



REPORT  
PROJECT: 105205-5.2.2

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES  
CLARIDGE HOMES  
MAPLE GROVE LANDS  
1981 MAPLE GROVE ROAD  
KANATA WEST

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Prepared for CLARIDGE HOMES  
by IBI GROUP

FEBRUARY 2018

# Table of Contents

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<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	Purpose.....	1
1.2	Subject Property .....	1
1.3	Previous Studies .....	1
1.4	Existing Infrastructure .....	1
1.5	Pre-Consultation .....	2
1.6	Geotechnical Considerations .....	2
<b>2</b>	<b>WATER SUPPLY .....</b>	<b>3</b>
2.1	Existing Conditions .....	3
2.2	Master Servicing Study .....	3
2.3	Design Criteria .....	3
	<b>2.3.1 Water Demands .....</b>	<b>3</b>
	<b>2.3.2 System Pressure .....</b>	<b>4</b>
	<b>2.3.3 Fire Flow Rates.....</b>	<b>4</b>
	<b>2.3.4 Boundary Conditions.....</b>	<b>4</b>
	<b>2.3.5 Hydraulic Model .....</b>	<b>5</b>
2.4	Proposed Water Plan.....	5
	<b>2.4.1 Modeling Results .....</b>	<b>5</b>
	<b>2.4.2 Watermain Layout .....</b>	<b>5</b>
<b>3</b>	<b>SANITARY SEWERS.....</b>	<b>6</b>
3.1	Existing Conditions .....	6
3.2	Master Servicing Study .....	6
3.3	Design Criteria .....	6
3.4	Proposed Wastewater Plan .....	7
<b>4</b>	<b>STORMWATER MANAGEMENT .....</b>	<b>8</b>
4.1	Existing Conditions .....	8
4.2	Master Servicing Study .....	8
4.3	Minor Storm Sewer Design Criteria .....	8

## Table of Contents (continued)

---

4.4	Proposed Minor Storm Plan.....	9
4.5	Proposed Major System Plan .....	9
4.6	Infiltration.....	9
<b>5</b>	<b>EROSION AND SEDIMENTATION CONTROL PLAN.....</b>	<b>10</b>
<b>6</b>	<b>APPROVALS AND PERMIT REQUIREMENTS.....</b>	<b>11</b>
6.1	City of Ottawa .....	11
6.2	Province of Ontario .....	11
6.3	Conservation Authority.....	11
6.4	Federal Government .....	11
<b>7</b>	<b>CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>12</b>
7.1	Conclusion .....	12
7.2	Recommendation.....	12

## List of Figures

---

### FIGURES:

1.1	Location Plan
1.2	Draft Plan
1.3	Location of Existing Municipal Infrastructure
2.1	Proposed Water Plan
3.1	Proposed Wastewater Plan
4.1	Proposed Minor Storm Plan
4.2	Proposed Macro Grading Plan

# Table of Contents (continued)

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## List of Appendices

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### **APPENDIX A**

- City of Ottawa Servicing Study Guidelines Checklist
- November 19, 2016 City Pre-Consultation Meeting Notes

### **APPENDIX B**

- Drawing WM-1 – Watermain Final Concept from KWMSS
- Water Demand Calculation
- Boundary Conditions
- FUS Fire Flow Calculations
- Hydraulic Analysis

### **APPENDIX C**

- Drawing S-1 – Preferred Wastewater Option from KWMSS
- Sanitary Sewer Design Sheet from KWMSS

### **APPENDIX D**

- Figure 2 – Proposed Interim Conditions - Drainage Area to Stormwater Management Facility from Kanata West Community Pond 4

# 1 INTRODUCTION

## 1.1 Purpose

The purpose of this report is to investigate and confirm the adequacy of public services for the proposed site. This report will review major municipal infrastructure including water supply, wastewater collection and disposal and management of stormwater. This report will also include a Sedimentation and Erosion Control Plan. A review of traffic components will be the subject of a separate report.

This report is being prepared as a technical document in support of the subdivision submission, and was prepared in accordance with the November 2009 “Servicing Study Guidelines for Development Applications” in the City of Ottawa. **Appendix A** contains a customized copy of those guidelines which can be used as a quick reference for the location of each of the guideline items within the study report.

## 1.2 Subject Property

The subject property is located in the Kanata West Community in the City of Ottawa as shown on the Location Plan **Figure 1.1**. The site is located north of Maple Grove Road at Avon Street and north of the Stittsville Main Street which is currently dead-ended at the southwest corner of the site. Along the east, west and north, the site is bounded by undeveloped land. There is an existing residential lot at the east corner of the site.

A Draft Plan for this development is shown on **Figure 1.2**. The residential site consists of 57 single family lots, 101 street townhouse units and 38 back to back townhouse units. A park is located at the north corner of the site. The collector road, Stittsville Main Street, will be extended along the west side of the site.

## 1.3 Previous Studies

The following reports were reviewed prior to completion of this assessment:

- Kanata West Master Servicing Study (KWMSS) prepared by Stantec Consulting Ltd. and CCL/IBI Group, June 2006.
- Design Brief – Pond 4, Kanata West, Mattamy Homes, City of Ottawa prepared by DSEL & JFSA, December 2014.
- Geotechnical Investigation, Proposed Residential Development, Maple Grove Road, Ottawa, Ontario, prepared by Golder Associates, December, 2017.

## 1.4 Existing Infrastructure

**Figure 1.3** shows the existing infrastructure in the area that will service the subject site. A 300 mm diameter watermain has been extended along the Maple Grove Road right-of-way from Johnwoods Street to connect to a 300 mm diameter watermain on Stittsville Main Street. An existing 375 mm diameter sanitary sewer is located on Maple Grove Road at Johnwoods Street which flows east along Maple Grove Road. A 200 mm diameter high level sanitary sewer is provided to service the houses along Maple Grove. Along with the sanitary sewer, an existing 2100 mm diameter storm sewer is located at Maple Grove Road and Johnwoods Street. The sewer flows west and is tributary to Pond 4 and a diversion sewer. This will be further discussed in Section 4. As with the sanitary, a 375 mm diameter high level storm sewer is provided.

## 1.5 Pre-Consultation

There was a pre-application consultation meeting held at the City of Ottawa for the subject site, 1981 Maple Grove Road on November 9, 2016. The formal meeting notes are provided in **Appendix A**. The topics discussed at this meeting included the following:

- Engineering
- Conservation Authority
- Environmental/Tree
- Transportation/Noise/OC Transpo
- Urban Design
- Parks

## 1.6 Geotechnical Considerations

As mentioned in Section 1.3, a Geotechnical Report has been completed by Golder Associates for the subject site. Subsoil and groundwater conditions were determined by means of test pits. The investigation revealed that bedrock was encountered at all test pits ranging in depth from 0.3 to 2.1 meters below the existing ground surface.

The report has provided geotechnical design and construction considerations which includes the following:

- Site grading
- Foundation design
- Sewer and watermain construction
- Pavement design

Due to the shallow bedrock there is no practical limit to the amount of grade raise fill.

## 2 WATER SUPPLY

### 2.1 Existing Conditions

The subject property is located within the City of Ottawa's 3W pressure zone. Water to the entire Kanata West development is pressurized and stored at the Glen Cairn Pump Station and reservoir (GCPS and GCR). The GCPS and GCR are located near Castlefrank and Hazeldean Roads. From there, major feeder mains extend to the west, north and south.

As stated in Section 1.4 there is an existing 300 mm diameter watermain on the Maple Grove Road right-of-way extending to Stittsville Main Street. The 300 mm watermain will be the water supply for the subject lands.

### 2.2 Master Servicing Study

The KWMSS report provides trunk water mains in the Kanata West area. A copy of the recommended plan Watermain Final Concept Drawing No. WM-1 is included in **Appendix B**. The drawing shows the 300 mm diameter watermain on Maple Grove Road and on Stittsville Main Street to be extended north along the west boundary of the subject site.

### 2.3 Design Criteria

#### 2.3.1 Water Demands

Water demands have been calculated for the full development including Phase 1. Per unit population density and consumption rates are taken from Tables 4.1 and 4.2 at the Ottawa Design Guidelines – Water Distribution and are summarized as follows:

- Single Family 3.4 person per unit
- Townhouse and Semi-Detached 2.7 person per unit
- Average Apartment 1.8 person per unit
- Residential Average Day Demand 350 l/cap/day
- Residential Peak Daily Demand 875 l/cap/day
- Residential Peak Hour Demand 1,925 l/cap/day
- ICI Average Day Demand 50,000 l/gross ha/day
- ICI Peak Daily Demand 75,000 l/gross ha/day
- ICI Peak Hour Demand 135,000 l/gross ha/day

Residential units in the subject site consist of single family lots, back to back and street townhouses. A watermain demand calculation sheet is included in **Appendix B** and the total water demands are summarized as follows:

- Average Day 2.28 l/s
- Maximum Day 5.71 l/s
- Peak Hour 12.56 l/s

### 2.3.2 System Pressure

The Ottawa Design Guidelines – Water Distribution (WDG001), July 2010, City of Ottawa, Clause 4.2.2 states that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 552 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in Clause 4.2.2 of the guidelines are as follows:

Minimum Pressure	Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)
Fire Flow	During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.
Maximum Pressure	Maximum pressure at any point in the distribution system shall not exceed 689 kPa (100 psi). In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls will be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

### 2.3.3 Fire Flow Rates

In the recent Technical Bulletin 'ISDTB-2014-02, Revisions to Ottawa Design Guidelines – Water', the fire flow requirements for single detached dwellings and traditional town and row houses can be capped at 10,000 l/min provided that there is a minimum separation of 10 meters between the backs of adjacent units and that the town and row house blocks are limited to 600 square meters of building areas and seven dwelling units. The single family and street townhouses in this development meet the requirements of ISDTB-2014-02, the fire flow rate of 10,000 l/min (166.7 l/s) is used in the fire flow analysis for single family and townhouse units.

As the back to back townhouses in the center of the development do not meet the requirements of ISDTB-2014-02, a Fire Underwriters Survey (FUS) calculation has been undertaken to determine the required fire flow. In **Appendix B**, a FUS calculations for the largest block is included which results in a fire flow rate of 15,000 l/min (250 l/s) which is used in the hydraulic analysis for the back to back townhouse units.

### 2.3.4 Boundary Conditions

The City of Ottawa has provided hydraulic boundary conditions at two locations on Maple Grove Road watermain, one at Stittsville Main Street and the other near Johnwood Street. Two separate conditions were given for the max day plus fire scenario, one for the 10,000 l/min for single family and street townhouses fire flow and a separate one for the 15,000 l/min back to back townhouses. A copy of the boundary conditions is included in **Appendix B** and summarized as follows:

	CONNECTION 1 STITTSVILLE MAIN ST.	CONNECTION 2 JOHNWOOD ST.
Max HGL (Basic Day)	106.7 m	106.7 m
Peak Hour	157.4 m	157.4 m
Max Day + Fire (10,000 l/min Fire Flow)	155.3 m	155.8 m
Max Day + Fire (15,000 l/min Fire Flow)	151.3 m	152.1 m



### 2.3.5 Hydraulic Model

A computer model for the subject development has been developed using the H2O MAP Version 6.0 program produced by MWH Soft Inc. The model includes the existing watermains and boundary conditions on Maple Grove Road.

## 2.4 Proposed Water Plan

### 2.4.1 Modeling Results

The hydraulic model was run under basic day, maximum day with fire flows and under peak hour conditions. Water pipes are sized to provide sufficient pressure and to deliver the required fire flows. During the design stage all mains are tested at the minimum 150 mm diameter size, while the pressure criteria is met with the minimum sized mains the fire flow requirement is not achieved at all locations. The main sizes are increased in an iterative process until the fire flow results are sufficient.

Results of the hydraulic model are include in **Appendix B** and summarized as follows:

#### Scenario

Basic Day (Max HGL) Pressure Range	468.4 to 521.3 kPa
Peak Hour Pressure Range	436.1 to 489.0 kPa
Max Day + 10,000 l/min Fire Flow Minimum Flow	234.2 l/s (14,052 l/min)
Max Day + 15,000 l/min Fire Flow Minimum Flow	294.7 l/s (17,682 l/min)

A comparison of the results and design criteria is summarized as follows:

Maximum Pressure	All nodes have basic day pressures under 552 kPa, therefore pressure reducing control is not required for this development.
Minimum Pressure	All nodes in the model exceed the minimum value of 276 kPa (40 psi).
Fire Flow	All nodes for both the single family and street townhouse and for the back to back townhouse analysis exceed the fire flow requirements.

### 2.4.2 Watermain Layout

**Figure 2.1** shows the proposed Water Plan for the proposed development.

As per the KWMSS, a 300 mm diameter watermain is extended along the Stittsville Main Street right-of-way. Several connections to the main are proposed to service the west side of the development. For the east side of the development, a 200 mm diameter watermain will connect to the 300 mm main on Maple Grove Road. A combination of 150 mm and 200 mm watermains are proposed to service the development in order to meet the required fire flows.

## 3 SANITARY SEWERS

### 3.1 Existing Conditions

As stated in Section 1.4, there is an existing 375 mm diameter sanitary sewer on Maple Grove Road which currently drains to the Mattamy Temporary Pump Station located on the south side of Maple Grove Road approximately 485 meters east of Huntmar Drive. The permanent outlet for the Maple Grove sanitary sewer is the Kanata West Pump Station which will be completed in Spring 2018.

### 3.2 Master Servicing Study

The KWMSS provides trunk sanitary sewers and drainage areas for the Kanata West area. The subject site is located in Area 26 of the preferred wastewater option of the study which is tributary to the Kanata West Pump Station. It is expected that the pump station will be in service prior to this development. In the sanitary design the KWMSS allows 30 units/hectare for area 26. The proposed development has approximately 26 units/hectare. A copy of the KWMSS Preferred Wastewater Option Drawing No. S-1 and the sanitary sewer design sheet is included in **Appendix C**.

### 3.3 Design Criteria

The estimated wastewater flows from the subject site are based on the proposed revised City of Ottawa design criteria. Among other items, these include:

- Average residential flow = 280 l/c/d
- Peak residential flow factor = (Harmon Formula) x 0.80
- Average commercial flow = 28,000 l/s/ha
- Average institutional flow = 28,000 l/s/ha
- Peak ICI flow factor = 1.5 if ICI area is ≤ 20% total area  
1.0 if ICI area is > 20% total area
- Inflow and Infiltration Rate = 0.33 l/s/ha
- Minimum Full Flow Velocity = 0.60 m/s
- Maximum Full Flow Velocity = 3.0 m/s
- Minimum Pipe Size = 200 mm diameter

DIAMETER (MM)	SLOPE (%)
200	0.320
250	0.240
300	0.186
375	0.140
450	0.111
525 and larger	0.100

Where practical and where there are less than 10 residential connections, the first lengths of sanitary sewers will be designed as 200 mm diameter pipes with a minimum slope of 0.65%.

The following density rates are from the City design criteria:

- Family lots = 3.4 ppu
- Semi-detached units = 2.7 ppu
- Townhouse and back to back units = 2.7 ppu
- Apartment units = 1.8 ppu

### 3.4 Proposed Wastewater Plan

The proposed wastewater plan for the Maple Grove Lands development is shown on **Figure 3.1**. A sanitary sewer is extended on Maple Grove Road from the existing sewer at Johnwoods Street to service the site and the lots fronting Maple Grove Road. There are no external areas draining through the site so all the sanitary sewers are local sewers at normal depth.

## 4 STORMWATER MANAGEMENT

### 4.1 Existing Conditions

As stated in Section 1.4 there is an existing 1200 mm diameter storm sewer on Maple Grove Road. The trunk storm sewer flows east outletting into Pond 4 which discharges to the Carp River. The Maple Grove storm trunk is also connected to a diversion pipe system which conveys excess flows to Poole Creek.

### 4.2 Master Servicing Study

The KWMSS provides trunk storm sewer and drainage areas for the Kanata West Area. The subject site is included in area A-1 with a runoff coefficient of  $C=0.6$  which is tributary to the Maple Grove trunk sewer outletting into Pond 4. In December 2014, DSEL prepared the report "Design Brief for Pond 4 Kanata West", a copy of Figure 2 from that report is included in **Appendix D**. Figure 2 shows the drainage areas for Pond 4 and the diversion pipe to Poole Creek. The A1 drainage area which contains the subject development has been modelled in the Pond 4 Design Brief for 100 year capture and no storage required.

### 4.3 Minor Storm Sewer Design Criteria

The minor system storm sewers for the subject site are proposed to be sized based on the rational method, applying standards of both the City of Ottawa and MOECC. Some of the key criteria for this site include the following:

- Sewer Sizing: Rational Method
- Design Return Period:
  - 1:2 year (local streets)
  - 1:5 year (collector streets)
  - 1:10 year (arterial roads)
- Initial Time of Concentration 10 minutes
- Manning's: 0.013
- Minimum Velocity: 0.80 m/s
- Maximum Velocity: 3.00 m/s
- Minimum Slope:

PIPE DIAMETER (mm)	SLOPE (%)
250	0.432
300	0.34
375	0.25
450	0.195
525	0.16
600	0.132
675	0.113
750 and larger	0.1

#### 4.4 Proposed Minor Storm Plan

**Figure 4.1** shows the minor storm plan for this development. A storm sewer will be extended from the existing trunk storm sewer on Maple Grove Road at Johnwoods Street to service the development and Maple Grove Road. The storm sewers will be sized to accommodate storm drainage from the adjacent Stittsville Main Street extension and will be sized for 100 year capture as per the Pond 4 Design Brief. As with the sanitary sewer system, there are no external areas flowing through the site so the storm sewers are at normal depth and run parallel to the sanitary sewers.

#### 4.5 Proposed Major System Plan

**Figure 4.2** shows the proposed macro grading plan for this development with the direction of major system flows. The road grades generally follow the natural topography of this area which grades to the north. As per the Pond 4 Design Brief, there will be 100 year capture in this area so no major system flow will leave the site. There will be opportunity for storage in the road sags in accordance with City Guidelines.

#### 4.6 Infiltration

The KWMSS has provided target infiltration rates to promote groundwater recharge. The subject site is in Area A-1 which has an infiltration rate of 104 mm/hr. Detailed water balance calculations will be provided at the detailed design stage.

## 5 EROSION AND SEDIMENTATION CONTROL PLAN

During construction, existing conveyance systems and water courses can be exposed to sediment loading. Development of a subdivision such as the subject site can potentially create deleterious material which can enter the natural environment and gain access to fish and amphibian habitat. In order to prevent site generated sediments from entering the environment, an Erosion and Sedimentation Control Plan (ESCP) will be implemented prior to development. Although a generic ESCP can be developed as part of subsequent Design Briefs, the final plan will be developed and implemented by the Owner's general contractor.

The erosion and sedimentation control strategy for the subject site could include erection of silt fences, straw bale barriers and rock check dams. These measures will ensure protection of both adjacent developments and the natural environment adjacent to and downstream of the site.

Other elements of an ESCP could also include installation of bulkhead barriers at the nearest existing downstream manholes to ensure deleterious material does not gain access to those sewers and potentially the Kanata West Pump Station and Pond 4. Also, the final ESCP will incorporate features to deal with disposal of any taken water. Some of the features or general requirements are sometimes conditions of a Permit To Take Water.

## **6 APPROVALS AND PERMIT REQUIREMENTS**

### **6.1 City of Ottawa**

The City of Ottawa will review all development documents including final working drawings and related reports. Upon completion, the City will approve the local watermains, under Permit No. 008-202; submit the sewer extension MOECC application to the province and eventually issue a Commence Work Notification.

### **6.2 Province of Ontario**

The Ministry of Environment and Climate Change (MOECC) will approve the local sewers under Section 53 of the Ontario Water Resources Act and issue an Environmental Compliance Approval. A Permit To Take Water may also need to be issued by the MOECC.

### **6.3 Conservation Authority**

The Mississippi Valley Conservation Authority will be contacted to confirm if any permits are required from the agency and to confirm re-charge mechanisms for the two ravines west of River Road.

### **6.4 Federal Government**

There are no required permits, authorizations or approvals needed expressly for this development from the federal government.

## 7 CONCLUSIONS AND RECOMMENDATIONS

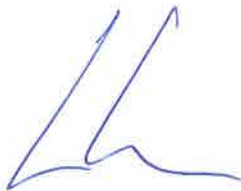
### 7.1 Conclusion

While some infrastructure which is needed to help service the subject site already exists, the development plan will include expansion and extension of those infrastructure to adequately service the site with water supply, wastewater collection and disposal and management of stormwater runoff. The extension of the existing watermains through the subject site will provide a reliable source of both drinking water and fire flows. The outlet wastewater sewer system is already in place and the Kanata West Pump Station will be in service in time for this development. The trunk storm sewer and stormwater management facility are already in place, therefore, including both existing and proposed major infrastructure there will be suitable public services put in place to service the subject site.

### 7.2 Recommendation

From an assessment of major municipal infrastructure perspective, it is recommended that the development application for the Claridge Maple Grove Lands property at 1981 Maple Grove Road be accepted and that the development of the property move forward.

IBI GROUP



Lance Erion, P. Eng.  
Associate



J:\105205\_MapleGrLnds\5.9 Drawings\59civil\current\FIGURES\105205-Fig-1.1.dwg Layout Name: FIG1.1



Project Title

MAPLE GROVE LANDS

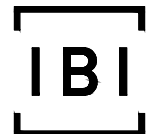
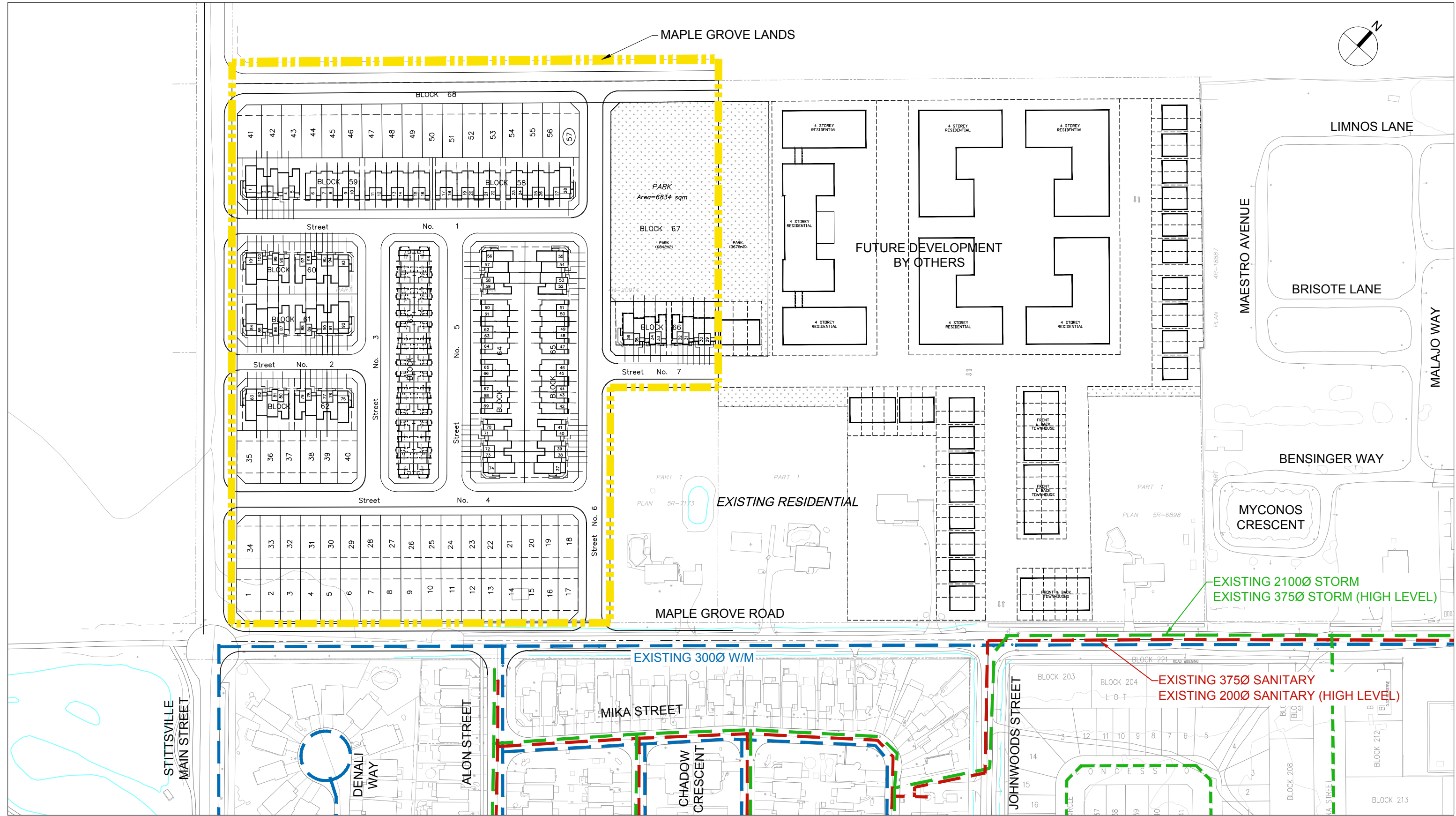
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SITE LOCATION

Sheet No.

FIG. 1.1



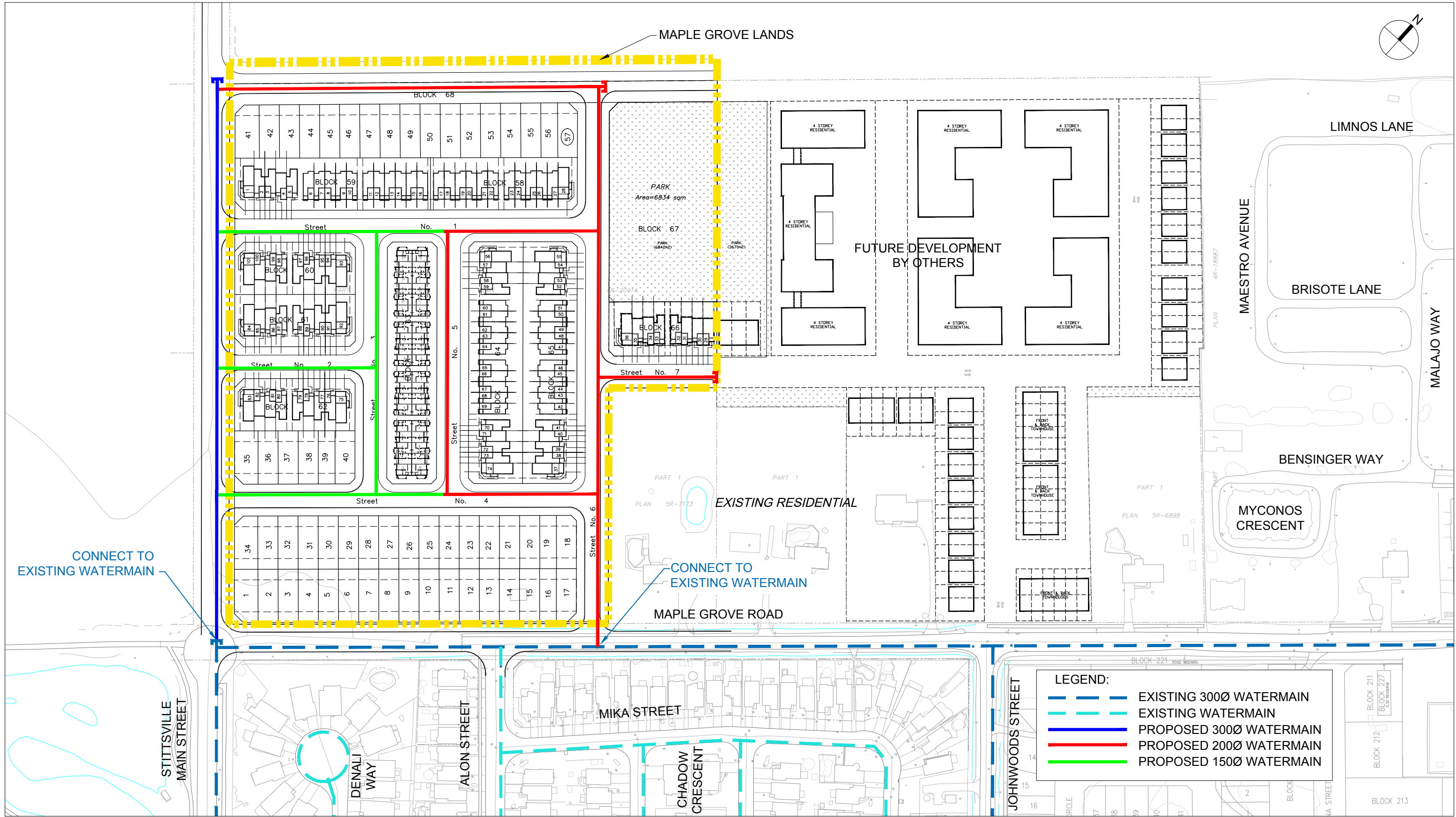


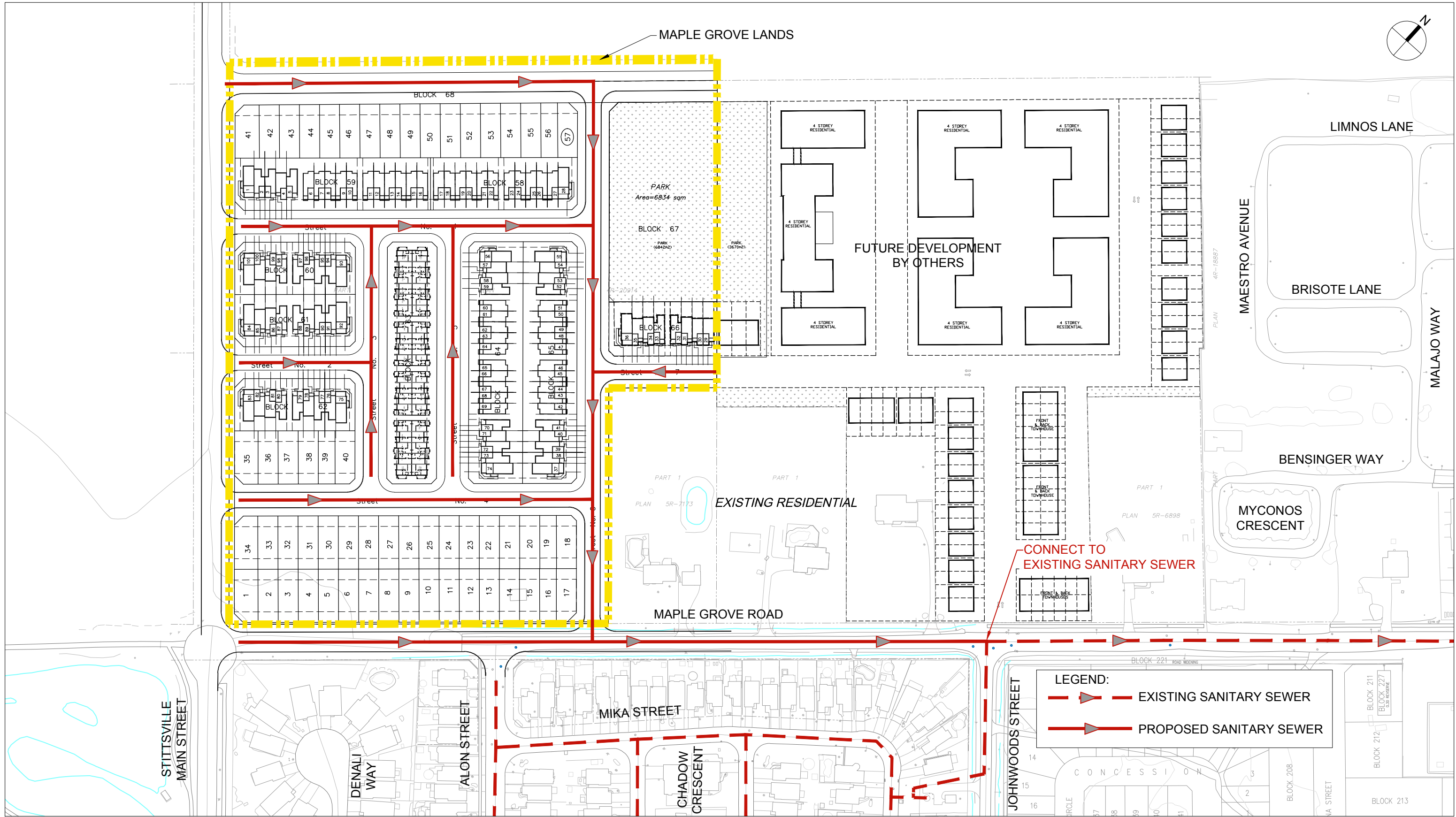
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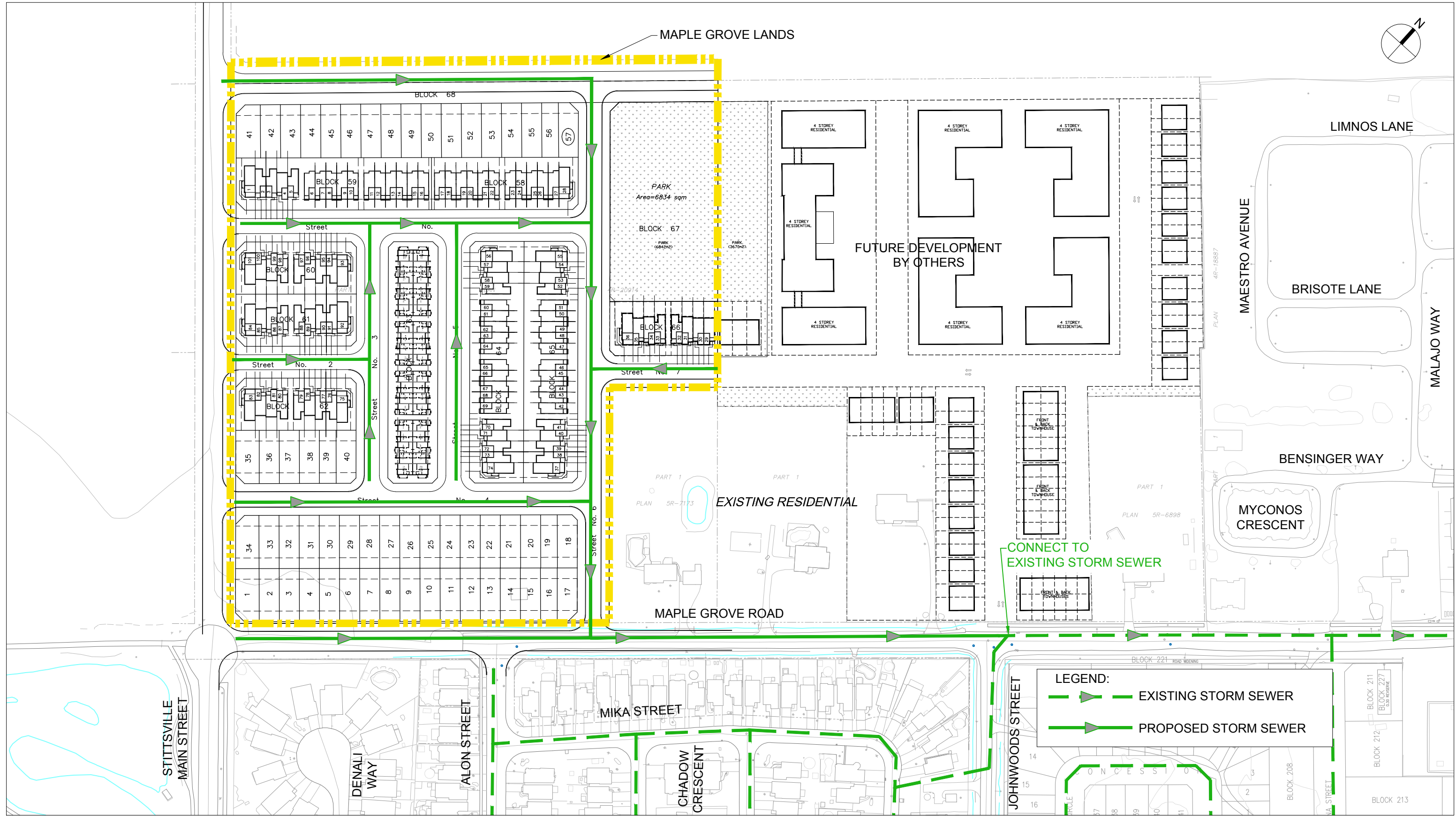
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MAPLE GROVE LANDS

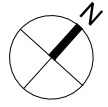
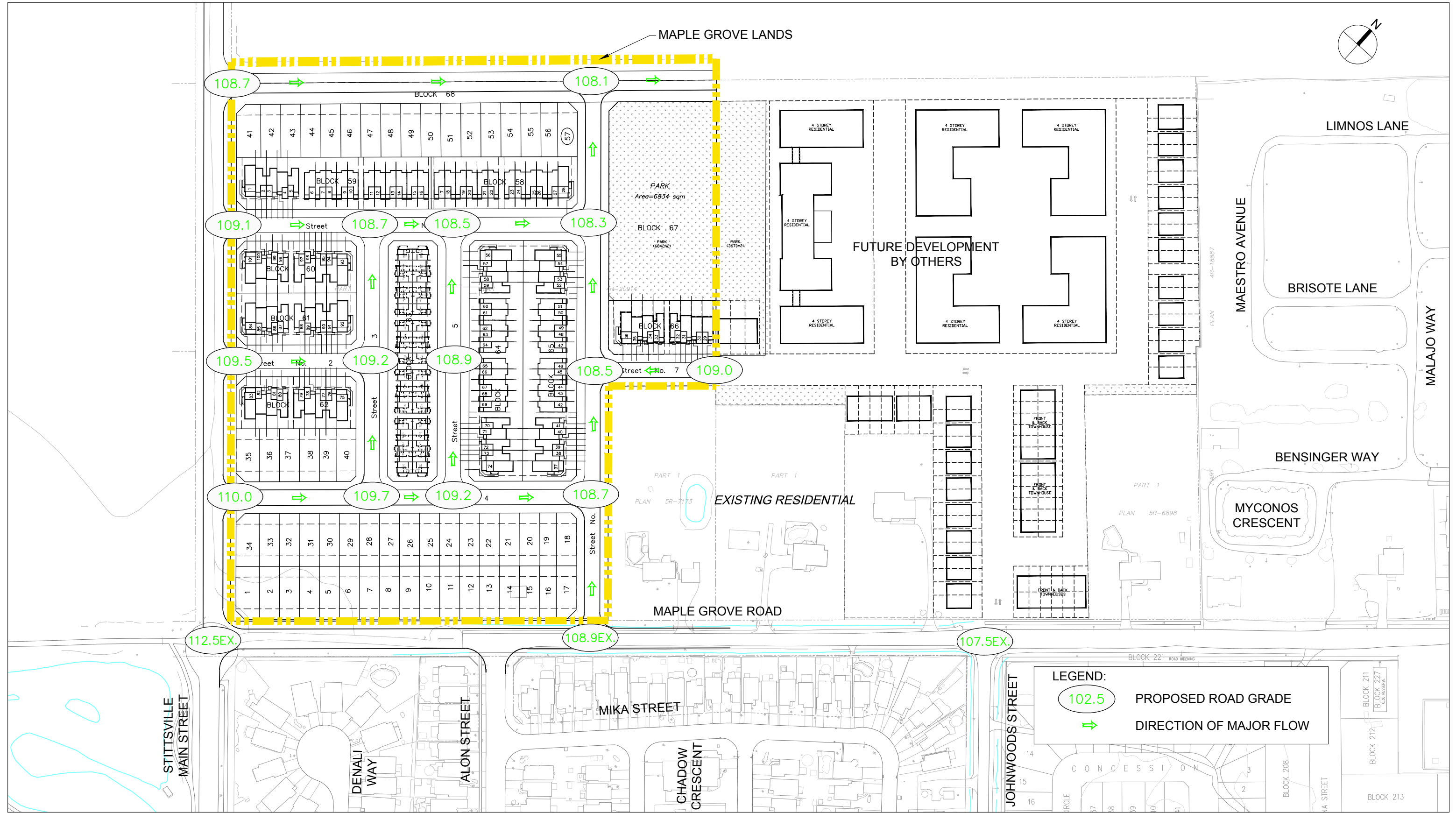
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INFRASTRUCTURE

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FIG. 1.3









**LEGEND:**

102.5 PROPOSED ROAD GRADE

➔ DIRECTION OF MAJOR FLOW

# APPENDIX A



## Development Servicing Study Checklist

The following table is a customized copy of the current City of Ottawa's Development Servicing Study Checklist. It is meant to be a quick reference for location of each of the items included on the list. The list contains the various item description and the study section in which the topic is contained.

### GENERAL CONTENT

	ITEM DESCRIPTION	LOCATION
	Executive Summary (for larger reports only)	N/A
√	Date and revision number of the report	Front Cover
√	Location Map and plan showing municipal address, boundary, and layout of proposed development.	Report Title, Figure 1.1
√	Plan showing the site and location of all existing services.	Figure 1.3
√	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 2.2, 3.2, 4.2 Figure 1.2
√	Summary of Pre-consultation Meeting with City and other approval agencies.	Section 1.5
√	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defensible design criteria.	Sections 1.3, 2.2, 3.2, 4.2
√	Statement of objectives and servicing criteria	Section 1.1, 2.2, 3.3, 4.3
√	Identification of existing and proposed infrastructure available in the immediate area.	Figure 1.3
√	Identification of Environmentally Significant Areas, Watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/A
√	<u>Concept level master grading plan</u> to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Section 1.6 Figure 4.2
√	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
	Proposed phasing of the development, if applicable.	N/A
√	Reference to geotechnical studies and recommendations concerning servicing.	Section 1.6

√	<p>All preliminary and formal site plan submissions should have the following information:</p> <ul style="list-style-type: none"> <li>• Metric scale</li> <li>• North arrow (including construction North)</li> <li>• Key plan</li> <li>• Name and contact information of applicant and property owner</li> <li>• Property limits including bearings and dimensions</li> <li>• Existing and proposed structures and parking areas</li> <li>• Easements, road widening and rights-of-way</li> <li>• Adjacent street names</li> </ul>	Noted
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DEVELOPMENT SERVICING REPORT: WATER

ITEM DESCRIPTION		LOCATION
√	Confirm consistency with Master Servicing Study, if available	Section 2.2
√	Availability of public infrastructure to service proposed development	Section 2.1
√	Identification of system constraints – external water needed	Section 2.2
√	Identify boundary conditions	Section 2.3.4
√	Confirmation of adequate domestic supply and pressure	Section 2.4 & Appendix B
√	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Section 2.4.1 Appendix B
√	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	Section 2.4.1 Appendix B
	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defining phases of the project including the ultimate design.	N/A
	Address reliability requirements such as appropriate location of shut-off valves.	Detail Design
√	Check on the necessity of a pressure zone boundary modification.	N/A
√	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range.	Section 2.3.1 Appendix B
√	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Detail Design
√	Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities and timing of implementation.	N/A
√	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 2.3
√	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Detailed Design

DEVELOPMENT SERVICING REPORT: WASTEWATER

ITEM DESCRIPTION		LOCATION
√	Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Section 3.3
√	Confirm consistency with Master Servicing Study and/or justifications for deviations.	Section 3.2
√	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age condition of sewers.	Detail Design
√	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 3.1
√	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 3.2
	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix "C") format.	Detail Design
√	Description of proposed sewer network including sewers, pumping stations and forcemains.	Section 3.4
√	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	Section 1.6
√	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	Section 3.2
√	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
√	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
√	Special considerations such as contamination, corrosive environment etc.	Detail Design

DEVELOPMENT SERVICING REPORT: STORMWATER CHECKLIST

ITEM DESCRIPTION		LOCATION
√	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 4.1, 4.2
√	Analysis of available capacity in existing public infrastructure.	Section 4.2
√	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Figure 4.1
√	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be	Section 4.2

	included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	
√	Water quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 4.2
√	Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 4.2, 4.4
√	Set-back from private sewage disposal systems.	N/A
√	Watercourse and hazard lands setbacks.	N/A
√	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Section 1.5
√	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	Section 4.2
√	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 4.2 Detail Design
√	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Detail Design
√	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
√	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Figures 4.1, 4.2
	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
√	Identification of potential impacts to receiving watercourses	N/A
√	Identification of municipal drains and related approval requirements.	N/A
√	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Detail Design
√	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Detail Design
	Inclusion of hydraulic analysis including hydraulic grade line elevations.	Detail Design
√	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 5
√	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
√	Identification of fill constraints related to floodplain and geotechnical investigation.	Section 1.6

APPROVAL AND PERMIT REQUIREMENTS: CHECKLIST

ITEM DESCRIPTION		LOCATION
√	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	Section 1.5
	Application for Certification of Approval (CofA) under the Ontario Water resources Act.	Detail Design
√	Changes to Municipal Drains	N/A
√	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	Section 6

CONCLUSION CHECKLIST

ITEM DESCRIPTION		LOCATION
√	Clearly stated conclusions and recommendations	Section 7.1 & 7.2
	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	Detail Design
√	All draft and final reports shall be signed and stamped by professional Engineer registered in Ontario.	Completed

## Pre-Application Consultation Meeting

### Meeting Notes

**1981 Maple Grove  
November 9, 2016**

**Attendees:** Louise Sweet-Lindsay (Planner, City of Ottawa)  
Max Walker (Transit Planner, City of Ottawa)  
Matthew Hayley (Environmental Planner, City of Ottawa)  
Amira Shehata (Transportation Planner, City of Ottawa)  
Santhosh Kuruvilla (Project Manager, City of Ottawa)  
Mark Young (Urban Design Planner, City of Ottawa)  
Mark Richardson (Forester, City of Ottawa)  
Kevin Wherry (Parks Planner, City of Ottawa)  
Victoria Bissonnette (Co-op Student, City of Ottawa)  
Greg Winters (NovaTech)  
Terry Brule (IBI Group)  
Jim Burghout (Claridge Homes)

**Subject:** Plan of Subdivision and Zoning By-law Amendment applications to rezone the subject lands from Development Reserve to Residential Third Density to permit the development of a new residential subdivision of 178 units made up of 42 single detached and 136 townhouse dwellings and a public park.

#### **Overview (Jim Burghout)**

- The site is a total of approximately 18 acres.
- Previous design schemes were a part of a joint development with the property to the east.
- The internal layout of this proposal includes the extension of Stittsville Main.
- This proposal includes a mix of housing types positioned around a central park.
  - Includes a total of 178 units made up of 42 singles, 88 townhouse units and 48 back-to-back townhouse units.
- The units have currently been aligned in an internalized fashion due to uncertainty of surrounding developments.

#### **Engineering (Santhosh Kuruvilla and IBI Group)**

- Site servicing has been developed based on the Kanata West Master Plan and is subject to when the Kanata West Pump Station operational in mid 2018.
- The sanitary services along John Woods road will be extended to the site.
- The existing Pond 4 is where the storm sewer will be located.
- There is a diversion pipe that runs through Mattamy's lands that will extend to this subdivision.
- In terms of macro grading, there is a grade raise in the middle of the site (approximately a 3 meter drop from south to west), which will require that the north and east portions of the site be raised.

- In terms of storm flow, there will be a major storm emergency route along the north and west boundary of the site.
- There will be a sewer extension as part of this development.
- The proposed water main will operate as a looped system.
- The stormwater management guidelines have been developed from current guidelines rather than the revised guidelines, however IBI Group will do their best to incorporate as much of the new guidelines as possible.
- The infiltration targets on site are as per the City's requirements and similar to what adjacent properties have done. A detailed analysis will need to be done regarding this.
- ***There will need to be a formal request for watermain boundaries.***
- Studies required by the City: KWMSS, Design Brief for Pond 4, Carp River Watershed Study along with standard reports and studies.

#### **Conservation Authority (MVCA)**

- This site is located within the Feedmill Creek watershed. Per the Carp River Watershed/Subwatershed Study, quality control corresponding to an enhanced level of protection is recommended.
- The Carp River Watershed / Subwatershed Study and the KWMSS include infiltration and temperature targets. MVCA recommends measures to maintain infiltration and reduce water temperatures be considered and implemented where possible at the site.

#### **Environmental / Tree (Matthew Hayley)**

- A TCR will be required.
- The developer is limited for retention due to the scale and density of the proposal. However, it is noted that the developer should still attempt to retain wherever possible, especially mature trees.
- It is noted that the developer should connect with Mark Richardson to determine what he requires to be included in the report.
- An EIS is required to address the species at risk in the area. For example, butternut trees and the species that are associated with them.
- There is little concern about Blandings turtles being in the area, and more concern about bats, which will need to be discussed in the tree inventory.
- ***The City's Woodland policies do not have to be addressed because of the KWCP but should briefly be included in the EIS in case the policies change and to limit the potential for an appeal.***
- An Integrated Environmental Review is required and can be included in the Planning Rationale.

#### **Transportation/ Noise/ OC Transpo (Amira Shehata and Max Walker)**

- The OP identifies Maple Grove Road as a collector road with a ROW protection of 26m, i.e. 13m from existing centerline of the road to the property line. Road widening will be required along the property frontage on Maple Grove Road.
- Stittsville Main Street is a collector road per the TMP (Map 6) with a ROW protection of 26m. Stittsville Main Street.
- Maple Grove Road and Stittsville Main Street should be designed and constructed in accordance to the Transportation Association of Canada standards and City Standards.
- A Transportation Impact Brief (TB) is required. The study should evaluate the potential impact of the proposed development on the surrounding road network, and identify mitigation measures that may be required to offset network impacts from the

development. The study should discuss non-auto modes, in keeping with the policy directions established by the Official Plan and Transportation Master Plan.

- Stittsville Main is an important north-south collector connecting otherwise isolated communities. To meet service delivery standards and provide high quality transit service at all stages of the development the Stittsville Main extension should be built during the early stage of the development.
- Regarding the urban fabric, barrier-free pedestrian connections should be provided to the aforementioned roadways in order to reduced walking distance and foster transit usage.
- A Noise Feasibility Study is required.

#### **Urban Design (Mark Young)**

- The subject property can be referred to as Area A in the KWCP.
- The KWCP requires that there be a transition in residential density, which could require moving the back-to-back townhouse from the edge of the southern property boundary.
- Although the location of the park will be suffice, it is recommended that it be relocated where it can be more easily accessible from the adjacent properties. For example in the corner of the subdivision along a collector road.
- Rear lotting will need to be removed and units should be fronting on collector roads wherever possible.
- BBSS pushes for the mixture of towns and singles.
  - Noted by developer that they avoid mixing unit types due to the stigma that is associated with this – this is not preferred by consumers.

#### **Parks (Kevin Wherry)**

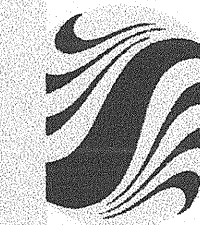
- A park planner will be assigned in the near future. It will likely be the planner working on the adjacent properties.
- The intention of the park is for a standard neighbourhood park.
- Noted by the City that there is a desire for active park opportunities wherever possible, this would limit tree retention in this case.
  - The park planner will help in the design of the park.
- ***The developer is required to provide a facility fit plan before draft approval.***
- Sidewalks are preferred along the side of the road that the park is located.
- The townhouses that back onto the park need to be addressed to City standards. For example with proper fencing.
- The location of the park is preferred on a collector opposed to centrally so it can be more easily accessed. This, however, might bring up concerns from the public due to the proximity to a collector without a fence.

#### **Closing**

- List of Required Studies and Plans – attached separately
- Required applications: Plan of Subdivision ( 41 to 250 units) \$58,961  
Zoning By-law: \$15,914 + OMB legal costs max. \$10,000
- Staff strongly recommended the applicant advise Ward Councillor of proposed application prior to submission. The Councillor has requested this.
- Staff offered to provide comments on further revisions to the draft Plan of Subdivision prior to application submission.



# **APPENDIX B**



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**Stantec**

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**Legend**

- KANATA-WEST CONCEPT PLAN BOUNDARY
- EXISTING WATERMAIN
- EXISTING 610mm WATERMAIN TO BE UPGRADED TO 914mm
- EXISTING 610mm WATERMAIN TO BE UPGRADED TO 762mm
- PROPOSED 610mm DIA. WATERMAIN
- PROPOSED 406mm DIA. WATERMAIN
- PROPOSED 305mm DIA. WATERMAIN
- PROPOSED 203mm DIA. WATERMAIN

**Notes**

INTERNAL WATERMAIN SIZE ARE EXPECTED TO VARY FROM 152mm TO 305mm.



1770 WOODWARD DR., OTTAWA (613)225-1311

5	REVISED FOR DEC.21/05 SUBMISSION	GBU	SJP	DEC.21/05
4	REVISED AS PER CITY COMMENTS (Sept.16/05)	GBU	MAF	OCT.28/05
3	REVISED WATER DISTRIBUTION NETWORK	GBU	S.J.P.	AUG 09/05
2	REVISED POND 1 AREA	NI	MAF	JUNE 09/05
1	REVISED LOTTING FOR TARTAN AND MATTAMY	BCB	SJP	JAN.18/05

Revision	By	Appd.	Date

File Name:	Dwn.	Chkd.	Dagn.	Date

Seals

Client/Project

Kanata West Concept Plan  
 Master Servicing Study

Ottawa, Ontario

Title

Watermain  
 Final Concept

Project No.	Scale	0	75	225	375m
60400406	1:7500				

Drawing No.	Sheet	Revision
WM-1	2 of 7	5



HIGHWAY 417

HIGHWAY 417

CONNECT EXISTING 203mm WATERMAIN TO PROPOSED 305mm WATERMAIN

CONNECT EXISTING 305mm WATERMAIN TO PROPOSED 610mm WATERMAIN

W:\Projects\60400406\Design\Watermain\60400406-Servicing (Final).dwg  
 2007-12-19 01:00PM By: gsk



IBI GROUP  
333 PRESTON STREET  
OTTAWA, ON  
K1S 5N4

WATERMAIN DEMAND CALCULATION SHEET

PROJECT : MAPLE GROVE LANDS  
LOCATION : CITY OF OTTAWA  
DEVELOPER : CLARIDGE

FILE: 105205.5.7  
DATE: 1/31/2018  
DESIGN: LME  
PAGE: 1 OF 1

NODE	RESIDENTIAL						NON-RESIDENTIAL			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			MAXIMUM HOURLY DEMAND (l/s)			FIRE DEMAND (l/s)
	UNITS				GROSS RES. (Ha)	POP'N	COM (Ha)	IND (Ha)	INS (Ha)	Res.	Non-res.	Total	Res.	Non-res.	Total	Res.	Non-res.	Total	
	SF	SD	TH	APT															
J10	9					31				0.12		0.12	0.31		0.31	0.68		0.68	
J15	8					27				0.11		0.11	0.28		0.28	0.61		0.61	
J25	3		5			24				0.10		0.10	0.24		0.24	0.53		0.53	
J30			10			27				0.11		0.11	0.27		0.27	0.60		0.60	
J32			8			22				0.09		0.09	0.22		0.22	0.48		0.48	
J34			10			27				0.11		0.11	0.27		0.27	0.60		0.60	
J36	9					31				0.12		0.12	0.31		0.31	0.68		0.68	
J38	8					27				0.11		0.11	0.28		0.28	0.61		0.61	
J40	5		10			44				0.18		0.18	0.45		0.45	0.98		0.98	
J42			20			54				0.22		0.22	0.55		0.55	1.20		1.20	
J44	3		5			24				0.10		0.10	0.24		0.24	0.53		0.53	
J46	12					41				0.17		0.17	0.41		0.41	0.91		0.91	
J50			10			27				0.11		0.11	0.27		0.27	0.60		0.60	
J52			18			49				0.20		0.20	0.49		0.49	1.08		1.08	
J60			16			43				0.18		0.18	0.44		0.44	0.96		0.96	
J62			7			19				0.08		0.08	0.19		0.19	0.42		0.42	
J64			18			49				0.20		0.20	0.49		0.49	1.08		1.08	
TOTALS	57		137			564						2.28			5.71			12.56	

ASSUMPTIONS

RESIDENTIAL DENSITIES	AVERAGE DAILY DEMAND	MAXIMUM DAILY DEMAND	MAXIMUM HOURLY DEMAND	FIRE DEMANDS
- Single Family (SF) <u>3.4</u> p/p/u	- Residential <u>350</u> l/cap/day	- Residential <u>875</u> l/cap/day	- Residential <u>1,925</u> l/cap/day	- SF <u>167</u> l/s
- Semi Detached (SD) <u>2.7</u> p/p/u	- Commercial <u>60,000</u> l/ha/day	- Commercial <u>90,000</u> l/ha/day	- Commercial <u>162,000</u> l/ha/day	- SD <u>167</u> l/s
- Townhouse (TH) <u>2.7</u> p/p/u	- Industrial <u>20,000</u> l/ha/day	- Industrial <u>30,000</u> l/ha/day	- Industrial <u>54,000</u> l/ha/day	- TH <u>167</u> l/s
- Apartment (APT) <u>1.8</u> p/p/u	- Institutional <u>50,000</u> l/ha/day	- Institutional <u>75,000</u> l/ha/day	- Institutional <u>135,000</u> l/ha/day	- Gallery TH <u>183</u> l/s
				- ICI <u>250</u> l/s

# Boundary Conditions 1981 Maple Grove

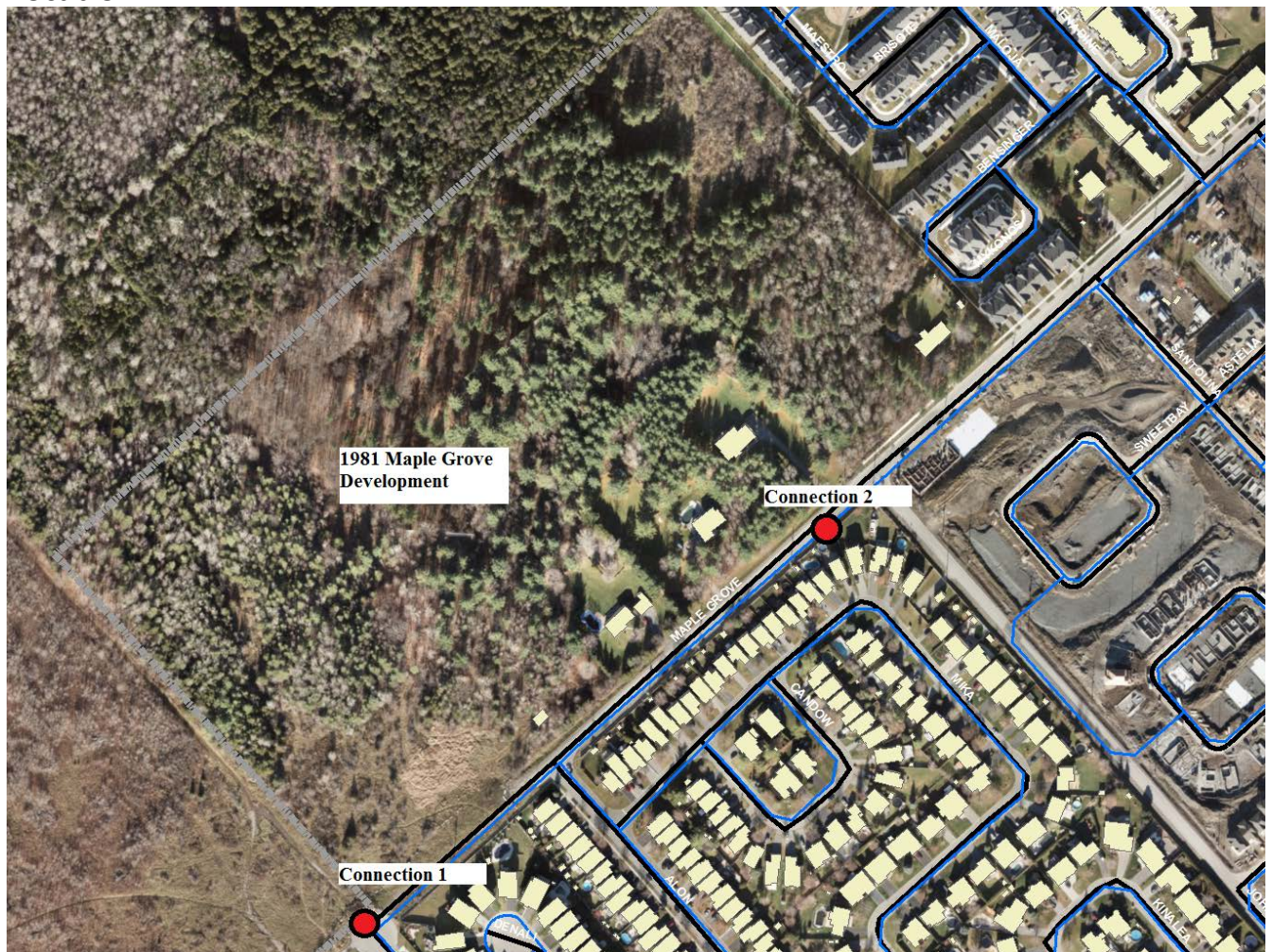
## Information Provided

Date provided: 20 November 2017

### Provided Information:

Scenario	Demand	
	L/min	L/s
Average Daily Demand	136.8	2.28
Maximum Daily Demand	342.6	5.71
Peak Hour	756	12.6
Fire Flow Demand # 1	10000	166.7
Fire Flow Demand # 2	15000	250.0

## Location



## Results

### Connection 1 - Maple Grove Road and Stittsville Main St

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)
Maximum HGL	160.7	67.9
Peak Hour	157.4	63.2
Max Day plus Fire (10,000 l/min)	155.3	60.3
Max Day plus Fire (15,000 l/min)	151.3	54.5

<sup>1</sup> Ground Elevation = 112.7 m

### Connection 2 - Maple Grove Road

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)
Maximum HGL	160.7	73.6
Peak Hour	157.4	68.9
Max Day plus Fire (10,000 l/min)	155.8	66.6
Max Day plus Fire (15,000 l/min)	152.1	61.4

<sup>1</sup> Ground Elevation = 108.2 m

## Notes:

- 1) 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.*

## Fire Flow Requirement from Fire Underwriters Survey

### Building Floor Area 10 units

Back to Back Townhouses	width	17.0 m
	depth	36.0 m
	stories	2
		1,224.0 m <sup>2</sup>

$$F = 220C\sqrt{A}$$

C	1.5	C =	1.5 wood frame
A	1,224 m <sup>2</sup>		1.0 ordinary
			0.8 non-combustible
F	11,545 l/min		0.6 fire-resistive
use	12,000 l/min		

### Occupancy Adjustment

Use	-15%	-25% non-combustible
		-15% limited combustible
		0% combustible
Adjustment	-1800 l/min	+15% free burning
Fire flow	10,200 l/min	+25% rapid burning

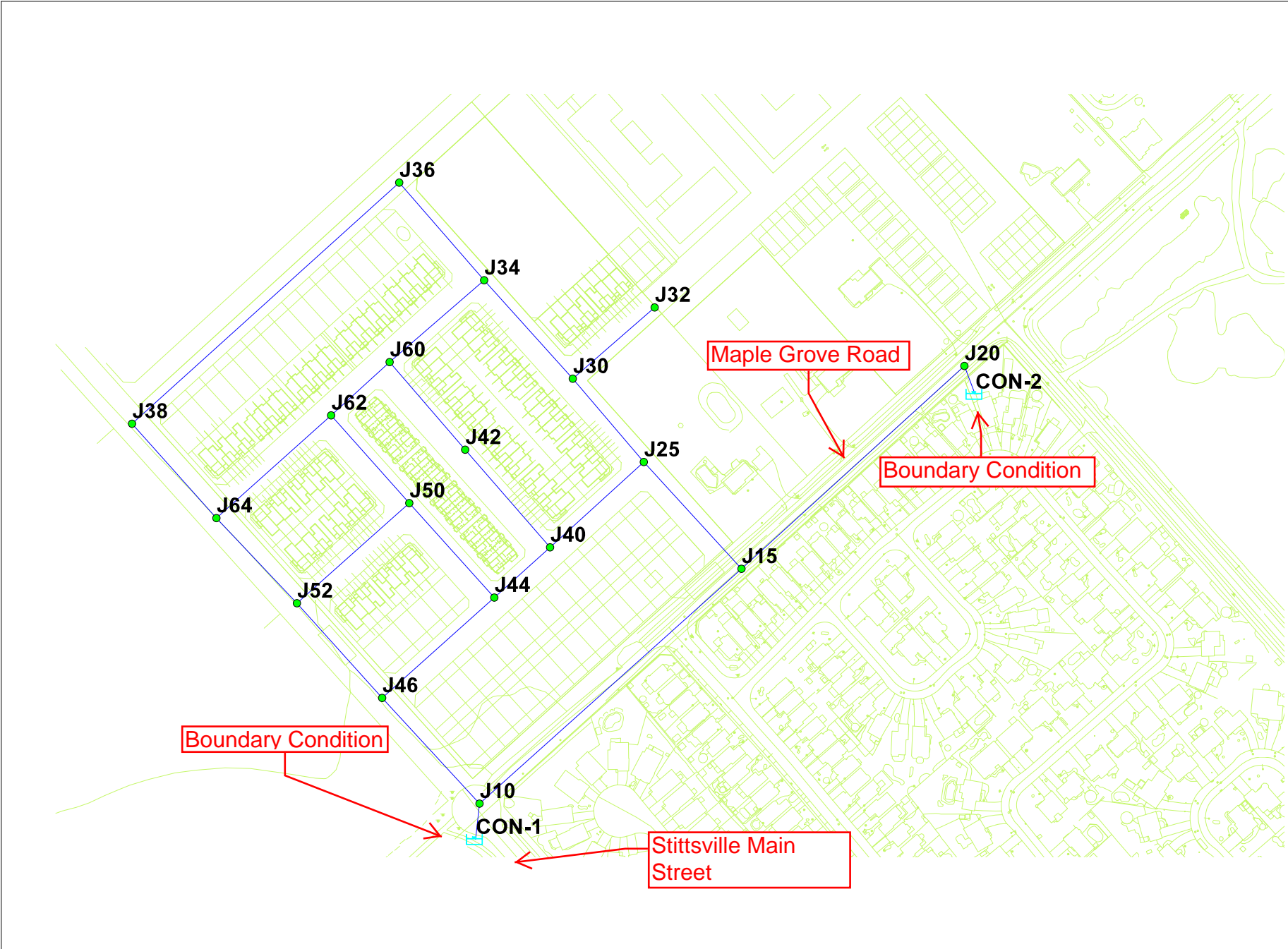
### Sprinkler Adjustment

Use	
Adjustment	0 l/min

### Exposure Adjustment

<u>Exposure Adjustment</u>		<u>Separation Charge</u>		
Building Face	Separation	Charge		
		0 to 3m	+25%	
		3.1 to 10m	+20%	
		10.1 to 20m	+15%	
Front	28	10%	20.1 to 30m	+10%
Rear	29	10%	30.1 to 45m	+5%
Left Side	28	10%		
Right Side	3.5	20%		
Total		50%		
Adjustment		5,100 l/min		
Total adjustment		5,100		
Fire flow		15,300 l/min		
<b>Use</b>		<b>15,000 l/min</b>		
		<b>250.0 l/s</b>		

# Maple Grove Lands - Water Model Nodes

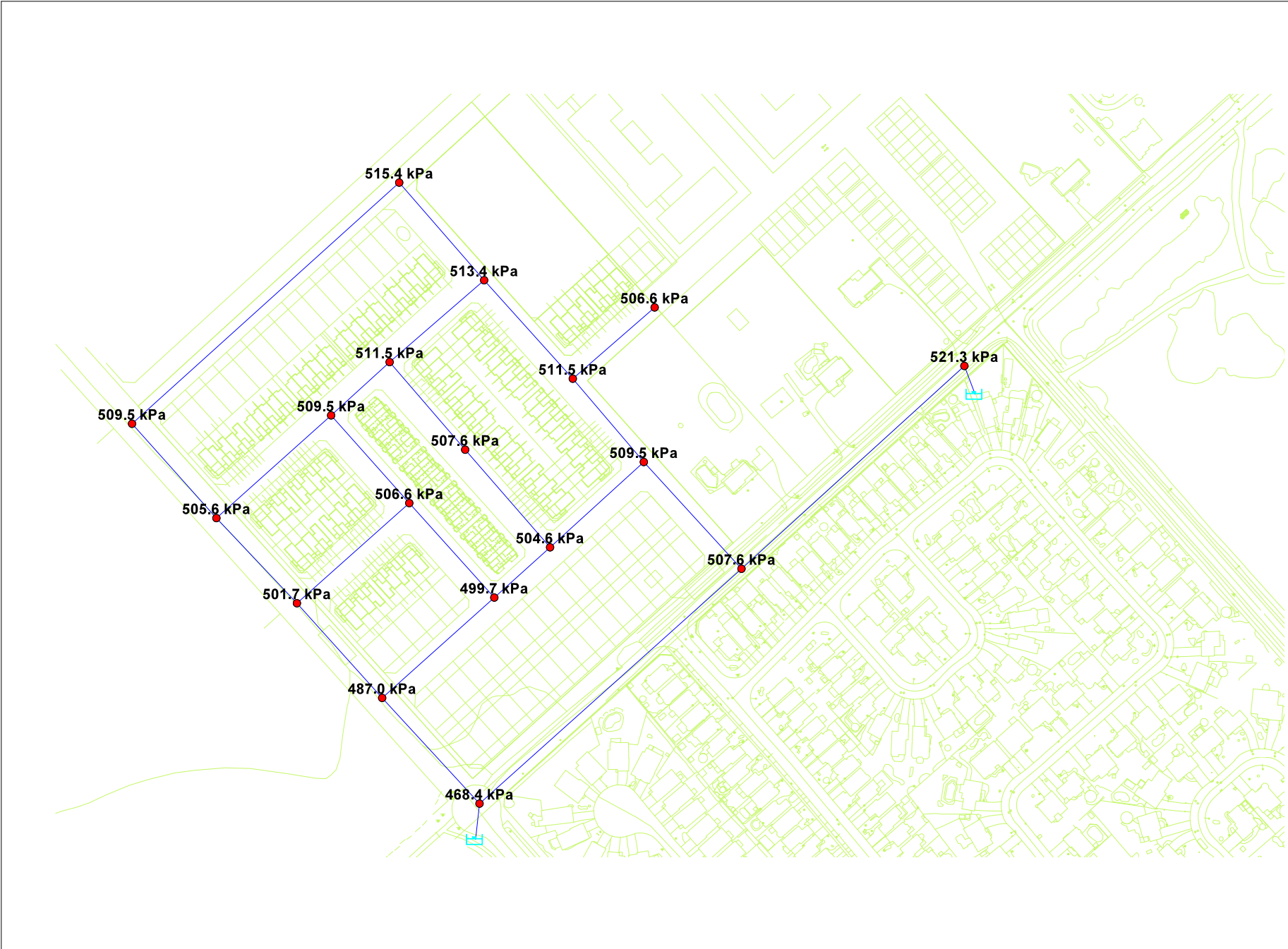


# Pipe Sizes

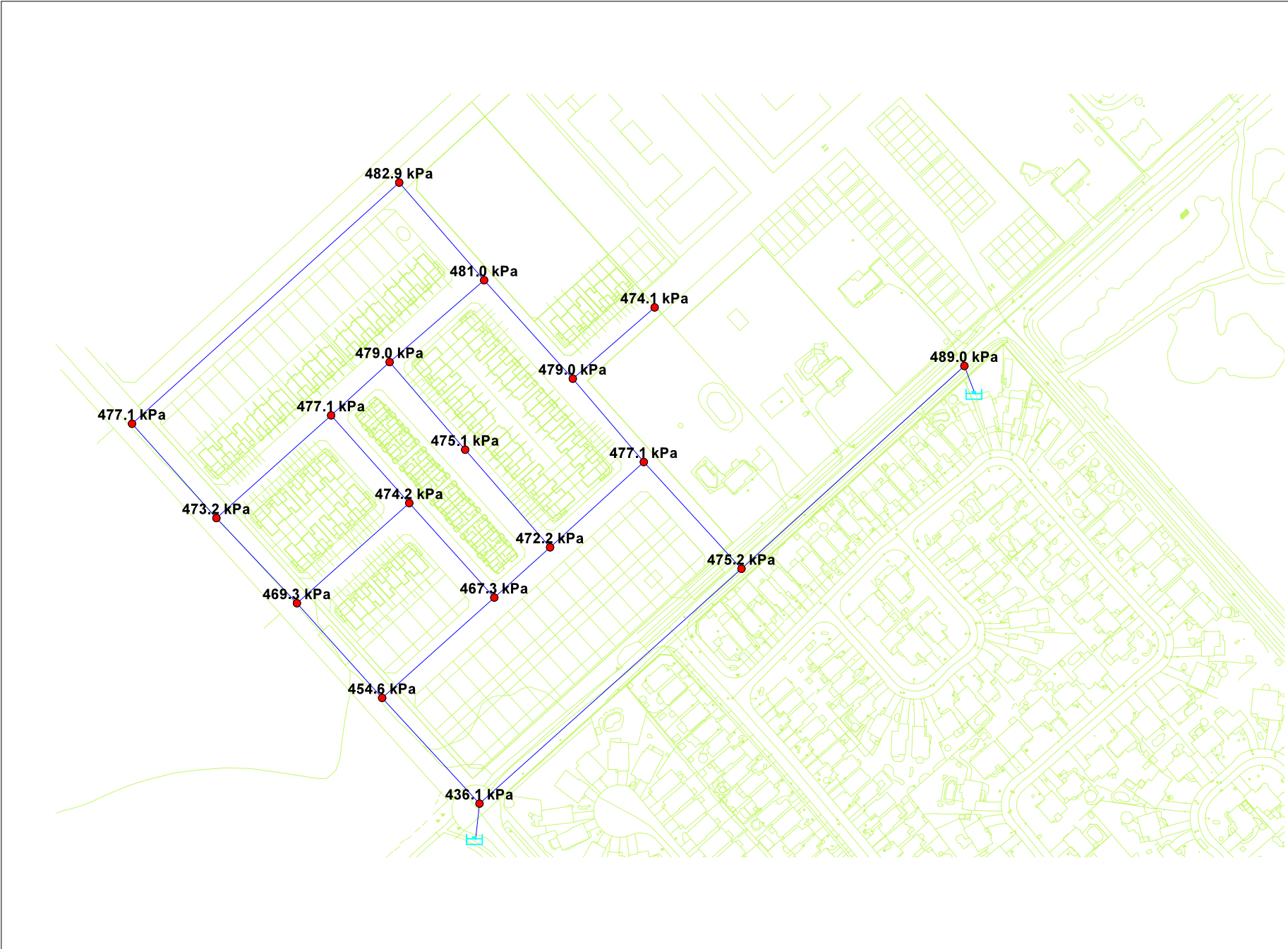




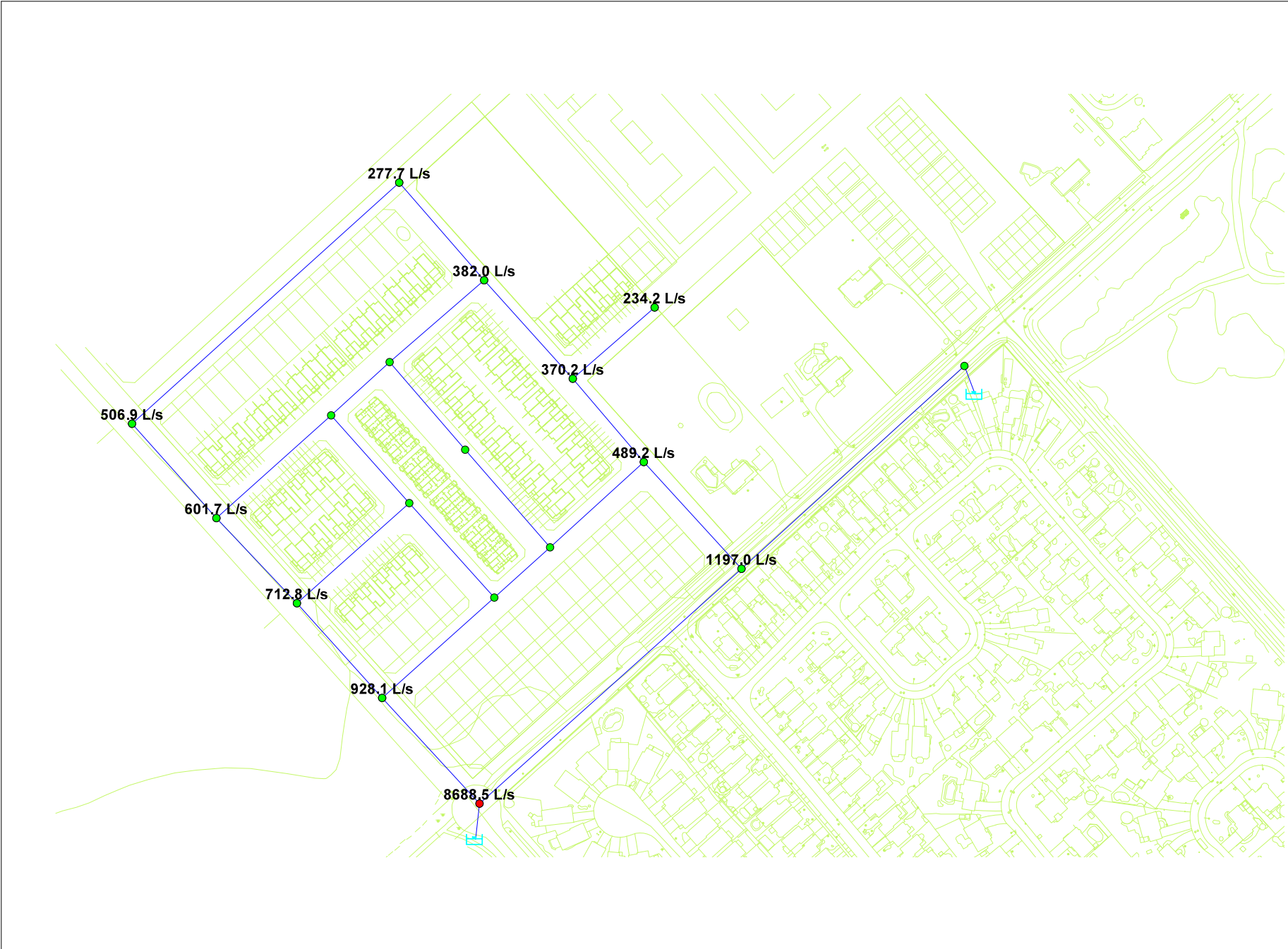
# Basic Day (Max HGL) Pressures



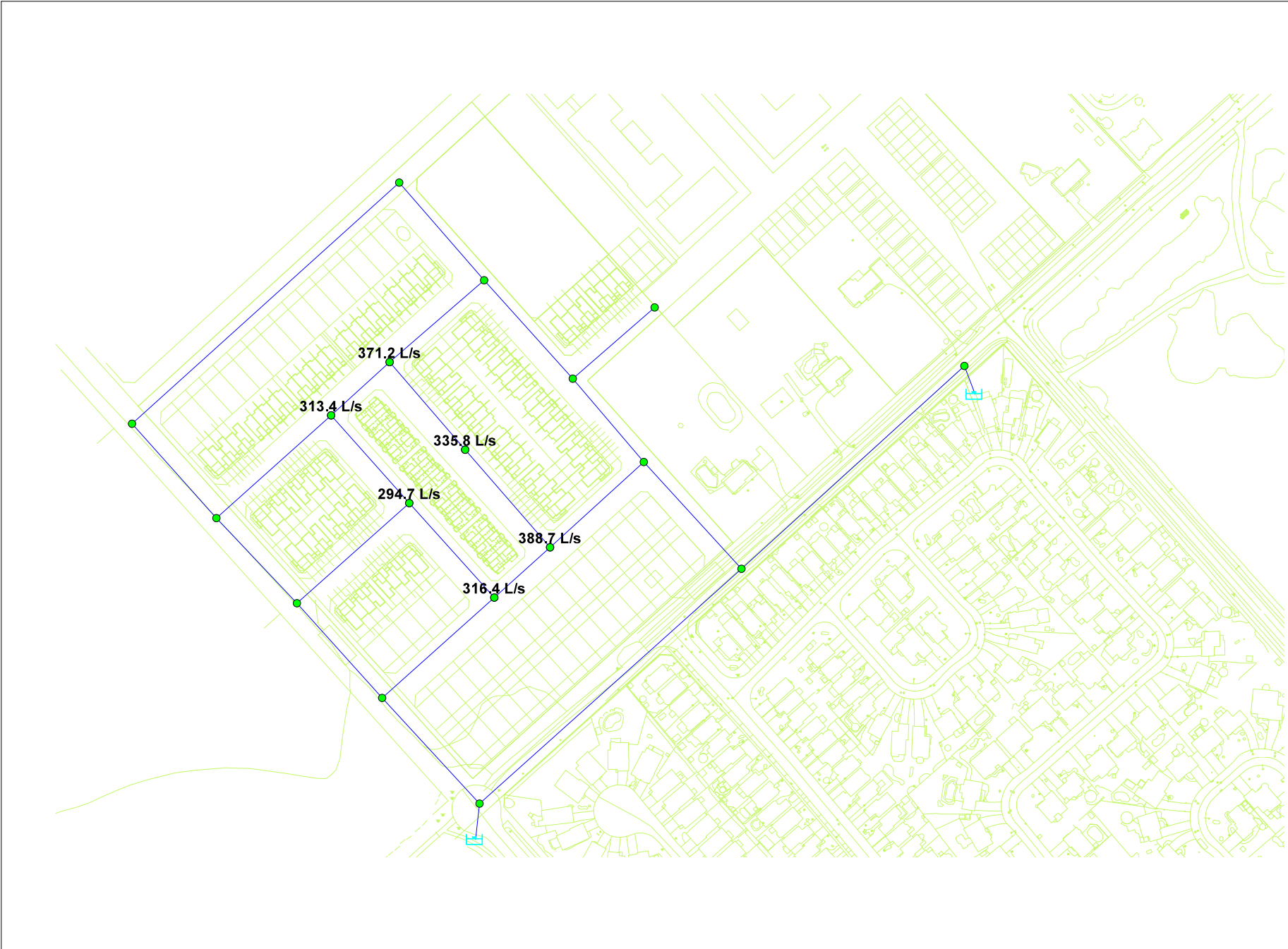
# Peak Hour Pressures



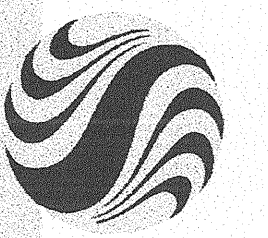
# MXDY + Fire (Single Family and Street THs) Fire Flows



# MXDY + Fire (Back to Back THs) Fire Flows



# **APPENDIX C**



**Stantec**

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1725 MCDONALD DR., OTTAWA (K1J 0L8)

**Legend**

- ULTIMATE MAJOR DRAINAGE LIMIT
- SUBCATCHMENT AREAS
- PROPOSED TRUNK SEWER
- PROPOSED FORCEMAIN
- TEMPORARY FORCEMAIN
- PROPOSED STITTVILLE PUMPING STATION AND FORCEMAIN
- EXISTING TRUNK SEWER
- MAJOR DRAINAGE SPLIT
- NODES
- EXISTING PUMPING STATION AND FORCEMAIN (TO BE DECOMMISSIONED)
- INPUT POINT AND AREA IN HECTARES
- EXISTING PUMPING STATION GRAVITY OUTLET

5	REVISED FOR DEC.21/05 SUBMISSION	G.B.U.	S.J.P.	05:12:21
4	REVISED TRUNK SEWER FROM 16 TO KWPS	R.W.W.	R.W.W.	05:10:05
3	ARROWS FOR EXIST. PUMP STATIONS ADDED	R.W.W.	R.W.W.	05:08:09
2	REPORT JUNE 2005	R.W.W.	R.W.W.	05:06:07
1	REPORT APR. 2005	R.W.W.	R.W.W.	05:04:20

Revision	By	Appd.	Date	
File Name:	Dwn.	Chkd.	Dsgn.	Date

Scale

Client/Project

**Kanata West Concept Plan  
Master Servicing Study**

Ottawa, Ontario

Title  
**Preferred Waste-Water  
Option**

Project No. 60400406 Scale 1:7500

Drawing No. S-1 Sheet 7 of 7 Revision 5

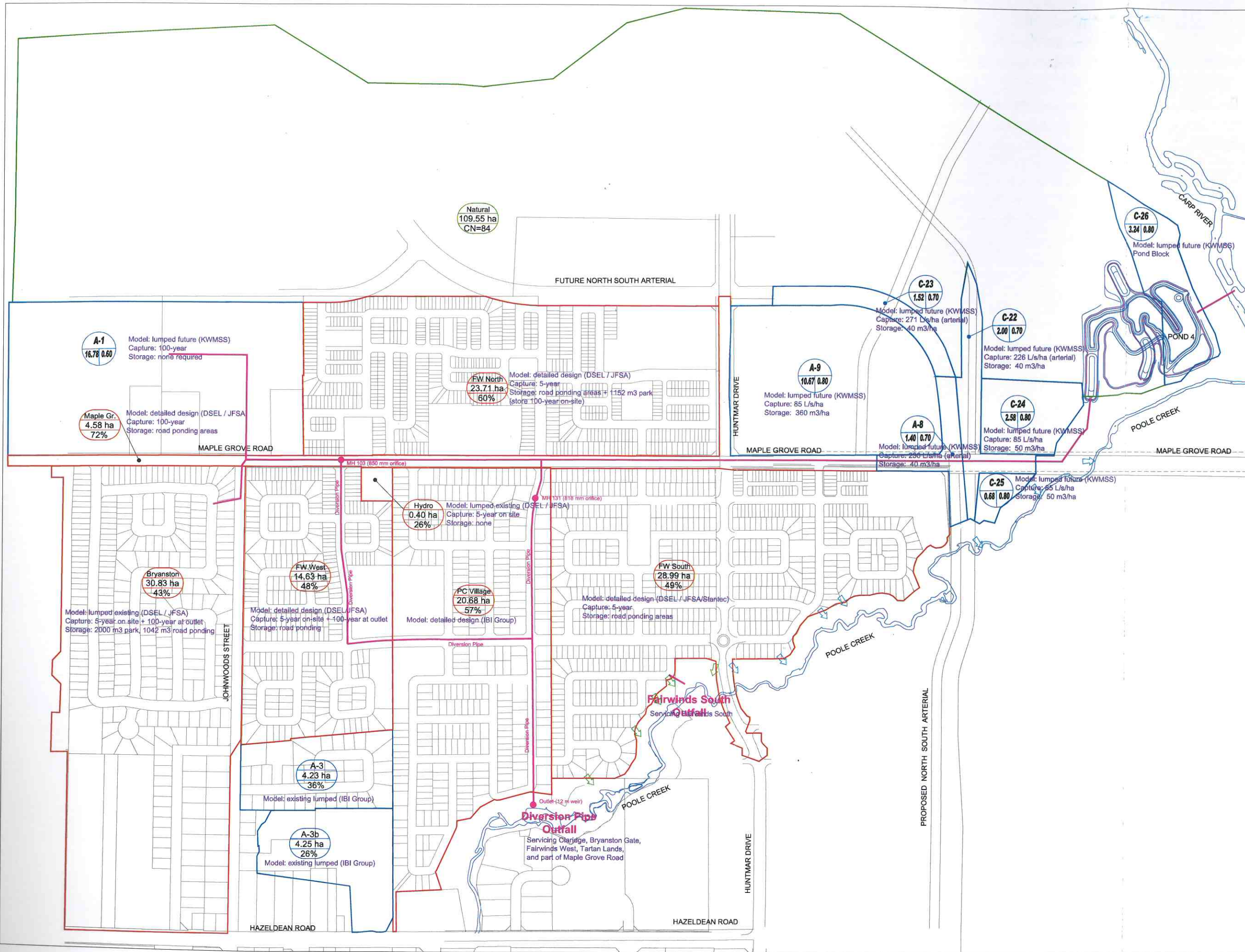


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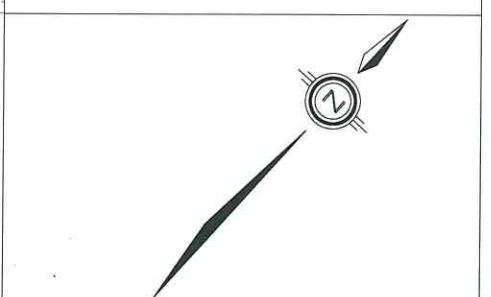
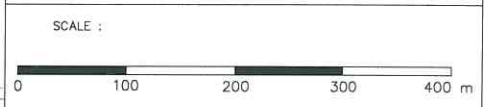
# **APPENDIX D**





- LEGEND :
- INTERIM DRAINAGE AREA (S TRUNK, DETAILED)
  - INTERIM DRAINAGE AREA (S TRUNK, LUMPED)
  - INTERIM NATURAL DRAINAGE AREA (LUMPED)
- Hydro  
0.40 ha  
26% — DRAINAGE AREA ID  
— DRAINAGE AREA (HA)  
— TOTAL IMPERVIOUSNESS
- C-23  
1.52 | 0.70 — KWMSS DRAINAGE AREA ID  
— RUNOFF COEFFICIENT  
— DRAINAGE AREA (HA)

- TRUNK SEWER
- ➔ MAJOR SYSTEM OUTFALL TO POOLE CREEK UPSTREAM OF HUNTMAR (PC1 / PCreek1)
- ➔ MAJOR SYSTEM OUTFALL TO POOLE CREEK DOWNSTREAM OF HUNTMAR (PC2 / PCreek2)



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 OTTAWA, ONTARIO K2S 1E9  
 (613) 836-0856

PROJECT : **Kanata West Community Pond 4**

No.	BY	DATE	DESCRIPTION	BY

**Proposed Interim Conditions Drainage Area to SWM Facility**

FIGURE 2  DRAWING REF: 631-07\Design\Pond Exp\201408\ CAD\JFS Fairwinds Global.dwg	DESIGNED:	
	DRAWN:	LP
	VERIFIED:	JFS
	APPROVED:	JFS
DATE:	Aug/14	PROJECT No. 631-07