ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
2504 WHITE STREET

Project No.: CCO-22-2100

City File No.: D02-02-22-0042

Prepared for:

RE/MAX Absolute Realty Inc
222 Somerset St W,
Ottawa, ON K1G 0Z1

Prepared by:

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Oct 25th, 2022

MᴄINTOSH PERRY

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MCINTOSH PERRY

1.0   PROJECT DESCRIPTION

1.1   Purpose

McIntosh Perry (MP) has been retained by RE/MAX to prepare this Assessment of Adequacy of Public Services Report in support of the Zoning By-law Amendment application process for the contemplated development at 2504 White Street within the City of Ottawa.

The main purpose of this report is to demonstrate that the contemplated development has access to sufficient public services in accordance with 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 development, ensuring that existing services would adequately service the contemplated development.

1.2   Site Description

The property, herein referred to as the site, is located at 2504 White Street within the Innes ward in the City of Ottawa. The site covers approximately 7932 m^2 (0.79 ha) and is located south of the Intersection of White Street and Renaud Road. The site is zoned Development Reserve (DR). The contemplated development would be within 0.62 ha of the site with the remainder being reserved for the existing single-family residence.

1.3   Existing Conditions and Infrastructure

The site is currently developed and consists of a one-storey, single family home fronting White Street. The existing single-family home is serviced by a private septic system, roadside ditches, and municipal water.

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:

- Renaud Road
    - 300 mm diameter ductile iron watermain;
    - 200 mm diameter PVC sanitary sewer, tributary to the Forest Valley Trunk; and
    - 1500 mm diameter concrete storm sewer, tributary to the Ottawa River.

- White Street
    - 300 mm diameter ductile iron watermain;

1.4   Contemplated Development and Statistics

The contemplated development consists of four blocks of townhouses. Two blocks of 2-storey townhouses on the East side of the site and two blocks of 2.5-Storey stacked townhouses on the West side of the site.

1.5   Approvals

The contemplated development would be subject to the City of Ottawa site plan control approval process,

subsequent the zoning by-law amendment 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*) would be required for the contemplated development as the Site requires the extension of the existing municipal sanitary sewer. Further discussion with the *MECP* would take place during Site Plan Control to confirm requirements.

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.

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-2018-03 City of Ottawa, March 2018. *(ISTB-2018-03)*

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*)

3.0   PRE-CONSULTATION SUMMARY

A pre-consultation meeting was conducted with the City regarding the contemplated site on July 8, 2021. The notes from this meeting can be found in *Appendix 'B'*.

4.0   WATERMAIN

4.1   Existing Watermain

The subject site is located within the 2E pressure zone, as shown by the Water Distribution figure located in *Appendix 'C'*. The following subsections outline the water infrastructure that exists within Renaud Road and White Street.

4.1.1   *Renaud Road*

There is an existing 300 mm diameter watermain, that runs the entire length of the property within Renaud Road. There is also a public hydrant directly adjacent to the property on Renaud Road. From a preliminary review, there are no existing water services coming from Renaud Road.

4.1.2   *White Street*

There is an existing 200 mm diameter watermain that runs the entire length of the property within White Street. There is also a public hydrant located 45 meters from the site within White Street. From a preliminary review, there are no existing water services coming from White Street.

4.2   Contemplated Watermain

It is anticipated that the development would be served from Renaud via a 150mm or 200mm internal watermain network. Individual townhouses are anticipated to be serviced via 19mm connections per S11.3 and the *Ottawa Water Guidelines.* Based on the *Ottawa Water Guidelines*, as the demand is less than 50 m^3 per day and there would be less than 49 units a dual connection is not required. It is anticipated that the existing hydrant within Renaud Road along with an internal hydrant would provide fire protection for the subject site.

The Fire Underwriters Survey 2020 (FUS) method was utilized to determine the required fire flow for the contemplated development. The 'C' factor (type of construction) for the FUS calculation was determined to be 1.0 (Ordinary construction). The total floor area ('A' value) for the FUS calculation was determined to be *957.60 m^2* for the North 8-unit building, *957.60 m^2* for the South 8-unit building, *670.0 m^2* for the West 4-unit building, and *670.6 m^2* for the East 4-unit building. The results of the calculations yielded a maximum required fire flow of *9,000 L/min* for the site. The detailed calculations for the FUS can be found in *Appendix 'C'*.

The water demands for the contemplated development have been calculated to adhere to the *Ottawa Design Guidelines – Water Distribution* manual and can be found in *Appendix 'C'*. The results have been summarized below in Table 1.

Table 1: 2504 White Street Water Demands

Water Demand Rate (Residential)	280 L/c/day
Site Area (ha)	0.62
Average Day Demand (L/s)	0.21
Maximum Daily Demand (L/s)	2.00
Peak Hourly Demand (L/s)	3.01
FUS Fire Flow Requirement Building 1 (L/s)	150.00
FUS Fire Flow Requirement Building 2 (L/s)	133.33
FUS Fire Flow Requirement Building 3 (L/s)	133.33
FUS Fire Flow Requirement Building 4 (L/s)	133.33
Max Day + Fire Flow (L/s)	152.00

The City provided both the estimated minimum and maximum water pressures, as well as the estimated water pressure during fire flow demand for the demands indicated by the correspondence in Appendix 'C'. As shown in Table 2 below, the minimum and maximum pressures fall within the required range identified in the City of Ottawa Water Supply guidelines.

Table 2: Boundary Conditions Results

Scenario	m H2O	Pressure (kPa) *
Minimum HGL	39.1	383.6
Maximum HGL	43.0	421.8
Maximum Daily + Fire Flow Demand (152 L/s) Building 1	39.6	388.5
Maximum Daily + Fire Flow Demand (135 L/s) Buildings 2-4	39.1	383.6

Note: Pressures adjusted for an elevation of 87.7m

To confirm the adequacy of fire flow to protect the contemplated development, public fire hydrants within 150 m of the contemplated building were accounted for per the City of Ottawa ISTB 2018-02 Appendix I, Table 1, as demonstrated below. A location map showing the hydrant proximities to the site can be found in *Appendix 'C'.*

Table 3: Fire Protection Confirmation

Building	Fire Flow Demand (L/min.)	Fire Hydrant(s) within 75m (5,700 L/min)	Fire Hydrant(s) within 150m (3,800 L/min)	Combined Fire Flow (L/min.)
2504 White Street	9,000	4	1	26,600

Based on City guidelines the existing hydrants located in the vicinity can provide adequate fire protection to the site.

5.0 SANITARY DESIGN

5.1 Existing Sanitary Sewer

The subject site lies within the Forest Valley Trunk which is tributary to the Orleans-Cumberland Collector. The following subsections outline the sanitary infrastructure that exists within Renaud Road.

5.1.1 *Renaud Road*

The single-family home on the site is currently serviced by a private septic system. There is an existing 200 mm diameter sanitary sewer located within Renaud Road that is tributary to the Forest Valley Wastewater Pumping Station. Currently there is no sanitary sewer located within the section of Renaud Road fronting the site; it is anticipated that the existing sewer at the intersection of Renaud Road and Fern Casey Street would be extended east along the frontage of the site.

5.2 Contemplated Sanitary Sewer

Table 4, below, summarizes the wastewater design criteria identified by the *Ottawa Sewer Guidelines.*

Table 4: Sanitary Design Criteria

Design Parameter	Value
Townhouse	2.7 persons/unit
Single Family	3.4 persons/unit
Residential Average Daily Demand	280 L/day/person
Commercial / Amenity Space	2800 L/(1000m² /day)

To provide a conservative estimate for the flows entering the anticipated extension of the Renaud Road sanitary sewer it was assumed that in addition to the site, 6408 and 6148 Renaud Road could be serviced by the extension. The peak design flow was calculated for the contemplated development using the *Ottawa Sewer Guidelines* and was determined to be *0.97 L/s.* The peak design flow for the contemplated development, 6408 and 6148 Renaud Road was determined to be *1.17 L/s.* Wastewater calculations are based on the site statistics provided by Fotenn Planning and Design utilizing flow criteria identified in Appendix 4-A of the *Ottawa Sewer Guidelines.* Refer to *Appendix 'D'* for detailed calculations.

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

Table 5: Summary of Estimated Sanitary Flow

Design Parameter	Total Flow (L/S) Site	Total Flow (L/s) Site, 6408 Renaud, 6418 Renaud
Total Estimated Average Dry Weather Flow	0.24	0.28
Total Estimated Peak Dry Weather Flow	0.80	0.89
Total Estimated Peak Wet Weather Flow	0.97	1.17

It is anticipated that each townhouse would be serviced via a 135 mm diameter service lateral in accordance with the *Ottawa Sewer Guidelines*. The capacity of each contemplated 135 mm diameter service lateral is 11.55 L/s at an assumed 1.0% slope.

The estimated capacity of the existing 200 mm diameter sanitary sewer within Renaud Road is 21.91 L/s at an assumed 0.41 percent slope. Assuming 6401 Renaud Road as well as all properties on Renaud Road between Compass Street and Fern Casey Street are currently serviced by the 200 mm diameter sanitary sewer, the estimated peak flow in the sanitary sewer is 5.99 L/s. Based on the review above, the existing local sanitary sewer would have sufficient capacity for the contemplated development and adjacent single-family homes. The increase in sanitary flow due to the site and adjacent single-family homes is estimated to be 5.3% of the pipe capacity within Renaud Road.

Further coordination with the City confirmed that the 200 mm diameter sewer has sufficient capacity to service the contemplated development. Correspondence with City staff is saved in *Appendix 'D'* for reference.

6.0   STORM DESIGN

6.1   Existing Storm Sewer

The following subsections outline the storm infrastructure that exists within Renaud Road. The sewers surrounding the subject site outlet into interim EUC Pond 1 (*East Urban Community Phases 1B, 2A, 2B Site Servicing and Stormwater Management Report*), which is tributary to Mud Creek.

Existing drainage from *0.067 Ha* of the site flows overland to catch basins within Renaud Road and roadside ditches within White Street. There is an existing 1500 mm diameter concrete storm sewer located within Renaud Road. The storm sewer slopes to the west and outlets to interim EUC Pond 1 along Renaud Road. This pond is tributary to Mud Creek as shown by the figure STM from the EUC included in *Appendix 'G'*.

Existing drainage from *0.555 Ha* of the site flows overland towards the south and is assumed to be tributary to EUC Pond 2.

7.0   STORMWATER MANAGEMENT

7.1   Design Criteria and Methodology

Stormwater management for the site would be maintained through positive drainage away from the contemplated buildings and towards the adjacent ROWs. The quantitative and qualitative properties of the storm runoff for both the pre & 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 controls are not anticipated due to the EUC ponds already providing quality control. Further discussion with the *RVCA* would take place to confirm that quality controls are not required.

Quantity Control

- Post-development flow 100-year is be restricted to the 2-year storm with a calculated time of concentration greater or equal to 10 minutes and with a maximum C value of 0.50.

7.2   Runoff Calculations

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

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

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
Undeveloped and Grass	0.20

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

Based on pre-development conditions, the time of concentration (Tc) used for the post-development design was estimated to be 10 minutes.

7.3   Site Drainage

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 6*.

Table 6: Pre-Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (2/5-Year)	Runoff Coefficient (100-Year)	Q (L/s)		
				2-Year	5-Year	100-Year
A1	0.060	0.20	0.25	2.57	3.48	7.46
A2	0.007	0.20	0.25	0.28	0.38	0.81
A3	0.555	0.20	0.25	23.72	32.17	68.92
Total	0.622			26.56	36.03	77.19

To meet the stormwater objectives the contemplated development may contain a combination of flow attenuation along the surface and subsurface storage.

Two scenarios have been contemplated to demonstrate the development could meet the stormwater management design criteria. In scenario one a portion of the site drainage would be attenuated without exceeding existing flow rates before being conveyed towards the Renaud Road right of way and EUC Pond 1. The remaining drainage for the contemplated development would be comprised of the unattenuated drainage flowing overland without exceeding existing flow rates and conveyed south towards EUC Pond 2. Detailed calculations for this scenario are provided below.

Based on the criteria listed in Section 7.1, in scenario one the development would be required to restrict flow tributary to EUC Pond 1 to *2.84 L/s* (combined areas A1 and A2) in the 100-year event. Furthermore, flow from the development tributary to EUC Pond 2 must not exceed *23.72 L/s* (Area B3).

The following storage estimate assumes that approximately 90% of the development area would be attenuated and directed towards the Renaud Road right of way. The remaining 10% of the development area would leave the south of the site without attenuation towards EUC Pond 2. The estimated post-development peak flows for the 5 and 100-year events and the required storage volumes are summarized below in *Table 7*, below.

Table 7: Post Development Flow Rate and Storage Requirements, Scenario One

Drainage Area	Runoff Coefficient (2/5-Year)	Runoff Coefficient (100-Year)	Unrestricted Flow (L/S)		Restricted Flow (L/S)		Storage Required (m^3)	
			5-year	100-Year	5-Year	100-Year	5-Year	100-Year
B1 (Restricted)	0.58	0.65	93.66	181.89	1.40	2.84	128.51	240.66
B2 (Unrestricted)	0.58	0.65	10.41	20.21	10.41	20.21	-	-
Total			104.07	202.11	11.81	23.05	128.51	240.66

It is anticipated that approximately *240.66 m^3* of storage would be required on site to attenuate flow towards EUC Pond 1 to the established release rate of *2.84 L/s.* Unrestricted flow from the development directed towards EUC Pond 2 is anticipated to be *20.21 L/s*, which does not exceed the established release rate of *23.72 L/s.* Flow and storage calculations can be found within *Appendix 'G'*. Actual storage volumes would need to be confirmed at the detailed design stage based on grading constraints.

The second scenario would convey attenuated drainage from the site towards a future storm sewer extension within Fern Casey Street, tributary to EUC Pond 2. Unattenuated flow from the site would also be directed towards the future Fern Casey Street right of way. As this scenario would cross the adjacent lands, an easement would be required on the adjacent site to service the contemplated development.

Based on the criteria listed in Section 7.1, in scenario two the development would be required to restrict flow to *26.56 L/s* in the 100-year event.

The following storage estimate assumes that approximately 90% of the development area would be attenuated and directed towards the future Fern Casey Street right of way. The remaining 10% of the development area would leave the site without attenuation towards the future Fern Casey Street right of way. The estimated post-development peak flows for the 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, Scenario Two

Drainage Area	Runoff Coefficient (2/5-Year)	Runoff Coefficient (100-Year)	Unrestricted Flow (L/S)		Restricted Flow (L/S)		Storage Required (m³)	
			5-year	100-Year	5-Year	100-Year	5-Year	100-Year
B1 (Restricted)	0.58	0.65	93.66	181.89	3.27	6.35	102.94	196.11
B2 (Unrestricted)	0.58	0.65	10.41	20.21	10.41	20.21	-	-
Total			104.07	202.11	13.68	26.56	102.94	196.11

It is anticipated that approximately *196.11 m³* of storage would be required on site to attenuate flow towards the Fern Casey right of way to the established release rate of *26.56 L/s.* Flow and storage calculations can be found within *Appendix 'G'.* Actual storage volumes would need to be confirmed at the detailed design stage based on grading constraints.

8.0   SUMMARY

- Four new townhouse blocks are part of a contemplated development on 2504 White Street;

- The FUS method estimated fire flow indicated 9,000 L/min is required for the contemplated development;

- The development and adjacent homes are anticipated to have a peak wet weather flow of 1.17 L/s. Based on communications with the City, the existing municipal sewer is anticipated to have sufficient capacity to support development;

- Based on City of Ottawa guidelines, there are two scenarios for storm water quantity control. In scenario one the contemplated development would be required to attenuate post-development 100-year flows to equivalent pre-development release rates towards EUC Pond 1 and EUC Pond 2 of 2.85 L/s and 23.72 L/s, respectively. In scenario two the contemplated development would be required to attenuate post development 100-year flows to an equivalent pre-development release rate of 26.56 L/s. These flow rates are based on the limit of work area of 0.62 ha and would need to be reviewed during detailed design;

- It is contemplated that stormwater objectives may be met through storm water retention via roof top, surface, and subsurface storage. It is anticipated that approximately 241 m^3 or 196 m^3 of onsite storage would be required to attenuate flow to the established release rate scenarios above.
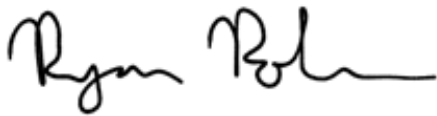
9.0   RECOMMENDATION

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 contemplated rezoning for 2504 White Street.

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 RE/MAX Absolute Realty 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. McIntosh Perry reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by McIntosh Perry 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. McIntosh Perry 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, McIntosh Perry should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

APPENDIX A
KEY PLAN

MCINTOSH PERRY

N

INNES ROAD

ESPRIT DRIVE

BOULEVARD D'ORLEANS

VISENEAUD DRIVE

GERRY LALONDE DRIVE

SOUTHFIELD WAY

CITY OF OTTAWA

PAGE ROAD

BRIAN COBURN BOULEVARD

MER BLEUE ROAD

10TH LINE ROAD

RENAUD ROAD

Site Location

WALL ROAD

NAVAN ROAD

JOSHUA STREET

Mer Bleue Bog

800   400   0   800

Scale 1:30,000   Metres

LEGEND

⭕ Site Location

〜 Watercourse

— Local Road

⬤ Waterbody

— Major Road

▮ Wooded Area
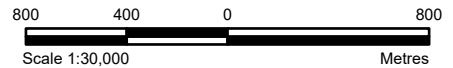
PROJECT NO: CCO-22-2100		FIGURE:
Date	Dec., 08, 2021	
GIS	EU	1
Checked By	AG	

REFERENCE

C:\Users\e.unquin\McIntosh Perry\GIS - Documents\Projects\2022\CCO\CCO-22-2100 REMAX Absolute - ZBLA - 2504 White St\aprx\Key Maps\LandDevelopment\CCO-22-2100_OptionD_SiteLocationPlan.aprx

APPENDIX B
BACKGROUND DOCUMENTS

MᴄINTOSH PERRY

Rezoning Pre- Application Consultation Notes

Date: July 8, 2021
Site Location: 2504 White St
Type of Development: ☒ **Residential (**☐ **townhomes,** ☐ **stacked,** ☐ **singles,**
☒ **apartments),** ☐ **Office Space,** ☐ **Commercial,** ☐ **Retail,** ☐ **Institutional,**
☐ **Industrial, Other:** N/A

Infrastructure

Water

Existing public services:

• Renaud Rd – 305mm DI
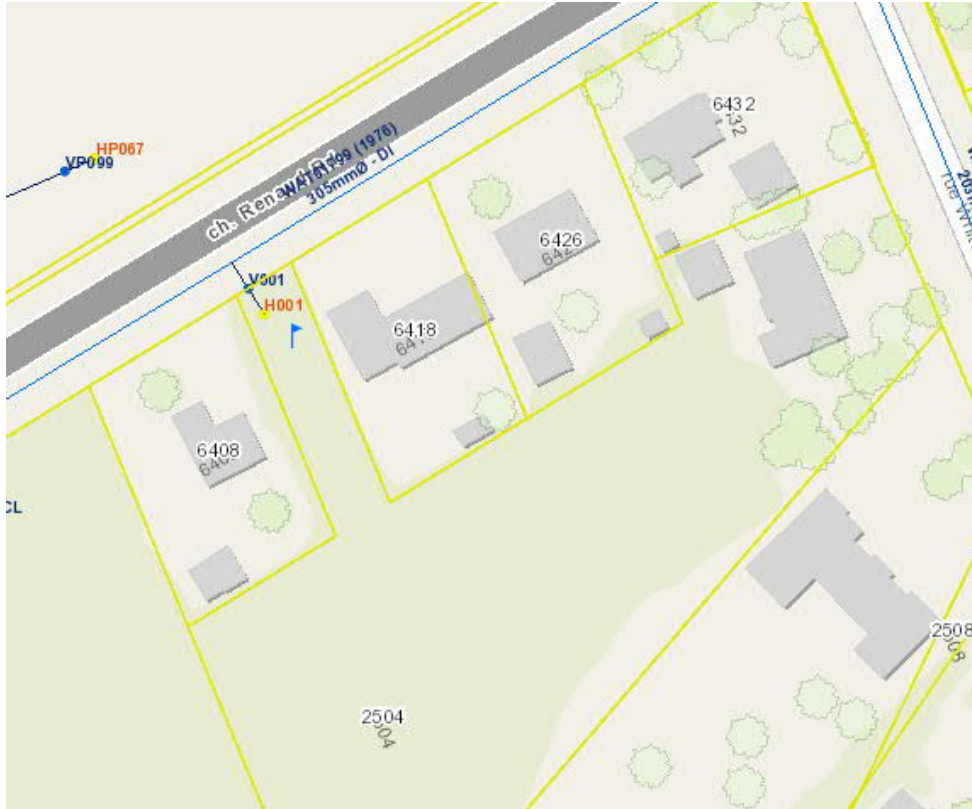
Watermain Frontage Fees to be paid ($190.00 per metre) on Woodroffe Avenue ☒ **Yes**   ☐ **No**

Boundary conditions:
Civil consultant must request boundary conditions from the City's assigned Project Manager prior to first 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:
   o Location of service(s)
   o Type of development and the amount of fire flow required (as per FUS, 1999)
   o Average daily demand: ___ L/s
   o Maximum daily demand: ___ L/s
   o Maximum hourly daily demand: ___ L/s
• Fire protection (Fire demand, Hydrant Locations)
• Please submit sanitary demands with the water boundary conditions

General comments
• Service areas with a basic demand greater than 50 m³/day shall be connected with a minimum of two water services, separated by an isolation valve, to avoid creation of vulnerable service area.
• A District Metering Area Chamber (DMA) is required for new services 150mm or greater in diameter.
• The existing fire hydrant must be relocated to be 3.0m from a driveway and 1.5m free of vegetation (Standard Drawing W18/Water By-Law Section 70).

Sanitary Sewer

Existing public services:
- Renaud Rd – 200mm PVC

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

General comments
- The existing sanitary sewer must be extended to the property frontage.
- Bends are not permitted within the Right-of-Way. All connections must be perpendicular.
- Sanitary sewers must a minimum of 2.5m deep. Service laterals must be a minimum of 2.0m deep.
- Please submit sanitary demands as part of the water boundary conditions to coordinate the proposed sewer extension.

Storm Sewer

Existing public services:
- Renaud Rd – 1500mm Conc
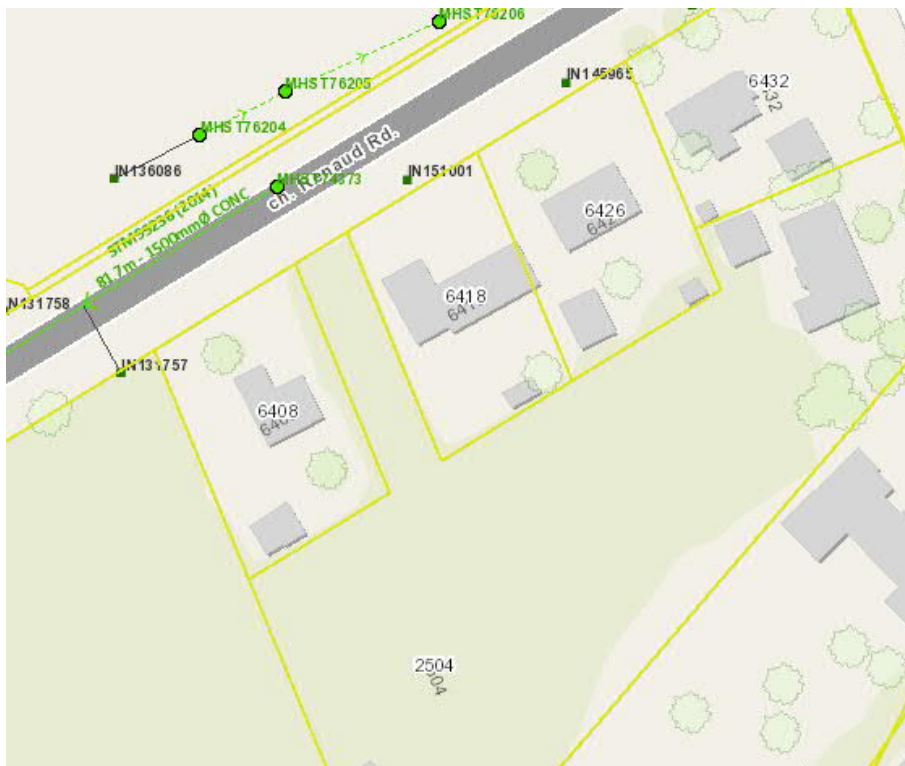
Stormwater Management

Quality Control:
- Rideau Valley Conservation Authority to confirm quality control requirements.

Quantity Control:
- Sub watershed: Savage Drain

- Master Servicing Study Area: East Urban Community Phase 2
- Time of concentration (Tc): Tc = pre-development; maximum Tc = 10 min
- Allowable run-off coefficient: 0.5
- Allowable flowrate: Allowable flowrate: Control the 100-year storm events to the 2-year storm event.

General Service Design Comments

- The City of Ottawa Standard Detail Drawings should be referenced where possible for all work within the Public Right-of-Way.

Other

Capital Works Projects within proximity to application? ☒ **Yes** ☐ **No**
- Intersection modification (Targeted start time 1-2 years)
- Planned infrastructure extension by external groups (This season)

References and Resources

- As per section 53 of the Professional Engineers Act, O. Reg 941/40, R.S.O. 1990, all documents prepared by engineers must be signed and dated on the seal.
- All required plans & reports are to be provided in *.pdf format (at application submission and for any, and all, re-submissions)
- Please find relevant City of Ottawa Links to Preparing Studies and Plans below:
  https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#standards-policies-and-guidelines
- To request City of Ottawa plan(s) or report information please contact the City of Ottawa Information Centre:
  InformationCentre@ottawa.ca<mailto:InformationCentre@ottawa.ca>
  (613) 580-2424 ext. 44455
- geoOttawa
  http://maps.ottawa.ca/geoOttawa/

SITE PLAN CONTROL APPLICATION (S)/ REZONING APPLICATION (Z) – Municipal servicing

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

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.

Notes:

4. Geotechnical Study / Slope Stability Study – required as per Official Plan section 4.8.3. All site plan applications need to demonstrate the soils are suitable for development. A Slope Stability Study may be required with unique circumstances (Schedule K or topography may define slope stability concerns).

10. Erosion and Sediment Control Plan – required with all site plan applications as per Official Plan section 4.7.3.

11. Stormwater Management Report/Brief - required with all site plan applications as per Official Plan section 4.7.6.

SITE INFORMATION

PROPOSED ZONING   R3Z

SITE AREA
Severed:	6220m²
Retained:	1706m²
Total:	7926m²

HEIGHT
Stacked Townhouses:	2.5 Storeys (8m)
Townhouses:	2 Storeys (6m)

PARKING RATES   REQUIRED
Residential - Townhouses:	1.0 p/unit
Residential - Stacked townhouses:	1.2 p/unit
Visitor (stacked townhouses only):	0.2p/unit

AMENITIES RATE
Required	6m² / unit

SETBACKS	F.Y.	S.Y.	R.Y.
	3.0m	3.0m	6.0m

DEVELOPMENT STATISTICS

RESIDENTIAL UNITS
Stacked Townhouses:	16
Townhouses:	8
Total:	24

Assumes an 85% efficiency

PARKING	Required	Provided
Stacked Townhouse:	19	19
Townhouses:	8	8
Visitor (Stacked Townhouses only)	3	3
Total :	30	30

AMENITY SPACE
Required (Stacked Townhouses only)	6m² x 16 = 96m²
Provided	TBD

*50% of the required amenity area must be communal.

NOTES

1. Assumes typical Residential floor height of 3m.

2. *GFA: as defined in City of Ottawa Zoning Bylaw means the total area of each floor whether located above, at or below grade, measured from the interiors of outside walls, but excluding areas dedicated for uses such as mechanical and electrical rooms, common hallways, corridors, staircases and elevators, interior amenities, bicycle storage and parking. Assume 85% efficiency for Retail buildings. Areas are approximate.

3. The base plan (lot lines, existing roads and surrounding areas) is based on the City's Open Data and aerial images. The site area is approximate and all dimensions need to be confirmed by a legal survey.

4. This concept is part of a development concept report and should be interpreted as per findings and descriptions of such report. This concept may require minor variances for setback reduction, parking, heights, etc.

2504 WHITE ST OTTAWA
Concept Plan

LEGEND

	TOWNHOUSES
	STACKED TOWNHOUSES
	AMENITY SPACE
	PROPERTY BOUNDARY
	SETBACKS
	POTENTIAL RIGHT-OF-WAY PROTECTION
●	EXISTING FIRE HYDRANT TO BE RELOCATED

0   5m 10m   25m   50m
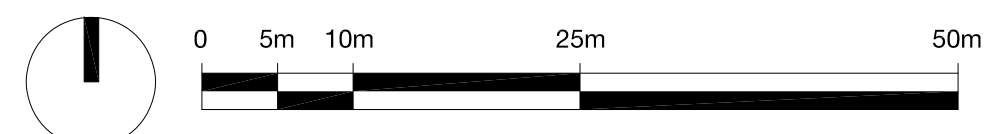
7	REVISIONS	2022.08.17	TK
6	FOR CLIENT REVIEW	2022.04.29	TK
5	FOR CLIENT REVIEW	2021.06.07	RP
4	REVISIONS	2021.05.17	TK
3	REVISIONS	2021.05.14	LC
2	CONCEPT PLAN	2021.05.06	TK
1	BASE PLAN	2021.04.05	TK
No.	REVISION	DATE	BY

CLIENT
ERIC LONGPRÉ

FOTENN
Planning + Design

DESIGNED	RP
REVIEWED	RP
DATE	2021.04.05

P1

(On-plan labels: RENAUD RD, WHITE ST, FUTURE STREET CONNECTION, SITE AREA: 1706 M2, SITE AREA: 6220 m², AMENITY SPACE A: 670m², 2.5 STOREYS 8 UNITS, 4 UNITS, UNITS, GARBAGE COLLECTION)
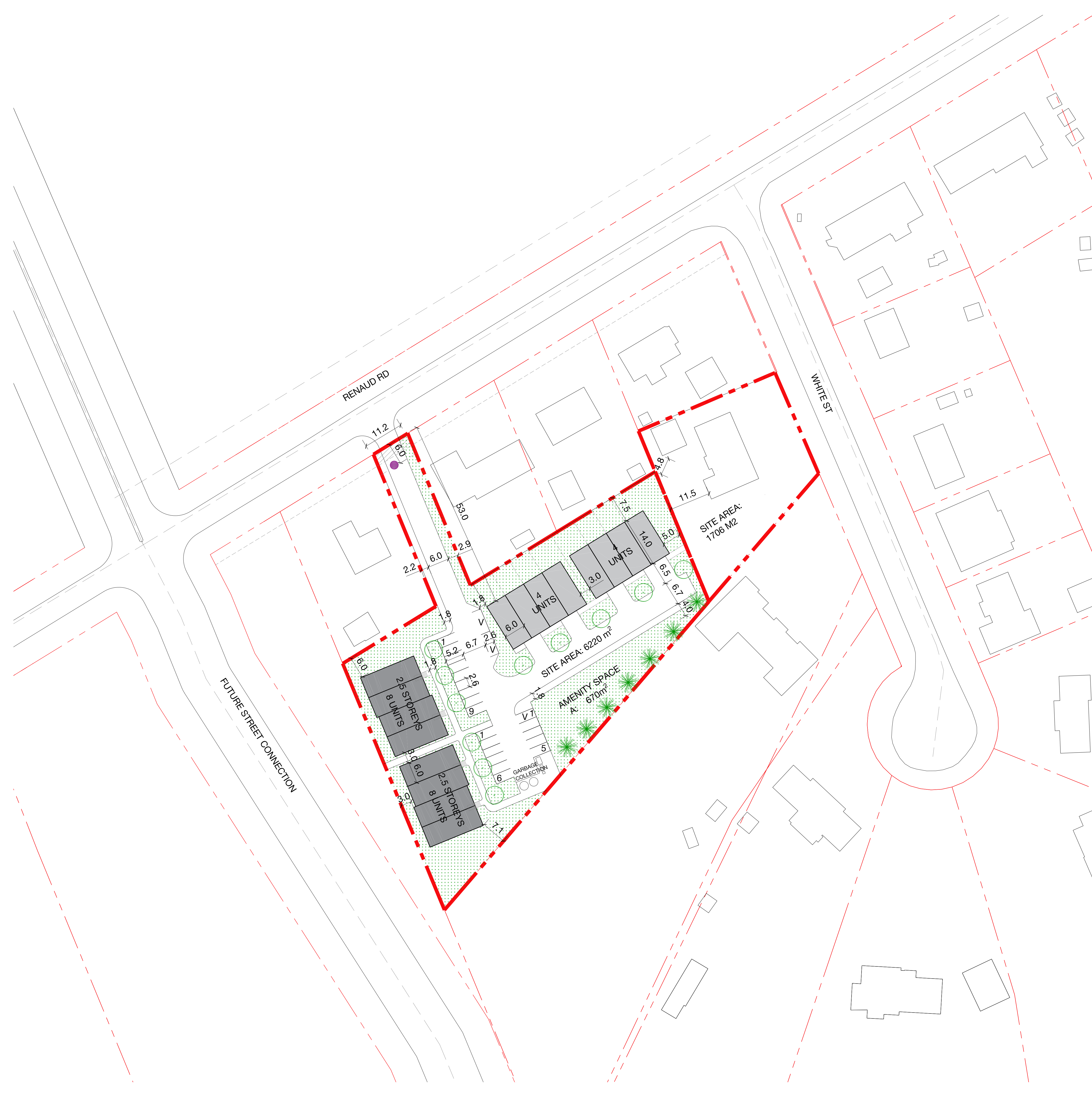
1.8. Apart from my comments above, I generally agree with the analysis undertaken in the Planning Rationale and do not have specific comments on the content of the report. It is comprehensive and represents and analyzes the relevant policies well.

2. Engineering – Rubina Rasool, Project Manager

The proposed zoning of the site would not be supported due to the following infrastructure reasons:

Stormwater Management:

2.1. The downstream stormwater management pond is at capacity and would not be able to accommodate additional flows from new developments. The storm sewer along Renuad Rd accounted for a small portion of the property frontage draining directly into the storm sewer . The site is an area that would have to outlet to the future EUC Pond 2 located south on Navan. The site would have to connect to the future storm sewer on Fern Casey. There is currently no access to Fern Casey and the property may require an easement along the adjacent site.

Sanitary Sewer:

2.2. There is capacity for the proposed sanitary sewer extension on Renaud Rd; however, the sanitary sewer currently does not exist. The zoning would require a holding symbol or similar tool until such time the applicant extends the sanitary sewer main.

3. Transportation Engineering – Mike Giampa

3.1. I don't have any transportation comments

4. Urban Design – Randolph Wang

Planning Rationale and Design Brief report

4.1. The applicant may want to review the Planning Rationale and Design Brief report and reformat the document as needed. Some font colors and numberings look a little bit unusual.

4.2. Design Brief is not included in the report. As indicated at pre-consultation, the proposed development would benefit from an understanding of the relationship with potential future development on adjacent properties. Some coordinated efforts between various owners to come up with a conceptual design plan that includes street and pathway connections, parks and open spaces will be very helpful. It is important to clarify the planed function of the lands between the site and the future Fern Casey. If land consolidation is possible, it will open up new opportunities for site design. None of these comments are addressed in the Planning Rationale and Design Brief report. The Design Brief section of report can be a good place to explore and illustrate the above noted questions.

Concept Plan

McINTOSH PERRY

2504 White Street

City of Ottawa Water Distribution System

SUBJECT SITE

FLEET STREET P.S.

2E

1E

Innes Rd/BearBrook Backup P.S.

Innes Rd Backup P.S.

HURDMAN P.S.

1W

BILLINGS BRIDGE P.S.

2W2C

CARLINGTON HEIGHTS P.S. & RES.

CONROY RD ELEVATED TANK

ME

3C

SOUTH GLOUCESTER P.S.
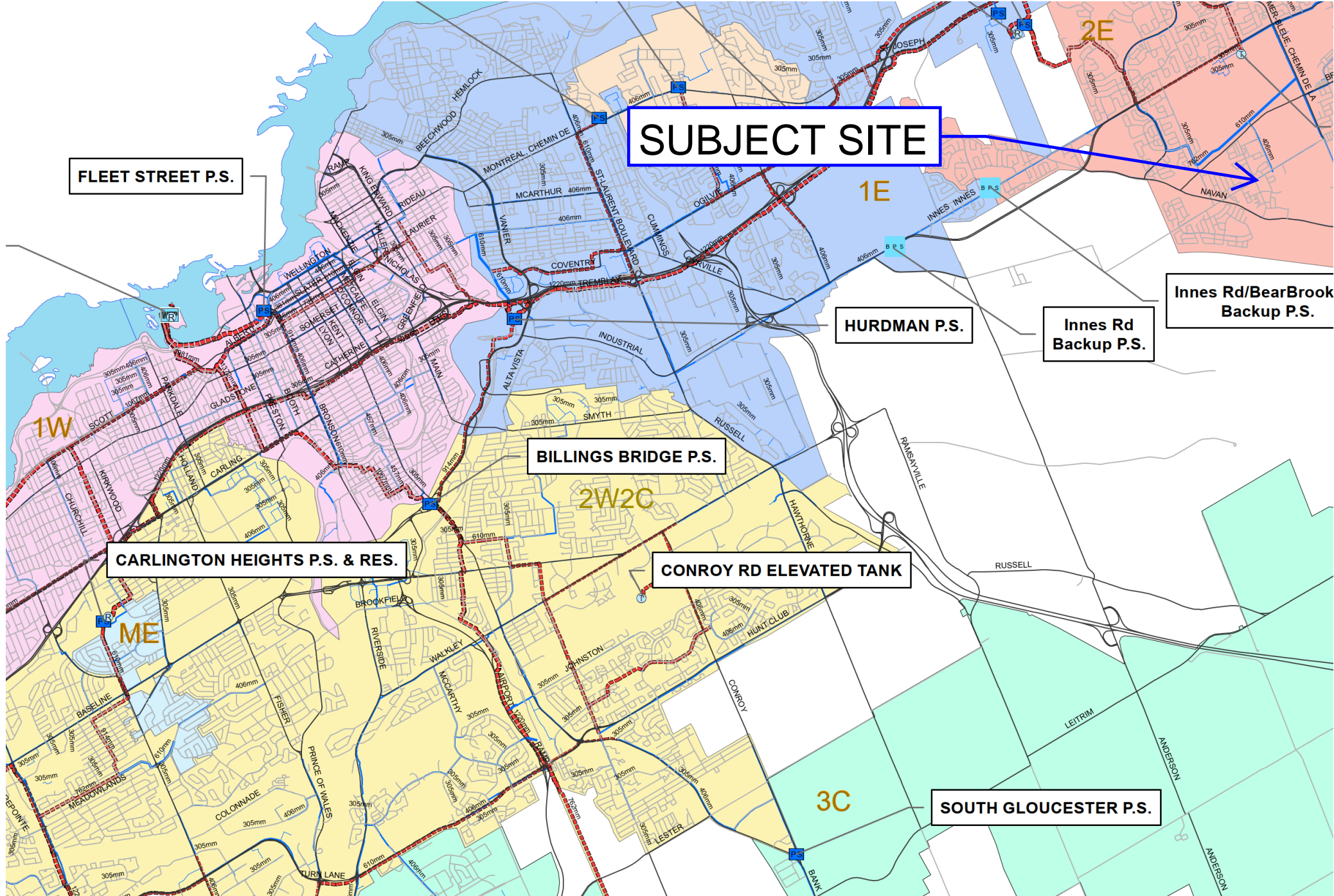
Boundary Conditions
2504 White St

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	13	0.21
Maximum Daily Demand	120	2.00
Peak Hour	181	3.01
Fire Flow Demand #1	9,000	150.00
Fire Flow Demand #2	10,000	166.67

Location
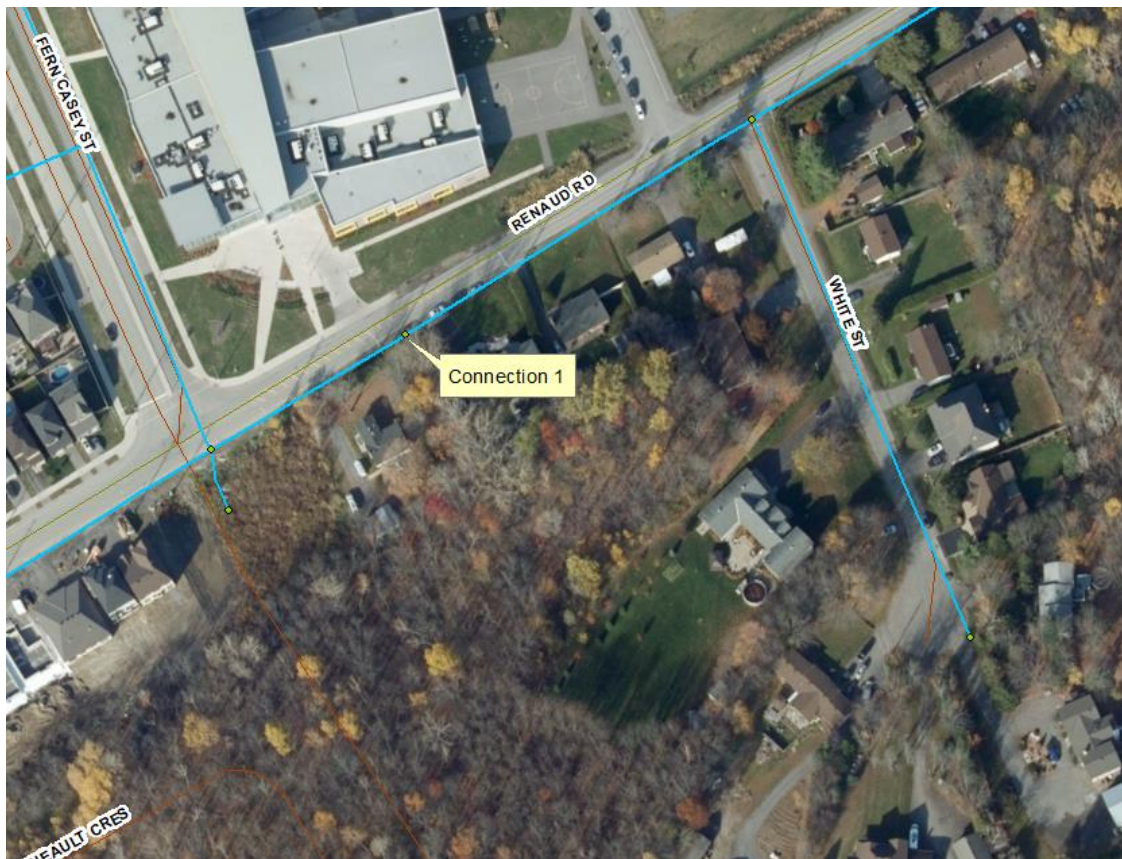
Results

Connection 1 – Renaud Rd.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.7	61.1
Peak Hour	126.8	55.6
Max Day plus Fire 1	127.3	56.3
Max Day plus Fire 2	126.8	55.6

Ground Elevation = 87.7 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.

McINTOSH PERRY

CCO-22-2100 - 2504 White Street - Water Demands

Project:	2504 White Street		
Project No.:	CCO-22-2100		
Designed By:	RRR		
Checked By:	RDF		
Date:	September 23, 2022		
Site Area:	0.62 gross ha		

Residential	NUMBER OF UNITS		UNIT RATE	
Single Family		homes	3.4	persons/unit
Semi-detached		homes	2.7	persons/unit
Townhouse	24	homes	2.7	persons/unit
Bachelor Apartment		units	1.4	persons/unit
1 Bedroom Apartment		units	1.4	persons/unit
2 Bedroom Apartment		units	2.1	persons/unit
3 Bedroom Apartment		units	3.1	persons/unit
Average Apartment		units	1.8	persons/unit

Total Population	65 persons

Commercial	m2
Industrial - Light	m2
Industrial - Heavy	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	0.21	L/s
	Commercial/Industrial/ Institutional	0.00	L/s

MCINTOSH PERRY

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	9.5	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	2.00	L/s
	Commercial/Industrial/Institutional	0.00	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	14.3	x avg. 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	3.01	L/s
	Commercial/Industrial/Institutional	0.00	L/s

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

MCINTOSH PERRY

AVERAGE DAILY DEMAND	0.21	L/s
MAXIMUM DAILY DEMAND	2.00	L/s
MAXIMUM HOUR DEMAND	3.01	L/s

McINTOSH PERRY

CCO-22-2100 - 2504 White Street - 8 UNIT BUILDING (NORTH) - Fire Underwriters Survey

Project:	2504 White Street - 8 UNIT BUILDING (NORTH)
Project No.:	CCO-22-2100
Designed By:	RRR
Checked By:	RDF
Date:	September 23, 2022

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)

$F = 220 \times C \times \sqrt{A}$ 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 **Ordinary Construction**

C	1	A	957.6 m^2
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)	957.6 m^2	*Unprotected Vertical Openings

Calculated Fire Flow	6,807.9 L/min
	7,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Combustible — 0%

Fire Flow	7,000.0 L/min

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered — 0%

Reduction	0.0 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	3.1 to 10	Ordinary - Mass Timber (Unprotected)	8	1	8.0	10%
Exposure 2	20.1 to 30	Ordinary - Mass Timber (Unprotected)	14	2	28.0	1%
Exposure 3	0 to 3	Ordinary - Mass Timber (Unprotected)	16	2.5	40.0	16%
Exposure 4	Over 30 m	Ordinary - Mass Timber (Unprotected)	20	0	0.0	0%
					% Increase*	27%

Increase*	1,890.0 L/min

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

Fire Flow	8,890.0 L/min
Fire Flow Required**	9,000.0 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

McINTOSH PERRY

CCO-22-2100 - 2504 White Street - 8 UNIT BUILDING (SOUTH) - Fire Underwriters Survey

Project:	2504 White Street - 8 UNIT BUILDING (SOUTH)
Project No.:	CCO-22-2100
Designed By:	RRR
Checked By:	RDF
Date:	September 23, 2022

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)

$F = 220 \times C \times \sqrt{A}$ 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 Ordinary Construction

C	1	A	960.0 m^2	
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)		960.0 m^2	*Unprotected Vertical Openings

Calculated Fire Flow	6,816.5 L/min
	7,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Combustible   0%

Fire Flow	7,000.0 L/min

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered   0%

Reduction	0.0 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	0 to 3	Ordinary - Mass Timber (Unprotected)	16	2.5	40.0	16%
Exposure 2	Over 30 m	Ordinary - Mass Timber (Unprotected)	31	1	31.0	0%
Exposure 3	Over 30 m	Ordinary - Mass Timber (Unprotected)	17	1	17.0	0%
Exposure 4	Over 30 m	Ordinary - Mass Timber (Unprotected)			0.0	0%
					% Increase*	16%

Increase*	1,120.0 L/min

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

Fire Flow	8,120.0 L/min
Fire Flow Required**	8,000.0 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

MᴄINTOSH PERRY

CCO-22-2100 - 2504 White Street - 8 UNIT BUILDING (WEST) - Fire Underwriters Survey

Project:	2504 White Street - 8 UNIT BUILDING (WEST)
Project No.:	CCO-22-2100
Designed By:	RRR
Checked By:	RDF
Date:	September 23, 2022

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)

$F = 220 \times C \times \sqrt{A}$ 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 Ordinary Construction

C	1	A	670.0 m^2
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)	670.0 m^2	*Unprotected Vertical Openings

Calculated Fire Flow	5,694.6 L/min
	6,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Combustible	0%

Fire Flow	6,000.0 L/min

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered	0%

Reduction	0.0 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	3.1 to 10	Ordinary - Mass Timber (Unprotected)	6	1	6.0	10%
Exposure 2	0 to 3	Ordinary - Mass Timber (Unprotected)	14	2	28.0	16%
Exposure 3	Over 30 m	Ordinary - Mass Timber (Unprotected)	14	1	14.0	0%
Exposure 4	10.1 to 20	Ordinary - Mass Timber (Unprotected)	24	3	60.0	7%
					% Increase*	33%

Increase*	1,980.0 L/min

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

Fire Flow	7,980.0 L/min
Fire Flow Required**	8,000.0 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

McINTOSH PERRY

CCO-22-2100 - 2504 White Street - 8 UNIT BUILDING (EAST) - Fire Underwriters Survey

Project:	2504 White Street - 8 UNIT BUILDING (EAST)
Project No.:	CCO-22-2100
Designed By:	RRR
Checked By:	RDF
Date:	September 23, 2022

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)

$F = 220 \times C \times \sqrt{A}$ 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 Ordinary Construction

C	1	A	670.6 m²	
		Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)	670.6 m²	*Unprotected Vertical Openings

Calculated Fire Flow	5,697.1 L/min
	6,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:
Combustible   0%

Fire Flow	6,000.0 L/min

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered   0%

Reduction	0.0 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	Ordinary - Mass Timber (Unprotected)	7	1	7.0	5%
Exposure 2	10.1 to 20	Ordinary - Mass Timber (Unprotected)	20.2	1	20.2	5%
Exposure 3	20.1 to 30	Ordinary - Mass Timber (Unprotected)	20	2	40.0	1%
Exposure 4	0 to 3	Ordinary - Mass Timber (Unprotected)	14	2	28.0	16%
					% Increase*	27%

Increase*	1,620.0 L/min

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

Fire Flow	7,620.0 L/min
Fire Flow Required**	8,000.0 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

McINTOSH PERRY

CCO-22-2100 - 2504 White Street - Boundary Condition Unit Conversion

Project:	2504 White Street
Project No.:	CCO-22-2100
Designed By:	RRR
Checked By:	RDF
Date:	September 23, 2022

Boundary Conditions Unit Conversion

RENAUD ROAD

Scenario	Height (m)	Elevation (m)	m H_2O	PSI	kPa
Avg. DD	130.7	87.7	43.0	61.2	421.8
Fire Flow (135 L/s or 8,120 L/min) BLDG2-4	126.8	87.7	39.1	55.6	383.6
Fire Flow (152 L/s or 9,120L/min) BLDG1	127.3	87.7	39.6	56.3	388.5
Peak Hour	126.8	87.7	39.1	55.6	383.6

*Note: Pressures adjusted for an elevation of 87.7m

2504 WHITE STREET HYDRANT COVER FIGURE

HYDRANT DIRECTLY ADJACENT TO SITE
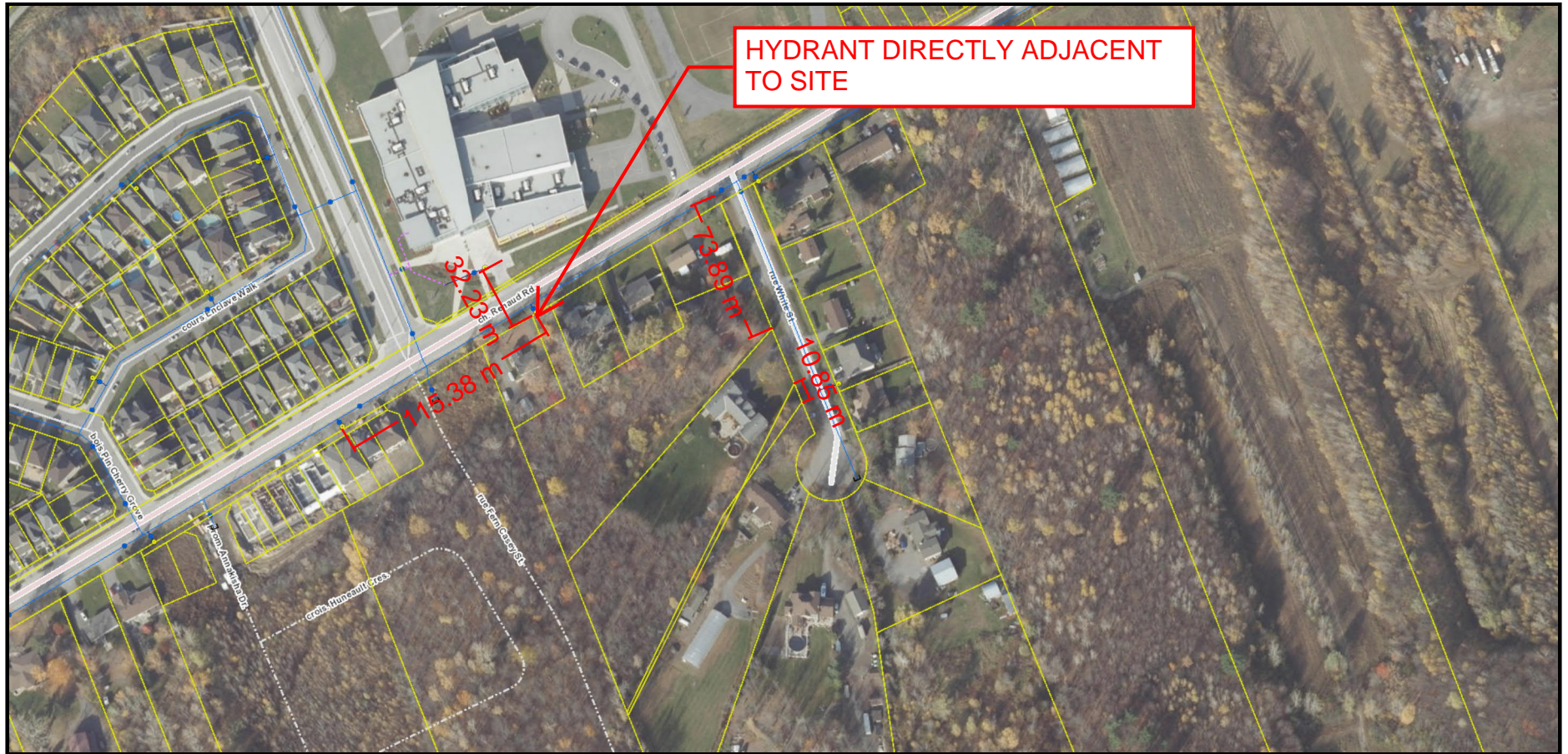
MCINTOSH PERRY

CCO-22-2100 - 2504 White Street - Sanitary Demands

Project:	2504 White Street
Project No.:	CCO-22-2100
Designed By:	AJG
Checked By:	RDF
Date:	December 9, 2021

Site Area	**0.622**	**Gross ha**	
Townhouse	**24**	**2.70**	**Persons per unit**

Total Population	**65**	**Persons**
Commercial Area	0.00	m²
Amenity Space	0.00	m²

DESIGN PARAMETERS

Institutional/Commercial Peaking Facto	1	
Residential Peaking Factor	3.63	*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	0.17
Total	**0.21**

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	*280*	*L/c/d*	*65*	*0.21*
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m² /d)		0
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/7.0m²/d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

MCINTOSH PERRY

AVERAGE RESIDENTIAL FLOW	0.21	L/s
PEAK RESIDENTIAL FLOW	0.77	L/s
AVERAGE ICI FLOW	0.00	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.00	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.24	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	0.80	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	0.97	L/s

McINTOSH PERRY

CCO-22-2100 - 2504 White St, 6408 Renaud Rd, 6418 Renaud Rd - Sanitary Demands

Project:	2504 White St, 6408 Renaud Rd, 6418 Renaud Rd
Project No.:	CCO-22-2100
Designed By:	AJG
Checked By:	RDF
Date:	December 9, 2021

Site Area	**0.974**	Gross ha		
Townhouse	**24**	2.70	Persons per unit	
Single Family	**2**	3.40	Persons per unit	*6408 & 6418 Renaud Rd*

Total Population	**72**	Persons
Commercial Area		m^2
Amenity Space		m^2

DESIGN PARAMETERS

Institutional/Commercial Peaking Facto	1
Residential Peaking Factor	3.62

*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	0.05
Wet	0.27
Total	**0.32**

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	*280*	*L/c/d*	*72*	*0.23*
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m² /d)		0
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

McINTOSH PERRY

AVERAGE RESIDENTIAL FLOW	0.23	L/s
PEAK RESIDENTIAL FLOW	0.85	L/s
AVERAGE ICI FLOW	0.00	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.00	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.28	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	0.89	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	1.17	L/s

McINTOSH PERRY

CCO-22-2100 - 2504 White St - Existing Sanitary Flow Review - Renaud Road

Project:	2504 White St - Existing Sanitary Flow Review - Renaud Road
Project No.:	CCO-22-2100
Designed By:	FV
Checked By:	AG
Date:	2021-12-21

Site Area	6.76	Gross ha	
Single Family	28	3.40	Persons per unit
Semi-detached and duplex	6	2.70	Persons per unit

Total Population	112	Persons
Commercial Area	0.00	m^2
Amenity Space	0.00	m^2

DESIGN PARAMETERS

Institutional/Commercial Peaking Factor	1.5	
Residential Peaking Factor	3.58	* 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	0.34
Wet	1.89
Total	2.23

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	112	0.36
Industrial - Light**	35,000	L/gross ha/d		0.00
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m² /d)	0.00	0.00
Hospital	900	L/(bed/day)		0
Schools	28,000	L/gross ha/d	5.06	1.64
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

MᴄINTOSH PERRY

AVERAGE RESIDENTIAL FLOW	0.36	L/s
PEAK RESIDENTIAL FLOW	1.30	L/s
AVERAGE INSTITUTIONAL	1.64	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	2.46	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	2.46	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	2.34	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	4.10	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	5.99	L/s

** PEAK INDUSTRIAL FLOW PER CITY OF OTTAWA SEWER DESIGN GUIDELINES APPENDIX 4B

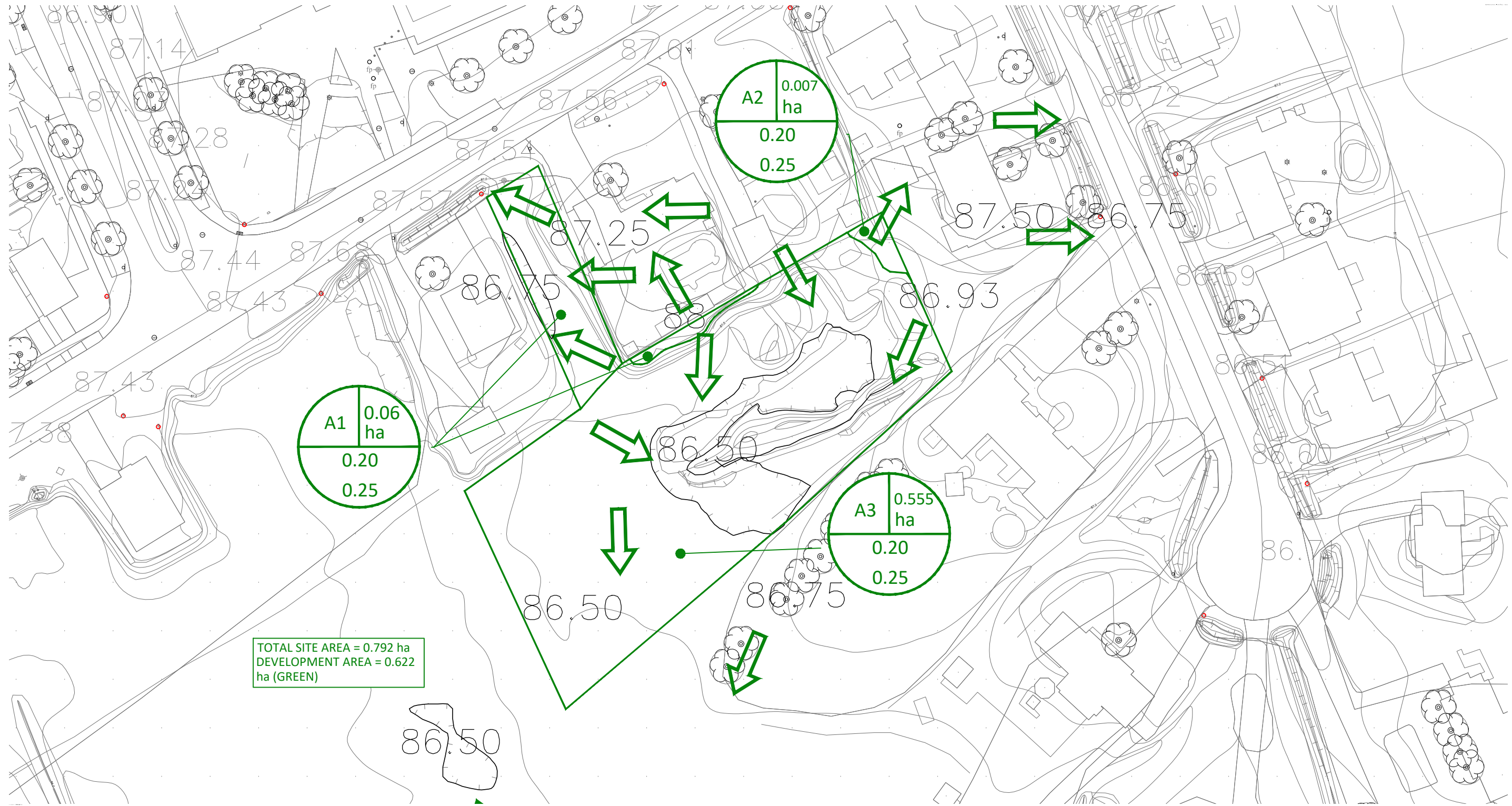# Renaud Road - Existing 200mm Diameter Sanitary Sewer Capacity Review

PROJECT: CCO-22-2100
LOCATION: 2504 White St
CLIENT: RE/MAX Absolute Realty Inc

McINTOSH PERRY

	LOCATION			RESIDENTIAL									ICI AREAS							INFILTRATION ALLOWANCE			FLOW										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	30	31
STREET	AREA ID	FROM MH	TO MH	SF UNIT TYPES	SD	TH	APT	AREA (ha)	POPULATION IND	CUM	PEAK FACTOR	PEAK FLOW (L/s)	INSTITUTIONAL IND	CUM	COMMERCIAL IND	CUM	INDUSTRIAL IND	CUM	PEAK FLOW (L/s)	AREA (ha) IND	CUM	FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	FLOW DEPTH (mm)	VELOCITY (actual) (m/s)	AVAILABLE CAPACITY L/s	(%)
Renaud Rd		MHSA70190	MHSA69052	28	6			1.70	111.4	111.4	3.58	1.29	5.06	5.06		0.00		0.00	2.46	6.76	6.76	2.23	5.98	21.91	408.80	200	0.41	0.676	72.7	0.580	15.93	72.69

Design Parameters:

Residential			ICI Areas			
SF	3.4	p/p/u				Peak Factor
TH/SD	2.7	p/p/u	INST	28,000	L/Ha/day	1.5
APT	2.3	p/p/u	COM	28,000	L/Ha/day	1.5
Other	60	p/p/Ha	IND	35,000	L/Ha/day	MOE Chart

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
   Harmon Formula = 1+(14/(4+P^0.5)*0.8)
   where P = population in thousands

Designed: FV
Checked: AG
Project No.: CCO-22-2100

No.	Revision	Date
1.		

Sheet No: 1 of 1

1 of 1

U:\Ottawa\01 Project - Proposals\2022 Jobs\CCO\CCO-22-2100 Fotenn_2504 White St\Civil\03 - Servicing\Sanitary\Renaud Road Existing Sewer Analysis\CO-22-2100- Renaud Existing Sanitary Sewer Design Sheet

2021-12-213:38 PM

APPENDIX E
PRE-DEVELOPMENT DRAINAGE PLAN

MCINTOSH PERRY

A2 | 0.007 ha | 0.20 | 0.25

A1 | 0.06 ha | 0.20 | 0.25

A3 | 0.555 ha | 0.20 | 0.25

87.14
87.28
87.44
87.43
87.43
87.56
87.75
87.25
86.75
86.93
87.50 86.75
86.50
86.50
86.75
86.50
86

TOTAL SITE AREA = 0.792 ha
DEVELOPMENT AREA = 0.622 ha (GREEN)

SCALE   1 : 250

0   5   10   15   20   25 Metres
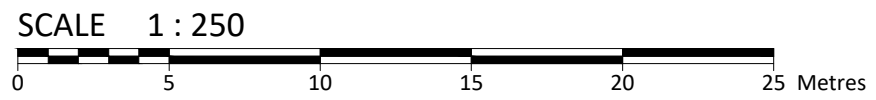
Legend:

DRAINAGE AREA ──── B3 | 0.07 ha | ──── AREA
0.79
0.88
5-YEAR RUNOFF COEFFICIENT
100-YEAR RUNOFF COEFFICIENT

N
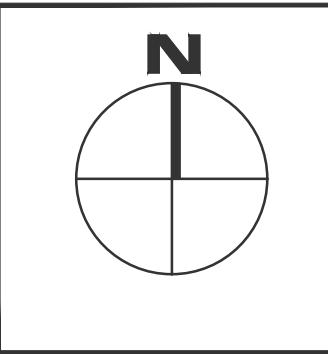
McINTOSH PERRY

115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184   Fax: 613-836-3742
www.mcintoshperry.com

Client:
RE/MAX ABSOLUTE REALTY INC
22 SOMERSET ST W, OTTAWA, ON K1G 0Z1

Project:
2504 WHITE STREET

Drawing Title:
PRE-DEVELOPMENT DRAINAGE AREA PLAN

Drawn by: R.R.R.	Checked By: A.J.G.			Drawing Number:
Scale: 1:250	Project Number: CCO-22-2100	1	ISSUED FOR REVIEW	OCT 25, 2022	PRE
		No.	Revisions	Date	

APPENDIX F
POST-DEVELOPMENT DRAINAGE PLAN

MᴄINTOSH PERRY

2504 WHITE STREET
POST-DEVELOPMENT RATIONAL
COEFFICIENT FIGURE

RENAUD RD

WHITE ST

FUTURE STREET CONNECTION

SITE AREA:
1706 M2

SITE AREA: 6220 m²

4 UNITS

4 UNITS

2.5 STOREYS
8 UNITS

2.5 STOREYS
8 UNITS

AMENITY SPACE
670m²

GARBAGE
COLLECTION
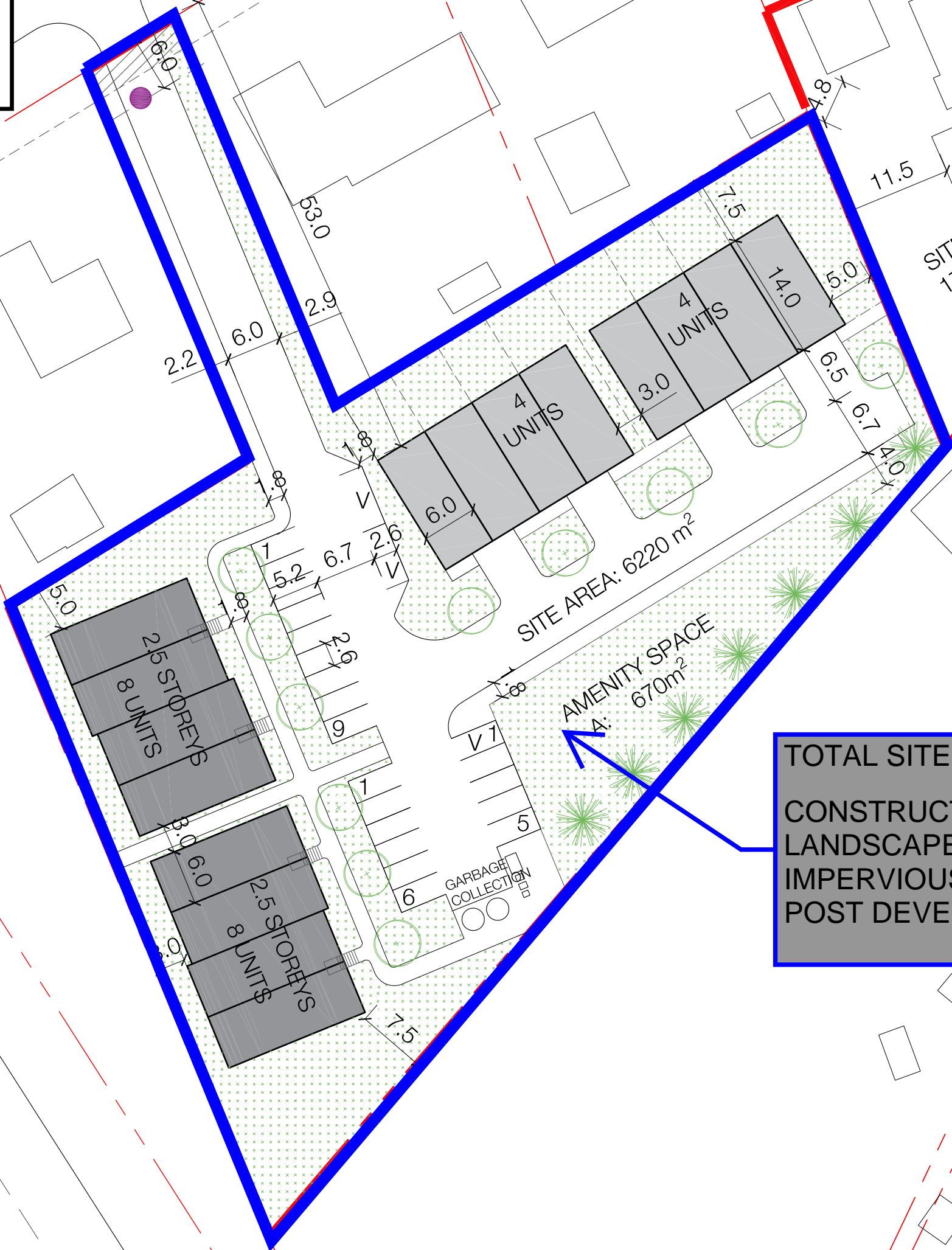
TOTAL SITE AREA = 7,902 m2

CONSTRUCTION LIMIT (BLUE LIMIT) = 6220
LANDSCAPE WITHIN LIMIT (GREEN AREA) = 2864.71 m2
IMPERVIOUS AREA (GREY AND WHITE AREA) = 3355.11 m2
POST DEVELOPMENT C VALUE = 0.58

6.0
53.0
2.9
2.2
6.0
1.8
1.8
7.5
14.0
5.0
3.0
6.5
6.7
4.0
11.5
1.8
6.0
2.6
6.7
2.6
1
5.2
1.8
5.0
2.6
9
8
1
5
6
7.5
3.0
6.0
3.0
7.5

MᴄINTOSH PERRY

MCINTOSH PERRY

Pre-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	C_{AVG} 2/5-Year	C_{AVG} 100-Year
A1	0.060	0.00	0.90	0.00	0.60	600.90	0.20	0.20	0.25
A2	0.007	0.00	0.90	0.00	0.60	65.32	0.20	0.20	0.25
A3	0.555	0.00	0.90	0.00	0.60	5,553.78	0.20	0.20	0.25

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
A1	0.060	0.20	0.25	10	76.8	104.2	178.6	2.57	3.48	7.46
A2	0.007	0.20	0.25	10	76.8	104.2	178.6	0.28	0.38	0.81
A3	0.555	0.20	0.25	10	76.8	104.2	178.6	23.72	32.17	68.92
Total	0.622							26.56	36.03	77.19

Post-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	C_{AVG} 2/5-Year	C_{AVG} 100-Year
B1	0.560	3,019.76	0.90	0.00	0.60	2,578.24	0.20	0.58	0.65
B2	0.062	335.53	0.90	0.00	0.60	286.47	0.20	0.58	0.65

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
B1	0.560	0.58	0.65	10	104.2	178.6	93.66	181.89
B2	0.062	0.58	0.65	10	104.2	178.6	10.41	20.21
Total	0.622						104.07	202.11

Required Restricted Flow

Drainage Area	Area (ha)	C 2-Year	Tc (min)	I (mm/hr) 2-Year	Q (L/s) 2-Year
A1	0.060	0.20	10	76.8	2.57
A2	0.007	0.20	10	76.8	0.28
Total*	0.067				2.84
A3	0.555	0.20	10	76.8	23.72
Total**	0.622				23.72

*Total Existing Flow Tributary to EUC Pond 1

**Total Existing Flow Tributary to EUC Pond 2

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/s)		Restricted Flow (L/s)		Storage Required (m^3)		Storage Provided (m^3)	
	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year
B1*	93.66	181.89	1.40	2.84	128.51	240.66	128.51	240.66
B2**	10.41	20.21	10.41	20.21	-	-	-	-
Total	104.07	202.11	11.81	23.05	128.51	240.66	128.51	240.66

*Restricted to Total Existing Flow Tributary to EUC Pond 1

**Post Development Unrestricted Flow Does Not Exceed Existing Flow Tributary to EUC Pond 2

McIntosh Perry

Storage Requirements for Area B1

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)
360	8.2	7.35	1.40	5.95	128.47
370	8.0	7.19	1.40	5.79	128.50
380	7.8	7.04	1.40	5.64	128.51
390	7.7	6.89	1.40	5.49	128.50
400	7.5	6.75	1.40	5.35	128.47

Maximum Storage Required 5-year =	128.5	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)
310	15.5	15.77	2.84	12.93	240.44
320	15.1	15.37	2.84	12.53	240.56
330	14.7	14.99	2.84	12.15	240.64
340	14.4	14.64	2.84	11.80	240.66
350	14.0	14.30	2.84	11.46	240.64
360	13.7	13.98	2.84	11.14	240.58
370	13.4	13.67	2.84	10.83	240.48
380	13.1	13.38	2.84	10.54	240.34
390	12.9	13.10	2.84	10.26	240.17
400	12.6	12.84	2.84	10.00	239.96

Maximum Storage Required 100-year =	240.7	m^3

5-Year Storm Event Storage Summary

Storage Available (m³) = 128.5	*
Storage Required (m³) = 128.5	

100-Year Storm Event Storage Summary

Storage Available (m³) = 240.7	*
Storage Required (m³) = 240.7	

McINTOSH PERRY

Pre-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m²)	C	Gravel Area (m²)	C	Pervious Area (m²)	C	C$_{AVG}$ 2/5-Year	C$_{AVG}$ 100-Year
A1	0.060	0.00	0.90	0.00	0.60	600.90	0.20	0.20	0.25
A2	0.007	0.00	0.90	0.00	0.60	65.32	0.20	0.20	0.25
A3	0.555	0.00	0.90	0.00	0.60	5,553.78	0.20	0.20	0.25

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
A1	0.060	0.20	0.25	10	76.8	104.2	178.6	2.57	3.48	7.46
A2	0.007	0.20	0.25	10	76.8	104.2	178.6	0.28	0.38	0.81
A3	0.555	0.20	0.25	10	76.8	104.2	178.6	23.72	32.17	68.92
Total	0.622							26.56	36.03	77.19

Post-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m²)	C	Gravel Area (m²)	C	Pervious Area (m²)	C	C$_{AVG}$ 2/5-Year	C$_{AVG}$ 100-Year
B1	0.560	3,019.76	0.90	0.00	0.60	2,578.24	0.20	0.58	0.65
B2	0.062	335.53	0.90	0.00	0.60	286.47	0.20	0.58	0.65

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
B1	0.560	0.58	0.65	10	104.2	178.6	93.66	181.89
B2	0.062	0.58	0.65	10	104.2	178.6	10.41	20.21
Total	0.622						104.07	202.11

Required Restricted Flow

Drainage Area	Area (ha)	C 2-Year	Tc (min)	I (mm/hr) 2-Year	Q (L/s) 2-Year
*A1	0.060	0.20	10	76.8	2.57
*A2	0.007	0.20	10	76.8	0.28
**A3	0.555	0.20	10	76.8	23.72
***Total	0.555				26.56

*Existing Flow Tributary to EUC Pond 1
** Existing Flow Tributary to EUC Pond 2
***Total Existing Flow From The Site

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/s)		Restricted Flow (L/s)		Storage Required (m³)		Storage Provided (m³)	
	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year
B1*	93.66	181.89	3.27	6.35	102.94	196.11	102.94	196.11
B2**	10.41	20.21	10.41	20.21	-	-	-	-
Total	104.07	202.11	13.68	26.56	102.94	196.11	102.94	196.11

*Post Development Restricted Flow Tributary to EUC Pond 2
**Post Development Unrestricted Flow to EUC Pond 2

McINTOSH PERRY

CCO-22-2100 - 2504 White Street - Runoff Calculations - Scenario #2

Storage Requirements for Area B1

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)
120	19.5	17.50	3.27	14.23	102.45
130	18.3	16.44	3.27	13.17	102.76
140	17.3	15.52	3.27	12.25	102.92
150	16.4	14.71	3.27	11.44	102.94
160	15.6	13.98	3.27	10.71	102.84

Maximum Storage Required 5-year =	102.9	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)
90	41.1	41.88	6.35	35.53	191.86
100	37.9	38.61	6.35	32.26	193.57
110	35.2	35.86	6.35	29.51	194.77
120	32.9	33.51	6.35	27.16	195.55
130	30.9	31.48	6.35	25.13	195.98
140	29.2	29.70	6.35	23.35	196.11
150	27.6	28.13	6.35	21.78	195.99
160	26.2	26.73	6.35	20.38	195.64
170	25.0	25.48	6.35	19.13	195.10
180	23.9	24.35	6.35	18.00	194.39

Maximum Storage Required 100-year =	196.1	m^3

5-Year Storm Event Storage Summary

Storage Available (m³) = 102.9	*
Storage Required (m³) = 102.9	

100-Year Storm Event Storage Summary

Storage Available (m³) = 196.1	*
Storage Required (m³) = 196.1	

Storm Sewer System map — City of Ottawa, Gloucester EUC Infrastructure Servicing Study Update.

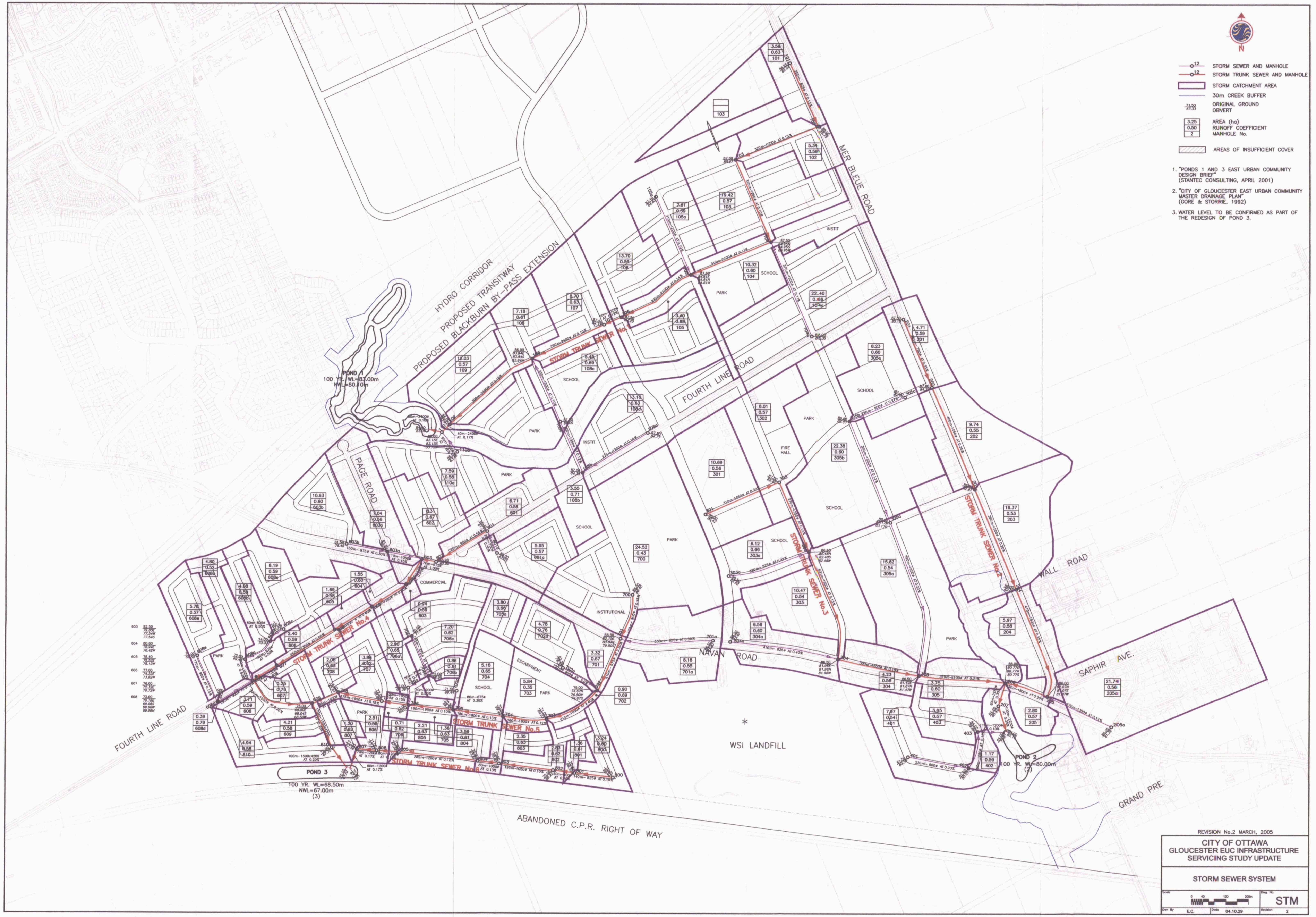**Legend:**
- Storm Sewer and Manhole
- Storm Trunk Sewer and Manhole
- Storm Catchment Area
- 30m Creek Buffer
- Original Ground / Obvert
- Area (ha) / Runoff Coefficient / Manhole No.
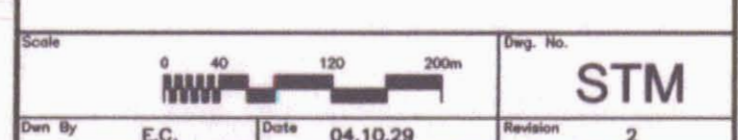- Areas of Insufficient Cover

Notes:
1. "PONDS 1 AND 3 EAST URBAN COMMUNITY DESIGN BRIEF" (STANTEC CONSULTING, APRIL 2001)
2. "CITY OF GLOUCESTER EAST URBAN COMMUNITY MASTER DRAINAGE PLAN" (GORE & STORRIE, 1992)
3. WATER LEVEL TO BE CONFIRMED AS PART OF THE REDESIGN OF POND 3.