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1086 Antochi Lane

Adequacy of Public Services and Conceptual Stormwater Management

Engineering excellence. Planning progress. Liveable landscapes.

1086 Antochi Lane

Ottawa, Ontario

Adequacy of Public Services and

Conceptual Stormwater Management Report

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

February 3, 2023
Revised: February 8, 2023

Novatech File: 120061
Ref: R-2022-213

February 8, 2023

City of Ottawa
Planning & Growth Management Department
110 Laurier Avenue West
4th Floor Infrastructure Approvals Division
Ottawa, ON K1P 1J1

Attention: Jeff Ostafichuk

Reference: 1086 Antochi Lane
Adequacy of Public Services and Conceptual Stormwater Management Report
City of Ottawa Pre-Consultation File No.: PC2020-160
Our File No.: 120061

Please find enclosed the above-noted report, revised February 8, 2023. This report is submitted in support of the Draft Plan of Subdivision application.

If you have any questions or require any additional information, please contact us.

Yours truly,

NOVATECH

Alex McAuley, P.Eng.
Project Manager | Land Development Engineering

cc: 1910753 Ontario Inc.

Table of Contents

Reference Documents

1. Manotick Secondary Plan (Amendment #162, prepared by City of Ottawa, March 2016)
2. Village of Manotick Servicing Master Plan and Trunk Services Concept (prepared by JL Richards, May 2003)

1.0 INTRODUCTION

1.1 Background

Novatech has been retained to provide engineering design services for the proposed development at 1086 Anotchi Lane located in the Village of Manotick. Refer to **Figure 1** (Key Plan) for the site location.

The existing site contains a private road, servicing eight single residential units. The existing units are currently serviced by individual wells and septic systems which would be decommissioned prior to the construction of the proposed development. The existing grade of the site generally slopes from west to east towards the Rideau River.

This report outlines the adequacy of municipal services to service the proposed development with respect to water servicing, sanitary servicing, storm servicing, and stormwater management.

1.2 Proposed Development

The proposed development at 1086 Antochi Lane includes 18 semi-detached residential units and one detached unit (19 units total). The site would include a private 6.7m road right-of-way connecting to the east end of the existing Antochi Lane. Refer to the **Concept Plan** for the proposed site layout.

The proposed development is located within the service area indicated in the Village of Manotick Secondary Plan and therefore would be developed with municipal water and sanitary services.

Notes from the pre-consultation meeting held with City of Ottawa (July 31, 2020) are included in **Appendix A** for reference.

2.0 WATER SERVICING

2.1 Watermain Analysis

Water supply would be provided via a 200mm diameter private watermain. It is proposed that the private watermain be connected to the future municipal 400mm diameter Manotick Watermain Link (Phase 2) on Antochi Lane which is expected to be installed prior to the construction of this development. The City of Ottawa has agreed to leave a stub from the 400mm diameter watermain to service this development. Refer to the Preliminary Grading and Servicing Plan **(120061-PGS)** for the proposed watermain servicing concept. The latest drawings of the Manotick Watermain Link (Phase 2) on Antochi Lane, prepared by JL Richards, were provided by the City of Ottawa and are included in **Appendix B** for reference.

Theoretical boundary conditions from the proposed Manotick Watermain Link (Phase 2) were provided by the City of Ottawa and are included in **Appendix B.** The boundary conditions were used to confirm that the required water pressures would be met during the high pressure, low pressure, and fire flow conditions. The City provided boundary conditions for two scenarios. The first scenario is based on existing conditions in the surrounding development, and the second condition is based on a potential future pressure zone reconfiguration in the South Urban Community (SUC). To be conservative, the lower hydraulic grade line of the pressure zone reconfiguration scenario was used for the purposes of this analysis.

The required fire flow for the development of 9,000L/min (150L/s) was determined using the Fire Underwriter's Survey (FUS) method and analyzes each pair of semi-detached homes as a single building. Watermain analysis and FUS calculations are included in **Appendix B** and summarized in **Table 2** below. The analysis confirms that minimum pressures are met in both peak hour and max day plus fire flow conditions. The residual pressure during the average day condition exceeds the maximum allowable pressure of 80psi. Therefore, pressure reducing valves would be required for each unit.

Table 1: Water Demand Summary

Condition	Demand (L/s)	Allowable Pressure (psi)	Estimated Pressure (psi)
High Pressure (Average Day)	0.17	80 (Max)	84
Low Pressure (Peak Hour)	0.91	40 (Min)	79
Max Day + Fire Flow	150.42	20 (Min)	73

2.2 Fire Protection

As shown on the Manotick Watermain Link (Phase 2) drawings, a municipal fire hydrant is proposed near the east end of Antochi Lane. An additional private fire hydrant is proposed for this development near the east end of the private road. Based on the boundary conditions provided by the City of Ottawa, it is assumed that both of these hydrants would be Class AA (light blue) rated, providing a rated capacity of at least 5,700L/min each. Based on the proposed hydrant locations, each of the proposed buildings would be within 75 meters of one Class AA hydrant and within 150 meters of two Class AA hydrants. As per City of Ottawa Technical Bulletin ISTB-2018-02, the combined flows from proposed hydrants can be summarized as in **Table 3** below.

Table 2: Fire Demand Summary

Fire Hydrants Less Than 75m from Building	Fire Hydrants Between 75m and 150m from Building	Aggregate Fire Flow
1 x 5,700 L/min	1 x 3,800 L/min	9,500 L/min

As shown in the table above, the Aggregate Fire Flow from the two hydrants meets the required fire flow of 9,000L/min. The exact location of the private fire hydrant would be determined at the detailed design stage.

3.0 SANITARY SERVICING

The proposed land use for the site is consistent with the medium-density residential land use allocation outlined in Schedule A – Land Use of the Manotick Secondary Plan, which is included in **Appendix C** for reference.

Sanitary servicing would be by means of a private sanitary sewer system including gravity sewers, pump station, and forcemain. The gravity sewer would direct flows towards the proposed pump station near the entrance of the site. From the pump station, flows would be directed via forcemain within the Antochi Lane public right-of-way to the existing municipal 250mm diameter sanitary sewer at the Bridgeport Avenue and Manotick Main Street intersection. A License of Occupation would be required.

A pump station and sanitary forcemain discharging to the existing Bridgeport Avenue sanitary sewer is consistent with the Proposed Wastewater Network outlined in the Manotick Secondary Plan which has been included in **Appendix C** for reference.

A review of the existing Bridgeport Avenue sanitary sewer system indicates a capacity of 47L/s in the pipe directly downstream of the proposed connection point which is the limiting pipe segment in the system. The proposed development would produce a peak sanitary flow of 0.8L/s representing 1.7% of the capacity of the existing sanitary sewer which currently has no other connections.

Therefore, the existing sanitary sewer system has sufficient capacity to service the proposed development. The proposed servicing concept for the sanitary system is shown on the Preliminary Grading and Servicing Plan **(120061-PGS).** Refer to **Appendix C** for peak flow calculations and sewer capacity analysis.

4.0 STORM SERVICING AND CONCEPTUAL STORMWATER MANAGEMENT

4.1 Stormwater Management Criteria

It is assumed that water quantity control is not required for this site as it would discharge directly to the Rideau River, similar to pre-development conditions. This is further supported by the recently developed Riverwalk Subdivision to the south (also draining to the Rideau River) for which the Rideau Valley Conservation Authority (RVCA) indicated that no quantity control was required.

An ‘enhanced’ level of water quality control corresponding to 80% removal of Total Suspended Solids (TSS) would be required for the site.

4.2 Proposed Storm Drainage System

The site currently drains to the Rideau River.

Storm servicing for the proposed site would include a dual drainage system. A private storm sewer system would be used to convey storm events up to and including a 1:5 year event, while flows from storm events exceeding this would be conveyed directly to the Rideau River along defined overland flow routes. Rear yard lot drainage for lots adjacent to the Rideau River would flow overland to the river. Refer to the Preliminary Grading and Servicing Plan **(120061-PGS)** for the proposed grading and storm sewer layout. Preliminary storm runoff calculations and a storm sewer design sheet are included in **Appendix D**.

To meet the stormwater quality control requirements, the storm sewer system would convey minor storm event flows to a hydrodynamic separator before discharging to the Rideau River. An Environmental Compliance Approval (ECA) would be required for the hydrodynamic separator and would be obtained at the detailed design stage.

4.3 Foundation Drainage

Depending on the underside of footing elevations in relation to the 100-year flood plain elevation of the Rideau River, sump pumps could be required for foundation drainage. This would be determined at the detailed design stage.

5.0 EROSION AND SEDIMENT CONTROL

The following temporary and permanent erosion and sediment control measures would be implemented in accordance with the “Guidelines on Erosion and Sediment Control for Urban Construction Sites” (Government of Ontario, May 1987). Details would be provided at the detailed design stage.

5.1 Temporary Measures

Temporary erosion and sediment control measures would be implemented prior to construction, would be inspected regularly, and would remain in place throughout construction until vegetation has been established. These measures may include:

- Light duty silt fence installed along the boundary of the site;
- Filter bags placed under catch basins and maintenance holes;
- Stockpiles located away from watercourses and stabilized against erosion;
- Storing and maintenance of all machinery away from the watercourse;
- Regular street-sweeping conducted once the roads are completed;
- Contractor to immediately report to the engineer or inspector any accidental discharges of sediment material into any watercourse; appropriate response measures to be carried out by the contractor without delay;
- No control measure to be permanently removed without prior authorization from the Engineer;
- Contractor advised that failure to implement erosion and sediment control measures may result in penalties imposed by any applicable regulatory agency.

5.2 Permanent Measures

Permanent erosion and sediment control measures would be implemented during construction, would be inspected regularly, and would remain in place once construction is complete. These measures would include:

- Roof leaders directed to grassed surfaces;
- Rear-yard swales vegetated and designed at minimum grade, where possible;
- A hydrodynamic separator upstream of the storm outlet providing 80% TSS removal;
- Rip rap at the storm outlet to the Rideau River.

6.0 CONCLUSIONS

The conclusions are as follows:

- The proposed development subdivision would consist of 18 semi-detached units and one detached unit;
- The proposed private watermain would be connected to the future 400mm diameter Manotick Watermain Link (Phase 2) and would provide sufficient flow and pressure to service the proposed development.
- Sanitary flows from the proposed development would be pumped from a private pump station to the existing sanitary sewer at the Bridgeport Avenue and Manotick Main Street intersection. The existing downstream sanitary sewer has sufficient capacity to accommodate the proposed sanitary flows from this development.
- Stormwater runoff would drain uncontrolled as the site is adjacent and drains directly to the Rideau River.
- A private storm sewer system would be used to convey storm events up to and including a 1:5 year event, while flows from storm events exceeding this would be conveyed directly to the Rideau River along defined overland flow routes.
- An 'enhanced' level of stormwater quality control corresponding to 80% removal of Total Suspended Solids (TSS) would be achieved through the implementation of a hydrodynamic separator.
- Erosion and sediment control measures would be implemented prior to and during construction.

NOVATECH

Prepared by:

Aden Rongve, B.Eng., EIT
Land Development Engineering

Reviewed by:

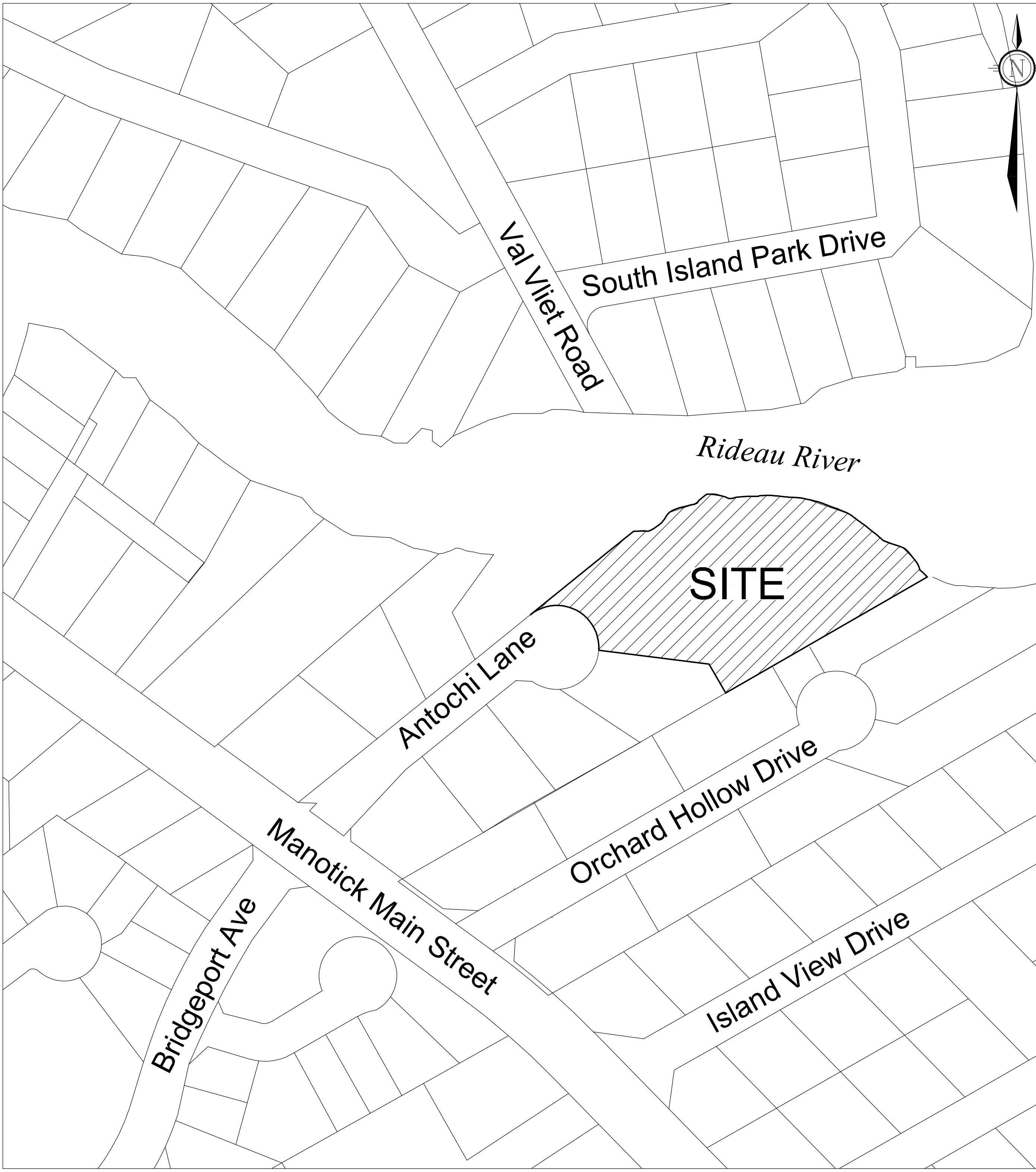
LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Feb 8, 2023
PROVINCE OF ONTARIO

Alex McAuley, P. Eng.
Project Manager
Land Development Engineering

Reviewed by:

LICENSED PROFESSIONAL ENGINEER
S.M. GORDON
Feb 3, 2023
PROVINCE OF ONTARIO

Susan M. Gordon, P.Eng.
Director
Land Development



NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

KEY PLAN

CITY OF OTTAWA

1086 ANTOCHI LANE

DATE	JOB	FIGURE
FEB 2023	120061	KP-1

SHT8X11.DWG - 216mmx279mm

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NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
1.	REVISED PRIVATE ROAD	JAN 26/23	JI

SCALE: 1:250 (A1) / 1:500 (11x17)

1:250 — 0 2 4 6 8 10

DESIGN: XXX
CHECKED: XXX
DRAWN: wls
CHECKED: XXX
APPROVED: XXX

FOR REVIEW ONLY

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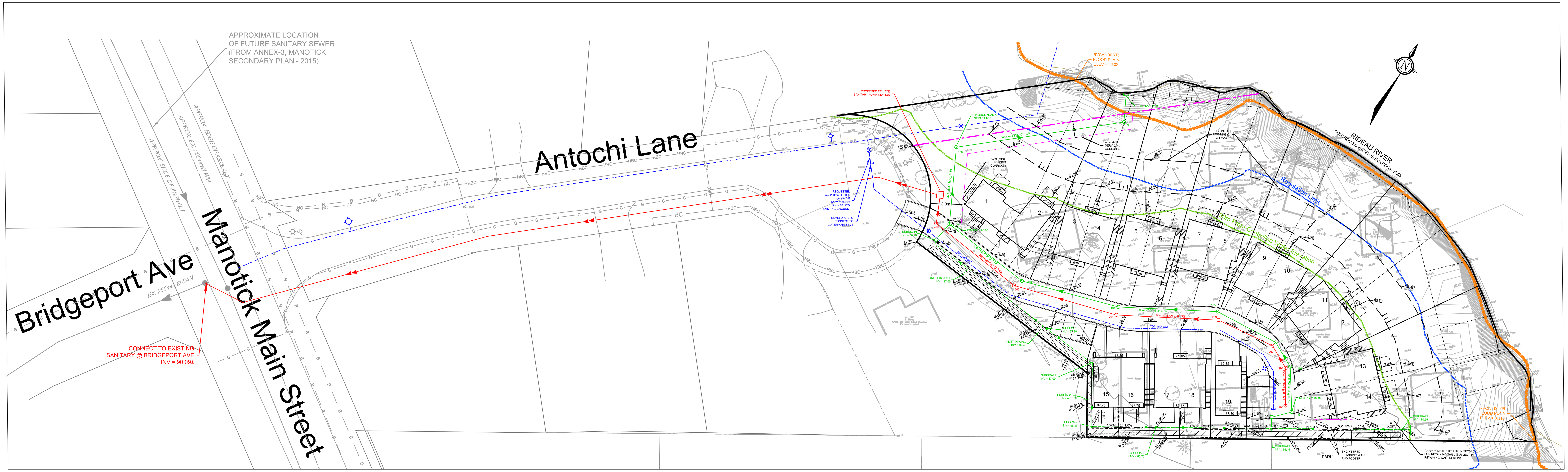
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

CITY of OTTAWA
1086 ANTOCHI LANE

DRAWING NAME: CONCEPT PLAN 6

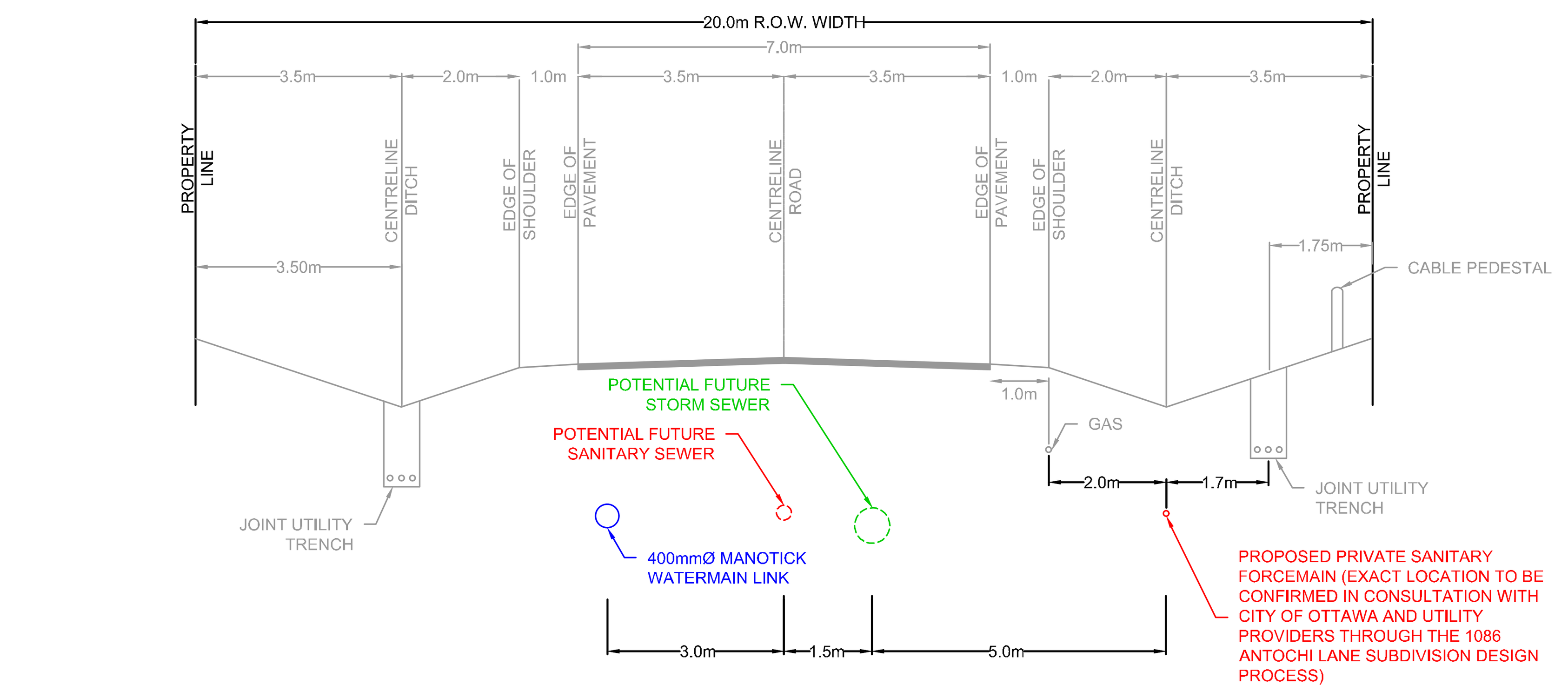
PROJECT No.: 120061-00
REV: REV #1
DRAWING No.: 120061-CP6



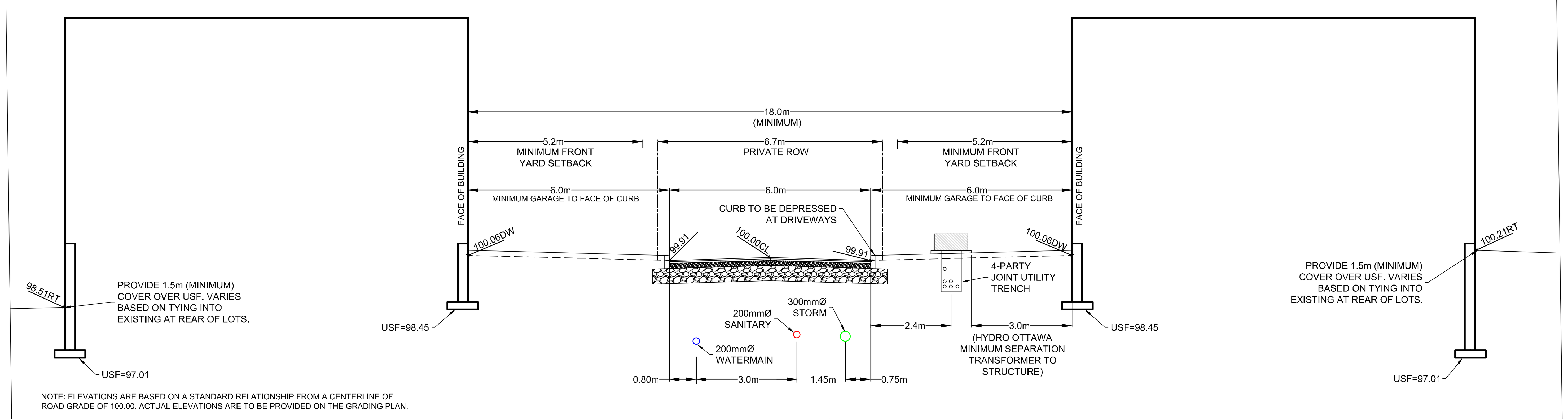
LEGEND

	PROPOSED PRIVATE SANITARY SEWER
	PROPOSED PRIVATE SANITARY FORCEMAIN
	PROPOSED PRIVATE STORM SEWER
	PROPOSED PRIVATE WATERMAIN
	PROPOSED 400mmØ MANOTICK WATERMAIN LINK (PHASE 2) BY CITY OF OTTAWA - LOCATION FROM JL RICHARDS DRAWINGS MAY 31/22
	PROPOSED PERFORATED SUBDRAIN AND DIRECTION
	PROPOSED SWALE
88.00	PROPOSED ELEVATION
88.00	EXISTING ELEVATION
88.00TW	PROPOSED TOP OF WALL ELEVATION
88.00BW	PROPOSED BOTTOM OF WALL ELEVATION
88.00TC	PROPOSED TOP OF CURB ELEVATION
89.35	PROPOSED HOUSE TERRACE ELEVATION
	3:1 (MAX) SLOPE
	PROPOSED RETAINING WALL

SOURCE REFERENCE:
Legal Information:
Plan of Survey 5R-13143, Completed by H.A.Ken Shipman Surveying Ltd. October 17, 1989
Topographic Information:
Topographic Plan of Survey, Completed by Annis, O'Sullivan, Vollebekk Ltd. April 29, 2021



EXISTING ANTOCHI LANE SECTION A-A (20.0m ROW)
SCALE 1:100



TYPICAL PRIVATE ROAD AND LOT GRADING CROSS SECTION
SCALE = 1:100

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
2.	ISSUED WITH DRAFT PLAN APPLICATION	FEB. 8/23	AAR
1.	ISSUED WITH DRAFT PLAN APPLICATION	FEB. 3/23	AAR

SCALE 1:500

DESIGN	AAR
CHECKED	ARM
DRAWN	AAR
CHECKED	ARM
APPROVED	SMG

FOR REVIEW ONLY

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
MANOTICK, ON
1086 ANTOCHI LANE

DRAWING NAME
PRELIMINARY GRADING AND SERVICING PLAN

PROJECT No. 120061
REV # 2
DRAWING No. 120061-PGS

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Appendix A - Correspondence

1. City Ottawa Pre-Consultation Meeting Notes (Meeting held Jul. 31/20)

James Ireland

From: Cunningham, Craig (PC) <craig.cunningham@canada.ca>
Sent: Monday, August 17, 2020 10:49 AM
To: Ostafichuk, Jeffrey; Greg Winters; James Ireland; Susan Gordon; Matt Nesrallah; Morgan, Brian; Shepherd, Reid; Young, Mark; Bougadis, John; Hayley, Matthew; Stow, Nick; Giampa, Mike; Eric Lalande
Cc: Brown, Adam
Subject: RE: 1086 Antochi Lane, Village of Manotick Pre-Consultation Results

Jeff,

Further to our comments provided during the August 31, 2020 pre-consultation meeting, the following information is offered as a summary of those comments:

We are pleased to see that the 30 metre setback from water will be maintained for new buildings and structures. This is perceived as a net gain over the pre-existing situation, and is consistent with the Rideau Canal's inscription as a UNESCO World Heritage Site. The existing vegetated buffer between the development and the Rideau Canal should be maintained and enhanced wherever possible, especially in disturbed areas.

Parks Canada is the approval authority for work conducted in, over, or directly abutting the Rideau Canal. The applicant is advised to obtain prior written authorization from Parks Canada for work conducted to the shoreline, or the construction, repair, modification, or demolition of any marine facilities.

It is our understanding that the proposal may involve the construction of a new watermain beneath the Rideau Canal, extending from Manotick Island to the mainland shore. In addition to a permit requirement from Parks Canada, this part of the project is also subject to the federal Impact Assessment Act.

Please contact me with any questions.

Regards,

Craig

Craig Cunningham
Planner

Rideau Canal National Historic Site
Parks Canada / Government of Canada
34 Beckwith Street South, Smiths Falls, ON K7A 2A8
Craig.Cunningham@canada.ca / Tel: 613-283-7199 Ext. 284

Planificateur par interim
Lieu historique national du Canal-Rideau
Parcs Canada, Gouvernement du Canada
34 Beckwith Street South, Smiths Falls, ON K7A 2A8
Craig.Cunningham@canada.ca / Tel: 613-283-7199 Ext. 284

From: Ostafichuk, Jeffrey <Jeffrey.Ostafichuk@ottawa.ca>
Sent: Friday, August 14, 2020 11:38 AM
To: Greg Winters <G.Winters@novatech-eng.com>; James Ireland <j.ireland@novatech-eng.com>; Susan Gordon <s.gordon@novatech-eng.com>; Matt Nesrallah <MNesrallah@thomascavanagh.ca>; Morgan, Brian <Brian.Morgan@ottawa.ca>; Shepherd, Reid <reid.shepherd@ottawa.ca>; Young, Mark <Mark.Young@ottawa.ca>; Bougadis, John <John.Bougadis@ottawa.ca>; Hayley, Matthew <Matthew.Hayley@ottawa.ca>; Stow, Nick

<Nick.Stow@ottawa.ca>; Giampa, Mike <Mike.Giampa@ottawa.ca>; Eric Lalande <eric.lalande@rvca.ca>; Cunningham, Craig (PC) <craig.cunningham@canada.ca>
Cc: Brown, Adam <Adam.Brown@ottawa.ca>
Subject: 1086 Antochi Lane, Village of Manotick Pre-Consultation Results

File Number PC2020-160

14 August 2020

Novatech Engineering
James Ireland
240 Michael Cowpland Drive
Ottawa, ON
K2M 1P6

Dear Mr. Ireland

Re: 1086 Antochi Lane, Village of Manotick Pre-Consultation Results

Date of Meeting July 31, 2020

In attendance and/or provided comments:

Jeff Ostafichuk City
James Ireland Novatech
Greg Winters Novatech
Susan Gordon Novatech
Matt Nesrallah Cavanagh
Brian Morgan City
Reid Shepherd City
Mark Young City
John Bougadis City
Matthew Hayley City
Nick Stow City
Mike Giampa City
Eric Lalande RVCA
Craig Cunningham Parks Canada

Please find below the results of our meeting with respect to your client's proposal to development a "multi residential" eighteen residential dwellings on a private street.

Comments

Jeff Ostafichuk Planning

In our discussions you have suggested that a site plan will follow the rezoning. Will you also be filing a subdivision application.

Policies that need to be considered "Official Plan and "Manotick Secondary Plan"

Land Use

OP
Section 3.2 - Rideau River, many addressing improving and/or providing access to the Rideau River. Is there an opportunity here for the development to improve the situation for public access to the waterfront?
Section 4.7.1 Integrated Environmental Review
Section 4.8.1 Flood Plains

Manotick Secondary Plan
Section 1.0 Introduction and Planning Framework
Section 2.3.3 Residential Medium Density
Section 2.4.1 Parks
Section 3.2 Rideau River Access and Views
Section 4.0 Natural Heritage Systems and Environmental Constraints
Section 5.0 Servicing

Brian Morgan Infrastructure

- A construction easement and a consent to enter will be required so that the City has a construction area for installing the water main under the Rideau River. The City will be using either horizontal drilling or micro-tunnelling.
- John Bougadis will have to address whether the City would prefer a PRIVATE or a PUBLIC sanitary pumping station.
- New City water main will be constructed in either 2022 or 2023.
- Rezoning and Site Plan to applied for concurrently.
- All the usual reports will be required, but we will also require: 2. Assessment of Adequacy of Public Services, 6. Groundwater Impact Study (affect on neighbours), 13. Water main Analysis, and the 28. Archaeological Resource Assessment.
- Noise Study and Traffic Study not required. TIA ‘brief’ called for (alias a Screening Analysis).
- Is there sufficient turn-around space for garbage and fire trucks?
- ECA required for Stormceptor.

Studies

Assessment of Adequacy of Public Services (water, stormwater, sanitary) - required as per Official Plan section 4.4.1. for proposals in a Public Service Area to determine limits of both service supply and demand. Can be a brief at submission stage.

Geotechnical Study / Slope Stability Study – required as per Official Plan section 4.8.3. All plans of subdivision to demonstrate the soils are suitable for development. If a slope stability study is required (sensitive marine clays, in conjunction with trees, may provide a lower threshold of ROW width; Schedule K or topography may define slope stability concerns) it should be provided at submission stage though it can be included as part of draft approval if, for example, the subdivision design includes a retaining wall.

Erosion and Sediment Control Plan – required with all plans of subdivision applications as per Official Plan section 4.7.3. May be required at Submission stage under unique circumstances.

Stormwater Management Report/Brief - required with all plans of subdivision applications as per Official Plan section 4.7.6.

Hydraulic Watermain Analysis – required with all plans of subdivision applications as per Official Plan section 4.4.1.

As per section 4.8.4 of the Official Plan all subdivision applications shall include a Phase 1 ESAs. Phase 1 ESAs shall be prepared in accordance with Ontario Regulation 153/04.

Record of Site Condition – (if required) - Record of Site Condition for residential land use or a use more sensitive than its previous land use where applicable information indicates the site is contaminated or is within 500 metres, or other influence area, of an active landfill site.

Reid Shepherd Parks

- Parks would like the applicant to demonstrate how they can provide parkland that can be added to the adjacent park. If it cannot be done, we’ll want to see a rationale as to why. The alternative concept shown by Mark Young during the pre-consult did demonstrate an alternative layout that may offer more potential for land that can be added to the park.
- Lands to be added to Orchard Hollow Park would need to be:
    - Free of any easements of encumbrances and outside the 30 m setback
    - Ideally – a sliver of land that continues to the water and increases the water frontage of the existing park
- The land provided for parkland would be based on the net increase in units.

Mark Young Urban Design Planner

- Consider alternatives for the arrangement of the proposed private street to reduce the length of the street and allow for Built Form abutting Orchard Hollow Park.
- Consider built form alternatives to townhomes, ex. Semi-detached and detached dwellings, which are more representative of the built form in the surrounding context and allow for greater design flexibility.
- Consider the use of varied setbacks to create a more diverse streetscape reflective of the context.
- Utilize means of covering outdoor parking (Manor Hill Private) example, carriage ways, extended second floors etc, can all be utilized to minimize the visual appearance of parking on the streetscape.
- Ensure adequate room for new tree planting in addition to tree retention.
- Provide a pedestrian connection between Antochi Lane and Orchard Hollow Park. This could include measures such as a pedestrian easement.
- Consider enhancement of the existing 10 m easement for pedestrian access to the river.
- The northern end unit should be designed to address Antochi Lane – glazing, entrance etc.
- Ensure a positive relationship with Orchard Hollow Park – Fencing is not always the best solution.
- Design Brief

John Bougadis Infrastructure

- Water
  - The MWL Phase 2 is scheduled to be constructed in 2022.
  - The Phase 2 main will include a servicing stub for 1086 Antochi Lane. Exact location to be coordinated with landowner.
  - The watermain will be located within the existing 10 m easement on the subject site.
  - A temporary staging area will be required during construction.
- Wastewater:
  - A private pump station to service the subject site will likely be supported by Infrastructure Planning (to be confirmed).
  - An agreement with the City will likely be needed since the private forcemain will be located within a City-owned right-of-way.
  - The City to confirm whether a Municipal Responsibility Agreement is required for the private facility.
- Stormwater
  - Provide quality control to an "enhanced" level of treatment (80% removal of TSS).
  - Overland flow generated from the subject site must be contained on site and outlet to the Jock River.
- See Attached Document 1

Matthew Hayley Planning

- This is a redevelopment of an existing waterfront development. They are proposing a 30 m setback, which appears to improve the situation however the number of units are increasing.
  - How will the waterfront / riparian lands be treated, what will the ownership be, naturalization plantings, water access, docks or other structures along the water?
- In terms of the submission they will need an EIS/TCR to address species at risk, for example butternut trees, Blanding's turtles, bank swallow, barn swallow, etc. The TCR will need to address the retention of trees within the 30 m watercourse setback, along property lines (special attention to boundary trees) and if possible along the road/park.
- Parks Canada will need to be involved.
- The Secondary plan for the village has some specific policies for Rideau River developments in Section 3.2 - Rideau River, many addressing improving and/or providing access to the Rideau River. Is there an opportunity here for the development to improve the situation for public access to the waterfront?
- See attached Document 2

Nick Stow Policy

- Our policies for development along the Rideau call for protection and conveyance of the shoreline to the City.
- The site is undergoing redevelopment, and we ask that the new development respect our setback policies as much as possible. The greater of the limit of hazard lands, 30 m from normal high water, or 15 m from top of slope. We would also be looking for a naturalized shoreline, with shoreline access limited to one point.

Eric Lalande RVCA Rideau Valley Conservation Authority

- The proposed plan looks like most of the development is outside of the 30 metres setback, so treatment of the area within 30 metres will need to be understood. Maximizing naturalization will be highly encouraged.
- As for access point, a communal access should be used rather than providing access/docks for each property backing onto the river.
- As for water quality control, the RVCA would be looking for quality control of enhanced level (80% TSS removal).

Mike Giampa City Transportation

- No TIA is required, but a screening form should be completed for my records.
- No road noise study is required because its 100 away from the nearest collector/arterial (Manotick Main)

Craig Cunningham Parks Canada

No written comments to date

Applicant's Study and Plan Identification List

The letter **S** indicates that the study or plan is required with application submission.
The letter **D** indicates that the study or plan may be required to satisfy a condition of approval/draft approval.

For information on preparing required studies and plans refer to:

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

S/A	Number of copies	ENGINEERING		S/A	Number of copies
S	6/35/55	1. Site Servicing Plan	2. Assessment of Adequacy of Public Services ~~/ Site Servicing Study / Brief~~	S	6
S	6/35/55	3. Grade Control and Drainage Plan	4. Geotechnical Study / Slope Stability Study	S / S	4
S	2	5. Composite Utility Plan	6. Groundwater Impact Study	S	6
S	5	7. Servicing Options Report	8. Wellhead Protection Study		6
	9	9. Community Transportation Study and/or Transportation Impact Study / Brief	10. Erosion and Sediment Control Plan / Brief	S	6
S	6	11. Storm water Management Report / Brief	12. Hydro-geological and Terrain Analysis		8
S	3	13. Watermain Analysis	14. Noise Control Study / Vibration Study		3
	35/50/55	15. Roadway Modification Design Plan	16. Confederation Line Proximity Study		9

S/A	Number of copies	PLANNING / DESIGN / SURVEY		S/A	Number of copies
S ?	50	17. Draft Plan of Subdivision	18. Plan Showing Layout of Parking Garage		2
	30	19. Draft Plan of Condominium	20. Planning Rationale	S	3
S	35/55	21. Zoning Amendment/Site Plan	22. Minimum Distance Separation (MDS)		3
	20	23. Concept Plan Showing Proposed Land Uses and Landscaping	24. Agrology and Soil Capability Study		5
S	3	25. Concept Plan Showing Ultimate Use of Land	26. Cultural Heritage Impact Statement	S	3
S	35/55	27. Landscape Plan	28. Archaeological Resource Assessment Shoreline Under Water Requirements: **S** (site plan) **A** (subdivision, condo)	S	3
S	2	29. Survey Plan	30. Shadow Analysis		3
	3	31. Architectural Building Elevation Drawings (dimensioned)	32. Design Brief (includes the Design Review Panel Submission Requirements)	S	Available Online
	6	33. Wind Analysis			

S/A	Number of copies	ENVIRONMENTAL		S/A	Number of copies
S	5	34. Phase 1 Environmental Site Assessment	35. Impact Assessment of adjacent Waste Disposal/Former Landfill Site		6
		36. Phase 2 Environmental Site Assessment (depends on the outcome of Phase 1)	37. Assessment of Landform Features		7
S	4	38. Record of Site Condition	39. Mineral Resource Impact Assessment		4
S	10	40. Tree Conservation Report	41. Environmental Impact Statement / Impact Assessment of Endangered Species	S	11
	4	42. Mine Hazard Study / Abandoned Pit or Quarry Study			

S/A	Number of copies	ADDITIONAL REQUIREMENTS		S/A	Number of copies
		43.	44.		

Meeting Date: ***July 31, 2020***

Application Type: ***Zoning By-law Amendment Site Plan***

File Lead: Jeff Ostafichuk

Engineer/Project Manager: ***Brian Morgan***

Site Address: 1086 Antochi Lane

*Preliminary Assessment: 1 2 3 4 5

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

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

Jeff Ostafichuk, Planner
Development Review, Rural Services Unit §Examen des projets d'eménagement, Unité des services ruraux
Planning, Infrastructure and Economic Development Department §Services de la planification, de l'infrastructure et du développement économique
City of Ottawa ville d'Ottawa § 613-580-2424 x 31329 jeffrey.ostafichuk@ottawa.ca § Mail code 01-14

Please note: Given the current pandemic, I will be working from home until further notice; reaching me by email is easiest. Please do not leave messages on my office voicemail.

'

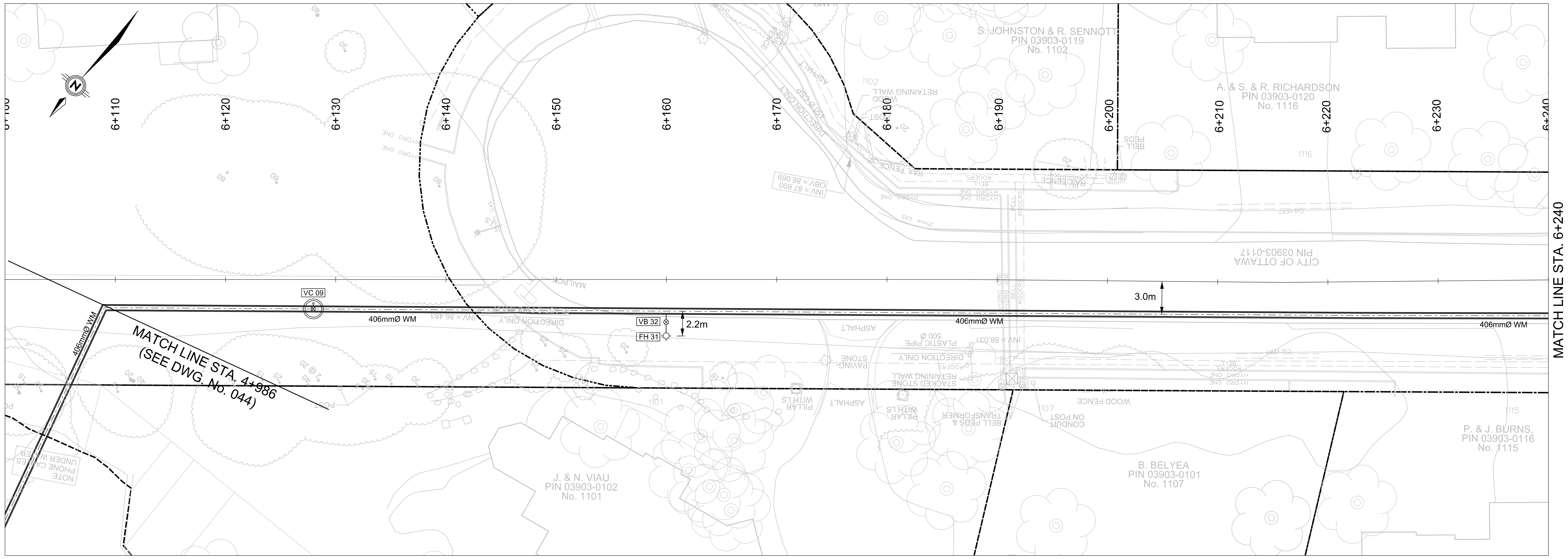
'

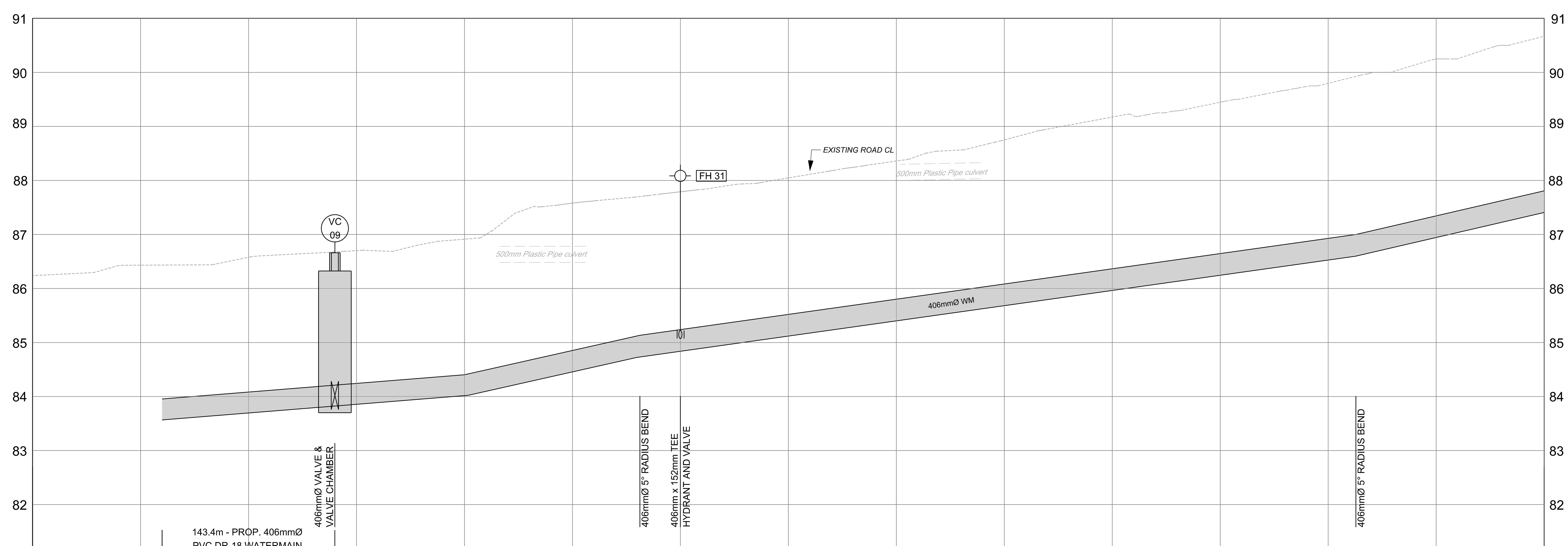
Appendix B – Water Servicing

1. Manotick Watermain Link Phase 2 Drawings prepared by JL Richards:
    a) Antochi Lane Plan and Profile Sta. 6+100 to Sta. 6+240 (CP000598-045, rev2 dated Jun. 2/22)
    b) Antochi Lane Plan and Profile Sta. 6+240 to Sta. 6+320 (CP000598-046, rev2 dated Jun. 2/22)
2. City of Ottawa Boundary Conditions email (Nov. 21/22)
3. Water Demand Calculations (prepared by Novatech Feb. 2023)
4. FUS – Fire Flow Calculations (prepared by Novatech Feb. 2023)

JLR 31345

ANTOCHI LANE





℄ PROFILE CONTROL	86.238	86.432	86.578		86.701	86.913	87.580		87.790	88.046	88.359	88.749	89.173	89.448	89.799		90.250
TOP OF WATERMAIN			84.083		84.243	84.404	84.852		85.238	85.520	85.802	86.083	86.365	86.646	86.928		87.349
STATION	6+100	6+110	6+120	6+128.0	6+130	6+140	6+150	6+156.2	6+160	6+170	6+180	6+190	6+200	6+210	6+220	6+222.7	6+230

CITY OF OTTAWA

MANOTICK WATERMAIN LINK
PHASE 2

ANTOCHI LANE
PLAN AND PROFILE
STA. 6+100 TO STA. 6+240

CARINA DUCLOS, P. ENG. *Acting Director*	J. LYONS, P. ENG. *Project Manager*

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

Contract No. CP000598	Dwg. No. 045
Sheet 45 of 48	
Asset No.	
Asset Group	
Des. D.M.	Chk'd. T.R.
Dwn. D.M.	Chk'd. T.R.
Utility Circ. No.	Index No.
Const. Inspector	

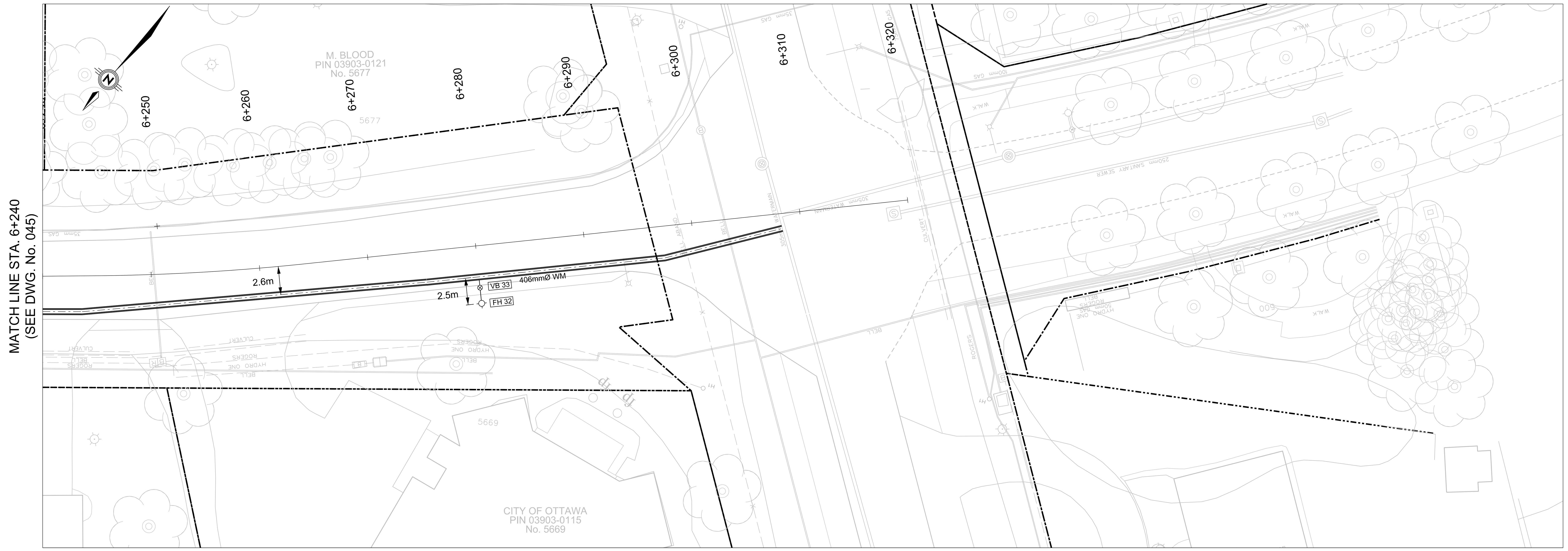
Scale:
HORIZONTAL 1:250 (0m, 2.5, 5, 10)
VERTICAL 1:50 (0m, 1, 2)

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

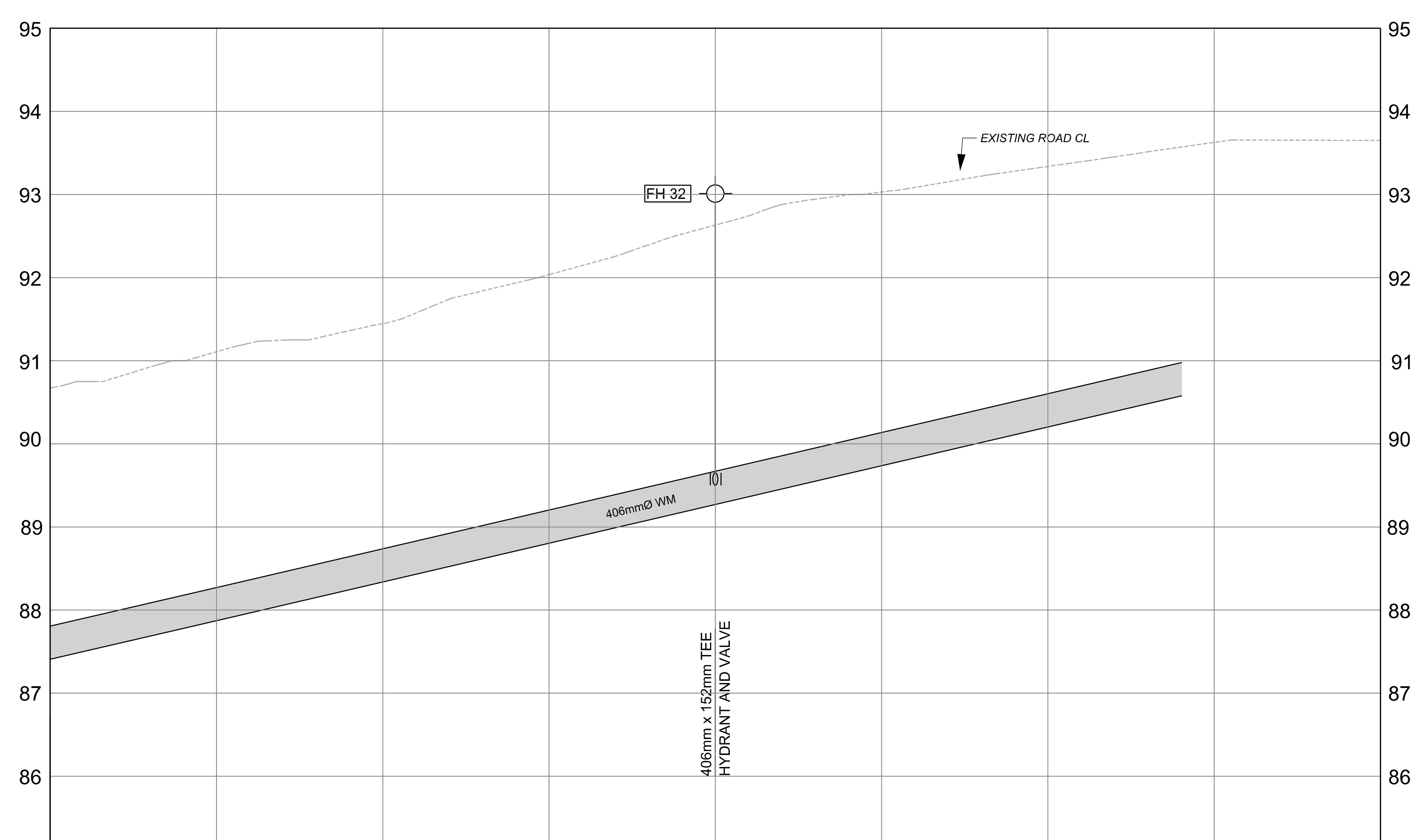
REVISIONS

No.	Description	By	Date (dd/mm/yy)
1	ISSUED WITH PRELIMINARY DESIGN REPORT	T.R.	31/05/22
2	ISSUED FOR PRELIMINARY DESIGN UTILITY CIRCULATION	T.R.	02/06/22

ANTOCHI LANE



JLR 31345



℄ PROFILE CONTROL	90.669	91.107	91.445	92.035	92.632	93.031	93.338	93.627	℄ PROFILE CONTROL
TOP OF WATERMAIN	87.818	88.287	88.756	89.226	89.695	90.164	90.633		TOP OF WATERMAIN
STATION	6+240	6+250	6+260	6+270	6+280	6+290	6+300	6+310	STATION

CITY OF OTTAWA

MANOTICK WATERMAIN LINK
PHASE 2

Ottawa

ANTOCHI LANE
PLAN AND PROFILE
STA. 6+240 TO STA. 6+320

CARINA DUCLOS, P. ENG.
Acting Director

J. LYONS, P. ENG.
Project Manager

J.L.Richards
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www.jlrichards.ca

Contract No.	Dwg. No.
CP000598	046
Sheet 46 of 48	
Asset No.	
Asset Group	
Des. D.M.	Chk'd. T.R.
Dwn. D.M.	Chk'd. T.R.
Utility Circ. No.	Index No.
Const. Inspector	

Scale:
HORIZONTAL 1:250
0m 2.5 5 10
0m 1 2
VERTICAL 1:50

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

REVISIONS

No.	Description	By	Date (dd/mm/yy)
1	ISSUED WITH PRELIMINARY DESIGN REPORT	T.R.	31/05/22
2	ISSUED FOR PRELIMINARY DESIGN UTILITY CIRCULATION	T.R.	02/06/22

Aden Rongve

From:	Morgan, Brian <Brian.Morgan@ottawa.ca>
Sent:	Monday, November 21, 2022 9:22 AM
To:	Alex McAuley
Cc:	Ostafichuk, Jeffrey; Morgan, Brian
Subject:	RE: 1086 Anotchi Lane - Boundary Conditions
Attachments:	1086 Antochi Lane_Boundary_Conditions_18Nov2022.docx

Alex,

The boundary conditions for this site are attached for your review. Note that the 'Manotick Watermain Link Phase 2' was included for modelling purposes, and Water Services has added a note to reflect this.

Sincerely,

Brian

Brian R. Morgan, C.E.T., IntET (Canada)
Project Manager | Gestionnaire de programme
Development Review - Rural Branch
Planning, Real Estate and Economic Development Department /
Direction générale de la planification, des biens immobiliers et du développement économique
City of Ottawa | Ville d'Ottawa
W: 613.580.2424 ext./poste 13698, E: brian.morgan@ottawa.ca

Due to the City's and public health directions related to COVID-19,
I will be working from home until further notice.
Phone contact is limited and therefore email is the best option.

From: Alex McAuley <a.mcauley@novatech-eng.com>
Sent: October 25, 2022 9:23 AM
To: Lyons, Julie <Julie.Lyons@ottawa.ca>
Cc: Donovan McLean <dmclean@jlrichards.ca>; Philip Reeve <preeve@jlrichards.ca>; Marshall Huband <mhuband@jlrichards.ca>; Susan Gordon <s.gordon@novatech-eng.com>; Greg Winters <g.winters@novatech-eng.com>; Aden Rongve <a.rongve@novatech-eng.com>
Subject: 1086 Anotchi Lane - Boundary Conditions

Julie,
We are sending this e-mail to request municipal watermain boundary conditions for the above-noted development. We thought we should reach out to you since this the future 400mmØ Manotick Watermain Link (Phase 2) is still in the design stage. A copy of our plan, which was previously provided, is attached for reference (120061-CS, rev. 4),

We are requesting theoretical water boundary conditions (Min HGL, Max HGL, Max Day + Fire HGL) based on the following:

Required Fire Flow - 150 L/s
Average Day Demand – 0.2 L/s
Maximum Day Demand – 0.4 L/s
Peak Hour Demand – 0.9 L/s

Please let us know if you have any questions.

Alex McAuley, P.Eng., Project Manager | Land Development Engineering
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 292 | Cell: 613.261.9166 | Fax: 613.254.5867

'

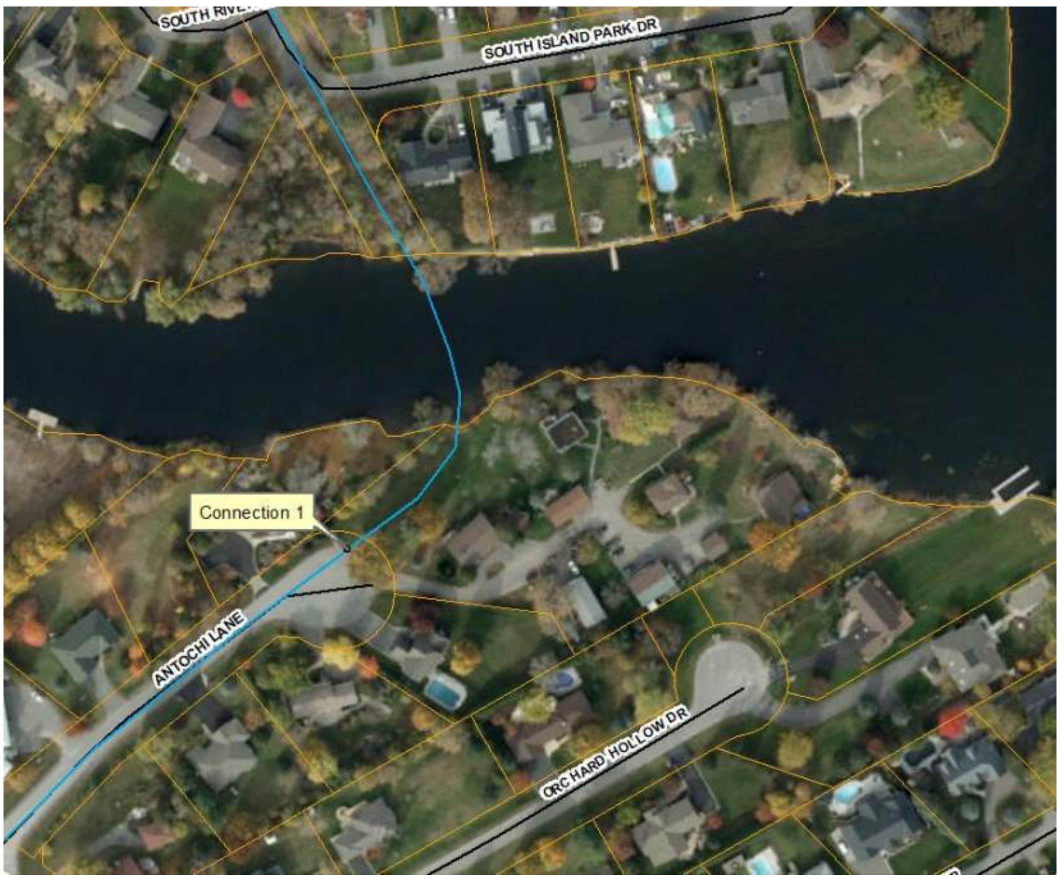
'

Boundary Conditions
1086 Antochi Lane

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	12	0.20
Maximum Daily Demand	24	0.40
Peak Hour	54	0.90
Fire Flow Demand #1	9,000	150.00

Location



Results – Existing Conditions

Connection 1 – Antochi Lane

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	156.9	98.7
Peak Hour	140.2	75.1
Max Day plus Fire 1	125.9	54.7

Ground Elevation = 87.4 m

Results – SUC Zone Reconfiguration

Connection 1 – Antochi Lane

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	146.7	84.3
Peak Hour	143.2	79.3
Max Day plus Fire 1	139.1	73.4

Ground Elevation = 87.4 m

Notes

1. A 400mm watermain from Bravar Drive to Antochi Lane (Manotick Watermain Link Phase 2) was included for modelling purposes.
2. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
   a. If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
   b. Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

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.

1086 ANOTCHI LANE DEVELOPMENT
WATER DEMAND

JOB NO. 120061
DATE: FEBRUARY 2023

Domestic Water Demand

Residential Population			Residential Demand (L/s)			Total Demand (L/s)		
Semi Detached Units	Single Family Units	Total Population	Avg Day	Max. Daily	Peak Hour	Avg Day	Max. Daily	Peak Hour
18	1	52	0.17	0.42	0.93	0.17	0.42	0.93

Design Parameters:

- Semi-Detached Unit	2.7	persons/unit
- Single Family Unit	3.4	persons/unit
Section 4.0 Ottawa Water Distribution Design Guidelines		
- Average Domestic Flow	280	L/capita/Day
- Max. Daily Demand:	2.5	x Avg Day
- Peak Hourly Demand:	2.2	x Max Day

FUS - Fire Flow Calculations

As per 2020 Fire Underwriter's Survey Guidelines

Engineers, Planners & Landscape Architects

Novatech Project #: 120061
Project Name: 1086 Antochi Lane
Date: Feb. 2023
Input By: Aden Rongve
Reviewed By: Alex McAuley

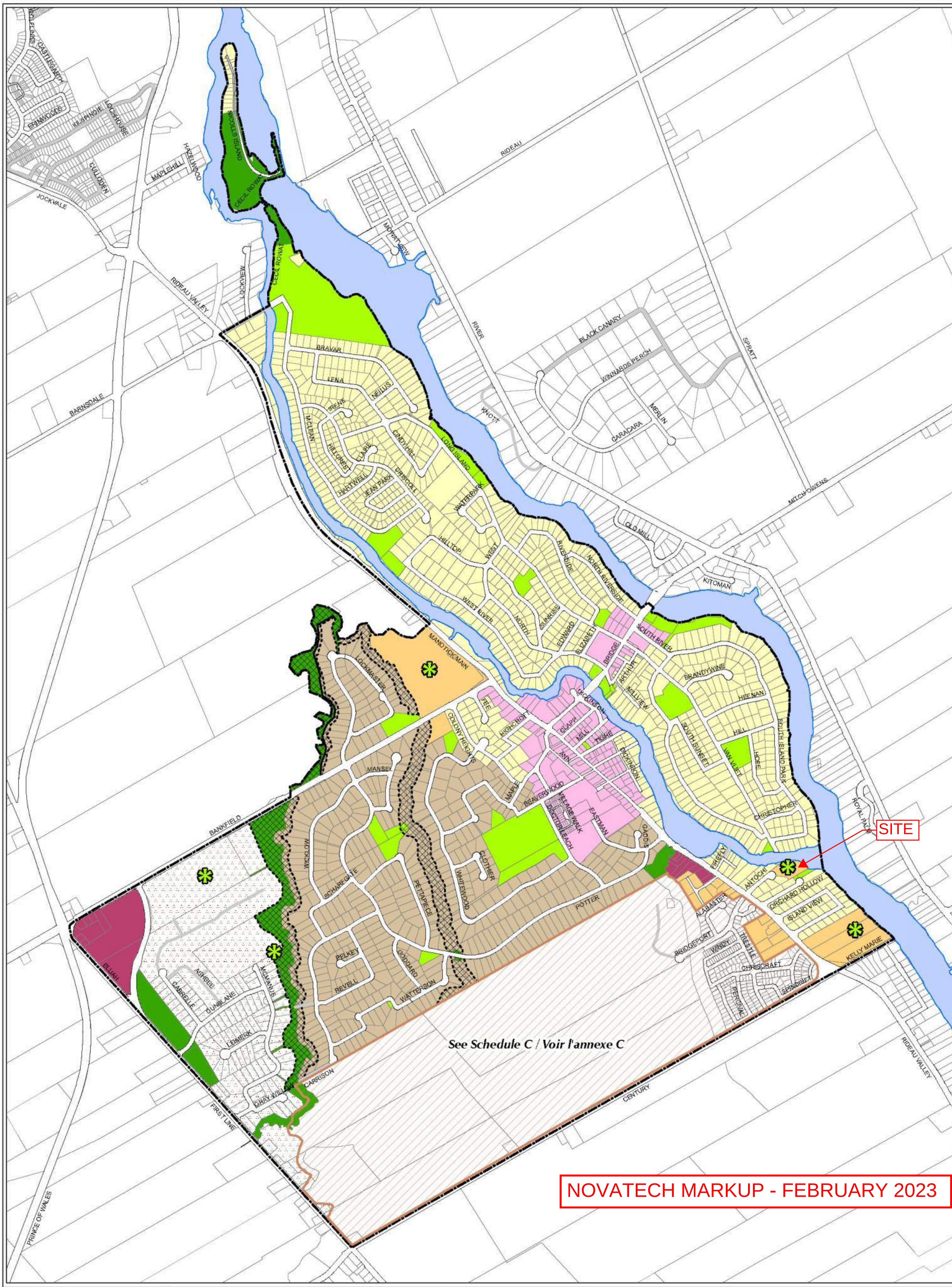
Legend: Input by User; No Information or Input Required

Building Description: Pair of Semi-detached units (90m² per unit)
Type V - Wood frame

Step			Input		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m²)	180			
		Number of Floors/Storeys	2			
		Area of structure considered (m²)			**360**	
	F	**Base fire flow without reductions**				**6,000**
		$F = 220\ C\ (A)^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,100**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m²)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**3,825**
		East Side	0 - 3 m		25%	
		South Side	3.1 - 10 m		20%	
		West Side	0 - 3 m		25%	
				Cumulative Total	**75%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**9,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**150**
				or	USGPM	2,378

Appendix C – Sanitary Servicing

1. Manotick Secondary Plan Schedule A – Land Use (Apr. 2015)
2. Manotick Secondary Plan Annex 3 – Proposed Wastewater Network (2015)
3. Bridgeport Avenue Existing Sanitary Sewer Capacity (prepared by Novatech Feb. 2023)
4. Conceptual Sanitary Sewer Design Sheet (prepared by Novatech Feb. 2023)



MANOTICK SECONDARY PLAN BOUNDARY / LIMITE DU PLAN SECONDAIRE MANOTICK

Residential - Detached (Estate) / Résidentiel - maison isolée (domaine)

Residential - Detached (Low Density) / Résidentiel - maison isolée (faible densité)

Residential (Medium Density) / Résidentiel (densité moyenne)

Mixed Residential-Commercial / Commercial résidentiel mixte

Village Core /Centre du village (see Schedule C / voir l'annexe C)

Park / Parc

Future Park / Parc futur

Open Space / Espace libre

Development Setback / Retrait d'aménagement futur

Special Design Area / Secteur de désignation spéciale

Mahogany Community / Communauté Mahogany (see Schedule B / voir l'annexe B)

Ottawa

MANOTICK

SECONDARY PLAN
Schedule A - Land Use

PLAN SECONDAIRE
Annexe A - Utilisation du sol

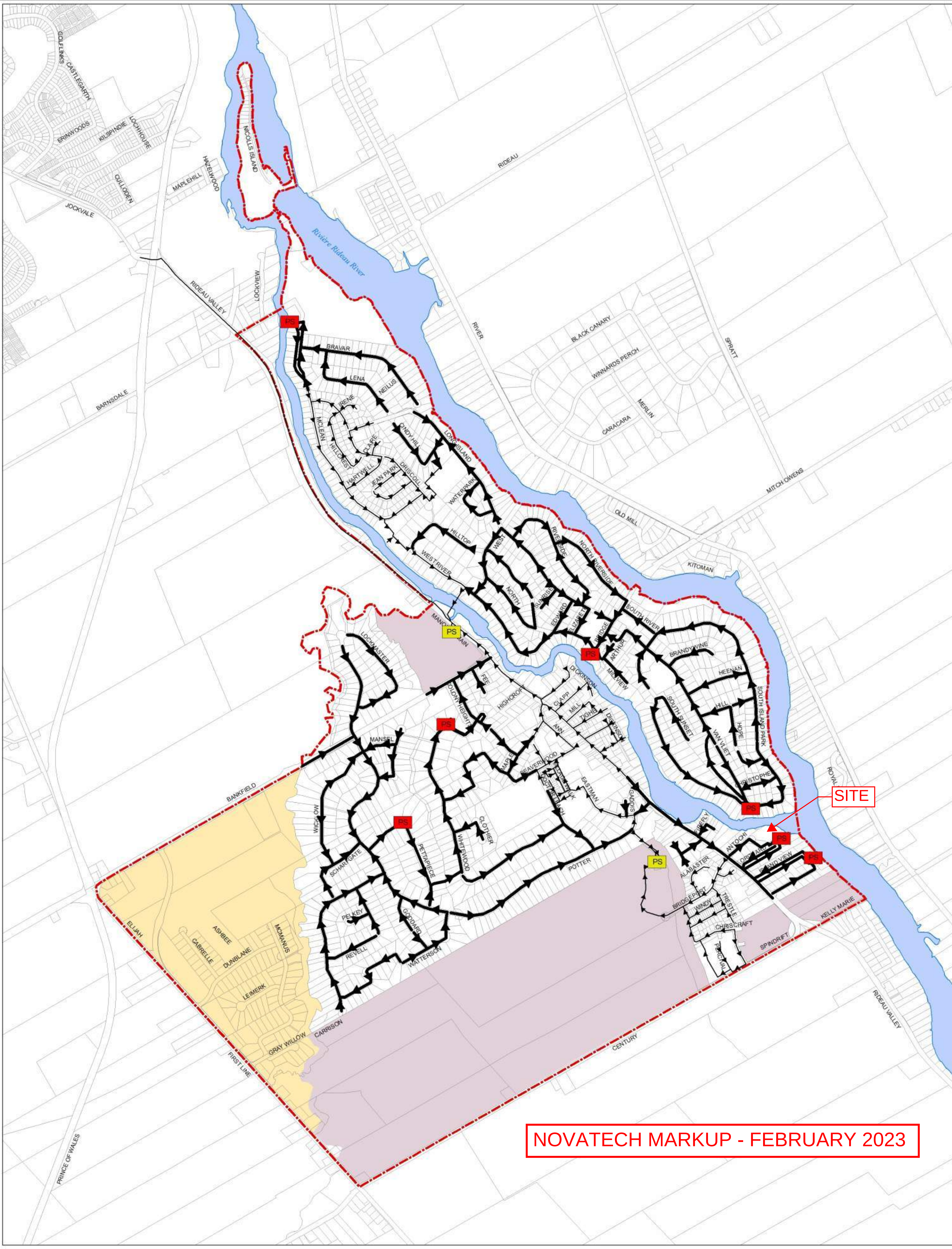
N

Scale / Echelle 1:17,000 approx.

0 125 250 500 750 1,000 Meters

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques

04 / 2015



Existing Sanitary Sewers /
système d'égout séparatif existants

Proposed Sanitary Sewers /
Système d'égout séparatif proposé

PS Existing Sanitary Pump Station /
Station de pompage existant

PS Proposed Sanitary Pump Station /
Station de pompage proposé

Servicing solution to be undertaken as part of the development approval process /
Une solution de viabilisation doit être entreprise dans le cadre du processus d'approbation des demandes d'aménagement

Development on Private Services /
Développement sur les services privés

MANOTICK SECONDARY PLAN BOUNDARY /
LIMITE DU PLAN SECONDAIRE DU SECTEUR MANOTICK

Ottawa

MANOTICK

SECONDARY PLAN
Annex 3 - Proposed Wastewater Network

PLAN SECONDAIRE
Appendice 3 - Réseaux d'égouts proposé

Ottawa

N

Scale / Echelle 1:18,000 approx.

0 0.125 0.25 0.5 0.75 1 km

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques
2015

PROJECT #: 120061
PROJECT NAME: 1086 ANTOCHI LANE
LOCATION: 1086 ANTOCHI LANE, MANOTICK, ON

NOVATECH
Engineers, Planners & Landscape Architects

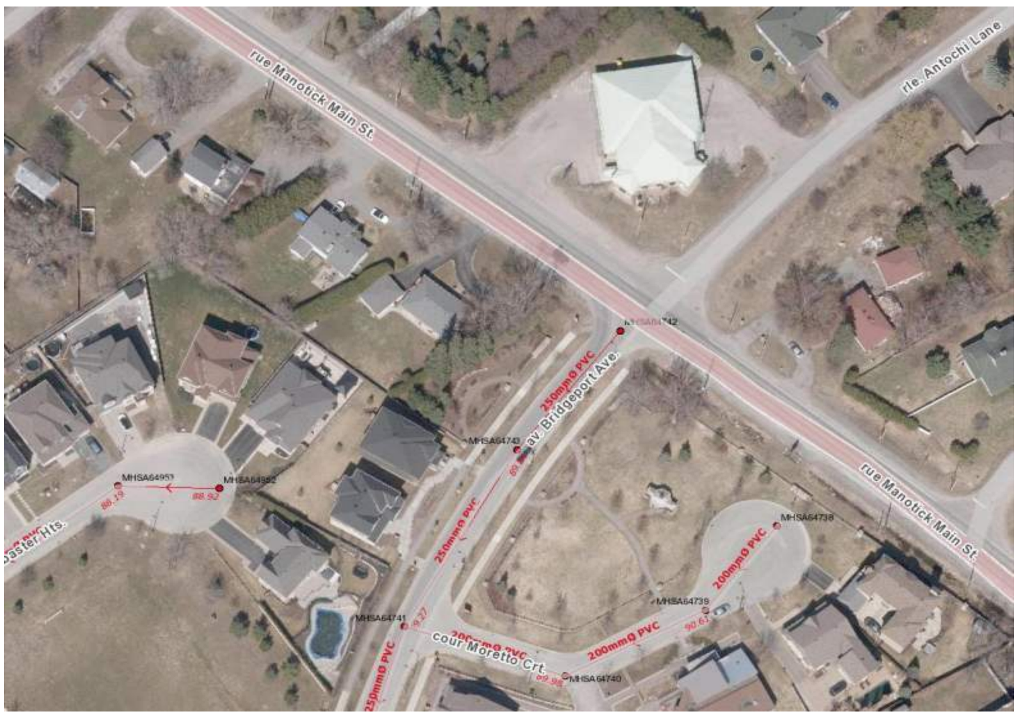
DATE PREPARED: FEBRUARY 2023

BRIDGEPORT AVENUE EXISTING SANITARY SEWER CAPACITY

		PIPE				
FROM	**TO**	Size (mm)	Slope (%)	Length (m)	Capacity (L/s)	Full Flow Vel. (m/s)
64742	**64743**	250	0.63	40	47.2	0.96
64743	**64741**	250	1.1	54	62.3	1.27

*Note: Slope and length of sewers obtained from GeoOttawa (see screenshot below)

Peak Sanitary Flow from Proposed 1086 Antochi Lane Development = 0.8 L/s
Capacity of Existing Bridgeport Avenue Sanitary Sewer = 47.2 L/s
Percentage of Contributing Capacity = 1.7%



M:\2020\120061\DATA\Calculations\Sewer Calcs\SAN\120061-SAN.xlsx

PREPARED BY: NOVATECH

PROJECT #: 120061
PROJECT NAME: 1086 ANTOCHI LANE
LOCATION: 1086 ANTOCHI LANE, MANOTICK, ON

NOVATECH
Engineers, Planners & Landscape Architects

DATE PREPARED: FEBRUARY 2023

1086 ANTOCHI LANE CONCEPTUAL SANITARY DESIGN SHEET

								EXTRANEOUS				PIPE					
FROM	**TO**	Semi-Detached Units	Single Family Units	Population	Accum. Pop.	Peak Factor	Peak Flow (L/s)	Total Area (ha)	Accum. Area (ha)	Infilt. Flow (L/s)	**Total Flow (L/s)**	Size (mm)	Slope (%)	Length (m)	Capacity (L/s)	Full Flow Vel. (m/s)	Q/Q_{full} (%)
200	**201**	2		5.4	5.4	3.7	0.07	0.08	0.08	0.03	0.1	200	0.65	10	26.4	0.84	0.3%
201	**202**	2		5.4	10.8	3.7	0.13	0.03	0.11	0.04	0.2	200	0.65	6	26.4	0.84	0.6%
202	**203**	2	1	8.8	19.6	3.7	0.24	0.05	0.17	0.05	0.3	200	0.65	14	26.4	0.84	1.1%
203	**204**	6		16.2	35.8	3.7	0.43	0.17	0.34	0.11	0.5	200	0.65	24	26.4	0.84	2.0%
204	**205**	4		10.8	46.6	3.7	0.55	0.06	0.39	0.13	0.7	200	0.40	26	20.7	0.66	3.3%
205	**206**	2		5.4	52.0	3.6	0.61	0.07	0.46	0.15	0.8	200	0.40	24	20.7	0.66	3.7%
206	**PS**	0		0.0	52.0	3.6	0.61	0.01	0.47	0.16	0.8	200	0.40	5	20.7	0.66	3.7%

Design Parameters:

Section 4.0 Ottawa Sewer Design Guidelines

Population Densities

-Semi-Detached	2.7	per unit
-Single Family	3.4	per unit

Design Flows

- Average Residential Flow	280	L/capital/day
- Wet & Dry Weather Extraneous Flows	0.33	L/s/ha

Residential Peaking Factor — Harmon Equation

M:\2020\120061\DATA\Calculations\Sewer Calcs\SAN\120061-SAN.xlsx

PREPARED BY: NOVATECH

Appendix D – Storm Servicing

1. Post Development Storm Drainage Area Figure (120061-PSTM, Feb. 2023)
2. 5 Year Storm Sewer Design Sheet (prepared by Novatech Feb. 2023)

LEGEND

0.50ha — DRAINAGE AREA (hectares)
A1 — ID
0.70 — RUNOFF COEFFICIENT (C)

STORM DRAINAGE AREA

OVERLAND DRAINAGE DIRECTION

M:\2020\120061\CAD\Design\120061-STM.dwg, POST, Feb 03, 2023 - 3:12pm, arongve

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

1086 ANTOCHI LANE

POST DEVELOPMENT STORM DRAINAGE AREA FIGURE

SCALE	1 : 500 (0 5 10 15 20)
DATE	FEB 2023
JOB	120061
FIGURE	PSTM

SHT11X17.DWG - 279mmX432mm

5 Year Storm Sewer Design Sheet

LOCATION			AREA (Ha)				FLOW					PROPOSED SEWER							
FROM	TO	DRAINAGE AREA ID	DRAINAGE AREA (ha)	SOFT SURFACE AREA C = 0.2	HARD SURFACE AREA C = 0.9	RUNOFF COEF. C	INDIV 2.78 AC	ACCUM 2.78 AC	TIME OF CONC.	RAINFALL INTENSITY I	*PEAK FLOW Q (l/s)	PIPE SIZE (mm)	PIPE SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	TIME OF FLOW (min)	EXCESS CAPACITY (l/s)	Q/Qfull
100	102	A1 & A4	0.22	0.13	0.09	0.50	0.30	0.30	10.0	104.19	32	300	0.30	11.0	53.0	0.7	0.2	21.5	0.59
102	103		0.00				0.00	0.30	10.2	104.19	32	300	0.30	7.0	53.0	0.7	0.2	21.5	0.59
103	104		0.00				0.00	0.30	10.4	104.19	32	300	0.30	19.0	53.0	0.7	0.4	21.5	0.59
104	105		0.00				0.00	0.30	10.8	104.19	32	300	0.30	26.0	53.0	0.7	0.6	21.5	0.59
105	106		0.00				0.00	0.30	11.4	104.19	32	300	0.30	17.0	53.0	0.7	0.4	21.5	0.59
106	107		0.00				0.00	0.30	11.8	104.19	32	300	0.30	27.0	53.0	0.7	0.6	21.5	0.59
107	108	A2	0.15	0.03	0.12	0.76	0.32	0.62	12.4	93.10	58	375	0.30	19.0	96.1	0.9	0.4	38.0	0.60
108	109		0.00				0.00	0.62	12.7	93.10	58	375	0.30	42.0	96.1	0.9	0.8	38.0	0.60
109	Outlet		0.00				0.00	0.62	13.5	93.10	58	375	0.30	6.0	96.1	0.9	0.1	38.0	0.60

Definitions
Q = 2.78 AIC
Q = Peak Flow, in Liters per second (L/s)
A = Area in hectares (ha)
I = 5 YEAR Rainfall Intensity (mm/h)
C = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min Velocity = 0.76 m/sec.
3) 5 Year Rainfall Intensity = 998.071 / (time + 6.053)$^{0.814}$