Corporation of the County of Lanark
MUNICIPALITY OF MISSISSIPPI MILLS
***

PROJECT: MENZIE ENCLAVES SUBDIVISION

ADDRESS:
ADELAIDE ST / MENZIE ST
MUNICIPALITY OF MISSISSIPPI MILLS, ON

SITE SERVICING REPORT

PREPARED FOR:
13165647 Canada Inc
27 Queen Street East. #407,
Toronto, ON,
M5C 2M6

PREPARED BY:
Advance Engineering Ltd. Ottawa, ON
(613) 986 9170

Date	*Revision / Issue*
July 08, 2025	New Layout - Municipality Comments Dated December 5, 2024
June 28, 2024	Municipality Comments Dated November 8, 2023, February 11, 2024 and June 18, 2024
January 31, 2023	Issued for a Subdivision Draft Plan Application

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List of Related Drawings:

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GSP-1 - General Services Plan

List of Related Reports:

- Stormwater Management Report

1.0 INTRODUCTION

13165647 Canada Inc. has retained *Advance Engineering Ltd.* to provide a site servicing study for the proposed residential subdivision located at the south west corner of unopened Adelaide St and Menzie St intersection in the north side of Mississippi Mills, Ontario. This report describes the existing infrastructure in the immediate area of the development site and estimates the anticipated servicing requirements. The adequacy of the existing sanitary and storm sewers, watermain to accommodate all required flows and demands associated with the proposed development will be examined. The report also provides information and assumptions used in the design of the sanitary sewer and watermain and should be read in conjunction with the design drawings prepared by *Advance Engineering Ltd.*.The report was prepared in support of an application for a subdivision plan approval by the applicant.

1.1 SITE DESCRIPTION

The proposed development is on a single parcel of land and is approximately 2.8426 hectares (7.02 acres) with a rectangular shape of 185 m in length and 155 m in width (Figure-1, **Appendix A**). The legal description of the property *is: "Park Lot 2, Block C, Henderson Section, And Lot 1 to 25 inclusive, Park Block C, McLean Section, And Alfred Street, And Alexandra Street, Registered Plan 6262, Former Town of Almonte, Municipality of Mississippi Mills, County of Lanark".* The site is bounded as follows:

- Adelaide St (unopened) and a future development (*Hannan Hills*) beyond to the north,
- *Spring Creek* and Menzie St (unopened) to the east,
- Augusta St (unopened) and *Spring Creek* beyond to the south, and,
- residential dwellings and McDermott St beyond to the west.

The site is currently vacant and covered with trees and tall grass. The property is not currently serviced by municipal water, sanitary or storm sewers.

1.2 BACKGROUND AND LAND USE

The site has never been developed. Under the Comprehensive Zoning By-Law #11-83, consolidated March 10, 2020, a zoning amendment is required to change the zoning type of the site from "D" zoning to proposed "R1" and "R2" zonings.

The site has been surveyed by *Annis, O'Sullivan, Vollebekk Ltd.,* Job No.: 22733-22, field work completed October 31, 2022.

The following documents have been provided by the Municipality and the Owner:

1- "*Hannan Hills, Serviceability and Conceptual Stormwater Management Report*" dated May 20, 2021, by *Novatech.* File: 118201, Ref: R-2021-010.

2- "*Preliminary Grading and Servicing Plan"* Rev # 4, dated May 27, 2025, by *Novatech.* Project No.: 118201-00, DWG: 118201-PGS.

3- "*Master Plan Update Report"* prepared by *J.L.Richards* for the Municipality of Mississippi Mills, dated February 2018. JLR No.: 27456-01.

4- *"Phase 2 Report - Mississippi Mills Water and Wastewater Infrastructure Master Plan"* by *J.L.Richards*, dated September 23, 2024. JLR No.: 29920-008 Rev. 0.

5- Various documents issued by the Municipality related to water and wastewater policies and by-laws.

1.3 PROPOSED DEVELOPMENT

The proposed development consists of the construction of paved roadways, sidewalks, sanitary and storm sewers, watermains and other utilities to service the proposed subdivision lots. The project will be completed in one phase. All proposed right-of-ways (ROW) are 18 m wide and will encompass 8.5m of asphalt pavement and mountable or barrier curbs. The sidewalk will be constructed on one side of the subdivision streets. The final subdivision layout will have two intersections with Adelaide St. A paved pathway is proposed at south east side of the subdivision and will link the subdivision to Menzie St. As per the latest draft plan, the proposed 58 residential units are distributed as follows:

- 1 Single detached (Lot 12)
- 36 Semi-detached dwelling units (Blocks 3 to 11 and 13 to 21)
- 21 Townhouses (Blocks 22, 23, 24 and 25)

The semi-detached lots come with attached garages with areas not less than 225 m^2 and frontages not less than 7.5 m for each dwelling unit. In addition to the residential lots, it is proposed one block for stormwater management (Block 27), one block for the existing creek setback (Block 28) and two blocks for road widening along Adelaide and Augusta unopened streets.

1.4 EXISTING INFRASTRUCTURE

1.4.1 WATER

Existing municipal watermain:

There is no watermain in the immediate area of the site. The preliminary servicing plan for *Hannan Hills* development shows a proposed 250 mm diameter watermain running east-west within the north side of Adelaide St. It will connect east to the existing 250 mm diameter watermain identified at Honeyborne St across the creek and west to Florence St 250 mm diameter proposed watermain.

Available Capacities:

Existing capacities have been examined based on anticipated water demand for both developments.

1.4.2 WASTEWATER

Existing municipal sewer: There is no sanitary sewer in the immediate area of the site. There are existing sanitary sewers at Maude St to the south of the site and at Finner Court to the west of the site. The preliminary servicing plan for *Hannan Hills* shows a proposed 200 mm diameter pipe running east to west along Adelaide St and connected to a proposed 375 mm diameter sewer running north to south along Florence St. The invert at the outlet manhole at Victoria St / Florence St is assumed at 134.9.
The two proposed manholes at Adelaide St intersections with Street A have invert elevations of 136.70 and 137.10 and grate elevations of 140.15 and 140.10 approximately. The slope is 0.4% and the full capacity is estimated at 21.6 L/s.

Available Capacities:

Figure 25 of the Master Plan shows a committed capacity of **5.97 L/s** in the coming 5-10 years for *Victoria and Menzie Residential infill,* which includes the proposed subdivision and *Hannan Hills* development. In December 2024, the Municipality has advised about a newly passed *Capacity Allocation By-law* that would organize capacity allocations to all new subdivisions.

1.4.3 STORMWATER

The site is located in the sub-watershed of *Spring Creek*. There is no storm water sewer in the immediate area of the site. There are existing detention ponds in the area that outlet into the creek.

2.0 WATER SERVICING

2.1 DESIGN CRITERIA

The water demand for the proposed development has been calculated based on MOECP and Ottawa Guidelines as follows:

- Population: 157.3 person (residential occupancy for single family dwelling 3.4 person per unit and for semi-detached and townhomes 2.7 person per unit)
- Average daily demand per capita per day = 350 L/pers./day
- Peaking factor for maximum daily demand = 4.84
- Peaking factor for peak hourly demand = 7.31
- Peaking factor are provided by linear interpolation from Table 3-3 of the MOECP "*Design Guidelines for Drinking-Water Systems",* used for water systems serving fewer than 500 people.
- Required fire flow (RFF): is calculated as per the *Ontario Building Code* (OBC), A-3.2.5.7 Division B, Building Code Compendium, and cross-referenced with the 2020 version of the *Fire Underwriter's Survey* (FUS).
- System pressures requirements:

Pressure Check	Minimum Pressure		Maximum Pressure	
	(kPa)	(psi)	(kPa)	(psi)
Normal Use	345	50	552	80
Peak Hour Demand	276	40	552	80
Maximum Day and Fire Flow	140	20	552	80
Maximum pressure at any point in occupied areas			552	80
Maximum pressure at any point in unoccupied areas			689	100

Table -1 System Pressure Requirements

- Proposed Watermain:

  150 mm diameter PVC Class 150 DR 18 – Roughness Coefficient C= 100

- Residential areas serving more than 50 dwellings require a minimum of two watermain connections separated by an isolation valve.

2.2 PROPOSED SERVICING AND CALCULATIONS

2.2.1 DOMESTIC WATER DEMAND

Domestic water demands are summarized as follows (Refer to **Appendix B** for full calculations):

Design Parameter	Value
Population in capita	157.3
Residential Average Demand Volume Per Capita in L/c/day	350
Average Demand Volume in m^3/day	55.1
Maximum Daily Demand (**4.84** x Average) in m^3/day **	266.5
Maximum Hourly Demand (**7.31** x Average Daily) in m^3/day **	402.5
Maximum Hourly Water Flow Required in L/s	**4.66**

Table - 2 Anticipated Domestic Water Demand

2.2.2 FIRE FLOW DEMAND

1- Ontario Building Code (OBC), A-3.2.5.7 Division B, Building Code Compendium:

Minimum water supply required in Litres: $Q= K.V.S_{tot}$ where:

Q: minimum water supply in litres
K: water supply coefficient from Table 1
V: total building volume in cubic metres
S_{tot}: total of spatial coefficient values from property line exposures on all sides as obtained from the formula: $S_{tot} = 1+ (S_{side1} + S_{side2} + S_{side3} +...$ etc.); S_{tot} need not exceed 2.0.

A minimum of water supply flow rate for firefighting shall be 2 700 L/min.

2- Required Basic Fire Flow (FUS 2020 – PART II. 1): $F = 220\ C\ A^{0.5}$ where

F: required fire flow in litres per minute
C: coefficient related to the type of construction
A: the total floor area in m^2

Adjustments to the calculated fire flow can be made based on occupancy, sprinkler protection and exposure to other structures. The Final Fire Flow shall not exceed 45,000 L/min nor be less than 2,000 L/min.

The specific details of future buildings were not available at the time of preparation of this report, therefore, assumptions for the building materials, fire separations and contents have been considered based on experience about similar buildings. Combustible construction with limited combustible occupancy and no sprinkler has been assumed in our calculation for single and semi-detached and townhouse blocks. Lot coverage of 40% of lot area has been considered for single and semi detached. Expositions were calculated according to permitted setbacks. Refer to spreadsheets in **Appendix B** for detailed calculations of the required fire flow using both methods.

OBC calculation method has resulted in a required 4,500 L/min flow rate. FUS calculations has resulted in higher demand as follows:

Single and semi-detached family lots: a required fire flow demand of 10,000 L/min. The wood frame structures are expected to be separated by less than 3 m (2.4 m according to the proposed zoning). However, the simple method presented in Table 7, page 33 of FUS 2020, allows a suggested RFF of **8,000 L/min** for one and two-family dwellings with wood frame construction with exposure distance of less than 3 m.

The required fire flow for single and semi-detached is 8,000 L/min based on FUS 2020 simple method.

Townhouses: a required fire flow demand of 13,000 L/min. However, the simple method provided in Table 8, page 33 of FUS 2020, allows the use of **8,000 L/min** as a RFF for row housing with wood frame construction with exposure minimum distances between 3 and 10 m. In our case, the minimum exposure distance is 4.6 m.

The required fire flow for townhouses is 8,000 L/min based on FUS 2020 simple method.

Proposed Fire Hydrants:
Water supply for fire fighting will be delivered to the fire hydrants through the municipal system. Four fire hydrants are proposed with a maximum spacing of 110 m. A plan showing 45 m radius circles centered on each hydrant is attached in **Appendix B**. All new hydrants are assumed to be Class AA with rated capacity of 5,700 L/min.

2.2.3 HYDRAULIC ANALYSIS

Using an initial pressure at Adelaide watermain, a model using EPANET 2.2 software is used to assess headlosses and velocities within the proposed watermain under maximum day and required fire flow demand condition. The results shall remain comparable to the existing watermain in the area. Residual pressure shall be kept above 140 kPa and velocities less than 5 m/s.

2.3 CONCLUSION

The anticipated water demand is summarized as follows:

Parameter	Anticipated Demand	
	(L/s)	(L/min)
Average Day Demand	0.64	38.2
Max Day Demand	3.08	185.0
Peak Hour	4.66	279.5
Required Fire Flow	133.3	8,000
Fire Flow + Max Day	**136.4**	**8,185**

Table - 3 Summary of Anticipated Water Demand

It is proposed to provide water supply within the subdivision with a new 150 mm diameter PVC Class 150 DR 18 in the shape of a loop. The proposed watermain will be connected to the proposed 250 mm diameter watermain at Adelaide St at two locations as shown in the General Services Plan.

Water supply for fire fighting will be delivered through the municipal watermain system. Isolation valves will be installed at both intersections with Adelaide St.

Under normal use, pressure shall be kept between 345 kPa (50 psi) and 552 kPa (80 psi). For peak hour demand pressure shall be greater than 276 kPa (40 psi) and lower than 552 kPa (80 psi). Residual pressure for fire flow and maximum day demand shall be kept greater than 140 kPa (20 psi).

3.0 SANITARY SERVICING

3.1 DESIGN CRITERIA

Sanitary sewage flow for the proposed development is estimated as follows:

- Population: 157.3 persons
- Peak Flow Design Calculation:
  - Average daily flow per capita = 350 L/pers./day
  - Harmon's Residential Peaking Factor = 1 + (14 / (4 + (P / 1000)$^{0.5}$)) (Max.= 4; Min.= 2)
  - Infiltration contribution (Extraneous): 0.33 L/s/effective gross ha

Gross residential area includes lots and roadways. The creek buffer and the pond were not included.

3.2 PROPOSED SERVICING AND CALCULATIONS

The total peak design flow rate is the sum of the peak dry weather flow rate as generated by population and land use for the design contributing area plus all extraneous flow allowances. Detailed calculations for sanitary flows are exhibited in **Appendix B**. Results are summarized in the following table 4:

Design Parameter	Flow (m^3/day)	Flow (L/s)
Peak Flow Rate	268.03	3.10

Table - 4 Summary of Anticipated Sanitary Flows

The total peak sanitary flow rate from the proposed development represents 14.3 **%** of the capacity of the proposed sewer at Adelaide St (21.6 L/s) running east to west along Adelaide St.

3.3 CONCLUSION

It is proposed to construct a sanitary sewer composed of 1200 mm inner diameter manholes and 200 mm diameter PVC DR 35 pipes with a minimum pipe slope of 0.40% within the subdivision. Refer to **Appendix B** for the sanitary sewer design sheet. The gravity sewer will outlet into Adelaide St proposed sanitary sewer. The maximum distance between manholes is 120 m. Hydraulic grade lines are kept at least 0.3 m below footings.

All sanitary laterals shall be 135 mm diameter DR 28 PVC pipes with minimum 1% slopes. Backwater valves shall be installed on all sanitary and storm laterals.

Sewage discharges will be domestic in type and in compliance with the *Ontario Building Code (OBC).*

4.0 STORMWATER AND STORMWATER MANAGEMENT

Development stormwater will be captured and conveyed through catchbasins and underground pipes to the detention structure within the site where it will be controlled. Excess flow will be discharged gradually into the municipal drain at pre-development rate levels. The quality control consists of an enhanced level of treatment (80% of TSS removal) by on-site measures to protect receiving waters. A proposed Stormceptor will be installed at the south east side of the property. Refer to "Stormwater Management Report" for detailed analysis and calculations pertaining to quantity, quality controls and storage requirements.

5.0 CONCLUSION AND RECOMMENDATIONS

The preceding servicing report has been prepared to support the development of a residential subdivision composed of 58 units. The conclusions are as follows:

- Based on the estimated water demand, and upon confirmation by the Municipality of acceptable boundary conditions, the proposed 250 mm diameter watermain within Adelaide St has sufficient water supply capacity to support the proposed development.
- The watermain system is able to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions. The Municipality fire department shall review the required fire flow design.
- The proposed watermain within the subdivision will be of 150 mm diameter DR 18 PVC in the form of a loop. Water services shall be 25 mm diameter Type K soft copper or Cross-linked Polyethylene.
- The proposed sanitary sewer will be composed of a 200 mm diameter DR 35 PVC pipe and 1200 mm diameter manholes as per OPSD 701.010. The sewage will be conveyed gravitationally to the proposed Adelaide St sewer. Downstream sewer has adequate capacity to convey the estimated wastewater generated from the development.
- Blocks 3 and 17 may be serviced from Street A through the backyards. Easements may be required by the Municipality.
- Service connections shall comply with the Municipality instructions.
- The design of Adelaide St infrastructure will be conducted by *Hannan Hills* design team.
- Stormwater will be conveyed through a proposed separate storm sewer within the right-of-way to a proposed on-site stormwater management structure where quality and quantity control will be achieved. Discharge flow rates will match the pre-development levels.
- Hydro, gas and telecommunication have not been examined in this report. Service connections of these utilities will be coordinated with authorities having jurisdictions prior to construction.

Respectfully submitted,

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APPENDICES

Appendix A

- Figure 1: Site Location

Appendix B

- Domestic Water Supply Calculations
- Fire Flow Calculations
- Sanitary Sewer Calculations

Appendix C

- Correspondences

APPENDIX - A

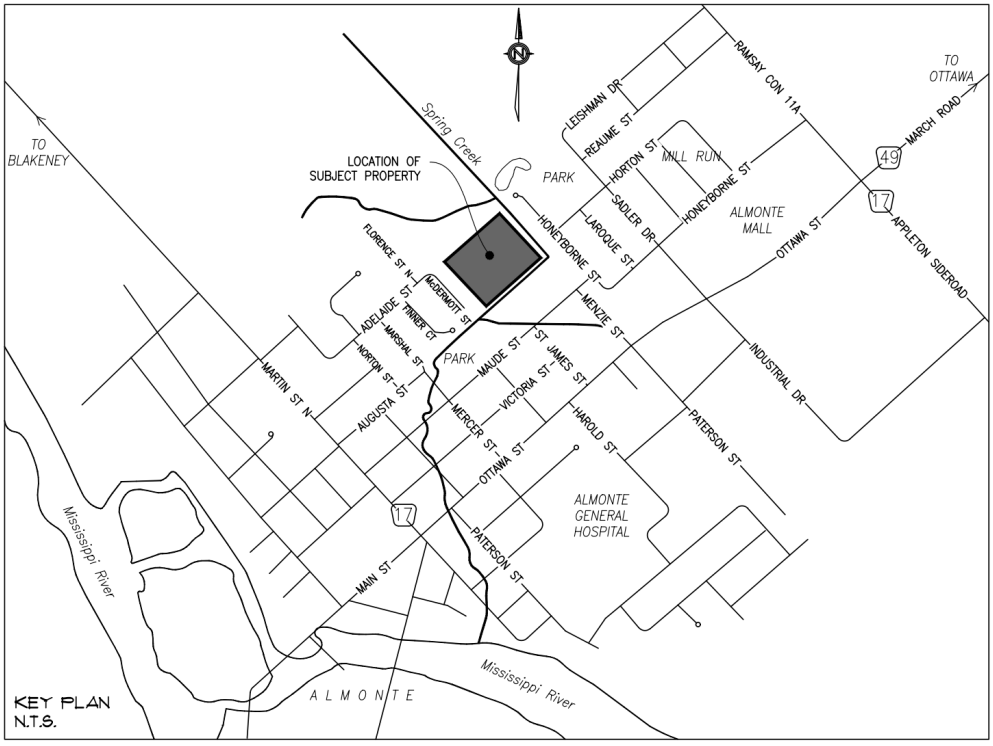


FIGURE 1

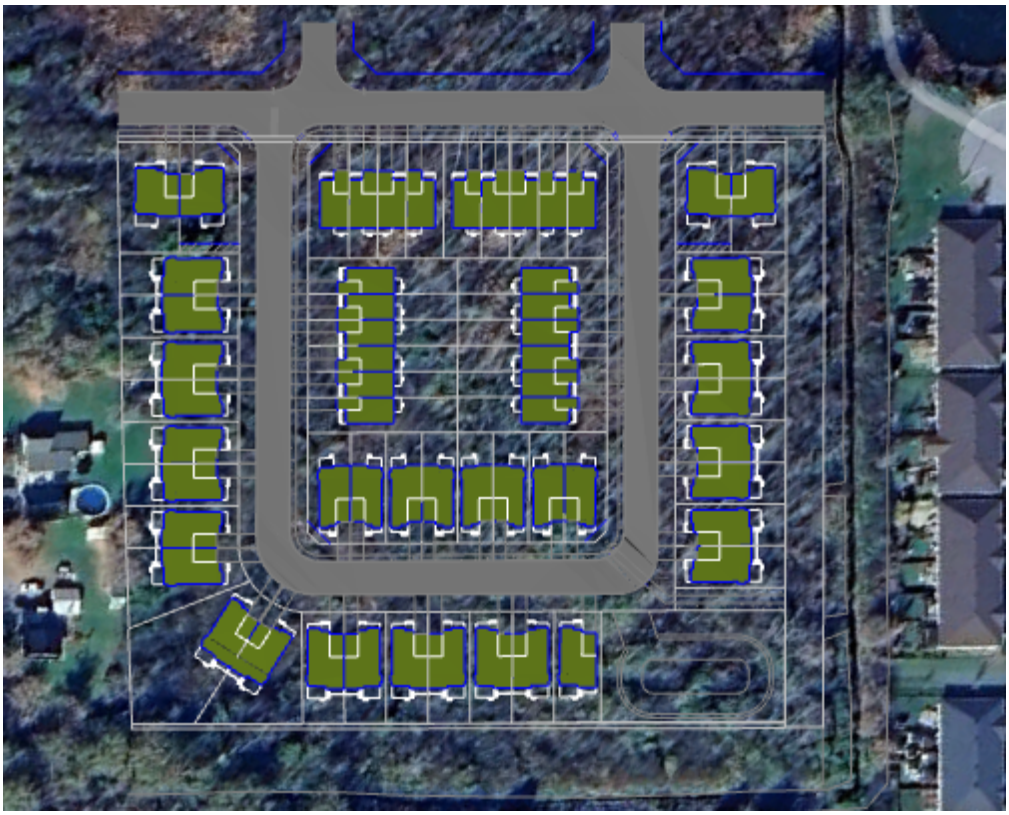


FIGURE 2

APPENDIX - B

MENZIE/ADELAIDE ST, MISSISSIPPI MILLS

ANTICIPATED WATER DEMAND

I- POPULATION

UNIT TYPE	QTY	PERSON PER UNIT *	TOTAL
Townhouses	21	2.7	56.7
Single Detached	1	3.4	3.4
Semi-Detached	36	2.7	97.2
Apartment (Average)	0	1.8	0.0
Total Units	**58**	**Total Population**	**157.3**

* As per Ottawa Sewer Design Guidelines – Table 4.1

II- DESIGN CRITERIA

Design Parameter	Value
Population in capita	157.3
Residential Average Demand Volume Per Capita in L/c/day	350
Average Demand Volume in m^3/day	55.1
Maximum Daily Demand (**4.84** x Average) in m^3/day **	266.5
Maximum Hourly Demand (**7.31** x Average Daily) in m^3/day **	402.5
Maximum Hourly Water Flow Required in L/s	**4.66**

** Peak factors of 4.9 and 7.4 for maximum daily demand and maximum hourly demand from Table 3-3 of the MOE Design Guidelines for Drinking-Water Systems for population fewer than 500 persons.

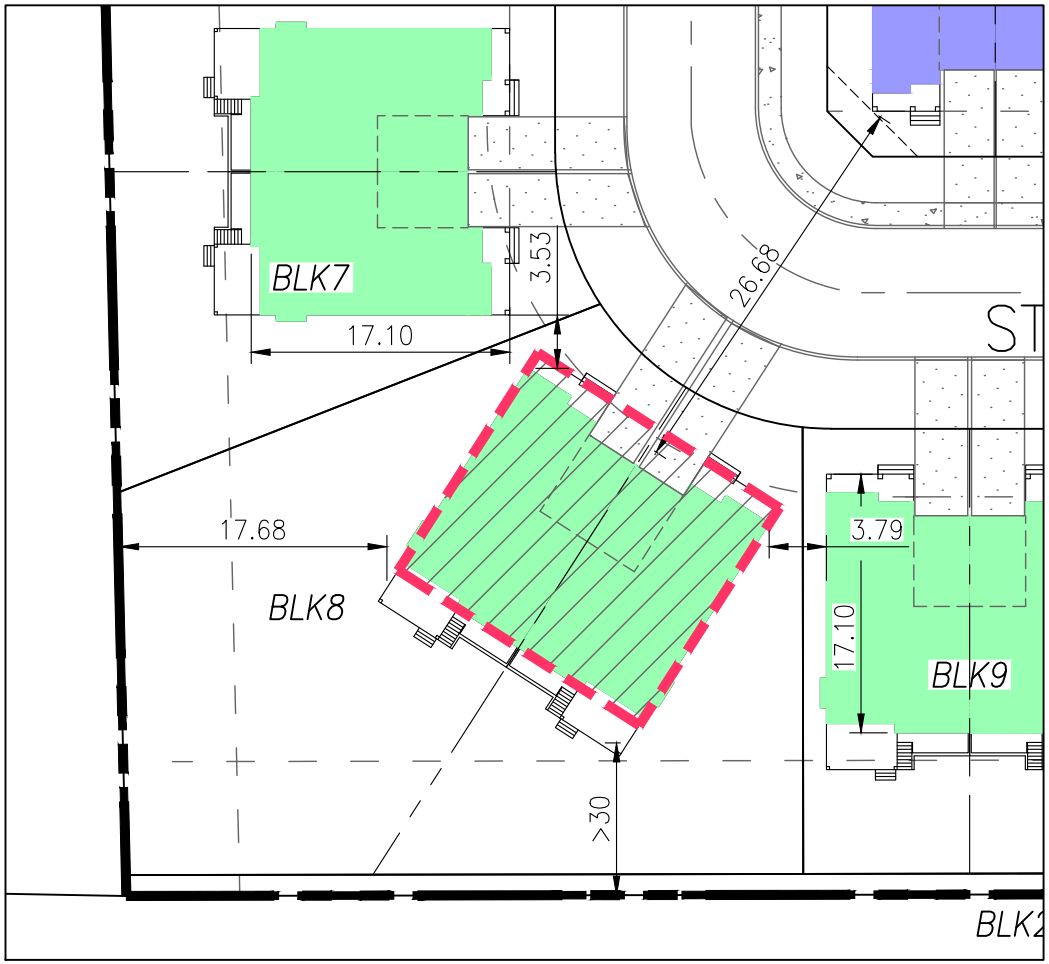
III- SUMMARY

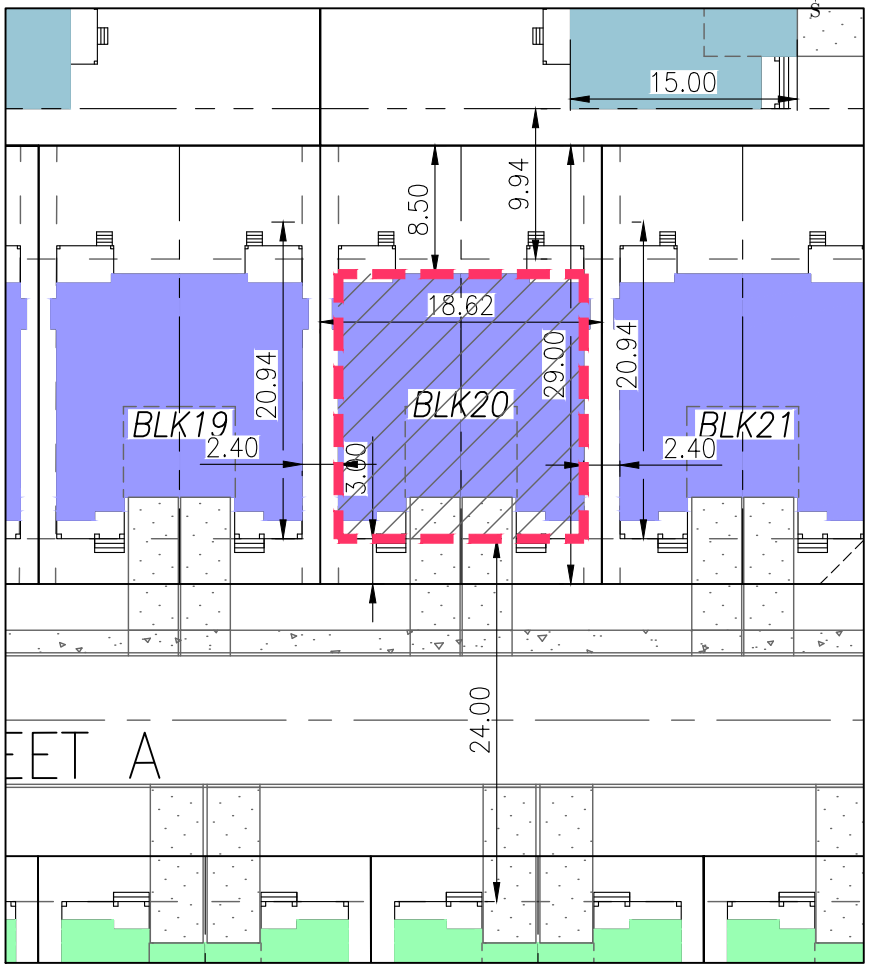
Parameter	Anticipated Demand	
	(L/s)	(L/min)
Average Day Demand	0.64	38.2
Max Day Demand	3.08	185.0
Peak Hour	4.66	279.5
Required Fire Flow	133.3	8,000
Fire Flow + Max Day	**136.4**	**8,185**

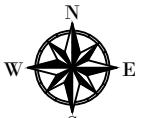
IV- PRESSURE REQUIREMENTS

Pressure Check	Minimum Pressure		Maximum Pressure	
	(kPa)	(psi)	(kPa)	(psi)
Normal Use	**345**	**50**	**552**	**80**
Peak Hour Demand	**276**	**40**	**552**	**80**
Maximum Day and Fire Flow	**140**	**20**	**552**	**80**
Maximum pressure at any point in occupied areas			**552**	**80**
Maximum pressure at any point in unoccupied areas			**689**	**100**

* Proposed watermain: 150 mm diameter PVC DR18
* Friction Factor C for 150 diameter: 100
* Proposed 4 fire hydrants; maximum distance between fire hydrants= 110 m





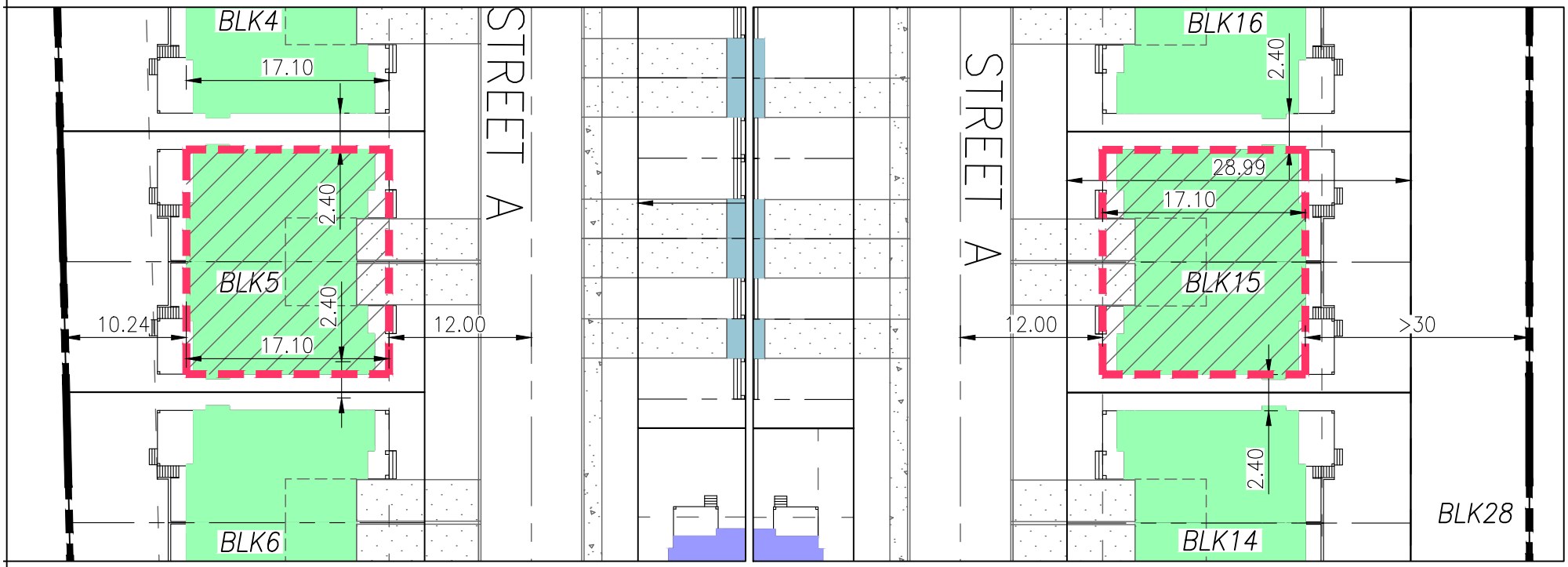


SUBJECT BUILDING

NOTES
* DISTANCES ARE IN METRE
* PLAN NORTH SHOWN IS NOT THE GEOGRAPHIC NORTH

ZONING: R2D
MIN. LOT AREA: 225 m^2 (EACH UNIT)
MIN. FRONTAGE: 7.5 m
MIN. FRONT YARD: 3 m
MIN. REAR YARD: 7.5 m
MIN. SIDE YARD: 1.2 m (EXT. SY: 3 m)
MAX. HEIGHT: 11 m
MAXIMUM BUILDING FOOTPRINT = 40% OF LOT AREA

FIRE FLOW DEMAND – LAYOUT USED IN FUS 2020 CALCULATION (1:500)



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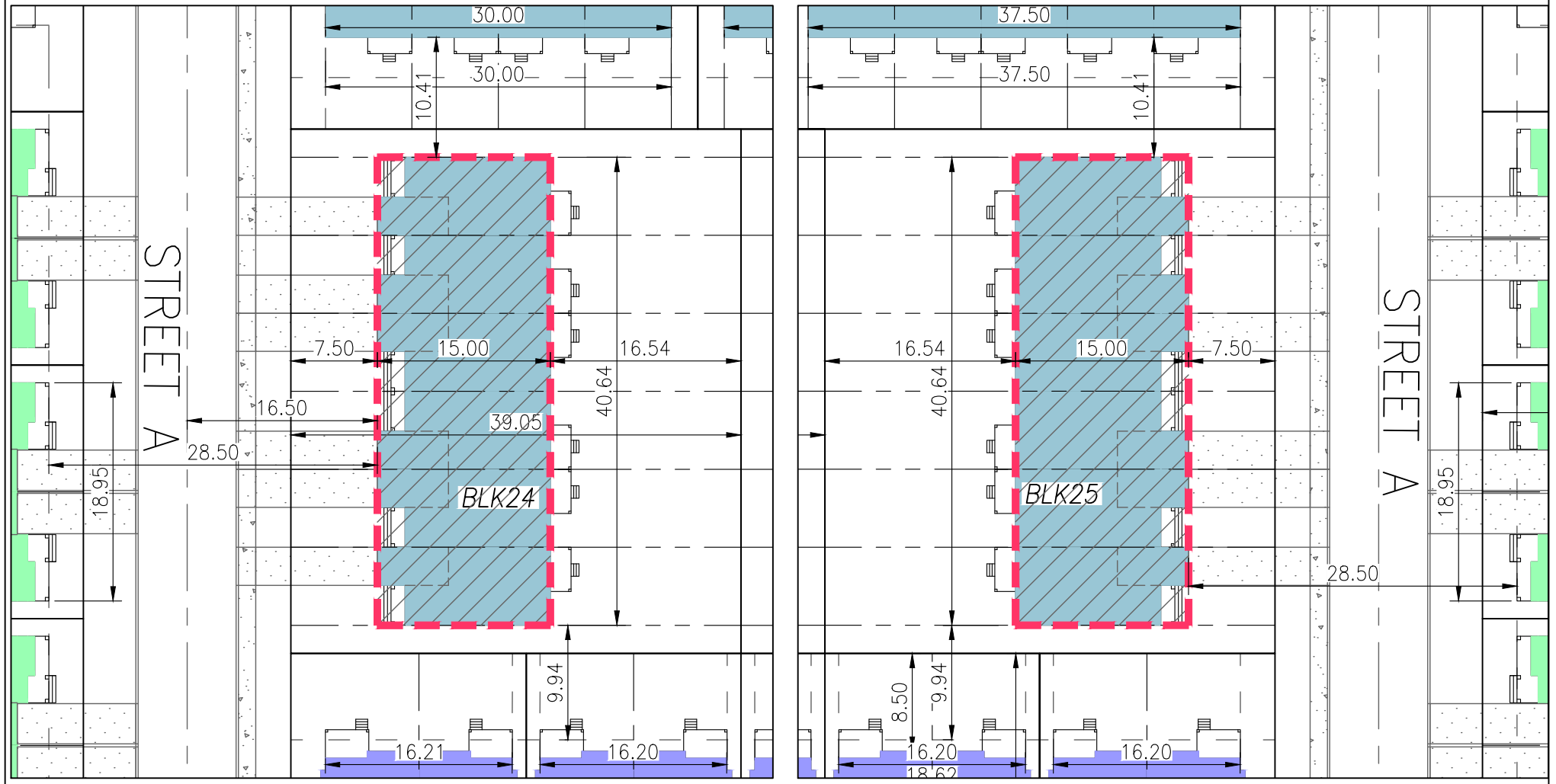

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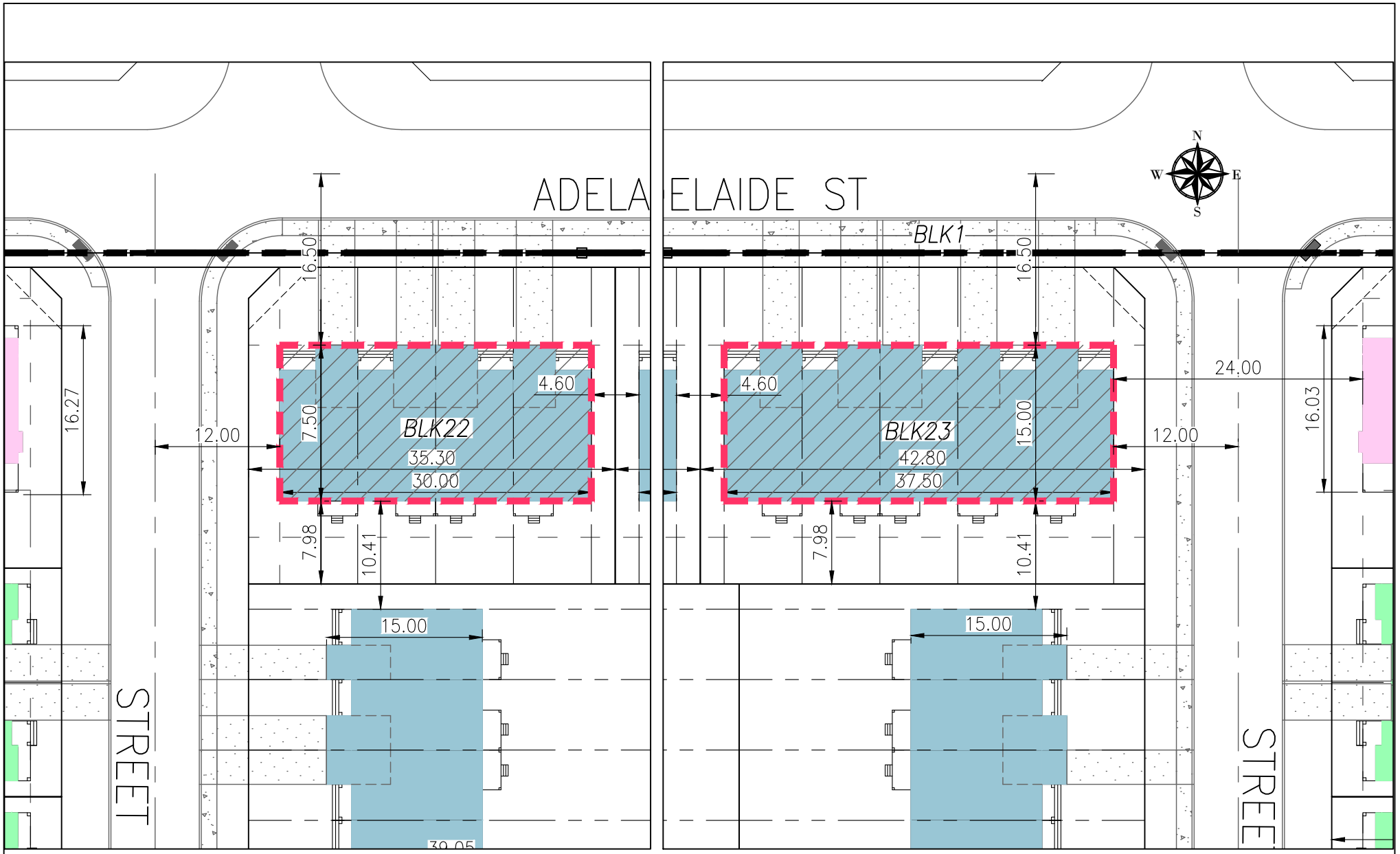
SUBJECT BUILDING

FIRE FLOW DEMAND – LAYOUT USED IN FUS 2020 CALCULATION (1:500)

ALMONTE SUBDIVISION - JUNE 2025



* PLAN NORTH SHOWN IS NOT THE GEOGRAPHIC NORTH

SUBJECT BUILDING

FIRE FLOW DEMAND – LAYOUT USED IN FUS 2020 CALCULATION (1:500)

ALMONTE SUBDIVISION - JUNE 2025

Ontario Building Code 2012 (OBC), Appendix A, division B, A-3.2.5.7

Water supply for firefighting: $Q = K.V.S_{tot}$

Q = minimum supply of water available in litres (L)
K = water supply coefficient for residential occupancy C and combustible construction A-3.2.5.7 Table 1
V = total building volume in cubic metres
S_{tot} = total of spatial coefficient values from property line exposure on all sides, to a maximum of 2.0

$S_{tot} = 1 + (S_{side1} + S_{side2} + S_{side3} + ...$ etc.)

Typical Semi Detached Block (Block 20)

Average Building Height =	11.0 m	
Building Footprint =	216 m²	(540.11 m^2 x 40%)
Total Building A Volume V =	2 376 m³	

K from A-3.2.5.7 Table 1 = 23 Building of combustible construction. Floor assemblies are fire separations but with no fire-resistance rating.

* **$S_{tot} = 1 + (S_{side1} + S_{side2} + S_{side3} + ...$ etc.) As per figure 1**

		$S_{side\ i}$
Exposure Distance N =	10.9 m	0
Exposure Distance S =	12.0 m	0
Exposure Distance E =	2.4 m	0.5
Exposure Distance W =	2.4 m	0.5
Total Spatial Coefficient =		**2**

Minimum supply of water in litres Q = **109 296 L**

108 000 L < Q < 135 000

Required Minimum Water Supply Flow Rate as per Table 2, A-3.2.5.7 :

3 600 L/min at a minimum pressure of 140 kPa

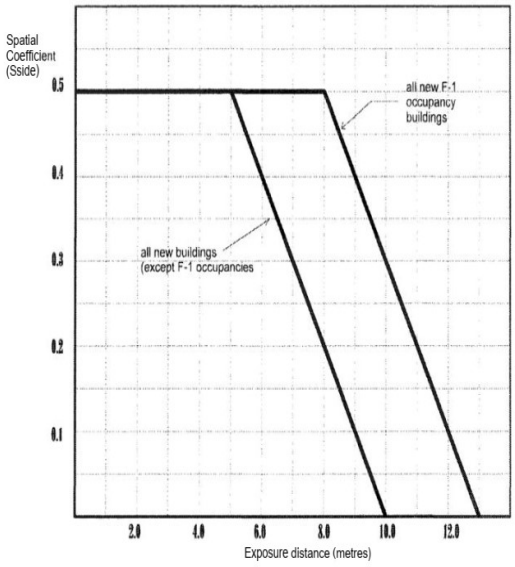


Figure 1
Spatial Coefficient vs Exposure Distance

Further clarification of intent and sample problems and solutions are contained in the "Fire Protection Water Supply Guideline for Part 3 in the Ontario Building Code". This guideline may be obtained through the Office of the Fire Marshal's web site at: "www.ofm.gov.on.ca"

Ontario Building Code 2012 (OBC), Appendix A, division B, A-3.2.5.7

Water supply for firefighting: $Q = K.V.S_{tot}$

Q = minimum supply of water available in litres (L)
K = water supply coefficient for residential occupancy C and combustible construction A-3.2.5.7 Table 1
V = total building volume in cubic metres
S_{tot} = total of spatial coefficient values from property line exposure on all sides, to a maximum of 2.0

$S_{tot} = 1+ (S_{side1} + S_{side2} + S_{side3} +...$ etc.)

Typical Semi Detached Block (Block 23, Townhouses)

Average Building Height =	11.0 m
Building Footprint =	642 m²
Total Building A Volume V =	7 062 m³

K from A-3.2.5.7 Table 1 = 23 Building of combustible construction. Floor assemblies are fire separations but with no fire-resistance rating.

* **$S_{tot} = 1+ (S_{side1} + S_{side2} + S_{side3} +...$ etc.) As per figure 1**

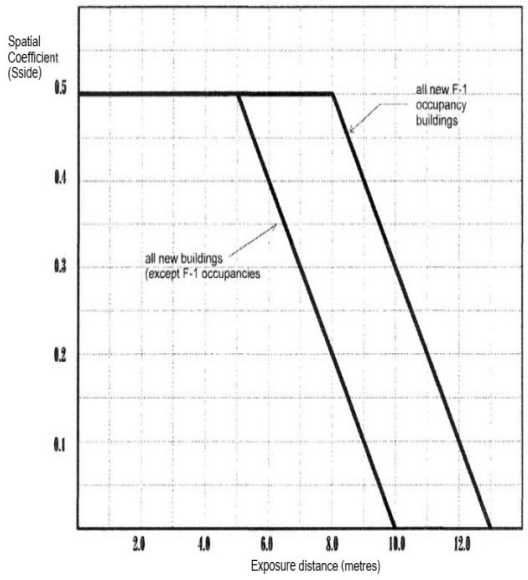
		$S_{side\ i}$
Exposure Distance N =	32.0 m	0
Exposure Distance S =	10.4 m	0
Exposure Distance E =	24.0 m	0
Exposure Distance W =	4.6 m	0.5
Total Spatial Coefficient =		**1.5**

Minimum supply of water in litres Q = **243 639 L**

190 000 L < Q < 270 000

Required Minimum Water Supply Flow Rate as per Table 2, A-3.2.5.7 :

6 300 L/min at a minimum pressure of 140 kPa



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Spatial Coefficient vs Exposure Distance

Further clarification of intent and sample problems and solutions are contained in the "Fire Protection Water Supply Guideline for Part 3 in the Ontario Building Code". This guideline may be obtained through the Office of the Fire Marshal's web site at: "www.ofm.gov.on.ca"

Ontario Building Code 2012 (OBC), Appendix A, division B, A-3.2.5.7

Water supply for firefighting: $Q = K.V.S_{tot}$

Q = minimum supply of water available in litres (L)
K = water supply coefficient for residential occupancy C and combustible construction A-3.2.5.7 Table 1
V = total building volume in cubic metres
S_{tot} = total of spatial coefficient values from property line exposure on all sides, to a maximum of 2.0

$S_{tot} = 1+ (S_{side1} + S_{side2} + S_{side3} +...$ etc.)

Typical Semi Detached Block (Block 25, Townhouses)

Average Building Height =	11.0 m
Building Footprint =	610 m²
Total Building A Volume V =	6 706 m³

K from A-3.2.5.7 Table 1 = 23 Building of combustible construction. Floor assemblies are fire separations but with no fire-resistance rating.

* **$S_{tot} = 1+ (S_{side1} + S_{side2} + S_{side3} +...$ etc.) As per figure 1**

		$S_{side\ i}$
Exposure Distance N =	10.4 m	0
Exposure Distance S =	9.9 m	0
Exposure Distance E =	29.7 m	0
Exposure Distance W =	33.0 m	0
Total Spatial Coefficient =		**1**

Minimum supply of water in litres Q = **154 229 L**

135 000 L < Q < 162 000

Required Minimum Water Supply Flow Rate as per Table 2, A-3.2.5.7 :

4 500 L/min at a minimum pressure of 140 kPa

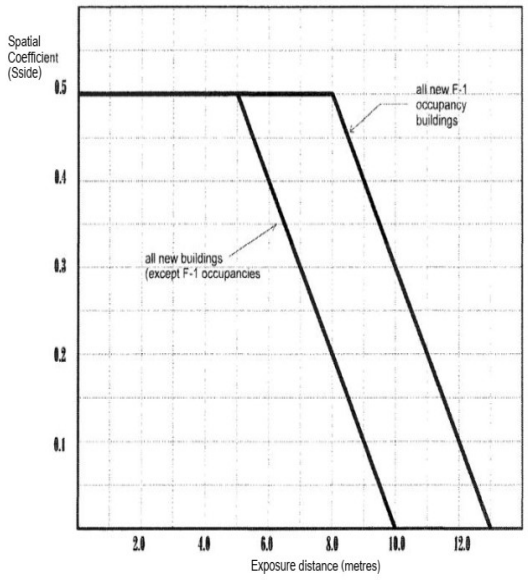


Figure 1
Spatial Coefficient vs Exposure Distance

Further clarification of intent and sample problems and solutions are contained in the "Fire Protection Water Supply Guideline for Part 3 in the Ontario Building Code". This guideline may be obtained through the Office of the Fire Marshal's web site at: "www.ofm.gov.on.ca"

Fire Flow Protection according to the Fire Underwriters Survey (FUS) Guidelines 2020

Typical Semi Detached lot – Block 5

Required Basic Fire Flow (FUS – PART II) $RFF = 220C\sqrt{A}$

Where: **RFF**: required fire flow in litres per minute; **C**: construction coefficient related to the type of construction
A: total effective floor area (effective building area) in sq.m

		Option	Charge		
A	**Type of Construction**	Type V Wood Frame Construction	**1.5**	**Type V Wood Frame Construction**	**1.5**
		Type IV-A Mass Timber Construction	**0.8**		
		Type IV-B Mass Timber Construction	**0.9**		
		Type IV-C Mass Timber Construction	**1.0**		
		Type IV-D Mass Timber Construction	**1.5**		
		Type III Ordinary Construction	**1.0**		
		Type II Noncombustible Construction	**0.8**		
		Type I Fire Resistive Construction	**0.6**		
	Ground Floor Area				**216.0 m³**
B	Second Floor Area				**216.0 m³**
	Total Effective Floor Area A				**432.0 m³**
C	**Fire Flow F = 220 C A $^{0.5}$**				**6 859 L/min**
				Rounded to the nearest 1,000 L/min RFF =	**7 000 L/min**

		Option	Charge		
D	**Occupancy Adjustment**	Non-Combustible	**-25%**	**Limited-Combustible**	**-15%**
		Limited-Combustible	**-15%**		
		Combustible	**0%**		
		Free Burning	**15%**		
		Rapid Burning	**20%**		
	Occupancy Adjustment				**-1 050 L/min**
	Fire Flow				**5 950 L/min**

		Option	Charge		
E	**Sprinkler Protection**	None	**0%**	**None**	**0%**
		Automatic Sprinkler Protection (NFPA 13)	**30%**		
		Water Supply is Standard for System & Hose Lines	**10%**		
		Fully Supervised System	**10%**		
		Additional Reduction	**0%**		
				Sprinkler Reduction	**000 L/min**

F Exposures

North Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**15.0 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**30**
	Distance to the Exposure		**10.9 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**11%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

East Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**17.1 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**34.2**
	Distance to the Exposure		**25.2 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**21%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

South Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**15.0 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**30**
	Distance to the Exposure		**12.0 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**11%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

West Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**17.1 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**34.2**
	Distance to the Exposure		**15.0 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**21%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

	Total charge for exposures =	**64%**
	Total adjustment for exposures =	**3 808 L/min**
G	Adjusted Fire Flow (D)-(E)+(F) =	**9 758 L/min**
	Rounded to the nearest 1,000 L/min RFF =	**10 000 L/min**

Notes:

1. Fire flow calculations have been prepared in accordance with Fire Underwriters Survey (v. 2020)
2. Second storey assumed to have floor area equal to first floor area
3. Block 15 has more rear setback and same area

Fire Flow Protection according to the Fire Underwriters Survey (FUS) Guidelines 2020

Typical Semi Detached lot – Block 20

Required Basic Fire Flow (FUS – PART II) $RFF = 220C\sqrt{A}$

Where: **RFF**: required fire flow in litres per minute; **C**: construction coefficient related to the type of construction
A: total effective floor area (effective building area) in sq.m

		Option	Charge		
A	**Type of Construction**	Type V Wood Frame Construction	**1.5**	**Type V Wood Frame Construction**	**1.5**
		Type IV-A Mass Timber Construction	**0.8**		
		Type IV-B Mass Timber Construction	**0.9**		
		Type IV-C Mass Timber Construction	**1.0**		
		Type IV-D Mass Timber Construction	**1.5**		
		Type III Ordinary Construction	**1.0**		
		Type II Noncombustible Construction	**0.8**		
		Type I Fire Resistive Construction	**0.6**		
B	Ground Floor Area				**216.0 m³**
	Second Floor Area				**216.0 m³**
	Total Effective Floor Area A				**432.0 m³**
C	**Fire Flow F = 220 C A $^{0.5}$**				**6 859 L/min**
				Rounded to the nearest 1,000 L/min RFF =	**7 000 L/min**

		Option	Charge		
D	**Occupancy Adjustment**	Non-Combustible	**-25%**	**Limited-Combustible**	**-15%**
		Limited-Combustible	**-15%**		
		Combustible	**0%**		
		Free Burning	**15%**		
		Rapid Burning	**20%**		
	Occupancy Adjustment				**-1 050 L/min**
	Fire Flow				**5 950 L/min**

		Option	Charge		
E	**Sprinkler Protection**	None	**0%**	**None**	**0%**
		Automatic Sprinkler Protection (NFPA 13)	**30%**		
		Water Supply is Standard for System & Hose Lines	**10%**		
		Fully Supervised System	**10%**		
		Additional Reduction	**0%**		
				Sprinkler Reduction	**000 L/min**

F **Exposures**

North Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**15.0 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**30**
	Distance to the Exposure		**10.9 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**11%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

East Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**17.1 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**34.2**
	Distance to the Exposure		**2.4 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**21%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

South Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**15.0 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**30**
	Distance to the Exposure		**12.0 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**11%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

West Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**17.1 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**34.2**
	Distance to the Exposure		**2.4 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**21%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

	Total charge for exposures =	**64%**
	Total adjustment for exposures =	**3 808 L/min**
G	Adjusted Fire Flow (D)-(E)+(F) =	**9 758 L/min**
	Rounded to the nearest 1,000 L/min RFF =	**10 000 L/min**

Notes:

1. Fire flow calculations have been prepared in accordance with Fire Underwriters Survey (v. 2020)
2. Second storey assumed to have floor area equal to first floor area.
3. Conservative 40 % of lot coverage has been used. Total lot area = 540.11 sqm

Fire Flow Protection according to the Fire Underwriters Survey (FUS) Guidelines 2020

Townhouse block – 5 units Block 23

Required Basic Fire Flow (FUS – PART II) $RFF = 220C\sqrt{A}$

Where: **RFF**: required fire flow in litres per minute; **C**: construction coefficient related to the type of construction
A: total effective floor area (effective building area) in sq.m

		Option	Charge		
A	**Type of Construction**	Type V Wood Frame Construction	**1.5**	**Type V Wood Frame Construction**	**1.5**
		Type IV-A Mass Timber Construction	**0.8**		
		Type IV-B Mass Timber Construction	**0.9**		
		Type IV-C Mass Timber Construction	**1.0**		
		Type IV-D Mass Timber Construction	**1.5**		
		Type III Ordinary Construction	**1.0**		
		Type II Noncombustible Construction	**0.8**		
		Type I Fire Resistive Construction	**0.6**		
	Ground Floor Area				**642.0 m³**
B	Second Floor Area				**642.0 m³**
	Total Effective Floor Area A				**1 284.0 m³**
C	**Fire Flow F = 220 C A $^{0.5}$**				**11 825 L/min**
				Rounded to the nearest 1,000 L/min RFF =	**12 000 L/min**

		Option	Charge		
D	**Occupancy Adjustment**	Non-Combustible	**-25%**	**Limited-Combustible**	**-15%**
		Limited-Combustible	**-15%**		
		Combustible	**0%**		
		Free Burning	**15%**		
		Rapid Burning	**20%**		
	Occupancy Adjustment				**-1 800 L/min**
	Fire Flow				**10 200 L/min**

		Option	Charge		
E	**Sprinkler Protection**	None	**0%**	**None**	**0%**
		Automatic Sprinkler Protection (NFPA 13)	**30%**		
		Water Supply is Standard for System & Hose Lines	**10%**		
		Fully Supervised System	**10%**		
		Additional Reduction	**0%**		
				Sprinkler Reduction	**000 L/min**

F **Exposures**

North Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**15.0 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**30**
	Distance to the Exposure		**25.5 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**2%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

East Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**15.0 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**30**
	Distance to the Exposure		**4.6 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**16%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

South Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**15.0 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**30**
	Distance to the Exposure		**10.4 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**11%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

West Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**16.0 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**32**
	Distance to the Exposure		**24.0 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**2%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

	Total charge for exposures =	**31%**
	Total adjustment for exposures =	**3 162 L/min**
G	Adjusted Fire Flow (D)-(E)+(F) =	**13 362 L/min**
	Rounded to the nearest 1,000 L/min RFF =	**13 000 L/min**

Notes:

1. Fire flow calculations have been prepared in accordance with Fire Underwriters Survey (v. 2020)
2. Second storey assumed to have floor area equal to first floor area
3. Block 22 with 4 units has the same setbacks with lesser area

Fire Flow Protection according to the Fire Underwriters Survey (FUS) Guidelines 2020

Townhouse block – 5 units Block 25

Required Basic Fire Flow (FUS – PART II) $RFF = 220C\sqrt{A}$

Where: **RFF**: required fire flow in litres per minute; **C**: construction coefficient related to the type of construction
A: total effective floor area (effective building area) in sq.m

		Option	Charge		
A	**Type of Construction**	Type V Wood Frame Construction	**1.5**	**Type V Wood Frame Construction**	**1.5**
		Type IV-A Mass Timber Construction	**0.8**		
		Type IV-B Mass Timber Construction	**0.9**		
		Type IV-C Mass Timber Construction	**1.0**		
		Type IV-D Mass Timber Construction	**1.5**		
		Type III Ordinary Construction	**1.0**		
		Type II Noncombustible Construction	**0.8**		
		Type I Fire Resistive Construction	**0.6**		
	Ground Floor Area				**609.6 m³**
B	Second Floor Area				**609.6 m³**
	Total Effective Floor Area A				**1 219.2 m³**
C	**Fire Flow F = 220 C A $^{0.5}$**				**11 523 L/min**
				Rounded to the nearest 1,000 L/min RFF =	**12 000 L/min**

		Option	Charge		
D	**Occupancy Adjustment**	Non-Combustible	**-25%**	**Limited-Combustible**	**-15%**
		Limited-Combustible	**-15%**		
		Combustible	**0%**		
		Free Burning	**15%**		
		Rapid Burning	**20%**		
	Occupancy Adjustment				**-1 800 L/min**
	Fire Flow				**10 200 L/min**

		Option	Charge		
E	**Sprinkler Protection**	None	**0%**	**None**	**0%**
		Automatic Sprinkler Protection (NFPA 13)	**30%**		
		Water Supply is Standard for System & Hose Lines	**10%**		
		Fully Supervised System	**10%**		
		Additional Reduction	**0%**		
				Sprinkler Reduction	**000 L/min**

F **Exposures**

North Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**37.5 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**75**
	Distance to the Exposure		**10.4 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**13%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

East Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**19.0 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**37.9**
	Distance to the Exposure		**28.5 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**2%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

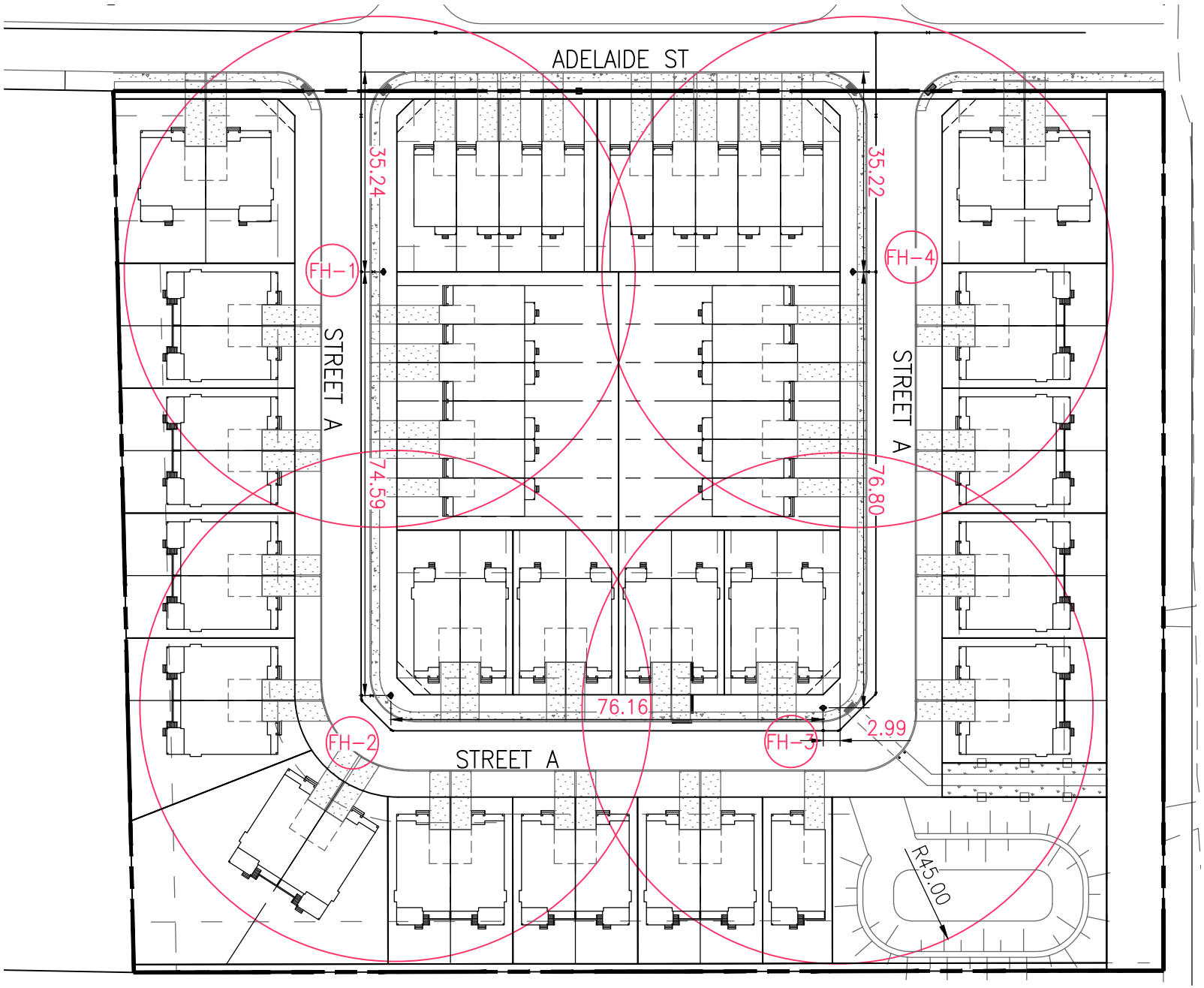
South Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**16.2 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**32.4**
	Distance to the Exposure		**9.9 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**16%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

West Side	Subject Building and Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Building Fully Protected with Automatic Sprinkler Systems		No
	Exposed Wall Length		**40.6 m**
	Exposed Wall Height in Number of Storeys		**2**
	Length-Height Factor of Exposed Wall		**81.28**
	Distance to the Exposure		**33.1 m**
Construction Type of Exposed Wall (FUS 2020 – Table 6 – page 31)	**Options**		**Charge**
	Type V Wood Frame Construction	**Type V Wood Frame Construction**	**0%**
	Type III-IV w/ unprotected openings		
	Type III-IV w/o protected openings		
	Type I-II w/ unprotected openings		
	Type I-II w/o protected openings		

	Total charge for exposures =	**31%**
	Total adjustment for exposures =	**3 162 L/min**
G	Adjusted Fire Flow (D)-(E)+(F) =	**13 362 L/min**
	Rounded to the nearest 1,000 L/min RFF =	**13 000 L/min**

Notes:

1. Fire flow calculations have been prepared in accordance with Fire Underwriters Survey (v. 2020)
2. Second storey assumed to have floor area equal to first floor area
3. Block 24 is symmetric



NOTES
* DISTANCES ARE IN METRE

PROPOSED SUBDIVISION
FIRE HYDRANT LAYOUT (SCALE: 1:1000)

MENZIE ENCLAVES SUBDIVISION - JUNE 2025

ALMONTE SUBDIVISION
MENZIE / ADELAIDE ST MISSISSIPPI MILLS
SANITARY SEWER DESIGN

1- DESIGN FLOW CALCULATION

$Q_d = (M \cdot q \cdot P / 86.4) + I \cdot A$ Where:

Q_d = Peak Design Flow (L/s)

M = Peaking Factor (Max = 4; Min = 1.5)

q = Average Daily Flow per capita per day (L/c/day)

P = Population

I = Infiltration Contribution (0.33 L/s/eff. gross ha)

A = Gross Drainage Area (ha) = Total land (-) Pond and Riparian

A (ha) =	2.5459	ha	
q (L/c/day) =	350	L/c/day	
Population =	157.3	Capita	
M (Harmon's Peaking Factor) =	3.55	M= 1+(14/(4+(P/1000)^0.5))k =	**3.55**
Extraneous Flow 0.33 x A (L/s) =	0.84	L/s K=0.8	
		As per Technical Bulletin	
Peak Flow Rate Q_d (L/s) =	**3.10**	L/s	(Design Flow)
Q_d (m^3/day) =	**268.03**	m^3/day	

2- SEWER CAPACITY CALCULATION – ADELAIDE ST

200mmØ @ 0.5%

Manning's Equation

$Q=1/n.A.R^{2/3}.S^{1/2}$

D (mm) =	**203**	
A (m^2) =	0.0324	
n =	**0.013**	Manning Coefficient
R (m) =	0.05	Hydraulic Radius (m)
S =	**0.40%**	Slope (%)

$Q=1/n * A * R^{2/3} * S^{1/2}$

Full Pipe Capacity Q_f (m^3/s)=	**0.0216**	m^3/s =	**21.6** L/s
V_f (m/s)=	**0.67**	m/s	

3- PROPOSED SEWER CAPACITY CALCULATION (WITHIN THE SUBDIVISION)

Refer to sanitary sewer calculation sheet for all segments

For total sanitary flow rate at 0.32% slope:

Manning's Equation $Q=1/n.A.R^{2/3}.S^{1/2}$

D (mm) =	**203**	
A (m²) =	0.0324	
n =	**0.013**	Manning Coefficient
R (m) =	0.05	Hydraulic Radius (m)
S =	**0.40%**	Slope (%)

$Q=1/n *A*R^{2/3} *S^{1/2}$

Full Pipe Capacity Q_f (m^3/s)= **0.0216** m^3/s = 21.6 L/s

V_f (m/s)= **0.67** m/s

Minimum Velocity Vsc = 0.9885*R^(1/6)= **0.60** m/s (For self-cleaning)

Q_{avg} (Dry) (L/s) = **2.26** L/s

Pipe % Full = Q_{avg}/Q_{full} = 10.48% 0.105

Graph y/D = f(Q_{avg}/Q_{full} , V_{avg}/V_{full}) => y/D = 0.216 y = 44 mm

And V_{avg}/V_{full} = 0.66

V_{avg} = **0.44** m/s n = Constant

Q_d (Wet) (L/s) = **3.10** L/s

Pipe % Full = Q_{avg}/Q_{full} = 14.37% 0.144

Graph y/D = f(Q_{avg}/Q_{full} , V_{avg}/V_{full}) => y/D = 0.255 y = 52 mm

And V_d/V_{full} = 0.72

Vd = **0.48** m/s n = Constant

NOTES:

Minimum diameter for sanitary main sewer: 200 mm (8")
Maximum velocity = 3 m/s
Minimum velocity = 0.6 m/s
Minimum depth of cover 2.5 m from crown of sewer to finished grade
Minimum vertical clearance between sewer and watermain is 0.30m and 0.5m if sewer abo
Minimum horizontal clearance between sewer and watermain is 2.5 m
Special treatment of manholes and pipe if high groundwater level
Maximum spacing of manholes 120 m
Drops at manholes: 30 mm (straight sewer) and 60 mm (45 to 90 deg sewer)
Pipe material: PVC DR of 35 320 kPa or equivalent
Manholes: precast or poured concrete as per OPSD standards
Bedding: as per OPSD standards and geotechnical

GRAPH USED TO DETERMINE ACTUAL FLOW DEPTH AND VELOCITY

Q/Q_{full}	h/D	v/v_{full}	R/D	Q/Q_{full}	h/D	v/v_{full}	R/D
0.095	0.205	0.64	0.1233	0.610	0.568	1.04	0.2697
0.100	0.211	0.65	0.1265	0.620	0.575	1.04	0.2715
0.105	0.216	0.66	0.1291	0.630	0.581	1.05	0.2731
0.110	0.221	0.67	0.1317	0.640	0.587	1.05	0.2745
0.115	0.226	0.68	0.1343	0.650	0.594	1.05	0.2762
0.120	0.231	0.69	0.1369	0.660	0.600	1.05	0.2776
0.125	0.236	0.69	0.1395	0.670	0.607	1.06	0.2793
0.130	0.241	0.70	0.1421	0.680	0.613	1.06	0.2806
0.135	0.245	0.71	0.1441	0.690	0.620	1.06	0.2821
0.140	0.250	0.72	0.1466	0.700	0.626	1.06	0.2834
0.145	0.255	0.72	0.1491	0.710	0.633	1.06	0.2848
0.150	0.259	0.73	0.1511	0.720	0.640	1.07	0.2862
0.155	0.263	0.74	0.1531	0.730	0.646	1.07	0.2874
0.160	0.268	0.74	0.1556	0.740	0.653	1.07	0.2887
0.165	0.272	0.75	0.1575	0.750	0.660	1.07	0.2900
0.170	0.276	0.76	0.1595	0.760	0.667	1.07	0.2912
0.175	0.281	0.76	0.1619	0.770	0.675	1.07	0.2925
0.180	0.285	0.77	0.1638	0.780	0.682	1.07	0.2936
0.190	0.293	0.78	0.1676	0.790	0.689	1.07	0.2947
0.200	0.301	0.79	0.1714	0.800	0.697	1.07	0.2958
0.210	0.309	0.80	0.1751	0.805	0.701	1.08	0.2964
0.220	0.316	0.81	0.1784	0.810	0.705	1.08	0.2969
0.230	0.324	0.82	0.1820	0.815	0.709	1.08	0.2974
0.240	0.331	0.83	0.1851	0.820	0.713	1.08	0.2979
0.250	0.339	0.84	0.1887	0.825	0.717	1.08	0.2984
0.260	0.346	0.85	0.1918	0.830	0.721	1.08	0.2989
0.270	0.353	0.86	0.1948	0.835	0.725	1.08	0.2993
0.280	0.360	0.86	0.1978	0.840	0.729	1.07	0.2997
0.290	0.367	0.87	0.2007	0.845	0.734	1.07	0.3002
0.300	0.374	0.88	0.2037	0.850	0.738	1.07	0.3006
0.310	0.381	0.89	0.2066	0.855	0.742	1.07	0.3010
0.320	0.387	0.89	0.2090	0.860	0.747	1.07	0.3014
0.330	0.394	0.90	0.2118	0.865	0.751	1.07	0.3018
0.340	0.401	0.91	0.2146	0.870	0.756	1.07	0.3022
0.350	0.407	0.92	0.2170	0.875	0.761	1.07	0.3025
0.360	0.414	0.92	0.2197	0.880	0.766	1.07	0.3028
0.370	0.420	0.93	0.2220	0.885	0.770	1.07	0.3031
0.380	0.426	0.93	0.2243	0.890	0.775	1.07	0.3033
0.390	0.433	0.94	0.2269	0.895	0.781	1.07	0.3036
0.400	0.439	0.95	0.2291	0.900	0.786	1.07	0.3038
0.410	0.445	0.95	0.2313	0.905	0.791	1.07	0.3040
0.420	0.451	0.96	0.2334	0.910	0.797	1.07	0.3041
0.430	0.458	0.96	0.2359	0.915	0.803	1.06	0.3042
0.440	0.464	0.97	0.2380	0.920	0.808	1.06	0.3043
0.450	0.470	0.97	0.2401	0.925	0.814	1.06	0.3043
0.460	0.476	0.98	0.2420	0.930	0.821	1.06	0.3043
0.470	0.482	0.99	0.2441	0.935	0.827	1.06	0.3042
0.480	0.488	0.99	0.2461	0.940	0.834	1.05	0.3040
0.490	0.494	1.00	0.2481	0.945	0.841	1.05	0.3037
0.500	0.500	1.00	0.2500	0.950	0.849	1.05	0.3033
0.510	0.506	1.00	0.2519	0.955	0.856	1.05	0.3029
0.520	0.512	1.01	0.2538	0.960	0.865	1.04	0.3022
0.530	0.519	1.01	0.2559	0.965	0.874	1.04	0.3014
0.540	0.525	1.02	0.2577	0.970	0.883	1.04	0.3004
0.550	0.531	1.02	0.2595	0.975	0.894	1.03	0.2989
0.560	0.537	1.02	0.2612	0.980	0.905	1.03	0.2972
0.570	0.543	1.03	0.2629	0.985	0.919	1.02	0.2946
0.580	0.550	1.03	0.2649	0.990	0.935	1.02	0.2908
0.590	0.556	1.03	0.2665	0.995	0.956	1.01	0.2844
0.600	0.562	1.04	0.2681	1.000	1.000	1.00	0.2500

SANITARY SEWER DESIGN CALCULATION SHEET

Refer to Drawing SA-1 for sanitary sewer system layout Manning's n = 0.013

LOCATION				RESIDENTIAL AREA AND POPULATION										INFILTRATION		FLOW	PROPOSED SANITARY SEWER DESIGN								
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
Location Street	Manhole No.		Catch-ment	Number of Dwelling Units				Individual		Cumulative		Peaking Factor (M)	Pop. Peak Flow Q_P	Acc. Area	Peak Infiltration Flow Q_i (Ax0.33)	Peak Design Flow Q_d	Pipe Length L	Pipe Diameter d	Pipe Type	Slope s	Pipe Capacity Q_f	Full Flow Velocity V_f	Flow Check >0.6 m/s <3.0 m/s	% Full	Flow Depth	Actual Flow Velocity V_p @ Q_d
	From MH	To MH		Single Family 3.4 p/ unit	Semi-Detached 2.7 p/ unit	Townhouse 2.7 p/ unit	Apartment 1.8 p/ unit	Pop. (Cap)	Area (ha)	Pop. (Cap)	Area (ha)		(L/s)	(ha)	(L/s)	(L/s)	(m)	(mm)		%	(L/s)	(m/s)		%	(mm)	(m/s)
Street A	**110**	**108**	**SAN 1**	1	14			41.2	**0.6111**	41.2	0.6111	4.00	0.67	0.6111	0.20	**0.87**	81.1	203	DR35	**0.40**	21.6	0.67	OK	4.0%	28	0.33
Street A	**108**	**106**	**SAN 2**		2			5.4	**0.1666**	46.6	0.7777	4.00	0.76	0.7777	0.26	**1.01**	9.8	203	DR35	**0.40**	21.6	0.67	OK	4.7%	30	0.34
Street A	**106**	**104**	**SAN 3**		6	4		27.0	**0.4344**	73.6	1.2121	4.00	1.19	1.2121	0.40	**1.59**	58.6	203	DR35	**0.40**	21.6	0.67	OK	7.4%	37	0.39
Street A	**104**	**102**	**SAN 4**		2	2		10.8	**0.2274**	84.4	1.4395	4.00	1.37	1.4395	0.48	**1.84**	57.5	203	DR35	**0.40**	21.6	0.67	OK	8.5%	40	0.41
								At Node MH 102 (A) at Adelaide St		84.4	1.4395	4.00	1.37	1.4395	0.48	**1.84**										
Street A	**110**	**112**	**SAN 5**		1			2.7	**0.1438**	2.7	0.1438	4.00	0.04	0.1438	0.05	**0.09**	59.4	203	DR35	**2.50**	54.0	1.67	OK	0.2%	7	0.31
Street A	**112**	**114**	**SAN 6**		5	4		24.3	**0.4313**	27.0	0.5751	4.00	0.44	0.5751	0.19	**0.63**	59.8	203	DR35	**0.40**	21.6	0.67	OK	2.9%	24	0.30
Street A	**114**	**116**	**SAN 7**		2	2		10.8	**0.2442**	37.8	0.8193	4.00	0.61	0.8193	0.27	**0.88**	15.8	203	DR35	**0.40**	21.6	0.67	OK	4.1%	28	0.33
								At Node MH 116 (B) at Adelaide St		37.8	0.8193	4.00	0.61	0.8193	0.27	**0.88**										

Lots to be connected to the proposed Adelaide st 200mm diameter sanitary sewer

Adelaide St	**116(A)**	**116(B)**	**SAN 8**		2			5.4	**0.1524**	5.4	0.1524	4.00	0.09	0.1524	0.05	**0.14**	38.5	203	DR35	**Designed by Others**						
Adelaide St	**116(B)**	**102(A)**	**SAN 9**			9		24.3	**0.3158**	24.3	0.3158	4.00	0.39	0.3158	0.10	**0.50**	42.0	203	DR35	**Designed by Others**						
Adelaide St	**102(A)**	**102(B)**	**SAN 10**		2			5.4	**0.1237**	5.4	0.1237	4.00	0.09	0.1237	0.04	**0.13**	42.0	203	DR35	**Designed by Others**						
			Totals:	1	36	21		157.3	2.8507																	

Notes: 1- Adelaide Street sanitary sewer to be designed by Hannan development team as per cost-sharing agreement between the two developers.
2- Actual velocity are below 0.6 m/s. The approval by the Municipality is required. Preference is to keep the sanitary sewer deep to accommodate service laterals.

Design Parameters:

q = Average daily per capita flow — **350 L/day per capita**

q_i = Unit of peak extraneous flow — 0.28 + 0.05 = 0.33 L/effect. Gross ha.s

M = Residential peaking factor — $M = 1 + (14 / (4+\sqrt{P})) * K$ (Harmon Equation Max.=4)

P: Population in 1000

K: Correction factor = 0.8

Q_p = Peak population flow (L/s) — $Q_p = P \times q \times M / 86.4$ (L/s)

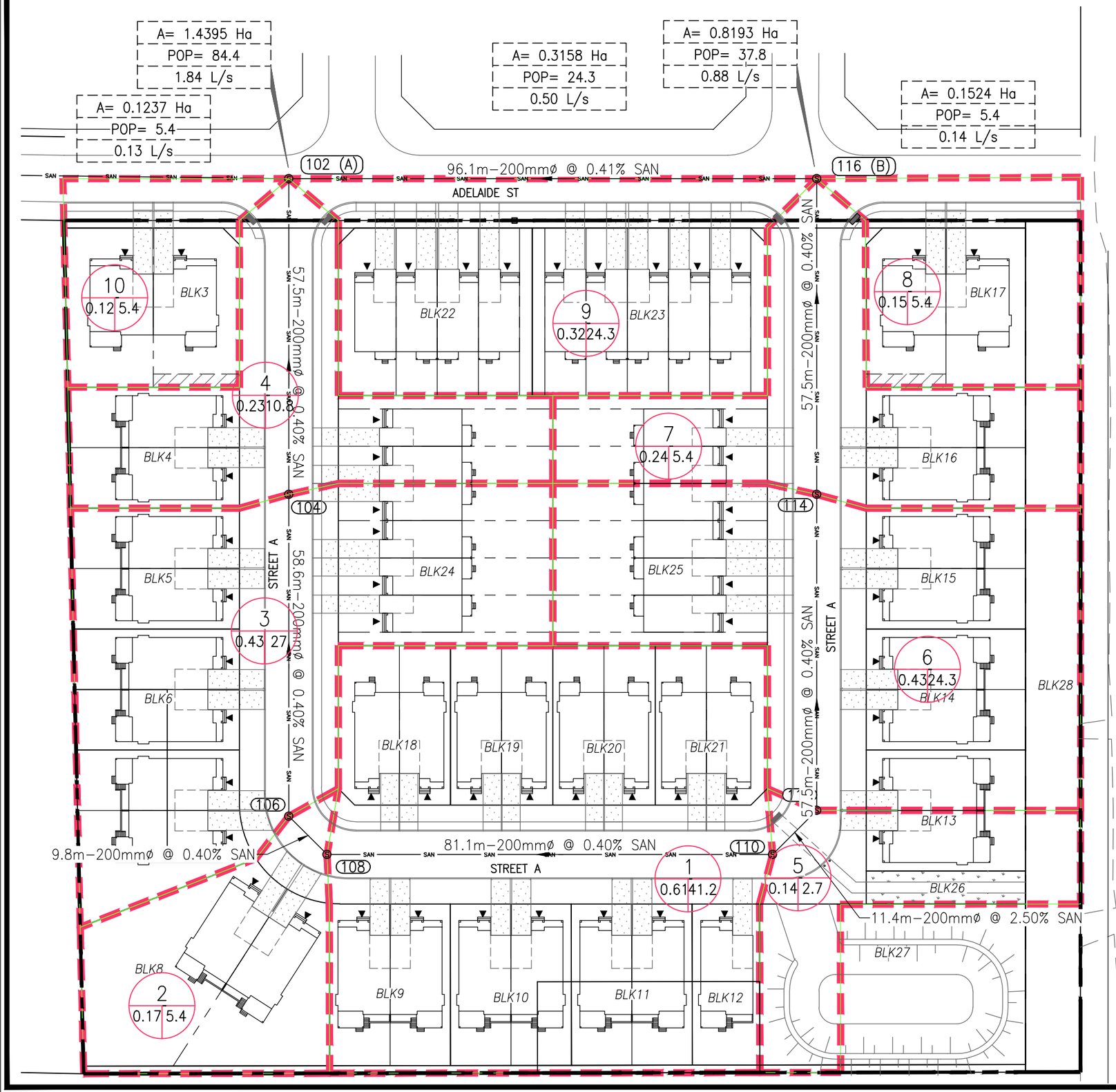
Q_i = Peak extraneous flow (L/s) — $Q_i = q_i \times A$ (L/s) A = Area in hectares

Q_d = Peak design flow (L/s) — $Q_d = Q_p + Q_i$ (L/s)

Population: as per Guidelines

Notes:

1. Minimum diameter for sanitary gravity sewer: 200 mm (8")
2. Minimum velocity = 0.6 m/s
3. Maximum velocity = 3 m/s
4. Minimum depth of cover 2.4 m from crown of sewer to finished grade
5. Minimum vertical clearance between sewer and watermain is 0.15 m and 0.5 m if sewer above
6. Minimum horizontal clearance between sewer and watermain is 2.5 m
7. Pipe material: PVC DR 35 320 KPa or equivalent
8. Sewer bedding: As per OPSD standard 802.010 if not specified by the geotechnical engineer
9. Special treatment of manholes and pipe if high groundwater level
10. Manhole inner diameter: 1200 mm
11. Maximum spacing between manholes: 120 m
12. Drops at manholes: 20 mm for straight sewer and 60 mm for sewer at 45 to 90 deg
13. Manholes: 1200 mm inner diameter precast or poured concrete
14. Minimum diameter for individual service connections (PVC DR 28): 135 mm w/ min grade 1% (preferred 2%)
15. Use tees or wyes, strap-on-saddles for connections to main sewer



LEGEND:

- SANITARY DRAINAGE BOUNDARY
- UPSTREAM MH TO DOWNSTREAM MH — 102–104 / 0.32 / 40
- AREA IN HECTARES
- POPULATION
- 200mmø SAN
- MAINTENANCE HOLE — MH101
- CAP
- CARRYOVER SEWAGE
  - AREA (Ha) — A= 0.2000 Ha
  - POPULATION — POP= 34
  - FLOW (L/s) — 1.00 L/s

TABLE OF SANITARY DRAINAGE AREAS

DA #	AREA (ha)	POPULATION	FROM	TO
SA1	0.6111	41.2	110	108
SA2	0.1666	5.4	108	106
SA3	0.4344	27	106	104
SA4	0.2274	10.8	104	102
SA5	0.1438	2.7	110	112
SA6	0.4313	24.3	112	114
SA7	0.2442	5.4	114	116
SA8	0.1524	5.4	116(A)	116(B)
SA9	0.3158	24.3	116(B)	102(A)
SA10	0.1237	5.4	102(A)	102(B)

SANITARY DRAINAGE AREAS

RESIDENTIAL SUBDIVISION

MENZIE ENCLAVES ALMONTE - MISSISSIPPI MILLS

1:750

Rev. 0 :07/08/25

SA-1

123-s.sm-1.dwg

8.20.2025

APPENDIX - C

Pre-Consultation Meeting Notes
Virtual zoom meeting – July 14, 2022
Prepared By: Julie Stewart

In Attendance
Ash Sharma -owner
Sampat Poddar – owner
Mongi Mabourak – Engineer
Greg Winters – Planner, Novatech
Susan Gordon – Engineer, Novatech
James Ireland – Project Planner, Novatech
Ken Kelly – CAO, Mississippi Mills
Cory Smith – Public Works, Mississippi Mills
Melanie Knight – Senior Planner, Mississippi Mills
Julie Stewart – County Planner, County of Lanark

Ash provided a brief overview of the proposed development,
Provided a draft concept plan dated May 3, 2022

Legal
The owner needs to provide the block map, parcel abstract and other legal information to confirm ownership and details of the subject land.

Planning
Blocks 16-19 on concept plan have frontage on Adelaide Street and new internal street. Melanie to review and provide comment on preferred streetscape.

Affordable Housing needs to be provided and secured by agreement. Consultation with other agencies encouraged, for example, CMHC or Lanark County.

Engineering / Servicing
- Concept plan shows 18m road, the standard is 20 m. If 18m then this needs to be justified. Cory will provide the specs and cross-section for 18m and 20m to engineer's.
- Servicing - will be an issue. Cory will send information from the master plan.
- Cory advised that he previously provided a letter to the owner in regards to servicing.
- A conceptual plan for servicing will need to be provided.

- There is a need to figure out best way to service the area.

Susan Gordon

- Advised there is a need to look at servicing for the whole area. The engineers will need to look at Cavanagh development and Sharma development together.

The owner and all consultants are to re-group and determine whom is involved in the project. Once that is established a further meeting with MVCA and Gemtec can be coordinated by the County.

Please refer to the attached Pre-Consultation Checklist and comments from the Municipality of Mississippi Mills.

Mississippi Mills

The Corporation of the
Municipality of Mississippi Mills
Municipal Office
3131 Old Perth Road
RR2, P.O. Box 400
Almonte, ON
K0A 1A0
Tel: (613) 256-2064
Fax: (613) 256-4887

February 28, 2022

Memo

By: Cory Smith, A/Director of Public Works

Re: Servicing requirements for the development area known as Lots 21-25 Plan 6262
1.65 ha (4.1 ac) Menzie Parcel

This memo has been prepared as a general overview of servicing requirements for the development area known as the 1.65 ha (4.1 ac) Menzie Parcel. This memo is based on information in the Water and Wastewater Master Plan. Additional works may be required based on the density of the development and other changes to the existing system.

The property is approximately 1.65 ha (4.1 ac) in size. It is bounded to the North by an unopened/unmaintained segment of Adelaide St., to the East by an unopened segment of Menzie Street. This segment also contains a reach of the Almonte Municipal Drain. To the south it is bounded by an unopened road allowance that appears to be the continuation of Augusta St. This segment also contains a reach of the Almonte Municipal Drain. To the West the property is bounded by a 1.25 ha (3.1 ac) parcel described as Plan 6262 BLK C, Lot 2.

The areas bounded by the Municipal Drain should be evaluated for required buffer zones resulting from what may be considered an unevaluated wetland. Consultation with the Mississippi Valley Conservation Authority is recommended as there may be additional development requirements under the Regulatory Framework of the Conservation Authority.

Roadways

It is intended that the site is to be accessed from the unopened/unmaintained extension of Adelaide St. Adelaide St. would need to be upgraded and extended to meet Mississippi Mills Municipal Standards for an urban right-of-way cross section. The design should consider incorporating access to the 1.25 ha (3.1 ac) lot to the West of the property.

Water Servicing

Water servicing has not been extended to this site at this time. Water servicing is likely to occur from an extension of the watermain on Adelaide St. The Master Plan also calls for an extension of the watermain down the unopened road allowance for Menzie Street. Considerations for looping of the system need to be contemplated in the design and boundary conditions should be modelled for this site to be incorporated into the design and requirements for servicing this site. Figure 17 from the Water Wastewater master plan has been attached to this memo for reference.

Sanitary Servicing

Sanitary servicing has not been extended to this site at this time. It is anticipated that sanitary servicing will connect into a sanitary main to be constructed in the unopened road allowance of Florence Street. The connection to the unconstructed main will likely be from the unopened segment of Adelaide St. and will require construction of a new sanitary main along Adelaide. A pump station may be required, or alternative routes could be reviewed during design.

Stormwater Management

Stormwater Management will require review by the designer. The outlet is most likely to be to the Almonte Municipal Drain. A review of the downstream effects on the drain will be required. Consultation with the MVCA should also occur.

Other Considerations

Extension of the roadway along Adelaide St. and water and sewer services may be beneficial to other development properties in the area. Considerations of cost sharing alternatives should be explored.

Cory Smith
A/Director of Roads and Public Works
Mississippi Mills
613 256-2064 ext. 229.

CORPORATION OF THE MUNICIPALITY OF MISSISSIPPI MILLS
3131 OLD PERTH ROAD · PO BOX 400 · RR 2 · ALMONTE ON · K0A 1A0

PHONE: 613-256-2064
FAX:613-256-4887
WEBSITE: www.mississippimills.ca

August 11, 2022

Julie Stewart, County Planner
jstewart@lanarkcounty.ca

RE: PROPOSED MENZIES SUBDIVISION
PRECONSULTATION COMMENTS
FILE: TBD

Please see attached the Planning and Engineering comments regarding the proposed Plan of Subdivision for the Menzie's lands (located at the southerly corner of the unopened road allowance of Adelaide Street and Menzie Road in Almonte). The following comments are based on the concept plan of subdivision submitted to the County for a formal pre-consultation meeting (attached).

Planning

1. Blocks 16 to 19 – the dwellings should be oriented towards Adelaide Street as opposed to Street B to provide activation of Adelaide Street.
2. Consider orienting Blocks 3 or 15 towards Adelaide Street
3. Sidewalks should be added to the Adelaide St right of way
4. The 18-metre cross section can be found in our Urban Design Guidelines
5. A concurrent Zoning By-law Amendment application will be required which reflects the proposed land uses.

Engineering

Please see attached the Servicing memo previously provided to the applicant. Public Works has been in direct contact with Novatech Engineering following the pre-consultation meeting and has provided the necessary engineering information.

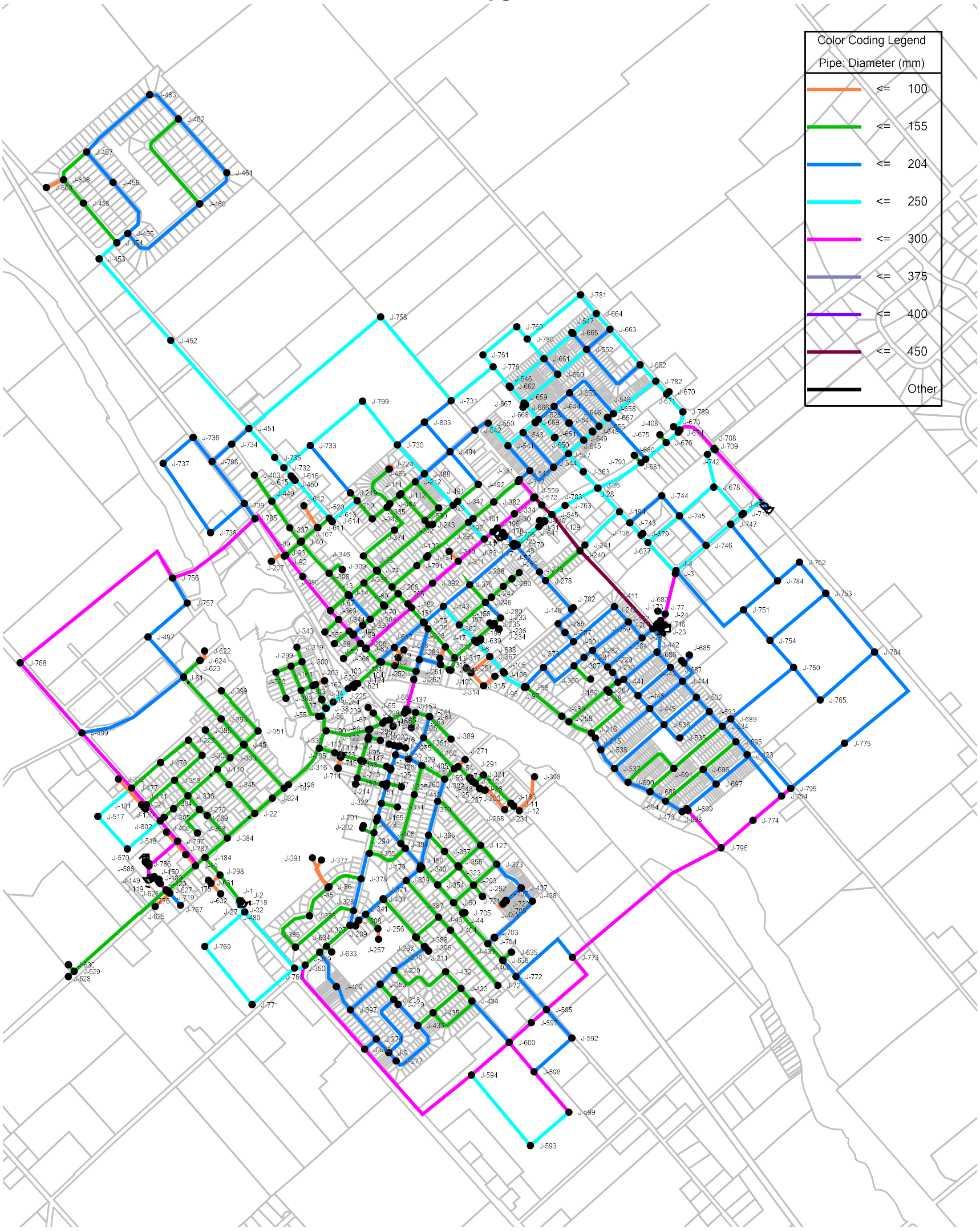
I trust the above will assist you. If you have any further questions regarding this matter, please feel free to contact me at your convenience.

Respectfully yours,

Melanie Knight, MCIP, RPP
Senior Planner
Municipality of Mississippi Mills

Cc: Cory Smith, A/Director of Public Works

Mississippi Mills Almonte Water Master Plan
Proposed Long Term Water Distribution System
With Upgrades



Distribution 0 to 5 year
Third River Crossing

Distribution 0 to 5 year
Expanded Pressure Zone

Distribution
5 to 15 year
Pressure Zone
Optimization
New PRVs

Booster
Pumping Station
and Reservoir

Well #5

Well #6

Distribution
15 to 25 Year
New Pressure Zone

Distribution
15 to 25 Year
Adjust PRV Settings

Well #3

Supply 5 to 15 year
Add new Well Supply

Supply 15 to 25 year
Expand New Well

Well #7 & 8

Elevated Water
Storage Tank

Supply 0 to 5 year
Increase Capacity
of Wells #7 &8

Supply 5 to 15 year
Increase capacity of
Wells 7 & 8 to Full Yield

Storage 5 to 15 year
Increased Capacity of
Elevated Tank

Distribution
5 to 15 year
Fourth River Crossing

Mississippi River

DEVELOPMENT AREA 1

N

Legend

Water Upgrades

- 0 TO 5
- 5 TO 15
- 15 to 25
- Pressure Zone
- Simulated Watermain Routing (conceptual) to be finalized during development

Land Use

- Intensification (Infill, Subdivisions)
- Residential - Greenfield
- Business Park
- Commercial
- Industrial

PROJECT:
MUNICIPALITY OF MISSISSIPPI MILLS ALMONTE WARD WATER AND WASTEWATER INFRASTRUCTURE MASTER PLAN UPDATE

DRAWING:
SUMMARY OF POTABLE WATER SYSTEM UPGRADES

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS
www.jlrichards.ca

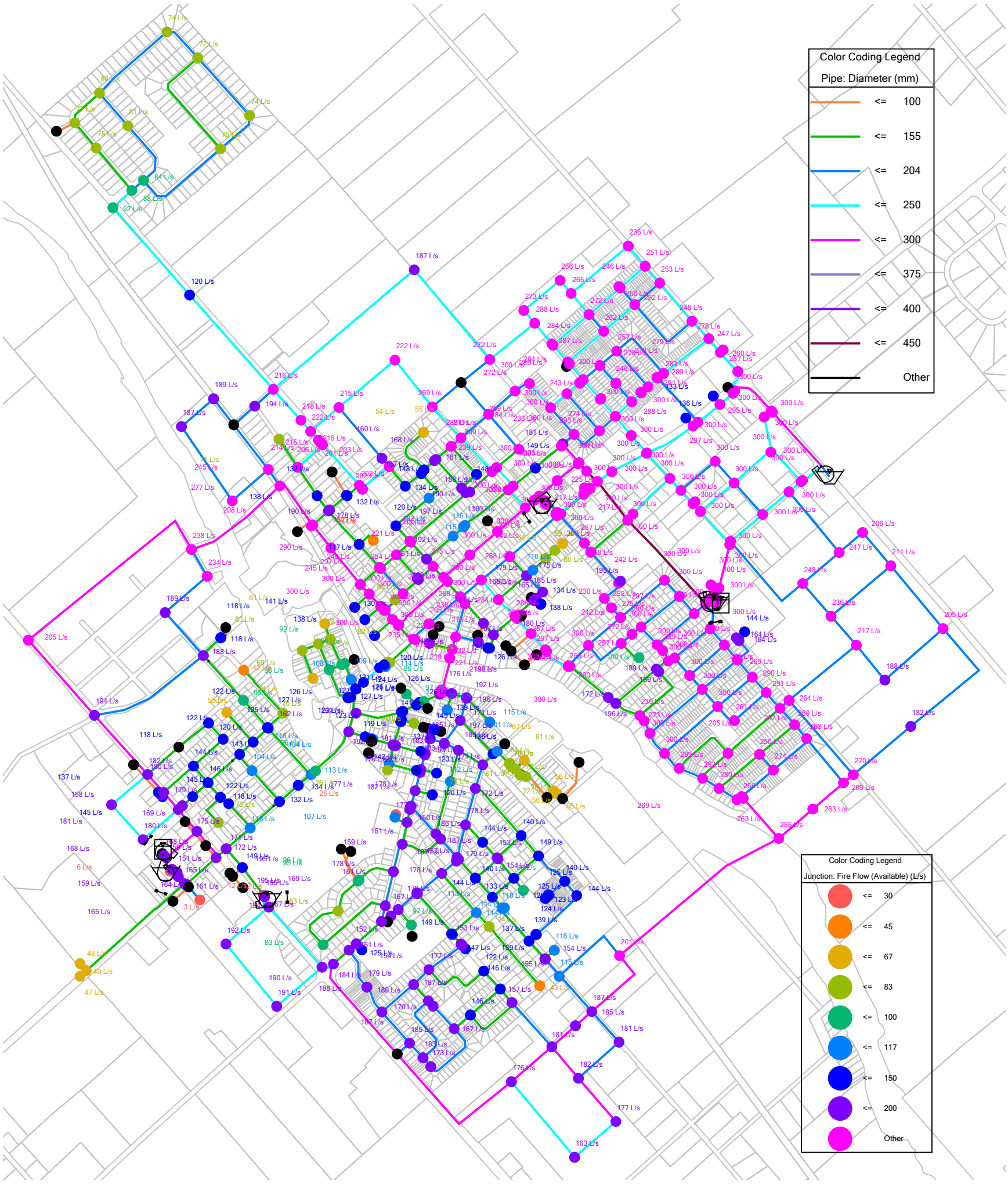
DESIGN: AG
DRAWN: KTK
CHECKED: MB
JLR #: 29920-008

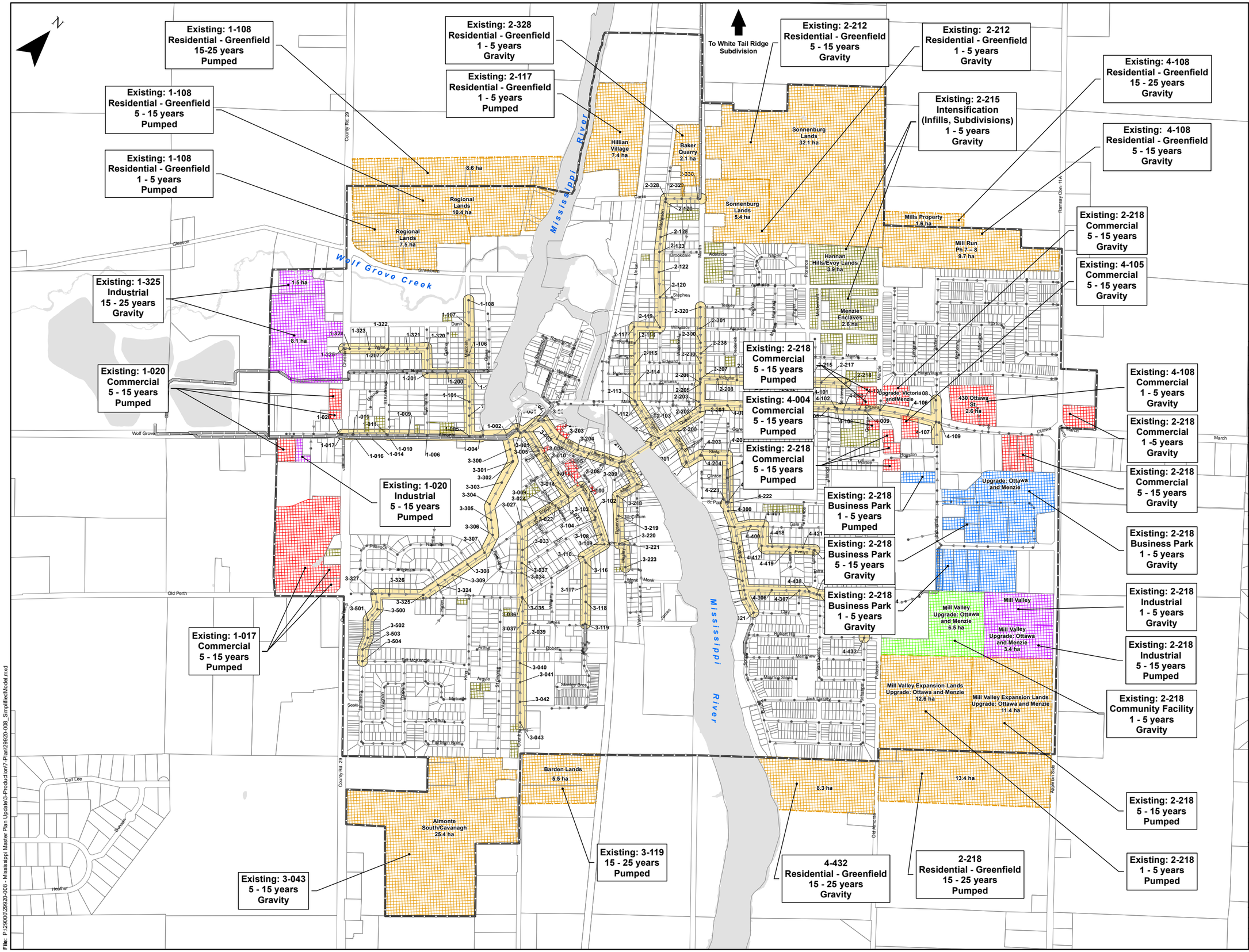
DRAWING #:
FIGURE 5

File Location: P:\29000\29920-008 - Mississippi Master Plan Update\3-Production\7-Plan\29920-008_ExWater_PIC_Buildout.mxd

Plot Date: July 16, 2024 2:13:01 PM

Mississippi Mills Almonte Water Master Plan
Maximum Day Demand with Fire Flow
Long Term (2038 to 2048) with Upgrades




Existing: 1-108
Residential - Greenfield
15-25 years
Pumped
Existing: 1-108
Residential - Greenfield
5 - 15 years
Pumped
Existing: 1-108
Residential - Greenfield
1 - 5 years
Pumped
Existing: 2-328
Residential - Greenfield
1 - 5 years
Gravity
Existing: 2-117
Residential - Greenfield
1 - 5 years
Pumped
To White Tail Ridge Subdivision
Existing: 2-212
Residential - Greenfield
5 - 15 years
Gravity
Existing: 2-212
Residential - Greenfield
1 - 5 years
Gravity
Existing: 2-215
Intensification
(Infills, Subdivisions)
1 - 5 years
Gravity
Existing: 4-108
Residential - Greenfield
15 - 25 years
Gravity
Existing: 4-108
Residential - Greenfield
5 - 15 years
Gravity
Existing: 2-218
Commercial
5 - 15 years
Gravity
Existing: 4-105
Commercial
5 - 15 years
Gravity
Existing: 1-325
Industrial
15 - 25 years
Gravity
Existing: 1-020
Commercial
5 - 15 years
Pumped
Existing: 1-020
Industrial
5 - 15 years
Pumped
Existing: 1-017
Commercial
5 - 15 years
Pumped
Existing: 3-043
5 - 15 years
Gravity
Existing: 3-119
15 - 25 years
Pumped
Existing: 2-218
Commercial
5 - 15 years
Pumped
Existing: 4-004
Commercial
5 - 15 years
Pumped
Existing: 2-218
Commercial
5 - 15 years
Pumped
Existing: 2-218
Business Park
1 - 5 years
Pumped
Existing: 2-218
Business Park
5 - 15 years
Gravity
Existing: 2-218
Business Park
1 - 5 years
Gravity
Existing: 4-108
Commercial
1 - 5 years
Gravity
Existing: 2-218
Commercial
1 -5 years
Gravity
Existing: 2-218
Commercial
5 - 15 years
Gravity
Existing: 2-218
Business Park
1 - 5 years
Gravity
Existing: 2-218
Industrial
1 - 5 years
Gravity
Existing: 2-218
Industrial
5 - 15 years
Pumped
Existing: 2-218
Community Facility
1 - 5 years
Gravity
Existing: 2-218
5 - 15 years
Pumped
Existing: 2-218
1 - 5 years
Pumped
4-432
Residential - Greenfield
15 - 25 years
Gravity
2-218
Residential - Greenfield
15 - 25 years
Pumped
Mississippi River
Wolf Grove Creek
Hillian Village 7.4 ha
Baker Quarry 2.1 ha
Sonnenburg Lands 32.1 ha
Sonnenburg Lands 5.4 ha
Regional Lands 10.4 ha
Regional Lands 7.5 ha
8.6 ha
Hannan Hills/Evoy Lands 3.9 ha
Menzie Enclaves 2.6 ha
Mills Property 1.6 ha
Mill Run Ph 7 – 8 9.7 ha
1.5 ha
8.1 ha
Upgrade: Victoria 08 and Menzie
430 Ottawa St. 2.6 ha
Upgrade: Ottawa and Menzie
Mill Valley Upgrade: Ottawa and Menzie 6.5 ha
Mill Valley
Mill Valley Upgrade: Ottawa and Menzie 3.4 ha
Mill Valley Expansion Lands Upgrade: Ottawa and Menzie 12.6 ha
Mill Valley Expansion Lands Upgrade: Ottawa and Menzie 11.4 ha
Barden Lands 5.5 ha
Almonte South/Cavanagh 25.4 ha
8.3 ha
13.4 ha
Legend
Almonte Ward Limits
Land Use
Intensification (Infill, Subdivisions)
Residential - Greenfield
Residential - Community Facility
Business Park
Commercial
Industrial
Sanitary
Maintenance Hole
Sewer
Forcemain
Lagoon Outfall
Trunk Sewer
No.
ISSUE / REVISION
DD/MM/YY
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VERIFY SHEET SIZE AND SCALES. BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING.
0 25mm
SCALE:
0 50 100 200 300 400 Meters
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MISSISSIPPI MILLS, ONTARIO
DRAWING:
DEMAND INPUTS FOR THE WASTEWATER HYDRAULIC MODEL
DESIGN: AG
DRAWN: KTK
CHECKED: MB
JLR #: 29920-008
DRAWING #:
FIGURE 8
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