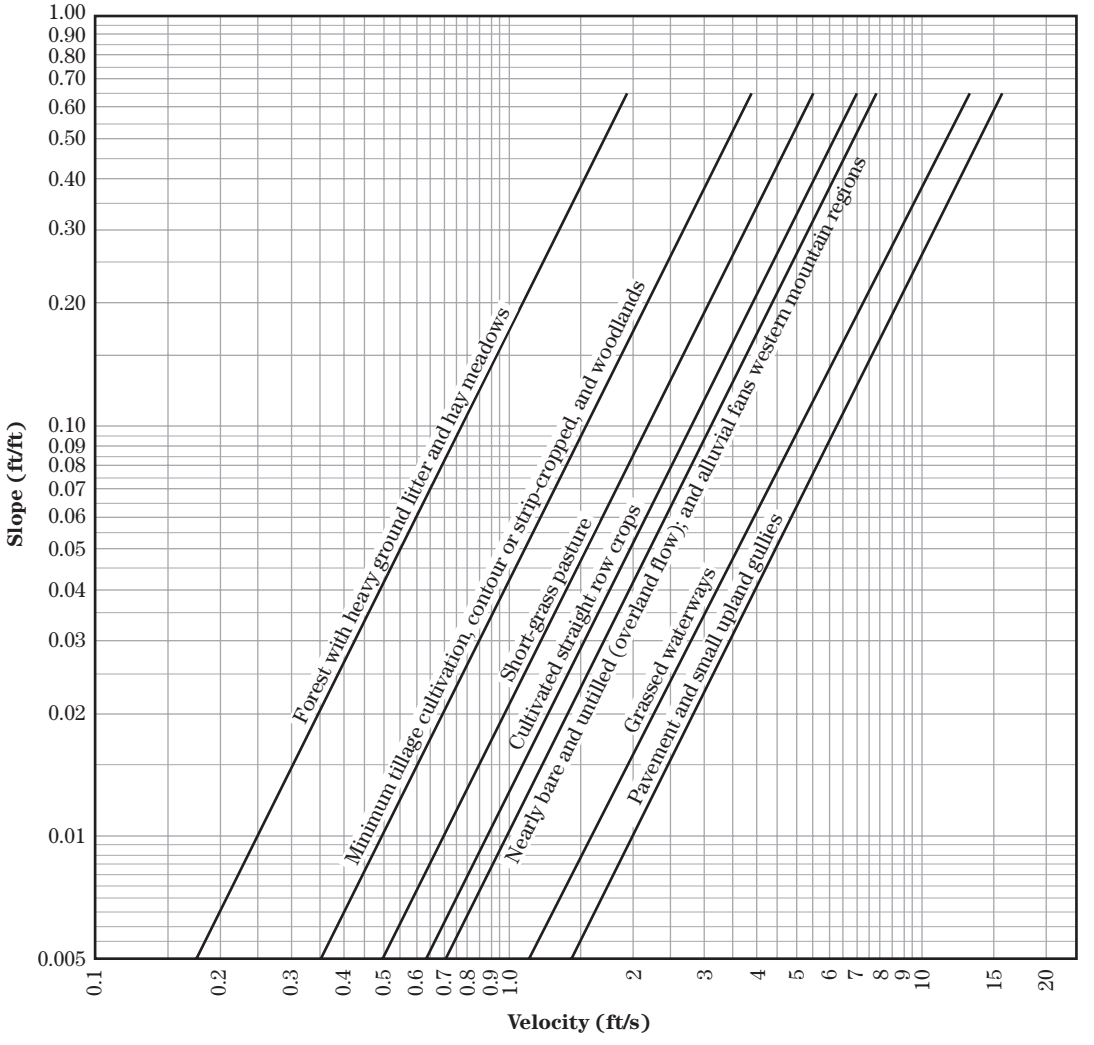


Table 15–3 Equations and assumptions developed from figure 15–4

Flow type	Depth (ft)	Manning's *n*	Velocity equation (ft/s)
Pavement and small upland gullies	0.2	0.025	$V = 20.328(s)^{0.5}$
Grassed waterways	0.4	0.050	$V = 16.135(s)^{0.5}$
Nearly bare and untilled (overland flow); and alluvial fans in western mountain regions	0.2	0.051	$V = 9.965(s)^{0.5}$
Cultivated straight row crops	0.2	0.058	$V = 8.762(s)^{0.5}$
Short-grass pasture	0.2	0.073	$V = 6.962(s)^{0.5}$
Minimum tillage cultivation, contour or strip-cropped, and woodlands	0.2	0.101	$V = 5.032(s)^{0.5}$
Forest with heavy ground litter and hay meadows	0.2	0.202	$V = 2.516(s)^{0.5}$

Windmill Development Group Ltd.
Southminster Church
Existing Conditions

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2012

Existing Church Drainage North to Echo Drive and Bank Street

Area	0.075	ha
C	0.60	Rational Method runoff coefficient
t_c	10.0	min

Estimated Peak Flow

	2-year	**5-year**	**100-year**	
i	76.8	104.2	178.6	mm/hr
Q	9.6	13.0	27.9	L/s

Existing Church Drainage South to Aylmer Avenue and Bank Street

Area	0.109	ha
C	0.68	Rational Method runoff coefficient
t_c	10.0	min

Estimated Peak Flow

	2-year	**5-year**	**100-year**	
i	76.8	104.2	178.6	mm/hr
Q	15.8	21.5	46.0	L/s

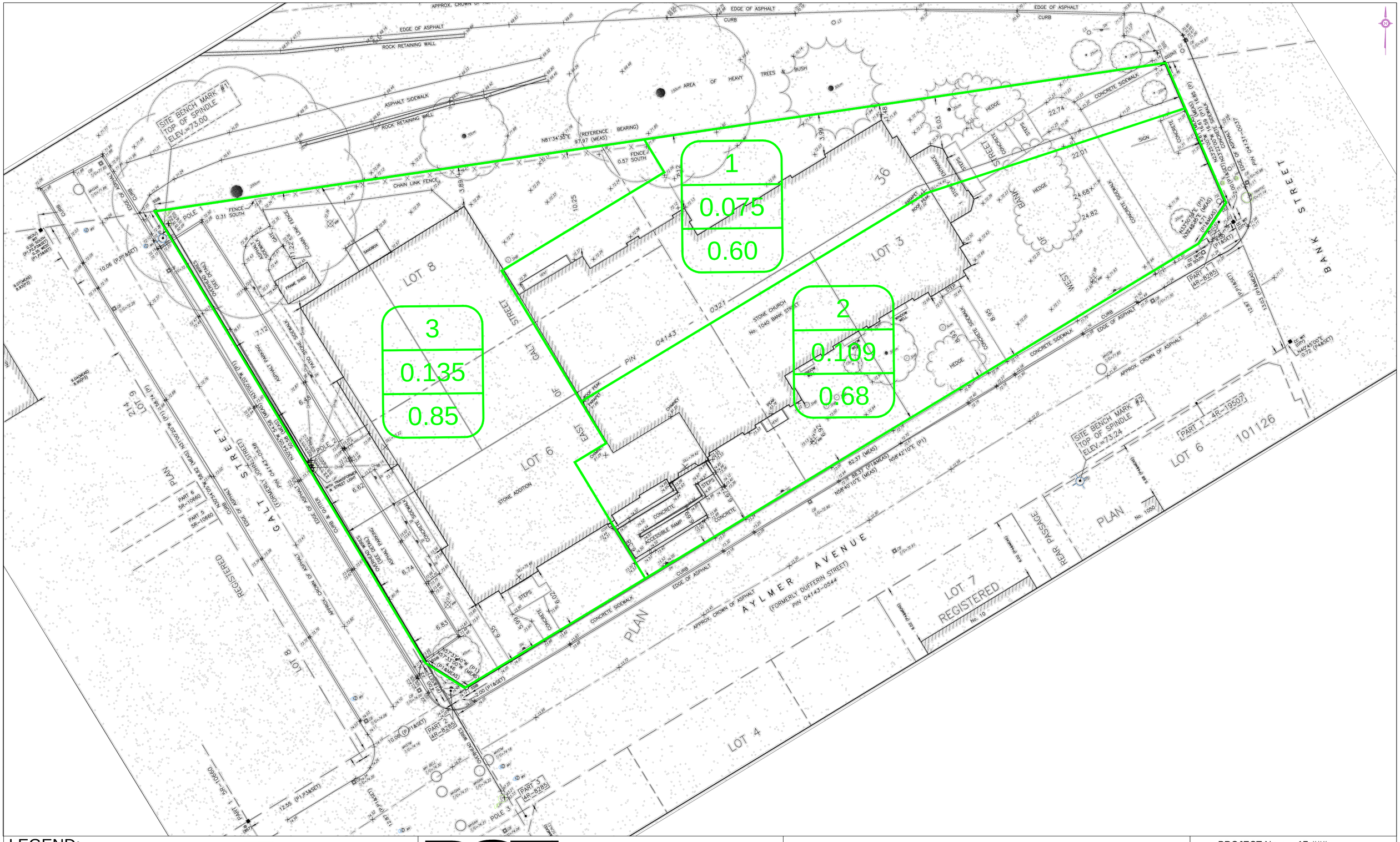
Existing Drainage from Limits of Re-Development

Area	0.135	ha
C	0.85	Rational Method runoff coefficient
t_c	10.0	min

Estimated Peak Flow

	2-year	**5-year**	**100-year**	
i	76.8	104.2	178.6	mm/hr
Q	24.5	33.2	71.1	L/s

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)



LEGEND:

EXISTING DRAINAGE DIVIDE

207	DRAINAGE AREA ID
0.200	DRAINAGE AREA IN Ha
0.60	DRAINAGE COEFFICIENT

DSEL
david schaeffer engineering ltd

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

EXISTING STORM DRAINAGE
1040 Bank Street
Windmill Developments

PROJECT No. :	17-###
SCALE:	NTS
DATE:	APRIL 2017
DRAWING No.	SWM-1
SHEET NO.	2

Windmill Development Group Ltd.
Southminster Church
Proposed Conditions
Residences

Stormwater - Proposed Development
City of Ottawa Sewer Design Guidelines, 2012

Target Flow Rate

Area	0.14	ha
C	0.50	Rational Method runoff coefficient
t_c	10.0	min

	5-year	
i	104.2	mm/hr
Q	19.5	L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area	0.01	ha
C	0.90	Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}* (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10.0	104.2	3.5	3.5	0.0	0.0	178.6	6.7	6.7	0.0	0.0

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Total Area	0.12	ha
C	0.90	Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10	104.2	31.6	6.7	24.9	14.9	178.6	60.3	12.8	47.4	28.5
15	83.6	25.4	6.8	18.6	16.8	142.9	48.2	12.8	35.4	31.8
20	70.3	21.3	6.8	14.6	17.5	120.0	40.5	12.8	27.6	33.2
25	60.9	18.5	6.8	11.7	17.6	103.8	35.0	12.8	22.2	33.3
30	53.9	16.4	6.8	9.6	17.3	91.9	31.0	12.8	18.2	32.7
35	48.5	14.7	6.8	7.9	16.7	82.6	27.9	12.8	15.0	31.6
40	44.2	13.4	6.8	6.6	15.9	75.1	25.4	12.8	12.5	30.1
45	40.6	12.3	6.8	5.5	15.0	69.1	23.3	12.8	10.5	28.3
50	37.7	11.4	6.8	4.6	13.9	64.0	21.6	12.8	8.7	26.2
55	35.1	10.7	6.8	3.9	12.7	59.6	20.1	12.8	7.3	24.0
60	32.9	10.0	6.8	3.2	11.5	55.9	18.9	12.8	6.0	21.7
65	31.0	9.4	6.8	2.6	10.2	52.6	17.8	12.8	4.9	19.2
70	29.4	8.9	6.8	2.1	8.8	49.8	16.8	12.8	4.0	16.6
75	27.9	8.5	6.8	1.7	7.4	47.3	15.9	12.8	3.1	14.0
80	26.6	8.1	6.8	1.2	6.0	45.0	15.2	12.8	2.3	11.3
85	25.4	7.7	6.8	0.9	4.5	43.0	14.5	12.8	1.7	8.4
90	24.3	7.4	6.8	0.6	3.0	41.1	13.9	12.8	1.0	5.6
95	23.3	7.1	6.8	0.2	1.4	39.4	13.3	12.8	0.5	2.7
100	22.4	6.8	6.8	0.0	0.0	37.9	12.8	12.8	0.0	0.0
105	21.6	6.6	6.8	0.0	0.0	36.5	12.3	12.8	0.0	0.0
110	20.8	6.3	6.8	0.0	0.0	35.2	11.9	12.8	0.0	0.0

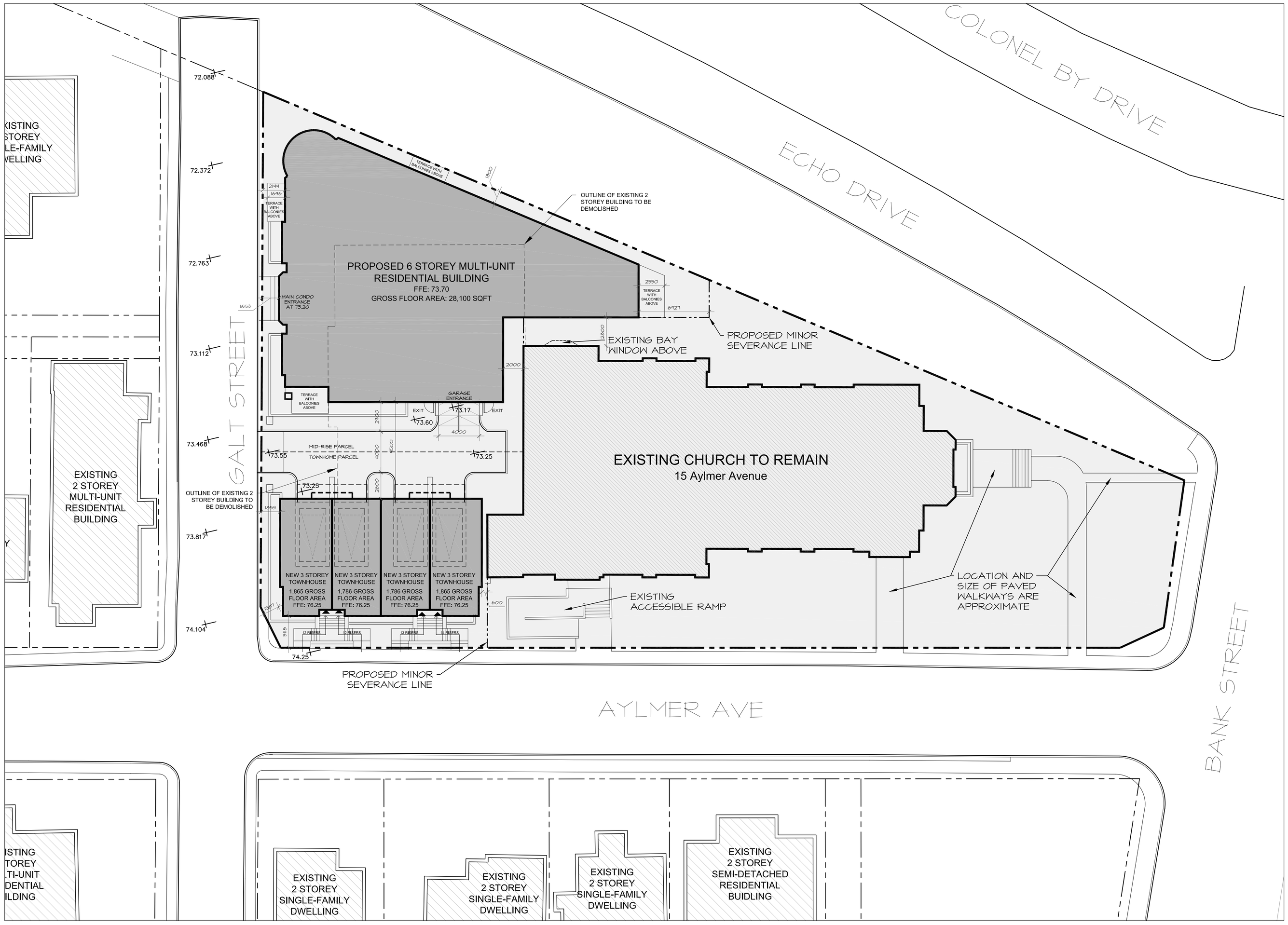
Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

5-year $Q_{attenuated}$	**6.78 L/s**	**100-year $Q_{attenuated}$**	**12.84 L/s**
5-year Max. Storage Required	**17.6 m^3**	**100-year Max. Storage Required**	**33.3 m^3**

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Storage (m^3)	100-Year Release Rate (L/s)	100-Year Storage (m^3)
Unattenuated Areas	3.52	0.0	6.70	0.0
Attenutated Areas	6.78	17.6	12.84	33.3
Total	**10.3**	**17.58**	**19.54**	**33.3**

DRAWINGS / FIGURES



OWNER

WINDMILL DEVELOPMENT GROUP LTD.
1306 WELLINGTON STREET W, UNIT 201
OTTAWA, ON, K1Y 3B2
TEL 613-820-5600 ext. 133

CONSULTANTS

URBAN PLANNING CONSULTANTS:
LLOYD PHILLIPS & ASSOCIATES LTD.
1827 WOODWARD DRIVE
OTTAWA, ON, K2C 0P9
TEL 613-236-5716

CIVIL ENGINEERING:
DSEL - DAVID SCHAEFFER ENG. LTD.
120 IBER ROAD, SUITE 103
OTTAWA, ON, K2S 1E9
TEL 613-836-0856

GEOTECHNICAL:
TBD

STRUCTURAL ENGINEER:
TBD

MECH/ELEC ENGINEER:
TBD

SURVEYOR:
STANTEC GEOMATICS LTD.
331 CLYDE AVENUE, SUITE 400
OTTAWA, ON, K2C 3G4
TEL 613-722-4420

LANDSCAPE ARCHITECT:
TBD

TRAFFIC CONSULTANTS:
PARSONS
1223 MICHAEL STREET, SUITE 100
OTTAWA, ON, K1J 7T2
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no.	date	revision

Hobin Architecture Incorporated
63 Parrilla Street
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Canada K1S 3K7

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hobinarc.com

HOBIN ARCHITECTURE

PROJECT/LOCATION:
SOUTHMINSTER UNITED CHURCH REDEVELOPMENT
15 AYLMER AVENUE

DRAWING TITLE:
SITE PLAN

DRAWN BY:	DATE:	SCALE:
BM	21/04/17	1:200

PROJECT: 1524

DRAWING NO.: **SP1**

REVISION NO.: 1

0m 5m 10m 20m 50m

DATE-PLOT
DWGNAME