

**Township of North Dundas
Schedule 'B' Municipal Class Environmental Assessment
Village of Winchester
Main Street West Sewage Pumping Station Upgrades
Project File**

(FINAL)

April 2022

Prepared for:

THE TOWNSHIP OF NORTH DUNDAS

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Township of North Dundas Main Street West SPS Upgrades

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Schedule 'B' Class EA: (FINAL)

1.0 Introduction

1.1 Background

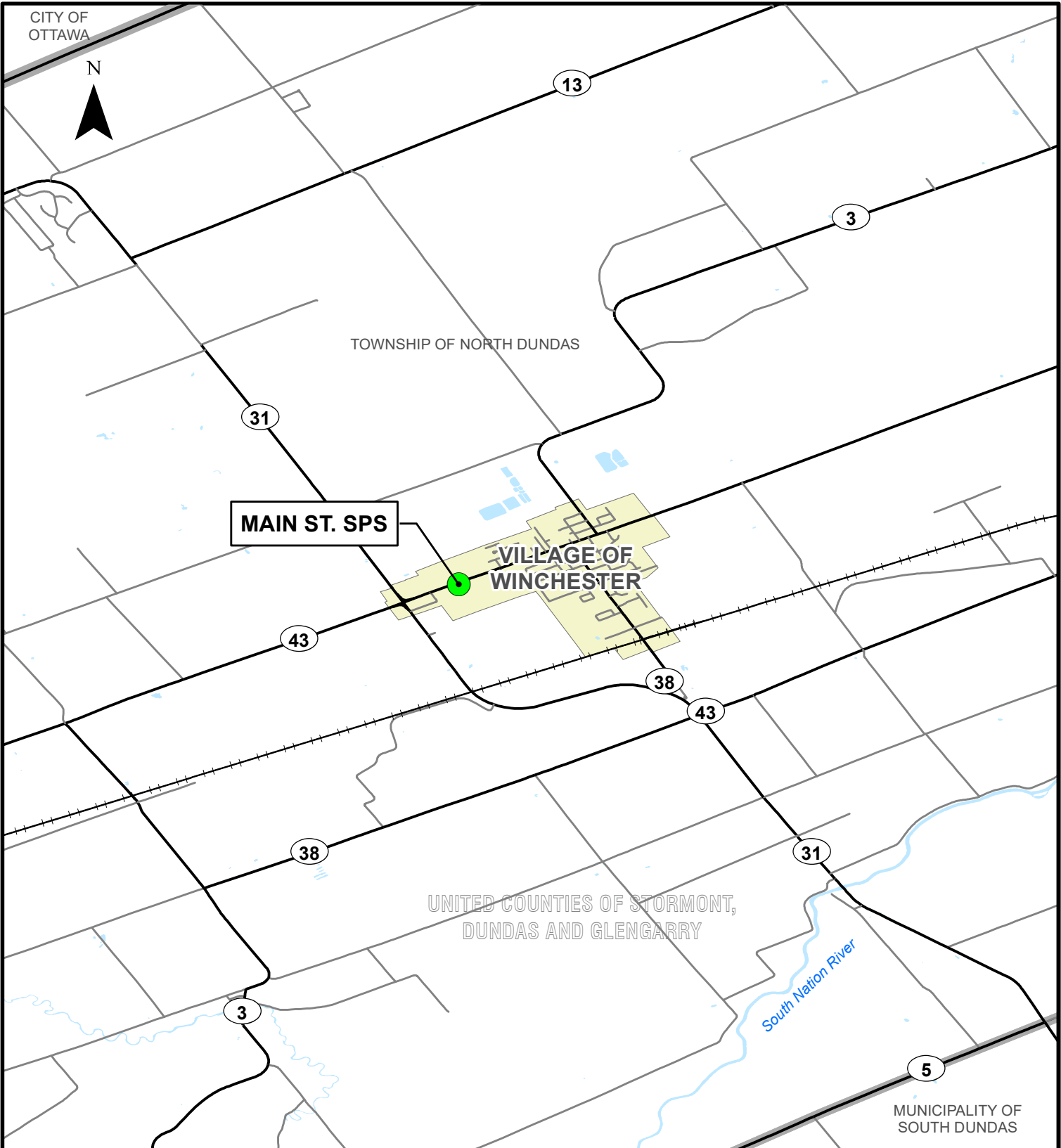
The Township of North Dundas (Township) initiated a Schedule 'B' Class Environmental Assessment (Class EA) Study to address capacity and condition limitations of the Village of Winchester's Main Street West Sanitary Pump Station (SPS). The ultimate objective of the Class EA is to develop a strategy to improve the overall capacity, performance, and reliability of the Main Street West SPS and to ensure it can be relied on to accommodate current and future flows generated within its catchment area. J.L. Richards & Associates Limited (JLR) was retained by the Township in September 2021 to undertake the Municipal Class EA process.

The Township of North Dundas is located approximately 50 km south of downtown Ottawa, midway between Ottawa and Morrisburg. The Township was founded in 1998 with the amalgamation of the former Townships of Winchester and Mountain and the Villages of Chesterville and Winchester. The Village of Winchester is located along the eastern side of County Road No. 31, with the western and southern extents located north of the intersection with County Road No. 43. This can be seen in Figure 1.

There are three sub-area sewage pumping stations within the Village of Winchester that pump wastewater from low lying service areas into gravity sewers located downstream at higher elevations. Figure 2 is a key infrastructure map that displays the location of each SPS. The Main Street West SPS conveys sewage from Winchester's western extents, ranging from east of County Road No. 31 to west of 5206 Main Street West. Sewage is currently conveyed from the SPS through a 100 mm diameter forcemain to a maintenance hole, then by gravity sewer to the Bailey Avenue SPS.

The Main Street West SPS is equipped with two pumps, one rated for 6 L/s and the other rated for 3.5 L/s. The existing station was constructed in 2006. As part of an ECA amendment process in 2019, the SPS underwent pump replacement to increase capacity. Although the amendment approved replacing both pumps, only one of the two pumps were replaced during the previous upgrades. JLR has carried out the Township of North Dundas Water and Wastewater Servicing Study in 2020 to assess the ability of existing infrastructure to support future growth and development at various stages up to the 20+ year full buildout scenario. The study identified the Main Street West SPS needs additional capacity to adequately service increased flows. The purpose of this Class EA is to address constraints at the Main Street West SPS to allow development and growth to continue in the next 20 years and beyond.

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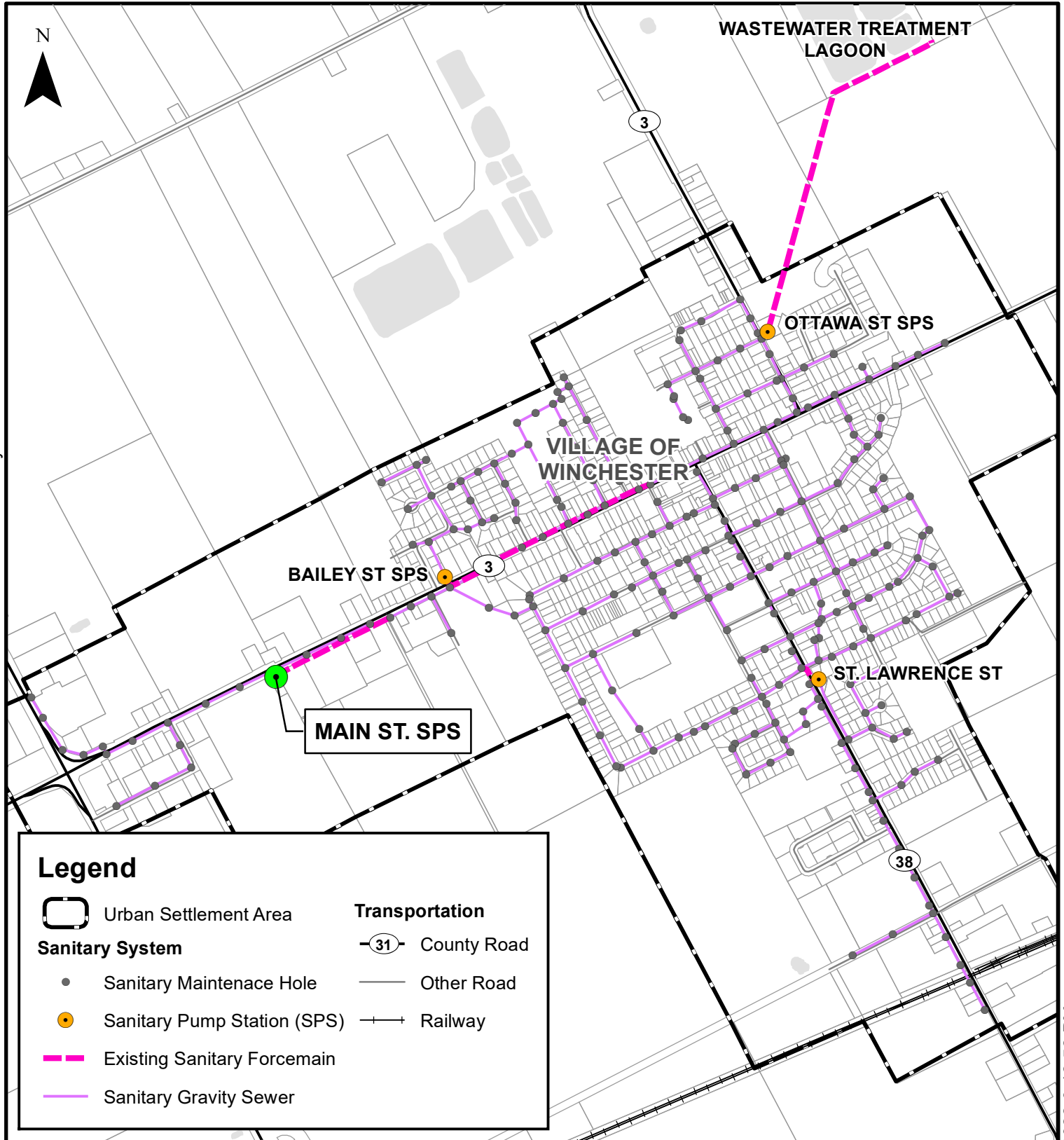


PROJECT: **MAIN ST. WEST PUMP STATION SCHEDULE 'B' CLASS EA**
VILLAGE OF WINCHESTER, NORTH DUNDAS, ONTARIO

DRAWING: **LOCATION PLAN**

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PROJECT: MAIN ST. WEST PUMP STATION SCHEDULE 'B' CLASS EA
VILLAGE OF WINCHESTER, NORTH DUNDAS, ONTARIO

DRAWING: STUDY AREA AND OVERVIEW OF KEY WASTEWATER INFRASTRUCTURE

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Schedule 'B' Class EA: (FINAL)

1.2 Class Environmental Assessment Objectives

This report is intended to summarize findings from both the Phase 1 and Phase 2 activities under the Municipal Class EA process. The objectives of this Schedule 'B' Class EA are:

- To provide an overview of the Municipal Class EA process;
- To summarize background information related to the Winchester Main Street West SPS;
- To review historical wastewater flows, growth projections and expected wastewater flows for the 20-year planning horizon;
- To identify system constraints associated with the Main Street West SPS;
- To establish the Problem/Opportunity Statement for this undertaking;
- To evaluate alternatives based on environmental, social, technical and financial impacts;
- To recommend a preferred solution for the Main Street West SPS upgrades;
- To develop preliminary design concepts for the preferred solution;
- To provide a summary of the Class EA consultation activities; and
- To identify environmental impacts and outline mitigation measures.

1.3 Class Environmental Assessment Process

The *Ontario Environmental Assessment Act* (EA Act), enacted in 1976, formally recognizes the Municipal Class Environmental Assessment (Class EA) process and outlines requirements for EA approval. The Municipal Class EA applies to municipal infrastructure projects, including roads, water, and wastewater projects. To ensure that environmental impacts and effects are considered for each project as per the EA Act, proponents are required to generally follow the planning process set out in the Municipal Class EA Guidelines, prepared by the Municipal Engineers Association (MEA) (2015) (www.municipalclassea.ca). The Class EA process includes the following stages:

- | | |
|----------|--|
| Phase 1: | Problem or opportunity identification. |
| Phase 2: | Identification and evaluation of alternative solutions to determine a preferred solution to the problem or opportunity. This Phase also compiles an environmental 'inventory', identifies impacts, and outlines mitigation measures. |
| Phase 3: | Identification and evaluation of design concepts for the preferred solution. A detailed evaluation of the environmental effects and mitigation measures will be addressed during this project Phase. |
| Phase 4: | Complete and place Environmental Study Report on Public Record. The Report will document Phases 1 through 3 and summarize the consultation undertaken throughout the planning process and is considered valid for a 10 year period. |
| Phase 5: | Implementation and monitoring. |

Since projects may vary in their environmental impact, they are classified in terms of the following schedules:

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Schedule 'B' Class EA: (FINAL)

- Schedule 'A' projects usually have minimal environmental effects and generally include normal or emergency operational and maintenance activities. These projects are pre-approved under the Class EA planning process. Projects within this category are subject to Phases 1 and 5.
- Schedule 'A+' projects are pre-approved projects similar to Schedule 'A', however, the public is to be advised prior to project implementation.
- Schedule 'B' projects have potential for some adverse environmental impacts and, therefore, the proponent is required to proceed through a screening process, including consultation with affected parties. Generally, these projects include improvements and minor expansions to existing facilities. Projects within this category are subject to Phases 1, 2 and 5.
- Schedule 'C' projects have potential for greater environmental impacts and are subject to all five Class EA Phases. Generally, these projects include the construction of new facilities and major expansions to existing facilities.

Based on the following excerpt from the MEA Guidelines, this project is currently being undertaken as a Schedule 'B' Class EA, and thus Phases 1 and 2 of the Class EA process will be completed.

"6. Construct new pumping station or increase pumping station capacity by adding or replacing equipment and appurtenances, where new equipment is located in a new building or structure."

1.4 Project Team

The project team and a description of the roles and responsibilities of each team member are described below:

- **The Township of North Dundas: Proponent**
 - o Contact Name: Khurram Tunio, P.Eng., M.Eng., Director of Public Works
 - o Phone Number: (613) 774-2105 x 292
 - o Email Address: ktunio@northdundas.com
- **J.L. Richards & Associates Limited (JLR): Consultant**
 - o Contact Name: Susan Shi, P.Eng., Senior Environmental Engineer
 - o Phone Number: 343-302-5406
 - o Email Address: sshi@jlrichards.ca

1.5 Methodology

Compilation and Review of Existing Documentation

JLR has previously completed a number of related studies for the Township prior to this Class EA, as presented in Table 1. The listed reports were reviewed and summarized in the subsequent sections. The outcomes of the previous studies, particularly the 2019 Wastewater Capacity

Township of North Dundas Main Street West SPS Upgrades Schedule 'B' Class EA: (FINAL)

Assessment and the 2020 Water and Wastewater Servicing Study, have confirmed the constraints of the existing SPS and the need for an expanded Main Street West SPS.

Refer to Appendix A for a copy of all the previous studies.

Table 1 – Summary of Previous Completed Studies

Timeline	Report	Description
December 2012	Township of North Dundas Village of Winchester Sanitary Sewer System Capacity Assessment by JLR	Developed a working SewerCAD® model of the Winchester wastewater collection system
June 2017	Township of North Dundas Winchester Main Street West Pumping Station Assessment by JLR	Assessed the capacity of the existing Main Street West SPS based on current development and operation of the SPS, a proposed gas station/car wash site and future development envisioned as a part of the Winchester Sewage Treatment System Upgrades Class EA
June 2018	Supporting Information for ECA Amendment Application (ECA #4037-6CAMCT) by OCWA	Provided supporting information to complete the ECA Amendment and included Stantec's 2005 Design Brief for Main Street West SPS
June 2019	Township of North Dundas Winchester Wastewater Capacity Assessment by JLR	Assessed the remaining wastewater capacity of the Main Street West SPS, Bailey Street SPS and trunk gravity sewers in Winchester, and provided an update to the SewerCAD® model
February 2020	Township of North Dundas Drinking Water Supply System Capacity Expansion Class EA, Technical Memorandum No. 1 Population Growth and Development Projection by JLR	Established the proposed 20-year population projections for the Village of Winchester and Village of Chesterville within the Township boundary by determining their potential development opportunities for growth
December 2020	Township of North Dundas Water and Wastewater Servicing Study by JLR	Confirmed the expected development areas for near, mid, long-term and buildout scenarios, assessed the ability of existing infrastructure to support future growth and development, identified conceptual level upgrade requirements, developed opinion of probable costs for these upgrades and updated SewerCAD® model based on future flows in the Village Winchester's west end

2.0 Phase 1 – Problem and Opportunity Statement

2.1 Description of Existing Conditions

Existing Wastewater System Infrastructure

The Village of Winchester is serviced by a wastewater conveyance system that consists of gravity sewers, one main pumping station (Ottawa Street SPS), three sub-area pumping stations (including Main Street West SPS), and sewage treatment lagoons that provides treatment of wastewater.

The Main Street West SPS was originally constructed in 2006. The existing building on the property was a previous well pump station (Winchester Well No. 4), which was decommissioned and then converted into the Controls Building in 2006.

The Main Street West SPS is owned by the Township and operated by the OCWA in accordance with the Environmental Compliance Approval (ECA) No. 9743-B9ALZN (2019). The SPS consists of precast concrete wet wells equipped with two submersible variable speed pumps in the duty/standby configuration, one rated for 6 L/s at a total dynamic head (TDH) of 13 m and the other rated for 3.5 L/s at a TDH of 4.5 m.

Flow is conveyed to the site from a below-grade influent sanitary maintenance hole (MH #406), through a 250 mm diameter gravity sewer, with flow passing through a debris/trash basket located at the wet well inlet. The wet well houses raw sewage pumps and associated piping/valves. There is no existing bypass/overflow chamber or piping at this SPS. The SPS then conveys the collected sewage through a single 100 mm diameter, 350 m (approx.) forcemain easterly along Main Street West right-of-way and to a maintenance hole (MH #21), which drains by gravity to the Bailey Avenue SPS. Refer to Figure 3 for a site plan of the existing SPS.

Table 2 provides a summary of key infrastructure at the Main Street West SPS.

Table 2: Summary of MainStreet West SPS Infrastructure

Parameter	Value ⁽¹⁾
ECA 9743-B9ALZN Firm Capacity	6 L/s – With Both Pumps Replaced
Actual Firm Capacity	3.5 L/s – Actual Firm Capacity ⁽²⁾
Raw Sewage Pumps	
Type	Submersible with variable frequency drive (VFD)
Number	2
Pump No. 1 Rated Capacity	6 L/s at 13 m TDH
Pump No. 2 Rated Capacity	3.5 L/s at 4.5 m TDH
Wet Well ⁽³⁾	
Type	Below Grade Concrete
Dimensions	2.44 m internal diameter x 6.64 m deep (5.1 m ³ storage to bottom of inlet sewer)

Township of North Dundas Main Street West SPS Upgrades

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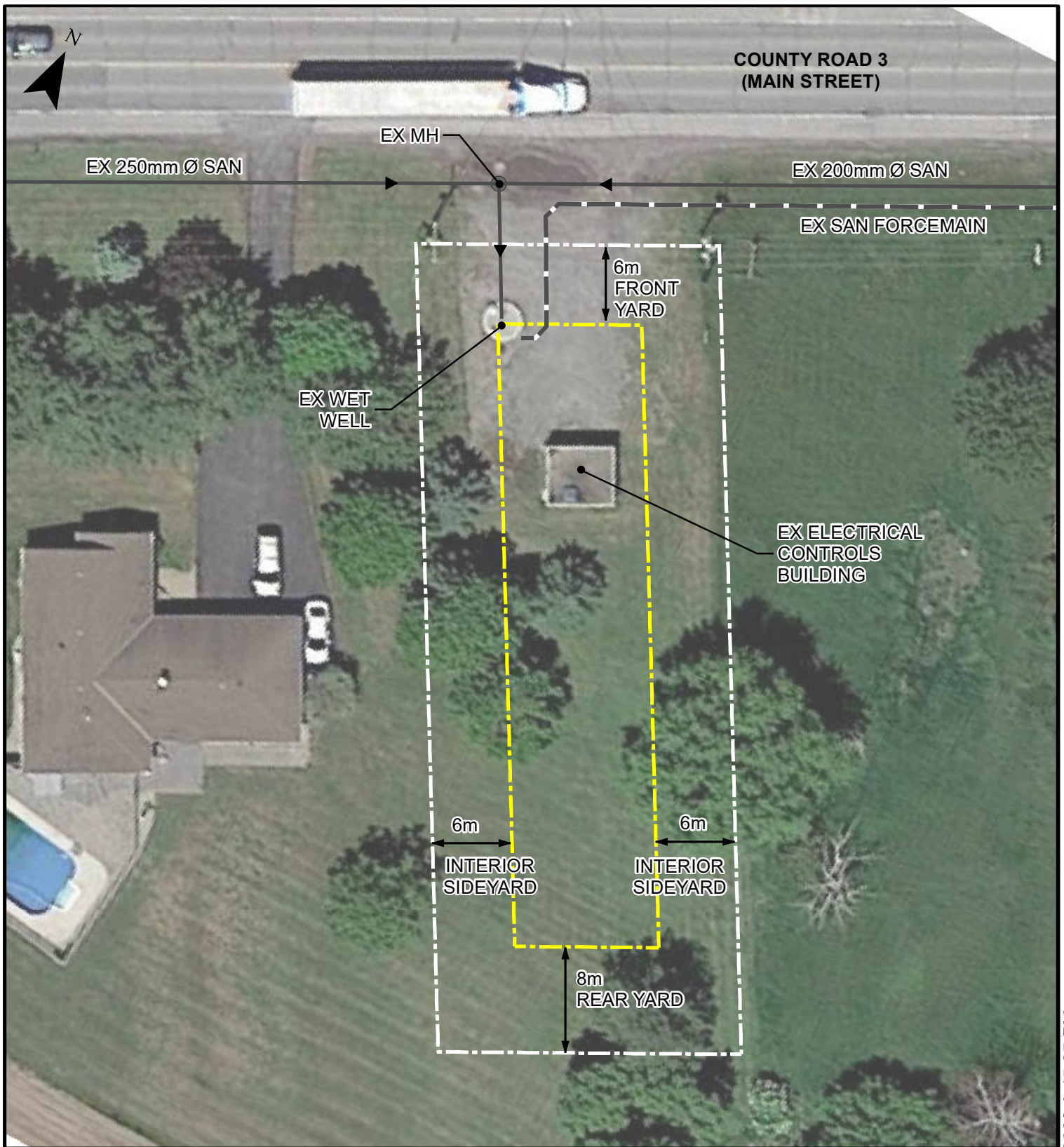
Parameter	Value ⁽¹⁾
Operating Levels	70.26 m (Min.) / 70.55 m (Max.)
Operating Volume	1.4 m ³
Forcemain	
Type	PVC
Diameter	100 mm ⁽³⁾
Length	350 m
Capacity	27.5 L/s ⁽⁴⁾
(1) From ECA 9743-B9ALZN unless noted otherwise. (2) In 2019, an ECA Amendment (9743-B9ALZN) was submitted to replace the previous 2005 ECA (4037-6CAMCT). The proposed work involved replacement of the two (2) existing pumps, each rated for 3.5 L/s at 4.5 m TDH with new pumps rated for 6 L/s at 13 m TDH. Upon receipt of the ECA Amendment, the Township decided to only replace one pump. As such, it should be noted the discrepancy between the ECA firm capacity and the actual firm capacity of the PS. The Ministry of the Environment, Conservation and Parks (MECP) Design Guidelines for Sewage Works defines "firm capacity" as the capacity of the station with the largest pump out of service (MECP 2008). Therefore, the actual firm capacity of the Main Street West SPS is 3.5 L/s at a TDH of 4.5 m. (3) 2005 Stantec Record Drawings. (4) Based on a maximum velocity of 3 m/s (MECP, 2008).	

2.2 Zoning

The Main Street West SPS property is owned by the Township and is located at 12048 Main St. West, Winchester, ON. This property is currently zoned as Institutional in accordance with the Village of Winchester Zoning By-Law 25-96 (Office Consolidation February 2017). Zoning provisions are presented in Table 3 and shown in Figure 4. Any proposed future expansions will need to conform with the zoning bylaw requirements identified herein.

Table 3: Zoning By-Law Provisions for Institutional Zones

Parameter	Required
Lot Area (minimum)	Nil
Lot Frontage (minimum)	Nil
Front Yard Depth (minimum)	6 m
Exterior Side Yard Width (minimum)	6 m
Interior Side Yard Width (minimum)	6 m
Rear Yard Depth (minimum)	8 m
Landscaped Open Space (minimum)	10%
Height of Building (Maximum)	14 m



PROJECT:

MAIN ST. WEST PUMP STATION SCHEDULE 'B' CLASS EA
VILLAGE OF WINCHESTER, NORTH DUNDAS, ONTARIO

DRAWING:

EXISTING SPS SITE LAYOUT



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FIGURE 3

Township of North Dundas Main Street West SPS Upgrades

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2.3 Historical Wastewater Flows

A SewerCAD® model was first developed by JLR for the Village of Winchester in 2012 during the Village of Winchester Sanitary Sewer System Capacity Assessment. Subsequently in 2019, JLR completed the Winchester Wastewater Capacity Assessment which assessed the remaining wastewater capacity of the Main Street West SPS, Bailey Street SPS and the trunk gravity sewers and provided an update to the 2012 SewerCAD® model with new information. The information presented below is a summary of the 2019 updated model results.

The existing operation of the Main Street West SPS has been assessed based on the ECA rated capacity. Table 4 summarizes and compares the expected peak flow to the wet well based on available historical data, simulated peak flow from the updated model and theoretical peak flow. The theoretical peak flow has been estimated based on the historical data and the addition of the theoretical peak flows calculated for the new development/sewer connections that has occurred between 2012 and 2019.

Table 4: Total Inflow into the Main Street West SPS (JLR, 2019 Winchester Wastewater Capacity Assessment)

Sewage Pump Station	Peak Inflow into Sewage Pumping Station (L/s)			ECA Rated Capacity (L/s)	90% of Current Operating Capacity	Remaining SPS Capacity (L/s)
	Historical Data	Simulated Peak Flow	Theoretical Peak Flow			
Main Street West SPS	5.25	7.36	5.72	6.0	5.40	0

The simulated peak flow from the updated model appear to represent a conservative value when compared to the estimated peak flow developed from available historical data. Therefore, a theoretical peak flow was assessed based on the historical data and the addition of the theoretical peak flows calculated for the new development/sewer connections that occurred between 2012 and 2019.

Based on the assessment above, the Main Street West SPS is at or nearing its rated capacity with no readily available capacity to accommodate additional wastewater flows.

2.4 Planning Projections

Projected future development effects on sewage flows for Winchester were previously assessed as part of the 2020 Water and Wastewater Servicing Study. This study provided a detailed summary of the future development areas and their corresponding populations, including figures to depict the future development areas over the near, mid, long-term and build-out planning horizon. Refer to Figures 5, 6, 7 and 8 for potential future development areas categorized in the 1-5 years, 5-10 years, 10-20 years and 20+ years planning horizons.

Table 5 below illustrates the projected population increase under the low and high growth scenarios considered in the study. The design basis for the Main Street West SPS upgrades will utilize the high growth scenario. Presented populations do not directly correlate to anticipate flow

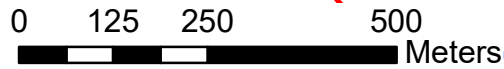
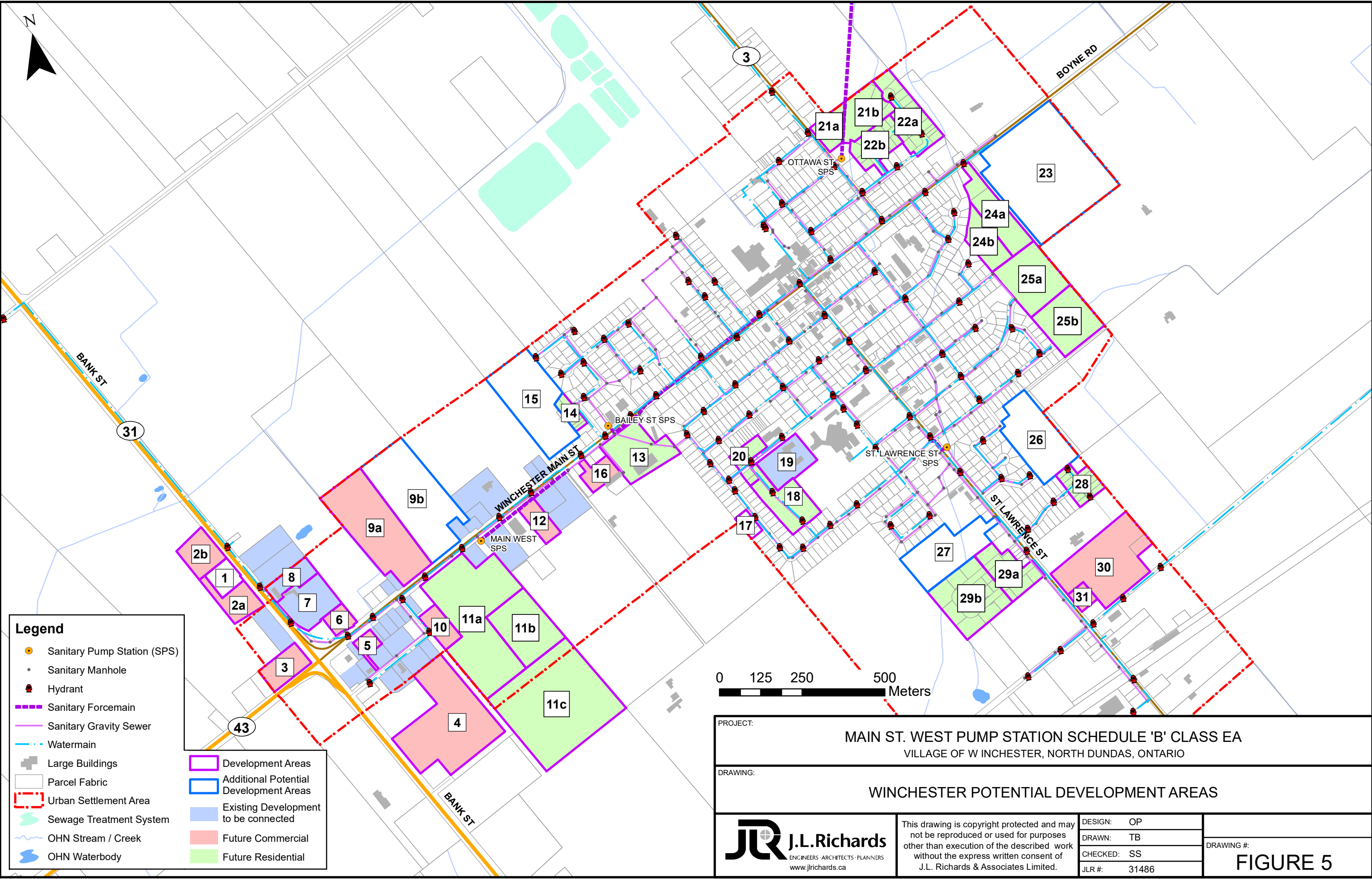
Township of North Dundas Main Street West SPS Upgrades Schedule 'B' Class EA: (FINAL)

increases to the Main Street West SPS, since the growth and development presented in the table is relevant to all of Winchester, whereas the Main Street West SPS services only the western portion of Winchester.

Table 5: Population projections in Winchester (JLR, 2020 Water and Wastewater Servicing Study)

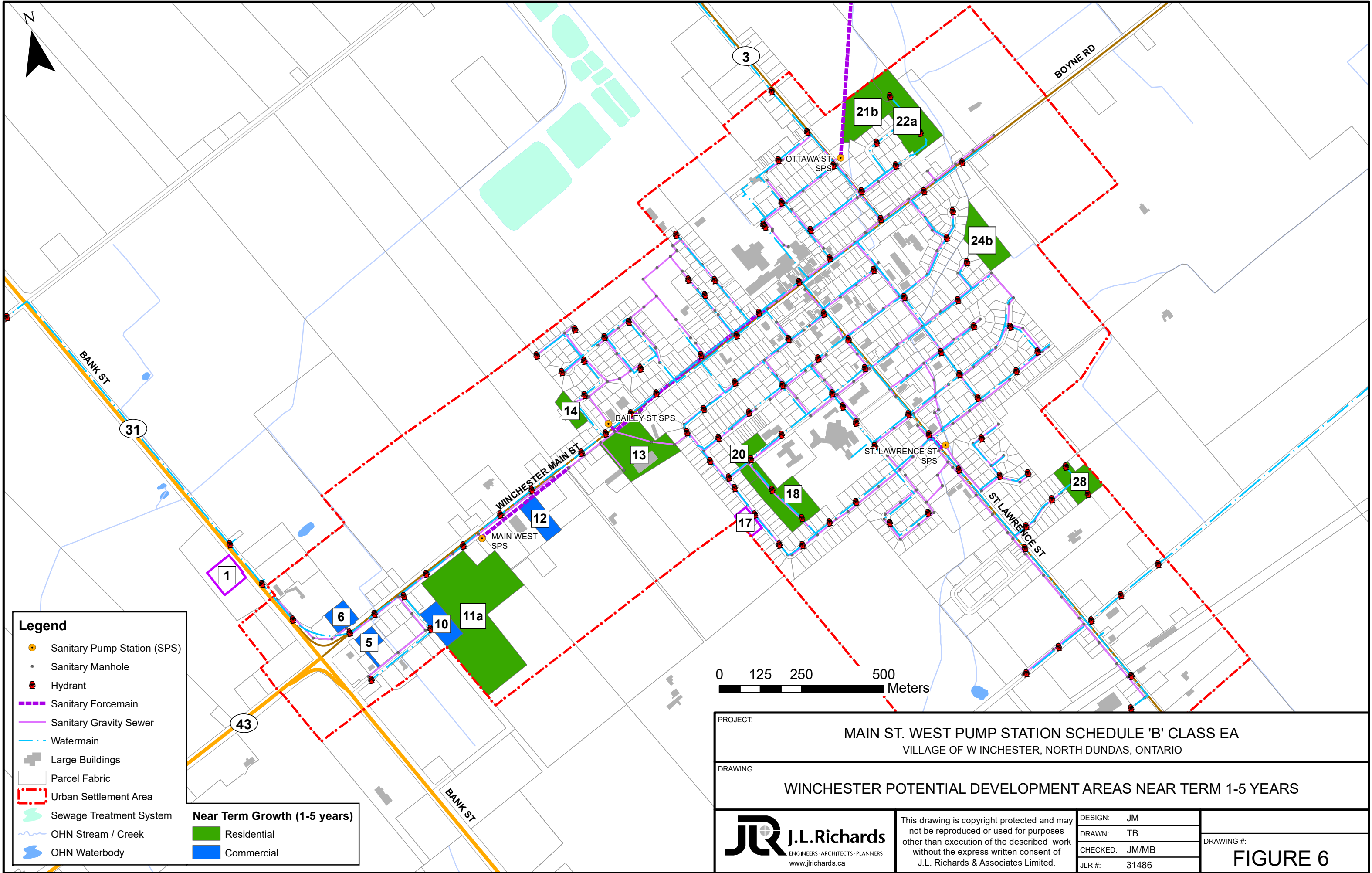
	Low Growth Scenario		High Growth Scenario	
Year	Projected Population Increase (Persons)	Population Projected (Low Growth Scenario)	Projected Population Increase (Persons)	Population Projected (High Growth Scenario)
2016	-	2,394 ⁽¹⁾	-	2,394 ⁽¹⁾
2019	108 ⁽²⁾	2,502	108 ⁽²⁾	2,502
2039	1,128 ⁽³⁾	3,630	1,128 ⁽³⁾ + 572	4,202
1. Population based on the 2016 Census Information for Winchester. 2. 2019 population increase based on an assumed annual growth rate of 1.5%. 3. Based on the potential population increase for Low Growth Scenario (Population Growth Memo) 4. Based on the potential population increase for Phase 2 to Phase 5 of the Wellings of Winchester development identified in the JLR 2020 Population Growth Memo.				

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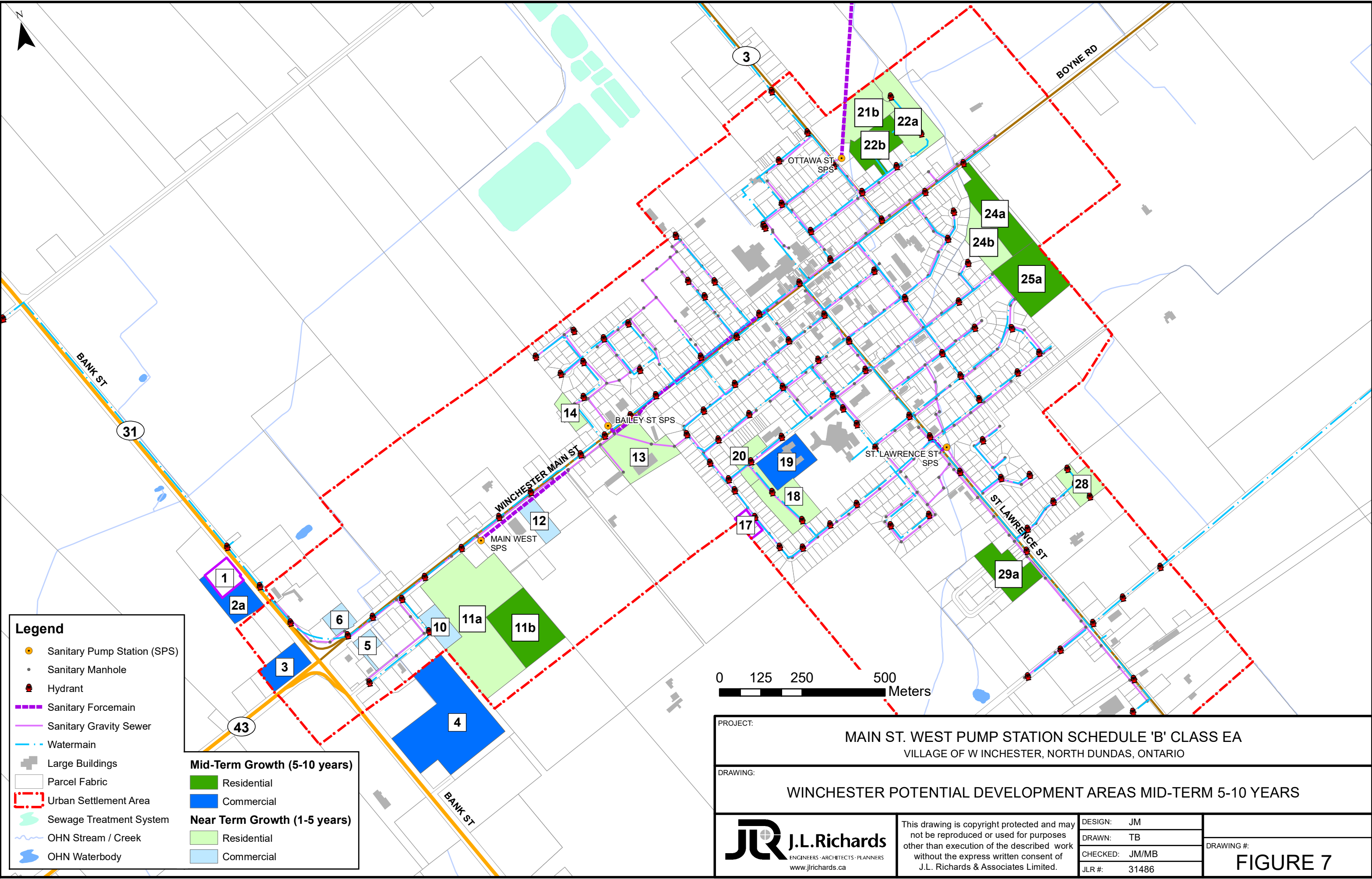


PROJECT:			
MAIN ST. WEST PUMP STATION SCHEDULE 'B' CLASS EA VILLAGE OF WINCHESTER, NORTH DUNDAS, ONTARIO			
DRAWING:			
WINCHESTER POTENTIAL DEVELOPMENT AREAS			
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Legend

- Sanitary Pump Station (SPS)
- Sanitary Manhole
- Hydrant
- Sanitary Forcemain
- Sanitary Gravity Sewer
- Watermain
- Large Buildings
- Parcel Fabric
- Urban Settlement Area
- Sewage Treatment System
- OHN Stream / Creek
- OHN Waterbody

Mid-Term Growth (5-10 years)

- Residential
- Commercial

Near Term Growth (1-5 years)

- Residential
- Commercial

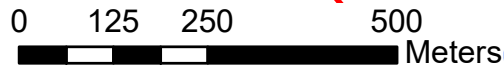
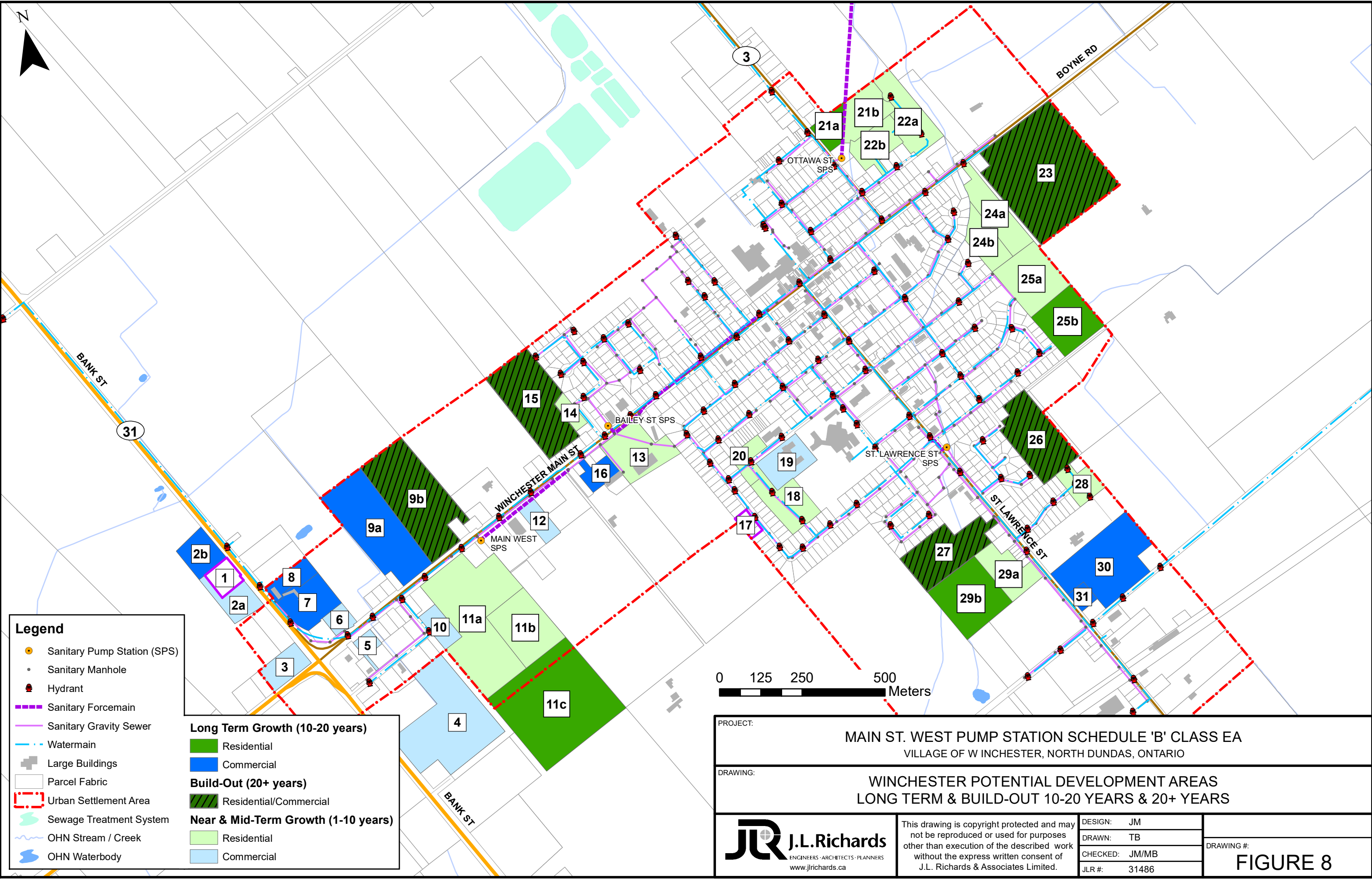
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MAIN ST. WEST PUMP STATION SCHEDULE 'B' CLASS EA VILLAGE OF WINCHESTER, NORTH DUNDAS, ONTARIO		
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WINCHESTER POTENTIAL DEVELOPMENT AREAS MID-TERM 5-10 YEARS		
 ENGINEERS · ARCHITECTS · PLANNERS www.jlrichards.ca	DESIGN: JM	DRAWING #: FIGURE 7
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PROJECT:			MAIN ST. WEST PUMP STATION SCHEDULE 'B' CLASS EA VILLAGE OF WINCHESTER, NORTH DUNDAS, ONTARIO	
DRAWING:			WINCHESTER POTENTIAL DEVELOPMENT AREAS LONG TERM & BUILD-OUT 10-20 YEARS & 20+ YEARS	
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Township of North Dundas Main Street West SPS Upgrades Schedule 'B' Class EA: (FINAL)

2.5 Future Design Basis

As part of the 2020 Water and Wastewater Servicing Study, the current sanitary sewer system was simulated using the Township's SewerCAD® model under existing to 5 year, 5 to 10 year, 10 to 20 year and Build-out 20+ year sewage flow demand conditions, to determine if capacity upgrades of the existing sewers and other related infrastructure are required. The remainder of this section outlines methods and results of the 2020 Water and Wastewater Servicing Study.

Industrial, commercial, and institutional (ICI) growth was individually assessed for additional projected flows based on developed area using the MECP Sewer Design Guidelines and City of Ottawa Sewer Design Guidelines. These were combined with existing and projected residential flows, accounting for the full 20+ year buildout scenario.

Table 6 summarizes the design parameters used to calculate the sanitary sewer flow demands for the projected future developments and phasing obtained in the 2020 North Dundas Drinking Water Supply System Capacity Expansion Class EA Technical Memorandum No. 1 – Population Growth and Development Projections.

Table 6: Sanitary System Design Parameters

RESIDENTIAL:	
Average Flow	350 L/cap/day
Peaking Factor (minimum 2, maximum of 4)	$1 + \frac{14}{4 + \sqrt{\frac{Population}{1000}}}$
INDUSTRIAL, COMMERCIAL AND INSTITUTIONAL (ICI):	
Average Flow	28,000 L/ha/day
Peaking Factor	1.4
INFILTRATION:	
Peak Extraneous Flow (Collection System)	0.28 L/ha/s
Extraneous Flow (Treatment System)	90 L/cap/day

Based on the sanitary system design parameters, the following sanitary sewer flows were determined for projected development and presented in Table 7. Only development relevant to the Main Street West SPS catchment area are presented. Development identification numbers correspond to those presented in Figures 5 to 8.

Table 7: Projected Sanitary Sewer Flows from Development Stages

Development (ID # – Location)	Type / Magnitude of Development	Peak Residential Flow	Peak ICI Flow	Extraneous Flow	Cumulative Total Flow
		L/s	L/s	L/s	L/s
TIMING – EXISTING TO 5 YEARS:					
5 – Main St. (South)	Commercial – 0.42 ha	-	0.19	0.12	0.31
6 – Main St. (North)	Commercial – 0.20 ha	0.33	0.25	0.15	0.73
10 – Dawley Dr.	Commercial – 0.81 ha	-	0.37	0.23	0.60
11A – Wellings PH 1 - 2	Residential – 150 units	3.24	-	1.89	5.13

Township of North Dundas Main Street West SPS Upgrades Schedule 'B' Class EA: (FINAL)

Development (ID # – Location)	Type / Magnitude of Development	Peak Residential Flow	Peak ICI Flow	Extraneous Flow	Cumulative Total Flow
		L/s	L/s	L/s	L/s
11A – Wellings PH 1 - 2	Commercial – 2.28 ha	1.03	-	0.64	1.67
12 Main St. (South)	Commercial – 0.77 ha	-	0.35	0.22	0.57
SUB-TOTAL – EXISTING TO 5 YEARS		4.6	1.16	3.25	9.01
TIMING – 5 TO 10 YEARS:					
2A – HWY #31	Commercial – 1.13 ha	-	0.51	0.32	0.83
3 – HWYs #31 and 43	Commercial – 1.12 ha	-	0.51	0.31	0.82
4 – HWY #31 John Deere	Commercial – 6.17 ha	-	2.80	1.73	4.53
11B – Wellings PH 3	Residential – 86 units	1.85	-	0.81	2.66
SUB-TOTAL – 5 TO 10 YEARS		1.85	3.82	3.17	8.84
TIMING – 10 TO 20 YEARS:					
A – Existing Not Connected	Residential/commercial – 28 units	1.13	1.44	3.28	5.85
2B – HWY #31	Commercial – 1.22 ha	-	0.55	0.34	0.89
7 – Motel Property	Residential – 14 units	0.57	-	0.52	1.09
8 – Country Kitchen	Residential – 7 units	0.29	-	0.24	0.53
9A – Main St. (North)	Commercial – 5.07 ha	-	2.30	1.42	3.72
11C – Wellings PH 4 - 5	Residential 264 units	5.64	-	2.42	8.06
SUB-TOTAL – 10 TO 20 YEARS		7.63	4.29	8.22	20.14
TIMING – BUILD-OUT 20+ YEARS:					
9B – Main St. (North)	Commercial – 5.53 ha	-	2.51	1.55	4.06
SUB-TOTAL – BUILD-OUT 20+ YEARS		-	2.51	1.55	4.06

Inputting projected development into the existing SewerCAD® model for all development stages, a projected peak flow for each development stage was acquired and is presented in Table 8.

Table 8: Main St. West SPS Flow Projections

Pumping Station	Rated Capacity (L/s)	Projected Peak Flow (L/s)			
		0-5 Years	5-10 Years	10-20 Years	Build-out
Main St. West	6	19	27	41	44

Township of North Dundas Main Street West SPS Upgrades

Schedule 'B' Class EA: (FINAL)

2.6 Problem / Opportunity Statement

The following Problem / Opportunity Statement will be used as the basis for proceeding to Phase 2 of this Class EA:

The Village of Winchester's Main Street West Sewage Pump Station (SPS) receives sewage collected in the western extents of the Village and conveys it through a single forcemain to a maintenance hole upstream of the Bailey Avenue SPS. It has been identified in a 2020 Water and Wastewater Servicing Study that the existing Main Street West SPS does not have sufficient capacity to accommodate future flows. An upgrade at the Main Street West SPS provides the opportunities for future development to occur and renewal of the existing infrastructure.

3.0 Phase 2 – Identification of Alternative Solutions

The main objective of Phase 2 of a Class EA is to identify and evaluate possible alternative solutions to the problem(s) (and/or opportunities) identified in Phase 1. All reasonable potential solutions to the problem(s), including the 'Do Nothing' alternative, are considered. Class EAs for wastewater projects generally result in the identification and review of a broad range of solutions. It is also important to note that the objective of Phase 2 is to focus on determining a general solution to the problem and design details are typically further defined during a preliminary and detailed design stage.

As part of Phase 2 of the Class EA, alternative solutions to address the Problem/Opportunity Statement are considered and evaluated against any environmental, social and economic impacts.

The general alternative solutions considered for the Main Street West SPS include:

- Alternative 1: Do Nothing – this option generally examines what may occur if none of the alternatives under consideration are implemented
- Alternative 2: Expand within the Existing Wet Well
- Alternative 3: Keep the Existing Wet Well and Expand with a New Wet Well on the Existing Site
- Alternative 4: Decommission the Existing Wet Well and Build a New Wet Well on the Existing Site

3.1 Evaluation and Selection Methodology

In order to facilitate the evaluation and selection of the preferred solutions during Phase 2, a transparent and logical three-part assessment process was established. This process included:

- Initial screening of alternatives;
- Detailed evaluation of screened alternatives; and
- Selection of a preferred alternative.

The first evaluation stage considers the overall feasibility of the potential solutions and identifies those alternatives that fully address the problem statement. This step ensures that unrealistic alternatives are not carried forward to a more detailed evaluation stage. Based on the initial

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screening, a detailed assessment of the short list of alternatives is conducted. Evaluation criteria were developed based on a review of the background information, experience on similar assessments and in consultation with Township staff. The evaluation was conducted using criterion in the following four major criteria categories:

- Natural Environment and Archaeology
- Social and Community Well Being
- Engineering and Technical Considerations
- Financial Impacts

Each criterion was assigned a colour to reflect its level of impact relative to other criteria. The relative level of impact for each criterion for each potential solution was then assessed based on the colour weighting system summarized in Table 9. The option that has the least negative impact or has the strongest positive impact was recommended as the preferred solution and presented to stakeholders to solicit input before finalizing.

Table 9: Detailed Evaluation Impact Level and Colouring System

Impact Level	Colour	Relative Impact
Strong Positive Impact	Green	Preferred
Minor Impact	Yellow	Less Preferred
Strong Negative Impact	Orange	Least Preferred

The OPC for each servicing solution were based on a Class 'D' estimate, generally defined as follows:

- Work Definition: A description of the intended solutions with such supporting documentation as is available.
- Intended Purpose: To aid in the screening of various servicing solutions prior to recommending a preferred solution (not intended to establish or confirm budgets).
- Opinion of Probable Cost is in 2022 dollar value. An OPC with a Class 'D' (Indicative Estimate) level of accuracy was developed for each alternative solution and includes allowances for design elements that have not fully been developed. Class 'D' OPCs developed for this assignment are expected to be within +/- 30%. The OPCs were developed based on past experience on similar projects, professional judgment, and equipment costs provided by suppliers. Design completed as part of this Class EA is conceptual in nature for the purpose of obtaining Class 'D' cost estimates. All design parameters (e.g., pipe size, pump capacity, wet well dimensions, etc.) should be confirmed during detailed design. Any provided estimate of costs or budget is an OPC that is based on historic construction data and does not include labour, material, equipment, manufacturing, supply, transportation or any other cost impacts in relation to COVID-19. JLR shall not be responsible for any variation in the estimate caused by the foregoing factors but will notify the Township of any conditions which JLR believes may cause such variation upon delivery of the estimate.

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3.2 Initial Screening of Alternatives

This stage considers high level feasibility of potential alternatives, based majorly on whether they address the problem statement. This typically allows immediate elimination of multiple alternatives and causes only realistic alternatives to be carried forward into the detailed evaluation.

Several alternatives are presented in Table 10 for the Main Street West SPS along with a summary of the review carried out to support a recommendation to either carry the alternative forward for further evaluation or not.

Table 10: Description and Preliminary Evaluation of Main Street West SPS Alternatives

Alternative	Review/Recommendation
Alternative 1: Do Nothing CARRY FORWARD	Review: This alternative will not address the problem statement. Recommendation: Carry forward as base line option.
Alternative 2: Expand within Existing Wet Well	Review: This alternative will address the problem/opportunity statement, but only limited to short term needs. The existing wet well does not have sufficient space to accommodate newer larger pumps. The wet well structure has limited capacity which is not sufficient for mid to long-term servicing requirements. Recommendation: Do not carry forward.
Alternative 3: Keep the Existing Wet Well and Expand with a New Wet Well on the Existing Site	Review: This alternative will address the problem/opportunity statement. However, it is not a common practice to have two parallel wet wells on the same PS site, particularly with the rated capacity of Main Street West SPS. The flow diversion and pump control can become challenging. Recommendation: Do not carry forward.
Alternative 4: Decommission the Existing Wet Well and Build a New Wet Well on the Existing Site CARRY FORWARD	Review: This alternative will address the problem/opportunity statement. This alternative allows the existing SPS to remain in operation during construction of the new station, avoiding longer-term bypass requirements. The new wet well can be sized appropriately for long-term servicing requirements. Recommendation: Carry forward.

From the initial screenings, the following alternatives are being carried forward for the SPS:

- Alternative 1: Do Nothing.
- Alternative 4: Decommission the Existing Wet Well and Build New Wet Well on the Existing Site.

3.3 Detailed Evaluation of Proposed Alternatives

Alternative 1 – Do Nothing

Alternative 1 is the “Do Nothing” approach. This would mean that no work would be undertaken and the existing SPS would remain in service. This approach has no associated construction costs, and no impacts due to construction. The “Do Nothing” approach does not address any of

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the issues identified in the Problem/Opportunity Statement. It does not allow for continued growth and development within Winchester's west end.

Alternative 4 – Decommission the Existing Wet Well and Build a New Wet Well on the Existing Site

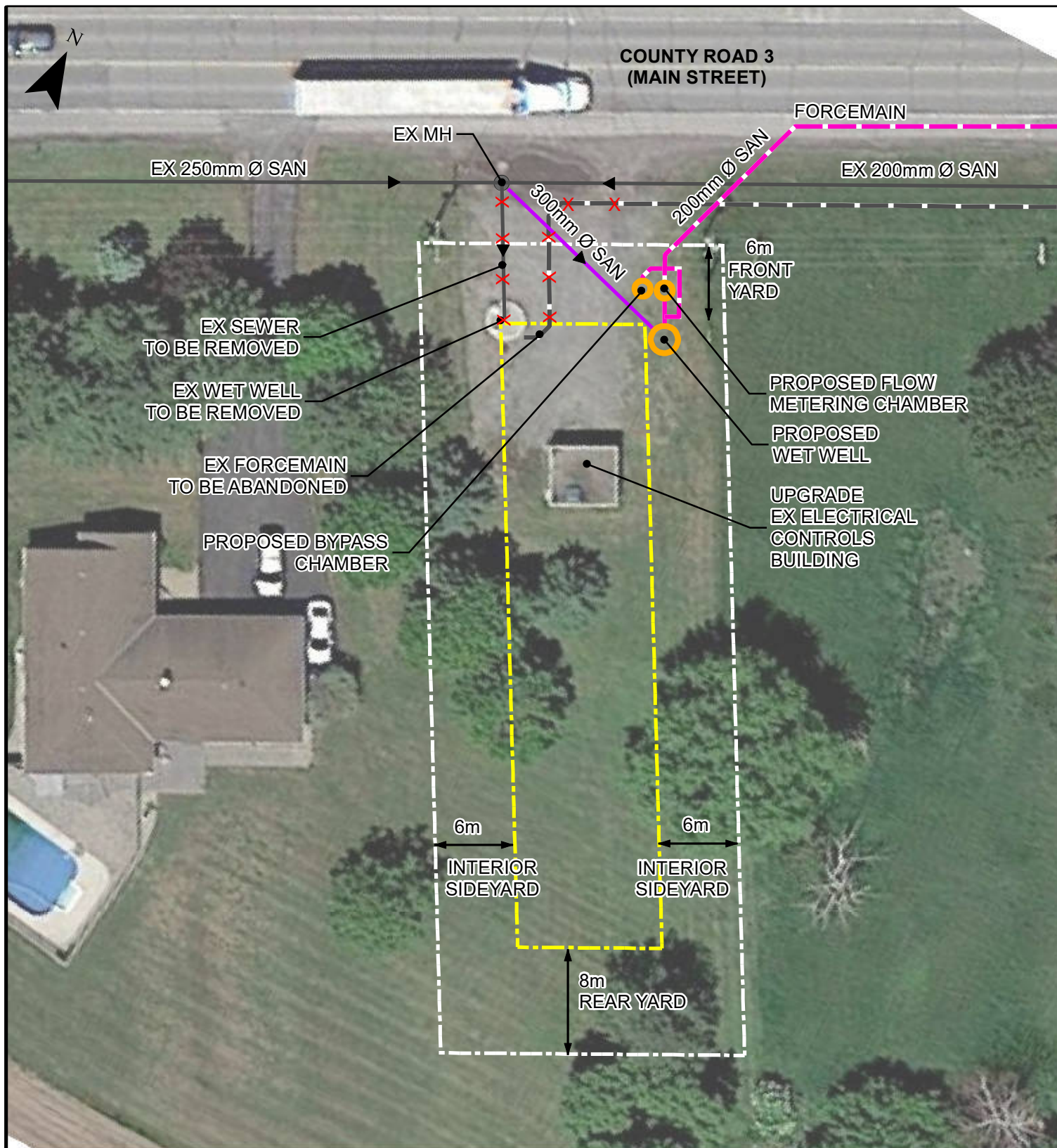
The general layout of Alternative 4 is shown in Figure 9.

Alternative 4 consists of decommissioning the existing wet well and building a new wet well on the existing site. The existing wet well is a prefabricated concrete structure with electrical connections feeding to a separate Controls Building and a forcemain extending to the east. The proposed works would include a new wet well, including two (2) new pumps, new piping and valves. The new wet well will have new electrical duct work feeding to the existing Controls Building, with new panels installed. The gravity sewer and forcemain will be modified to connect to the new wet well. Forcemain piping design outside the wet well will consider increased contingency measures to allow sufficient operational practices, such as a short bypass route around the flow meter chamber, as well as a separate metering chamber.

The main benefits of this alternative include:

- A new wet well on the existing site utilizes the existing Controls building and reduces modifications to the existing sewer system.
- Increasing pumping capacity enables future growth and development.
- Construction of the new station can occur while the existing station remains active, incurring far less risk, and requiring minimal bypass operations. This also allows for flow to be temporarily directed back to the existing SPS during commissioning if any issues occur.
- Operation and maintenance capabilities heavily improved from new equipment and bypass solutions.

The Opinion of Probable Costs for Alternative No.4 is estimated at \$3,100,000, which includes some construction contingencies, overhead costs, mobilization, insurance/bonding, etc., but excluding HST.



PROJECT:

MAIN ST. WEST PUMP STATION SCHEDULE 'B' CLASS EA
VILLAGE OF WINCHESTER, NORTH DUNDAS, ONTARIO

DRAWING:

**ALTERNATIVE NO. 5 – DECOMMISSION THE EXISTING WET WELL AND
BUILD NEW WET WELL ON THE EXISTING SITE**

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3.4 Summary of Evaluation and Preferred Alternative

Evaluation Overview

The evaluation process consisted of a review of the short-listed combinations in consideration of the criteria described in Table 11.

Table 11: Summary of Evaluation Criteria

Criteria	Description
Natural Environment Considerations	Natural features, natural heritage areas, Areas of Natural and Significant Interest, designated natural areas, watercourses and aquatic habitat
Social and Cultural Environment Considerations	Proximity of facilities to residential, commercial and institutions, archeological and cultural features, designated heritage features, wellhead protection areas, land-use and planning designations
Technical Feasibility	Constructability, maintaining or enhancing water quality, reliability and security of wastewater collection system, ease of connection to existing infrastructure and operation and maintenance requirements, addresses aging infrastructure, expandability
Financial Considerations	Capital costs, Operation and Maintenance costs

The relative impact for each criterion to each potential Servicing Solution was assessed based on whether the alternative is 'Preferred', 'Less Preferred', 'Least Preferred' or 'Not Feasible' with respect to that criterion. The four (4) evaluation criteria were assigned equal weights as they were considered to have equal importance in this evaluation at the EA stage.

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Table 12: Evaluation Matrix

	Alternative No. 1 – Do Nothing	Alternative No. 4 – Decommission the Existing Wet Well and Build a New Wet Well on the Existing Site
Natural Environment	- No impacts to the natural environment will occur. - If growth and development continue, incoming flows will exceed capacity. This would cause an overflow and a release of raw sewage into the natural environment if not addressed.	- Some impact to the natural environment is anticipated due to construction. - There is no waterway adjacent to the site. - Activities are not anticipated to have impacts on the few nearby trees. The site has sufficient space for construction laydown. Minimal interruption is anticipated for existing natural features. - Minimal impacts are anticipated for any wildlife.
Evaluation	Preferred	Less Preferred
Social and Cultural Environment	- Does not allow for planned growth and development. - Capacity constraints may lead to basement flooding, pump station overflow which can have significant environmental and social consequences.	- New wet well will be further away from closest resident, reducing potential odor and noise. - Sufficient for full build-out scenario of growth and development. - Noise, increased traffic, and reduced air quality is anticipated during construction, however, can be mitigated.
Evaluation	Least Preferred	Preferred
Technical Feasibility	Existing SPS has no remaining capacity for additional flows.	- Increased pumping capacity sufficient for future growth and development. - New pumps will be equipped with variable frequency drive (VFD) to increase energy efficiency. - Flow meter added for useful flow data. - Bypass chamber and piping for additional layers of contingency and ease of maintenance.
Evaluation	Least Preferred	Preferred
Financial Considerations	- No cost associated with construction. - Does not allow for development to occur - More likely for future environmental incidents (and associated clean up).	- Higher capital cost. - Built in bypass solutions allow for reduced maintenance costs
Evaluation	Less Preferred	Preferred
Overall Evaluation	Least Preferred	Preferred

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Preferred Alternative Solution

Based on the evaluation methodology utilized, it was determined that the preferred alternative is **Alternative No. 4 - Decommission the Existing Wet Well and Build a New Wet Well on the Existing Site.**

4.0 Source Water Protection

The recent amendments to the Municipal Engineers Association (MEA) Class EA guideline in October 2015 require a Proponent to identify, during the Class EA and Master Planning process, if the proposed undertaking occurs within a source water protection vulnerable area.

This section intends to identify whether or not the proposed EA project is located within a vulnerable area and its potential impact on the source water protection.

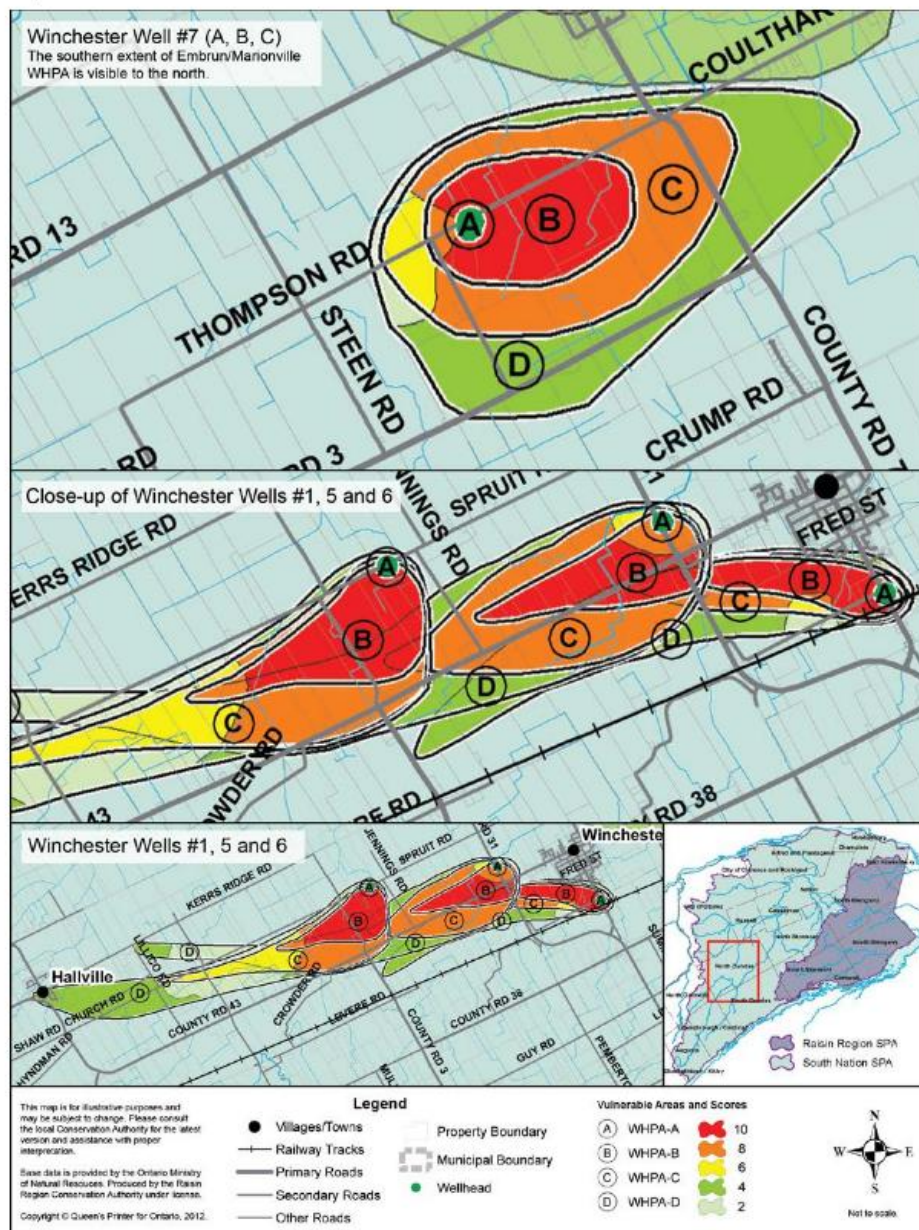
According to the Raisin-South Nation Conservation Drinking Water Source Protection Plan (Figure 10) and the Ontario Source Protection Information Atlas (Figure 11), the Main Street West SPS is located outside of the Wellhead Protection Area. It is located within the highly vulnerable aquifer with a score of 6. The Raisin-South Nation Conservation Drinking Water Source Protection Plan prescribes the “establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage” as a drinking water threat.

It is recommended that a detailed hydrogeological and geotechnical study be undertaken in the preliminary design to address any concerns related to source water protection.

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Raisin-South Nation Source Protection Region
Source Protection Plan

Map 15: Vulnerable Areas – Winchester



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Figure 10: Vulnerable Areas Winchester (Raisin-South Nation Source Water Protection Plan)

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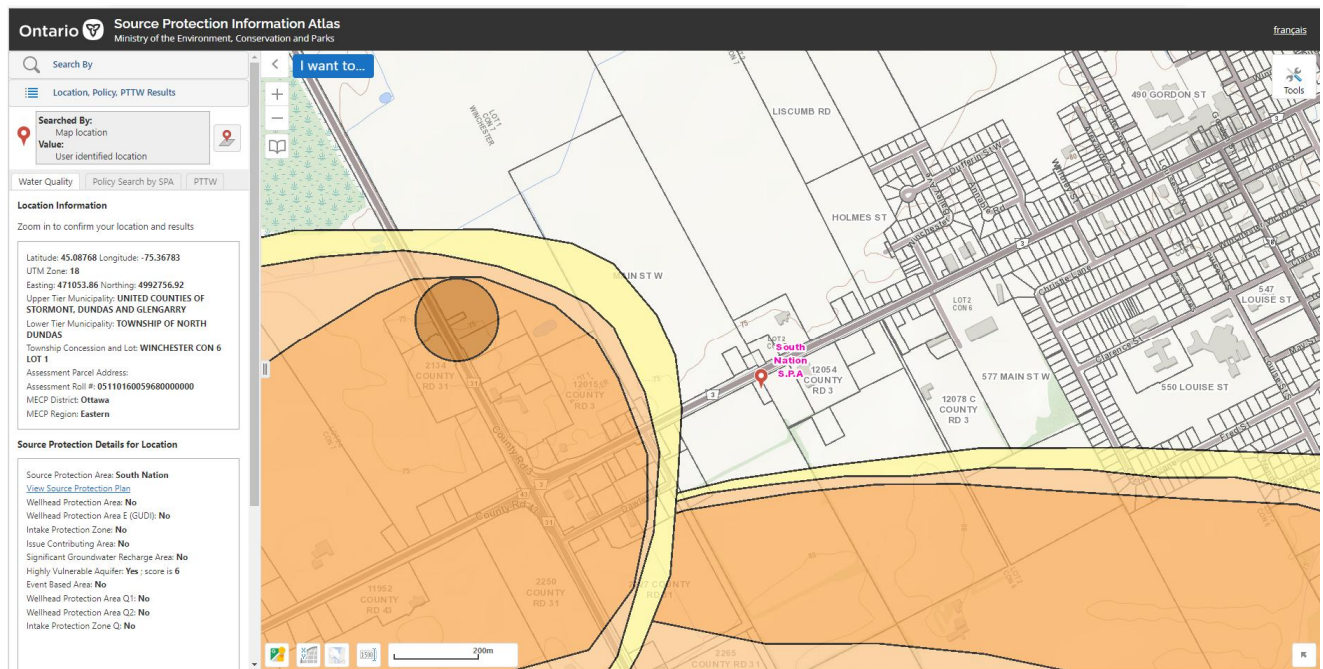


Figure 11: Ontario Source Protection Information Atlas

5.0 Project Description

5.1 Project Overview

The preferred alternative solution involves decommissioning of the existing precast concrete wet well and construction of a new wet well at the existing Main Street West SPS site to service the future flows. In detail, the project involves the following major components:

- A new wet well approximately 1,800 mm in diameter made from prefabricated fibreglass reinforced plastic at a depth of approximately 8 m from grade.
- Two new variable speed drive submersible pumps each rated for 44 L/s at total dynamic head (TDH) of 23 m.
- New gravity sewer sections will be installed to connect to the new wet well.
- The individual discharge forcemain for the pumps will be 150 mm in diameter, feeding into a 200 mm forcemain header leaving the site.
- A new metering and bypass chambers will be installed. The bypass chamber is designed to increase operational flexibility to allow an easier bypass of the entire forcemain downstream, should any maintenance be required on the discharge forcemain. In addition, should any maintenance required within the SPS, flow can be pumped from the upstream manhole and into the bypass connection. This eliminates the need for trucking sewage.
- Site-wide electrical, instrumentation and control upgrades will be completed.
- The existing pumps and wet well will be decommissioned.

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A sequencing rationale is required to maintain process operations while installing required new equipment include the pumps, piping and electrical upgrades. The following is a preliminary detailing of proposed works and the sequence of the process:

- Complete linear infrastructure work to install the new forcemain section.
- Complete removals within existing Controls Building to facilitate installation of new electrical equipment.
- Provide new electrical equipment within the existing Controls Building, including variable frequency drives for pump speed control and infrastructure to back feed the existing SPS.
- Provide temporary generator to operate the existing SPS and disconnect the existing electrical service.
- Complete new electrical service upgrade.
- Switch existing SPS to new electrical service and remove temporary generator.
- Complete natural gas and municipal water service relocations. Re-connect new gas service to existing SPS control building.
- Install new SPS, including:
 - o Sanitary sewer
 - o Forcemain infrastructure
 - o Metering chamber
 - o Bypass pumping chamber
 - o New power and communications between SPS and existing Controls Building
- Commission new SPS using water to confirm complete station operation prior to switchover to sewage.
- Provide bypass pumping from two maintenance holes upstream of MH#406 to the new SPS.
- Complete additional testing / commissioning on new SPS with sewage.
- Complete modifications to MH#406 to connect sanitary sewer to new SPS and cap sanitary sewer to existing SPS.
- Remove existing SPS and obsolete infrastructure.
- Complete site grading and remedial works.

5.2 Project Schedule and Implementation

Once the Township initiates the design phase, it is anticipated that the project will take approximately two to three years, depending on the approval timeline at that time. The project will proceed in accordance with the following approximate timeline:

- | | |
|--|----------------|
| • Preliminary Design: | 3 months |
| • Detailed Design: | 4 months |
| • Finalize Contract Drawings and Specifications: | 1 month |
| • Approvals: | 6 to 12 months |
| • Tender and Contract Award: | 2 months |
| • Construction: | 12-18 months |

The time between filing the Schedule 'B' Report and commencement of construction, shall not exceed 10 years in accordance with the Municipal Class EA process. In the event that the

Township of North Dundas Main Street West SPS Upgrades Schedule 'B' Class EA: (FINAL)

Township decides to delay the project and the lapse of time exceeds 10 years, a Schedule 'B' Report amendment is required to review the planning and design process and the current environmental setting to ensure the project and the mitigation measures are still valid given the current planning context.

5.3 Opinion of Probable Construction Costs

The Opinion of Probable Construction Costs for the proposed undertaking is estimated at \$3,100,000, which includes some construction contingencies, overhead costs, mobilization, insurance/bonding, etc., but excluding HST.

5.4 Impacts on the Natural, Social, and Economic Environments

Geotechnical Conditions

Since the existing site has already been developed, the site conditions are majorly known and are not expected to have unanticipated geotechnical issues. It is proposed that a field geotechnical assessment be completed during preliminary and detailed design.

Archaeological Conditions

There are no known archaeological conditions associated with this site. The site has been previously disturbed within the proposed works footprint, and the proposed works are not exceeding site boundaries. The project team contacted archaeologicalsites@ontario.ca and has confirmed that there are no reported archaeological sites on or in the immediate vicinity of the Main Street West SPS. Refer to Appendix B for the correspondence.

With additional consultation, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) provided a letter identifying their interest in the project and the required screenings. As part of this, the MHSTCI provided "*Criteria for Evaluating Archaeological Potential*"; a checklist to determine if an archaeological assessment is required. This completed checklist can be found in Appendix C.

Completing of the checklist in regard to the site, all screening questions were answered no. The property, specifically within the areas of proposed works, have been subjected to recent, extensive and intensive disturbances, as described on the checklist instructions. Therefore, no further archaeological assessment is required.

Natural Environment, Ecology and Species at Risk

Bowfin Environmental Consulting was retained to complete a desktop review of the natural heritage features at and surrounding the site location. The following section serves to highlight and summarize the findings relevant to this Class EA. The complete Desktop Review Report can be found in Appendix C. Note that the report covers analysis of multiple sites in the Township; the annotation for the site relevant to this Class EA is 'Site 2'.

Table 13 provides a summary of the natural heritage features protected within Stormont, Dundas and Glengarry United Counties (SD&G) and identified conclusions during the desktop review for each feature.

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Table 13: Summary of Natural Heritage Features Protected in SD&G (from Bowfin Environmental)

Natural Heritage Feature	Identified Potential Site Concerns (On site or in Adjacent Lands Within 120 m of Site Location)
Significant habitat of Endangered and Threatened Species (SAR)	Chimney Swift Barn Swallow Bobolink Eastern Meadowlark Bats (day-roosts) Butternuts
Significant wetlands	None
Significant coastal wetlands or coastal wetlands	None
Significant valley lands	None
Significant woodlands	None
Significant wildlife habitat	None
Significant Areas of Natural and Scientific Interest	None
Fish Habitat	None

The Eastern Meadowlark is identified as a SAR within the site area when utilizing the Make A Map system by the Ontario Ministry of Natural Resources and Forestry. Other listed habitat or presence of endangered and threatened species were identified as having a potential presence based on the site location.

For the proposed undertaking, tree removal is not required and work will generally remain within an existing gravel area and smaller portion of continually cut grassed area. As such, it is anticipated that the impact to natural environment will be minimal and can be mitigated via construction scheduling to avoid breeding and spawning season.

Although impacts are not anticipated to be of significance, further field investigations will be completed during the design phase to confirm the potential presence of any of the above listed species, or any other potential site concerns.

Built Heritage Resources and Cultural Heritage Landscapes

The MHSTCI provided "*Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes*"; a checklist to help determine whether an EA project may impact built heritage resources and/or cultural heritage landscapes. This completed checklist can be found in Appendix C.

Completing the checklist in consideration of site conditions, all screening questions for known or potential cultural heritage value were answered no. The site occupies a small footprint with no historical significance, contains a singular building built within the last 40 years, and is not located near any significant features that indicate potential cultural heritage value. It was therefore determined there is a very low potential for built heritage or cultural heritage landscape on the property and that no further investigations are required.

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Air Quality, Dust and Noise

A construction mitigation plan will be developed to incorporate noise and air quality control measures in order to mitigate adverse noise impacts to nearby residential land uses within the study area.

The noise from construction can be mitigated via limiting the operation hours of noisy machinery (e.g., hoe ramming) and advance notice to the neighboring property owners. The reduced air quality can be mitigated via promoting offsite manufacturing and onsite assembling practices. The construction vehicles can be hosed down prior to leaving the site to reduce mud carry over onto the streets.

Climate Change Impact

Global warming is unequivocal, raising global average temperatures. The effects this locally can drastically vary between regions. A study done by CBCL to produce projections for the national capital region (NCR) (CBCL 2020) can be used to provide estimates for high similarities in the North Dundas region. Key points from this study relevant to the Main Street West SPS are as follows:

- Increasing total precipitation (except for summer)
 - Annual total precipitation for the region expected to increase approximately 4% in the 2030s, 7% in the 2050s, and about 10% in the 2080s, with increased concentrations in the winter and shoulder seasons and none for the summer.
- No alterations to frequency of wet days
 - Precipitation is anticipated to be concentrated within the same number of wet days (exceeding 1 mm of precipitation).
- Increase for precipitation intensity
 - Annual maximum precipitation in one day expected to rise approximately 5%, 12%, and 15% in the 2030s, 2050s, and 2080s, respectively. Multiple varying duration intensities (sub-daily, daily, multi-day) are expected to increase. Short-period intensities are expected to rise 5%, 15%, and 20% by the 2030s, 2050s, and 2080s, respectively.

Since a typical sanitary system is susceptible to infiltration, projections of increased total precipitation and precipitation intensities could lead to even higher incoming flows during wet periods. The design basis for Main Street West SPS has taken into account climate change impact from precipitation. Currently, the Main Street West SPS is not heavily influenced by wet weather events. A significant portion of the flow for the new SPS will be from new development area for which newer piping network will be installed. During detailed design, additional considerations will be taken to account for potential inflow and infiltration from underground piping network for the future, e.g., slightly larger pumps.

At the SPS, the pumps will be equipped with variable frequency drives (VFDs) which reduce energy demands, and hence greenhouse gas emissions (GHGs), by enabling electric motors to operate at less than full speed. During the design stage, consideration for the material choice (concrete vs. prefabricated fibreglass) and installation method for the wet well and its associated carbon footprint would be given. The pumping station sizing will be optimized to require fewer

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building materials, which would generally lead to reduced GHG emissions during material manufacturing and construction phase.

Excessive Soil Management and Contaminated Site

As discussed previously, a geotechnical engineering consultant should be retained during the detailed design to review excess soil management strategies and issues related contaminated site conditions. All activities involving the management of excess soil will be completed in accordance with O.Reg. 406/19 and the MECP's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices". All waste materials generated during construction will be disposed of in accordance with ministry's requirements.

5.5 Permits and Approvals

A number of approvals are required prior to implementing the proposed works. These may include:

- Amendments to the Environmental Compliance Approval
- Environmental Activity Sector Registry or Permit to Take Water for Construction dewatering from the MECP, if required
- Site Plan approval from the Municipality
- Electrical Safety Authority (ESA) Permit
- Screening of the project in accordance with the requirements of the *Canadian Environmental Assessment Act*, should any Federal approvals be required or should funding be provided by the Federal Government for this project.

6.0 Public and Stakeholder Consultation Activities

6.1 Notice of Study Commencement

A notice of study commencement was issued to the public on December 6, 2021. This notice was revised to alter contact information and was reissued to the public on February 7, 2022. Both the notice and the revised notice were posted to the Township's website <https://www.northdundas.com/municipal-services/environmental-assessments>.

The notice provided a general overview of study purpose and how the public would be affected by it. The notice also provided a means of acquiring additional information or inquiring about the study, as well as an expected period for a Public Information Centre to be held.

6.2 Public Information Centre

A virtual Public Information Centre (PIC) was held on March 22, 2022, to discuss the Phase 1 and 2 Class EA findings. In advance of the PIC, a direct mailing was sent to individuals and stakeholders on the project mailing list and notices were posted on the Town's website <https://www.northdundas.com/municipal-services/environmental-assessments>.

The PIC included was in the format of a presentation, followed by question and answer period. The presentation discussed the steps taken during the Class EA process and the evaluation

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process to recommend the proposed 'preferred servicing solution" (Alternative No. 4 – Decommission the Existing Wet Well and Build a New Wet Well on the Existing Site. No comment was received during and after the PIC. Refer to Appendix B for a copy of the PIC presentation.

6.3 Stakeholder comments

A project mailing list was kept up to date throughout the project identifying stakeholders that required full documentation, partial documentation, and other parties that either declined participation unless the project scope changes to affect their respective agency or provided no response. Refer to Appendix C for stakeholder comments received, and responses provided and an updated stakeholder distribution list.

Table 14: Review Agency Comments

REVIEW AGENCY COMMENTS / RESPONSES	
Review Agency Ministry of Environment, Conservation and Parks (MECP)	
Comments:	
1. The MECP Letter provided general guidance on the Class EA Process, Schedule 'B' Process, MECP contacts, MECP technical review details and consultation with First Nations and Métis Communities, and various considerations.	
Responses:	
1. JLR will address these comments in the Report and subsequent public consultation process.	
Review Agency Ministry of Heritage, Sport, Tourism and Culture Industries	
Comments:	
1. The MHSTCI provided a letter to provide guidance on the archaeological resources, built heritage resources, and cultural heritage landscapes aspects to be addressed during this Class EA.	
2. No reported archaeological sites are currently mapping on or in the immediate vicinity of 5206 Main Street West, Winchester, Ontario. The fact there are no sites reported by licensed archaeologists on these lands at this time in no way precludes the presence of archaeological resources there. Archaeological sites are only reported to this office as they are discovered by licensed archaeologists in the course of their activities in the field. The paucity of archaeological sites at these locations could reflect the fact that a licensed archaeologist has never surveyed any of the lands in question.	
Responses:	
1. JLR will address these comments in the Report.	
2. Any archeological findings will be monitored for during construction activities.	

6.4 Aboriginal Consultation

MECP has instructed the Project team to consult with the following aboriginal communities who have been identified as potentially affected by the proposed project:

- Algonquins of Ontario (AOO)
- Mohawk Council of Akwesasne

Township of North Dundas Main Street West SPS Upgrades

Schedule 'B' Class EA: (FINAL)

7.0 References

CBCL Limited. (2020). 'Climate Projections for the Nation Capital Region'.
<<http://ottwatch.ca/meetings/file/646969>> (Jul. 06, 2021)

J.L. Richards & Associates Limited (JLR). (2012). *Township of North Dundas Village of Winchester Sanitary Sewer System Capacity Assessment*.

JLR. (2017). *Township of North Dundas Winchester Main Street West Pumping Station Assessment*.

JLR. (2019). *Township of North Dundas Winchester Wastewater Capacity Assessment*.

JLR. (2020). *Township of North Dundas Drinking Water Supply System Capacity Expansion Class EA, Technical Memorandum No. 1 Population Growth and Development*.

JLR. (2020). *Township of North Dundas Water and Wastewater Servicing Study*.

The Government of Ontario. (2022). 'Land Information Ontario'.
<<https://www.ontario.ca/page/land-information-ontario>>

The Government of Ontario, Ministry of Natural Resources and Forestry. (2022). 'Make a Topographic Map'.
<https://www.lioapplications.lrc.gov.on.ca/MakeATopographicMap/index.html?viewer=Make_A_Topographic_Map.MATM&locale=en-CA>

Ontario Clean Water Association (OCWA). (2018). *Supporting Information for ECA Amendment Application (ECA #4037-6CAMCT)*.

Township of North Dundas Main Street West SPS Upgrades Schedule 'B' Class EA: (FINAL)

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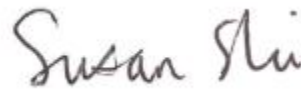
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