ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
1034 MCGARRY TERRACE

Project No.: CCO-23-3441

Prepared for:

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April 19, 2024 Subm2

McINTOSH PERRY
egis

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1.0 PROJECT OVERVIEW

1.1 Purpose

McIntosh Perry (MP) has been retained by Kionas Construction Inc. (Kionas) to prepare this Assessment of Adequacy of Public Services Report in support of the Zoning By-law Amendment (ZBLA) application process for the contemplated development at 1034 McGarry Terrace, within the City of Ottawa.

The main purpose of this report is to demonstrate that the proposed servicing and stormwater management design for the development follows the recommendations and guidelines provided by the City of Ottawa (City), the Rideau Valley Conservation Authority (RVCA), and the Ministry of the Environment, Conservation and Parks (MECP). This report will address access to water, sanitary and storm servicing for the site, ensuring that existing services will adequately service the proposed development.

1.2 Site Description

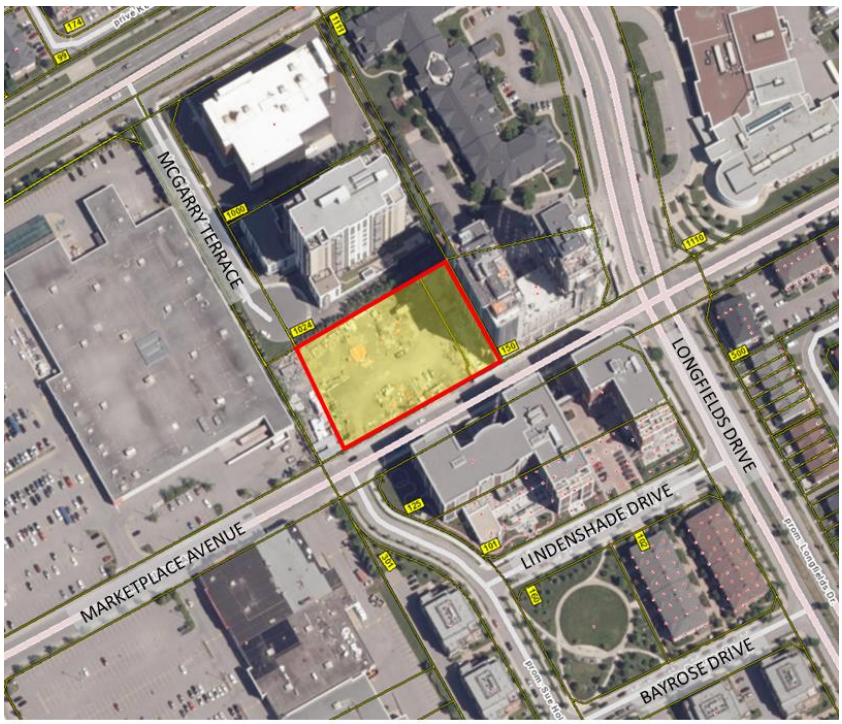


Figure 1: Site Map

The subject property, herein referred to as the site, is located at 1034 McGarry Terrace in the Barrhaven West Ward in the City of Ottawa. The site covers approximately ***0.42 ha*** and is located at the southwest corner of the proposed extension of McGarry Terrace and

Marketplace Avenue intersection. The site is zoned for Mixed-Use Centre Zone (MC[2573]). Additional details are included on the Site Location Plan included in ***Appendix B***.

1.3 Proposed Development and Statistics

The contemplated development consists of a mixed-use building containing a 4-storey base podium, an 11-storey residential tower (centre), 26-storey residential tower (east), and a 35-storey residential tower (west). The ***Site Plan*** proposes ***592*** *residential units,* ***1,104 m²*** of commercial space, and ***653*** parking spaces, which are all underground. The site access will be from Marketplace Avenue. Refer to ***Site Plan*** prepared by Progressive Architects Ltd. In ***Appendix B*** for further details.

1.4 Existing Conditions and Infrastructure

The site was previously occupied by a single-family residential dwelling. Currently, the site is undeveloped and serves as a construction lay-down area for adjacent properties.

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:

- McGarry Terrace
  - 203 mm diameter PVC watermain;
  - 200 mm diameter PVC sanitary sewer; and a
  - 525 mm diameter concrete storm sewer.
- Marketplace Avenue
  - 305 mm diameter PVC watermain;
  - 250 mm diameter PVC sanitary sewer; and a
  - 1350 mm diameter concrete storm sewer.

1.5 Approvals

The contemplated development is subject to the City of Ottawa zoning by-law amendment approval process.

The development will be subject to the City of Ottawa site plan control approval process. Site plan control requires the City to review, provided concurrence and approve the engineering design package. Permits to construct can be requested once the City has issued a site plan agreement.

An Environmental Compliance Approval (***ECA***) through the Ministry of Environment, Conservation and Parks (***MECP***) is not anticipated to be required for the development. The stormwater management system is anticipated to meet the exemption requirements under O.Reg. 525/90 since the development is located within a single parcel, is not tributary to a combined sewer system, and does not propose industrial usage.

2.0 BACKROUND STUDIES, STANDARDS AND REFERENCES

2.1 Background Reports / Reference Information

As-built drawings of existing services, provided by the City of Ottawa Information centre, within the vicinity of the site were reviewed in order to identify infrastructure available to service the contemplated development. The following reports were also reviewed:

- Site Servicing and Stormwater Management Report, 1117 Longfields Drive and 1034 McGarry Terrace, Ottawa, ON prepared by Stantec Consulting Ltd., May 13, 2019; and
- Nepean South Chapman Mills Stormwater Management Servicing Report, Prepared by IBI Group, dated September 2010, Fourth Addendum dated February 16, 2018.

2.2 Applicable Guidelines and Standards

City of Ottawa:

- Ottawa Sewer Design Guidelines, City of Ottawa, SDG002, October 2012. (***Ottawa Sewer Guidelines***)
  - Technical Bulletin ISTB-2014-01 City of Ottawa, February 2014***. (ISTB-2014-01)***
  - Technical Bulletin ISTB-2018-01 City of Ottawa, January 2018***. (ISTB-2018-01)***
  - Technical Bulletin ISTB-2018-03 City of Ottawa, March 2018. ***(ISTB-2018-03)***
  - Technical Bulletin ISTB-2019-01 City of Ottawa, January 2019. ***(ISTB-2019-01)***
  - Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. ***(ISTB-2019-02)***
- Ottawa Design Guidelines – Water Distribution City of Ottawa, July 2010. (***Ottawa Water Guidelines***)
  - Technical Bulletin ISD-2010-2 City of Ottawa, December 15, 2010. ***(ISD-2010-2)***
  - Technical Bulletin ISDTB-2014-02 City of Ottawa, May 2014. **(ISDTB-2014-02)**
  - Technical Bulletin ISTB-2018-02 City of Ottawa, March 2018. ***(ISTB-2018-02)***
  - Technical Bulletin ISTB-2021-03 City of Ottawa, August 2021. ***(ISTB-2021-03)***
- Stormwater management Design Criteria for the Pinecrest Creek/Westboro Area, City of Ottawa, May 2020. (***Pinecrest Creek Study***)

Ministry of Environment, Conservation and Parks:

- Stormwater Planning and Design Manual, Ministry of the Environment, March 2003. ***(MECP Stormwater Design Manual)***
- Design Guidelines for Sewage Works, Ministry of the Environment, 2008. (***MECP Sewer Design Guidelines***)

Other:

- Water Supply for Public Fire Protection, Fire Underwriters Survey, 2020. (***FUS Guidelines***)

3.0 PRE-CONSULTATION SUMMARY

A pre-consultation meeting was conducted on June 7th, 2022, regarding the contemplated development at 1034 McGarry Terrace. Specific design parameters to be incorporated within this design include the following.

- All Site Servicing and SWM design shall meet the design criteria set in the Nepean South Chapman Mills Stormwater Management Servicing Report (***Chapman Mills SWMF Report***), prepared by IBI Group.
- Quality control to be provided by the Chapman Mills SWMF.
- Post-development to be restricted to 85 L/s/ha for all events up to the 100-year event, with no ponding in the 2-year storm event, based on a calculated time of concentration and the lesser of either the calculated pre-development rational method coefficient or 0.50. Time of concentration must be equal to or greater than 10 minutes.
- Confirm boundary conditions with City of Ottawa staff.
- Confirm sanitary capacity with City of Ottawa staff.

The notes from the City of Ottawa pre-consultation can be found in ***Appendix B***.

4.0 WATERMAIN

4.1 Existing Watermain

The subject site is located within the 3SW pressure zone, as shown by the Water Distribution figure located in ***Appendix C***. The following subsections outline the water infrastructure that exists within McGarry Terrace and Marketplace Avenue.

4.1.1 *McGarry Terrace*

There is an existing 203 mm diameter PVC watermain within McGarry Terrace. In addition, there is an existing fire hydrant on the north side of the site along McGarry Terrace.

4.1.2 *Marketplace Avenue*

There is an existing 305 mm diameter PVC watermain within Marketplace Avenue. In addition, there is an existing fire hydrant fronting the site along Marketplace Avenue.

4.2 Proposed Watermain

In accordance with Section 4.3.1 of the ***Ottawa Water Guidelines***, service areas with a basic day demand greater than 50 m^3/day require a dual connection to the municipal system. A dual connection will be required to service the contemplated development, based on the site statistics provided by the ***Site Plan***. Two connections to the watermain will be designed during the Site Plan Control phase.

The Fire Underwriters Survey 2020 (FUS) method was utilized to estimate the required fire flow for the site. Fire flow requirements were calculated per City of Ottawa Technical Bulletin ***ISTB-2018-02***. The following parameters were provided by the building architect:

- Type of construction – Non-Combustible Construction
- Occupancy type – Limited Combustibility
- Sprinkler Protection – Standard Water Supply Sprinklered

The results of the calculations yielded a required fire flow of ***11,000 L/min*** (183.3 L/s). The detailed calculations for the FUS can be found in ***Appendix C***.

The water demands for the proposed building have been calculated to adhere to ***Ottawa Water Guidelines*** and can be found in ***Appendix C***. The results have been summarized below:

Table 1: Water Supply Design Criteria and Water Demands

Site Area	0.42 ha
Residential	280 L/day/person
Studio Apartment (46 units)	1.4 persons/unit
Residential 1 Bedroom Apartment (290 Units)	1.4 persons/unit
Residential 2 Bedroom Apartment (244 Units)	2.1 persons/unit
Residential 3 Bedroom Apartment (12 Units)	3.1 persons/unit
Commercial Space	28,000 L/gross ha/day
Average Day Demand (L/s)	3.40 L/s
Maximum Daily Demand (L/s)	8.40 L/s
Peak Hourly Demand (L/s)	18.43 L/s
FUS Fire Flow Requirement (L/s)	183.3 L/s (11,000 L/min)

The City provided the estimated water pressures for the average day scenario, peak hour scenario and the max day plus fire flow scenario for the demands indicated by the correspondence in ***Appendix C***. The resulting pressures for the boundary conditions results are shown in ***Tables 2*** and ***3***, below. Boundary conditions have been provided for the current pressure zone (3SW) as well as the future pressure zone (SUC).

The estimated water demands have decreased since the boundary condition request due to changes in the site statistics. Due to the minor decrease, the validity of the boundary condition results is not anticipated to be impacted.

Table 2: Boundary Condition Results – Current 3SW Pressure Zone

	Connection 1 – Marketplace Avenue		Connection 2 – McGarry Terrace	
Scenario	**Estimated Demands (L/s)**	**HGL (m H_2O)*/kPa**	**Estimated Demands (L/s)**	**HGL (m H_2O)**/kPa**
Average Day Demand	3.40	55.3 / 542.5	3.40	54.7 / 536.5
Maximum Daily + Fire Flow Demand	8.40	42.1 / 413.0	8.40	41.5 / 406.7
Peak Hourly Demand	18.43	41.8 / 410.1	18.43	41.3 / 404.7

**Adjusted for an estimated ground elevation of 101.2m above the connection point.*
***Adjusted for an estimated ground elevation of 101.8m above the connection point.*

The normal operating pressure range for the current zone is anticipated to be 404.7 kPa to 536.5 kPa and will not be less than 275 kPa (40 psi) or exceed 689 kPa (100 psi). The watermains will meet the minimum required 20 psi (140 kPa) from the ***Ottawa Water Guidelines*** at the ground level under maximum day demand and fire flow conditions.

Table 3: Boundary Condition Results – Future SUC Pressure Zone

	Connection 1 – Marketplace Avenue		Connection 2 – McGarry Terrace	
Scenario	**Estimated Demands (L/s)**	**HGL (m H_2O)*/kPa**	**Estimated Demands (L/s)**	**HGL (m H_2O)**/kPa**
Average Day Demand	3.40	45.7 / 448.3	3.40	45.1 / 442.4
Maximum Daily + Fire Flow Demand	8.40	42.0 / 412.0	8.40	38.5 / 377.7
Peak Hourly Demand	18.43	42.8 / 419.9	18.43	42.2 / 414.0

**Adjusted for an estimated ground elevation of 101.2m above the connection point.*
***Adjusted for an estimated ground elevation of 101.8m above the connection point*

The normal operating pressure range for the future pressure zone is anticipated to be 377.7 kPa to 442.4 kPa and will not be less than 275 kPa (40 psi) or exceed 689 kPa (100 psi). The watermains will meet the minimum required 20 psi (140 kPa) from the ***Ottawa Water Guidelines*** at the ground level under maximum day demand and fire flow conditions. In accordance with the FUS, the existing watermain network can provide the required fire flow to the proposed building.

To confirm the adequacy of fire flow to protect the proposed development, public and private fire hydrants within 150 m of the proposed building were accounted for per ***ISTB 2018-03*** *Appendix I* Table 1. The results are summarized below in ***Table 4***.

Table 4: Fire Protection Confirmation

Building	Fire Flow Demand (L/min.)	Fire Hydrant(s) within 75m	Fire Hydrant(s) within 150m	Combined Fire Flow (L/min.)
1034 McGarry Terrace	11,000 L/min – FUS	5 public	4 public	43,700

Based on City guidelines (***ISTB-2018-02***), it is anticipated that the existing municipal hydrants can provide adequate fire coverage to the contemplated development. A hydrant coverage figure can be found in ***Appendix C***.

5.0 SANITARY DESIGN

5.1 Existing Sanitary Sewer

There is an existing 200 mm diameter PVC sanitary sewer within McGarry Terrace and an existing 250 mm diameter sanitary sewer within Marketplace Avenue available to service the site. The McGarry Terrace sewer connects to the Marketplace Avenue sewer, which then connects to the Longfields Drive sewer, flowing south.

5.2 Proposed Sanitary Sewer

Table 5, below, summarizes the wastewater design criteria identified by the ***Ottawa Sewer Guidelines***.

Table 5: Sanitary Design Criteria

Design Parameter	Value
Studio Apartment (46 units)	1.4 persons/unit
Residential 1 Bedroom / Bachelor Apartment (290 Units)	1.4 persons/unit
Residential 2 Bedroom Apartment (244 Units)	2.1 persons/unit
Residential 3 Bedroom Apartment (12 Units)	3.1 persons/unit
Average Daily Demand	280 L/day/person
Commercial Space	2800 L/(1000m²/day)

It is anticipated that the contemplated development will be serviced by the 250 mm diameter sanitary sewer within Marketplace Avenue.

Table 5, below, summarizes the estimated wastewater flow from the contemplated development. Refer to ***Appendix D*** for detailed calculations.

Table 6: Summary of Estimated Sanitary Flow

Design Parameter	Total Flow (L/s)
Total Estimated Average Dry Weather Flow	3.42
Total Estimated Peak Dry Weather Flow	10.81
Total Estimated Peak Wet Weather Flow	10.96

City staff were contacted on February 14th, 2023, to review contemplated wastewater flows from the site and advise if there were any downstream constraints. City staff were able to confirm that the Longfields Drive sanitary sewer can accommodate the contemplated flow of ***10.96 L/s*** from the site. Correspondence with City Staff is included in ***Appendix D***.

6.0 STORM SEWER & STORMWATER MANAGEMENT DESIGN

6.1 Existing Storm Sewers

Stormwater runoff from the site is currently tributary to the Ottawa River within the Jock River sub-watershed. The following subsections outline the storm infrastructure that exists within McGarry Terrace and Marketplace Avenue.

6.1.1 McGarry Terrace

There is an existing 525 mm diameter storm sewer located within McGarry Terrace. The storm sewer slopes to the south and discharges to the existing storm sewer on Marketplace Avenue.

6.1.2 Marketplace Avenue

There is an existing 1350 mm diameter storm sewer located within Marketplace Avenue. The storm sewer slopes to the east and connects to the 1350 mm diameter storm sewer within Longfields Drive.

6.2 Proposed Storm Sewers

It is anticipated that runoff will be directed to the existing 1350 mm diameter storm sewer running east along Marketplace Avenue towards Longfields Drive at a restricted rate, as discussed in *Section 7.1*. The Longfields Drive sewer is tributary to the Chapman Mills Stormwater Management facility.

It is anticipated that a combination of surface, subsurface, rooftop, and internal cistern storage will be required to meet the SWM criteria identified by the City of Ottawa. Further details on the storm sewer design to be provided for the Site Plan Control application.

7.0 STORMWATER MANAGEMENT

7.1 Design Criteria and Methodology

Stormwater management for the site will be maintained through positive drainage away from the contemplated building and towards the adjacent ROWs. The quantitative and qualitative properties of the storm runoff for both the pre-development and post-development flows are further detailed below.

In summary, the following design criteria have been employed in developing the stormwater management design for the site as directed by the RVCA and City:

Quality Control

- Quality control to be provided by the Chapman Mills Stormwater Management Facility. As per the Nepean South Chapman Mills Stormwater Management Servicing Fourth Addendum report (***Chapman Mills SWM report***), the downstream stormwater facility was designed to provide quality controls for the area, including 1034 McGarry Terrace.

Quantity Control

- Post-development to be restricted to 85 L/s/ha for all events up to the 100-year event, with no ponding in the 2-year storm event, based on a calculated time of concentration and the lesser of either the calculated pre-development rational method coefficient or 0.50. Time of concentration must be equal to or greater than 10 minutes. Relevant excerpts from the ***Chapman Mills SWM report*** are included in ***Appendix G*** for reference.

7.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \quad \text{(L/s)}$$

Where: C = Runoff coefficient

I = Rainfall intensity in mm/hr (City of Ottawa IDF curves)

A = Drainage area in hectares

It is recognized that the Rational Method tends to overestimate runoff rates. As a result, the conservative calculation of runoff ensures that any stormwater management facility sized using this method is anticipated to function as intended.

The following coefficients were used to develop an average C for each area:

Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped and Grass	0.20

As per the ***Ottawa Sewer Guidelines***, the 2 or 5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

7.3 Site Drainage

Based on the criteria listed in *Section 7.1*, the contemplated development will be required to restrict flow to 85 L/s/ha for all events up to the 100-year event, with no ponding in the 2-year storm event.

It has been assumed that the existing development contained no stormwater management controls for flow attenuation. The estimated pre-development peak flows for the 2, 5, and 100-year events are summarized below in ***Table 7***.

Table 7: Pre-Development Runoff Summary

Drainage Area	Area (ha)	Q (L/s)		
		2-Year	5-Year	100-Year
A1	0.42	53.81	72.99	156.36

The restriction of stormwater runoff from the site will create the need for on-site storage. To meet the stormwater objectives, the contemplated development may contain a combination of flow attenuation including surface and subsurface storage as well as building storage via an internal cistern and rooftops.

The following storage requirement estimate assumes the flow will be restricted to 85 L/s/ha up to the 100-year storm event. The estimated post-development peak flows for the 2, 5 and 100-year events and the required storage volumes are summarized below in ***Table 8***, below.

Table 8: Post Development Flow Rate and Storage Requirements

Drainage Area	Unrestricted Flow (L/s)			Restricted Flow (L/s)			Storage Required (m^3)		
	2-year	5-year	100-Year	2-year	5-Year	100-Year	2-year	5-Year	100-Year
B1 (0.25 ha)	48.24	65.44	124.61	17.00	17.00	17.00	19.6	32.6	85.4
B2 (0.09 ha)	3.93	5.34	11.43	3.93	5.34	11.43			
B3 (0.08 ha)	14.77	20.04	38.16	6.80	6.80	6.80	4.8	8.4	23.1
Total	**66.95**	**90.82**	**174.20**	**27.73**	**29.14**	**35.23**	**24.42**	**40.94**	**108.46**

It is anticipated that approximately ***109 m³*** of storage will be required on site to attenuate flow to the established release rate of ***35.23 L/s***. Flow and storage calculations can be found within ***Appendix G***. Actual storage volumes will need to be confirmed at the detailed design stage based on a number of factors including site imperviousness and grading constraints.

8.0 SUMMARY

- Development including a four-storey base podium, an 11-storey residential tower, a 26-storey residential tower, and a 35-storey residential tower is contemplated at 1034 McGarry Terrace;
- The FUS method estimated a maximum fire flow of ***11,000 L/min*** is required for the contemplated development;
- The development is anticipated to have a peak wet weather flow of ***10.96 L/s***. Based on coordination with City staff, the municipal system can accommodate the wastewater flow;
- Based on the IBI Report, the proposed development will be required to attenuate post development flows to an equivalent release rate of 85 L/s/ha for all storms up to and including the 100-year storm event;
- To meet the stormwater objectives the contemplated development may contain a combination of flow attenuation including surface and subsurface storage as well as building storage via an internal cistern and rooftops. It is anticipated that approximately ***109 m³*** of onsite storage will be required to attenuate flow to the established release rate.
- Quality controls are not required for the proposed development due to the proposed outlet to the Chapman Mills Stormwater Management Pond.

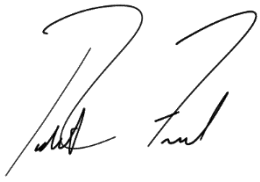
9.0 RECOMMENDATION

Based on the information presented in this report, we recommend that City of Ottawa approve this Assessment of Adequacy of Public Services in support of the proposed rezoning for 1034 McGarry Terrace.

This report is respectfully being submitted for approval.

Regards,

McIntosh Perry Consulting Engineers Ltd.



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10.0 STATEMENT OF LIMITATIONS

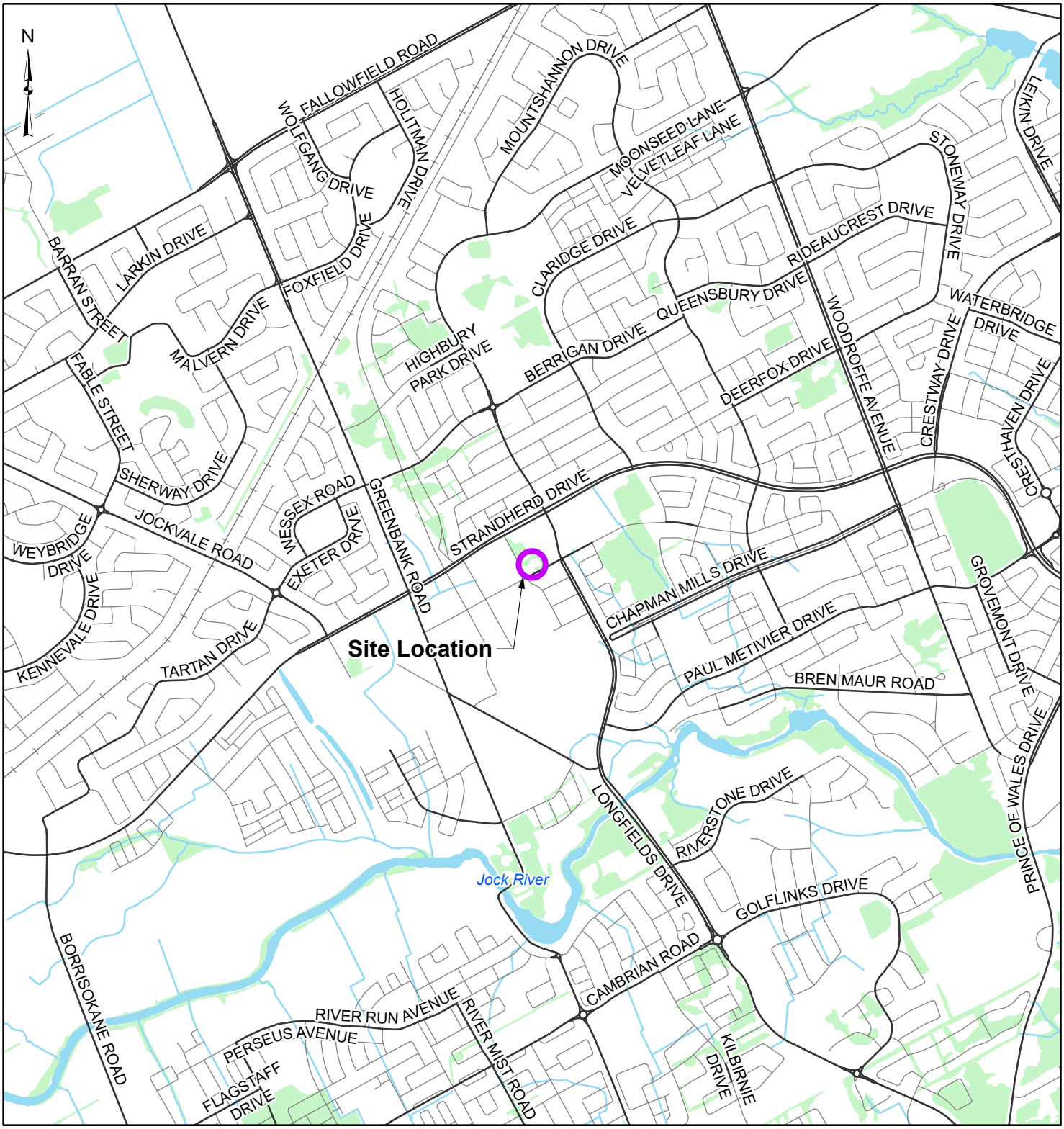
This report was produced for the exclusive use of Kionas Construction Inc. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment, Parks and Climate Change, City of Ottawa and local approval agencies. Egis Canada (formerly McIntosh Perry) reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by Egis Canada and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. Egis Canada accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, Egis Canada should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

APPENDIX A
KEY PLAN

McINTOSH PERRY



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LEGEND

- Site Location
- Local Road
- Major Road
- Railroad
- Watercourse
- Waterbody
- Wooded Area

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2023.

CLIENT: KIONAS CONSTRUCTION INC.

PROJECT: 1034 MCGARRY TERRACE

TITLE: SITE LOCATION PLAN

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

PROJECT NO:	CCO-23-3441
Date	Aug., 30, 2023
GIS	AH
Checked By	AB

FIGURE: 1

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APPENDIX B
BACKGROUND DOCUMENTS

McINTOSH PERRY

Date: June 7, 2022

Site Location: **1034 McGarry Terrace**

Type of Development: x Residential (☐ townhomes, ☐ stacked, ☐ singles, x apartments),
☐ Office Space, ☐ Commercial, ☐ Retail, ☐ Institutional, ☐ Industrial, other____

Owner/Agent: _____

Assigned Planner: **Sean Moore**

Attendees: _____

All Site Servicing and SWM design shall meet the design criteria set in the Nepean South Chapman Mills Stormwater Management Servicing Report, Prepared by IBI Group, Dated September 2010.

Water:
Connection point: 203mm PVC on McGarry Terrace
Connection point: 305mm PVC on Marketplace Ave

Water redundancy would be required for this development based on the number of proposed units.

- Watermain Frontage Fees to be paid ($190.00 per metre) ☐ **Yes** ☒ **No**

Boundary conditions:
Civil consultant must request boundary conditions from the City's assigned Project Manager prior to submission.

- Water boundary condition requests must include the location of the service(s) and the expected loads required by the proposed developments. Please provide all the following information:
  - Location of service(s)
  - Type of development and the amount of fire flow required (as per FUS, 2020).
  - Average daily demand: ___ l/s.
  - Maximum daily demand: ___l/s.
  - Maximum hourly daily demand: ___ l/s.
- Fire protection (Fire demand, Hydrant Locations)

Sanitary Sewers:
Connection point: 200mm PVC on McGarry Terrace
Connection point: 250mm PVC on Marketplace Ave

Is a monitoring manhole required on private property? ☒ Yes ☐ No

- The designer should be aware there may be limited capacity in the downstream sanitary sewer system. The sanitary demand needs to be coordinated with the City Planning Dept. to determine if the existing sanitary sewer system has sufficient capacity to support the proposed rezoning. Provide sanitary demands to the City project manager for coordination.

Storm Sewers:
Connection point: 525mm concrete on McGarry
Connection point: 1350mm concrete on Marketplace Ave

Storm Water Management:
Quality Control:

- Quality control to be provided by the Chaman Mills SWMF and confirmation from the Rideau Valley Conservation Authority to be provided upon submission.

Quantity Control:

- Allowable Runoff coefficient (C): C = the lesser of the existing pre-development conditions to a maximum of 0.5.
- Time of concentration (Tc): Tc = pre-development; maximum Tc = 10 min
- Allowable flowrate: Control up to the 100-year events to 85 L/s/ha with no ponding in the 2 year event.

Ministry of Environment, Conservation and Parks (MECP)

All development applications should be considered for an Environmental Compliance Approval, under MECP regulations.

a. The consultants determine if an approval for sewage works under Section 53 of OWRA is required and determines what type of application. The City's project manager may help confirm and coordinate with the MECP as required.
b. The project will be either transfer of review (standard), transfer of review (additional), direct submission, or exempt as per O. Reg. 525/98.
c. Pre-consultation is not required if applying for standard or additional works (Schedule A of the Agreement) under Transfer Review.
d. Pre-consultation with local District office of MECP is recommended for direct submission.
e. Consultant completes an MECP request form for a pre-consultation. Sends request to moeccottawasewage@ontario.ca
f. ECA applications are required to be submitted online through the MECP portal. A business account required to submit ECA application. For more information visit https://www.ontario.ca/page/environmental-compliance-approval
g. It is unclear if the proposed development will remain as one property. An ECA will be required where the stormwater management services more than one property parcel.

NOTE: Site Plan Approval, or Draft Approval, is required before any Ministry of the Environment and Climate Change (MOECC) application is sent.

General Service Design Comments

- The City of Ottawa requests that all new services be located within the existing service trench to minimize necessary road cuts.
- Monitoring manholes should be located within the property near the property line in an accessible location to City forces and free from obstruction (i.e. not a parking).
- Where service length is greater than 30 m between the building and the first maintenance hole / connection, a cleanout is required.
- The City of Ottawa Standard Detail Drawings should be referenced where possible for all work within the Public Right-of-Way.
- The upstream and downstream manhole top of grate and invert elevations are required for all new sewer connections.

Services crossing the existing watermain or sewers need to clearly provide the obvert/invert elevations to demonstration minimum separation distances. A watermain crossing table may be provided.

All development applications should be considered for an Environmental Compliance Approval (ECA) by the Ministry of the Environment, Conservation, and Parks (MECP);

a. Consultant determines if an approval for sewage works under Section 53 of OWRA is required. Consultant then determines what type of application is required and the City's project manager confirms. (If the consultant is not clear if an ECA is required, they will work with the City to determine what is required. If the consultant it is still unclear or there is a difference of opinion only then will the City PM approach the MECP.
b. The project will be either transfer of review (standard), transfer of review (additional), direct submission, or exempt as per O. Reg. 525/98.
c. Pre-consultation is not required.
d. Standard Works ToR Draft ECA's are sent to the local MECP office (moeccottawasewage@ontario.ca).for information only
e. Additional ToR draft ECAs require a project summary/design brief and require a response from the local MECP (10 business day window)
f. **Site Plan Approval, or Draft Approval, is required before an application is sent to the MECP**

Refer to application tables for lists of required supporting plans and studies

---

Site Plan Control – Municipal servicing

Legend:

The letter **S** indicates that the study or plan is required with application submission.
The letter **M** indicates that the study or plan may be required with application submission.

For information on preparing required studies and plans refer to:

http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans

S/A	Number of copies	ENGINEERING		S/A	Number of copies
S	1	1. Site Servicing Plan	2. Assessment of Adequacy of Public Services / Site Servicing Study / Brief	**S**	1
S	1	3. Grade Control and Drainage Plan	4. Geotechnical Study / Slope Stability Study	**S**	1
	1	5. Composite Utility Plan	6. Groundwater Impact Study		1
	1	7. Servicing Options Report	8. Wellhead Protection Study		1
	1	9. Community Transportation Study and/or Transportation Impact Study / Brief	10. Erosion and Sediment Control Plan / Brief	**S**	1
S	1	11. Storm water Management Report / Brief	12. Hydro-geological and Terrain Analysis		1
S	1	13. Hydraulic Water main Analysis	14. Noise / Vibration Study	**M**	1
	1	15. Roadway Modification Design Plan	16. Confederation Line Proximity Study		1

Meeting Date: ***2022-Jun-07***

Application Type: ***Site Plan Control***

File Lead: ***Sean Moore***

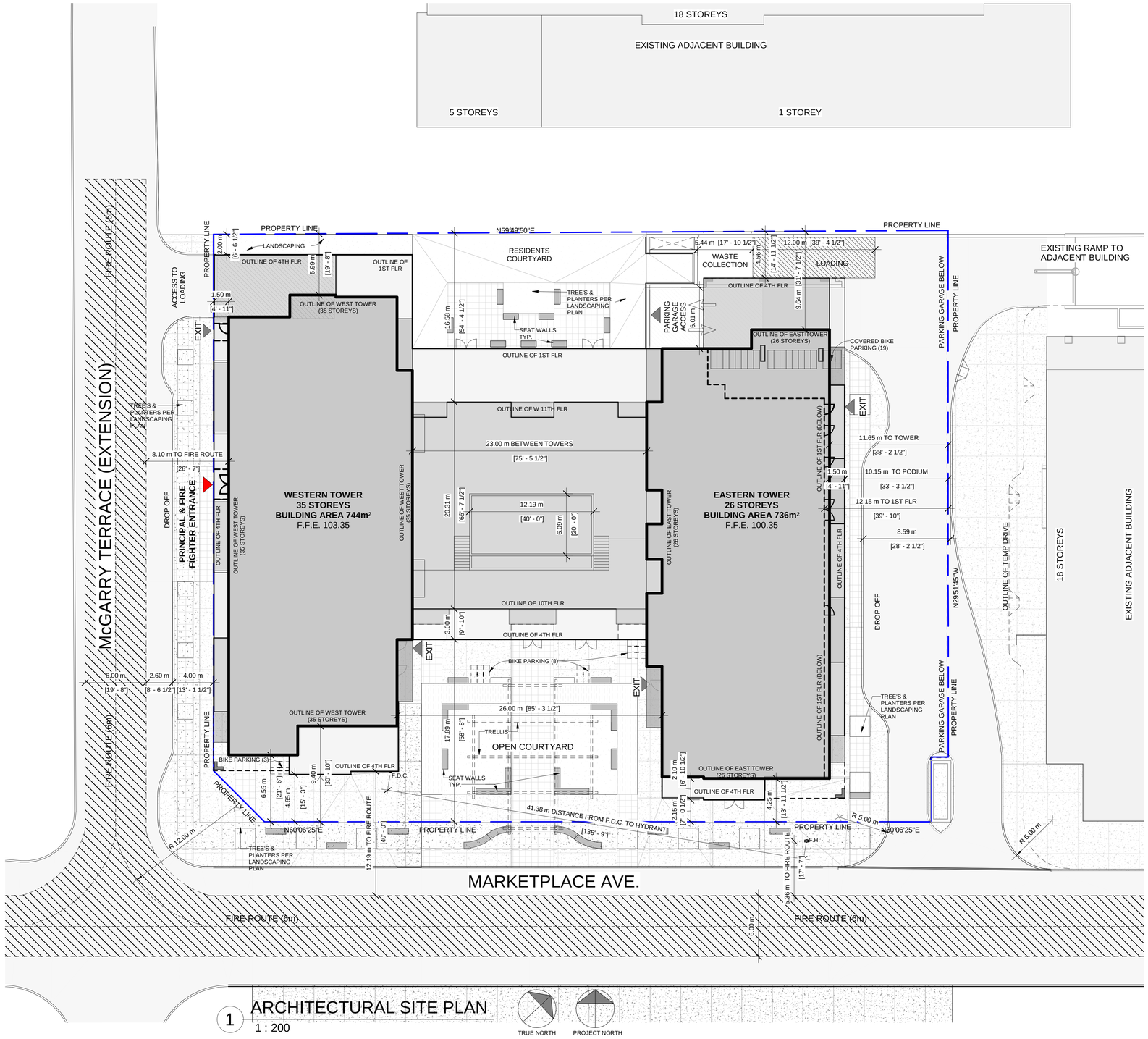
Engineer/Project Manager: ***Bruce Bramah***

Site Address: **1034 McGarry Terrace**

*Preliminary Assessment: 1☐ 2☐ 3☐ 4☐ 5☐

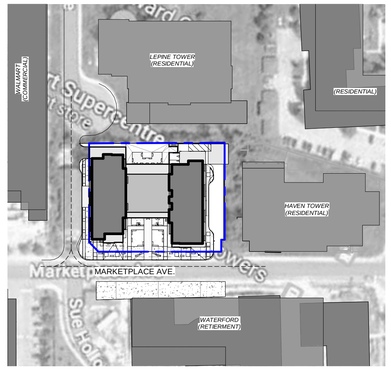
*One (1) indicates that considerable revisions are required before a planning application is submitted, while five (5) suggest that proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal, or in any way guarantee application approval.

It is important to note that the need for additional studies and plans may result during application review. If following the submission of your application, it is determined that material that is not identified in this checklist is required to achieve complete application status, in accordance with the Planning Act and Official Plan requirements, City Planning will notify you of outstanding material required within the required 30 day period. Mandatory pre-application consultation will not shorten the City's standard processing timelines, or guarantee that an application will be approved. It is intended to help educate and inform the applicant about submission requirements as well as municipal processes, policies, and key issues in advance of submitting a formal development application. This list is valid for one year following the meeting date. If the application is not submitted within this timeframe the applicant must again pre-consult with the City



1 ARCHITECTURAL SITE PLAN
1 : 200

TRUE NORTH PROJECT NORTH



2 KEYPLAN
1 : 1500

TOTAL UNIT COUNT

LEVELS	PER FLR	# OF LEVELS	TOTAL
PODIUM & LINK			
2ND- 4TH FLR	25 UNITS	3 LEVELS	**75 UNITS**
5TH- 9TH FLR	24 UNITS	5 LEVELS	**120 UNITS**
10TH &11TH FLR	17 UNITS	2 LEVELS	**34 UNITS**
WEST TOWER			
12TH FLR	7 UNITS	1 LEVEL	**7 UNITS**
13TH- 35TH FLR	9 UNITS	23 LEVELS	**207 UNITS**
EAST TOWER			
12TH FLR	9 UNITS	1 LEVELS	**9 UNITS**
13TH- 26TH FLR	10 UNITS	14 LEVELS	**140 UNITS**
		TOTAL	**592 UNITS**

UNIT TYPE COUNT

UNIT TYPE	2ND-11TH FLR	WEST TOWER	EAST TOWER	TOTAL
STUDIO	--	46	--	**46 (7.8%)**
1 BED	143	72	75	**290 (49%)**
2 BED	76	94	74	**244 (41.2%)**
3 BED	10	2	--	**12 (2%)**
TOTAL	**229**	**214**	**149**	**592 UNITS**

BUILDABLE AREA

LEVELS	PER FLR	# OF FLRS	TOTAL
PARKING			
P1 PARKING	3033 m²	1 FLRS	**3033 m²**
P2-P6 PARKING	4128 m²	5 FLRS	**20640 m²**
P6 LOWER LEVEL	2007 m²	1 FLRS	**2007 m²**
		TOTAL BELOW GRADE	**25680 m²**
PODIUM			
1ST FLR	2289 m²	1 FLR	**2289 m²**
2ND- 4TH FLR	2261 m²	3 FLRS	**6783 m²**
5TH- 9TH FLR	1942 m²	5 FLRS	**9710 m²**
10TH&11TH FLR	1957 m²	2 FLRS	**3914 m²**
TOWERS			
12TH-35TH FLR WEST	744 m²	24 FLRS	**17856 m²**
12TH-26TH FLR EAST	736 m²	15 FLRS	**11040 m²**
		TOTAL ABOVE GRADE	**51592 m²**

OVERALL PARKING COUNT

457	PARKING STANDARD 2.6x5.5
98	PARKING MIDSIZE 2.5x5.1
81	PARKING COMPACT 2.4x4.6
8	BF TYPE B PARKING
9	BF TYPE A PARKING
653	

CITY OF OTTAWA ZONING BYLAW 2008-250

MC[2573] MIXED-USE CENTRE ZONE
PROPOSED APARTMENT DWELLING, HIGH RISE

PROPOSED USES:
APARTMENT DWELLING, HIGH RISE (592 UNITS)
RETAIL STORE: 1120m² GFA
LOT AREA: 5194.06m²
LOT FRONTAGE: 70.41m
LOT DEPTH: 57.55m

ZONING PROVISION	REQUIRED	PROVIDED	COMPLIANT
MIXED-USE CENTRE ZONE MC[2573]			
LOT AREA (MIN.)	NO MINIMUM	4,148m²	✓
LOT WIDTH (MIN.)	NO MINIMUM	72.3m	✓
FRONT YARD & CORNER YARD SETBACK (MIN.)	NO MINIMUM	0m, 2.15m	✓/✓
INTERIOR SIDE YARD SETBACK (MIN.)	NO MINIMUM	2.0m	✓
REAR YARD SETBACK (MIN.)	NO MINIMUM	10.15m	✓
FLOOR SPACE INDEX (MAX.)	NO MAXIMUM	17.9 FSI	✓
BUILDING HEIGHT (MIN.)	20 m*†	7.5 m	✓
BUILDING HEIGHT (MAX.)	57 m*	130 m	X
GROSS FLOOR AREA (MAX.)	28,270 m²*	67,000 m² (WEST TOWERS 38,730m² + EAST TOWERS 28,270m²)	X
LANDSCAPED AREA (MIN.)	NO MINIMUM	1155 m²	✓
PROVISION FOR HIGH RISE BUILDING (SECTION 77) (AREA B ON SHEDULE 402)			
INTERIOR SIDE YARD (MIN.) PORTION OF A BUILDING THAT ARE 10 STOREYS OR TALLER:	11.5 m	5.9 m & 11.65 m	X/✓
PARKING PROVISIONS (SECTION 101) (AREA C ON SCHEDULE 1A) (320m FROM EXISTING RAPID TRANSIT ON SCHEDULE 2A)			
RESIDENTIAL: MINIMUM PARKING SPACES REQUIRED FOR DWELLING UNITS IN A MIXED-USE BUILDING: 0.5 PER DWELLING UNIT.	592 UNITS × 0.5 = 296 SPACES*	523 SPACES	✓
RETAIL STORE (N79): 1.25 SPACES PER 100 M² GFA; LESS 200 M²	(1120 m² - 200) x 0.0125 =11.5 SPACES	12 SPACES	✓
RESIDENTIAL VISITOR PARKING: 0.2 SPACES PER DWELLING UNIT	592 UNITS × 0.2 = 118.4 (118) SPACES*	118 SPACES	✓
TOTAL VEHICLE PARKING SPACES:	**426 SPACES**	**653 SPACES**	✓
BICYCLE PARKING (SECTION 111)			
RESIDENTIAL: DWELLING UNIT IN THE SAME BUILDING AS A NON-RESIDENTIAL USE: 0.5 SPACES PER DWELLING UNIT	592 UNITS × 0.5 = 296 SPACES	296 SPACES	✓
RETAIL STORE (e): 1 SPACE PER 250 M² GFA	1120 X 0.004 = 4.5 (5) SPACES	5 SPACES	✓
TOTAL BICYCLE PARKING SPACES:	**301 SPACES**	**301 SPACES**	✓
AMENITY AREA (SECTION 137) (MIXED USE BUILDING, WITH NINE OR MORE DWELLING UNITS)			
RESIDENTIAL: 6 M² PER DWELLING UNIT, AND 10% OF THE GROSS FLOOR AREA OF EACH ROOMING UNIT	592 UNITS × 6 = 3552 m²	5385 m²‡	✓
COMMUNAL AMENITY AREA: MINIMUM OF 50% OF THE REQUIRED TOTAL AMENITY AREA	3552 X 50% = 1776 M²	2692 M²‡	✓
OTHER PROVISIONS			
50% OF THE GROUND FLOOR OF A BUILDING CONTAINING DWELLING UNITS MUST BE OCCUPIED BY NON -RESIDENTIAL USES			✓
NO MORE THAN 12 PARKING SPACES MAY BE PROVIDED AT GRADE			✓
NOTES:			
* PROVISION OF URBAN EXCEPTION 2573 † ONLY 50% OF THE BUILDING ENVELOPE MUST COMPLY WITH THE MINIMUM BUILDING HEIGHT ‡ COMMUNAL AMENITY AREA INCLUDES PUBLICLY ACCESSIBLE FORECOURT			✓ ✓ ✓

PROGRESSIVE ARCHITECTS, LTD.
5255 COUNTY RD. 42, UNIT C, WINDSOR ON, N8N2M1 TEL: 519-256-1607

ONTARIO ASSOCIATION OF ARCHITECTS
SAAD A. KHALAF
LICENCE
5975

rev.	date	issued for	rev.	date	issued for
8			16		
7			15		
6			14		
5			13		
4			12		
3			11		
2	FEB 27.24	PHASE 2 PRE-CONSULT.	10		
1	DEC 21.23	RE-ZONING	9		

project:
MARKETPLACE WEST
address: 1034 MCGARRY TERRACE, OTTAWA ON

sheet name:
ARCHITECTURAL SITE PLAN

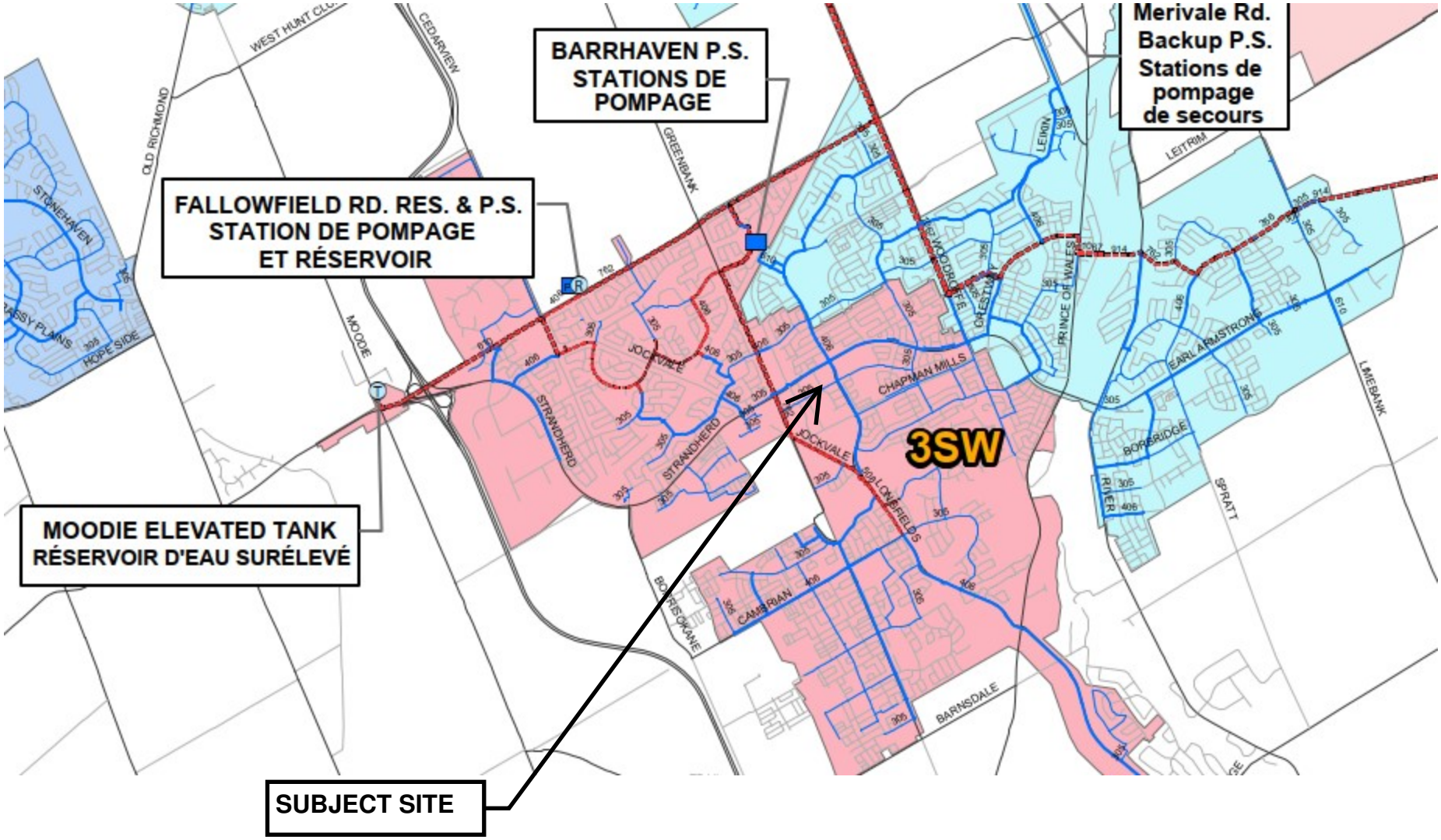
project no.:
22-0039

sheet no.:
A001

APPENDIX C
WATERMAIN CALCULATIONS

McINTOSH PERRY

City of Ottawa - Water Distribution System
Facilities and Feedermains



McINTOSH PERRY

CCO-23-3441 - McGarry Terrace Apartments - Water Demands

Project:	McGarry Terrace Apartments
Project No.:	CCO-23-3441
Designed By:	FV
Checked By:	AB
Date:	August 31, 2023
Site Area:	0.42 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Studio Apartment	**46**	units	1.4	persons/unit
1 Bedroom Apartment	**290**	units	1.4	persons/unit
2 Bedroom Apartment	**244**	units	2.1	persons/unit
3 Bedroom Apartment	**12**	units	3.1	persons/unit
Total Population	**1020**	**persons**		
Commercial + Amenity	**2809**	m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d

AVERAGE DAILY DEMAND	**Residential**	**3.31**	**L/s**
	Commercial/Industrial/ Institutional	**0.09**	**L/s**

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d

MAXIMUM DAILY DEMAND	**Residential**	**8.26**	**L/s**
	Commercial/Industrial/ Institutional	**0.14**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	2.2	x max. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d

MAXIMUM HOUR DEMAND	**Residential**	**18.18**	**L/s**
	Commercial/Industrial/ Institutional	**0.25**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	3.40	L/s
MAXIMUM DAILY DEMAND	8.40	L/s
MAXIMUM HOUR DEMAND	18.43	L/s

McINTOSH PERRY

CCO-23-3441 - McGarry Terrace Apartments - Fire Underwriters Survey

Project:	McGarry Terrace Apartments
Project No.:	CCO-23-3441
Designed By:	FV
Checked By:	RF
Date:	August 15, 2023

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where: F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Non-Combustible Construction

C 0.8 A 38,552.4 m^2

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) 7,578.9 m^2 * Unprotected Vertical Openings

Calculated Fire Flow	15,322.0 L/min
	15,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%	
Fire Flow		12,750.0 L/min

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Standard Water Supply Sprinklered	-40%	
Reduction		-5,100.0 L/min

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons. of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	64.19	19	1219.6	8%
Exposure 2	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	44.2	16	707.2	8%
Exposure 3	20.1 to 30	Fire Resistive - Non Combustible (Unprotected Openings)	73.6	8	588.8	4%
Exposure 4	20.1 to 30	Fire Resistive - Non Combustible (Unprotected Openings)	127.7	18	2298.6	4%
					% Increase*	24%

Increase*	3,060.0 L/min

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	10,710.0 L/min
Fire Flow Required**	11,000.0 L/min

* In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
** In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

115 Walgreen Road, R.R.3. Carp, ON K0A 1L0 | T. 613-836-2184 | F. 613-836-3742
info@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

CCO-23-3441 - McGarry Terrace Apartments - Boundary Condition Unit Conversion

Project: McGarry Terrace Apartments
Project No.: CCO-23-3441
Designed By: FV
Checked By: RF
Date: August 31, 2023

Boundary Conditions Unit Conversion

Current Pressure Zone (3SW) - Connection 1 - Marketplace Avenue

Scenario	Height (m)	Elevation (m)*	m H_2O	PSI	kPa
Avg. DD	156.5	101.2	55.3	78.7	542.5
Max Day + Fire Flow (233.33 L/s)	143.3	101.2	42.1	59.9	413.0
Peak Hour	143.0	101.2	41.8	59.5	410.1

Current Pressure Zone (3SW) - Connection 2 - McGarry Terrace

Scenario	Height (m)	Elevation (m)	m H_2O	PSI	kPa
Avg. DD	156.5	101.8	54.7	77.8	536.5
Max Day + Fire Flow (233.33 L/s)	143.3	101.8	41.5	59.0	406.7
Peak Hour	143.0	101.8	41.3	58.7	404.7

Future Pressure Zone (SUC) - Connection 1 - Marketplace Avenue

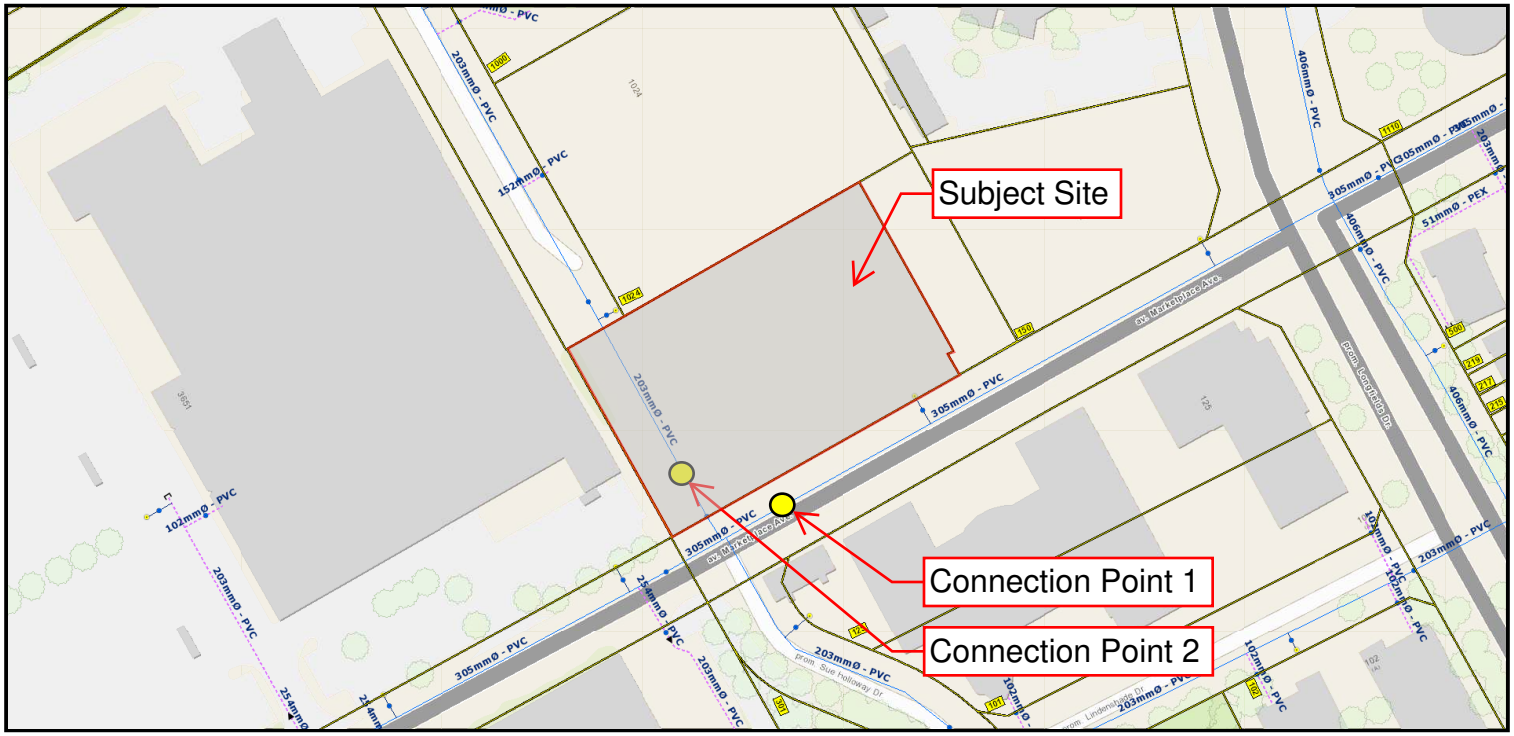
Scenario	Height (m)	Elevation (m)	m H_2O	PSI	kPa
Avg. DD	146.9	101.2	45.7	65.0	448.3
Max Day + Fire Flow (233.33 L/s)	143.2	101.2	42.0	59.8	412.0
Peak Hour	144.0	101.2	42.8	60.9	419.9

Future Pressure Zone (SUC) - Connection 2 - McGarry Terrace

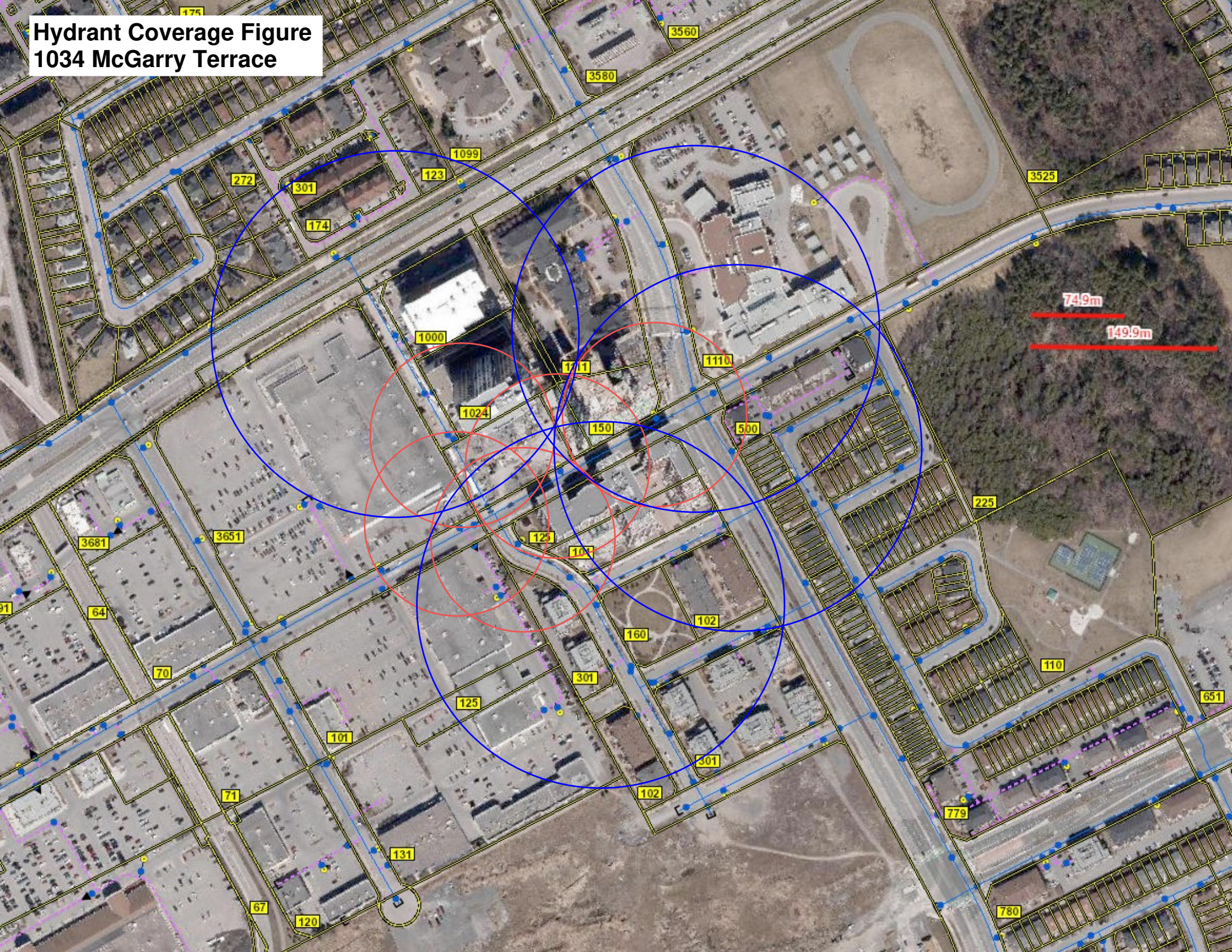
Scenario	Height (m)	Elevation (m)	m H_2O	PSI	kPa
Avg. DD	146.9	101.8	45.1	64.2	442.4
Max Day + Fire Flow (233.33 L/s)	140.3	101.8	38.5	54.8	377.7
Peak Hour	144.0	101.8	42.2	60.0	414.0

1034 McGarry Terrace

Connection Figure



Hydrant Coverage Figure
1034 McGarry Terrace

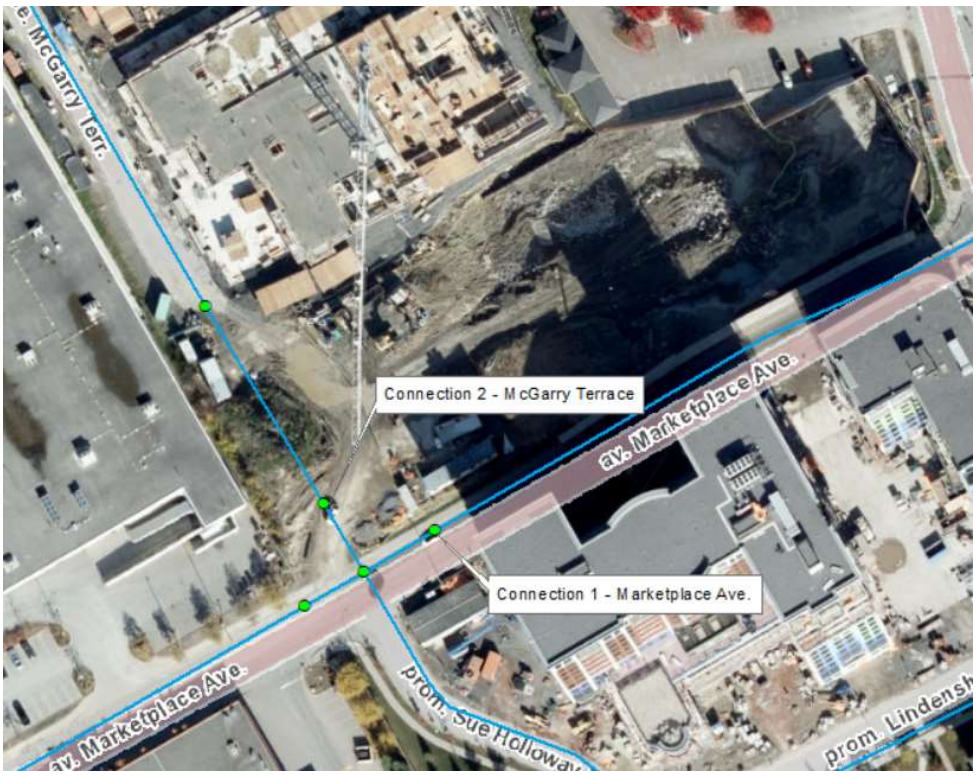


Boundary Conditions
1034 McGarry Terrace

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	224	3.73
Maximum Daily Demand	557	9.29
Peak Hour	1,225	20.42
Fire Flow Demand #1	14,000	233.33

Location



Results

Existing Conditions (Pressure Zone 3SW)

Connection 1 – Marketplace Ave.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	156.5	78.6
Peak Hour	143.0	59.4
Max Day plus Fire Flow	143.3	59.8

[1] Ground Elevation = 101.2 m

Connection 2 – McGarry Terrace

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	156.5	77.7
Peak Hour	143.0	58.5
Max Day plus Fire Flow	143.3	58.9
[1] Ground Elevation =	101.8	m

Future Conditions (Pressure Zone SUC)

Connection 1 – Marketplace Ave.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	146.9	65.0
Peak Hour	144.0	60.9
Max Day plus Fire Flow	143.2	59.7
[1] Ground Elevation =	101.2	m

Connection 2 – McGarry Terrace

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	146.9	64.0
Peak Hour	144.0	60.0
Max Day plus Fire Flow	140.3	54.6
[1] Ground Elevation =	101.8	m

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. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

Andrea Bishop

From: Bramah, Bruce <bruce.bramah@ottawa.ca>
Sent: February 17, 2023 2:24 PM
To: Robert Freel
Cc: Francis Valenti
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace
Attachments: 1034 McGarry_Terrace_Boundary Condition(14Feb2023).docx

Follow Up Flag: Follow up
Flag Status: Completed

Hi Robert,

Boundary conditions came back very quick! Please see the attached Boundary Conditions.
Have a good weekend.

--
Bruce Bramah, EIT
Project Manager
Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique
Development Review - South 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 29686, Bruce.Bramah@ottawa.ca

From: Robert Freel <r.freel@mcintoshperry.com>
Sent: February 15, 2023 2:20 PM
To: Bramah, Bruce <bruce.bramah@ottawa.ca>; Francis Valenti <F.Valenti@McIntoshPerry.com>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Thanks Bruce.

Robert Freel, P.Eng.
Senior Project Manager, Land Development
T. 613.714.6174 | **C.** 613.915.3815
r.freel@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

From: Bramah, Bruce <bruce.bramah@ottawa.ca>
Sent: February 15, 2023 1:28 PM
To: Robert Freel <r.freel@mcintoshperry.com>; Francis Valenti <F.Valenti@McIntoshPerry.com>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Hi Robert,

I should have a response to you regarding the sanitary flows within a week.
Regards,
--
Bruce Bramah, EIT
Project Manager
Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique
Development Review - South 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 29686, Bruce.Bramah@ottawa.ca

From: Robert Freel <r.freel@mcintoshperry.com>
Sent: February 15, 2023 12:02 PM
To: Francis Valenti <F.Valenti@McIntoshPerry.com>; Bramah, Bruce <bruce.bramah@ottawa.ca>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Good morning Bruce,

Hope you are well,

Understand that typically boundary conditions could take a couple weeks to get back, any idea of how long the review of the sanitary flows might be?

Cheers,
Bobby

Robert Freel, P.Eng.
Senior Project Manager, Land Development
T. 613.714.6174 | **C.** 613.915.3815
r.freel@mcintoshperry.com | www.mcintoshperry.com

From: Francis Valenti <F.Valenti@McIntoshPerry.com>
Sent: February 14, 2023 2:17 PM
To: bruce.bramah@ottawa.ca
Cc: Robert Freel <r.freel@mcintoshperry.com>
Subject: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Good afternoon,

We would like to request boundary conditions for the proposed development at 1034 McGarry Terrace. The site plan proposes a 659 unit 40-storey mixed use building, complete with underground parking with street access from Marketplace Avenue. The connections (dual) will be to the existing 305 mm and 203 mm diameter watermains located within Marketplace Avenue and McGarry Terrace, respectively. Please find attached a map showing the proposed connection locations and calculations prepared for the demands listed below.

- The estimated fire flow is 14,000 L/min based on the FUS method
- Average Daily Demand: 3.73 L/s
- Maximum Daily Demand: 9.29 L/s
- Maximum hourly daily demand: 20.42 L/s

Concern was also expressed in the pre-consultation meeting regarding sanitary capacity. Can you please verify municipal infrastructure has the capacity to accommodate the additional flows? Estimated post-development sanitary flows are summarized below, and detailed calculations are attached.

- Total Estimated Average Dry Weather Flow: 3.76 L/s
- Total Estimated Peak Dry Weather Flow: 11.93 L/s
- Total Estimated Peak Wet Weather Flow: 12.07 L/s

Regards,

Francis Valenti, EIT
Engineering Intern, Land Development
T. 613.714.6895 | **C.** 613.808.2123
F.Valenti@McIntoshPerry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

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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.

'

APPENDIX D
SANITARY CALCULATIONS

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CCO-23-3441 - McGarry Terrace Apartments - Sanitary Demands

Project:	McGarry Terrace Apartments			
Project No.:	CCO-23-3441			
Designed By:	FV			
Checked By:	AB			
Date:	Aug-23			
Site Area	0.52	Gross ha		
Studio	46	1.40	Persons per unit	
1 Bedroom	290	1.40	Persons per unit	
2 Bedroom	244	2.10	Persons per unit	
3 Bedroom	12	3.10	Persons per unit	
Total Population	1020	Persons		
Commercial/Amenity	2809.30	m^2		

	Units
Amenities	1705.00
Commercial	1104.30
	2809.30

DESIGN PARAMETERS

Institutional/Commercial Peaking Facto	1.0	
Residential Peaking Factor	3.24	* *Using Harmon Formula* = 1+(14/(4+P^0.5))*0.8
		where P = population in thousands, Harmon's Correction Factor = 0.8
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Infiltration allowance	0.33	L/s/Ha

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.03
Wet	0.15
Total	**0.17**

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	1020	3.31
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m^2 /d)	2809.30	0.09
Hospital	900	L/(bed/day)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m^2/d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENTIAL FLOW	**3.31**	**L/s**
PEAK RESIDENTIAL FLOW	**10.70**	**L/s**
AVERAGE ICI FLOW	**0.09**	**L/s**
PEAK INSTITUTIONAL/COMMERCIAL FLOW	**0.09**	**L/s**
PEAK INDUSTRIAL FLOW	**0.00**	**L/s**
TOTAL PEAK ICI FLOW	**0.09**	**L/s**

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	**3.42**	**L/s**
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	**10.81**	**L/s**
TOTAL ESTIMATED PEAK WET WEATHER FLOW	**10.96**	**L/s**

Andrea Bishop

From: Curtis Melanson
Sent: August 4, 2023 4:19 PM
To: Bays, Eric
Cc: Andrea Bishop
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Follow Up Flag: Follow up
Flag Status: Flagged

Thanks Eric,
Andrea and I will be looking after this!

Curtis Melanson, C.E.T.
Practice Area Lead, Land Development
T. 613.714.4621 | **F.** 613.836.3742 | **C.** 613.857.0784
c.melanson@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY
egis

Turning Possibilities Into Reality

From: Bays, Eric <Eric.Bays@stantec.com>
Sent: August 4, 2023 4:15 PM
To: Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: FW: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

See below re: servicing.
e

Stantec

Stantec

From: Robert Freel <r.freel@mcintoshperry.com>
Sent: Monday, March 20, 2023 2:32 PM
To: Bays, Eric <Eric.Bays@stantec.com>; Spyro Dimitrakopoulos <spyro@kionas.ca>; Tanya Chowieri <tanya@katasa.ca>
Subject: FW: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Good news everyone,

After some additional discussion with the City (see below) they will allow the sanitary discharge from the site via the McGarry/Longfield sewer.

Cheers,
Bobby

Robert Freel, P.Eng.
Senior Project Manager, Land Development
T. 613.714.6174 | **C.** 613.915.3815
r.freel@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

From: Bramah, Bruce <bruce.bramah@ottawa.ca>
Sent: March 20, 2023 1:52 PM
To: Robert Freel <r.freel@mcintoshperry.com>
Cc: Scaramozzino, Tracey <Tracey.Scaramozzino@ottawa.ca>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Good afternoon Robert,

With further discussions with our Asset Management team, we will be able to accept the proposed sanitary flows for 1034 McGarry.
If you have any questions, please feel free to call me.
Thank you,

--
Bruce Bramah, EIT
Project Manager
Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique
Development Review - South 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 29686, Bruce.Bramah@ottawa.ca

From: Robert Freel <r.freel@mcintoshperry.com>
Sent: March 10, 2023 11:06 AM
To: Bramah, Bruce <bruce.bramah@ottawa.ca>
Cc: Scaramozzino, Tracey <Tracey.Scaramozzino@ottawa.ca>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Hi Bruce,

Further to yesterday's meeting are you able to provide the analysis / design sheet that was prepared to support the findings? Below is a design sheet that was created as part of neighbouring development, 1024 McGarry, that I was involved in with for Lepine. It demonstrated that there was 12L/s of capacity within the Longfields sewer prior to that development which would leave 5.16L/s in addition to the capacity allotted for the lands. Is there a hydraulic analysis that was conducted by the City or are we going off the same information?

As mentioned, one option is splitting flow from the development to a second outlet towards the town centre. Could the balance be sent to this outlet?

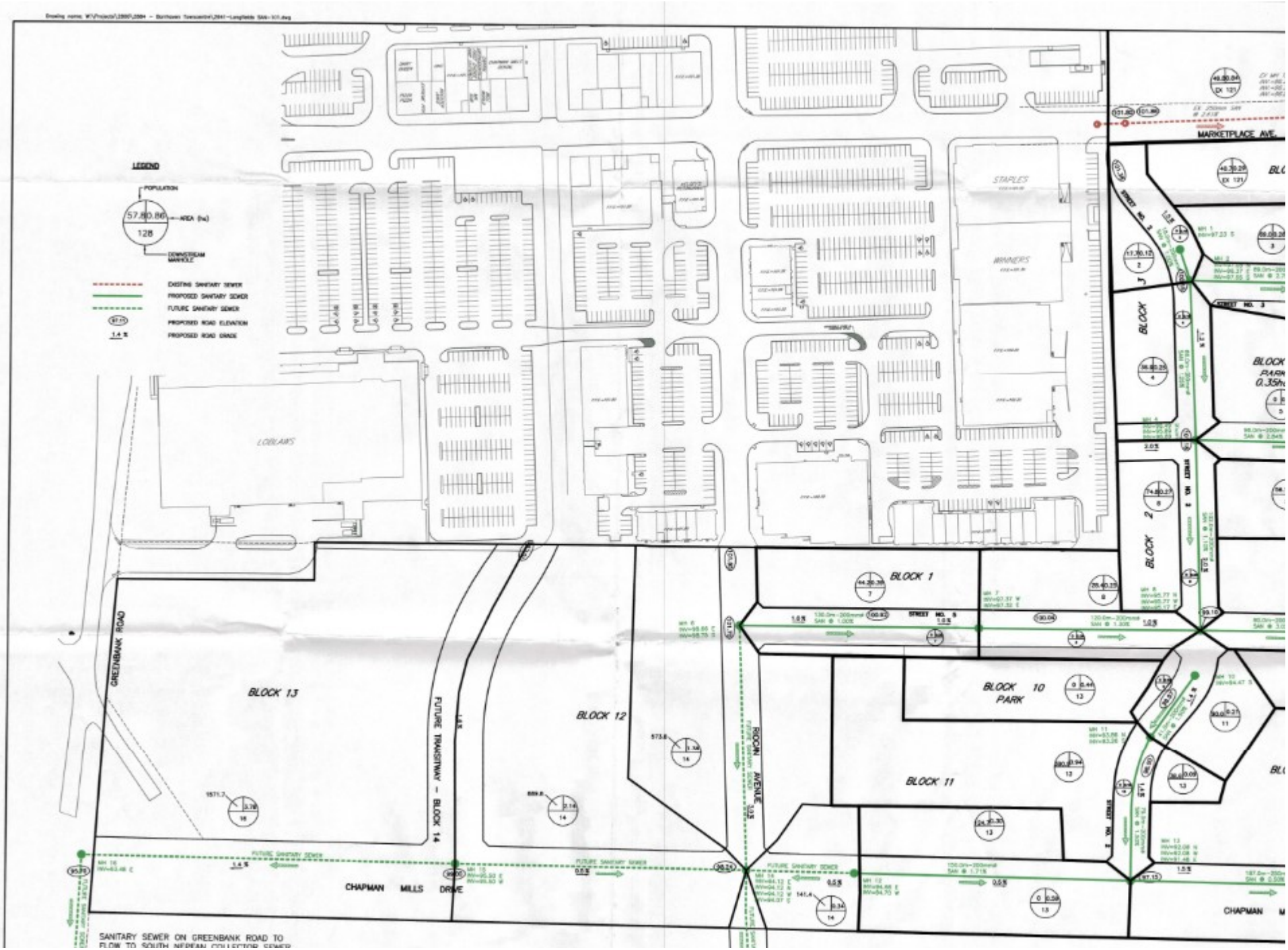
SANITARY SEWER CALCULATION SHEET

CLIENT: Lepine
LOCATION: McGarry Terrace
FILE REF: 17-938
DATE: 24-Jan-18

DESIGN PARAMETERS

Avg. Daily Flow Res.	280	L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0	Infiltration / Inflow
Avg. Daily Flow Comm	28,000	L/ha/d	Peak Fact. Comm. 1.5	Min. Pipe Velocity
Avg. Daily Flow Instl.	28,000	L/ha/d	Peak Fact. Instl. 1.5	Max. Pipe Velocity
Avg. Daily Flow Indust	35,000	L/ha/d	Peak Fact. Indust. per MOE graph	Mannings N
Harmens Corr Factor	0.8			

Location			Residential Area and Population										Commercial		Institutional		Industrial			Infiltration				
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	DI
			(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)	(mr
Longfields Drive	School	101	0.000					0.0	0.000	0.0	3.20	0.00		0.00	5.61	5.61		0.00	4.87	5.610	5.610	1.571	6.44	
	101	102	0.600					0.0	0.600	0.0	3.20	0.00		0.00		5.61		0.00	4.87	0.600	6.210	1.739	6.61	
Longfields Drive	Retirehome	102	0.000					0.0	0.000	0.0	3.20	0.00		0.00	1.42	1.42		0.00	1.23	1.420	1.420	0.398	1.63	
Longfields Drive	102	103	2.720					174.1	3.320	174.1	3.20	1.81		0.00		7.03		0.00	6.10	2.720	10.350	2.898	10.81	
Longfields Drive	122	121	1.130					90.5	1.130	90.5	3.20	0.94		0.00		0.00		0.00	0.00	1.130	1.130	0.316	1.25	
Marketplace Ave	McGarry Terrace	121	1.490					89.4	1.490	89.4	3.20	0.93		0.00		0.00		0.00	0.00	1.490	1.490	0.417	1.34	
	121	103	0.720					54.1	3.340	234.0	3.20	2.43		0.00		0.00		0.00	0.00	0.720	3.340	0.935	3.36	
Marketplace Ave	San Stub	103	0.510					30.6	0.510	30.6	3.20	0.32		0.00		0.00		0.00	0.00	0.510	0.510	0.143	0.46	
Longfields Drive	103	5062-A	0.280					0.0	7.450	438.7	3.20	4.55		0.00		7.03		0.00	6.10	0.280	14.480	4.054	14.71	
Sue Holloway Drive	1	2	0.280					17.7	0.280	17.7	3.20	0.18		0.00		0.00		0.00	0.00	0.280	0.280	0.078	0.26	
Lindenshade Drive	2	3	0.510					69.0	0.790	86.7	3.20	0.90		0.00		0.00		0.00	0.00	0.510	0.790	0.221	1.12	
Lindenshade Drive	3	5062-A	0.230					29.6	1.020	116.3	3.20	1.21		0.00		0.00		0.00	0.00	0.230	1.020	0.286	1.49	
Longfields Drive	5062-A	5062	0.080					0.0	8.550	555.0	3.16	5.68		0.00		7.03		0.00	6.10	0.080	15.580	4.362	16.15	
	5062	5063-A	0.220					0.0	8.770	555.0	3.16	5.68		0.00		7.03		0.00	6.10	0.220	15.800	4.424	16.21	
Sue Holloway Drive	2	4	0.440					36.9	0.440	36.9	3.20	0.38		0.00		0.00		0.00	0.00	0.440	0.440	0.123	0.51	
	4	5	0.850					56.1	1.290	93.0	3.20	0.96		0.00		0.00		0.00	0.00	0.850	1.290	0.361	1.33	
	5	5063-A	0.490					115.1	1.780	208.1	3.20	2.16		0.00		0.00		0.00	0.00	0.490	1.780	0.498	2.66	
Sue Holloway Drive	4	8	0.500					74.8	0.500	74.8	3.20	0.78		0.00		0.00		0.00	0.00	0.500	0.500	0.140	0.92	
Longfields Drive	5063-A	5063	0.220					0.0	10.770	763.1	3.10	7.66		0.00		7.03		0.00	6.10	0.220	17.800	4.984	18.75	
	5063	5063-B	0.130					0.0	10.900	763.1	3.10	7.66		0.00		7.03		0.00	6.10	0.130	17.930	5.020	18.78	
Street 5	6	7	0.710					44.2	0.710	44.2	3.20	0.46		0.00		0.00		0.00	0.00	0.710	0.710	0.199	0.66	
	7	8	0.540					28.4	1.250	72.6	3.20	0.75		0.00		0.00		0.00	0.00	0.540	1.250	0.350	1.10	
Glenroy Gilbert	8	9	0.660					129.5	2.410	276.9	3.20	2.87		0.00		0.00		0.00	0.00	0.660	2.410	0.675	3.55	
	9	5063-B	0.370					43.2	2.780	320.1	3.20	3.32		0.00		0.00		0.00	0.00	0.370	2.780	0.778	4.10	
Longfields Drive	5063-B	5066	0.180					0.0	13.860	1083.2	3.02	10.61		0.00		7.03		0.00	6.10	0.180	20.520	5.746	22.46	
	5066	5067	0.170					0.0	14.030	1083.2	3.02	10.61		0.00		7.03		0.00	6.10	0.170	20.690	5.793	22.50	
	5067	5067-A	0.580					97.2	14.610	1180.4	3.00	11.48		0.00		7.03		0.00	6.10	0.580	21.270	5.956	23.54	
Chapman Mills Drive Extension	12	13	0.890					124.7	0.890	124.7	3.20	1.29		0.00		0.00		0.00	0.00	0.890	0.890	0.249	1.54	
Street 2	10	11	0.370					90.0	0.370	90.0	3.20	0.93		0.00		0.00		0.00	0.00	0.370	0.370	0.104	1.04	
	11	13	1.620					429.5	1.990	519.5	3.17	5.34		0.00		0.00		0.00	0.00	1.620	1.990	0.557	5.90	
Chapman Mills Drive Extension	13	5067-A	1.890					496.9	4.770	1141.1	3.01	11.13		0.00		0.00		0.00	0.00	1.890	4.770	1.336	12.47	
Longfields Drive	5067-A	5070	0.700					0.0	20.080	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.700	26.740	7.487	34.86	
	5070	5071	0.180					0.0	20.260	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.180	26.920	7.538	34.91	
	5071	5072	0.220					0.0	20.480	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.220	27.140	7.599	34.98	
	5072	5073	0.210					0.0	20.690	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.210	27.350	7.658	35.03	
	5073	5076	0.160					0.0	20.850	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.160	27.510	7.703	35.08	
	5076	5077	0.220					0.0	21.070	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.220	27.730	7.764	35.14	
Garrity Crescent	124	5077	7.690					623.7	7.690	623.7	3.14	6.34		0.00		0.00		0.00	0.00	7.690	7.690	2.153	8.50	


LEGEND
POPULATION
AREA (ha)
DOWNSTREAM MANHOLE
EXISTING SANITARY SEWER
PROPOSED SANITARY SEWER
FUTURE SANITARY SEWER
PROPOSED ROAD ELEVATION
PROPOSED ROAD GRADE
LOBLAWS
STAPLES
MARKETPLACE AVE.
BLOCK 1
BLOCK 2
BLOCK 3
BLOCK 10 PARK
BLOCK 11
BLOCK 12
BLOCK 13
GREENBANK ROAD
FUTURE TRANSITWAY - BLOCK 14
ROCKIN AVENUE
CHAPMAN MILLS DRIVE
FUTURE SANITARY SEWER
SANITARY SEWER ON GREENBANK ROAD TO


BLOCK 11
CHAPMAN MILLS DRIVE
FILL AREA
LUMBER AREA
LONGFIELDS DRIVE
RIOCAN AVENUE
SANITARY SEWER ON RIOCAN AVENUE TO FLOW TO SOUTH NEPEAN COLLECTOR SEWER EXACT LOCATION AND SIZE TO BE DETERMINED ONCE A ROAD NETWORK HAS BEEN CONFIRMED
FUTURE SANITARY SEWER
PROPOSED 250mmø SANITARY CONNECTION
LEGEND
POPULATION
AREA (ha)
CONNECTION MANHOLE
EXISTING SANITARY SEWER
PROPOSED SANITARY SEWER

Robert Freel, P.Eng.
Senior Project Manager, Land Development
T. 613.714.6174 | **C.** 613.915.3815
r.freel@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

From: Bramah, Bruce <bruce.bramah@ottawa.ca>
Sent: Thursday, March 9, 2023 10:13 AM
To: Robert Freel <r.freel@mcintoshperry.com>
Cc: Scaramozzino, Tracey <Tracey.Scaramozzino@ottawa.ca>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Hi Robert,

The sanitary sewer along Longfields does **NOT** have the capacity to proceed with the rezoning application for 1034 McGarry. The parcel will need to comply with the original rezoning servicing criteria which addressed both 1117 Longfields (150 Marketplace) and 1034 McGarry.

If you have any questions prior to our meeting this afternoon, please feel free to call me.
Thank you,
--
Bruce Bramah, EIT
Project Manager
Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique
Development Review - South 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 29686, Bruce.Bramah@ottawa.ca

From: Robert Freel <r.freel@mcintoshperry.com>
Sent: February 24, 2023 8:16 AM

To: Bramah, Bruce <bruce.bramah@ottawa.ca>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Good morning Bruce,

Just following up to see if you had received a response regarding the sanitary flows.

Cheers,
Bobby

Robert Freel, P.Eng.
Senior Project Manager, Land Development
T. 613.714.6174 | **C.** 613.915.3815
r.freel@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

From: Robert Freel <r.freel@mcintoshperry.com>
Sent: Sunday, February 19, 2023 9:23 AM
To: Bramah, Bruce <bruce.bramah@ottawa.ca>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Thanks Bruce, you as well.

Robert Freel, P.Eng.
Senior Project Manager, Land Development

T. 613.714.6174 | **C.** 613.915.3815
r.freel@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

From: Bramah, Bruce <bruce.bramah@ottawa.ca>
Sent: Friday, February 17, 2023 2:24 PM
To: Robert Freel <r.freel@mcintoshperry.com>
Cc: Francis Valenti <F.Valenti@McIntoshPerry.com>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Hi Robert,

Boundary conditions came back very quick! Please see the attached Boundary Conditions.
Have a good weekend.
--
Bruce Bramah, EIT
Project Manager
Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique
Development Review - South 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 29686, Bruce.Bramah@ottawa.ca

From: Robert Freel <r.freel@mcintoshperry.com>
Sent: February 15, 2023 2:20 PM
To: Bramah, Bruce <bruce.bramah@ottawa.ca>; Francis Valenti <F.Valenti@McIntoshPerry.com>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Thanks Bruce.

Robert Freel, P.Eng.
Senior Project Manager, Land Development
T. 613.714.6174 | **C.** 613.915.3815
r.freel@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

From: Bramah, Bruce <bruce.bramah@ottawa.ca>
Sent: February 15, 2023 1:28 PM
To: Robert Freel <r.freel@mcintoshperry.com>; Francis Valenti <F.Valenti@McIntoshPerry.com>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Hi Robert,

I should have a response to you regarding the sanitary flows within a week.
Regards,
--
Bruce Bramah, EIT
Project Manager
Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique
Development Review - South 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 29686, Bruce.Bramah@ottawa.ca

From: Robert Freel <r.freel@mcintoshperry.com>
Sent: February 15, 2023 12:02 PM

To: Francis Valenti <F.Valenti@McIntoshPerry.com>; Bramah, Bruce <bruce.bramah@ottawa.ca>
Subject: RE: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Good morning Bruce,

Hope you are well,

Understand that typically boundary conditions could take a couple weeks to get back, any idea of how long the review of the sanitary flows might be?

Cheers,
Bobby

Robert Freel, P.Eng.
Senior Project Manager, Land Development
T. 613.714.6174 | **C.** 613.915.3815
r.freel@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

From: Francis Valenti <F.Valenti@McIntoshPerry.com>
Sent: February 14, 2023 2:17 PM
To: bruce.bramah@ottawa.ca
Cc: Robert Freel <r.freel@mcintoshperry.com>
Subject: 23-3441 - Boundary Condition Request - 1034 McGarry Terrace

Good afternoon,

We would like to request boundary conditions for the proposed development at 1034 McGarry Terrace. The site plan proposes a 659 unit 40-storey mixed use building, complete with underground parking with street access from Marketplace Avenue. The connections (dual) will be to the existing 305 mm and 203 mm diameter watermains located within Marketplace Avenue and McGarry Terrace, respectively. Please find attached a map showing the proposed connection locations and calculations prepared for the demands listed below.

- The estimated fire flow is 14,000 L/min based on the FUS method
- Average Daily Demand: 3.73 L/s
- Maximum Daily Demand: 9.29 L/s
- Maximum hourly daily demand: 20.42 L/s

Concern was also expressed in the pre-consultation meeting regarding sanitary capacity. Can you please verify municipal infrastructure has the capacity to accommodate the additional flows? Estimated post-development sanitary flows are summarized below, and detailed calculations are attached.

- Total Estimated Average Dry Weather Flow: 3.76 L/s
- Total Estimated Peak Dry Weather Flow: 11.93 L/s
- Total Estimated Peak Wet Weather Flow: 12.07 L/s

Regards,

Francis Valenti, EIT

Engineering Intern, Land Development
T. 613.714.6895 | **C.** 613.808.2123
F.Valenti@McIntoshPerry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

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APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

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CCO-23-3441 - McGarry Terrace - SWM Calculations

Tc (min)	Intensity (mm/hr)				C-Values	
	2-Year	5-Year	100-Year			
10	76.8	104.2	178.6	PRE-DEVELOPMENT	Impervious	0.90
10	76.8	104.2	178.6	POST-DEVELOPMENT	Gravel	0.60
					Pervious	0.20

Pre-Development Runoff Coefficient

Drainage Area	Impervious Area (m^2)	Gravel (m^2)	Pervious Area (m^2)	Average C (5-year)	Average C (100-year)
A1	0	4,200	0	0.60	0.75

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	Q (L/s)		
					2-Year	5-Year	100-Year
A1	0.42	0.60	0.75	10	53.81	72.99	156.36
Total	**0.42**				**53.81**	**72.99**	**156.36**

Post-Development Runoff Coefficient

Drainage Area	Impervious Area (m^2)	Gravel (m^2)	Pervious Area (m^2)	Average C (2/5-year)	Average C (100-year)	
B1	2,510	0	0	0.90	1.00	**Rooftop**
B2	0	0	921	0.20	0.25	**Surface**
B3	769	0	0	0.90	1.00	**Driveway**

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	Q (L/s)			
					2-Year	5-Year	100-Year	
B1	0.25	0.90	1.00	10	48.24	65.44	124.61	*Building - Restricted*
B2	0.09	0.20	0.25	10	3.93	5.34	11.43	*Landscaped Area - Unrestricted*
B3	0.08	0.90	1.00	10	14.77	20.04	38.16	*Driveway - Restricted*
Total	**0.42**				**66.95**	**90.82**	**174.20**	

Required Restricted Flow

Area (ha)	Restricted Release Rate (L/s/ha)	Q (L/s)		
		2-Year	5-Year	100-Year
0.42	85.00	35.7	35.70	35.70

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/S)			Restricted Flow (L/S)			Storage Required (m^3)		
	2-year	5-year	100-Year	2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
B1	48.24	65.44	124.61	17.00	17.00	17.00	19.6	32.6	85.4
B2	3.93	5.34	11.43	3.93	5.34	11.43			
B3	14.77	20.04	38.16	6.80	6.80	6.80	4.8	8.4	23.1
Total	**66.95**	**90.82**	**174.20**	**27.73**	**29.14**	**35.23**	**24.42**	**40.94**	**108.46**

CCO-23-3441 - McGarry Terrace - SWM Calculations

Storage Requirements for Area B1

2-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
5	103.6	65.07	17.00	48.07	14.42
10	76.8	48.24	17.00	31.24	18.74
15	61.8	38.82	17.00	21.82	19.63
20	52.0	32.66	17.00	15.66	18.79
25	45.2	28.39	17.00	11.39	17.08

Maximum Storage Required 5-year =	20 m^3

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
5	141.2	88.68	17.00	71.68	21.51
10	104.2	65.45	17.00	48.45	29.07
15	83.6	52.51	17.00	35.51	31.96
20	70.3	44.15	17.00	27.15	32.58
25	60.9	38.25	17.00	21.25	31.87

Maximum Storage Required 5-year =	33 m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
5	242.7	169.37	17.00	152.37	45.71
10	178.6	124.64	17.00	107.64	64.58
15	142.9	99.72	17.00	82.72	74.45
20	120.0	83.74	17.00	66.74	80.09
25	103.8	72.44	17.00	55.44	83.16
30	91.9	64.13	17.00	47.13	84.84
35	82.6	57.64	17.00	40.64	85.35
40	75.1	52.41	17.00	35.41	84.98
45	69.1	48.22	17.00	31.22	84.30
50	64.0	44.66	17.00	27.66	82.99

Maximum Storage Required 100-year =	85 m^3

CCO-23-3441 - McGarry Terrace - SWM Calculations

Storage Requirements for Area B3

2-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B3	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
5	103.6	19.93	6.80	13.13	3.94
10	76.8	14.77	6.80	7.97	4.78
15	61.8	11.89	6.80	5.09	4.58
20	52.0	10.00	6.80	3.20	3.84
25	45.2	8.69	6.80	1.89	2.84

Maximum Storage Required 5-year =	5	m^3

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B3	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
5	141.2	27.16	6.80	20.36	6.11
10	104.2	20.04	6.80	13.24	7.95
15	83.6	16.08	6.80	9.28	8.35
20	70.3	13.52	6.80	6.72	8.07
25	60.9	11.71	6.80	4.91	7.37

Maximum Storage Required 5-year =	8	m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B3	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
5	242.7	51.87	6.80	45.07	13.52
10	178.6	38.17	6.80	31.37	18.82
15	142.9	30.54	6.80	23.74	21.37
20	120.0	25.65	6.80	18.85	22.61
25	103.8	22.18	6.80	15.38	23.08
30	91.9	19.64	6.80	12.84	23.11
35	82.6	17.65	6.80	10.85	22.79
40	75.1	16.05	6.80	9.25	22.20
45	69.1	14.77	6.80	7.97	21.51
50	64.0	13.68	6.80	6.88	20.63

Maximum Storage Required 100-year =	23	m^3

Report

Nepean South Chapman Mills Stormwater Management Servicing Fourth Addendum

Prepared for Minto Communities – Canada
by IBI Group
February 16, 2018

1 Introduction

Minto Communities retained IBI Group to prepare the stormwater management servicing plan for the Chapman Mills lands, which are part of the Nepean South development. The subject lands measure approximately 200 ha and are located in a quadrant bounded by Greenbank Road to the west, Woodroffe Road to the east, the Jock River to the south, and Strandherd Drive to the north (**Figure 1A**). The overall storm servicing is presented in "Nepean South-Chapman Mills Stormwater Management Servicing Report" (IBI Group, August 2006), which recommended a preferred stormwater management system to accommodate sustainable development while protecting the existing natural environment and the receiving Jock River.

As detailed design and construction of the Chapman Mills lands has proceeded, the stormwater management servicing has been updated to reflect the detailed design of the development.

1.1 Background

The recommended stormwater management system presented in the 2006 Servicing Report is comprised of an interceptor sewer, three interceptor manholes, an end-of-pipe stormwater management facility providing water quality treatment to the tributary development, and three overflow outlets to the Jock River. The system diverts the most frequent and polluted flow (first flush) to the stormwater management facility via the interceptor sewer and interceptor manholes. Flow in excess of the first flush (trunk overflow) bypasses the stormwater management facility and is discharged directly to the Jock River via three overflow outlets.

Subsequent to the stormwater management servicing, IBI Group prepared the detailed design of the stormwater management system, which is presented in "Nepean South-Chapman Mills Stormwater Management Design Brief" (IBI Group, May 2007).

IBI Group completed the detailed design of the Longfields Drive trunk storm sewer south of Marketplace Drive to the Jock River, which is presented in the "Longfields-Jockvale Connecting Link Drainage Report" (IBI Group, July 2009).

Stantec prepared the detailed design of the Riocan Drive trunk storm sewer, which services lands in the western part of the study area, and is tributary to the Longfields Drive trunk storm sewer.

AECOM (formerly TSH) completed the design of Greenbank Road. A portion of the Greenbank Road minor system is tributary to the Longfields Drive trunk storm sewer, via the Riocan Drive trunk storm sewer.

EXP (formerly David McManus Engineering Limited (DME)) completed the detailed design of the Longfields Drive storm sewer from Strandherd Drive south to Marketplace Drive; the detailed design of existing commercial areas west of Longfields Drive; Ampersand Stage I; as well as residential and institutional areas east of Longfields Drive.

In November 2009, IBI completed "Nepean South Chapman Mills Stormwater Management Servicing Report Addendum," an update to the approved 2006 Servicing Report. The 2009 Addendum summarized the updates to the stormwater management servicing as a result of detailed design within the Chapman Mills development. Specifically, a secondary interceptor sewer was introduced to the system as a result of revisions at the detailed design stage.

In September 2010, IBI completed "Nepean South Chapman Mills Stormwater Management Servicing Report Second Addendum," the purpose of which was to update the drainage parameters for the proposed Ampersand Stage I development, located southwest of Marketplace Drive and Longfields Drive, within the Chapman Mills Town Centre.

In July 2012, IBI completed a third addendum to the servicing, presented in a memorandum entitled “Chapman Mills SWM Servicing,” which summarized the updates to the stormwater management servicing for Stage 7, the final stage of residential development in Chapman Mills east of Longfields Drive.

The purpose of this document is to summarize the proposed updates to the stormwater management servicing for the future development west of Longfields Drive. This report should be read in conjunction with the 2006 Servicing Report and supersedes the 2009, 2010 and 2012 Addenda.

Construction of the interceptor sewers, interceptor manholes, stormwater management facility and overflow outlets is complete.

1.2 Study Objectives

As detailed design of the Chapman Mills development has progressed, the street layout and land use plan have been updated. As noted above, as revisions have been made, IBI Group has updated the overall modeling that supports the stormwater management system to ensure dual drainage design targets and water quality treatment are achieved, as well as to confirm the hydraulic grade line. Specifically, this has been completed in 2009, 2010 and 2012, and summarized in respective stormwater management servicing addenda.

At this time, proposed changes to storm servicing of undeveloped lands west of Longfields Drive have prompted the servicing west of Longfields Drive to be reviewed. Undeveloped lands west of Longfields Drive are majority owned by Minto and the City, with a parcel owned by Tartan and other private landowners. Minto is initiating conceptual site servicing at two locations, resulting in a review of proposed land use and on-site storage. Specifically, due to the topographical relief and the challenges of providing on-site storage on the subject lands, options for reducing on-site storage have been explored. The purpose of this report is to summarize the proposed updates to the stormwater management servicing for the future development west of Longfields Drive. IBI Group has re-evaluated the function of the stormwater management system to ensure dual drainage design targets and water quality treatment are maintained, as well as to confirm the hydraulic grade line.

2 Modeling Methodology

The modeling methodology remains consistent with the 2006 Servicing Report. The hydrologic evaluation was conducted with SWMHYMO and the surcharge analysis conducted with XPSWMM. The updates to the respective models are summarized in the below sections.

Modeling simulations were performed using the 25 mm 4 hour Chicago storm, 100 year 24 hour SCS Type II storm, and 100 year 3 hour Chicago storm. Based on experience with similar types of urban watersheds, the most critical runoff estimates are those generated by the summer single event storms. There are two standard types of summer single event design storms typically used for modeling in Eastern Ontario. The SCS Type II design storm is typically used for watersheds characterized by the rural component being significantly greater than the urban component. The second design storm, the Chicago design storm, is more critical for the modeling of fully urbanized watersheds.

The Chapman Mills development comprises high, medium and low-density residential developments, parks, institutional and commercial areas. Accordingly, the Chicago design storm was used for urban simulation and the SCS Type II storm is relevant to the Jock River since the overall river watershed is predominantly rural. However, the function of the interceptor manholes and interceptor sewer with respect to the stormwater management facility and Jock River were simulated with the 25 mm 4 hour Chicago design storm. This is an exception of routine techniques, due to the need to simulate total suspended solids and other pollutant loads to the recipient watercourse using frequent, short duration storms. This approach is consistent with the Ontario Ministry of the Environment (MOE) *Stormwater Management Planning and Design Manual* which suggests the use of this short duration storm, regardless of land use, to evaluate erosion and water quality, and in this particular case, flow separation.

In summary, the 25 mm 4 hour Chicago storm was used to evaluate the function of the interceptor sewer and interceptor manholes during first flush conditions. The 100 year 3 hour Chicago storm was used to analyze on-site detention and evaluate the major system flow. The 100 year 24 hour SCS Type II storm was used to evaluate the hydraulic grade line (HGL). Following City request, the HGL has also been evaluated using the 100 year 3 hour Chicago storm for this current addendum.

The overall stormwater servicing was originally established with a minor system capture of 85 l/s/ha (and 10 year on arterial roads and rapid transit corridors) and a combination of direct conveyance and on-site detention of the major system. Generally, lands east of Longfields Drive were simulated with direct conveyance, while lands west of Longfields Drive were simulated with on-site detention of the 100 year event.

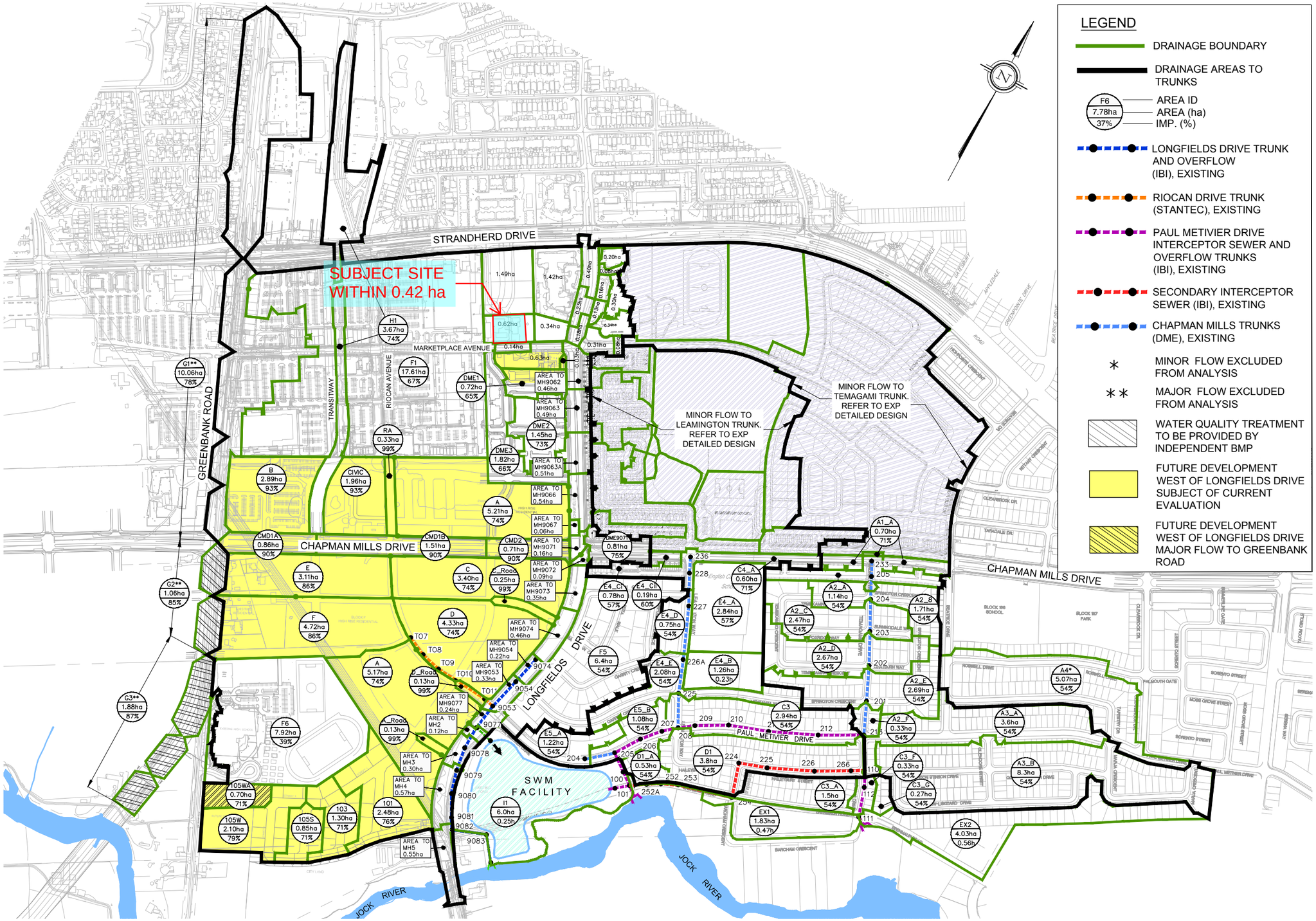
Model files are enclosed in **Appendix A**.

2.1 Drainage Areas

Since the 2006 Servicing Report, there have been revisions to the street layout and land use plan as detailed design has progressed. Accordingly, the trunk storm sewers and drainage areas tributary to each trunk storm sewer have been revised to reflect these adjustments. The revised drainage areas are summarized in the below table and presented on the enclosed **Figure 1A**, and **Figure 1B** presents the original drainage area plan from the 2006 Servicing Report.

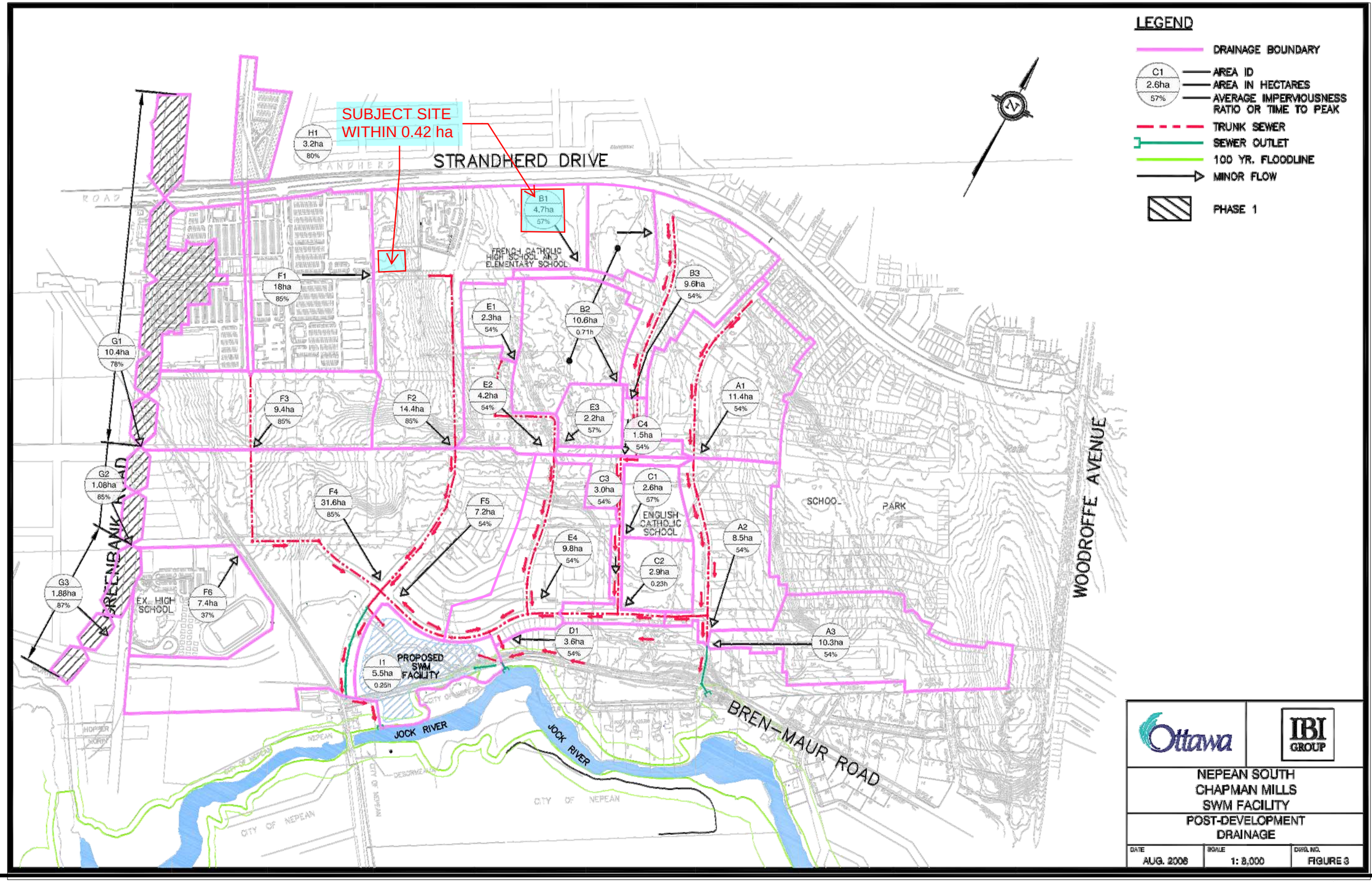
Table 2.1 Drainage areas

2006				UPDATED			
DRAINAGE AREA		WEIGHTED IMP (%) [TIME OF CONC. (H)]		DRAINAGE AREA		WEIGHTED IMP (%) [TIME OF CONC. (H)]	
ID	AREA (HA)	TOTAL	DIRECTLY CONNECTED	ID	AREA (HA)	TOTAL	DIRECTLY CONNECTED
A1	11.4	54	41	A1(1)	11.8	54	41
A2	8.5	54	41	A2_A	1.13	54	41
				A2_B	1.71	54	41
				A2_C	2.47	54	41
				A2_D	2.67	54	41
				A2_E	2.71	54	41
				A2_F	0.33	54	41
A3	10.3	54	41	A3_A	3.6	54	41
				A3_B	8.3	54	41
B1	4.7	57	57	B1(1)	4.7	57	57
B2	10.6	[0.80]	N/A	B2_A(1)	3.4	[0.80]	N/A
				B2_B(2)	6.04	[0.71]	N/A
				B2_Bii(2)	0.89	[0.1]	N/A
B3	9.6	54	41	B3_A(1)	8	54	41
				B3_B(2)	0.9	54	41
C1	2.6	57	57	*Part of A2*	-	-	-
C2	2.9	[0.39]	N/A	*Part of A2*	-	-	-
C3	3.0	54	41	C3	2.9	54	41
C4	1.5	54	41	C4(2)	1.3	54	41
				C4_A	0.6	71	71
D1	3.6	54	41	D1	3.8	54	41
				D1_A	0.5	54	41
E1	2.3	54	41	E1(2)	3.14	0.61	0.46
E2	4.2	54	41	E2A(2)	0.58	0.75	0.75
				E2(2)	2.62	0.6	0.46
E3	2.2	57	57	E3(2)	2.01	0.57	0.57
E4	9.8	54	41	E4_A	2.8	57	57
				E4_B	1.3	[0.23]	N/A
				E4_C	0.9	54	41
				E4_D	0.7	54	41
				E4_E	2.1	54	41
				E5_A	1.22	54	41
				E5_B	1.08	54	41
F1	17.5	85	85	F1	17.62	67	67
F2	14.4	85	85	F2	58.35	*Further discretized based on detailed design (refer to **Figure 1A** and **Table 2.9**)*	
F3	9.4	85	85	F3			
F4	31.6	85	85	F4			
F5	7.2	54	41	F5	6.4	54	41
F6	7.37	37	37	F6	7.84	38	38
G1	10.40	78	78	G1	10.06	78	78
G2	1.08	85	85	G2	1.08	85	85
G3	1.88	87	87	G3	1.88	87	87



J:\IBI Engineering\CCL\0-CAD\cad\Water\3771 Nepean South\5.0\5.9\5.9.1\Design files\CH-MILLS SWM Addendum-2017\Figure 1A.dwg Layout Name: Figure 1A Plot Style: ---- Plot Scale: 1:2.5849 Plotted At: 2/15/2018 11:56 AM Last Saved By: svukic Last Saved At: Dec. 20, 17

Scale	Project Title	Drawing Title	Sheet No.
N.T.S.	NEPEAN SOUTH-CHAPMAN MILLS SWM SERVICING ADDENDUM	DRAINAGE AREA PLAN	FIGURE 1A



Scale | Project Title | Drawing Title | Sheet No.

IBI GROUP

N.T.S.

NEPEAN SOUTH-CHAPMAN MILLS
SWM SERVICING ADDENDUM

DRAINAGE AREA PLAN
2006 SERVICING REPORT

FIGURE 1B

APPENDIX H
CITY OF OTTAWA DESIGN CHECKLIST

McINTOSH PERRY

City of Ottawa

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

Criteria	Location (if applicable)
☐ Executive Summary (for larger reports only).	N/A
☐ Date and revision number of the report.	On Cover
☐ Location map and plan showing municipal address, boundary, and layout of proposed development.	Appendix A
☐ Plan showing the site and location of all existing services.	Site Servicing Plan (C102)
☐ 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.	1.1 Purpose 1.2 Site Description 6.0 Stormwater Management
☐ Summary of pre-consultation meetings with City and other approval agencies.	Appendix B
☐ 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.	1.1 Purpose 1.2 Site Description 6.0 Stormwater Management
☐ Statement of objectives and servicing criteria.	3.0 Pre-Consultation Summary

☐ Identification of existing and proposed infrastructure available in the immediate area.	N/A
☐ 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).	Site Grading Plan (C101)
☐ 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.	Site Grading Plan (C101)
☐ 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.	Section 2.0 Background Studies, Standards and References
☐ 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	Site Grading Plan (C101)

4.2 Development Servicing Report: Water

Criteria	Location (if applicable)
☐ Confirm consistency with Master Servicing Study, if available	N/A
☐ Availability of public infrastructure to service proposed development	N/A
☐ Identification of system constraints	N/A
☐ Identify boundary conditions	Appendix C
☐ Confirmation of adequate domestic supply and pressure	N/A
☐ 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.	Appendix C
☐ 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	Appendix C, Section 4.2

☐ 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.	Site Servicing Plan (C101)
☐ 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.	Appendix C
☐ 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

Criteria	Location (if applicable)
☐ 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).	N/A
☐ 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 5.2 Proposed Sanitary Sewer

☐ 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 5.3 Proposed Sanitary Design
☐ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	N/A
☐ Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 5.2 Proposed Sanitary Sewer
☐ 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

Criteria	Location (if applicable)
☐ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ Analysis of available capacity in existing public infrastructure.	N/A
☐ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Pre & Post-Development Plans
☐ 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 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ 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.	N/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).	Appendix G

☐ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Site Grading Plan
☐ 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 7.0 Proposed Stormwater Management Appendix G
☐ Any proposed diversion of drainage catchment areas from one outlet to another.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ 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 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ 100-year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Site Grading Plan (C101)
☐ 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.	Section 8.0 Sediment & Erosion Control
☐ 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

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

Criteria	Location (if applicable)
☐ 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

Criteria	Location (if applicable)
☐ Clearly stated conclusions and recommendations	Section 9.0 Summary Section 10.0 Recommendations
☐ 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 are stamped
☐ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	All are stamped