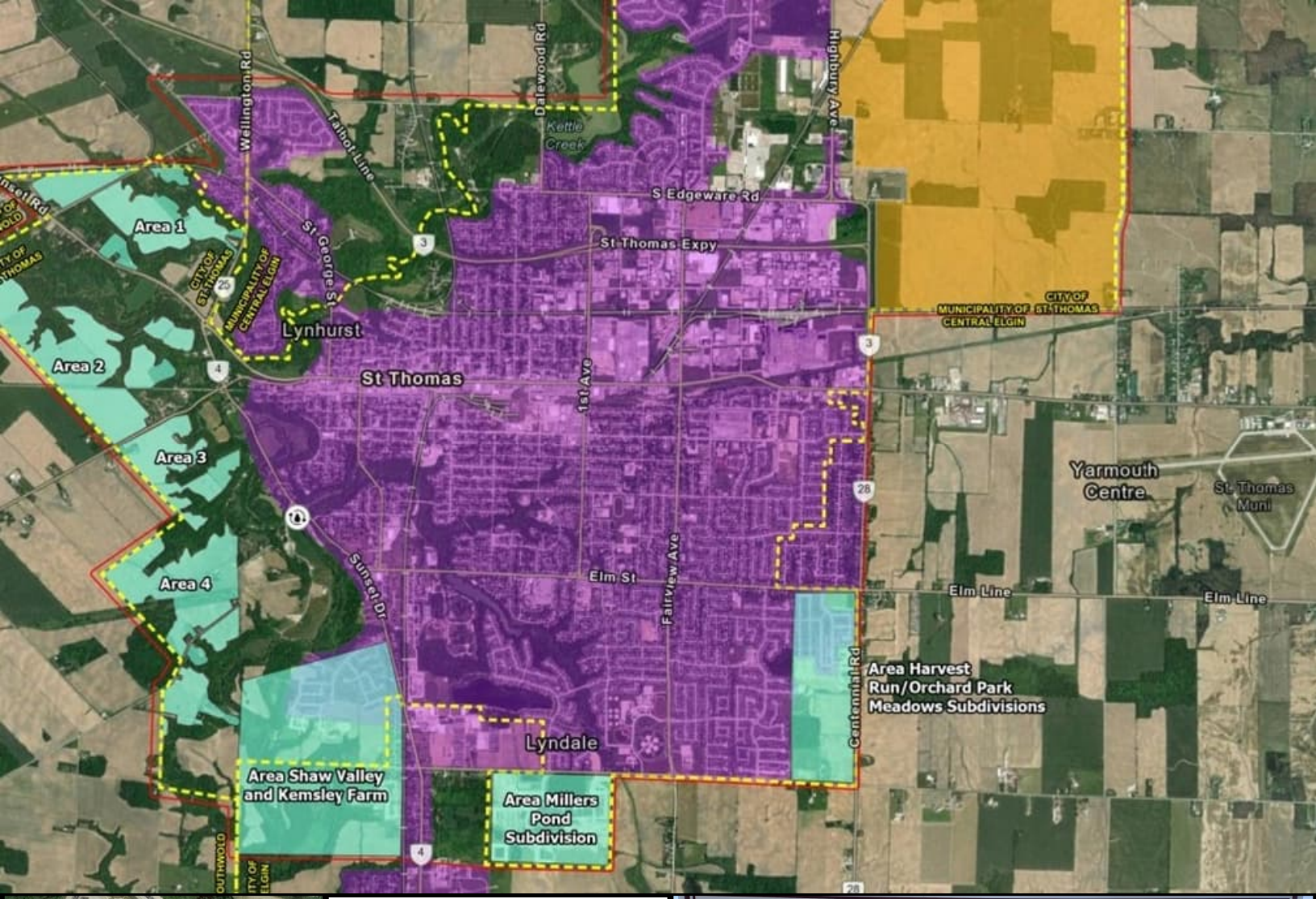

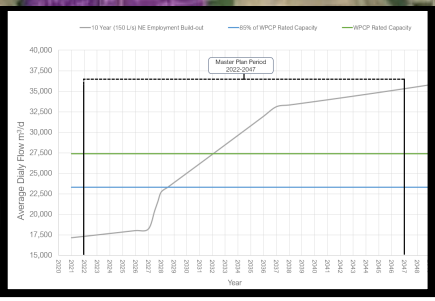

CITY OF ST. THOMAS

St. Thomas Wastewater Master Plan Update

Final

December 21, 2023

ST. THOMAS
THE RAILWAY CITY

RVA

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RVA 226304

December 21, 2023

City of St. Thomas
545 Talbot Street
St. Thomas, ON, N5V 3P7

Attention: **Patrick Anckaert, P.Eng. Senior Project Manager, Industrial Development**

Dear Sir:

Re: **St. Thomas Water Pollution Control Plant Wastewater Management Master Plan Update – Final Report**

R.V. Anderson Associates Ltd. is pleased to present to the City of St. Thomas the final St. Thomas Water Pollution Control Plant Wastewater Management Master Plan Update. If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED

John Tyrrell, M.Sc.(Eng.), P.Eng.
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St. Thomas Water Pollution Control Plant Wastewater Management Master Plan Update Report

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EXECUTIVE SUMMARY

Introduction

The City of St. Thomas (the City) has a population of 42,840 residents based on the 2021 census. The City owns, operates, and maintains all aspects of the municipal wastewater system which includes the sewage collection system comprising sewers, forcemains, and 16 sewage pumping stations, a Water Pollution Control Plant (WPCP), SCADA system, and a biosolids management facility. The projected growth of the City requires it to assess the existing wastewater treatment capability and position itself to meet the future wastewater servicing needs. The anticipated growth is projected to come from seven residential zones with a total area of 592 ha. There is also the North East Employment Lands (NE Employment Lands) with a developable area of approximately 430 ha. In view of the above, the City is undertaking a Wastewater Master Plan (WWMP) to ensure the effective operation of the WPCP and to identify options, costs, and solutions for potential wastewater treatment expansion for City's servicing needs over the next 20-years.

Planning Process

The Municipal Class Environmental Assessment (MCEA) (Municipal Engineers Association, 2023) is an approved planning and design process under the Ontario Environmental Assessment Act. The process provides the framework for planning of municipal infrastructure projects to fulfill the requirements of Ontario Environmental Assessment Act for a class or category of infrastructure projects. Projects are divided into schedules based on the type of projects and activities. Schedules are categorized as Exempt, B and C with reference to the magnitude of their anticipated environmental impact. These are described briefly in the following paragraphs. Figure 2.1 in the WWMP report shows the MCEA process.

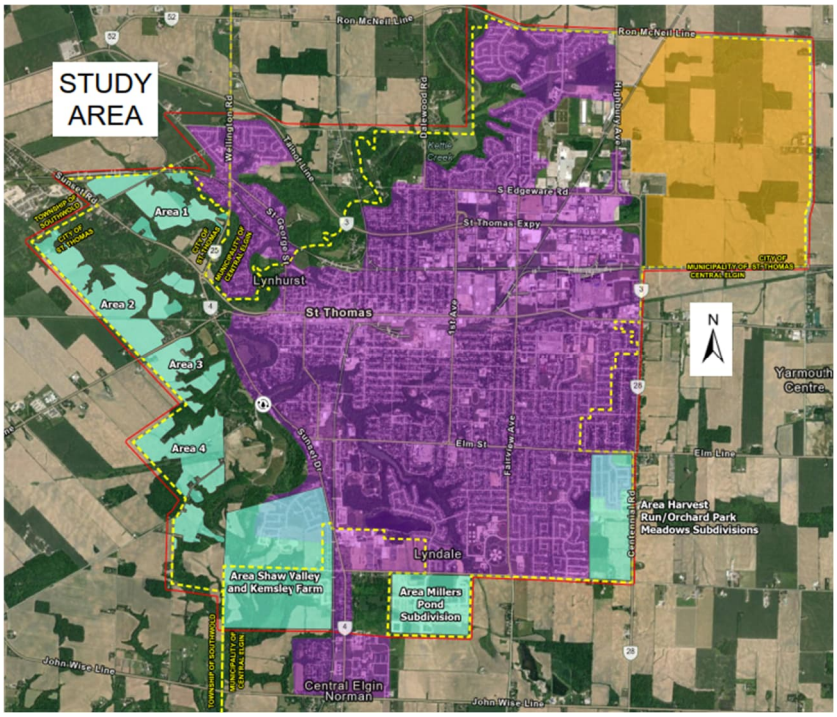


Figure ES 1 – Study Area

The Master Plan Process provides the basis for developing a long-range water and wastewater servicing plans which integrate infrastructure requirements for existing / future land use and evaluate all reasonable servicing alternative solutions with considerations to natural, social, and

economic environments ("triple bottom line"). The WWMP was developed following Approach #1 of the MECA process which involves a broad scope and a high level of assessment of the projects identified in the Study Area. Figure ES 1 in the WWMP report shows the MCEA process.

Problem/Opportunity Statement

As the first step in Phase 1 of the MCEA process, the City must identify and describe the problem or opportunity which outlines the need and justification for the overall project and establishes the general parameters, or scope, of the study. The City has defined the following as its statement of the problem/opportunity to be addressed by the WWMP:

> "As a growing city, St. Thomas has determined nine (9) new areas along with a large allowance for expected infill projects for growth within the City boundaries. With these new areas being developed, there will be population growth within the City. The existing WPCP capacity needs to be assessed to service the future sewage flows caused by the increase in the City population, and alternative solutions need to be evaluated to service the projected growth.
>
> In view of this, the goal of the WWMP is to ensure the effective operation of the Water Pollution Control Plant (WPCP) and to identify options, costs, and solutions for potential wastewater treatment expansion for City's servicing needs over the next 25-years."

Existing Wastewater Infrastructure

The WPCP is located at 115 Sunset Drive in St. Thomas. It is a conventional activated sludge treatment plant with a rated capacity of 27,300 m^3/d (316 L/s) and peak flow capacity of 54,600 m^3/d (632 L/s). St. Thomas WPCP is a conventional activated sludge facility with three (3) separate liquid trains called Plants 2, 3 and 4, respectively. Plants 2 and 3 were constructed in 1960s, while Plant 4 was completed in two phases between 1980 to 2003. In addition, a combined sewer overflow (CSO) was constructed in 2000 to mitigate wet weather peaks experienced at the WWTP and reduce overflows in the collection system. Currently, the City has approximately 2.0 km of combined sewers in its inventory and the *10 Year Capital Plan – 2023 to 2032* shows that most of these sewers will be separated in the next 10 years. In addition, the collection system has 16 sewage pumping stations.

Sewage Flow Projections

Based upon the best available information available at the time of the preparation of this report, it is anticipated that the NE Employment Lands will generate and average daily flow of approximately 150 L/s of flows on average to the City's sewage collection and treatment system. It is assumed that flows from the battery plant will be required by 2028 and will initially be in the order of 50 L/s. The remainder of the flows will be required when the NE Employment Lands are built out. Build out is assumed to be over a 10-year period.

Table ES 1 – Sewage Flow Projections for Planning Period

Parameter	Year						
	2022	2027	2028[1]	2032	2037	2042	2047
Population	43,379	46,179	46,760	49,159	52,331	55,708	59,303
Flow L/s	201	226	257	301	365	399	412
Flow m^3/d	17,344	19,500	22,186	26,026	31,500	34,496	35,614

1 – Milestone year when initial flows from NE Employment Lands are anticipated.

2- Assumed 10-Year NE Employment Lands build out period.

Figure ES 1.2 shows the flow projections noting that the when the initial flows commence from the NE Employment Lands, the current WPCP will reach 85% of its capacity and its capacity will be exceeded in the period between 2029 and 2034 depending on the rate of growth.

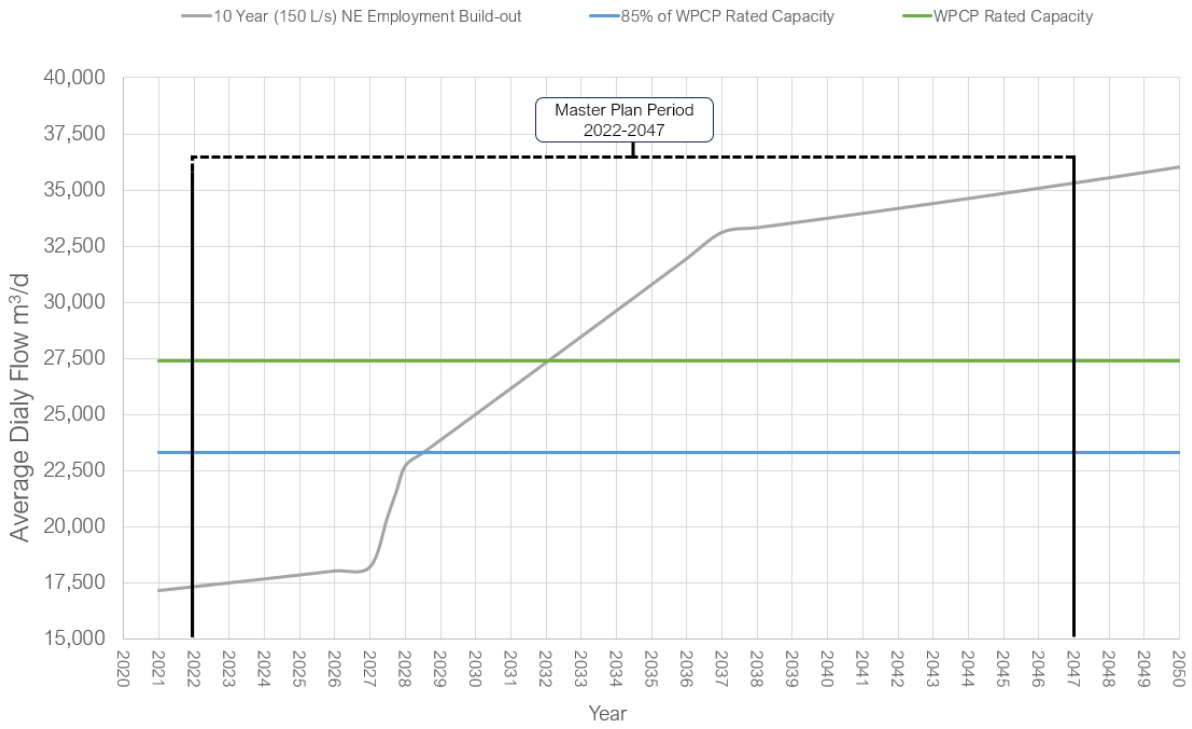


Figure ES 2 – Projected Flows

Solutions to Address Future Demand

By 2028, the City's flows will reach 85% of the current WPCP's capacity with the new battery plant coming on line. The development of additional industries in the NE Employment Lands is anticipated to occur over a 10-year period and therefore it is estimated that the capacity of the WPCP will be exceeded by 2032.To provide for the requirement for additional wastewater treatment capacity, the following are the planning level options that were reviewed:

1. Do Nothing;
2. Increase capacity of existing WPCP; and
3. Build new North WWTP
    a. To service NE Employment Lands Only,
    b. To service NE Employment Lands and Existing Areas.

The MCEA requires that all studies consider the "Do Nothing" alternative. For this alternative, no facilities or infrastructure would be constructed to solve the identified problem or opportunity. This solution does not satisfy the study objective and will not carry forward for evaluation. As shown in Table ES-1.2, Option 3 b is the solution that most fully satisfies the WWMP Problem and Opportunity Statement while addressing many of the wastewater system issues and risks previously noted in this report. This option will be carried forward as the preferred servicing option in the WWMP.

Table ES 2 – Solutions to Address Future Demand

Option	Advantages	Disadvantages
Option 2 - Increase Existing WWTP	• Reuse of existing infrastructure where capacity is available; and • A single point of discharge of treated sewage flows into the environment. • Potentially lower cost than Option 3 provided technical issues could be addressed.	• There would need to be significant upgrades to the conveyance system of sewers and pumping stations • The WPCP is spatially constrained by Sunset Dr., Bush Ln., and the flood protection berm to the south and east of the plant. • Any new construction may need to be located at the southeastern end of the property, near the location of the original Plant 1. • Upgrading the plant with advanced technology, such as a membrane bioreactor (MBR) would require new headworks, disinfection system expansion will be challenging given the constraints of the site. • Would move forward timing of lifecycle refits. • The WPCP's capacity would be restricted during the retrofit.
Option 3a – New WWTP for NE Employment Lands Only	• Construction of a greenfield pant would alleviate constraints and construction staging concerns compared to Option 2 • Redundancy and operational flexibility to the wastewater collection and treatment systems possible if the ability to shift a portion of overall wastewater flows between the WPCP and the North WWTP is provided • Minimizing growth related flows to the existing WPCP would facilitate its refurbishment.	• Duplication of infrastructure. • Low initial flows and effluent characteristics of the sewage may be difficult to manage. • The conveyance issues that were noted in the PPCP will not be addressed. • Cost associated with a separate system.

Option	Advantages	Disadvantages
Option 3b - New WWTP for NE Employment Lands and Existing Areas	• Baseflow of municipal sewage will facilitate treatment of industrial flows from the NE Employment Lands. • Construction of a greenfield pant would alleviate constraints and construction staging concerns compared to Option 2. • Diversion of municipal flows would reduce the flows to the WPCP may reduce impact of costs associated with recommendations from the PPCP. • Solution could provide overall redundancy and operational flexibility to the wastewater collection and treatment systems if the ability to shift a portion of overall wastewater flows between the WPCP and the North WWTP is provided. • Redirection of existing flows and growth related flows to the existing WPCP would facilitate its refurbishment.	• Significantly higher cost compared to Options 2 and 3a.

Existing WPCP Lifecycle Upgrades

WPCP Condition

Plant 2 was constructed in 1953, Plant 3 in 1964 and Plant 4 was completed in two phases between 1980 to 2003. Infrastructure Canada lists the average expected useful life of wastewater treatment plants and wastewater storage tanks as 45 and 74 years respectively (Infrastructure Canada, 2022). As Plant 2 and 3 are 70 and 53 years old respectively, rehabilitation will be required at some point in the planning horizon. Similarly, the WPCP's mechanical screen 1 was constructed in 1980, with mechanical screen 2 added in 2003, and will also likely require rehabilitation and upgrading in the planning horizon. Finally, staff have indicated that existing alum dosing system is reaching the end of life and will require replacement.

Refurbishment Timing

The temporary reduction in flow to the WPCP due to the implementation of a new WWTP allows for the City to undertake refurbishment and upgrade of the WPCP given that Plants 2 and 3 are reaching the end of their service lives. Table ES-3 summarizes the individual plant capacities.

Table ES 3 – Current WPCP Plant Capacities (ADF)

Plant	Portion of ADF (%)	Portion of ADF (L/s)	Portion of ADF (m^3/day)
2	17	54	4,670
3	34	108	9,330
4	49	155	13,300

There is more flexibility in the timing for the CAS refurbishment (this can undertaken in stages as the conversion of Plant 3 can be done in two steps) over the period from 2028 to 2047 while the MBR refurbishment option as it involves taking Plant 3 off line requires the work the be undertaken no later than 2037. Additionally, as shown in Table ES 4, the CAS option is significantly less expensive. Therefore, the CAS rehabilitation option is ranked higher than the MBR rehabilitation option.

Table ES 4– Plants 2 and 3 Rehabilitation Costs

Component	CAS Option	MBR Option
Headworks	$6,077,000	$7,190,000
WPCP Office Refurbishment	$885,000	$890,000
Plant 2 Refurbishment/Decommissioning	$9,723,200	$1,430,000
Plant 3 Refurbishment	$3,171,250	$31,250,000
TOTAL	**$19,856,450**	**$40,760,000**

The CAS rehabilitation option is ranked higher than the MBR rehabilitation based on the significantly lower capital cost.

New WWTP

For this size of WWTP, there are two common treatment systems used:

- Conventional Activated Sludge (CAS); and
- Membrane Bioreactor (MBR).

Table ES 5 summarizes the advantages and disadvantages of the MBR treatment system.

Table ES 5 – Comparison of Treatment Technologies

eatment ystem	Advantages	Disadvantages
CAS	• Simpler overall technology • More equipment supplier choices for key technology components of the system • Lower use of electrical power than MBR • Future expansion can be done within the property footprint.	• Generally, a larger footprint compared to MBR facility • Need a separate filtration process to remove nutrients to achieve effluent quality matching MBR systems
MBR	• Can provide for a smaller overall footprint than CAS system • MBR provides both secondary and tertiary filtration • May provide for a higher effluent quality than CAS (if high effluent quality is required)	• More complex technology • Generally, a higher use of electrical power and chemicals for treatment system • Fewer equipment supplier choices for critical technology components of the system • Expansion will be tied to MBR technology in future

The required Class EA phase of this project should review and confirm which type of treatment system (CAS, MBR, or other) should be the basis for the new WWTP. For the purposes of developing a Master Plan level cost, we are assuming that a CAS WWTP will be chosen as the basis for design. The layout and dimensions are shown in Figure ES 3.

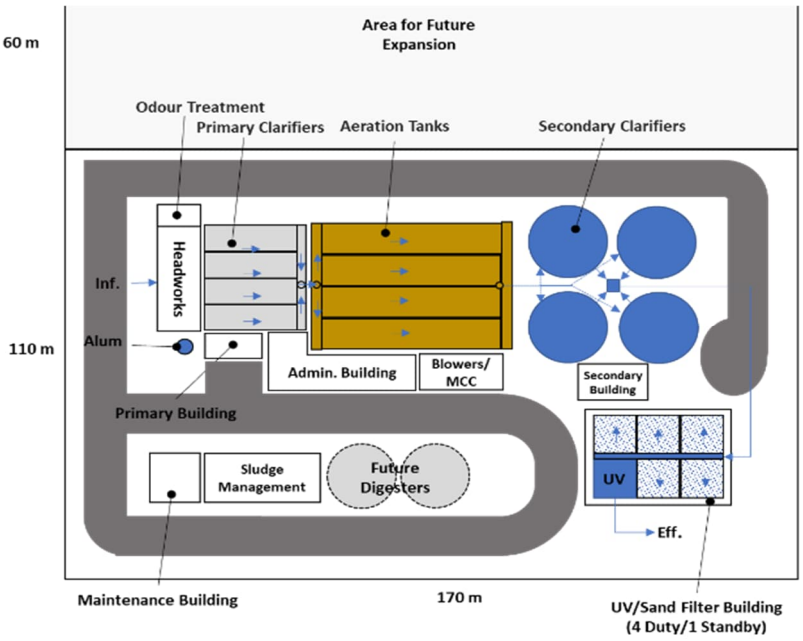


Figure ES 3 – Conceptual New WWTP Layout

NE Employment Lands Sanitary Servicing

Location for the New WWTP

Through consultation with the City of St Thomas and a desktop and field review, RVA has identified 8 potential locations for the new St Thomas Wastewater Treatment Plant (WWTP). Figure 8.2 shows the locations of the sites reviewed.

Locations were ranked by evaluating their performance over 10 weighted criteria. The weighting of each criteria was developed in conjunction with City staff. Table ES 6 summarises the completed location review and provides a general ranking of the sites. RVA recommends that more than one property be considered for the WWTP so that there can be some level of competitiveness in the land acquisition cost for the City.

Table ES 6 – Location Evaluation Matrix

Location :		1	2	3	4	5	6	7	8
Description:		North of Ron McNeil Line, East of Kettle Creek.	South of Ron McNeil Line, West of Dalewood Rd.	North of Water Tower Line, West of Dalewood Rd.	North of Water Tower Line, East of the CN Railway	North of Water Tower Line, East of the CN Railway	South of Water Tower Line, West of Dalewood Road.	South of Beck Line, East of Highway 3	Cowan Park
Criteria	Weight	Value							
SAR Impacts	5.0%	8.0	8.0	10.0	8.0	8.0	1.0	3.0	1.0
KCCA Reqr.	2.5%	8.0	8.0	10.0	8.0	8.0	1.0	8.0	1.0
DFO Requirements	2.5%	10.0	10.0	10.0	10.0	10.0	1.0	10.0	3.0
Forcemain Length	10.0%	3.3	5.2	6.5	5.4	4.2	10.0	6.5	1.0
Outfall Length	5.0%	3.3	2.0	2.0	1.7	1.0	10.0	5.0	10.0
SPS Reduction	10.0%	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Odour Impacts	10.0%	10.0	10.0	10.0	10.0	9.0	3.0	3.0	3.0
Property Cost	15.0%	2.7	2.1	2.1	2.9	4.1	10.0	9.3	10.0
Constructability	10.0%	8.0	8.0	10.0	10.0	7.0	1.0	1.0	1.0
Expansion	15.0%	10.0	10.0	10.0	10.0	9.0	1.0	1.0	1.0
Social/Cultural	15.0%	7.0	7.0	7.0	7.0	9.0	1.0	5.0	1.0
Total	100.0%	6.59	6.63	7.11	6.96	6.74	4.30	4.70	3.45

Based on the above information, Locations 3, 4 and 5 are the most desirable locations for the new WWTP and scored very similarly. It is likely the ultimate site location, amongst the desired locations, will be chosen based on the cost of property acquisition.

New Sewage Pumping Station for Flow Diversion to New WWTP

It is assumed that flows from the NE Employment Lands to the new WWTP will be routed to a new SPS. These are based on the general assumption that a new SPS will be constructed to divert all or a major portion of the Woodworth SPS sewershed. Two locations which would allow some flows to be diverted from the existing WPCP were developed to estimate the range of flows that could be diverted to a new plant and are presented below:

- Upgrading and expanding the Woodworth Ave. SPS or building a new facility; or
- Building a new SPS in the vicinity of Waterworks Park on South Edgeware Road.

The SPS site location and the routing of the forcemain to the new WWTP will have to consider impacts to the Highway 3 right of way and access arrangement reviewed and confirmed through Phases 1 and 2 of the MCEA.

NE Employment Lands Sanitary Servicing Cost Opinion

Based upon the requirements of this project, we have conducted a review of a variety of sources to provide this cost opinion. Sources include bench marked industry costing for WWTPs and recent tendered costs for similar projects undertaken both by RVA and those found from publicly available municipal bidding websites in southern Ontario. Table 8.5 summarizes our cost opinion for this project.

Table ES 7 – Opinion of Cost for the NE Employment Lands Sanitary Servicing (not including property or HST)

Component	Capital Cost Opinion
Gravity Sewer (525/600 mm)	$8,000,000
Sewage Pumping Station (842 L/s)	$20,720,000
Forcemain (400mm)	$5,000,000
Wastewater Treatment Plant (25,140 m^3/day)	$81,000,000
Sludge Management	$31,000,000
Administration Building & Garage	$14,000,000
Subtotal (Base Capital)	$159,720,000
Subtotal: -30% (Low Range Capital)	$111,804,000
Subtotal: +50% (High Range Capital)	$239,580,000
Planning, Engineering, CA, and Testing (12.5% of Base)	$19,965,000
Total (Base Estimate + Engineering + Property)	**$179,685,000**
Total (Low Range + Engineering + Property)	$131,769,000
Total (High Range + Engineering + Property)	$259,545,000

As the waste water collection and treatment system described in this report will be constructed in parallel with the NE Employment Lands including the Battery Plant, there is the potential for inflated costs (labour, material, and equipment) due the anticipated level of local construction activities. At each phase of the project, cost opinions should be reviewed and updated to best reflect the current construction market.

Next Steps for NE Employment Lands Sanitary Servicing

Class Environmental Assessment Process

The Municipal Class Environmental Assessment is a planning process followed by municipalities in Ontario when planning for new infrastructure that may have impacts on the environment (natural environment as well as the social environment). The Class EA framework allows for consultation with the public, businesses, technical agencies, and engagement with Indigenous communities. The overall components of this project have different requirements to complete the Class EA and are detailed below:

- The gravity sewer connecting the NE Employment Lands to the collection system is considered an Exempt Activity provided it is routed along current public right of ways;

- The new SPS is a Schedule B project and must complete Phases 1 and 2 of the Class EA process before proceeding to implementation (Phase 5);
- The forcemain connecting the SPS to the WWTP is is considered an Exempt Activity provided it is routed along current public right of ways and the crossing of Kettle Creek is undertaken by trenchless methods; and
- The new WWTP is a Schedule C project and must complete Phases 1, 2, 3 and 4 of the Class EA process before proceeding to implementation (Phase 5).

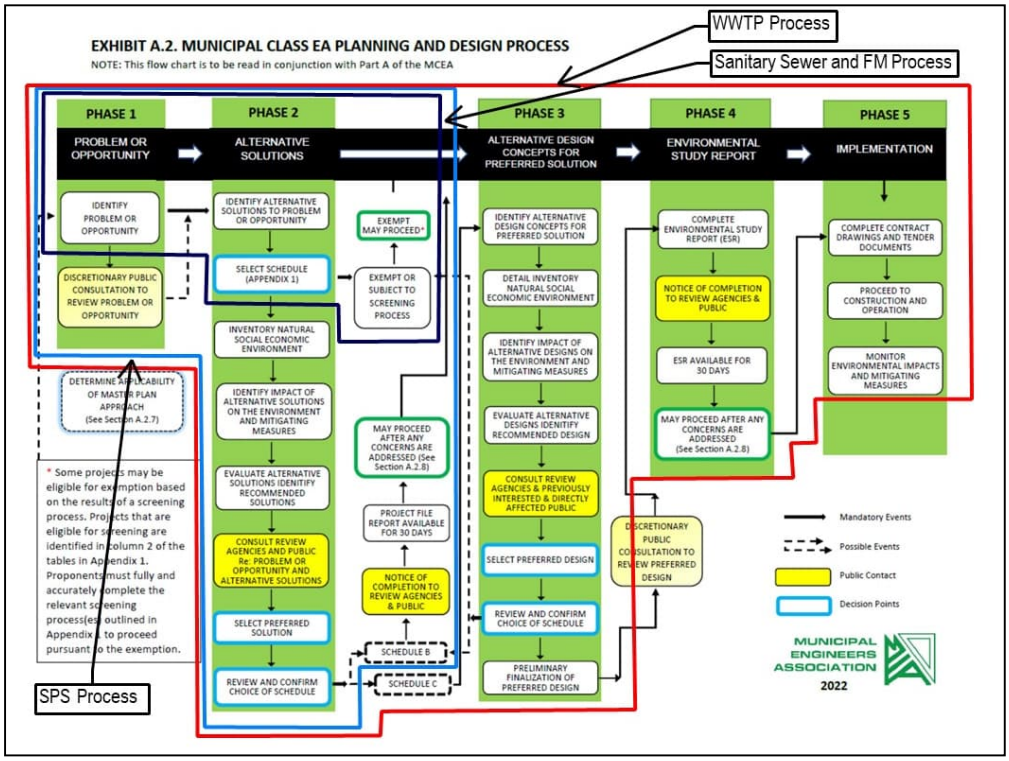


Figure ES 4 – Class EA Process for NE Employment Lands Sanitary Servicing

Preliminary Design

Influent Gravity Sewers to the New SPS design will be based on the City of St Thomas' *Design Guidelines Manual, 2023 Edition.* The New SPS and Forcemain design will be based on the MECP Design Guidelines For Sewage Works and the City of St Thomas' Design Guidelines Manual, 2023 Edition or latest edition details the overall requirements of preliminary design. The New WWTP will be designed based on the MECP *Design Guidelines For Sewage Works* which provide the overall requirements of preliminary design.

Further Steps

At the conclusion of Preliminary Design, the City can assess the options to deliver this project which can include design-bid-build or design-build. These approaches can be pursued based on the findings of the Preliminary Design weighing the various advantages and disadvantages of each option and combination of projects.

1.0 INTRODUCTION AND PROJECT BACKGROUND

1.1 Introduction

The City of St. Thomas (the City) has a population of 42,840 residents based on the 2021 census. The City, as the upper-tier municipality, holds exclusive municipal authority and responsibility for its wastewater system services, as per Section 11(11) of the Municipal Act, 2001. The City owns, operates, and maintains all aspects of the municipal wastewater system which includes the sewage collection system comprising sewers, forcemains, and 16 sewage pumping stations, a Water Pollution Control Plant (WPCP), SCADA system, and a biosolids management facility.

The projected growth of the City requires it to assess the existing wastewater treatment capability and position itself to meet the future wastewater servicing needs. The anticipated growth is projected to come from seven residential zones with a total area of 592 ha. There is also the North East Employment Lands (NE Employment Lands) with a developable area of approximately 430 ha.

In view of the above, the City is undertaking a Wastewater Master Plan (WWMP) to ensure the effective operation of the WPCP and to identify options, costs, and solutions for potential wastewater treatment expansion for City's servicing needs over the next 20-years. The City has retained R.V. Anderson Associates Limited (RVA) to complete this Master Plan. The St. Thomas Water Pollution Control Plant (WPCP) owned and operated by the City of St. Thomas (the City). It is located at 115 Sunset Drive in St. Thomas. It is a conventional activated sludge treatment plant with a rated capacity of 27,300 m^3/d (316 L/s) and peak flow capacity of 54,600 m^3/d (632 L/s).

1.2 Master Plan Goals

The City's Terms of Reference of this Master Plan included the following activities:

1. Reviewing all related background information from previous reports and studies;
2. Analysing existing and future development areas to project an estimation of sewage flows and drainage areas from St. Thomas, from future St. Thomas expansions, and from approved Central Elgin areas within the existing urban area boundaries to 25 year forecasted period (2047);
3. Determining the parameters of concern from the respective receiving streams including an analysis of load changes to the receiver(s) when evaluating recommendations for capacity;
4. Providing needed optimization and upgrade measures within the WPCP's existing 27,300 m^3/d facility within a 25-year period;
5. Determining the location and planned staging for a capacity increase in the existing wastewater treatment plant footprint; and
6. Determining the location of a new treatment plant in the north end of the City and providing a detailed plan for rerouting drainage areas and pumping station flows to achieve this.

1.3 Level of Cost Opinions

ASTM E 2516 (Standard Classification for Cost Estimate Classification System) provides a five-level classification system based on several characteristics, with the primary characteristic being the level of project definition (i.e., percentage of design completion). The ASTM standard, shown in Table 1.1, illustrates the typical accuracy ranges that may be associated with the general building industries.

Table 1.1- ASTM E2516 Accuracy Range of Cost Opinions for General Building Industries

Cost Estimate Class	Expressed as % of Design Completion	Anticipated Accuracy Range as % of Actual Cost
5	0-2	-30 to +50
4	1-15	-20 to +30
3	10-40	-15 to +20
2	30-70	-10 to +15
1	50-100	-5 to +10

The cost estimates developed in this report would be best described as a Class 5 Cost Estimate which is typically used for high level study project.

2.0 MASTER PLANNING PROCESS

2.1 Class Environmental Assessment Process

The Municipal Class Environmental Assessment (MCEA) (Municipal Engineers Association, 2023) is an approved planning and design process under the Ontario Environmental Assessment Act. The process provides the framework for planning of municipal infrastructure projects to fulfill the requirements of Ontario Environmental Assessment Act for a class or category of infrastructure projects. Projects are divided into schedules based on the type of projects and activities. Schedules are categorized as Exempt, B and C with reference to the magnitude of their anticipated environmental impact. These are described briefly in the following paragraphs.

Exempt projects include various municipal maintenance, operational activities, rehabilitation works, minor reconstruction or replacement of existing facilities, and new facilities that are limited in scale and have minimal adverse effects on the environment. These projects are exempt from the requirements of the *Environmental Assessment Act*. Most Exempt projects were formerly classified as Schedule A and A+ projects.

Schedule B projects are those which have a potential for adverse environmental effects. A screening process must be undertaken which includes consultation with directly affected public and relevant review agencies. Projects generally include improvements and minor expansions to existing facilities. The project process must be filed, and all documentation prepared for public and agency review.

Schedule C projects have the potential for significant environmental effects and must follow the full planning and documentation procedures specified in the MCEA process. An Environmental Study Report (ESR) must be prepared and filed for review by public and review agencies. Projects generally include the construction of new facilities and major expansions to existing facilities.

There are five key elements in the MCEA planning process. These include:

1. Phase 1 – Identification of problem (deficiency) or opportunity;
2. Phase 2 – Identification of alternative solutions to address the problem or opportunity. Public and review agency contact is mandatory during this phase and input received along with information on the existing environment is used to establish the preferred solution. It is at this point that the appropriate Schedule (B or C) is chosen for the undertaking. If Schedule B is chosen, the process and decisions are then documented in a Project File. Schedule C projects proceed through the following Phases;
3. Phase 3 – Examination of alternative methods of implementing the preferred solution established in Phase 2. This decision is based on the existing environment, public and review agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects;
4. Phase 4 – Preparation of an Environmental Study Report summarizing the rationale, planning, design, and consultation process of the project through Phases 1-3. The ESR is then to be made available to agencies and the public for review; and

5. Phase 5 – Completion of contract drawings and documents. Construction and operation to proceed. Construction to be monitored for adherence to environmental provisions and commitments. Monitoring during operation may be necessary if there are special conditions.

The overall process is shown in Figure 2.1.

2.2 Master Plan Process

The Master Plan Process provides the basis for developing a long-range water and wastewater servicing plans which integrate infrastructure requirements for existing / future land use and evaluate all reasonable servicing alternative solutions with considerations to natural, social, and economic environments ("triple bottom line").

The WWMP was developed following Approach #1 of the MECA process which involves a broad scope and a high level of assessment of the projects identified in the Study Area. This Master Plan is intended to fulfill the MCEA requirements for Schedule A and A+ projects that are identified and to outline additional work that will be required for any identified Schedule B and C projects. At a minimum, the W/WW MP must satisfy the requirements of Phases 1 and 2 of the MCEA process and incorporate the five key principles of environmental planning which include:

- Public and agency consultation,
- Consideration of a reasonable range of alternatives,
- Identification and consideration of each alternative on all aspects of the environment (natural, social, cultural, economic, technical),
- Systematic evaluation of alternatives and net environmental impacts, and
- Full documentation of the planning process.

Specific projects recommended in the W/WW MP become part of a larger management system and are distributed geographically throughout the Study Area. Implementation of these projects will occur over an extended time frame and certain projects (Schedule B and C projects) will require more detailed investigation to fulfill additional MCEA requirements.

2.3 Study Area

The study area for this report includes all lands within the boundary of St. Thomas including those lands designated for future growth as well as those areas of the Municipality of Central Elgin and the Municipality of Southwold where sanitary servicing agreements exist which require St. Thomas to provide sewage treatment. This is shown in Figure 2.2.

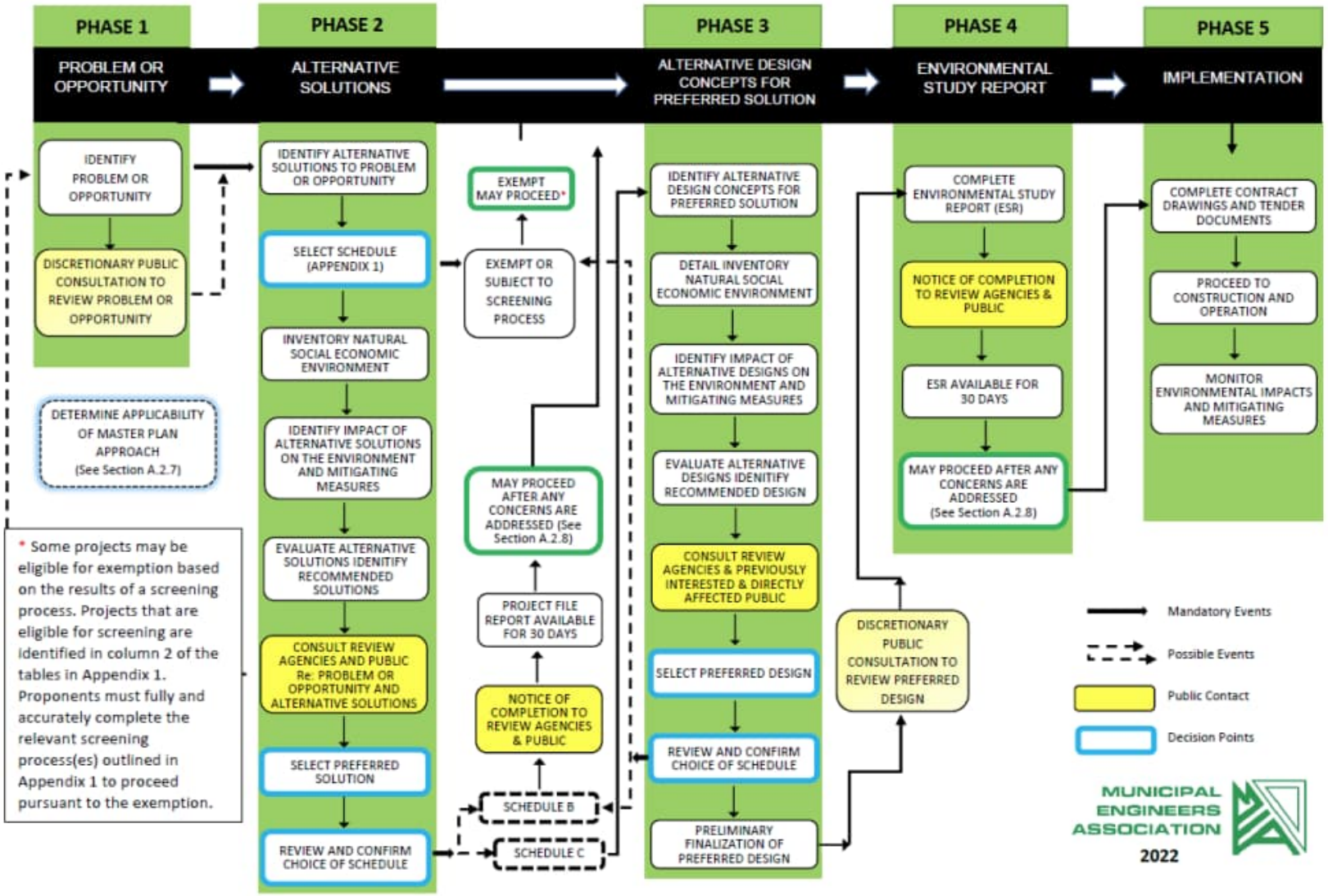


Figure 2.1- MCEA Planning and Design Process

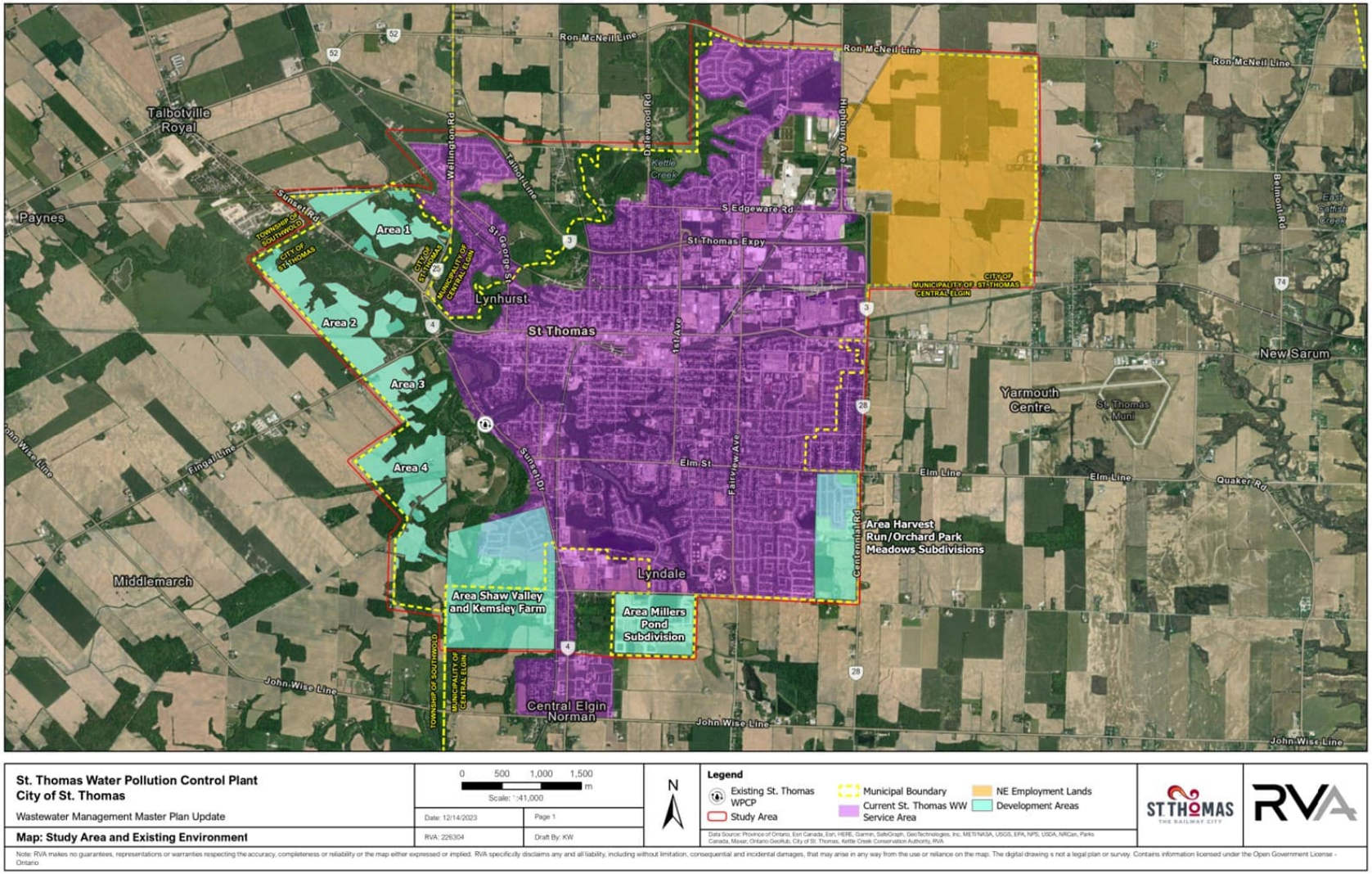


Figure 2.2- Study Area

2.4 Natural Environment Review

2.4.1 Introduction

As part of the Master Plan Municipal Class Environmental Assessment (EA) for the St. Thomas Pollution Prevention Control Plan (PPCP), a Natural Environment Review (NER) was prepared to identify and characterize the significance and sensitivity of the natural water features in the study area. This NER was prepared through a desktop review of available federal and provincial databases and is intended to provide a general framework for future water/wastewater pollution control projects. This NER documents the methodology and results of the preliminary background review of the existing conditions of the natural environment in the Study Area focused on water features.

2.4.2 Study Area and Methodology

2.4.2.1 Methodology – Data Collection

The following sources were reviewed for information related to natural water features and components, associated policy, and physiology within the Study Area:

- Natural Heritage Information Centre (NHIC) Make A Map Application;
- Land Information Ontario (LIO) Mapping – Aquatic Resource Areas (ARA);
- Fisheries and Oceans Canada (DFO) Aquatic SAR Mapping;
- Ontario Nature Reptile and Amphibian Atlas (ORAA);
- Ministry of Agriculture, Food and Rural Affairs (MAFRA) – AgMaps;
- Kettle Creek Conservation Authority (KCCA) Watershed Report Cards (2023);
- Catfish Creek Conservation Authority (CCCA) Watershed Report Cards(2018);
- Elgin County Natural Heritage Systems Study (2019);
- Geology Ontario;
- Physiography of Southern Ontario; Ontario Geological Survey – Chapman and Putnam (1984); and
- Kettle Creek Watershed Characterization Report (V. 2.0, January 2008).

2.4.2.2 Methodology – Field Investigations

Fieldwork was not a component of this existing natural environment characterization. Prior to any future works, a site-specific field investigation program should be planned and implemented, subject to the extent of work proposed, through discussions with the City of St. Thomas and relevant agency staff.

2.4.3 Environmental Planning and Policy Review

The following planning and policy documents are applicable to the natural aquatic environment in the Study Area.

2.4.3.1 Provincial Policy Statement (2020)

The wise use and management of the natural environment is understood to be vital for Ontario's long-term prosperity, environmental health, and social well-being. Accordingly, Section 2.1 (Natural Heritage) of the Provincial Policy Statement (PPS) provides direction for the long-term protection, rehabilitation, and improvement of the diversity and

connectivity of natural features and the ecological function and biodiversity of natural systems. In the PPS, natural heritage features include significant wetlands, significant woodlands, significant valley-lands, significant wildlife habitat, significant areas of natural and scientific interest, and coastal wetlands. Additionally, Section 2.2 (Water) of the PPS describes the requirement to protect, improve and restore the quality and quantity of water at a watershed scale.

2.4.3.2 The Official Plan of the City of St. Thomas

Schedule "E" of the St. Thomas Official Plan shows Natural Heritage areas, primarily associated with the watercourses. It also identifies the designated Open Space and Conservation areas, which are smaller, disjunct, and generally located within the natural heritage system.

2.4.3.3 Species at Risk Act and Endangered Species Act

These are federal and provincial legislations which protect Species at Risk (SAR) and their habitats. There are currently no aquatic SAR identified within the Study Area, and therefore the direction in these acts is not applicable at this time. Prior to any future works, updated SAR information should be sought from the MECP to confirm potential impacts, permitting and approval requirements.

2.4.3.4 Conservation Authority Act

Under the Conservation Authority Act, the Kettle Creek and Catfish Creek Conservation Authorities are responsible for conservation, restoration, development, and management of natural resources in their respective watersheds. They must approve the development or site alteration within hazardous areas adjacent to shorelines, watercourses, and wetlands, as detailed in the Ontario Regulation 157/06: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. The regulation limits of these two conservation authorities are found in the Study Area.

2.4.4 Existing Conditions

An overview of the natural environment features, conservation authority boundaries and regulation limit, found in the Study Area is presented in Map 1 – Appendix A.

2.4.4.1 Physiography

The City of St. Thomas is situated in three physiographic regions. The majority of the Study Area is in the Ekfrid Clay Plain. The St. Thomas Moraine enters the City boundary from the east and west but does not connect through the Study Area. Lastly, a small area of the Norfolk Sand Plain enters the Study Area from the south (Chapman & Putnam, 1984).

2.4.4.2 Watersheds

The City of St. Thomas is located almost exclusively within the Kettle Creek watershed with a small part of the collection area situated within the Catfish Creek watershed boundary.

Kettle Creek Watershed

The Kettle Creek watershed drains approximately 520 km^2 of land from the southern end of London, through to Port Stanley. Kettle Creek originates at Lake Whittaker, a kettle lake, in the northeastern portion of the watershed. The upper portion of Kettle Creek flows southwesterly to the City of St. Thomas where it is joined by a major tributary, Dodd Creek. Kettle Creek then flows predominately southward towards Lake Erie at Port Stanley. There is a significant drop in elevation as Kettle Creek approaches Lake Erie, approximately 1.75 m per kilometer (141 m total). This significant decrease in elevation can result in flash

flooding which in turn leads to intense erosion along the banks of Kettle Creek. The Kettle Creek watershed has been reported as having the most rapidly eroding shoreline in the Great Lakes basin. The overall erosion rate in the watershed is compounded by the fact that 83 percent of the watershed lands are in agricultural use. The watershed is a relatively small in area, the population of the entire watershed was 44,406 in 2001 and is now reported to have an approximate watershed population of 70,000. The City of St. Thomas is the largest population centre within the Kettle Creek watershed. Kettle Creek provides habitat for communities of aquatic organisms, recreational opportunities as well as livestock watering and agricultural irrigation. However, the tributaries of the Kettle Creek watershed are primarily used for waste assimilation from industrial and/or sewage treatment plant discharge and as habitat for aquatic life.

Catfish Creek Watershed

Catfish Creek watershed includes Catfish Creek and its tributaries, which drains approximately 490 km^2 in Elgin and Oxford counties and enters Lake Erie at Port Bruce. A small area of the City of St. Thomas (1,662 people within the area) are within the Catfish Creek watershed boundary.

2.4.5 Surface Water Features and Aquatic Species

2.4.5.1 Kettle Creek

Kettle Creek is described above in Section 2.4.4.2. The watercourse provides warm water habitats for a diverse fish community including catfish, darters, carps and minnows, bass, gar, sunfish, suckers, pike, chub, and perch.

2.4.5.2 Dodd Creek

Dodd Creek has a drainage area of approximately 130 km^2, making it Kettle Creek's largest tributary. It flows from the headwaters in the northwest corner of the watershed, easterly into the City of St. Thomas where it converges with Kettle Creek. Dodd Creek flows primarily through agricultural lands over the relatively flat clay plain which results in high runoff, little groundwater recharge and little continuous baseflow.

Dodd Creek is a very murky, warm water stream with midsummer temperatures ranging from 22 to 27 °C. Deep water pools in Dodd Creek do not exceed 1.2 m, and substrates range from gravel to muck. Historically, there are sections of the creek that do not flow in July, August, and September, except during major precipitation events.

Despite its minimal baseflow and warm temperatures, Dodd Creek provides habitat for a diverse fish community. Recorded species include catfish, darters, carps and minnows, bass, gar, sunfish, suckers, pike, chub, and perch.

2.4.5.3 Lake Margaret

Lake Margaret is a retired gravel pit that is filled with natural groundwater and provides recharge to Mill Creek, a tributary to Kettle Creek. Since the surrounding soils are predominately gravel, the lake contains waters that are clearer than most other systems in the Study Area, which are typically murky due to a high clay content.

The lake provides habitat for a warm water fishery which includes a significant bass population. According to the Kettle Creek Watershed Characterization Report (2008), past monitoring showed that benthic invertebrates in the lake consisted primarily of aquatic worms, which indicates low oxygen conditions. This may be a result of groundwater influence or due to the biomass in the lake consuming oxygen.

2.4.5.4 Pinafore Creek, Lake, and Wetland

Pinafore Creek is a clear, warm water stream with a depth ranging from 0.05 m to 0.5 m, and substrates ranging from gravel to clay and muck. Fish species recorded in the creek consisted of darters, minnows, suckers, rock bass, and chub.

Pinafore Lake is located south of Elm Street in the City of St. Thomas and is associated with a historic nature park. At the southern end of the lake is a small wetland that covers approximately 2 ha. The wetland is predominately swamp in nature with some marsh and open lake areas.

2.4.5.5 Dalewood Reservoir and Wetlands

Dalewood Reservoir was constructed as a water source for the City of St. Thomas. It has since been taken over by KCCA and is managed as a flood control structure and Provincially Significant Wetlands (PSWs). Since the 1980s it has been documented that due to intensive upstream agriculture and tile drainage, the reservoir had begun rapidly filling with silt. Over a 25-year period, the reservoir surface area reduced by almost 30%, going from 51 ha to 35 ha. The increase in sediment reduced the water quality in the reservoir but it also created a growth of wetlands surrounding the Dalewood Reservoir. It appeared that the Dalewood Reservoir had reached equilibrium in the mid-2000s and became a net source of sediment to downstream portions of the watershed. The wetlands surrounding the reservoir contain diverse vegetation communities and support a wide variety of fish species, and the reservoir itself acts a summer refuge. Wetlands, in general, are protected by the Conservation Authority. Provincially, wetlands are ranked to determine those areas identified by the province as being the most valuable and should receive special protection as “provincially significant.” Significance is determined by the Ontario Wetland Evaluation System (OWES). The Dalewood Wetlands (also known as the Kettle Creek Woods) consists of twelve individual wetlands, altogether protected as a PSW.

2.4.5.6 Water Quality

Kettle Creek Watershed Quality

According to the 2023 KCCA watershed Report Card, surface water quality within the Kettle Creek watershed was reported as ‘D’ grade, or poor. The low grade is due primarily to phosphorus concentrations that regularly exceed (99% of all samples) the Provincial Water Quality Objective (PWQO) of 0.02mg/L as well as poor benthic invertebrate Family Biotic Index results. E. coli concentrations throughout the watershed were found to be fair, or C grade.

A 2006 report prepared by KCCA and Grand River Conservation Authority (GRCA) summarized the water quality conditions within the Kettle Creek watershed from 1991-1995. The purpose of the report was to identify key water quality issues within the watershed. Like the 2018 findings, nutrient levels, primarily phosphorus and nitrate, were high throughout the watershed. Nitrate was found to be significantly higher in the Lower Kettle Creek than the rest of the watershed. Phosphorus concentrations were also found to be highest in Lower Kettle Creek but were also found to be consistently high throughout the watershed and exceeded the PWQO.

Kettle Creek’s water quality directly affects the water quality of Lake Erie and is a potential point source of contamination to the Elgin Area drinking water supply. Raw water for the Elgin Area Primary Water Supply System is taken from Lake Erie into which Kettle Creek drains. Studies have found that littoral drift within the lake carries sediment from the mouth of Kettle Creek to the intake pipe.

In general, surface water quality within the watershed has been reported as being negatively affected by increasing summer temperatures, decreasing baseflows, and potentially low levels of DO and extensive nutrient and sediment loading. According to the Watershed Characterization Report (2008), most of the tributaries within the Kettle Creek watershed are thermally stressed – this had become a primary water quality concern. High water temperatures can impact dissolved oxygen saturations and can limit the diversity of aquatic species present.

As of 2018, Ontario beaches are to follow recreational water guidelines and protocols where samples at beaches are taken weekly during the summer months. Water samples were found to fail guidelines 10% of the time in 2018 and 13% of the time in 2019.

The pressures on the watershed, with growing urban centres, increasing temperatures, decreasing base flows, low levels of dissolved oxygen, and excessive nutrient and sediment concentrations could lead to increasing negative impacts on the water quality within the watershed if management measures are not implemented.

Catfish Creek Watershed Quality

The upper main branch of Catfish Creek is reported as being the area where water quality is the most impaired, with improvement as the creek flows downstream. The Nineteen Creek sub-watershed, which incudes the small eastern area of the Study Area, was reported as 'C' grade, or fair. The grade, like Kettle Creek, was a result of nutrient levels (phosphorus), intrinsic geology and topography as all being factors affecting water quality within the watershed.

2.4.6 Discussion

This NER was prepared through a desktop review of available sources, intended to provide a general framework for future water/wastewater pollution control projects. In support of this NER, information requests have been made to the KCCA, CCCA, and MECP to provide any additional or updated information related to the existing aquatic habitat features or water quality concerns in or as may be affected by the Study Area. If any additional information is received it will be incorporated into this document and appended as correspondence.

2.5 Public Consultation and Engagement

2.5.1 Project Problem/Opportunity Statement

In letters sent to agencies, stakeholders and the public, the following was included which defines the project problem/opportunity statement:

> "St. Thomas Water Pollution Control Plant (WPCP) Wastewater Management Master Plan (WWMP) will provide the City with guidance for capital planning and project implementation for wastewater treatment to accommodate growth for the next 20 years and beyond in a cost effective and environmentally sustainable manner."

The consultation process is an integral component of the MCEA process. Effective communication with Aboriginal communities, agencies, stakeholders, and the public can reduce or avoid controversy that can ultimately lead to project delays and general discontent of project stakeholders. RVA, in consultation with City staff identified stakeholders, agencies and Aboriginal communities that may have an interest in the study, the methods of contact, and the timing of contact for this project. This section details the

consultation process followed by the Master Plan. Appendix 1.1 contains the public notices that have been filed as part of this process.

2.5.2 Stakeholder Consultation

Potential stakeholders included but were not limited to:

- Public – This includes individual members of the public including property owners who may be affected by the project, individual citizens who may have a general interest in the project, special interest groups, community representatives, and developers;
- Review agencies – This includes government agencies who represent the policy positions of their respective departments, ministries, authorities, or agencies; and
- City of St. Thomas internal departments.

Members of the public were notified of project commencement and invited to attend Public Information Centres (PICs) by way of notices published in a local area newspaper.

A list of relevant agencies and the appropriate contact person was developed at the onset of the project. Throughout the process, these contacts were sent letters notifying them of the project progress. Appendix 1.2 contains the contact list developed for this project. Appendix 1.3 contains responses from both the public and agencies.

2.5.3 Aboriginal Consultation

Based on discussions and recommendations provided by the Ministry of Environment and Conservation of Parks (MECP) regional office, the City contacted Aboriginal Affairs and Northern Development Canada (AANDC) and the Ministry of Aboriginal Affairs (MAA) separately from the general notifications sent to review agencies. The purpose of the contact was to request which, if any, Aboriginal communities may be affected by the project alternatives. The additional information may result from existing claims not readily available to the public. Information provided ensures the appropriate communities have been included in the contact lists for the duration of the MCEA project. These government agencies were not included in general notifications. The Aboriginal agency contact letters and correspondence are contained in Appendix 1.4.

2.5.4 Public Information Meetings

A Public Information Centre is a method to communicate with the public, interested parties and review agencies. For this project one PIC was held.

PIC 1 – Was held as an in-person Public Consultation Meeting from 6 PM to 8 PM on November 29, 2023. The Display Boards from this meeting and comment sheet given to attendees are attached as are any comments received in Appendix 1.5.

2.5.5 Notices

On May 11, 2022, the City published notice of the WWMP and for the duration of the master plan is maintaining a website which has information on public meetings, reports and contact information for City and RVA staff (City WWMP Website).

The Notice of Public Consultation Meeting for PIC 1 as well as the published on the City of St. Thomas' Notice to Residents website. Letters were emailed to all identified project contacts.

The Notice of Completion was sent out to agencies and interested parties informing them that the PPCP had been completed via email as well as being published on the City of St. Thomas' Notice to Residents website (Notices to Public). Copies of the notices are included in Appendix 1.1.

2.6 Problem/Opportunity Statement

As the first step in Phase 1 of the MCEA process, the City must identify and describe the problem or opportunity which outlines the need and justification for the overall project and establishes the general parameters, or scope, of the study. The City has defined the following as its statement of the problem/opportunity to be addressed by the WWMP:

> "As a growing city, St. Thomas has determined nine (9) new areas along with a large allowance for expected infill projects for growth within the City boundaries. With these new areas being developed, there will be population growth within the City. The existing WPCP capacity needs to be assessed to service the future sewage flows caused by the increase in the City population, and alternative solutions need to be evaluated to service the projected growth.
>
> In view of this, the goal of the WWMP is to ensure the effective operation of the Water Pollution Control Plant (WPCP) and to identify options, costs, and solutions for potential wastewater treatment expansion for City's servicing needs over the next 25-years."

3.0 MASTER PLANNING AND POLICY CONTEXT

3.1 Planning Context

3.1.1 2020 Provincial Policy Statement

3.1.1.1 General

The Provincial Policy Statement (PPS), 2020 (Ministry of Municipal Affairs and Housing [MMAH], 2020) sets out the Provincial policy direction for land use planning in Ontario, including managing growth, using, and managing natural resources, protecting the environment, and ensuring public health and safety.

The vision of the policy recognizes that Ontario's long-term prosperity, environmental health and social well-being depend on promoting efficient land use and development patterns. Efficient development patterns also optimize the use of land, resources and public investment in infrastructure and public service facilities and support sustainability by promoting strong, liveable, healthy, and resilient communities, protecting the environment and public health and safety, and facilitating economic growth.

3.1.1.2 Planning for Growth

The policies indicate that settlement areas shall be the focus of growth and development, and that municipalities plan for a full range of and mix of land uses and housing options to meet current and future needs over a 25-year planning horizon. Land use patterns within settlement areas shall be based on densities and a mix of land uses which:

- Efficiently use land and resources;
- Are appropriate for, and efficiently use, the infrastructure and public service facilities which are planned or available; and
- Avoid the need for their unjustified and/or uneconomical expansion.

The PPS policies require that planning for sewage and water services shall:

Accommodate forecasted growth in a manner that promotes the efficient use and optimization of:

- Existing municipal sewage services and municipal water services; and
- Existing private communal sewage services and private communal water services, where municipal sewage services and municipal water services are not available or feasible.
- Ensure these systems are provided in a manner that:
  - can be sustained by the water resources upon which such services rely,
  - prepares for the impacts of a changing climate,
  - is feasible and financially viable over their lifecycle, and
  - protects human health and safety, and the natural environment;
- Promote water conservation and water use efficiency;
- Integrate servicing and land use considerations at all stages of the planning process; and
- Be in accordance with the servicing hierarchy in the policies.

All planning decisions and Official Plan policies (including those related to infrastructure) are required to be 'consistent with' the policies of the PPS (2020). As such, the W/WW MP is developed on the premises of the above-described PPS policies, including specific policies:

- Building Strong and Healthy Community;
- 1.2 Coordination;
- 1.6 Infrastructure and Public Service Facilities, which covers policy 1.6.6 Sewage Water and Stormwater;
- 1.7 Long Term Economic Prosperity; and
- Wise Use and Management of Resources, which covers policies 2.1 Natural Heritage and 2.2 Water.

3.1.1.3 Natural Heritage

Part V of the 2020 PPS focuses on Natural Heritage and the protection and management of natural heritage systems and features. A natural heritage system is defined by the Province of Ontario as:

> "A system made up of natural heritage features and areas, and linkages intended to provide connectivity (at the regional or site level) and support natural processes which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species and ecosystems. These systems can include natural heritage features and areas, federal and provincial parks and conservation reserves, other natural heritage features, lands that have been restored or have the potential to be restored to a natural state, areas that support hydrologic functions and working landscapes that enable ecological functions to continue. (MMAH 2020)."

Natural heritage features of significance are described in the Natural Heritage Reference Manual (MNR, 2010) and include:

- Significant wetlands;
- Significant coastal wetlands;
- Fish habitat;
- Significant woodlands;
- Significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- Habitat of endangered and threatened species;
- Significant wildlife habitat; and
- Significant areas of natural and scientific interest (ANSIs).

Development and site alteration is not permitted in:

- Significant wetlands in Ecoregions 5E, 6E and 7E and significant coastal wetlands;
- Significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E, Significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River), significant wildlife

habitat, significant ANSIs, and coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b), unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions; and

- Fish habitat or habitat of endangered and threatened species except in accordance with provincial and federal requirements.

3.1.2 St Thomas Official Plan and Zoning Bylaw

The current Official Plan of the City of St. Thomas was adopted in 2021 (OPA 97). It is a requirement under the *1990 Planning Act* which sets out the rules for land use planning in Ontario, that local land use planning direction must be set forth in an official plan for every municipality. The Act states that Official Plans must 'contain goals, objectives and policies established primarily to manage and direct physical change and the effects on the social, economic, and natural environment of the municipality'.

For growth areas to be added to the City, the City's Official Plan (OPA Part A, 3.1):

> "Municipal water and sanitary sewer services can be extended to the new areas being proposed for urban development and there is sufficient water supply and sanitary sewage treatment capacity available in the City's water and waste water systems to accommodate the planned growth."

The OPA states that development will be serviced in accordance with PPS servicing policies as stated in 1.6.6 of the PPS.

3.2 Provincial Policy Context

The WWMP references the several Provincial regulations for the analysis of the City's drinking water and wastewater systems, which are summarized in this section.

3.2.1 Environmental Assessment Act (EAA)

The EAA is the legislation which allows the MCEA process to be followed by municipalities so that they can plan, design, construct, maintain, rehabilitate, and/or retire municipal road, water, wastewater, and transit projects. This allows these projects to proceed without having to obtain project-specific approval under the EAA provided that the MCEA process is followed.

3.2.2 Ontario Water Resources Act (OWRA)

The purpose of this Act is to provide for the conservation, protection, and management of Ontario's waters and for their efficient and sustainable use, to promote Ontario's long-term environmental, social, and economic well-being. For use of a water supply for municipal drinking water, an application for a Permit to Take Water (PTTW) issued by the Ministry of the Environment, Conservation and Parks (MECP) under Section 34 of the OWRA is required.

3.2.3 Nutrient Management Act (NMA)

The General Regulation Ontario Regulation (O. Reg.) 267/03 made under the Nutrient Management Act governs the requirements for land application of biosolids, e.g., seasonal storage requirement. For wastewater treatment plants (WWTP) which were not phased in under the *Nutrient Management Act*, requirements are set out in the Environmental Compliance Approval (ECA), based on the MECP and the Ministry of Agriculture, Food and

Rural Affairs (OMAFRA) Guidelines for the Utilization of Biosolids and Other Wastes on Agricultural Land, 1996. Part II of the NMA requires the City to ensure that their biosolids land application program meets the requirements of the Act and complies with the requirements for land application for non-agricultural source materials (NASM).

3.2.4 Environmental Protection Act (EPA)

The intent of the EPA is to protect the Ontario environment from an "adverse effect" which is defined as the following:

- Impairment of the quality of the natural environment for any use that can be made of it;
- Injury or damage to property or to plant or animal life;
- Harm or material discomfort to any person;
- An adverse effect on the health of any person;
- Impairment of the safety of any person;
- Rendering any property or plant or animal life unfit for human use;
- Loss of enjoyment of normal use of property; and
- Interference with the normal conduct of business.

Regulations from the Act which may impact or have bearing on the operation or construction of water and wastewater systems are shown below in Table 3.4.

Table 3.1- EPA Regulations impacting Water and Wastewater Systems

Regulation	Title
O. Reg. 406/19	On-Site and Excess Soil Management
O. Reg. 208/19	Environmental Compliance Approval in Respect of Sewage Works
O. Reg. 1/17	Registrations Under Part ii.2 of the Act - Activities Requiring Assessment of Air Emissions
O. Reg. 63/16	Registrations Under Part ii.2 of the Act - Water Taking
O. Reg. 351/12	Registrations Under Part ii.2 of the Act - Waste Management Systems
O. Reg. 255/11	Applications for Environmental Compliance Approvals
O. Reg. 224/07	Spill Prevention and Contingency Plans
O. Reg. 222/07	Environmental Penalties
O. Reg. 153/04	Records of Site Condition - Part xv.1 of the Act
O. Reg. 675/98	Classification And Exemption of Spills and Reporting of Discharges
O. Reg. 524/98	Environmental Compliance Approvals - Exemptions from Section 9 of the Act
O. Reg. 232/98	Landfilling Sites

Regulation	Title
O. Reg. 206/97	Waste Disposal Sites, Waste Management Systems And Sewage Works Subject to Approval Under or Exempt from the Environmental Assessment
O. Reg. 101/94	Recycling and Composting of Municipal Waste
R.R.O. 1990, Reg. 360	Spills

3.2.5 Clean Water Act (CWA)

The *Clean Water Act* (CWA) is a law enacted by the Legislative Assembly of Ontario, Canada to protect existing and future sources of drinking water. The CWA (2006) is a major part of the Ontario government's commitment to ensuring that every Ontarian has access to safe drinking water. Key regulations enabling the work and authority for Source Water Protection are:

- O. Reg. 284/07 Source Protection Areas and Regions delineates source water protection areas within the province;
- O. Reg. 287/07 General mandates the terms of reference and requirements for source water protection plans; and
- O. Reg. 288/07 Source Protection Committees under the CWA constitutes and mandates Source Projection Committees:

> *"When municipal raw water demonstrates an exceedance of an Ontario Drinking Water Quality standard or increasing trend of a contaminant of concern, the CWA allows local Source Protection Authorities (SPAs) to designate municipal wellhead protection areas as Issues Contributing Areas (ICA). An ICA delineates an area where certain current or past land use have or are likely inferred to contribute to the elevated contaminant concentration in raw water supplies.*

3.2.6 Sustainable Water and Sewage Systems Act (2002)

The *Sustainable Water and Sewage Systems Act* (SWSSA) mandates that all municipalities (regulated entity) operate their water and wastewater systems on a full cost recovery basis where the system cost is borne by the system users. Every municipality that provides water services to the public must prepare and approve a plan describing how the entity intends to pay the full cost of providing those services. This Act has no enabling regulations and was implemented following the Walkerton Water Crisis which occurred in 2000.

3.2.7 O.Reg. 588/17: Asset Management Planning for Municipal Infrastructure

On January 1, 2018, O.Reg. 588/17: Asset Management Planning for Municipal Infrastructure came into effect. This regulation was made under the Infrastructure for Jobs and Prosperity Act, 2015. This regulation sets out requirements for municipal asset management planning. This regulation included the following deadlines:

- By July 1, 2019, all municipalities had to have in place a Strategic Asset Management Policy (SAMP) which must be reviewed and updated every 5 years;

- By July 1, 2022, all municipalities had to have in place an Asset Management Plan (AMPs) for "core municipal infrastructure assets" (includes water, wastewater, stormwater, roads and bridges and structural culverts) that address current service levels, asset performance, condition, age and replacement cost and the 10-year lifecycle costs and funding required to maintain those service levels; and
- By July 1, 2024, AMPs for all "other municipal infrastructure assets" (including green infrastructure assets) that address current service levels, asset performance, condition, age, and replacement cost and the 10-year life-cycle costs and funding required to maintain those service levels.

3.2.8 Species at Risk Act

At a federal level, Species at Risk (SAR) designations for species occurring in Canada are initiated by the completion of a comprehensive Status Report by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). If approved by the federal Minister of the Environment, species are added to the federal List of Wildlife Species at Risk (Government of Canada 2002).

Species that are included on Schedule 1 as Endangered or Threatened are afforded both individual and critical habitat protection on federal lands under the *Species at Risk Act* (SARA). On private or provincially owned lands, only aquatic species listed as Endangered, Threatened or Extirpated are protected under SARA, unless ordered by the Governor in Council.

3.2.9 Endangered Species Act

At the provincial level, SAR and their habitats are protected under the *Endangered Species Act* (ESA, Government of Ontario 2007) which is administered by the Ministry of Environment, Conservation and Parks (MECP). SAR designations for species in Ontario are initiated by the completion of a comprehensive Status Report by the Committee on the Status of Species at Risk in Ontario (COSSARO), and if approved by the provincial Minister of the Environment, Conservation and Parks, species are added to the Species at Risk in Ontario (SARO) List (O. Reg. 230/08) under the ESA. Section 9(1) of the ESA, 2007 prohibits the killing, harming, harassment, capture, taking, possession, transport, collection, buying, selling, leasing, trading, or offering to buy, sell, lease or trade species listed as Extirpated, Endangered, or Threatened on the SARO List. Section 10(1) prohibits damaging or destroying habitat of Endangered or Threatened species on the SARO List and may apply to Extirpated species through special regulations. General habitat protection applies to all Endangered and Threatened species, with some species having 'categorized habitat', which protects areas within specific distances from known records. Some SARS are afforded a more precise habitat protection through a habitat regulation (regulated habitat), as identified in Ontario Regulation 242/08. Species designated as Special Concern are not protected under the Act.

The ESA, 2007 does include provisions for permits under Section 17(2)(c) that would otherwise contravene the Act. Projects which propose impacts to SAR or their habitat would require a permit or other process (e.g., registration) to proceed without contravening the Act.

3.3 Federal Fisheries Act

The *Fisheries Act* (Government of Canada 1985) is administered by Fisheries and Oceans Canada (DFO) and provides a framework for the proper management and control of fisheries as well as the conservation and protection of fish and fish habitat, including the prevention of pollution. In June of 2019, Canada modernized the *Fisheries Act;* the new provisions and stronger protections aim to better support the sustainability of Canada's fish and fish habitat for future generations. Section 34.4 prohibits any work, undertaking or activity (other than fishing) that results in the death of fish; Section 35.1 prohibits the harmful alteration, disruption, or destruction of fish habitat (HADD); and Section 36 prohibits the deposit of deleterious substances.

The Fisheries Act requires that projects avoid causing death of fish or HADD of fish habitat unless authorized by DFO or a designated representative. Proponents are responsible for planning and implementing works, undertakings or activities in a manner that avoids harmful impacts to fish and fish habitat. Should proponents believe that their work, undertaking or activity will result in harmful impacts to fish and fish habitat, a Request for Review (RFR) must be submitted, and the DFO will collaborate with them to assess the risk and provide advice and guidance on how to comply with the *Fisheries Act*.

3.4 Other Considerations

3.4.1 Climate Change and Sustainability

The federal government has prioritised the promotion of efforts to address climate change and support sustainability. There are funding programs available through Infrastructure Canada's Investing in Canada Infrastructure Program (ICIP), Disaster Mitigation and Adaptation Fund (DMAF) and Smart Cities Challenge funding programs. In subsequent use of standard environmental certification programs should be considered to obtain higher government level funding if these programs are available.

3.4.2 Sanitary Infiltration and Inflow Control

Inflow from rainfall and infiltration from groundwater commonly called infiltration and inflow (I&I) regularly enter sanitary sewers to various degrees. Excessive I&I can increase operation and maintenance costs and can consume the collection system and the wastewater treatment plant's hydraulic capacity.

As such, the MECP *Design Guidelines For Sewage Works* requires that all sewer construction should exclude inflow and infiltration to the greatest extent possible. Although sanitary sewer systems are not designed to receive the bulk of stormwater flows, exposure to inflows and infiltrations may occur at vulnerable locations including pipe joints, and indirect sources such as service connections. These additional flows may cause exceedance from the wastewater treatment plant's capacity, stressing the individual system and leading to plant bypassing. The MECP *Design Guidelines For Sewage Works* provides and I&I allowance factor for the sanitary collection and treatment system capacities to address these concerns.

I&I control is recommended by the Wastewater GLs via proper design, construction, and maintenance.

Of the eight conclusions on a review of the City's collection system, Section 4.8 of the City's 2022 PPCP noted:

" 1. For the historic average flow value of approximately 16,500 m^3/d at the WPCP, the peak day flow (PDF) in the collection system (including treated flows at the WPCP and the overflows) can be as high as 80,000 m^3/d. This translates into a PDF factor of approximately 5.0, which, in comparison to a typical PDF factor of 3.2 for the current average flow (WEF guidelines), indicates excessive I&I issues in the collection system.

2. The high wet weather flows cause significant overflow issues in the collection system with an annual average overflow volume of 2.9%, and a maximum of 6.0%, of the annual flow volumes treated at the WPCP.

3. The historic average annual $cBOD_5$ and TSS loadings from these overflows to Mill Creek were approximately 20% of the WPCP effluent loadings, and as high as 40% in 2018 and 2019. Similarly, average annual TP loading by the overflows was 12% with a maximum of 55% in 2019. In addition to that, the high E-Coli loadings from the overflows make them a significant source of pollution to the Creek.

5. Out of the 16 pumping stations, overflows have been observed only at 5 stations including – Sunset, Woodworth. St George, and Confederation PSs and the Oak St. Ravine overflow. Out of these 5, majority of the events (over 80%) occur at the Sunset and Woodworth pumping stations. The overflows at the other 3 pumping stations are significantly less frequent and intense in comparison and mostly caused by mechanical issues."

As noted in Section 4.6 of this report, the City is undertaking a project to restore the WPCP hydraulic capacity which will address conclusion 3 to a certain extent. The City is also replacing the Sunset Sewage Pumping Station (SPS) which should provide some relief of the issues noted in Conclusion 5

Section 4.4 details the recommended projects arising from the PPCP. There could be opportunities with the expansion of the wastewater system (conveyance and treatment) arising out of this WWMP to coordinate with, defer, or eliminate certain recommendations from the PPCP.

4.0 EXISTING WASTEWATER INFRASTRUCTURE

4.1 St. Thomas Water Pollution Control Plant

The WPCP is a conventional activated sludge treatment plant with a rated capacity of 27,300 m^3/d (316 L/s) and peak flow capacity of 54,600 m^3/d (632 L/s). The WPCP is a conventional activated sludge facility with three (3) separate liquid trains called Plants 2, 3 and 4, respectively. Plants 2 and 3 were constructed in 1960s, while Plant 4 was completed in two phases between 1980 to 2003. In addition, a combined sewer overflow (CSO) was constructed in 2001 to mitigate wet weather peaks experienced at the WWTP and reduce overflows in the collection system.

The current average flow to the plant is 17,870 m^3/d (2020) which is distributed at the rates 19%, 39% and 42% between Plant 2, 3 and 4, respectively. Each train includes primary clarification, aeration, and secondary clarification processes. There is a common headworks facility and a common ultraviolet (UV) disinfection process. Effluent pumping is available during periods of high creek levels. Standby power is provided for the facility. Treated water is discharged from the WPCP to Kettle Creek, located to the South-West of the facility.

Each plant has 2 primary clarifiers, which in addition to providing the primary treatment, also co-thicken the waste activated sludge (WAS) received from their secondary trains. The combined sludge from the primary clarifiers is pumped to an existing sludge storage tank on the south side of the property for storage. Sludge is then pumped to a sludge processing facility operated by Lystek which dewaters and conditions the sludge. The dewatered product is then stored in a 4,600m^3 above ground bolted steel tank. During the warmer weather months when land application is permitted, the product is discharged from the tank at a filling station on the west side of the Lystek building.

4.2 CSO Facility

A CSO facility was constructed in 2001 to mitigate wet weather peaks experienced at the WPCP and reduce overflows in the collection system. The facility is located northeast of Sunset Drive and Bush Line in the Mill Creek Valley, immediately upstream of the WPCP on the main sewer leading from the City's sewershed. The inline CSO facility is 290 m long with a storage capacity of 4,000 m^3 and includes inlet, outlet, and overflow control structures. The CSO structure is shown in Figure 4.1.

The purpose of this tank is to control and mitigate peak flows to the WPCP, biological process upsets and prevent plant overflow events. The design allows the normal dry weather flow to pass unimpeded at a velocity that is adequate to maintain self-cleansing conditions. In the event of an overflow, the discharge enters Mill Creek upstream of the WPCP. The actuated gates to the outlet of this CSO Tank are set to limit the peak flow to the WPCP at 500 L/s. This limit was selected as the WPCP's grit chamber overflows at flows exceeding 500 L/s, creating hazardous conditions and safety issues at the WPCP. As the instantaneous flow starts exceeding this limit, the actuated gates adjust the openings to limit the outflow to the set point. This makes the excess flow volume accumulate in the CSO leading to a rise in the liquid level in the same. In cases of sustained peak flows exceeding 500 L/s, the liquid level rises to the overflow elevation of the CSO causing it to overflow to Mill Creek through a bypass line. The current operation is shown in Figure 4.2.

Figure 4.1 – CSO Facility Under Construction (RVA Photo)

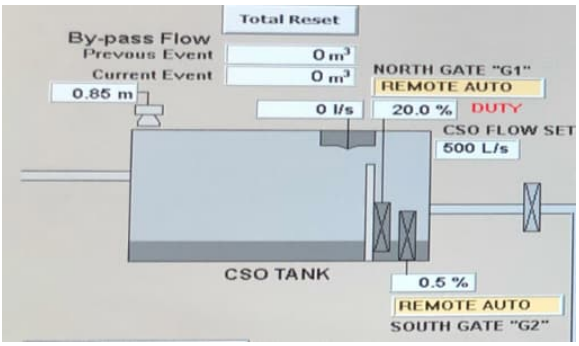


Figure 4.2 – CSO Facility Operation (City SCADA Screen)

4.3 Collection System

Currently, the City has approximately 2.0 km of combined sewers in its inventory and the *10 Year Capital Plan – 2023 to 2032* shows that most of these sewers will be separated in the next 10 years. In addition, the collection system has 16 sewage pumping stations. Table 4.1 gives a summary of each of the SPSs with regards to its age, equipment details (make, model, and capacity), and operational configuration. See Figure 4.3 for City's sewerage system map.

Table 4.1 – St. Thomas SPS Data

Pumping Station	Construction Date	Make and Model of the Pumps	Duty/ Stand by	Firm capacity (L/s)	TDH (m)
Axford	1997	Gorman-Rupp ECM	1/1	56.6	8.9
Burwell Rd	1993	ITT Flygt 3170.180	1/1	44	30
Confederation Dr	1968	Smith & Loveless	1/1	67	NA
Crescent Ave.	1988	Hydromatic Pentair	1/1	16	9.54
Elm St.	2018	Flygt 3153	1/1	44.35	13.1
Harper Rd	1973	Gorman-Rupp	1/1	21	9.1
Karen St.	2011	Flygt 3153	1/1	43.2	NA
Lynhurst	1996	Flygt 3102	1/1	23	NA
Parkside Dr.	1970	Flygt CP3127	1/1	NA	NA
Shaw Valley	2005	Flygt 3153	1/1	62.7	17
St. George St.	1966	Gorman-Rupp	1/1	94.6	37.2
Sunset Drive	1973	Barnes	1/1	23	8.5
Talbot Line	2014	Xylem NP-3153	1/1	25	34
Hughes St.	1993	ITT Flygt 3127	1/1	19.7	NA

Pumping Station	Construction Date	Make and Model of the Pumps	Duty/ Stand by	Firm capacity (L/s)	TDH (m)
Woodland	1988	Hydromatic Pentair	1/1	7	33.8
Woodworth Ave.	1972	Smart Turner Hayward	2/1	101	13.7

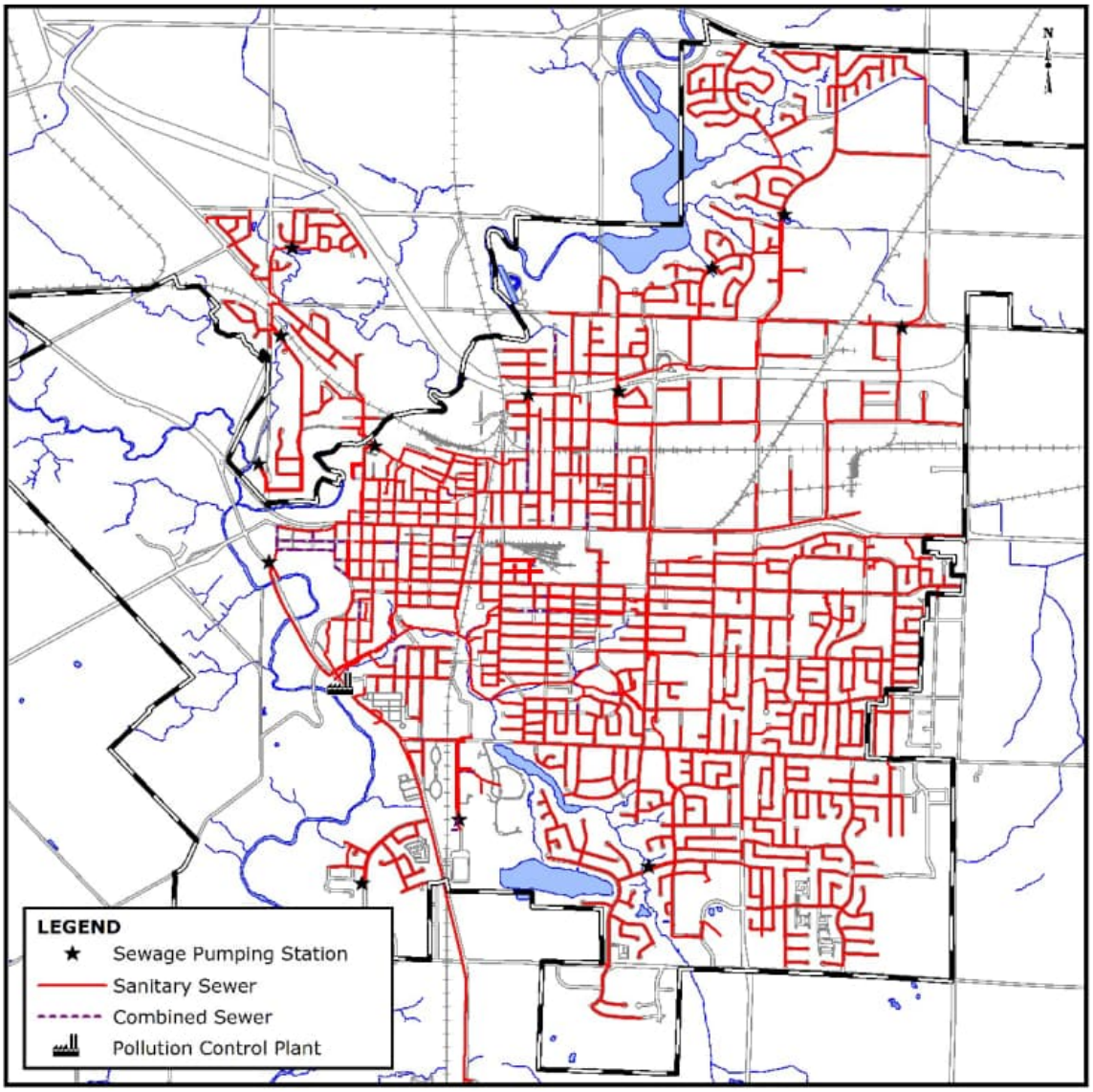


Figure 4.3 – Current City Collection System

4.4 Pollution Prevention Control Plan (PPCP)

The City had previously retained RVA for the preparation of a Pollution Prevention Control Plan (PPCP) as part of the City's ongoing efforts to improve the performance of their sanitary and storm sewer infrastructure. Table 1 summarizes the recommended collection system upgrades from this report which was completed in 2022. The Restoration of WPCP

Hydraulic Capacity project referenced in Section 1.2.1 was one of the recommendations of the PPCP which is being implemented at present.

Table 4.2 – PPCP Recommendations

Component	Cost Estimate Per Activity (2022 dollars)			Timeframe/ Comment
	Capital	Planning and Engineering	Total	
Recommended Collection System Upgrades				
Walnut (Sunset) SPS Improvements to coordinate with PPCP	$0	$25,000	$25,000	Assume that this may be only a design change in the new SPS and not impact the construction cost.
Additional cost to reroute the new Walnut SPS forcemain to the CSO	$100,000	$20,000	$120,000	Undertake following upgrades to WPCP to remove bottlenecks when now Walnut St SPS is being built.
Woodworth Ave SPS Upgrades	$2,500,000	$500,000	$3,000,000	When City deems necessary to do/ High level estimate/ City may look at other options.
Woodworth Ave SPS Collection System	$3,849,283	$577,392	$4,426,675	When City deems necessary to do/ High level estimate/ City may look at other options.
Burwell Rd SPS Upgrades	$2,000,000	$400,000	$2,400,000	When City deems necessary to do/ High level estimate/ City may look at other options.
Burwell Rd SPS Downstream Collection System	$1,500,000	$225,000	$1,725,000	When City deems necessary to do/ High level estimate/ City may look at other options.
Annual Sewer Lining (500 m/year)	$650,000	$65,000	$715,000	It will take 62 years to undertake the lining of the current total of 31 km of fair to poor sanitary sewers in the system.

4.5 Rehabilitation of Aging Infrastructure

The original WPCP train (Plant 1) was constructed in 1925 and is no longer in service. There have been several upgrades since that time. Plant 2 was constructed in 1953, Plant 3 in 1964 and Plant 4 was completed in two phases between 1980 and 2003.

Infrastructure Canada lists the average expected useful life of wastewater treatment plants and wastewater storage tanks as 45 and 74 years respectively (Infrastructure Canada, 2022). As Plant 2 and 3 are 70 and 53 years old respectively, rehabilitation will be required at some point in the planning horizon. Similarly, the WPCP's mechanical screen 1 was constructed in 1980, with mechanical screen 2 added in 2003, and will also likely require rehabilitation and upgrading in the planning horizon. Finally, staff have indicated that existing alum dosing system is reaching the end of life and will require replacement as well.

4.6 Current WPCP Upgrade Projects

At present, there are two upgrade projects undergoing at the WPCP including:

Aerated Sludge Storage Upgrade to address odour complaints since the introduction of the Lystek process in 2018. Studies have indicated that the odour is caused from the storage of raw sludge in a 60-year-old repurposed 720 m^3 digester. The City intends to address this issue by the construction of two aerated above ground storage sludge storage tank to replace the existing raw sludge storage system.

Restoration of WPCP Hydraulic Capacity to provide the permitted 632 L/s of maximum flow through the WPCP as the hydraulic capacity of 500 L/. This results in overflows at the upstream combined sewer overflow (CSO) facility as well as some flooding issues within the WPCP.

5.0 SEWAGE FLOW PROJECTIONS

5.1 Population Projections

5.1.1 Planned Areas of Expansion within City Limits

The four areas located on the west side of St. Thomas have had a development plan already made and developable areas determined (Dillion Consulting, Positioned for Growth – Planning Justification Report, 2020). There are also other areas that have been designated for growth as well as the North East Employment Lands (NE Employment Lands) with a developable area of approximately 430 ha. Figure 2.2 shows these areas.

5.1.2 Population Growth Rate and Projected Build-out Population

Population numbers are taken from the Ontario census numbers collected every 5 years. The average 5-year population growth was determined as the average of the individual 5-year growth rates in the historic data. The average growth rate was used to determine the annual compound growth rate of 1.26%. See Table 5.1 for details.

Table 5.1 – City Guideline Parameters

Year	Population	Growth %
1996	31,407	-
2001	33,236	5.8
2006	36,110	8.6
2011	37,905	5.0
2016	38,909	2.6
2021	42,840	10.1
Average 5-Year growth		6.4%
Compound Growth per Year		1.26%

The projected build-out population of residential areas was determined based on the planned population density split of 87% low density and 13% medium density (per the "Update of the Population Forecast, Housing Demand and Residential Land Need" from Dillon Consulting and Watson & Associates Economists LTD). Table 5.2 summarizes the build-out population estimate for St Thomas for its current boundaries. At the historic rate of population growth, these future areas will not reach buildout until the year 2081.

Table 5.2 – Build-out Population Projections

Future Residential Development Areas	Developable Area (ha)	Medium Population Density[1]	Low Population Density[1]	Population Projection
Area 1	63	532	2412	2944
Area 2	101	853	3866	4719
Area 3	39	330	1493	1823
Area 4	88	744	3369	4113

Future Residential Development Areas	Developable Area (ha)	Medium Population Density[1]	Low Population Density[1]	Population Projection
Shaw Valley and Kemsley Farm	157.3	1,329	6,021	7,350
Employment Development lands (equivalent population)	416.2	3,517	15,933	19,450
Harvest Run/Orchard Park meadows	86.3	729	3,302	4,031
Millers Pond	57.2	483	2,190	2,673
Total		8,518	38,586	47,103
Current Population				42,841
Projected Build-out Population				89,944

1. Medium and low population densities of 65 and 44 persons/ha per the City guidelines

5.1.3 NE Employment Lands Development

Following the commencement of this Master Plan, on June 8, 2022, the City announced the purchase of over 324 ha of land for "Mega Site Development." This area is located to the east of the existing NE Employment Lands. In February 2023, the province adjusted the City's boundary to include these lands within the City's boundary. On April 21, 2023, Volkswagen Group and Power Co SE announced that in collaboration with the Governments of Canada, Ontario, and the City that this would be the site of North America's first EV battery cell gigafactory. The battery plant will be the centre piece of the 324 ha industrial subdivision which will result in significant new sewage flows to the City of St. Thomas. Flows from this development are anticipated to start in 2028.

5.2 Sewage Flow Projections

Table 5.3 summarizes the wastewater design values used to project flows for the residential lands. Table 5.4 summarizes the wastewater design values used to project flows for the NE Employment Lands.

Table 5.3 – Wastewater Design Values for Residential Lands

Parameter	Value
Design Flow Estimation (Residential)	250 (L/Person-d)
Infiltration	0.1 (L/ha-s)
Population Density Low	44 Persons/ha
Population Density Medium	65 Persons/ha
Population Density Employment	150 Persons/ha

Table 5.4 – Wastewater Design Values for NE Employment Lads

Parameter	Units	Value	Notes
Average Infiltration Rate	L/s/ha	0.036	Calculated by RVA
Peak Infiltration Rate	L/s/ha	0.1	City of St Thomas Design Criteria
Industrial Wastewater Rate per Area	L/s/ha	0.35	MECP Guidelines: 0.2 – 0.5
Institutional Wastewater Rate per Area	L/s/ha	0.15	City of St Thomas Design Criteria: 53 pp/ ha X 250 L/pp/d
Wastewater Rate per Capita	L/d/pp	250	City of St Thomas Design Criteria
Industrial Land	ha	284.7	Measured from the City's preliminary site plan.
Training Center	ha	2.4	Measured from the City's preliminary site plan.

Based upon the best available information available at the time of the preparation of this report, it is anticipated that the NE Employment Lands will generate and average daily flow of approximately 150 L/s of flows on average to the City's sewage collection and treatment system. It is assumed that flows from the battery plant will be required by 2028 and will initially be in the order of 50 L/s. The remainder of the flows will be required when the NE Employment Lands are built out. Build out is assumed to be over a 10-year period.

Table 5.5 – Sewage Flow Projections for Planning Period

Parameter	Year						
	2022	2027	2028[1]	2032	2037	2042	2047
Population	43,379	46,179	46,760	49,159	52,331	55,708	59,303
Flow L/s	201	226	257	301	365	399	412
Flow m^3/d	17,344	19,500	22,186	26,026	31,500	34,496	35,614

1 – Milestone year when initial flows from NE Employment Lands are anticipated.
2- Assumed 10-Year NE Employment Lands build out period.

Figure 5.1 shows the flow projections noting that the when the initial flows commence from the NE Employment Lands, the current WPCP will reach 85% of its capacity and its capacity will be exceeded in the period between 2029 and 2034 depending on the rate of buildout of the NE Employment Lands.

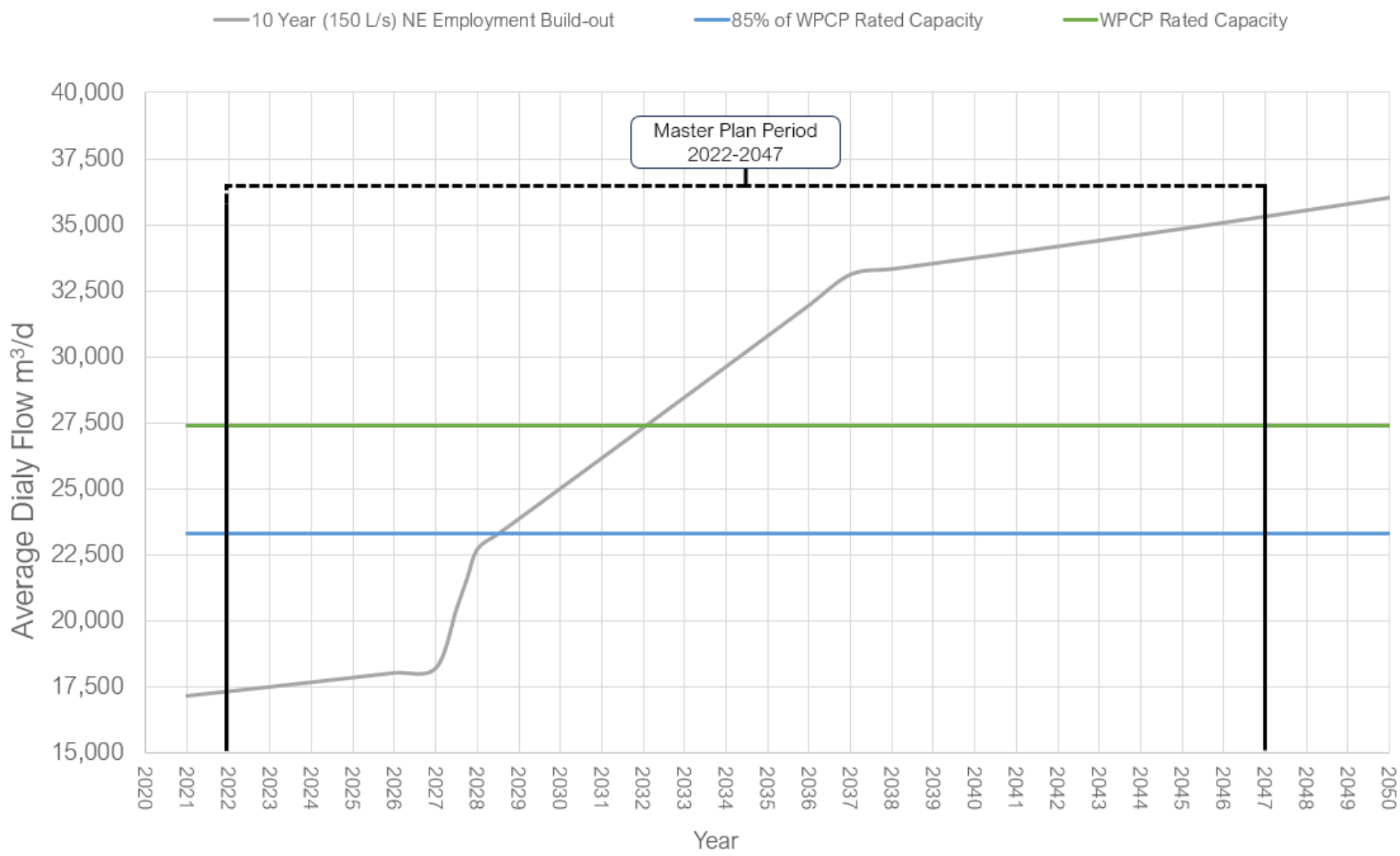


Figure 5.1 – Projected Flows

6.0 SOLUTIONS TO ADDRESS FUTURE DEMAND

By 2028, the City's flows will reach 85% of the current WPCP's capacity with the new battery plant coming on line. The development of additional industries in the NE Employment Lands is anticipated to occur over a 10-year period and therefore it is estimated that the capacity of the WPCP will be exceeded by 2032.

6.1 Servicing Evaluation Criteria

6.1.1 Evaluation Criteria

This sub-section of the WWMP reviews the alternative solutions to the challenges that have been identified with wastewater servicing. A MCEA based evaluation criteria is established and grouped in the following four categories:

- Technical;
- Social and Cultural;
- Environmental; and
- Economic.

The evaluation criteria were applied to each alternative solution (refer to the following subsections) to assess each alternative solution's ability to address the WWMP's Problem and Opportunity statement, objectives, technical, social-cultural, environmental, and economic considerations while addressing the issues and the risks identified in Sections 8 and 9. The WWMP evaluation categories and criteria are illustrated below in Table 12.1.

Table 6.1- Servicing Evaluation Categories and Criteria

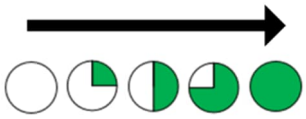
Category	Criteria
Technical	• Constructability • Improvement to operations • Infrastructure required • Approval requirements
Social and Cultural	• Public acceptance • Impact to cultural heritage infrastructure and landscapes • Impact to archaeological infrastructure and resources
Environmental	• Impact to aquatic and terrestrial species and habitat • Impact to surface water quantity and quality • Climate change resiliency
Economic	• Capital costs • Operational and maintenance costs • User Value

The wastewater alternative solutions were qualitatively reviewed by RVA for benefit, cost and impact and assessed as high-level options to address wastewater servicing needs.

6.1.2 Criteria Measurement

The proposed servicing concepts were rated for their fulfillment in each in the four categories based on the evaluation criteria. Table 6.2 illustrates the rating scale used. The visual rating provides a measure of the level of performance of each alternative and allows to select one that achieves the highest impact.

Table 6.2 - Alternative Solutions Rating Scale

Legend		
Highest Impact (Most Negative Solution)		Lowest Impact (Most Positive Solution)

6.2 Options

To provide for the requirement for additional wastewater treatment capacity which will be required no later than 2032, the following are the planning level options that were reviewed:

1) Do Nothing;
2) Increase capacity of existing WPCP; and
3) Build new North WWTP
    a) To service NE Employment Lands Only,
    b) To service NE Employment Lands and Existing Areas.

6.3 Option 1 - Do Nothing

The MCEA requires that all studies consider the “Do Nothing" alternative. For this alternative, no facilities or infrastructure would be constructed to solve the identified problem or opportunity. This means that the problem would remain in the system, or an opportunity would not be addressed. A decision to “Do Nothing” would typically be made when the costs of all other alternatives (in terms of being technically achievable, socially/culturally acceptable, impacts to the environment, and economic) outweigh the benefits.

This scenario entails abstaining expansion or upgrade of the wastewater treatment capacity within the City and no servicing would be given for the planned future development beyond the available WPCP capacity. Under the City’s Official Plan as well as commitments to provide servicing in the NE Employment Lands, there is planned growth that will exceed the available treatment capacity of the existing WPCP. Therefore, this solution does not satisfy the study objective and will not carry forward for evaluation.

6.4 Option 2 - Increase Existing WWTP

For this option, the existing WPCP would be upgraded to a capacity of approximately 466 L/s to manage flows from the NE Employment lands as well as growth within the City. This option has the following advantages:

- Reuse of existing infrastructure where capacity is available;
- A single point of discharge of treated sewage flows into the environment; and
- Potentially lower cost than Option 3 provided technical issues could be addressed.

This was determined to have several disadvantages including:

- There would need to be significant upgrades to the conveyance system of sewers and pumping stations between the NE Employment Lands and the Plant (probably in the order of $ 20 million);
- The WPCP is spatially constrained by Sunset Dr., Bush Ln., and the flood protection berm to the south and east of the plant. There is no space available to add another conventional activated sludge (CAS) treatment train, as is currently used, near the existing facility's footprint especially considering that a ~55% increase in the existing WPCP's capacity (317 L/s) would be required to meet the projected future flows;
- Any new construction would need to be located at the southeastern end of the property, near the location of the original Plant 1, however:
    - This would make the requirement for an additional flood proof structure to protect the new plant,
    - Plant 1 would not be able to share common treatment components from the WPCP or require pumping from the headworks to the plant and then to the existing WPCP outlet or else be designed as a parallel wastewater treatment system;
- Upgrading the plant with an advanced technology, such as a membrane bioreactor (MBR), could provided the required capacity however:
    - A new headworks structure would be required as influent to MBR systems has to have fine screening of sewage flows,
    - The disinfection system expansion will be challenging given the constraints of the site,
    - Staging construction within the current plant layout to maintain capacity during the upgrade would be very challenging;
- This capacity upgrade would have to be undertaken with refurbishment of some or all of Plants 2 and 3 which forces the timeline for this work forward; and
- The plant's treatment capacity would be restricted during the retrofit of the additional capacity.

The main portion of the WPCP, except for the biosolids system is protected from flooding during a 1:100-year flood by a berm which runs along Bush line and Kettle Creek. Three locations have been identified within the flood protection buffer which could be available for future construction are shown in Figure 6.1. A fourth location, near the Plant 2 primary clarifiers could be available but would require the construction of a retaining wall due to the location of the berm.

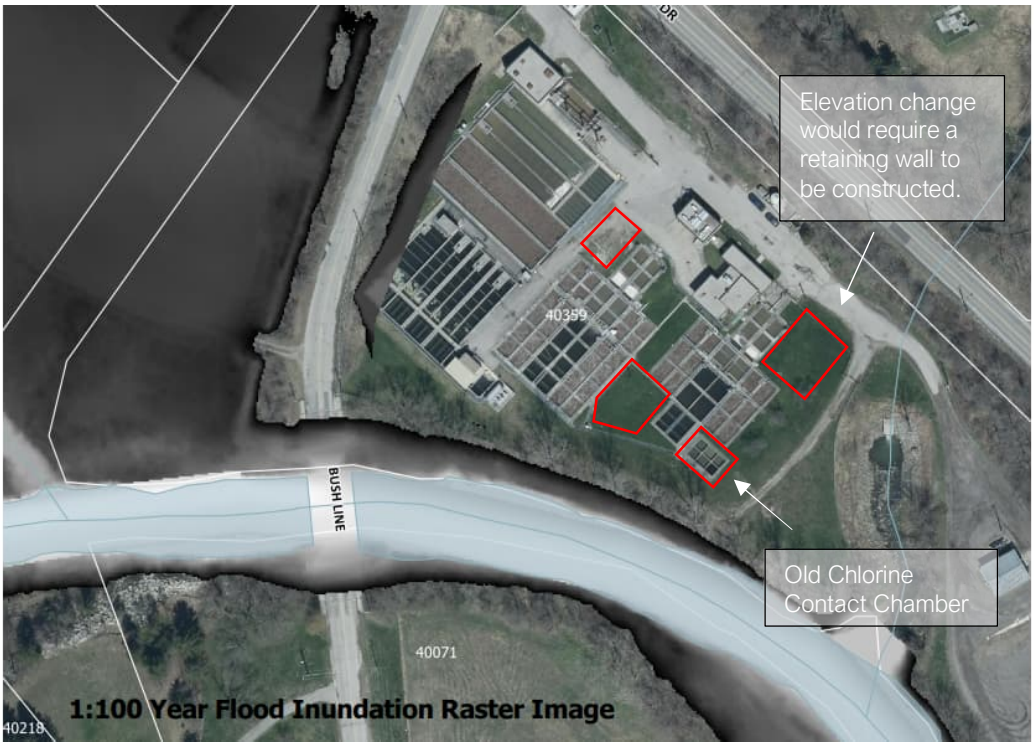


Figure 6.1 – WPCP 1:100 Year Flood Map and Available Areas (KCCA mapping)

6.5 Option 3 - Build New WWTP in North

6.5.1 Option 3a - NE Employment Lands Only

A new WWTP, referred to as the North WWTP, would be constructed to treat flows from the NE Employment lands. This option has the following advantages:

- Construction of a greenfield pant would alleviate spatial constraints and construction staging concerns compared to retrofitting the existing WPCP;
- The City could provide overall redundancy and operational flexibility to the wastewater collection and treatment systems if the ability to shift a portion of overall wastewater flows between the WPCP and the North WWTP is provided;
- Minimizing growth related flows to the existing WPCP would facilitate its refurbishment and renewal giving it additional useful life.

This option has the following disadvantages:

- Duplication of infrastructure (separate sewers, SPS, forcemain and WWTP;
- Low initial flows and characteristics of the sewage may be difficult to manage until more of the flow from the NE Employment lands is sent to the WWTP;
- The conveyance issues that were noted in the PPCP will not be addressed; and
- Cost associated with a separate system.

6.5.2 Option 3b - NE Employment Lands and Existing Areas

The North WWTP could be constructed to treat flows from the NE Employment Lands as well as additional lands shown in Figure 6.2. Based on our review, the new WWTP and three areas shown in this figure can be readily diverted. Table 6.3 shows that the total flow that could be diverted is estimated at 291 L/s (25,140 m^3/day) ADF.

Table 6.3 – Required Plant Capacity

Area	ADF (L/s)
NE Employment Lands	150
Woodworth Ave SPS. Diversion	120
St George SPS Diversion	19
Total	**289**

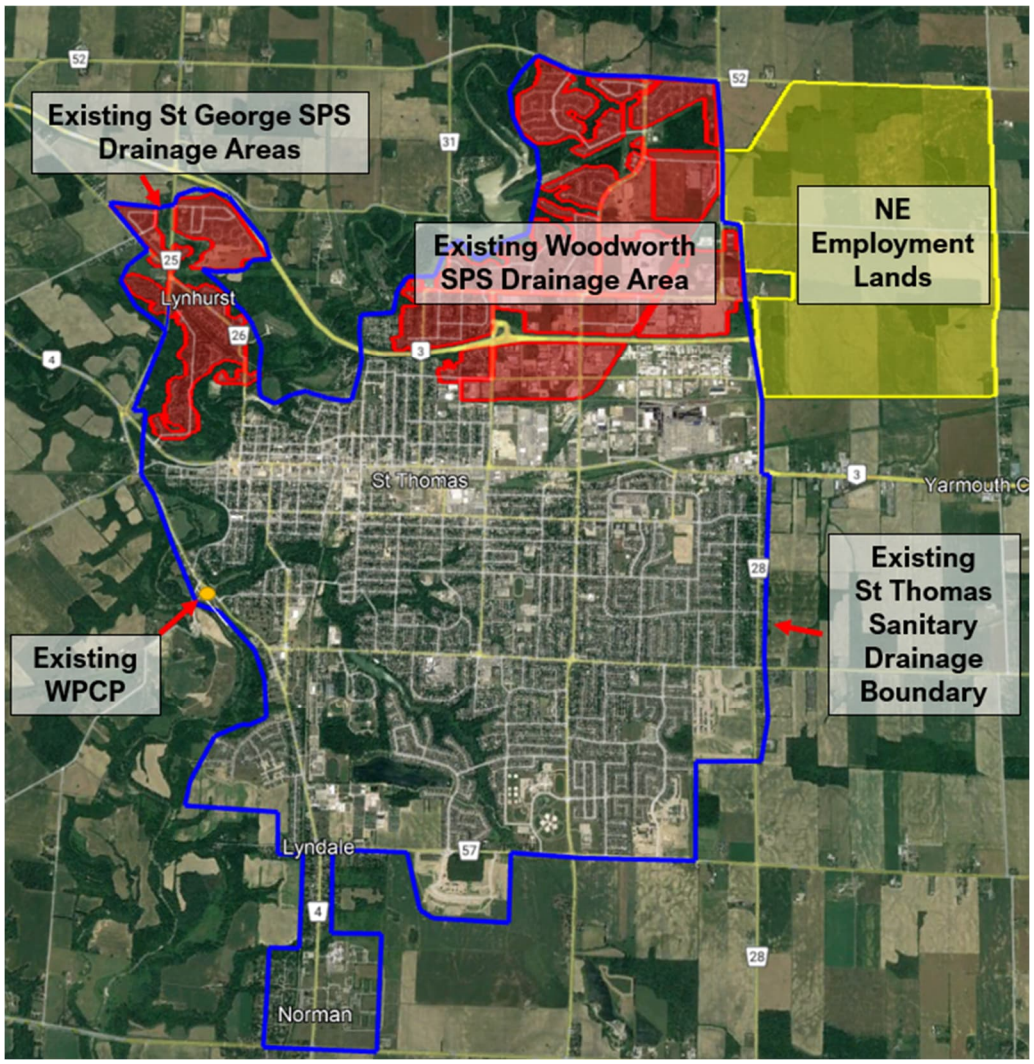


Figure 6.2 – Sanitary Drainage Areas to New WWTP (red and yellow areas)

This option has the following advantages:

- A baseflow of municipal sewage from an existing catchment will facilitate treatment as it will provide mixing for the industrial flows from the NE Employment Lands;
- A greenfield plant would alleviate spatial constraints and construction staging concerns compared to retrofitting the existing WPCP;
- Depending upon the set up of the collection system a new or existing SPS could be used to collect gravity flows from all or a portion of the Woodworth SPS drainage area which could be diverted to the North WWTP which would reduce the flows to the WPCP may reduce impact of costs associated with recommendations from the PPCP;
- The City could provide overall redundancy and operational flexibility to the wastewater collection and treatment systems if the ability to shift a portion of overall wastewater flows between the WPCP and the North WWTP is provided; and
- Reducing the flows to the existing WPCP would facilitate its refurbishment and renewal giving it additional useful life.

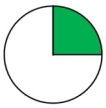
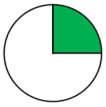
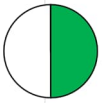
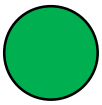
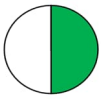
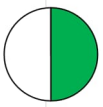
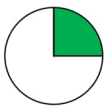
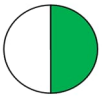
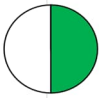
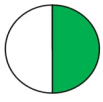
This option has the following disadvantages:

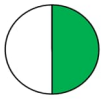
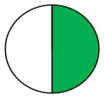
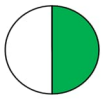
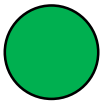
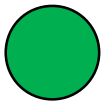
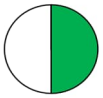
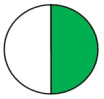
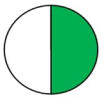
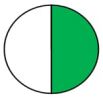
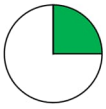
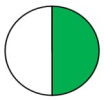
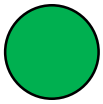
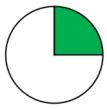
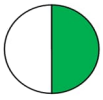
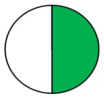
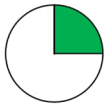
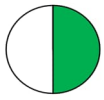
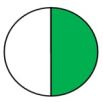
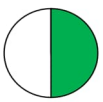
- Higher costs associated with a larger WWTP.

6.6 Review of Options

Table 6.4 illustrates the review undertaken for the three options for the new WWTP to meet the future servicing requirements of St. Thomas.

Table 6.4- Servicing Evaluation Categories and Criteria

Category	Option 2 Increase Existing WWTP	Option 3a New WWTP Employment Lands Only	Option 3b New WWTP Employment Lands and Existing Areas
Technical			
Constructability			
Improvement to operations			
Infrastructure Required			
Approval Requirements			
Social and Cultural			

Category	Option 2 Increase Existing WWTP	Option 3a New WWTP Employment Lands Only	Option 3b New WWTP Employment Lands and Existing Areas
Public Acceptance			
Impact to Cultural Heritage Infrastructure and Landscapes			
Impact to Archaeological Infrastructure and Resources			
Environmental			
Impact to Aquatic and Terrestrial Species and Habitat			
Impact to Surface Water Quantity and Quality			
Climate change resiliency			
Economic			
Capital Costs			
Operational and Maintenance Costs			
User Value			
Overall			

6.7 Preferred Solution to Address Future Wastewater Demand

As shown in the above table, Option 3 b, New WWTP for Employment Lands and Existing Areas scored the highest in terms of the three options reviewed. This approach most fully satisfies the WWMP Problem and Opportunity Statement while addressing many of the wastewater system issues and risks previously noted in this report. This option will be carried forward as the preferred servicing option in the WWMP.

6.8 Flow Redirection Options to the New WWTP

Based on the preferred solution for wastewater treatment capacity involving the construction of a new WWTP and diversion of the northern portion of the sanitary drainage areas, there are two redirection scenarios that the City can consider. These are as follows:

- Scenario 1 Diversion of drainage areas of Woodworth SPS and St George SPS including:
    - The Woodworth SPS Sewershed (434 ha): 120 L/s,
    - St George SPS Sewershed (116 ha): 19 L/s,
    - Total flow to the New WWTP is 289 L/s,
    - Total reduction to the WPCP is 141 L/s; and
- Scenario 2 – Diversion of Woodworth SPS north of South Edgeware Road and Harper SPS including:
    - The Existing drainage area north of South Edgeware Road (434 ha): 73 L/s,
    - St George SPS Sewershed (116 ha): 19 L/s,
    - Total flow to the New WWTP is 242 L/s,
    - Total reduction to the WPCP is 94 L/s; and
- Scenario 3 – Diversion is phased such that Scenario 2 is brought in to the new WWTP first and the remainder of the Woodworth SPS Road and Harper SPS area is brought to the new WWTP.

Figure 6.3 shows the flow Scenario 1 and 2 redirection areas and figures 6.4 and 6.5 show the impact to the WPCP for both scenarios and Table 5.6 summarizes the flow scenarios.

Figures 6.4 and 6.5 show the impact to the WPCP for both scenarios and Table 6.5 summarizes the flow scenarios.

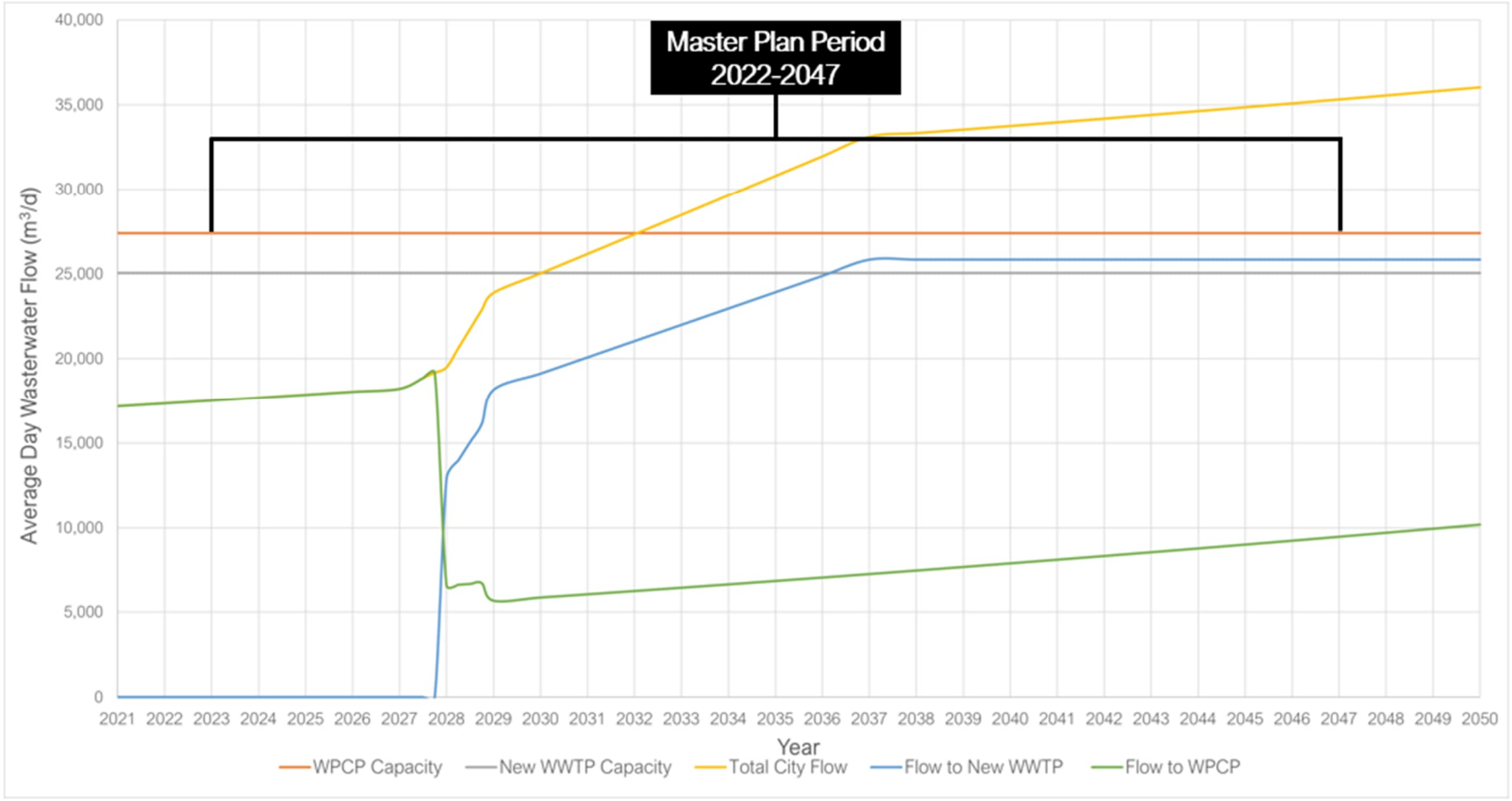


Figure 6.3 – Flow Split between WPCP and New WWTP (Woodworth SPS, and St George SPS Areas)

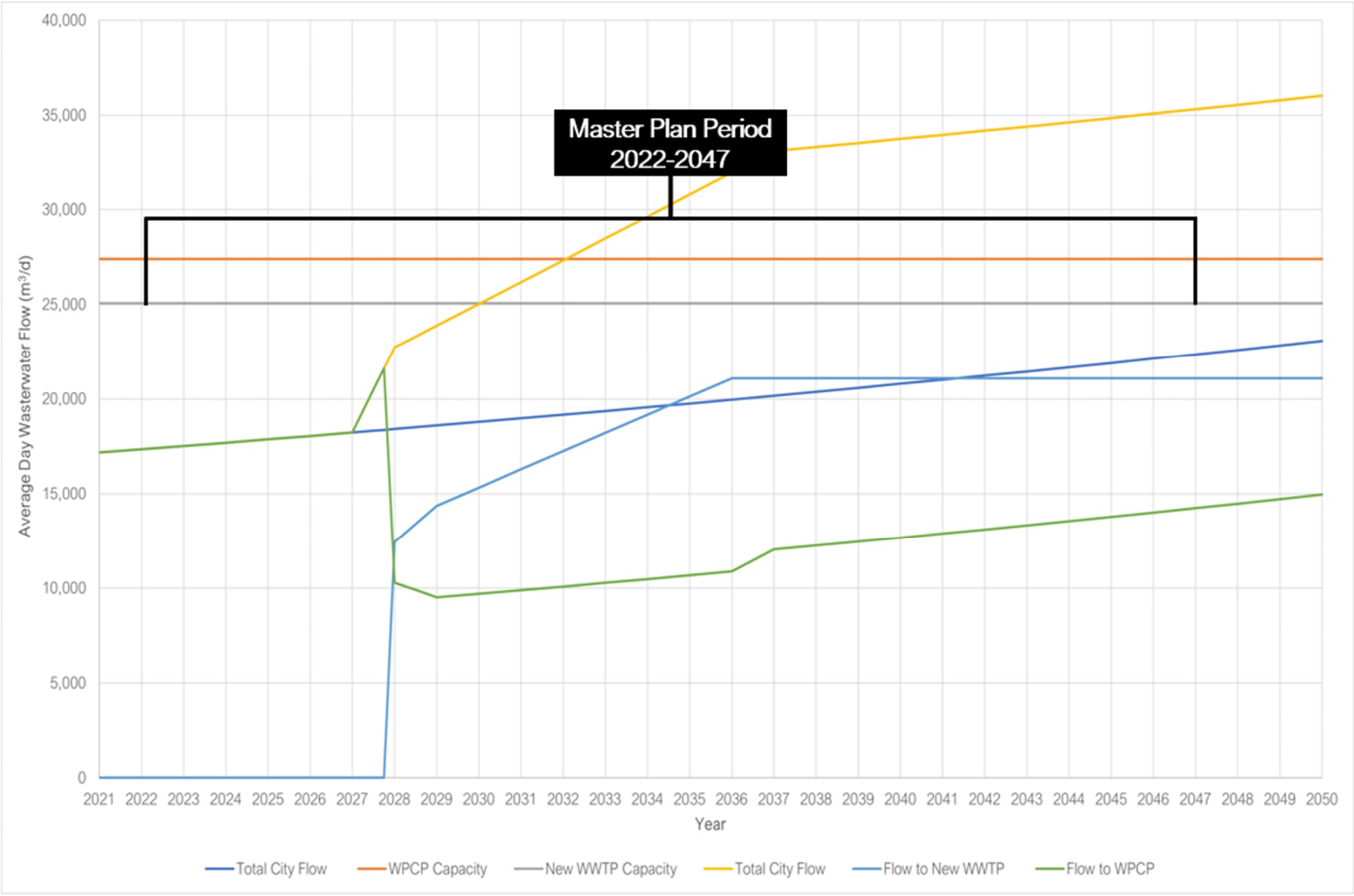


Figure 6.4 – Flow Split between WPCP and New WWTP (Woodworth SPS north of South Edgeware Road and Harper SPS)

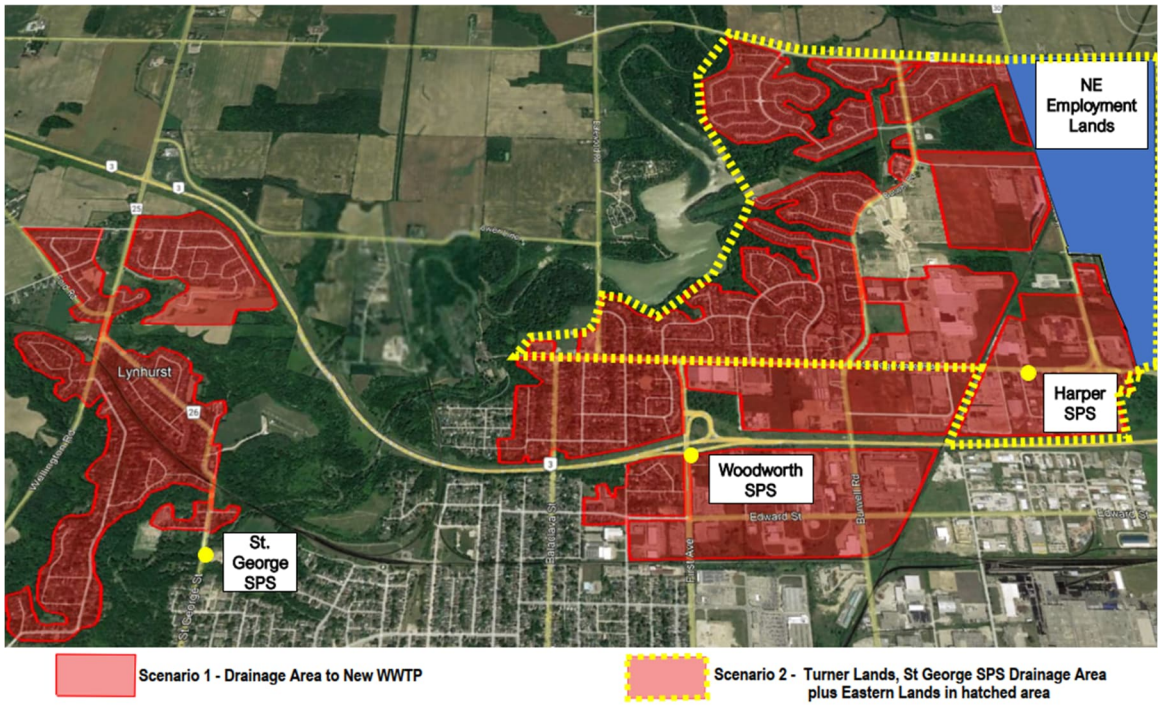


Figure 6.5 – Flow Split Redirection Scenarios

Table 6.5 – Flow Split Scenarios Between WPCP and New WWTP

Scenario	ADF to WPCP (m^3/day)	ADF to New WWTP (m^3/day)
1- Woodworth SPS north of South Edgeware Road and Harper SPS		
2023	17,516	-
2027 (prior to Employment Lands flow)	18,225	-
2028	6,350	13,402
2037 (assumed Employment Lands build out)	7,979	25,142
2047	10,472	25,142
2 – Diversion of Woodworth SPS north of South Edgeware Road and Harper SPS		
2023	17,516	-
2027 (prior to Employment Lands flow)	18,225	-
2028	6,350	16,470
2037 (assumed Employment Lands build out)	12,040	21,082
2047	14,235	21,082

During the next phase of planning for the New WWTP, consideration should be given to confirm which scenario for the redirection of the WWTP as well as if there are reasons to consider phasing of the flow redirection.

7.0 EXISTING WPCP LIFECYCLE UPGRADES

7.1 WPCP Condition

Plant 2 was constructed in 1953, Plant 3 in 1964 and Plant 4 was completed in two phases between 1980 to 2003. Infrastructure Canada lists the average expected useful life of wastewater treatment plants and wastewater storage tanks as 45 and 74 years respectively (Infrastructure Canada, 2022). As Plant 2 and 3 are 70 and 53 years old respectively, rehabilitation will be required at some point in the planning horizon. Similarly, the WPCP's mechanical screen 1 was constructed in 1980, with mechanical screen 2 added in 2003, and will also likely require rehabilitation and upgrading in the planning horizon. Finally, staff have indicated that existing alum dosing system is reaching the end of life and will require replacement.

7.2 Refurbishment Timing

The temporary reduction in flow to the WPCP due to the implementation of a new WWTP allows for the City to undertake refurbishment and upgrade of the WPCP given that Plants 2 and 3 are reaching the end of their service lives. Table 7.1 summarizes the individual plant capacities.

Table 7.1 – Current WPCP Plant Capacities (ADF)

Plant	Portion of ADF (%)	Portion of ADF (L/s)	Portion of ADF (m^3/day)
2	17	54	4,670
3	34	108	9,330
4	49	155	13,300

It would be assumed that the rehabilitation of the WPCP would be undertaken following the construction of the new WWTP which will be completed in or about 2028. There should be sufficient capacity remaining in Plant 4 and the other plant to undertake the rehabilitation of Plants 2 and 3 over the next 25-year period. Plant 3 can run ½ of its capacity due to its processes being mirrored. Table 7.2 shows the more critical capacity flow diversion scenario (Diversion of Woodworth SPS north of South Edgeware Road and Harper SPS to new WWTP) and the relative risk of rehabilitation construction in the time periods shown.

Table 7.2 –WPCP Capacity for the Refurbishments of Plants 2 and 3 (2028-2048)

Scenario	Year	2028	2037 (Employment Lands build out)	2047
	ADF to WPCP	12,014	13,768	16,198
	WPCP Capacity	27,300	27,300	27,300
Plant 2 down	WPCP Net Capacity	22,630	22,630	22,630
	WPCP Remaining Capacity	10,616	8,862	6,432
½ Plant 3 down	WPCP Net Capacity	22,635	22,635	22,635
	WPCP Remaining Capacity	10,621	8,867	6,437
	WPCP Net Capacity	17,965	17,965	17,965

Scenario	Year	2028	2037 (Employment Lands build out)	2047
Plant 2 and ½ Plant 3 down	WPCP Remaining Capacity	5,951	4,197	1,767
Plant 3 down	WPCP Net Capacity	17,970	17,970	17,970
	WPCP Remaining Capacity	5,956	4,202	1,772
Notes:				
	-Lowest Risk Period		-Higher Risk Period	-Highest Risk Period

7.3 Options for Refurbishment

Figure 7.1 shows the major components of the WPCP that will be discussed in this section.

Figure 7.1 – Major Components of WPCP

7.3.1 Headworks Replacement

The current headworks consists of the following:

- Two (2) automatic climber screens – with 16 mm openings; and
- One (1) aerated grit tank (12.0 m by 6.3 m).

While the headworks have the required hydraulic capacity, the processes in the WPCP are adversely impacted by grit and rags that are not adequately screened. This poses a particular risk to the Lystek proprietary sludge processing system requiring significant redundancy in grinders as well as adversely impacting the service life and maintenance frequency of pumps within the facility. The replacement of the screens with either 6 mm screens CAS system or else 2mm screens for a membrane bioreactor (MBR) system for any future plant replacements or upgrades.

It would be assumed that a new headworks facility would be constructed on the current WPCP site to minimize impacts during construction. The current cost opinion for a new headworks structure is $6,080,000 including the costs of engineering and related activities.

Under the current MCEA this is project falls under Municipal Water and Wastewater Projects Number 29a "Expand / refurbish / upgrade sewage treatment plant including outfall up to existing rated capacity where no land acquisition is required" which is exempt from the requirements of the Environmental Assessment Act.

7.3.2 CAS Refurbishment

7.3.2.1 Scope of Work

CAS refurbishment for each of Plant 2 and Plant 3 would consist of:

1. Refurbishment of primary treatment tankage and replacement of process equipment, railings, and gratings as well as rehabilitation of concrete tankage;
2. Refurbishment of secondary aeration tankage and replacement of process equipment, railings, and gratings as well as rehabilitation of concrete tankage;
3. Refurbishment of secondary settling tankage and replacement of process equipment, railings, and gratings as well as rehabilitation of concrete tankage; and
4. Refurbishment and/or replacement of process piping, pumps, electrical MCCs, conduits and cabling as required and monitoring equipment.

Under the current MCEA this is project falls under Municipal Water and Wastewater Projects Number 29a "Expand / refurbish / upgrade sewage treatment plant including outfall up to existing rated capacity where no land acquisition is required" which is exempt from the requirements of the Environmental Assessment Act.

7.3.2.2 Sequencing of Work

Over the period to 2048, refurbishment would need to be undertaken sequentially to minimize risk to the system due to higher flows. With reference to Table 7.3, the following would be the sequence of work options:

1. Option 1 – Complete work by 2037
    a. Undertake Headworks replacement,
    b. Undertake Plant 2 replacement,
    c. Undertake Plant 3 replacement;
2. Option 2a – Complete work by 2048
    a. Undertake Headworks replacement,
    b. Undertake Plant 2 and first ½ Plant 3 replacement (on or by 2037),

c. Undertake second ½ Plant 3 replacement;

3. Option 2b – Complete work by 2048
   a. Undertake Headworks replacement,
   b. Undertake Plant 2,
   c. Undertake first ½ Plant 3 replacement,
   d. Undertake second ½ Plant 3 replacement.

7.3.2.3 CAS Refurbishment Cost Opinion

Table 7.3 summarizes our cost opinion for the options for CAS replacement. The variance is due to the assumption of 25% higher construction costs when the refurbishment of Plant 3 is undertaken in two phases.

Table 7.3 –Cost Opinion for CAS Refurbishment Options (2023 dollars)

Component	Construction Cost	Engineering and Testing (18%)	Total
Option 1 - Work Completed by 2037			
Headworks	$5,150,000	$927,000	$6,077,000
WPCP Office Refurbishment	$750,000	$135,000	$885,000
Plant 2 Refurbishment	$6,090,000	$1,096,200	$7,186,200
Plant 3 Refurbishment	$4,300,000	$774,000	$5,074,000
TOTAL	**$16,290,000**	**$2,932,200**	**$19,222,200**
Option 2a - Work Completed by 2048			
Headworks	$5,150,000	$927,000	$6,077,000
WPCP Office Refurbishment	$750,000	$135,000	$885,000
Plant 2 and 1/2 Plant 3 Refurbishment	$8,240,000	$1,483,200	$9,723,200
Remaining 1/2 Plant 3 Refurbishment	$2,687,500	$483,750	$3,171,250
TOTAL	**$16,827,500**	**$2,940,000**	**$19,856,450**
Option 2b - Work Completed by 2048			
Headworks	$5,150,000	$927,000	$6,077,000
WPCP Office Refurbishment	$750,000	$135,000	$885,000
Plant 2 Refurbishment	$6,090,000	$1,096,200	$7,186,200
1/2 Plant 3 Refurbishment	$2,687,500	$483,750	$3,171,250
Remaining 1/2 Plant 3 Refurbishment	$2,687,500	$483,750	$3,171,250
TOTAL	**$17,365,000**	**$3,125,700**	**$20,490,700**

7.3.3 MBR Refurbishment

7.3.3.1 Scope of Work

The use of membrane filtration allows plants to operate their aeration system at much greater mixed liquor suspended solids (MLSS) concentrations as compared to CAS systems and negates the need to secondary clarifiers. The WPCP's capacity can be upgraded by altering existing secondary clarifiers to house the membranes and building a

new MBR building which would house the required process equipment include permeate pumps and membrane cleaning systems. MBR refurbishment would consist of:

1. Decommissioning Plant 2 to allow for its footprint to be used to house a new MBR building;
2. Take ½ of Plant 3 offline and convert aeration tankage to MBR, replacement of other process equipment, railings, and gratings as well as rehabilitation of concrete tankage and commission; and
3. Take remaining ½ of Plant 3 offline and convert aeration tankage to MBR, replacement of other process equipment, railings, and gratings as well as rehabilitation of concrete tankage and commission.

With reference to Table 7.2, it would be recommended that the MBR conversion be undertaken no later than 2037. Figure 7.2 shows the proposed WPCP footprint for this replacement option.

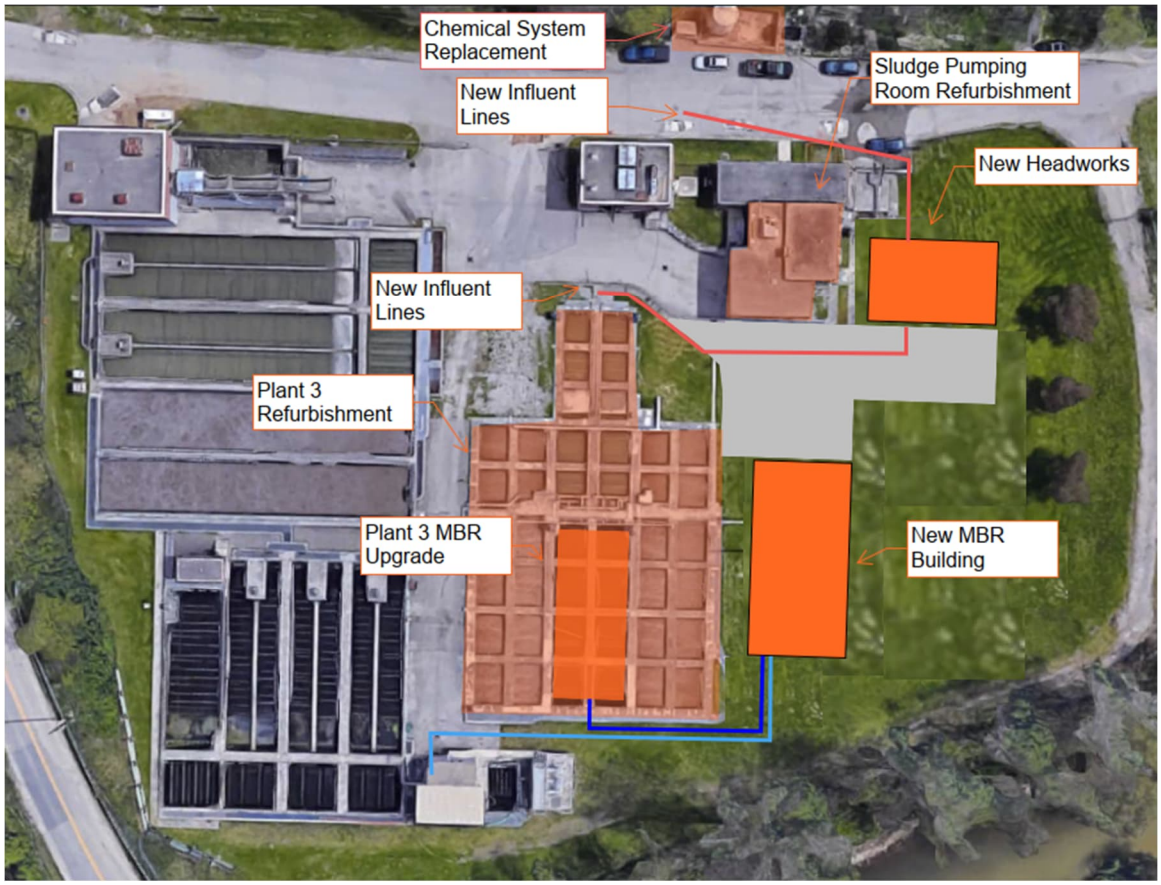


Figure 7.2 – MBR Upgrade

7.3.3.2 MBR Replacement Cost Opinion

Table 7.4 summarizes our cost opinion for the options for MBR replacement. The variance is due to the assumption of 25% higher construction costs when the refurbishment of Plant 3 is undertaken in two phases.

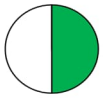
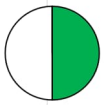
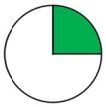
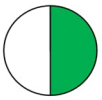
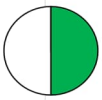
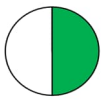
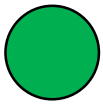
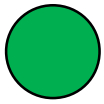
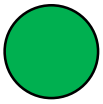
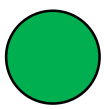
Table 7.4 –Cost Opinion for MBR Refurbishment Options (2023 dollars)

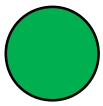
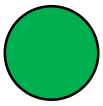
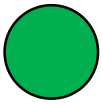
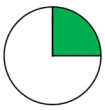
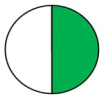
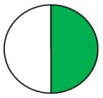
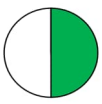
Component	Construction Cost	Engineering and Testing (18%)	Total
Headworks	$6,090,000	$1,100,000	$7,190,000
WPCP Office Refurbishment	$750,000	$140,000	$890,000
Plant 2 Decommissioning	$1,210,000	$220,000	$1,430,000
Plant 3 Refurbishment	$26,480,000	$4,770,000	$31,250,000
TOTAL	**$34,530,000**	**$6,230,000**	**$40,760,000**

7.4 Review of Refurbishment/Replacement Options

Table 7.5 illustrates the review undertaken for the three options for the new WWTP to meet the future servicing requirements of St. Thomas. In this table, please note that CAS Options 2a and 2b are similar enough as to be considered one option when compared to CAS Option 1 and the MBR Option.

Table 7.5- Review of Plant 2 and 3 Refurbishment/Replacement Options

Category	CAS Option 1	CAS Option 2 [1]	MBR Option
Technical			
Constructability			
Improvement to operations			
Infrastructure Required			
Approval Requirements			
Social and Cultural			
Public Acceptance			
Impact to Cultural Heritage Infrastructure and Landscapes			

Category	CAS Option 1	CAS Option 2 [1]	MBR Option
Impact to Archaeological Infrastructure and Resources			
Environmental			
Impact to Aquatic and Terrestrial Species and Habitat			
Impact to Surface Water Quantity and Quality			
Climate change resiliency			
Economic			
Capital Costs			
Operational and Maintenance Costs			
User Value			
Overall			

7.5 Preferred Solution to Address Future Wastewater Demand

As shown in the above Table 7.6 and based upon one point per shaded quarter, the options ranked as follows:

- CAS Option 1 – 2.69/4.00;
- CAS Option 2 – 2.92/4.00; and
- MBR Option – 2.46/4.00

CAS Options 2a (Plant 2 and 1/2 Plant 3 Refurbishment followed by 2nd ½ Plant 3 Refurbishment) and 2b (Plant 2 followed by 1st /2 Plant 3 Refurbishment and then by 2nd ½ Plant 3 Refurbishment) were the highest ranked for a combination of their for their flexibility to be implemented over a longer period when compared to CAS Option 1 and the significantly lower capital cost when compared to the MBR option.

8.0 NEW WWTP

8.1 Conceptual New WWTP Layout

8.1.1 Discharge Requirements

On May 1, 2023, the City and RVA with MECP staff to review the requirements to establish the discharge criteria for the new WWTP. After this meeting, RVA on behalf of the City submitted *Wastewater Services Implementation Plan for the Northeast Employment Lands Assimilative Capacity Study Terms of Reference Draft* dated May 8, 2023, for review by the MECP. MECP responded with their review and some additional requirements in an email dated May 18, 2023. This information is included in Appendix 3.

Based on the information in Appendix 3, the terms of reference for the Assimilative Capacity Study (ACS) can be finalized with the MECP and undertaken as part of the Schedule C MCEA for the WWTP once the City has selected a preferred site.

While the discharge requirements for the WWTP cannot be confirmed until the ASC is reviewed and accepted by the MECP, it is assumed that the new WWTP will have to provide tertiary level treatment, that is provide for the removal to acceptable levels to allow the receiving stream (Kettel Creek) to assimilate the flows of the following parameters:

- Solids;
- Organic Material; and
- Nutrients such as ammonia and phosphorus.

To accomplish this level of treatment for average day flows of 290 L/s (approximately 25,140 m^3/day).

8.1.2 Treatment Technology

8.1.2.1 Conventional Activated Sludge Based System

Conventional Activated Sludge (CAS) treatment systems consist of the following components:

- Screening and Grit Removal to remove large solids from incoming process stream;
- Primary treatment to remove solids from process stream through settling;
- Secondary Treatment
    - Through aeration tankage containing microorganisms to remove organic components of process stream,
    - Settling tank to allow sludge settling;
- Sludge (solids and microorganism) removal from tankage and treatment;
- Effluent filtration of process stream to remove nutrients (ammonia and phosphorus);
- Disinfection of process stream; and
- Discharge to receiving stream.

Table 8.1 summarizes the advantages and disadvantages of the CAS treatment system.

8.1.2.2 Membrane Bioreactor Based System

Membrane Bioreactor (MBR) treatment systems consist of the following components:

- Screening and Grit Removal to remove large solids from incoming process stream;
- Primary treatment to remove solids from process stream through settling;
- Aeration tankage containing microorganisms to remove organic components of process stream;
- MBR tankage to remove organic component and nutrients in process stream through ultrafiltration;
- Sludge (solids and microorganism) removal from tankage and treatment;
- Disinfection of process stream; and
- Discharge to receiving stream.

Table 8.1 summarizes the advantages and disadvantages of the MBR treatment system.

Table 8.1 – Comparison of Treatment Technologies

Treatment System	Advantages	Disadvantages
CAS	• Simpler overall technology • More equipment supplier choices for key technology components of the system • Lower use of electrical power than MBR • Future expansion can be done within the property footprint.	• Generally, a larger footprint compared to MBR facility • Need a separate filtration process to remove nutrients to achieve effluent quality matching MBR systems
MBR	• Can provide for a smaller overall footprint than CAS system • MBR provides both secondary and tertiary filtration • May provide for a higher effluent quality than CAS (if high effluent quality is required)	• More complex technology • Generally, a higher use of electrical power and chemicals for treatment system • Fewer equipment supplier choices for critical technology components of the system • Expansion will be tied to MBR technology in future

8.1.1 Treatment Technology Chosen for Basis of Master Planning

The required MCEA phase of this project should review and confirm which type of treatment system (CAS, MBR, or other) should be the basis for the new WWTP. This review will take into consideration such issues as the effluent criteria (as approved by MECP based on the ACS), the size of the available parcel of land for the WWTP, and other considerations. For the purposes of developing a Master Plan level cost, we are assuming that a CAS WWTP will be chosen as the basis for design.

8.2 System Components

The City has confirmed what elements should be included in the New WWTP which are summarized the Table 8.2. Appendix 4 provides some concept layouts of the WWTP site and the buildings and facilities within it.

Table 8.2 – Description of WWTP Components

Component	Description
WWTP Site	Access • No public access • Paved driveway Parking • Paved parking • Employee parking (10 to 14 cars) • Service vehicle parking (2 to 4) , • Visitor parking for meetings and contractors Expandability of Site • Capability to expand site for conceptual 100-year service life
WWTP Liquid Train	Liquid train to consist of: • Design Annual Daily Flow is 25.0 ML/day. • Headworks in a separate building containing o Redundant screens, grit removal and augers to remove screening o Bagged system for screening removal o Dual chemical tankage (for redundancy and chemical trials). • Conventional Activated Sludge Treatment consisting of o Primary Treatment o Secondary Treatment (rectangular or circular tankage to be determined in preliminary design) o Tertiary Treatment (in separate building) consisting of process water through gravity filters o UV disinfection (collocated with tertiary treatment) o Effluent pumping station if required (to be determined in preliminary design). • Secondary building which houses main plant electrical room. • Tertiary building to house the UV and Effluent pumping operations.
WWTP Solids Management	Solids Management to include: • Design based on anticipated solids production of liquid train. • Aerated storage for Lystek and/or flexibility to use portion of primary/aeration/secondary tankage for sludge storage. • Lystek treatment building.

Component	Description
	• Storage of processed solids for land application in permitted windows.
Administration Building	1-storey building consisting of following: • Separate male and female staff changerooms with washrooms and showers • Laundry facilities • SCADA Hub • Server Room • Offices (4 individual and 1 shared) • Break Room • Meeting room.
Garage	1-storey building consisting of following: • Approximately 10 m by 15 m garage area (5 m height) with 2 roll up doors and work bench area • One (1) maintenance office • One (1) washroom • Storage area.

A conservative capacity which could be required by the new WWTP and includes all areas for diversion and connection discussed above was estimated to be 291 L/s (refer to Table 8.3).

Table 8.3 – Required Plant Capacity

Area	ADF (L/s)
NE Employment Lands	150
Woodworth Ave SPS. Diversion	120
St George SPS Diversion	19
Total	**289**

Using the capacity estimated in Table 8.3 along with the MECP's *Design Guidelines for Sewage Works*, a conservative conceptual plant layout was prepared. It is expected that effluent limits will be more stringent than the current limits at the existing WPCP and therefore a tertiary plant as been shown. Consultation with the MECP will be required to understand the required effluent limits and the resulting impact on the size and type of plant required. A conventional activated sludge (CAS) facility is shown including provisions for tertiary media filtration, sludge management/digestion and associated ancillary buildings. Area to expand the plant to up to twice the rated capacity, by adding subsequent trains above the originally facility is also included in the layout to ensure land can be acquired to allow for future expansion.

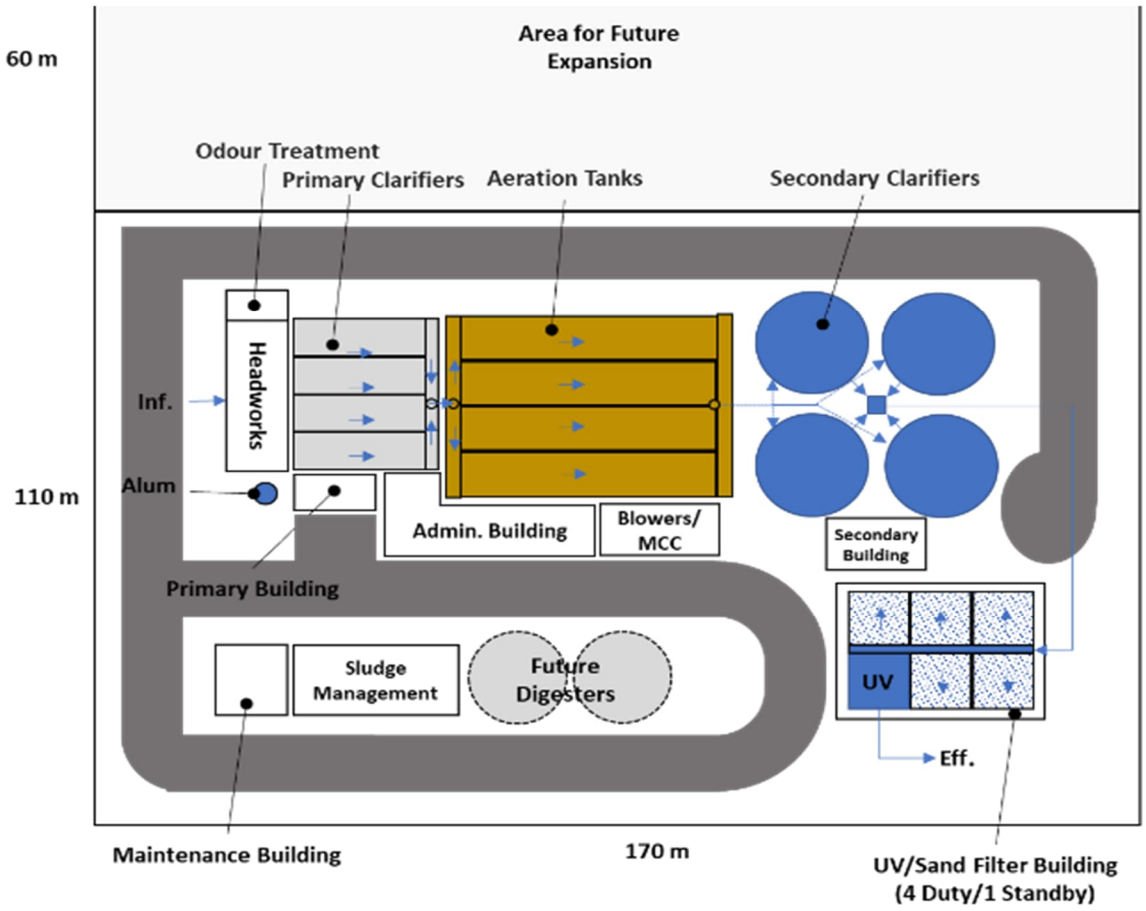


Figure 8.1 – Conceptual New WWTP Layout

8.3 Location for the New WWTP

8.3.1 Background

Through consultation with the City of St Thomas and a desktop and field review, RVA has identified 8 potential locations for the new St Thomas Wastewater Treatment Plant (WWTP). Figure 8.2 shows the locations of the sites reviewed.

8.3.2 Considerations

The following site evaluation aspects have been considered:

- Kettle Creek Conservation Authority (KCCA) Regulation limits: The KCCA's regulation limits exist to protect human life and property from hazards, such as unstable slopes and flooding, as well the environment by preserving floodplains. Building within the regulated area requires a permit from the KCCA and any construction within the floodplain will require flood proofing. Depending on the proximity to the watercourse, and the watercourse configuration, additional studies may be requested to permit the project including a Fluvial Geomorphic Assessment. As construction in these areas will subject the WWTP to additional hazards and require significant extra design and construction costs to comply with KCCA's requirements, it is recommended that locations in these areas be avoided.

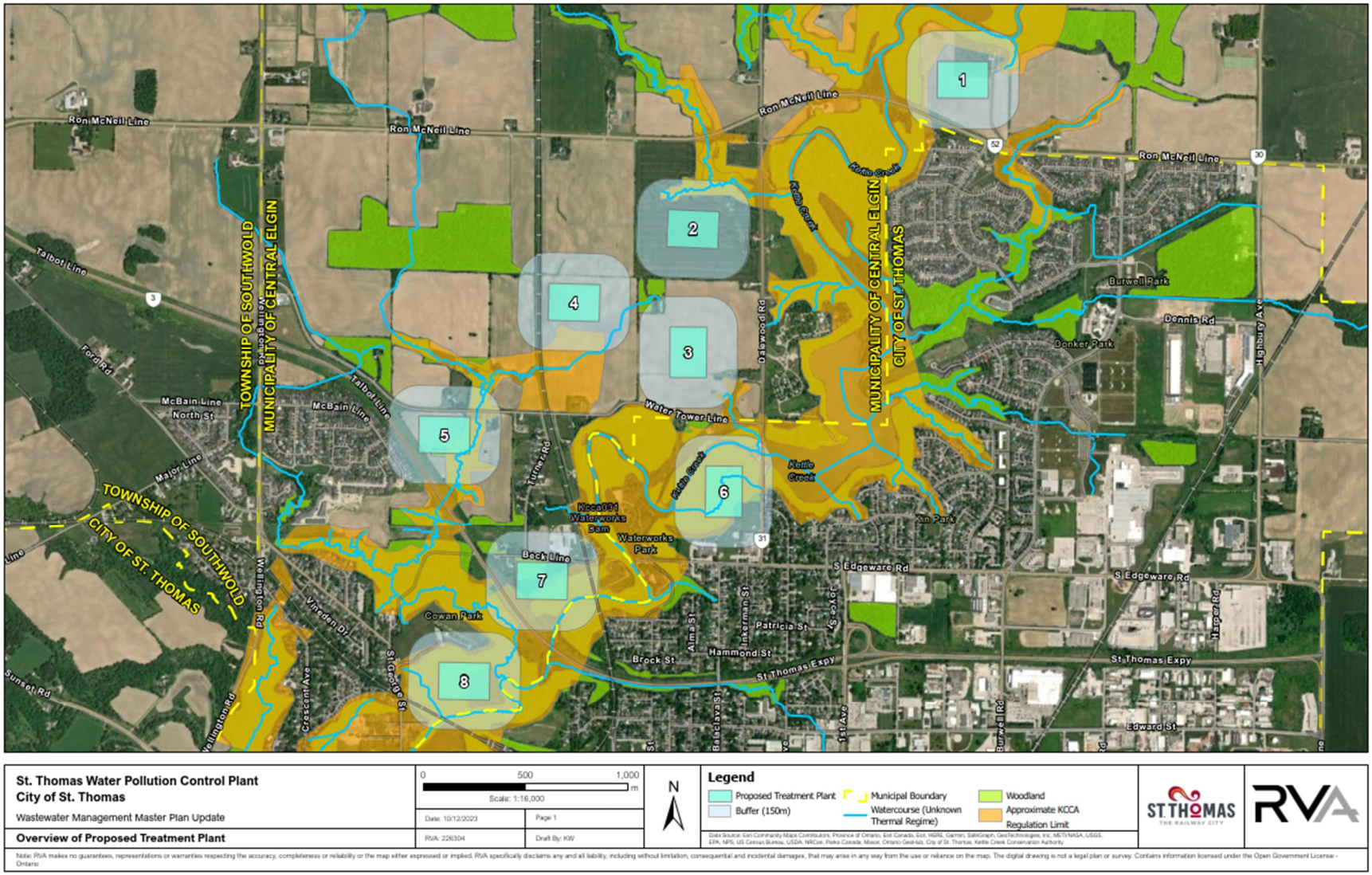


Figure 8.2 – Potential Sites for New WWTP

  - Any location with potential to impact a watercourse, below the high-water mark (i.e., top of bank in normal high flow), will be subject to review by Fisheries and Oceans Canada (DFO) under the Fisheries Act. Field investigations required to inform the DFO review process include seasonal fish habitat assessments and fish community inventories. Watercourse realignments or other significant impacts to fish habitat would likely require Authorization under the Fisheries Act and includes an Off-Setting Plan.

- Influent Route and Effluent Outfall: Conceptual forcemain routes from the Woodworth SPS as well as access to Kettle Creek.
- Buffering: Ontario Ministry of Environment, Conservation and Parks (MECP) Guideline D-2, Compatibility between Sewage Treatment and Sensitive Land Use, lists that for plants with a design capacity of >500 m^3/d to <25,000 m^3/d a minimum separation distance of 100 m, measured from the periphery of the noise/odour-producing source-structure, to the property/lot line of the sensitive land use should be provided. A separation distance of 150 m is recommended and has been used in the provided mapping.
- Pre-existing Site Conditions: Like work completed at the Northeast Employment Lands for the on-going construction of the battery manufacturing facility, Species at Risk protected under the provincial Endangered Species Act (ESA) and administered by the Ministry of the Environment, Conservation and Parks (MECP) will require consideration for any of the WWTP locations. Locations which impact 'green' lands (woodlands, wetlands, uncultivated fields, etc.) have an increased potential to impact a variety of species at risk (SAR), including bats, birds, and plants. The actual locations of many of these are unknown, requiring various surveys and studies that must be conducted to the satisfaction of the MECP prior to the initiation of any required permitting. Depending on the species, these surveys can be quite intensive, spanning several days or weeks, and are also seasonally dependant. For example, if large areas of woodland are proposed to be impacted, bat maternity roost surveys, followed by bat acoustic monitoring surveys would likely be requested. The maternity surveys are conducted in leaf off (November through April), while the acoustic surveys are conducted during the month of June.
  - It should be noted that despite the federal and provincial support for the battery manufacturing facility plant itself, additional studies to comply with the ESA were occurring this year as they had not been completed previously, even as grading and other activities are happening on other parts of that project. Had that project not had the level of support that it did and proceeded through a more traditional process, no development would be taking place yet; everything would be waiting on the results of the SAR work that RVA completed this year, and the entire project would be a year or more behind.
- Room for Expansion: A footprint of 250 m X 180 m will provide space for a conventional activated sludge (CAS) WWTP complete with tertiary filtration and a rated capacity of (25,140 m^3/d) as well as room for future expansions to increase the capacity of the plant.

8.3.3 Locations

Please refer to Appendix 5 for mapping of the properties, including the plant footprint, buffer, natural environment information, preliminary forcemain and outfall routes and KCCA regulated areas, for each of the identified locations.

8.3.3.1 Location 1

Refer to Figure 8.3 for the property location.

Location: North of Ron McNeil Line, East of Kettle Creek.

Municipality: Located in the Municipality of Central Elgin.

Property owner: Private Property.

Land Use: The Municipality of Central Elgin Official Plan, Schedule 1 classifies the current land use as Agricultural.

Influent Route: Wastewater would be pumped from the upgraded Woodworth SPS north under Highway 3, north along Woodworth Ave and Dalewood Rd. and east along Ron McNeil Line to the Plant.

Effluent Outfall: The property is located adjacent to Kettle Creek and effluent could flow by gravity to the Creek. The Kettle Creek Conservation Authority owns the land on either side of the Creek where the effluent line and outfall would be located.

Discussion: The future WWTP footprint can be adequately contained by the property line and does not impinge on the KCCA regulation limits. Appropriate buffering between the WWTP and sensitive land use can be provided to limit odour concerns. The site is primarily agricultural and would not require removal of wooded areas. Due to its location, diversion of flow via the Woodworth SPS would require a longer forcemain length than other options and would involve two crossings of Kettle Creek; at the Dalewood Rd. Bridge and the Ron McNeil Bridge.

Figure 8.3 – Location 1 – North of Ron McNeil Line

8.3.3.2 Location 2

Refer to Figure 8.4 for the property location.

Location: South of Ron McNeil Line, West of Dalewood Rd.

Municipality: Located in the Municipality of Central Elgin.

Property owner: Private Property.

Land Use: The Municipality of Central Elgin Official Plan, Schedule 1 classifies the current land use as Agricultural.

Influent Route: Wastewater would be pumped from the upgraded Woodworth SPS north under Highway 3, along Woodworth Ave and up Dalewood Rd to the plant.

Effluent Outfall: The property includes a small tributary to Kettle Creek which could potentially receive effluent from the plant pending further study. This could however result in relatively stringent effluent criteria due to potential low flows in this receiver. Alternatively, the property is located across Dalewood Rd. from Kettle Creek and effluent could flow by gravity to the Creek. The Kettle Creek Conservation Authority owns the land on either side of the Creek where the effluent line and outfall would be located.

Discussion: The future WWTP footprint can be adequately contained by the property line and does not impinge on the KCCA regulation limits. Appropriate buffering between the WWTP and sensitive land use can be provided to limit odour concerns. The site is primarily agricultural and would not require removal of wooded areas. Due to its location, diversion of flow via the Woodworth SPS would require crossing the Dalewood Reservoir via the Dalewood Rd. Bridge.

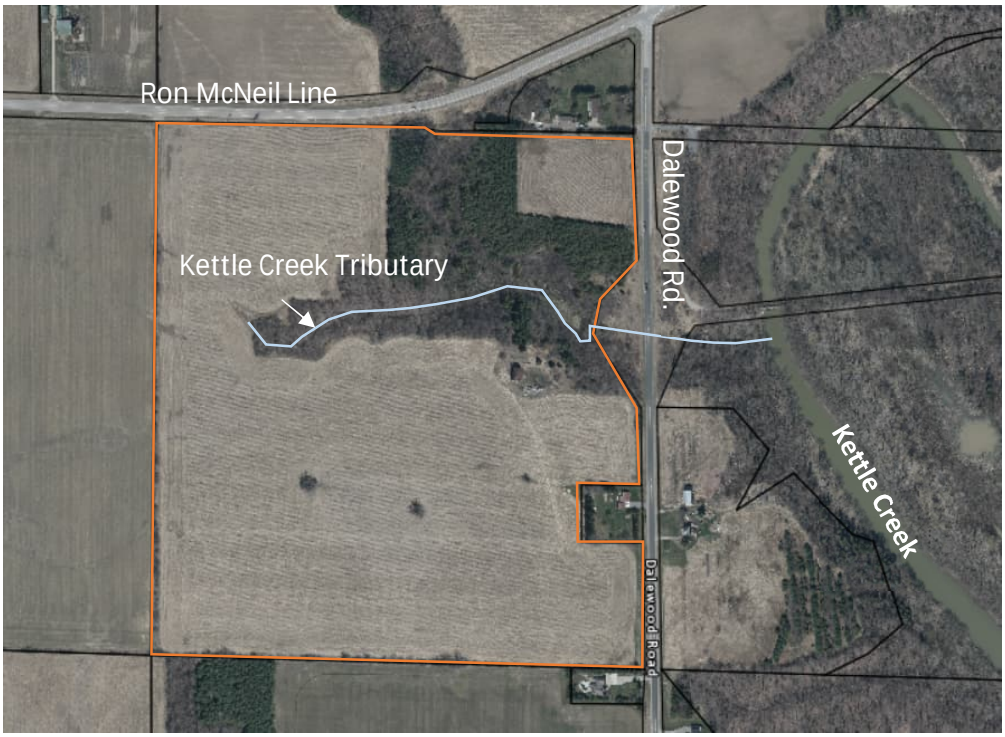


Figure 8.4 – Location 2 – South of Ron McNeil Line, West of Dalewood Rd.

8.3.3.3 Location 3

Refer to Figure 8.5 for the property location.

Location: North of Water Tower Line, West of Dalewood Rd.

Municipality: Located in the Municipality of Central Elgin.

Property owner: Private Property.

Land Use: The Municipality of Central Elgin Official Plan, Schedule 1 classifies the current land use as Agricultural.

Influent Route: Wastewater would be pumped from the upgraded Woodworth SPS north under Highway 3, along Woodworth Ave and up Dalewood Rd (or down Water Tower Line as needed) to the plant.

Effluent Outfall: Kettle Creek is located directly south of the property. The City of St Thomas owns the land on either side of the Creek where the effluent line and outfall would be located.

Discussion: The future WWTP footprint can be adequately contained by the property line and does not impinge on the KCCA regulation limits. Appropriate buffering between the WWTP and sensitive land use can be provided to limit odour concerns. The City currently owns the land where the effluent outfall would be located. The site is primarily agricultural and would not require removal of wooded areas. Due to its location, diversion of flow via the Woodworth SPS would require crossing the Dalewood Reservoir via the Dalewood Rd. Bridge.

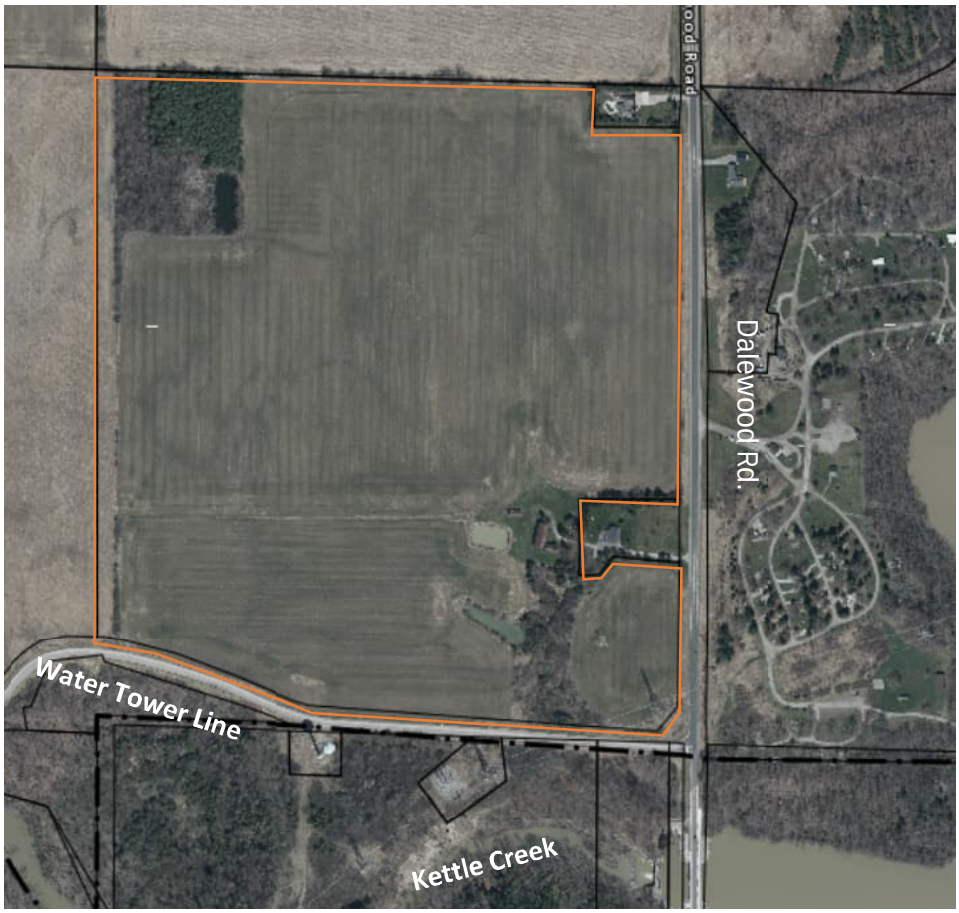


Figure 8.5 – Location 3 – North of Water Tower Line, West of Dalewood Rd.

8.3.3.4 Location 4

Refer to Figure 8.6 for the property location.

Location: North of Water Tower Line, East of the CN Railway.

Municipality: Located in the Municipality of Central Elgin.

Property owner: Private Property.

Land Use: The Municipality of Central Elgin Official Plan, Schedule 1 classifies the current land use as Agricultural.

Influent Route: Wastewater would be pumped from the upgraded Woodworth SPS north under Highway 3, North along Woodworth Ave and Dalewood Rd and West down Water Tower Line to the plant.

Effluent Outfall: Kettle Creek is located directly south of the property. A private property is located between Location 4 and the Creek.

Discussion: The future WWTP footprint can be adequately contained by the property line and does not impinge on the KCCA regulation limits. Appropriate buffering between the WWTP and sensitive land use can be provided to limit odour concerns. The site is primarily agricultural and would not require removal of wooded areas. Due to its location, diversion of flow via the Woodworth SPS would require crossing the Dalewood Reservoir via the

Dalewood Rd. Bridge. Construction of the effluent outfall would require the City to acquire an easement through the private property directly to the south of Location 4 or run the effluent sewer east down Water Tower Line to access the Kettle Creek via City Owned Lands near the water tower.

Figure 8.6 – Location 4 – North of Water Tower Line, East of the Railway

8.3.3.5 Location 5

Refer to Figure 8.7 for the property location.

Location: South of Water Tower Line, East of Highway 3.

Municipality: Located in the Municipality of Central Elgin

Property owner: Private Property

Land Use: The Municipality of Central Elgin Official Plan, Schedule 1 classifies the current land use as Agricultural.

Influent Route: Wastewater would be pumped from the upgraded Woodworth SPS north under Highway 3, North along Woodworth Ave and Dalewood Rd and West down Water Tower Line to the plant.

Effluent Outfall: A small tributary to Kettle Creek runs through the property before joining Kettel Creek near Cowan Park could potentially receive effluent from the plant pending further study. This could however result in relatively stringent effluent criteria due to

potential low flows in this receiver. Alternatively, effluent would require pumping east down Water Tower Line to discharge directly to Kettle Creek.

Discussion: The future WWTP footprint can only be partially contained by the property as it is split by the KCCA regulation limits. Only the western half of the property is usable as there would not be sufficient buffering between the properties on Turner Road. Care would be required to locate odour sources to give a suitable buffer between the plant and the McBain Line subdivision. Due to its location, diversion of flow via the Woodworth SPS would require crossing the Dalewood Reservoir via the Dalewood Rd. Bridge. The small receiving creek may have a limited capacity to receive effluent and therefore could require the City to pump effluent to the outfall which is less desirable than gravity drainage available in previous locations.

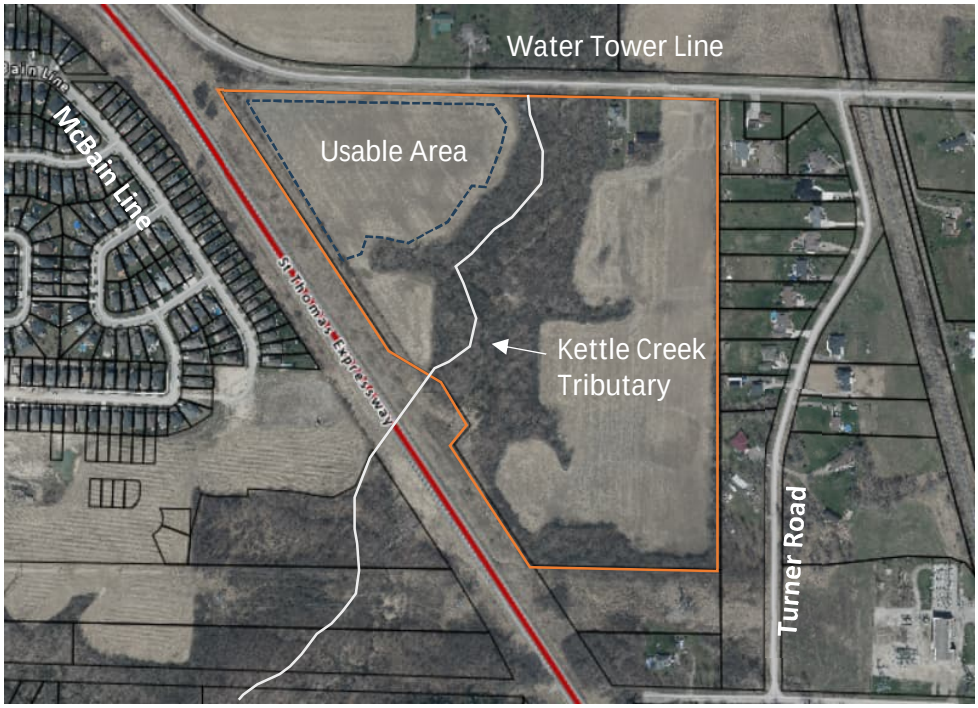


Figure 8.7 – Location 5 – South of Water Tower Line, East of Highway 3

8.3.3.6 Location 6

Refer to Figure 8.8 for the property location.

Location: South of Water Tower Line, West of Dalewood Road.

Municipality: Located in the City of St Thomas.

Property owner: City of St Thomas.

Land Use: Most of the Property is zoned Hazard Land with a small section on the southeastern side zoned Natural Heritage.

Influent Route: Wastewater would be pumped from the upgraded Woodworth SPS north under Highway 3, North along Woodworth Ave and Dalewood Rd to the plant.

Effluent Outfall: The outfall would be in Kettle Creek runs through the property.

Discussion: This property is owned by the City of St Thomas however is completely within the KCCA regulation limits and would be subject to the KCCA approval. Even if approved, the Plant would be subject to extensive requirements to study and mitigate the risks posed by flooding which could incur significant design and construction costs.

Realignments of the small tributary of kettle creek located within the property could be required and would likely require Authorization under the Fisheries Act. Construction of the plant would require extensive cleaning of 'green' lands (woodlands, wetlands, uncultivated fields, etc.) and have an increased potential to impact a variety of SAR. The actual locations of many of these SAR are unknown and could require various surveys and studies prior to the initiation of any required permitting.

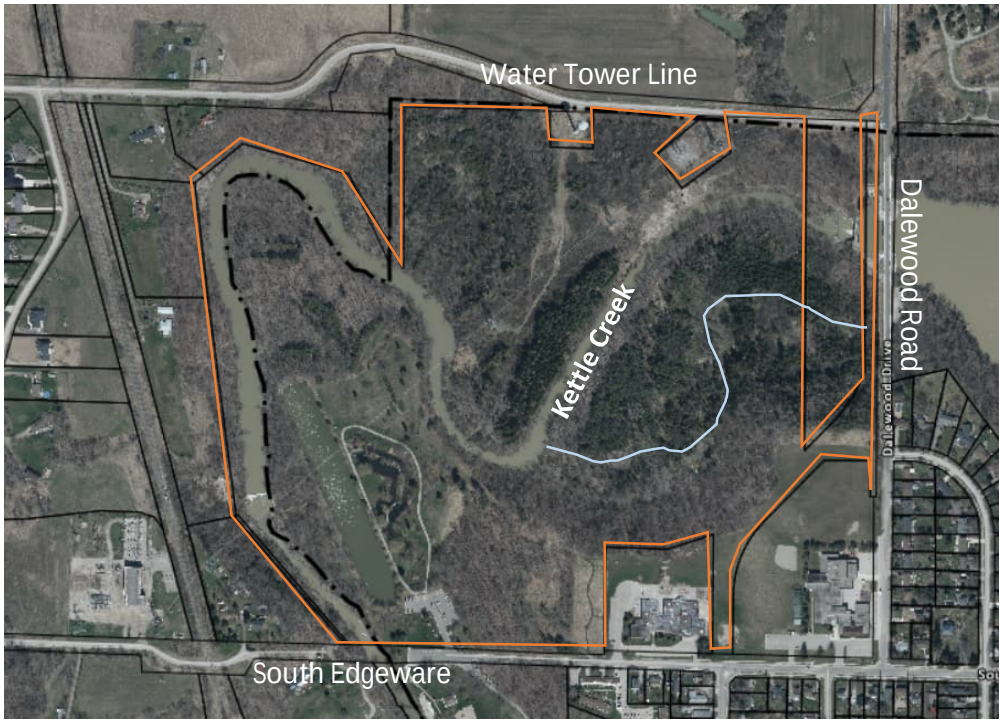


Figure 8.8 – Location 6 – South of Water Tower Line, West of Dalewood Road

8.3.3.7 Location 7

Refer to Figure 8.9 for the property location.

Location: South of Beck Line, East of Highway 3.

Municipality: Located in the Municipality of Central Elgin

Property owner: Private Property

Land Use: The Municipality of Central Elgin Official Plan, Schedule 1 classifies the current land use as Agricultural.

Influent Route: Wastewater would be pumped from the upgraded Woodworth SPS north under Highway 3, North along Woodworth Ave, west along South Edgeware, under Kettle Creek and west along Beck Line to the plant.

Effluent Outfall: The outfall would be located on Kettle Creek which runs through the property.

Figure 8.9 – Location 7 – South of Beck Line

Discussion: The future WWTP footprint can only be partially contained (approximately 30%) by the property as approximately half of the land is within the KCCA regulation limits and includes a significant elevation change down to Kettle Creek. This would potentially require filling of the low-lying area which is a major regulatory concern in regulated zones. Care would be required to locate odour sources to give suitable buffer between the plant and the neighboring properties.

Due to its location, diversion of flow via the Woodworth SPS would require crossing Kettle Creek (likely via directional drilling).

Construction of the plant would require extensive cleaning of 'green' lands (woodlands, wetlands, uncultivated fields, etc.) and have an increased potential to impact a variety of SAR. The actual locations of many of these SAR are unknown and could require various surveys and studies prior to the initiation of any required permitting.

8.3.3.8 Location 8

Refer to Figure 8.10 for the property location.

Location: Cowan Park.

Municipality: Located in the Municipality of Central Elgin

Property owners: The City of St Thomas and the St Thomas Gun Club.

Land Use: The Municipality of Central Elgin Official Plan, Schedule 1 classifies the current land use as Agricultural.

Influent Route: Wastewater from Ferndale/Lynhurst could be pumped from St George SPS with minimal changes. An extensive new forcemain would be required to route wastewater from the Woodworth SPS.

Effluent Outfall: The outfall would be located on Kettle Creek which runs through the properties.

Discussion: The properties are divided into a higher and lower level. Construction of the plant on the higher level would require removing the Cowan Park facilities and the Gun Club and therefore was not considered.

The lower level is completely within the KCCA regulation limits and would be subject to the KCCA approval. Even if approved, the Plant would be subject to extensive requirements to study and mitigate the risks posed by flooding which could incur significant costs. Construction of the plant would require extensive clearing of the existing wooded area. Construction of the plant would require extensive cleaning of 'green' lands (woodlands, wetlands, uncultivated fields, etc.) and have an increased potential to impact a variety of SAR. The actual locations of many of these SAR are unknown and could require various surveys and studies prior to the initiation of any required permitting.

Figure 8.10 – Location 8 – Cowan Park

8.3.4 Review of Locations

Locations were ranked by evaluating their performance over 10 weighted criteria. The weighting of each criteria was developed in conjunction with City staff. Table 8.4 summarises the completed location review and provides a general ranking of the sites. RVA recommends that more than one property be considered for the WWTP so that there can be some level of competitiveness in the land acquisition cost for the City.

Maximum and minimum point allocations for each of the criteria are described below:

1. SAR Impacts: Does the selected location impact 'green' lands (woodlands, wetlands, uncultivated fields, etc.) have an increased potential to impact a variety of species at risk (SAR), including bats, birds, and plants? 10 points were awarded to locations which require no removal of vegetation (agricultural fields) and 1 point award to locations which require extensive vegetation removal with a high risk of impacting SARs.
2. KCCA Requirements: Is the selected location within the KCCA regulated area? 10 points were awarded to locations which do not impact KCCA areas, and 1 point was awarded to locations completely within the regulated area which would be subject to major requirements and KCCA approval.
3. DFO Requirements: Does the selected location have the potential to impact a watercourse and would be subject to review by Fisheries and Oceans Canada (DFO) under the Fisheries Act? 10 points were awarded to locations which do not impact watercourses and 1 point was awarded to locations with major impacts and subject to major requirements.
4. Forcemain Length: The location with the shortest forcemain will be awarded 10 points. Points for other locations were calculated as equal to $\frac{Shortest\ FM\ length}{Location\ FM\ Length} \times 10$.
5. Outfall Length: The location with the shortest outfall will be awarded 10 points. Points for other locations were calculated as equal to $\frac{Shortest\ Outfall\ length}{Location\ Outfall\ Length} \times 10$.
6. SPS Reduction: This factor considers if the location would allow for the reduction in the size of the new SPS based on its location and impact on hydraulic condition. At this time, all sites were given a score of 5 points as further investigation and design would be required at the next phase of the project for the short-listed sites.
7. Odour Impacts: Do the locations allow for sufficient buffering to prevent odour impacts on nearby sensitive receivers? Locations which allow for more than 150 m between odour sources and the nearest property line were awarded 10 points. Locations with multiple sensitive receptors within 150 m were awarded 1 point.
8. Property Costs: Locations which are currently owned by the City were awarded 10 points. Points for other locations were calculated based on the lowest cost property as equal to $\frac{Lowest\ Cost}{Location\ Cost} \times 10$. Property costs were estimated based on the average unit costs of land in the area (gathered from local real estate prices) and the property size. As Location 1 is adjacent to development a premium factor of 1.5 was added.
9. Constructability: Locations such as agricultural field which will require little, if any, clearing of vegetation or engineering controls to manage hazards such as floodplain or large slopes were awarded 10 points. Locations which will require major clearing of vegetation and engineering controls to manage hazards such as floodplain or large slopes were awarded 1 point.
10. Expansion: Does the location have sufficient space to permit expansion in the future. 10 points was awarded to locations which allow duplication of the plant. 1 point was awarded to locations which do allow for expansion.
11. Social/Cultural/Heritage: Does the location have social value to the community or are there known or potential heritage resources include artifacts, buildings, or

structures (e.g., historic buildings, bridges, infrastructure, or monuments), cultural heritage landscapes (e.g., historic streetscapes, parks, trails, industrial complexes), and archaeological sites? 10 points was awarded to locations which have minimal impact on the social/cultural/heritage. 1 point was awarded to locations which have significant impact on the social/cultural/heritage allow for expansion.

Table 8.4 – Location Evaluation Matrix

Location :		1	2	3	4	5	6	7	8
Description:		North of Ron McNeil Line, East of Kettle	South of Ron McNeil Line, West of	North of Water Tower Line, West of	North of Water Tower Line, East of the CN	North of Water Tower Line, East of the CN	South of Water Tower Line, West of	South of Beck Line, East of Highway 3	Cowan Park
Criteria	Weight	Value							
SAR Impacts	5.0%	8.0	8.0	10.0	8.0	8.0	1.0	3.0	1.0
KCCA Requirements	2.5%	8.0	8.0	10.0	8.0	8.0	1.0	8.0	1.0
DFO Requirements	2.5%	10.0	10.0	10.0	10.0	10.0	1.0	10.0	3.0
Forcemain Length[1]	10.0%	3.3	5.2	6.5	5.4	4.2	10.0	6.5	1.0
Outfall Length[2]	5.0%	3.3	2.0	2.0	1.7	1.0	10.0	5.0	10.0
SPS Reduction	10.0%	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Odour Impacts	10.0%	10.0	10.0	10.0	10.0	9.0	3.0	3.0	3.0
Property Cost	15.0%	2.7	2.1	2.1	2.9	4.1	10.0	9.3	10.0
Constructability	10.0%	8.0	8.0	10.0	10.0	7.0	1.0	1.0	1.0
Expansion	15.0%	10.0	10.0	10.0	10.0	9.0	1.0	1.0	1.0
Social/Cultural/Heritage	15.0%	7.0	7.0	7.0	7.0	9.0	1.0	5.0	1.0
Total	**100.0%**	**6.59**	**6.63**	**7.11**	**6.96**	**6.74**	**4.30**	**4.70**	**3.45**

Notes:

[1]Approximate distance from current Woodworth SPS to WWTP property which is one of the Master Plan options and a known location

[3] The most direct route to Location 8 requires routing along Highway 3 which would not be permitted by the MTO. Marks were removed from both forcemain length and constructability.

[4] Location 4 requires a second crossing of Kettle Creek and Ron McNeil Line and therefore had marks removed for constructability.

8.4 Preferred Locations

Based on the above information, Locations 3, 4 and 5 are the most desirable locations for the new WWTP and scored very similarly. It is likely the ultimate site location, amongst the desired locations, will be chosen based on the cost of property acquisition. It should be noted that all preferred locations are in the Municipality of Central Elgin and are privately owned.

Appendix 5 shows photos of the preferred sites.

8.5 Sewage Pumping Station for the New WWTP

8.5.1 New Sewage Pumping Station for Flow Diversion to New WWTP

It is assumed that flows from the NE Employment Lands to the new WWTP will be routed to a new SPS. These are based on the general assumption that a new SPS will be constructed to divert all or a major portion of the Woodworth SPS sewershed. Two locations which would allow some flows to be diverted from the existing WPCP were developed to estimate the range of flows that could be diverted to a new plant and are presented below:

- Upgrading and expanding the Woodworth Ave. SPS or building a new facility; or
- Building a new SPS in the vicinity of Waterworks Park on South Edgeware Road.

8.5.2 Upgrading Woodworth Ave. SPS

Upgrading the Woodworth Ave. SPS (WSPS) would provide an opportunity to reduce overflows at this facility as was identified in the St Thomas Pollution Prevention and Control Plan (PPCP), completed by RVA in 2022. The WSPS property has additional area located to the north of the existing building which could be used for expansion as is shown in Figure 8.11. A new forcemain would be installed in the vicinity of the existing gravity sewer which crosses under Highway 3.

Utilizing the WSPS would permit the facility to send flows to either the new WWTP or the existing WPCP as needed, allow flow from some areas south of Highway 3 to be diverted and would keep the number of SPSs in the City the same.

Figure 8.11 – Upgrading the Woodworth Ave. SPS

8.5.3 Constructing a New SPS in Waterworks Park

A new SPS would be constructed within Waterworks Park at the west end of South Edgeware Road on City owned property as shown in Figure 8.12. The location is within the KCCA regulated area and would likely require flood proofing. This option would increase the number of SPSs within the City.

A new gravity sewer would be constructed down South Edgeware Rd. which would pick up sewage flows from the NE Employment lands as well as flows North of South Edgeware Rd. and bring them to the new SPS. A new forcemain would run east on South Edgeware Rd. and North on Dalewood Dr. to the new WWTP locations.

Constructing an SPS in this location would not require a crossing of Highway 3 but would reduce the area available for diversion as flows south of Highway 3 would continue to be routed to the existing WPCP and any flows south of South Edgeware Rd. would not be able to be diverted without construction of further gravity sewers.

Figure 8.12 – Potential New South Edgeware SPS

8.5.4 Routing Flows from the New SPS to the New WWTP

Appendix 6 shows the forcemain routes to the preferred WWTP sites. The routing from the Woodworth SPS area (SPS Location 1) will be as follows:

- North along current 525 mm/375 mm easement through Highway 3 corridor;
- North along Woodworth Cres to South Edgware Rd;
- West along South Edgeware Road to Dalewood Dr; then
- Common route with SPS Location 2.

The routing from the SPS Location 2 in Waterworks Park will be as follows:

- East along South Edgeware Road to Dalewood Dr; then
- Common route with SPS Location 1.

Common route for SPS Locations 1 and 2:

- North along Dalewood Dr crossing the Dalewood Reservoir;
- For Sites 3 and 4
    - West along Water Tower Line, then
    - North from Water Tower Line to entrances to sites;

- For Site 2
  - North along Dalewood Dr, then
  - West from Dalewood Dr to entrance to site;

8.5.5 Use of the Highway 3 Corridor

The installation of sewers, forcemains and/or a new SPS along Highway 3 is contingent on approval from the Ontario Ministry of Transportation (MTO) which owns the land. From our understanding, City discussions with the MTO have indicted that the MTO does not wish to have significant municipal infrastructure within the Highway 3 right of way. However, at present there are some City sewer and forcemain crossings of Highway 3 and the intent would be to minimize these going forward. However, there could be some need for some new sewers and/or forcemains to be located within the existing easements across the Highway 3 right of way.

8.5.6 SPS Site Selection

The SPS site location and the routing of the forcemain to the new WWTP will have to consider impacts to the Highway 3 right of way and access arrangement reviewed and confirmed through Phases 1 and 2 of the MCEA.

To establish the costs, RVA has selected Location 1 however the ultimate selection, phasing and details will have to be further vetted for environmental impacts through Phases 1 and 2 of the MCEA.

8.6 Costs and Implementation for the New WWTP

8.6.1 New North WWTP Cost Opinion

Based upon the requirements of this project, we have conducted a review of a variety of sources to provide this cost opinion. Sources include bench marked industry costing for WWTPs and recent tendered costs for similar projects undertaken both by RVA and those found from publicly available municipal bidding websites in southern Ontario. Table 8.5 summarizes our cost opinion for this project.

Table 8.5 – Class 5 Opinion of Cost for the
NE Employment Lands Sanitary Servicing (not including property costs or HST)

Component	Capital Cost Opinion
Gravity Sewer (525/600 mm)	$8,000,000
Sewage Pumping Station (842 L/s)	$20,720,000
Forcemain (400mm)	$5,000,000
Wastewater Treatment Plant (25,140 m^3/day)	$81,000,000
Sludge Management	$31,000,000
Administration Building & Garage	$14,000,000
Subtotal (Base Capital)	$159,720,000
Subtotal: -30% (Low Range Capital)	$111,804,000
Subtotal: +50% (High Range Capital)	$239,580,000

Component	Capital Cost Opinion
Planning, Engineering, CA, and Testing (12.5% of Base)	$19,965,000
Property Acquisition	$2,000,000
Total (Base Estimate + Engineering + Property)	**$181,685,000**
Total (Low Range + Engineering + Property)	$133,769,000
Total (High Range + Engineering + Property)	$261,545,000

As the waste water collection and treatment system described in this report will be constructed in parallel with the NE Employment Lands including the Battery Plant, there is the potential for inflated costs (labour, material, and equipment) due the anticipated level of local construction activities. At each phase of the project, cost opinions should be reviewed and updated to best reflect the current construction market.

8.6.2 Comparison to Similar Projects

The *Schedule 'C' Municipal Class EA Environmental Assessment, South Niagara Falls Wastewater Solutions Environmental Study Report* dated July 2022 was prepared for a servicing project involving the proposed construction of a 30,000 m^3/day in the Niagara Region. The cost of the South Niagara Falls WWTP was projected to be $143 million which with current inflation is $154 million. The WWTP component of our cost opinion is $126 million. Table 8.6 summarizes the treatment cost per m^3/day of flow.

Table 8.6 –Cost Comparison to Similar Project

Component	New St Thomas WWTP	South Niagara Falls WWTP
Average Daily Flow (MLD)	25.1	30.0
Average Daily Flow (m^3/day)	25,140	30,000
2023 Capital Cost ($ million)	126	154
Treatment cost of flow ($ per m^3/day)	5,148	5,020

8.7 Implementation

8.7.1 Employment Lands Buildout Schedule

The need to construct a new WWTP is driven by flows generated in the NE Employment Lands. Per discussions with the City, the Battery plant will send first flows in 2026 which will be approximately 11.4 L/s (approximately one third of full production). Full production is projected to start in 2027 with the plant projected to generate 34.3 L/s. With the addition of the battery plant flows, flows to the WPCP are estimated to reach at least 75% of its capacity. On-going development in St Thomas, as well as the anticipated surrounding ancillary industry in the NE Employment Lands, expected to start in 2026, will then push flows above 85% of the WPCP's capacity which could occur by 2027, depending on the pace of buildout. To ensure that the City has sufficient Wastewater treatment capacity to service planned growth, the municipal class environmental assessment process, design and construction of the necessary infrastructure will need to proceed at an accelerated pace.

Figure 8.13 provides a high-level schedule showing the timings of this accelerated project implementation so that the WWTP can be commissioned by Q4 2028.

8.7.2 Stages of Project Implementation

The current MECP *Design Guidelines For Sewage Works* details a three-stage approach, the for the planning and design phases involved towards the development of appropriate project design documentation for wastewater facilities.

Stage 1 is described as follows:

> "The recommended approach to meet the project objectives is typically determined through a feasibility and pre-design investigation. Normally, Stage 1 will include: an Environmental Assessment (EA) and the preparation of an Environmental Study Report (ESR), a requirement of the Environmental Assessment Act (EAA) through the approved Municipal Engineers Association (MEA) Municipal Class EA, feasibility studies, master plans and other special services. The terms of the MEA's Class EA, a planning document approved under the EAA for use in planning municipal sewage works, should be referred to and followed throughout the initial planning process, as and if applicable."

Stage 1 is the Municipal Class Environmental Assessment work that is detailed in Section 8.7.3.

Stage 2 is described as follows:

> Preliminary design and reports should include preliminary plans and reports in the form of drawings and documents outlining the nature of the project, a summary of the basis of the engineering design, a preliminary cost estimate, project schedule and a description of the extent of services and recommendations. This is sometimes referred to as the "preliminary engineering report" but should not be confused with pre-design and feasibility studies which are completed in Stage 1.

Stage 2 is the Preliminary Design work that is detailed in Section 3.5.

Stage 3 is described as follows:

> "Detailed design, final drawings, and specifications, should include preparation of: a design brief, final plans (detailed engineering drawings), specifications (for construction, processes, materials and equipment), a final cost estimate, geotechnical and special investigations (e.g., hazardous building material report) and documents required for all approval or permit applications (e.g., permits for construction, approval for waste discharges, stream crossings, air emissions). Detailed engineering drawings include all structural, civil, architectural, mechanical, electrical and Supervisory Control and Data Acquisition (SCADA) drawings required to adequately and completely detail the work being proposed to ensure the works are constructed as designed. A report outlining operation and maintenance requirements may also be necessary."

Stage 3 will be defined by the Stage 2 work and a scope of work will be prepared for the detailed design to be undertaken as a continuation of this project, following the City's acceptance of the Preliminary Design. As part of Stage 3, the project can be tendered to allow for its construction.

8.7.3 Class Environmental Assessment Process

The Municipal Class Environmental Assessment is a planning process followed by municipalities in Ontario when planning for new infrastructure that may have impacts on the environment (natural environment as well as the social environment). The MCEA framework allows for consultation with the public, businesses, technical agencies, and engagement with Indigenous communities.

The MCEA for this project will help to determine where the SPS and new WWTP will be located, the forcemain that will connect them and what kind of treatment design would be best suited for the specific St. Thomas situation and the Kettle Creek receiver. These critical decisions, which affect preliminary and detailed design, will be evaluated based on several key topics such as technical (including operation and maintenance, approval compliance), financial (including life cycle), environmental, social (including disturbance and impacts to neighborhoods and businesses), and archaeological/cultural.

The overall components of this project have different requirements to complete the MCEA and are detailed below:

- The gravity sewer connecting the NE Employment Lands to the collection system is considered an Exempt Activity provided it is routed along current public right of ways;
- The new SPS is a Schedule B project and must complete Phases 1 and 2 of the MCEA process before proceeding to implementation (Phase 5);
- The forcemain connecting the SPS to the WWTP is is considered an Exempt Activity provided it is routed along current public right of ways and the crossing of Kettle Creek is undertaken by trenchless methods; and
- The new WWTP is a Schedule C project and must complete Phases 1, 2, 3 and 4 of the MCEA process before proceeding to implementation (Phase 5).

The MCEA process and the processes for the project components for the New WWTP are illustrated in Figure 8.13. Figure 8.14 shows the timeline required to have the wastewater servicing infrastructure functional for the NE Employment Lands, the MCEA and the preliminary design will need to be undertaken concurrently.

Completion of the MCEA is required for the new SPS and new WWTP before the Environmental Compliance Approval (ECA) can be submitted to the Ministry of Environment, Conservation and Parks (MECP) during detailed design.

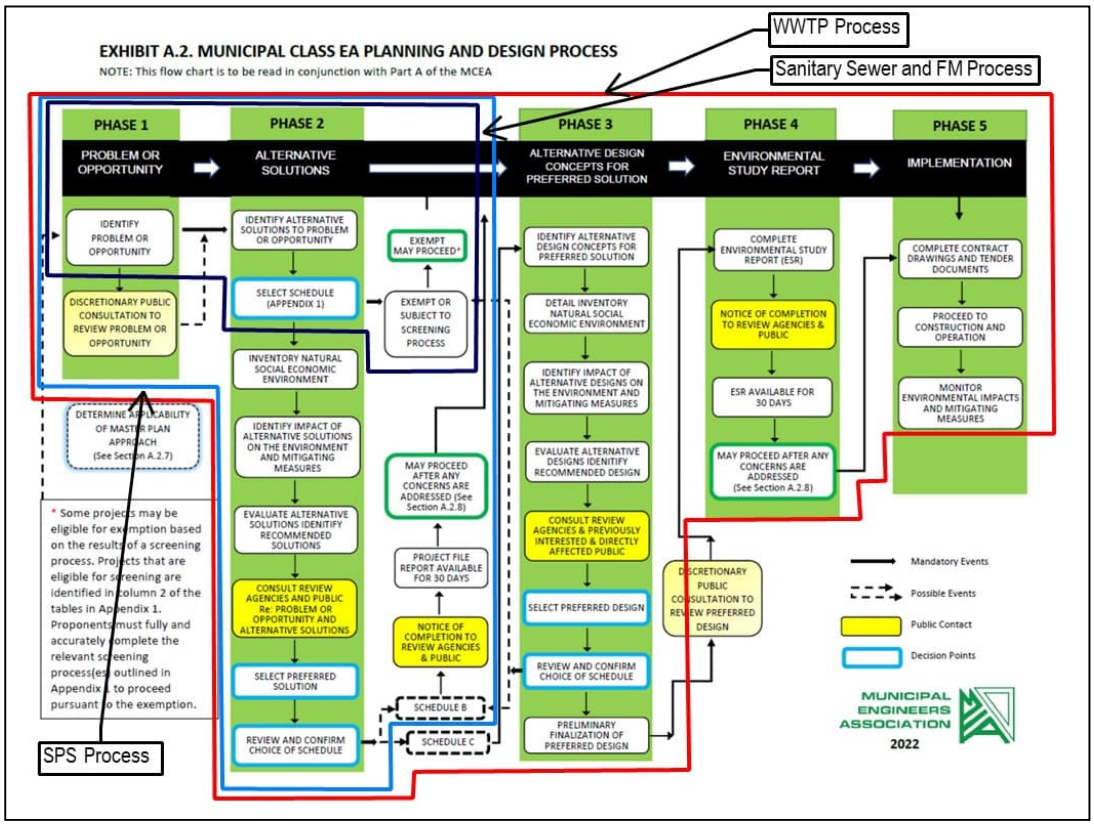


Figure 8.13 –MCEA Process for NE Employment Lands Sanitary Servicing

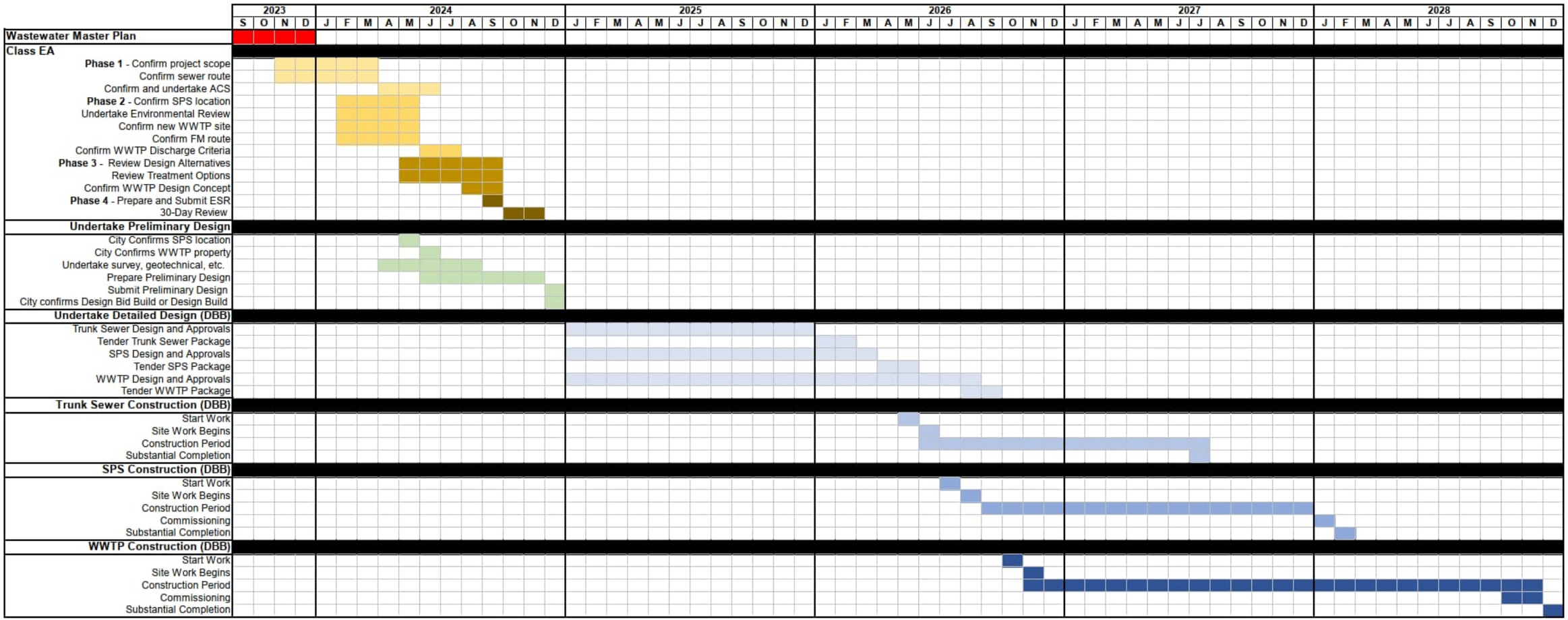


Figure 8.14 – High Level Project Schedule

8.7.4 Preliminary Design

8.7.4.1 Influent Gravity Sewers to SPS

The City of St Thomas' *Design Guidelines Manual, 2023 Edition* or latest edition details the overall requirements of design and for the preliminary design. The general scope of work includes but is not necessarily limited to the following:

- Confirmation of sewage flow and definition of sanitary drainage areas including infiltration;
- Confirmation of the design criteria used for proposed sewers including design flows, minimum depth of cover and minimum separation distance from water mains and other utilities;
- Documentation of the extent, nature, and anticipated population of the area to be serviced, facilities proposed to serve the area and provisions for future expansion of the collection system to include additional service areas and/or population growth;
- Identification of all influent sewers to new gravity sewer including pipe location, size, depth, material, inlets, manholes, and any other connections or other appurtenances;
- Review and confirm appropriate sanitary sewer alignment with City;
- Undertake required studies to inform design including but not necessarily limited to:
    - Legal Survey of property boundaries (if not undertaken by the City),
    - Topographical survey,
    - SUE B along route,
    - Geotechnical (Soils, Hydro Geological, PTTW, Excess Soils Building Pre-Condition etc.),
    - Arborist;
- Identification requirements for new gravity sewer including pipe location, size, depth, material and bedding, suitable inlets and outlets, the design, and manholes, building connections and other appurtenances;
- Consideration and discussion of cost-effective design alternatives in terms of capital and operation and maintenance costs;
- Discussion of the planning for any future extensions and/or improvements to the sewage collection systems;
- Preliminary design plans, all bearing the project title, name of the municipality/owner, name of the development or facility with which the project associated, name of the design engineer and preparation date and, where applicable, the plan scale, north point, land surveying datum and any municipal boundaries within the area shown; and
- Brief description of any renovations or improvements to the existing roadways, boulevards, easements, sewer rehabilitation and flow modifications that the City wishes to be incorporated into the work.

8.7.4.2 Sewage Pumping Station and Forcemain

The MECP *Design Guidelines For Sewage Works* and the City of St Thomas' *Design Guidelines Manual, 2023 Edition* or latest edition details the overall requirements of

preliminary design. The general scope of work includes but is not necessarily limited to the following:

- Undertake required studies to inform design including but not necessarily limited to:
  - Legal Survey of property boundaries (if not undertaken by the City),
  - Topographical survey,
  - SUE B along route,
  - Geotechnical (Soils, Hydrogeology, EASR/PTTW, Excess Soils, Building Pre-Condition etc.),
  - Arborist;
- Description of noise and odour generation potential in context with the separation distance between the SPS and the periphery of the nearest sensitive land-use (buffer zone);
- Definition of power and stand-by power requirements for the SPS;
- Documentation of the extent, nature, and anticipated population of the area to be serviced, provisions for future expansion of the SPS to include additional service areas and/or population growth;
- Itemization and discussion of present and future domestic sewage production figures, industrial, commercial, and institutional sewage production, infiltration, and wet weather inflows used in sizing various components of the SPS;
- Identification of all yard piping including pipe location, size, depth, material and bedding, the design and location of basins, manholes, building connections and other appurtenances;
- Description of the proposed flow metering, and monitoring program, including monitoring;
- Description of the number and capacities of duty and standby pumps;
- Consideration and discussion of cost-effective design alternatives in terms of capital and operation and maintenance costs;
- Description of energy efficient systems incorporated into the proposed design to minimize the impact on future energy demands. This should include energy conservation and utilization practices in the selection of process machinery, the location and orientation of structures, use of biogas and the insulation of buildings;
- Identification of suitable procedures and documents for the pre-selection of machinery and equipment;
- Review and confirm appropriate forcemain alignment with City;
- Specification of hydraulic grade line;
- Discussion of the design criteria used for proposed forcemain including design flows, minimum depth of cover and minimum separation distance from water mains and other utilities;
- Discussion of the planning for any future extensions and/or improvements to the SPS systems;

- Instrumentation & Controls definition including
    - Review of existing City SCADA network and approach for new system integration,
    - Definition of SPS PLC requirements,
    - Discussion about proposed network architecture,
    - Discussion of communication protocol and systems,
    - Alarm and on-call paging philosophy,
    - NFPA-820 and combustible gas detection requirements,
    - Draft PCN;
- Preliminary design plans, all bearing the project title, name of the municipality/owner, name of the development or facility with which the project associated, name of the design engineer and preparation date and, where applicable, the plan scale, north point, land surveying datum and any municipal boundaries within the area shown. Where pertinent, the following information may need to be provided:
    - General layout and size of existing and proposed sewers, forcemains and location of major components of other existing and proposed works,
    - General layout (line diagram) of the works (except for sewers);
- Process Flow Diagrams (PDFs) for the SPS, showing all process components, the direction of flow of sewage, the location of all chemical addition points, the maximum flow of all streams entering and leaving each component of the process and a balance for all design parameters around each process component;
- Brief description of any renovations or improvements to the existing structures, sewer rehabilitation and flow modifications; and
- NFPA 820 assessment and specification of zones within SPS.

8.7.4.3 WWTP

The MECP *Design Guidelines For Sewage Works* details the overall requirements of preliminary design. The general scope of work includes but is not necessarily limited to the following:

- Definition of raw sewage characteristics and design loads;
- Summary of receiving environment investigations and effluent quality criteria in coordination with the MCEA (based on approved criteria confirmed by MECP);
- Brief description of the proposed facilities including sludge management, where applicable;
- Summary of preliminary design basis, unit operations and process design parameters including information on operational reliability, unit redundancy/back-up (including sludge management facilities);
- Brief description of noise and odour generation potential in context with the separation distance between the WWTP and the periphery of the nearest sensitive land-use (buffer zone);
- Definition of power and stand-by power requirements for the WWTP;

- Documentation of the extent, nature, and anticipated population of the area to be serviced, facilities proposed to serve the area and provisions for future expansion of the sewage works to include additional service areas and/or population growth;
- Itemization and discussion of present and future domestic sewage production figures, industrial, commercial, and institutional sewage production, infiltration, and wet weather inflows used in sizing various components of the sewage collection and/or treatment works;
- Identification of all yard piping including pipe location, size, depth, material and bedding, suitable inlets and outlets, the design and location of basins, manholes, building connections and other appurtenances;
- Description of all waste streams generated in the WWTP, including their volumes, composition, proposed treatment, and points of discharge;
- Description of the proposed flow metering, sampling, and monitoring program, including monitoring of all waste streams;
- Description of the proposed pumping facilities, including the number and capacities of duty and standby pumps and discussion on the ability of sewage works to treat sewage during power failure events through standby power facilities and/or equalization facilities;
- Brief discussion of the locations of all significant sewage works structures and their proximity to sources of potential water contamination (e.g., streams, wells) and susceptibility to flooding;
- Consideration and discussion of cost-effective design alternatives in terms of capital and operation and maintenance costs;
- Description of energy efficient systems incorporated into the proposed design to minimize the impact on future energy demands. This should include energy conservation and utilization practices in the selection of process machinery, the location and orientation of structures, use of biogas and the insulation of buildings;
- Identification of suitable procedures and documents for the pre-selection of machinery and equipment;
- Specification of hydraulic grade line;
- Discussion of the design criteria used for proposed sewers including design flows, minimum depth of cover and minimum separation distance from water mains and other utilities;
- Discussion of the planning for any future extensions and/or improvements to the sewage collection and treatment systems;
- Instrumentation & Controls definition including
    - Review of existing City SCADA network and approach for new system integration,
    - Definition of WWTP PLC requirements,
    - Discussion about proposed network architecture,
    - Discussion of communication protocol and systems,
    - Alarm and on-call paging philosophy,

  - NFPA-820 and combustible gas detection requirements,
  - Draft PCN;

- Preliminary design plans, all bearing the project title, name of the municipality/owner, name of the development or facility with which the project associated, name of the design engineer and preparation date and, where applicable, the plan scale, north point, land surveying datum and any municipal boundaries within the area shown. Where pertinent, the following information may need to be provided:
  - General layout and size of existing and proposed sewers and location of major components of other existing and proposed works,
  - General layout (line diagram) of the works (except for sewers);
- Process Flow Diagrams (PDFs) for the sewage treatment processes, showing all process components, the direction of flow of all raw and treated sewage, the location of all chemical addition points, the maximum flow of all streams entering and leaving each component of the process and a balance for all design parameters around each process component;
- Brief description of any renovations or improvements to the existing structures, sewer rehabilitation and flow modifications;
- NFPA 820 assessment and specification of zones within the WWTP; and
- Brief description of buildings and other significant sewage works structures in terms of specific document needs (e.g., Code for Digester Gas and Landfill Installations CAN/CGA-B105 and Occupational Health and Safety Act (OHSA)).

8.8 Further Steps

At the conclusion of Preliminary Design, the City can assess the options to deliver this project which can include design-bid-build or design-build. These approaches can be pursued based on the findings of the Preliminary Design weighing the various advantages and disadvantages of each option and combination of projects. Based on our experience, Table 8.7 presents our opinion of which delivery options could be viable.

Table 8.7 –Project Delivery Approaches following MCEA/Predesign Phases

Contract	Design-bid-build	Design-build
Collection Sewer		
SPS		
WWTP		
SPS and WWTP (1 contract)		
Collection Sewer, SPS, WWTP (1 contract)		

Legend	
	Historically successful project delivery approach
	Potentially successful project delivery approach
	Not recommended project delivery approach

9.0 WORKS CITED

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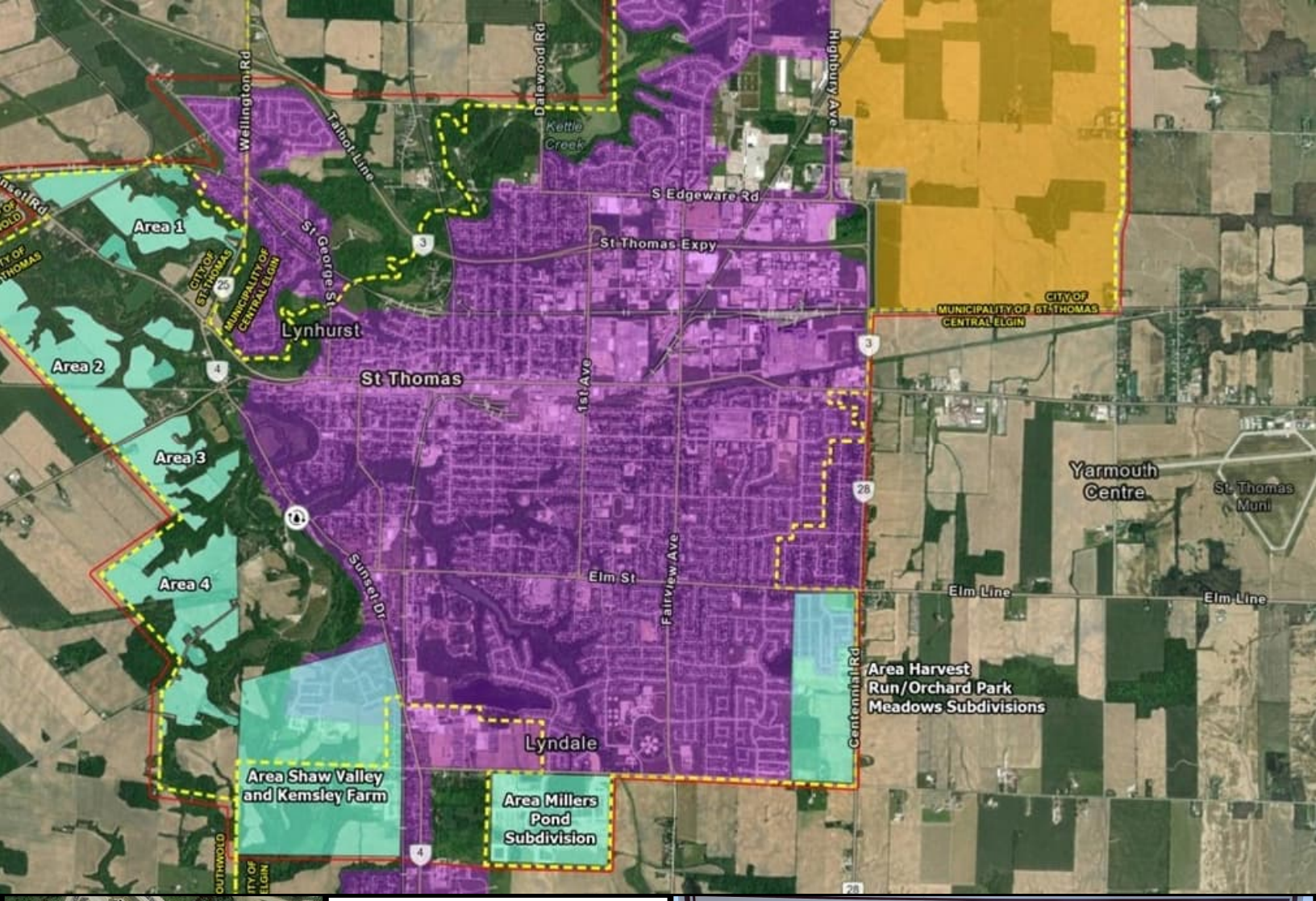
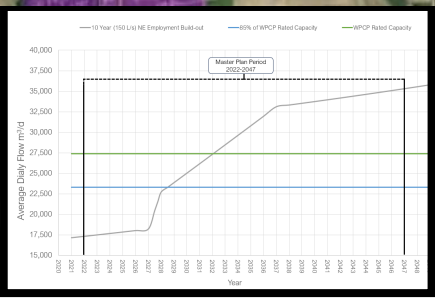




CITY OF ST. THOMAS

St. Thomas Wastewater Master Plan Update

APPENDICES

ST. THOMAS
THE RAILWAY CITY

RVA

557 Southdale Road E., Suite 200
London ON N6E 1A2
T 519 681 9916 **F** 855 833 4022
rvanderson.com

APPENDIX 1

Public Consultation

Appendix 1.1

Public Notices

Notice of Study Commencement
St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

The City of St. Thomas is preparing a Master Plan for its wastewater treatment infrastructure as part of ongoing efforts to improve the performance of the City's infrastructure. St. Thomas Water Pollution Control Plant (WPCP) Wastewater Management Master Plan (WWMP) will provide the City with guidance for capital planning and project implementation for wastewater treatment to accommodate growth for the next 20 years and beyond in a cost effective and environmentally sustainable manner.

The study is being undertaken in accordance with the Municipal Class Environmental Assessment (EA) process for Master Plans (Municipal Engineer's Association Class EA document October 2000, as amended in 2007, 2011 & 2015).

There will be opportunities to participate throughout the study. Two public engagement events will be held during the study to provide opportunities to review project information and provide feedback to the study team. For further information, please refer to the project website: www.stthomas.ca/wwmp

To be added to the study's distribution list to receive updates, or for more information, please contact a member of the study team below:

Nathan Bokma, P. Eng.
Manager of Development and Compliance
Environmental Services Dept.
City of St. Thomas
Tel: 519-631-1680 ext. 4151
nbokma@stthomas.ca
545 Talbot St., PO Box 520
St. Thomas, ON N5P 3V7

John Tyrrell, M.Sc. (Eng.), P. Eng.
Senior Project Manager
R.V. Anderson Associates Limited
Tel: 519-681-9916 ext. 5038
jtyrrell@rvanderson.com
557 Southdale Road East, Suite 200
London, ON N6E 1A2

With the exception of personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the Municipal Class Environmental Assessment, which is a planning process approved under Ontario's Environmental Assessment Act.

This notice was first distributed on May 11, 2022

ST. THOMAS THE RAILWAY CITY *Together for a Better Tomorrow*

Notice of Public Consultation Meeting
St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

The City of St. Thomas is preparing a Master Plan for its wastewater treatment infrastructure as part of ongoing efforts to improve the performance of the City's infrastructure. St. Thomas Water Pollution Control Plant (WPCP) Wastewater Management Master Plan (WWMP) will provide the City with guidance for capital planning and project implementation for wastewater treatment to accommodate growth for the next 20 years and beyond in a cost effective and environmentally sustainable manner.

The study is being undertaken in accordance with the Municipal Class Environmental Assessment (MCEA), 2023 process for Master Plans. The WWMP was developed following Approach #1 of the MCEA.

How do I Participate?

We are hosting an in-person Public Consultation Meeting to review the findings and next steps of the WWMP and provide members of the public with an opportunity to provide comments.

When? Wednesday November 29, 2023, from 6:00 – 8:00 p.m.

Where? City Hall, Room 304, 545 Talbot Street, St Thomas, ON

How? In-person

Information to be shared at the meeting will be available at www.stthomas.ca/wwmp on November 22. A summary of Questions received along with Answers will be posted to the website following the meeting.

For more information, or to be added to the study's distribution list to receive updates, please contact a member of the study team below:

Patrick Anckaert, P.Eng.
Senior Project Manager
City of St. Thomas
Tel: 226-378-3671
panckaert@stthomas.ca
545 Talbot St., PO Box 520
St. Thomas, ON N5P 3V7

John Tyrrell, M.Sc. (Eng.), P. Eng.
Senior Project Manager
R.V. Anderson Associates Limited
Tel: 519-681-9916 ext. 5038
jtyrrell@rvanderson.com
557 Southdale Road East, Suite 200
London, ON N6E 1A2

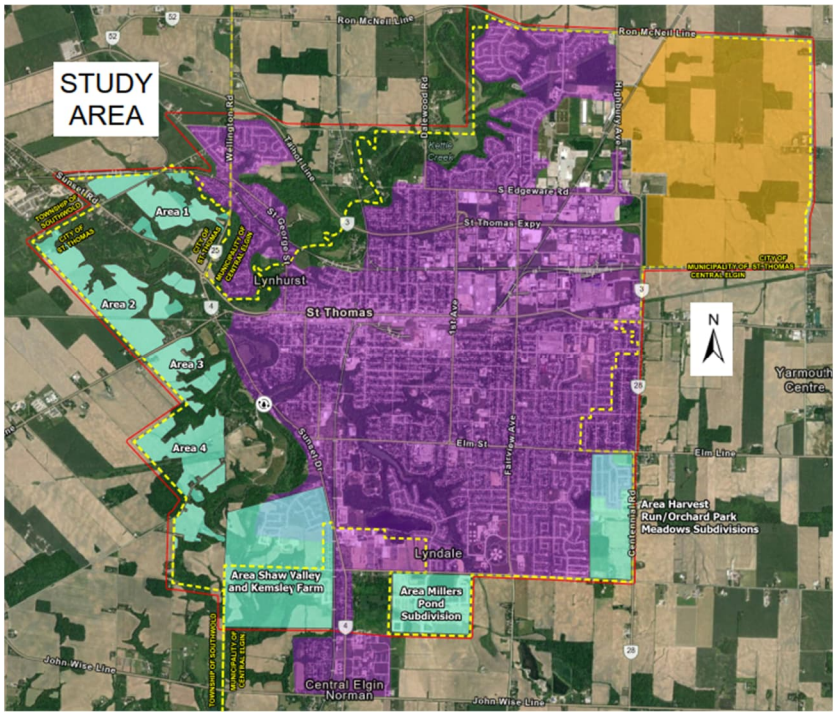
Except for personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the MCEA, which is a planning process approved under Ontario's Environmental Assessment Act.

This notice was first distributed on November 3, 2023

Notice of Master Plan

St. Thomas Water Pollution Control Plant
Wastewater Management Master Plan

The City of St. Thomas has completed the St. Thomas Water Pollution Control Plant (WPCP) Wastewater Management Master Plan (WWMP) for its wastewater treatment infrastructure as part of ongoing efforts to improve the performance of the City's infrastructure. The WWMP will provide the City with guidance for capital planning and project implementation for wastewater treatment to accommodate growth for the next 20 years and beyond in a cost effective and environmentally sustainable manner.



The Process

The Master Plan Study was undertaken in accordance with the master planning and design process of the Municipal Class Environmental Assessment (MCEA, 2023), approved under the Ontario Environmental Assessment Act. The 2024 WWMP followed Approach 1 of the MCEA process, which fulfills the requirements for Exempt (Schedule A and A+) projects and provides a basis for future investigations for Schedule B and C projects (where additional project specific investigations may be required to satisfy additional MCEA requirements before implementation). A WWMP report document has been prepared that details the planning and decision-making process followed during the Master Plan Study.

Public Comment Period

By this notice, the WWMP report is being placed online on the public record for a 30-day review period starting **December 21, 2023**. Due to the end of year upcoming holidays the Master Plan will be available for review until **January 28, 2023**, on the City's website at: St Thomas WWMP. This will provide the required 30-day review period with accommodation to stakeholders.

Notice of Master Plan

Contact Information

Interested persons may provide comments to the project team through your preferred means of communication. All comments and concerns should be sent directly to the Project Managers listed below.

Patrick Anckaert, P. Eng.
Senior Project Manager, Industrial Development,
City of St. Thomas
Tel: 226-378-3671
panckaert@stthomas.ca
545 Talbot St., PO Box 520
St. Thomas, ON N5P 3V7

John Tyrrell, M.Sc. (Eng.), P. Eng.
Senior Project Manager
R.V. Anderson Associates Limited
Tel: 519-681-9916 ext. 5038
jtyrrell@rvanderson.com
557 Southdale Road East, Suite 200
London, ON N6E 1A2

Section 16 Order Requests

The Minister of the Environment, Conservation and Parks can only issue an order with respect to Schedule B or C projects identified in the Master Plan requiring a higher level of study, or that conditions be imposed, only on the grounds that the requested order may prevent, mitigate, or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights.

Requests on other grounds will not be considered. The Minister cannot make an order with respect to Exempt projects identified in the Master Plan.

Requests must include your contact information and be received by January 28, 2023. Requests should specify what kind of order is being requested (request for conditions or a request for an individual/comprehensive environmental assessment); how an order may prevent, mitigate, or remedy potential adverse impacts on Aboriginal and treaty rights; and any information in support of the statements in the request. This will ensure that the Ministry is able to efficiently begin reviewing the request.

Requests should specify what kind of order is being requested (additional conditions or an individual environmental assessment), explain how an order may prevent, mitigate, or remedy potential adverse impacts, and can include any supporting information. The request should be sent to both:

Minister of the Environment, Conservation and Parks
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

Requests should also be sent to the City of St. Thomas by mail or by e-mail. Please visit the ministry's website for more information on requests for orders under section 16 of the Environmental Assessment Act at: https://www.ontario.ca/page/class-environmental-assessments-section-16-order.

This notice first issued December 21, 2023.

Appendix 1.2

Agency/Public Contact List and Notifications

St. Thomas Water Pollution Control Plant Wastewater Management Master Plan Update
Technical Agency Stakeholder Contact List

Updated: 2023-12-14

Agency	Contact	Title	Email	Address	Phone	*Notes*	Date Added to List	Removed from List	Notice of Study (date sent)	Notice of PIC1 (date sent)
Provincial Ministries, Agencies and Departments										
Ministry of the Environment, Conservation and Parks (MECP)	Southwest Region		eanotification.swregion@ontario.ca	733 Exeter Road, London, ON N6E 1L3	1-800-265-7672	*Complete the **project information form** and send copy of notice + form by email*			2022-05-13	2023-11-14
	General (Notices)		MEA.Notices.EAAB@ontario.ca			***NOTICE OF COMPLETION ONLY***			2022-05-13	2023-11-14
Ministry of Natural Resources and Forestry (MNRF)	Karina Cerniavskaja	District Planner - Aylmer	karina.cerniavskaja@ontario.ca	615 John Street N., Aylmer, ON N5H 2S8	519-773-4757				2022-05-13	2023-11-14
Ministry of the Environment, Conservation and Parks (MECP)	Scott Abernethy	Surface Water Evaluator/Team Leader	scott.abernethy@ontario.ca	733 Exeter Road, London, ON N6E 1L3	519-873-4779				2022-05-13	2023-11-14
Ministry of the Environment, Conservation and Parks (MECP)	Roland Plante	Water Inspector	roland.plante@ontario.ca	733 Exeter Road, London, ON N6E 1L3	519-281-1508	Notice of Commencemnt 1: Undeliverable			2022-05-13	2023-11-14
MECP	Mark Badali	Regional Environmental Planner (REP)	Mark.Badali1@ontario.ca							2023-11-14
~~Ministry of the Environment, Conservation and Parks (MECP)~~	~~Trevor Bell~~	~~Environmental Resource Planner / EA Coordinator~~	~~trevor.bell@ontario.ca~~	~~5775 Yonge Street, 8th Floor Toronto, ON~~	~~416-326-3577~~	Mark B. asked to remove Trevor from list and only contact him (above)			2022-05-13	2023-11-14
Ministry of the Environment, Conservation and Parks (MECP)	Ron Griffiths	Surface Water Specialist	ron.griffiths@ontario.ca	733 Exeter Road, London, ON N6E 1L3	519-873-5015				2022-05-13	2023-11-14
Ministry of the Environment, Conservation and Parks (MECP)	Kathryn Markham	Management Biologist	kathryn.markham@ontario.ca	615 John St. N, Aylmer, ON N5H 2S8	519-773-4711				2022-05-13	2023-11-14
Ministry of the Environment, Conservation and Parks (MECP)	Mark Smith	Water Compliance Supervisor	Mark.Smith@ontario.ca	733 Exeter Road, London, ON N6E 1L3	519-317-8116				2022-05-13	2023-11-14
Ministry of Municipal Affairs and Housing (EA Policy)	Erick Boyd	Manager (Acting)	erick.boyd@ontario.ca	659 Exeter Road, 2nd Floor, London, ON N6E 1L3	519-873-4031				2022-05-13	2023-11-14
Ministry of Agriculture, Food and Rural Affairs	David Marriott	Rural Planner, Western Ontario	david.marriott@ontario.ca	1 Stone Road W, 3rd Floor, Guelph, ON N1G 4Y2	519-766-5990				2022-05-13	2023-11-14
Ministry of Economic Development, Job Creation and Trade	David B. Meyer	Director	david.b.meyer@ontario.ca	30th Flr Suite 3001, 250 Yonge St, Toronto, ON M5B 2L7	416-212-6280				2022-05-13	2023-11-14
Ministry of Tourism, Culture and Sport (MTCS)	Karla Barboza	Team Lead(A), Heritage Heritage Planning Unit Programs and Services	karla.barboza@ontario.ca	Suite 1700, 401 Bay Street, Toronto, ON M7A 0A7	416-314 7120	***Only contact Karla and Laura (below) with initial notices***			2022-05-13	2023-11-14
Ministry of Tourism, Culture and Sport (MTCS)	Laura Romeo	Laura Romeo, Heritage Planner(A) Heritage Planning Unit	laura.romeo@ontario.ca	Suite 1700, 401 Bay Street, Toronto, ON M7A 0A7	437-996-5218					2023-11-14
Ministry of Tourism, Culture and Sport (MTCS)	Joseph Harvey	Heritage Planner A (Heritage Program Unit)	joseph.harvey@ontario.ca	Suite 1700, 401 Bay Street, Toronto ON M7A 0A7	613-242-3743	***Do not contact until after first notice is sent***				2023-11-14
Ministry of Tourism, Culture and Sport (MTCS)	Laura E. Hatcher	Heritage Planner (Heritage Program Unit)	laura.e.hatcher@ontario.ca	Suite 1700, 401 Bay Street, Toronto ON M7A 0A7	437-239-3404	***Do not contact until after first notice is sent***				2023-11-14
Ministry of Tourism, Culture and Sport (MTCS)	Jack Mallon	Heritage Planner A (Heritage Program Unit)	jack.mallon@ontario.ca	Suite 1700, 401 Bay Street, Toronto ON M7A 0A7	437-522-6582	***Do not contact until after first notice is sent***				2023-11-14
Ministry of Tourism, Culture and Sport (MTCS)	Dan Minkin	Heritage Planner (Culture Services Unit)	Dan.Minkin@ontario.ca	Suite 1700, 401 Bay Street, Toronto, ON M7A 0A7	416-314-7147	***Do not contact until after first notice is sent***			2022-05-13	2023-11-14
~~Ministry of Tourism, Culture and Sport (MTCS)~~	~~Rosi Zirger~~	~~Heritage Planner (Culture Services Unit)~~	~~rosi.zirger@ontario.ca~~	~~Suite 1700, 401 Bay Street, Toronto, ON M7A 0A7~~	~~416-314-7159~~				2022-05-13	2023-11-14
Ministry of Indigenous Affairs	Lise Chabot	Manager, Ministry Partnerships Unit	lise.Chabot@ontario.ca	Suite 400, 160 Bloor St. E, Toronto, ON M7A 2E6	647-532-0761				2022-05-13	2023-11-14
Environmental Assessment and Permissions Branch		Director	enviropermissions@ontario.ca	135 St. Clair Avenue West, 1st Floor, Toronto ON M4V 1P5					2022-05-13	2023-11-14
Municipal, MPs, MPPs										
City of St. Thomas	Justin Lawrence	Director and City Engineer	jlawrence@stthomas.ca	545 Talbot Street, PO Box 520, St. Thomas, ON N5P 3V7					2022-05-13	2023-11-14
City of St. Thomas	Wendall Graves	City Manager	wgaves@stthomas.ca	545 Talbot Street, PO Box 520, St. Thomas, ON N5P 3V7					2022-05-13	2023-11-14
County of Elgin	Brian Lima	General Manager, Engineering, Planning, Environment	blima@elgincounty.ca	450 Sunset Drive, St.Thomas, ON N5R 5V1					2022-05-13	2023-11-14
~~County of Elgin~~	~~Julie Gonyou~~	~~CAO~~	~~jgonyou@elgincounty.ca~~	~~450 Sunset Drive, St.Thomas, ON N5R 5V1~~				2023-11-29	2022-05-13	2023-11-14
County of Elgin	Don Shropshire	Interim CAO	cao@elgin.ca	450 Sunset Drive, St.Thomas, ON N5R 5V1			2023-11-29			

St. Thomas Water Pollution Control Plant Wastewater Management Master Plan Update
Technical Agency Stakeholder Contact List

Updated: 2023-12-14

Agency	Contact	Title	Email	Address	Phone	*Notes*	Date Added to List	Removed from List	Notice of Study (date sent)	Notice of PIC1 (date sent)
County of Elgin	Nancy Pasato	Manager of Planning	npasato@elgincounty.ca	450 Sunset Drive, St.Thomas, ON N5R 5V1					2022-05-13	2023-11-14
									2022-05-13	2023-11-14
Municipality of Central Elgin	Robin Greenall	Director of Infrastrucutre and Commmunity Services	cao@centralelgin.org	450 Sunset Drive, St.Thomas, ON N5R 5V1						
Municipality of Central Elgin	Geoff Brooks	Director of Infrastrucutre and Commmunity Services	gbrooks@centralelgin.org	450 Sunset Drive, St.Thomas, ON N5R 5V1					2022-05-13	2023-11-14
Towship of Southwold	Lisa Higgs	CAO	cao@southwold.ca	35663 Fingal Line, Fingal, ON N0L 1K0					2022-05-13	2023-11-14
	Peter Kavic	Director of Infrastrucutre and Development Services	development@southwold.ca	35663 Fingal Line, Fingal, ON N0L 1K0	519-769-2010				2022-05-13	2023-11-14
Provincial MPP	Jeff Yurek	MPP Elgin-Middlesex-London	jeff.yurekco@pc.ola.org	201 West Wing- 750 Talbot Street, St.Thomas, ON N5P 1E2	519-631-0666	***Notice of Commencement 1: undeliverable***			2022-05-13	2023-11-14
Federal MP	Karen Vecchio	MP Elgin-Middlesex-London	karen.vecchio@parl.gc.ca	203-750 Talbot Street, St. Thomas, ON N5P 1E2					2022-05-13	2023-11-14
Elgin-St.Thomas Health Unit				1230 Talbot Street, St. Thomas, ON N5P 1G9	519-631-9900 ext. 1250				2022-05-13	2023-11-14
Conservation Authority										
Kettle Creek Conservation Authority	Joe Gordon	Assistant Manager, Supervisor of Planning & Conservation Areas	joe@kettlecreekconservation.on.ca	44015 Ferguson Line, St. Thomas, ON N5P 3T3	519-631-1270 ext. 226				2022-05-13	2023-11-14
Catfish Creek Conservation Authority	Christopher Wilkinson	General Manager / Secretary-Treasurer	generalmanager@catfishcreek.ca	8079 Springwater Road, RR#5 Aylmer, ON N5H 2R4	519-773-9037				2022-05-13	2023-11-14
Indigenous Groups										
Metis Natio of Ontario	Margaret Frosh	Chief	MargaretF@metisnation.org	311-75 Sherbourne Street, Toronto, ON M5A 2P9					2022-05-13	2023-11-14
	Linda Norheim	Director, Lands, Resources and Consultations	lindan@metisnation.org		416-977-9881				2022-05-13	2023-11-14
			consultations@metisnation.org	Métis Consultation Unit Métis Nation of Ontario Head Office					2022-05-13	2023-11-14
Aamjiwnaang First Nation	Chris Plan	Chief	chief.plain@aamjiwnaang.ca	978 Tashmoo Avenue, Sarnia, ON N7T 7H5	519-336-8410				2022-05-13	2023-11-14
Caldwell First Nation	Mary Frances Duckworth	Chief	chief.duckworth@caldwellfirstnation.ca	P.O. Box 388 Leamington, ON N8H 3W3		***Notice of Commencement 1: undeliverable***			2022-05-13	2023-11-14
Chippewas of Kettle and Stony Point First Nation	Tom Bressette	Chief	thomas.bressette@kettlepoint.org	6247 Indian Lane, Forest, ON N0N 1J0		***Notice of Commencement 1: undeliverable***			2022-05-13	2023-11-14
Chippewa of the Thames First Nation	Fallon Burch	Consultation Coordinator - Lands & Environment		320 Chippewa Road, Muncey, ON N0L 1Y0	519-289-2662 ext. 213				2022-05-13	2023-11-14
	Leslee-White-Eye	Chief							2022-05-13	2023-11-14
Delaware Nation (Moravian of the Thames)	Greg Peters	Chief	apeters@mnsi.net	14760 School House Line RR3 Thamesville ON N0P 2K0					2022-05-13	2023-11-14
	Justin Logan		loganju@xplornet.ca						2022-05-13	2023-11-14
Munsee-Delaware Nation	Roger Thomas	Chief	Chief.thomas@munsee-delaware.org	279 Jubilee Road, Muncey ON N0L 1Y0					2022-05-13	2023-11-14
	Glen Forest								2022-05-13	2023-11-14
Oneida of the Thames First Nation	Sheri Doxtator	Chief	sheri.doxtator@oneida.on.ca	2212 Elm Ave, Southwold, ON N0L 2G0	519-652-6161				2022-05-13	2023-11-14
	Holly Elijah								2022-05-13	2023-11-14
Bkejwanong Territory (Walpole Island)	Dan Miskokomon			Wallaceburg, ON N8A 4K9					2022-05-13	2023-11-14
	Jarend Macbeth		Jared.macbeth@wifn.org						2022-05-13	2023-11-14

St. Thomas Water Pollution Control Plant Wastewater Management Master Plan Update
Technical Agency Stakeholder Contact List

Updated: 2023-12-14

Agency	Contact	Title	Email	Address	Phone	*Notes*	Date Added to List	Removed from List	Notice of Study (date sent)	Notice of PIC1 (date sent)
Members of Public										
Gorman Rupp Pumps	Shawn Meehan		shaun.meehan@grcanada.com				29-Nov-23			
Gorman Rupp Pumps	Jeff Coulombe				519-521-7302		29-Nov-23			
Landowner	[redacted]						29-Nov-23			
Landowner	[redacted]						29-Nov-23			
Resident	[redacted]						29-Nov-23			
Landowner	[redacted]						29-Nov-23			

Appendix 1.3

Agency/Public Responses

John Tyrrell

From: John Tyrrell
Sent: June 9, 2022 3:28 PM
To: Samya Chams
Subject: FW: City of St. Thomas, Water Pollution Control Plant Wastewater Master Plan
Attachments: MECP Acknowledgement - NoC - St. Thomas MCEA WPCP WWMP.pdf; Supporting Attachment - Species at Risk Proponents Guide to Preliminary Screening (Draft May 2019).pdf; St, Thomas WWMP Notice of Commencement.pdf

For 226304

John Tyrrell, M.Sc.(Eng.), P.Eng.
SENIOR PROJECT MANAGER/REGIONAL MANAGER

t 519 681 9916 ext. 5038 | m 519-878-7903
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

rvanderson.com

From: Badali, Mark (MECP) <Mark.Badali1@ontario.ca>
Sent: June 9, 2022 3:24 PM
To: Bokma, Nathan <nbokma@stthomas.ca>
Cc: Adrien, Pierre (MECP) <Pierre.Adrien@ontario.ca>; Bechard, Marc (MECP) <Marc.Bechard@ontario.ca>; John Tyrrell <JTyrrell@rvanderson.com>
Subject: RE: City of St. Thomas, Water Pollution Control Plant Wastewater Master Plan

Good afternoon,

Please find the attached letter of acknowledgement and supporting attachments in response to the Notice of Commencement of the City of St. Thomas Water Pollution Control Plant Wastewater Master Plan under the Municipal Class Environmental Assessment (EA).

Appendix 4 of the Municipal Class EA parent document outlines various approaches to conducting master plans (https://municipalclassea.ca/manual/page79.html). While all master plans must at a minimum address Phases 1 and 2 of the Class EA process, the ministry suggests that as the Class EA proceeds the proponent describe in subsequent Notices the approach that is to be followed (e.g. whether the master plan will be completed at a broad level of assessment such that more detailed investigations will be required for future projects (Approach #1), fulfill all Class EA requirements for

Schedule B projects (Approach #2), fulfill all Class EA requirements for Schedule C projects (Approach #3), etc.). Please do reach out to me to discuss the proposed approach, if necessary.

As I am the assigned Regional Environmental Planner (REP) for Class EA projects being completed in the ministry's Southwest Region, please remove Trevor Bell (trevor.bell@ontario.ca) from the contact list for this project. Per our notification procedures: Notices of Commencement, Completion, Addendum and Statements of Completion when applicable are required to be sent to the appropriate MECP Regional Email address (eanotification.swregion@ontario.ca, as was done for the Notice of Commencement for this project) and other notices such as notices of public information centres can either be sent to the Regional Email address or directly to the REP who is assigned to your project.

Thank you,

Mark Badali (he/him)
Regional Environmental Planner (REP) – Southwest Region
Project Review Unit | Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks
Mark.Badali1@ontario.ca | (416) 457-2155

From: Samya Chams <schams@rvanderson.com>
Sent: May 13, 2022 4:17 PM
To: EA Notices to SWRegion (MECP) <eanotification.swregion@ontario.ca>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; nbokma@stthomas.ca
Subject: City of St. Thomas, Water Pollution Control Plant Wastewater Master Plan

Dear Sir/Madam,

The City of St. Thomas is preparing a Master Plan for its wastewater treatment infrastructure as part of ongoing efforts to improve the performance of the City's infrastructure. St. Thomas Water Pollution Control Plant (WPCP) Wastewater Management Master Plan (WWMP) will provide the City with guidance for capital planning and project implementation for wastewater treatment to accommodate growth for the next 20 years and beyond in a cost effective and environmentally sustainable manner.

The study is being undertaken in accordance with the Municipal Class Environmental Assessment (EA) process for Master Plans (Municipal Engineer's Association Class EA document October 2000, as amended in 2007, 2011 & 2015).

There will be opportunities to participate throughout the study. Two public engagement events will be held during the study to provide opportunities to review project information and provide feedback to the study team.

For further information, please refer to the project website: www.stthomas.ca/wwmp. To be added to the study's distribution list to receive updates, or for more information, please contact a member of the study team below:

Nathan Bokma, P. Eng.
Manager of Development and Compliance
Environmental Services Dept.
City of St. Thomas
Tel: 519-631-1680 ext. 4151
nbokma@stthomas.ca
545 Talbot St., PO Box 520
St. Thomas, ON N5P 3V7

John Tyrrell, M.Sc. (Eng.), P. Eng.
Regional Manager
R.V. Anderson Associates Limited
Tel: 519-681-9916 ext. 5038
jtyrrell@rvanderson.com
557 Southdale Road East, Suite 200
London, ON N6E 1A2

With the exception of personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the Municipal Class Environmental Assessment, which is a planning process approved under Ontario's Environmental Assessment Act.

Thank you,

Samya

Samya Chams, B.A (she/her)
ADMINISTRATIVE ASSISTANT/ PROJECT SUPPORT COORDINATOR

t 519 681 9916 ext. 5021
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

rvanderson.com

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Téléc. : 416 314-8452

June 9, 2022

Nathan Bokma
Manager of Development and Compliance
City of St. Thomas
nbokma@stthomas.ca

Re: **Water Pollution Control Plant Wastewater Management Master Plan**
City of St. Thomas
Municipal Class EA
Response to Notice of Commencement

Dear Nathan Bokma,

This letter is in response to the Notice of Commencement for the above noted project. The Ministry of the Environment, Conservation and Parks (MECP) acknowledges that the City of St. Thomas (proponent) has indicated that the study is following the approved environmental planning process for a Master Plan under the Municipal Class Environmental Assessment (Class EA).

The **updated (February 2021)** attached "Areas of Interest" document provides guidance regarding the ministry's interests with respect to the Class EA process. Please address all areas of interest in the EA documentation at an appropriate level for the EA study. Proponents who address all the applicable areas of interest can minimize potential delays to the project schedule. **Further information is provided at the end of the Areas of Interest document relating to recent changes to the Environmental Assessment Act through Bill 197, Covid-19 Economic Recovery Act 2020.**

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before authorizing this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of this duty to project proponents while retaining oversight of the consultation process.

The proposed project may have the potential to affect Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. Where the Crown's duty to consult is triggered in relation to the proposed project**, the MECP is delegating the procedural aspects of rights-based consultation to the proponent through this letter.** The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information provided to date and the Crown`s preliminary assessment the proponent is required to consult with the following communities who have been identified as potentially affected by the proposed project:

- Aamjiwnaang First Nation
- Bkejwanong (Walpole Island)
- Caldwell First Nation
- Chippewas of Kettle and Stony Point
- Chippewas of the Thames First Nation
- Oneida Nation of the Thames
- Munsee Delaware
- Delaware Nation

Steps that the proponent may need to take in relation to Aboriginal consultation for the proposed project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process". Additional information related to Ontario's Environmental Assessment Act is available online at: www.ontario.ca/environmentalassessments.

Please also refer to the attached document "A Proponent's Introduction to the Delegation of Procedural Aspects of consultation with Aboriginal Communities" for further information, including the MECP's expectations for EA report documentation related to consultation with communities.

The proponent must contact the Director of Environmental Assessment Branch (EABDirector@ontario.ca) under the following circumstances subsequent to initial discussions with the communities identified by the MECP:

- Aboriginal or treaty rights impacts are identified to you by the communities
- You have reason to believe that your proposed project may adversely affect an

Aboriginal or treaty right
- Consultation with Indigenous communities or other stakeholders has reached an impasse
- A Part II Order request is expected on the basis of impacts to Aboriginal or treaty rights

The MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role you will be asked to play should additional steps and activities be required.

A draft copy of the report should be sent directly to me prior to the filing of the final report, allowing a minimum of 30 days for the ministry's technical reviewers to provide comments.

Please also ensure a copy of the final notice is sent to the ministry's Southwest Region EA notification email account (eanotification.swregion@ontario.ca) after the draft report is reviewed and finalized.

Should you or any members of your project team have any questions regarding the material above, please contact me at mark.badali1@ontario.ca.

Yours truly,

Mark Badali
Regional Environmental Planner – Southwest Region

Cc: Pierre Adrien, Manager (Acting), London District Office, MECP
Marc Bechard, Water Compliance Supervisor, Sarnia District Office, MECP
John Tyrrell, Senior Project Manager, R.V. Anderson Associates Limited

Encl. Areas of Interest
A Proponent's Introduction to the Delegation of Procedural Aspects of Consultation with Aboriginal Communities

AREAS OF INTEREST (v. February 2021)

It is suggested that you check off each section after you have considered / addressed it.

☐ **Planning and Policy**

- Applicable plans and policies should be identified in the report, and the proponent should describe how the proposed project adheres to the relevant policies in these plans.
    - Projects located in MECP Central, Eastern or West Central Region may be subject to **A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020)**.
    - Projects located in MECP Central or Eastern Region may be subject to the **Oak Ridges Moraine Conservation Plan (2017)** or the **Lake Simcoe Protection Plan (2014)**.
    - Projects located in MECP Central, Southwest or West Central Region may be subject to the **Niagara Escarpment Plan (2017)**.
    - Projects located in MECP Central, Eastern, Southwest or West Central Region may be subject to the **Greenbelt Plan (2017)**.
    - Projects located in MECP Northern Region may be subject to the **Growth Plan for Northern Ontario (2011).**

- The **Provincial Policy Statement (2020)** contains policies that protect Ontario's natural heritage and water resources. Applicable policies should be referenced in the report, and the proponent should describe how the proposed project is consistent with these policies.

- In addition to the provincial planning and policy level, the report should also discuss the planning context at the municipal and federal levels, as appropriate.

☐ **Source Water Protection**

The *Clean Water Act*, 2006 (CWA) aims to protect existing and future sources of drinking water. To achieve this, several types of vulnerable areas have been delineated around surface water intakes and wellheads for every municipal residential drinking water system that is located in a source protection area. These vulnerable areas are known as a Wellhead Protection Areas (WHPAs) and surface water Intake Protection Zones (IPZs). Other vulnerable areas that have been delineated under the CWA include Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Event-based modelling areas (EBAs), and Issues Contributing Areas (ICAs). Source protection plans have been developed that include policies to address existing and future risks to sources of municipal drinking water within these vulnerable areas.

Projects that are subject to the Environmental Assessment Act that fall under a Class EA, or one of the Regulations, have the potential to impact sources of drinking water if they occur in designated vulnerable areas or in the vicinity of other at-risk drinking water systems (i.e.

systems that are not municipal residential systems). MEA Class EA projects may include activities that, if located in a vulnerable area, could be a threat to sources of drinking water (i.e. have the potential to adversely affect the quality or quantity of drinking water sources) and the activity could therefore be subject to policies in a source protection plan. Where an activity poses a risk to drinking water, policies in the local source protection plan may impact how or where that activity is undertaken. Policies may prohibit certain activities, or they may require risk management measures for these activities. Municipal Official Plans, planning decisions, Class EA projects (where the project includes an activity that is a threat to drinking water) and prescribed instruments must conform with policies that address significant risks to drinking water and must have regard for policies that address moderate or low risks.

- In October 2015, the MEA Parent Class EA document was amended to include reference to the Clean Water Act (Section A.2.10.6) and indicates that proponents undertaking a Municipal Class EA project must identify early in their process whether a project is or could potentially be occurring with a vulnerable area. **Given this requirement, please include a section in the report on source water protection.**

    - The proponent should identify the source protection area and should clearly document how the proximity of the project to sources of drinking water (municipal or other) and any delineated vulnerable areas was considered and assessed. Specifically, the report should discuss whether or not the project is located in a vulnerable area and provide applicable details about the area.

    - If located in a vulnerable area, proponents should document whether any project activities are prescribed drinking water threats and thus pose a risk to drinking water (this should be consulted on with the appropriate Source Protection Authority). Where an activity poses a risk to drinking water, the proponent must document and discuss in the report how the project adheres to or has regard to applicable policies in the local source protection plan. This section should then be used to inform and be reflected in other sections of the report, such as the identification of net positive/negative effects of alternatives, mitigation measures, evaluation of alternatives etc.

- While most source protection plans focused on including policies for significant drinking water threats in the WHPAs and IPZs it should be noted that even though source protection plan policies may not apply in HVAs, these are areas where aquifers are sensitive and at risk to impacts and within these areas, activities may impact the quality of sources of drinking water for systems other than municipal residential systems.

- In order to determine if this project is occurring within a vulnerable area, proponents can use this mapping tool: http://www.applications.ene.gov.on.ca/swp/en/index.php. Note that various layers (including WHPAs, WHPA-Q1 and WHPA-Q2, IPZs, HVAs, SGRAs, EBAs, ICAs) can be turned on through the “Map Legend” bar on the left. The mapping tool will also

provide a link to the appropriate source protection plan in order to identify what policies may be applicable in the vulnerable area.

- For further information on the maps or source protection plan policies which may relate to their project, proponents must contact the appropriate source protection authority. **Please consult with the local source protection authority to discuss potential impacts on drinking water. Please document the results of that consultation within the report and include all communication documents/correspondence.**

More Information

For more information on the *Clean Water Act*, source protection areas and plans, including specific information on the vulnerable areas and drinking water threats, please refer to Conservation Ontario's website where you will also find links to the local source protection plan/assessment report.

A list of the prescribed drinking water threats can be found in section 1.1 of Ontario Regulation 287/07 made under the *Clean Water Act*. In addition to prescribed drinking water threats, some source protection plans may include policies to address additional "local" threat activities, as approved by the MECP.

☐ **Climate Change**

The document "Considering Climate Change in the Environmental Assessment Process" (Guide) is now a part of the Environmental Assessment program's Guides and Codes of Practice. The Guide sets out the MECP's expectation for considering climate change in the preparation, execution and documentation of environmental assessment studies and processes. The guide provides examples, approaches, resources, and references to assist proponents with consideration of climate change in EA. Proponents should review this Guide in detail.

- **The MECP expects proponents of Class EA projects to:**

1. Consider during the assessment of alternative solutions and alternative designs, the following:
    a. the project's expected production of greenhouse gas emissions and impacts on carbon sinks (climate change mitigation); and
    b. resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation).
2. Include a discrete section in the report detailing how climate change was considered in the EA.

How climate change is considered can be qualitative or quantitative in nature and should be scaled to the project's level of environmental effect. In all instances, both a project's impacts on climate change (mitigation) and impacts of climate change on a project (adaptation) should be considered.

- The MECP has also prepared another guide to support provincial land use planning direction related to the completion of energy and emission plans. The "Community Emissions Reduction Planning: A Guide for Municipalities" document is designed to educate stakeholders on the municipal opportunities to reduce energy and greenhouse gas emissions, and to provide guidance on methods and techniques to incorporate consideration of energy and greenhouse gas emissions into municipal activities of all types. We encourage you to review the Guide for information.

Air Quality, Dust and Noise

- If there are sensitive receptors in the surrounding area of this project, a quantitative air quality/odour impact assessment will be useful to evaluate alternatives, determine impacts and identify appropriate mitigation measures. The scope of the assessment can be determined based on the potential effects of the proposed alternatives, and typically includes source and receptor characterization and a quantification of local air quality impacts on the sensitive receptors and the environment in the study area. The assessment will compare to all applicable standards or guidelines for all contaminants of concern. **Please contact this office for further consultation on the level of Air Quality Impact Assessment required for this project if not already advised.**

- If a quantitative Air Quality Impact Assessment is not required for the project, the MECP expects that the report contain a qualitative assessment which includes:

    - A discussion of local air quality including existing activities/sources that significantly impact local air quality and how the project may impact existing conditions;
    - A discussion of the nearby sensitive receptors and the project's potential air quality impacts on present and future sensitive receptors;
    - A discussion of local air quality impacts that could arise from this project during both construction and operation; and
    - A discussion of potential mitigation measures.

- As a common practice, "air quality" should be used an evaluation criterion for all road projects.

- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the study area are not adversely affected during construction activities.

- The MECP recommends that non-chloride dust-suppressants be applied. For a comprehensive list of fugitive dust prevention and control measures that could be applied, refer to *Cheminfo Services Inc. Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities* report prepared for Environment Canada. March 2005.

- The report should consider the potential impacts of increased noise levels during the operation of the completed project. The proponent should explore all potential measures to mitigate significant noise impacts during the assessment of alternatives.

Ecosystem Protection and Restoration

- Any impacts to ecosystem form and function must be avoided where possible. The report should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.

- Natural heritage and hydrologic features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. The following sensitive environmental features may be located within or adjacent to the study area:
    - Key Natural Heritage Features: Habitat of endangered species and threatened species, fish habitat, wetlands, areas of natural and scientific interest (ANSIs), significant valleylands, significant woodlands; significant wildlife habitat (including habitat of special concern species); sand barrens, savannahs, and tallgrass prairies; and alvars.
    - Key Hydrologic Features: Permanent streams, intermittent streams, inland lakes and their littoral zones, seepage areas and springs, and wetlands.
    - Other natural heritage features and areas such as: vegetation communities, rare species of flora or fauna, Environmentally Sensitive Areas, Environmentally Sensitive Policy Areas, federal and provincial parks and conservation reserves, Greenland systems etc.

We recommend consulting with the Ministry of Natural Resources and Forestry (MNRF), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional studies will be necessary to preserve and protect these sensitive features. In addition, you may consider the provisions of the Rouge Park Management Plan if applicable.

Species at Risk

- The Ministry of the Environment, Conservation and Parks has now assumed responsibility of Ontario's Species at Risk program. Information, standards, guidelines, reference materials and technical resources to assist you are found at https://www.ontario.ca/page/species-risk.

- The Client's Guide to Preliminary Screening for Species at Risk (Draft May 2019) has been attached to the covering email for your reference and use. Please review this document for next steps.

- For any questions related to subsequent permit requirements, please contact SAROntario@ontario.ca.

Surface Water

- The report must include enough information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the study area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities (e.g. spills, erosion, pollution) are mitigated as part of the proposed undertaking.

- Additional stormwater runoff from new pavement can impact receiving watercourses and flood conditions. Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing surfaces. The ministry's Stormwater Management Planning and Design Manual (2003) should be referenced in the report and utilized when designing stormwater control methods. **A Stormwater Management Plan should be prepared as part of the Class EA process** that includes:

    - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (enhanced) water quality is maintained
    - Watershed information, drainage conditions, and other relevant background information
    - Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
    - Information on maintenance and monitoring commitments.

- Ontario Regulation 60/08 under the *Ontario Water Resources Act* (OWRA) applies to the Lake Simcoe Basin, which encompasses Lake Simcoe and the lands from which surface water drains into Lake Simcoe. If the proposed sewage treatment plant is listed in Table 1 of the regulation, the report should describe how the proposed project and its mitigation measures are consistent with the requirements of this regulation and the OWRA.

- Any potential approval requirements for surface water taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, except for certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information. Additionally, an

Environmental Compliance Approval under the OWRA is required for municipal stormwater management works.

- **Groundwater**

- The status of, and potential impacts to any well water supplies should be addressed. If the project involves groundwater takings or changes to drainage patterns, the quantity and quality of groundwater may be affected due to drawdown effects or the redirection of existing contamination flows. In addition, project activities may infringe on existing wells such that they must be reconstructed or sealed and abandoned. Appropriate information to define existing groundwater conditions should be included in the report.

- If the potential construction or decommissioning of water wells is identified as an issue, the report should refer to Ontario Regulation 903, Wells, under the OWRA.

- Potential impacts to groundwater-dependent natural features should be addressed. Any changes to groundwater flow or quality from groundwater taking may interfere with the ecological processes of streams, wetlands or other surficial features. In addition, discharging contaminated or high volumes of groundwater to these features may have direct impacts on their function. Any potential effects should be identified, and appropriate mitigation measures should be recommended. The level of detail required will be dependent on the significance of the potential impacts.

- Any potential approval requirements for groundwater taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, with the exception of certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information.

- Consultation with the railroad authorities is necessary wherever there is a plan to use construction dewatering in the vicinity of railroad lines or where the zone of influence of the construction dewatering potentially intercepts railroad lines.

- **Excess Materials Management**

- In December 2019, MECP released a new regulation under the Environmental Protection Act, titled "On-Site and Excess Soil Management" (O. Reg. 406/19) to support improved management of excess construction soil. This regulation is a key step to support proper management of excess soils, ensuring valuable resources don't go to waste and to provide clear rules on managing and reusing excess soil. New risk-based standards referenced by

this regulation help to facilitate local beneficial reuse which in turn will reduce greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment. The new regulation is being phased in over time, with the first phase in effect on January 1, 2021. For more information, please visit https://www.ontario.ca/page/handling-excess-soil.

- The report should reference that activities involving the management of excess soil should 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" (2014).

- All waste generated during construction must be disposed of in accordance with ministry requirements

Contaminated Sites

- Any current or historical waste disposal sites should be identified in the report. The status of these sites should be determined to confirm whether approval pursuant to Section 46 of the EPA may be required for land uses on former disposal sites. We recommend referring to the MECP's D-4 guideline for land use considerations near landfills and dumps.
  - Resources available may include regional/local municipal official plans and data; provincial data on large landfill sites and small landfill sites; Environmental Compliance Approval information for waste disposal sites on Access Environment.

- Other known contaminated sites (local, provincial, federal) in the study area should also be identified in the report (Note – information on federal contaminated sites is found on the Government of Canada's website).

- The location of any underground storage tanks should be investigated in the report. Measures should be identified to ensure the integrity of these tanks and to ensure an appropriate response in the event of a spill. The ministry's Spills Action Centre must be contacted in such an event.

- Since the removal or movement of soils may be required, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act* (EPA) and Ontario Regulation 153/04, Records of Site Condition, which details the new requirements related to site assessment and clean up. Please contact the appropriate MECP District Office for further consultation if contaminated sites are present.

Servicing, Utilities and Facilities

- The report should identify any above or underground utilities in the study area such as transmission lines, telephone/internet, oil/gas etc. The owners should be consulted to discuss impacts to this infrastructure, including potential spills.

- The report should identify any servicing infrastructure in the study area such as wastewater, water, stormwater that may potentially be impacted by the project.

- Any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste must have an Environmental Compliance Approval (ECA) before it can operate lawfully. Please consult with MECP's Environmental Permissions Branch to determine whether a new or amended ECA will be required for any proposed infrastructure.

- We recommend referring to the ministry's environmental land use planning guides to ensure that any potential land use conflicts are considered when planning for any infrastructure or facilities related to wastewater, pipelines, landfills or industrial uses.

Mitigation and Monitoring

- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met. Mitigation measures should be clearly referenced in the report and regularly monitored during the construction stage of the project. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly.

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.

- The proponent's construction and post-construction monitoring plans must be documented in the report, as outlined in Section A.2.5 and A.4.1 of the MEA Class EA parent document.

Consultation

- The report must demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all stakeholder consultation efforts undertaken during the planning process. This includes a discussion in the report that identifies concerns that were raised and **describes how they have been addressed by the proponent** throughout

the planning process. The report should also include copies of comments submitted on the project by interested stakeholders, and the proponent's responses to these comments (as directed by the Class EA to include full documentation).

- Please include the full stakeholder distribution/consultation list in the documentation.

Class EA Process

- If this project is a Master Plan: there are several different approaches that can be used to conduct a Master Plan, examples of which are outlined in Appendix 4 of the Class EA. **The Master Plan should clearly indicate the selected approach for conducting the plan**, by identifying whether the levels of assessment, consultation and documentation are sufficient to fulfill the requirements for Schedule B or C projects. Please note that any Schedule B or C projects identified in the plan would be subject to Part II Order Requests under the Environmental Assessment Act, although the plan itself would not be. **Please include a description of the approach being undertaken (use Appendix 4 as a reference).**

- If this project is a Master Plan: Any identified projects should also include information on the MCEA schedule associated with the project.

- The report should provide clear and complete documentation of the planning process in order to allow for transparency in decision-making.

- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment (including planning, natural, social, cultural, economic, technical). The report should include a level of detail (e.g. hydrogeological investigations, terrestrial and aquatic assessments, cultural heritage assessments) such that all potential impacts can be identified, and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the report.

- Please include in the report a list of all subsequent permits or approvals that may be required for the implementation of the preferred alternative, including but not limited to, MECP's PTTW, EASR Registrations and ECAs, conservation authority permits, species at risk permits, MTO permits and approvals under the *Impact Assessment Act*, 2019.

- Ministry guidelines and other information related to the issues above are available at http://www.ontario.ca/environment-and-energy/environment-and-energy. We encourage you to review all the available guides and to reference any relevant information in the report.

Amendments to the EAA through the Covid-19 Economic Recovery Act, 2020
Once the EA Report is finalized, the proponent must issue a Notice of Completion providing a minimum 30-day period during which documentation may be reviewed and comment and input can be submitted to the proponent. The Notice of Completion must be sent to the appropriate MECP Regional Office email address (for projects in MECP Southwest Region, the email is eanotification.swregion@ontario.ca).

The public has the ability to request a higher level of assessment on a project if they are concerned about potential adverse impacts to constitutionally protected Aboriginal and treaty rights. In addition, the Minister may issue an order on his or her own initiative within a specified time period. The Director (of the Environmental Assessment Branch) will issue a Notice of Proposed Order to the proponent if the Minister is considering an order for the project within 30 days after the conclusion of the comment period on the Notice of Completion. At this time, the Director may request additional information from the proponent. Once the requested information has been received, the Minister will have 30 days within which to make a decision or impose conditions on your project.

Therefore, the proponent cannot proceed with the project until at least 30 days after the end of the comment period provided for in the Notice of Completion. Further, the proponent may not proceed after this time if:

- a Part II Order request has been submitted to the ministry regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, or
- the Director has issued a Notice of Proposed order regarding the project.

Please ensure that the Notice of Completion advises that outstanding concerns are to be directed to the proponent for a response, and that in the event there are outstanding concerns regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, Part II Order requests on those matters should be addressed in writing to:

Minister David Piccini
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

and

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

A PROPONENT'S INTRODUCTION TO THE DELEGATION OF PROCEDURAL ASPECTS OF CONSULTATION WITH ABORIGINAL COMMUNITIES

DEFINITIONS

The following definitions are specific to this document and may not apply in other contexts:

Aboriginal communities – the First Nation or Métis communities identified by the Crown for the purpose of consultation.

Consultation – the Crown's legal obligation to consult when the Crown has knowledge of an established or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. This is the type of consultation required pursuant to s. 35 of the *Constitution Act, 1982*. Note that this definition does not include consultation with Aboriginal communities for other reasons, such as regulatory requirements.

Crown – the Ontario Crown, acting through a particular ministry or ministries.

Procedural aspects of consultation – those portions of consultation related to the process of consultation, such as notifying an Aboriginal community about a project, providing information about the potential impacts of a project, responding to concerns raised by an Aboriginal community and proposing changes to the project to avoid negative impacts.

Proponent – the person or entity that wants to undertake a project and requires an Ontario Crown decision or approval for the project.

I. PURPOSE

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that may adversely impact that right. In outlining a framework for the duty to consult, the Supreme Court of Canada has stated that the Crown may delegate procedural aspects of consultation to third parties. This document provides general information about the Ontario Crown's approach to delegation of the procedural aspects of consultation to proponents.

This document is not intended to instruct a proponent about an individual project, and it does not constitute legal advice.

II. WHY IS IT NECESSARY TO CONSULT WITH ABORIGINAL COMMUNITIES?

The objective of the modern law of Aboriginal and treaty rights is the *reconciliation* of Aboriginal peoples and non-Aboriginal peoples and their respective rights, claims and interests. Consultation is an important component of the reconciliation process.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. For example, the Crown's duty to consult is triggered when it considers

issuing a permit, authorization or approval for a project which has the potential to adversely impact an Aboriginal right, such as the right to hunt, fish, or trap in a particular area.

The scope of consultation required in particular circumstances ranges across a spectrum depending on both the nature of the asserted or established right and the seriousness of the potential adverse impacts on that right.

Depending on the particular circumstances, the Crown may also need to take steps to accommodate the potentially impacted Aboriginal or treaty right. For example, the Crown may be required to avoid or minimize the potential adverse impacts of the project.

III. THE CROWN'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

The Crown has the responsibility for ensuring that the duty to consult, and accommodate where appropriate, is met. However, the Crown may delegate the procedural aspects of consultation to a proponent.

There are different ways in which the Crown may delegate the procedural aspects of consultation to a proponent, including through a letter, a memorandum of understanding, legislation, regulation, policy and codes of practice.

If the Crown decides to delegate procedural aspects of consultation, the Crown will generally:

- Ensure that the delegation of procedural aspects of consultation and the responsibilities of the proponent are clearly communicated to the proponent;
- Identify which Aboriginal communities must be consulted;
- Provide contact information for the Aboriginal communities;
- Revise, as necessary, the list of Aboriginal communities to be consulted as new information becomes available and is assessed by the Crown;
- Assess the scope of consultation owed to the Aboriginal communities;
- Maintain appropriate oversight of the actions taken by the proponent in fulfilling the procedural aspects of consultation;
- Assess the adequacy of consultation that is undertaken and any accommodation that may be required;
- Provide a contact within any responsible ministry in case issues arise that require direction from the Crown; and
- Participate in the consultation process as necessary and as determined by the Crown.

IV. THE PROPONENT'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

Where aspects of the consultation process have been delegated to a proponent, the Crown, in meeting its duty to consult, will rely on the proponent's consultation activities and documentation of those activities. The consultation process informs the Crown's decision of whether or not to approve a proposed project or activity.

A proponent's role and responsibilities will vary depending on a variety of factors including the extent of consultation required in the circumstance and the procedural aspects of consultation the Crown has delegated to it. Proponents are often in a better position than the Crown to discuss a project and its potential impacts with Aboriginal communities and to determine ways to avoid or minimize the adverse impacts of a project.

A proponent can raise issues or questions with the Crown at any time during the consultation process. If issues or concerns arise during the consultation that cannot be addressed by the proponent, the proponent should contact the Crown.

a) What might a proponent be required to do in carrying out the procedural aspects of consultation?

Where the Crown delegates procedural aspects of consultation, it is often the proponent's responsibility to provide notice of the proposed project to the identified Aboriginal communities. The notice should indicate that the Crown has delegated the procedural aspects of consultation to the proponent and should include the following information:

- a description of the proposed project or activity;
- mapping;
- proposed timelines;
- details regarding anticipated environmental and other impacts;
- details regarding opportunities to comment; and
- any changes to the proposed project that have been made for seasonal conditions or other factors, where relevant.

Proponents should provide enough information and time to allow Aboriginal communities to provide meaningful feedback regarding the potential impacts of the project. Depending on the nature of consultation required for a project, a proponent also may be required to:

- provide the Crown with copies of any consultation plans prepared and an opportunity to review and comment;
- ensure that any necessary follow-up discussions with Aboriginal communities take place in a timely manner, including to confirm receipt of information, share and update information and to address questions or concerns that may arise;

- as appropriate, discuss with Aboriginal communities potential mitigation measures and/or changes to the project in response to concerns raised by Aboriginal communities;
- use language that is accessible and not overly technical, and translate material into Aboriginal languages where requested or appropriate;
- bear the reasonable costs associated with the consultation process such as, but not limited to, meeting hall rental, meal costs, document translation(s), or to address technical & capacity issues;
- provide the Crown with all the details about potential impacts on established or asserted Aboriginal or treaty rights, how these concerns have been considered and addressed by the proponent and the Aboriginal communities and any steps taken to mitigate the potential impacts;
- provide the Crown with complete and accurate documentation from these meetings and communications; and
- notify the Crown immediately if an Aboriginal community not identified by the Crown approaches the proponent seeking consultation opportunities.

b) What documentation and reporting does the Crown need from the proponent?

Proponents should keep records of all communications with the Aboriginal communities involved in the consultation process and any information provided to these Aboriginal communities.

As the Crown is required to assess the adequacy of consultation, it needs documentation to satisfy itself that the proponent has fulfilled the procedural aspects of consultation delegated to it. The documentation required would typically include:

- the date of meetings, the agendas, any materials distributed, those in attendance and copies of any minutes prepared;
- the description of the proposed project that was shared at the meeting;
- any and all concerns or other feedback provided by the communities;
- any information that was shared by a community in relation to its asserted or established Aboriginal or treaty rights and any potential adverse impacts of the proposed activity, approval or disposition on such rights;
- any proposed project changes or mitigation measures that were discussed, and feedback from Aboriginal communities about the proposed changes and measures;
- any commitments made by the proponent in response to any concerns raised, and feedback from Aboriginal communities on those commitments;
- copies of correspondence to or from Aboriginal communities, and any materials distributed electronically or by mail;

- information regarding any financial assistance provided by the proponent to enable participation by Aboriginal communities in the consultation;
- periodic consultation progress reports or copies of meeting notes if requested by the Crown;
- a summary of how the delegated aspects of consultation were carried out and the results; and
- a summary of issues raised by the Aboriginal communities, how the issues were addressed and any outstanding issues.

In certain circumstances, the Crown may share and discuss the proponent's consultation record with an Aboriginal community to ensure that it is an accurate reflection of the consultation process.

c) Will the Crown require a proponent to provide information about its commercial arrangements with Aboriginal communities?

The Crown may require a proponent to share information about aspects of commercial arrangements between the proponent and Aboriginal communities where the arrangements:

- include elements that are directed at mitigating or otherwise addressing impacts of the project;
- include securing an Aboriginal community's support for the project; or
- may potentially affect the obligations of the Crown to the Aboriginal communities.

The proponent should make every reasonable effort to exempt the Crown from confidentiality provisions in commercial arrangements with Aboriginal communities to the extent necessary to allow this information to be shared with the Crown.

The Crown cannot guarantee that information shared with the Crown will remain confidential. Confidential commercial information should not be provided to the Crown as part of the consultation record if it is not relevant to the duty to consult or otherwise required to be submitted to the Crown as part of the regulatory process.

V. WHAT ARE THE ROLES AND RESPONSIBILITIES OF ABORIGINAL COMMUNITIES' IN THE CONSULTATION PROCESS?

Like the Crown, Aboriginal communities are expected to engage in consultation in good faith. This includes:

- responding to the consultation notice;
- engaging in the proposed consultation process;
- providing relevant documentation;

- clearly articulating the potential impacts of the proposed project on Aboriginal or treaty rights; and
- discussing ways to mitigates any adverse impacts.

Some Aboriginal communities have developed tools, such as consultation protocols, policies or processes that provide guidance on how they would prefer to be consulted. Although not legally binding, proponents are encouraged to respect these community processes where it is reasonable to do so. Please note that there is no obligation for a proponent to pay a fee to an Aboriginal community in order to enter into a consultation process.

To ensure that the Crown is aware of existing community consultation protocols, proponents should contact the relevant Crown ministry when presented with a consultation protocol by an Aboriginal community or anyone purporting to be a representative of an Aboriginal community.

VI. WHAT IF MORE THAN ONE PROVINCIAL CROWN MINISTRY IS INVOLVED IN APPROVING A PROPONENT'S PROJECT?

Depending on the project and the required permits or approvals, one or more ministries may delegate procedural aspects of the Crown's duty to consult to the proponent. The proponent may contact individual ministries for guidance related to the delegation of procedural aspects of consultation for ministry-specific permits/approvals required for the project in question. Proponents are encouraged to seek input from all involved Crown ministries sooner rather than later.

Client's Guide to Preliminary Screening for Species at Risk

Ministry of the Environment, Conservation and Parks

Species at Risk Branch, Permissions and Compliance

DRAFT - May 2019

Table of Contents

1.0 Purpose, Scope, Background and Context

1.1 Purpose of this Guide

This guide has been created to:

- help clients better understand their obligation to gather information and complete a preliminary screening for species at risk before contacting the ministry,
- outline guidance and advice clients can expect to receive from the ministry at the preliminary screening stage,
- help clients understand how they can gather information about species at risk by accessing publicly available information housed by the Government of Ontario, and
- provide a list of other potential sources of species at risk information that exist outside the Government of Ontario.

It remains the client's responsibility to:

- carry out a preliminary screening for their projects,
- obtain best available information from all applicable information sources,
- conduct any necessary field studies or inventories to identify and confirm the presence or absence of species at risk or their habitat,
- consider any potential impacts to species at risk that a proposed activity might cause, and
- comply with the *Endangered Species Act* (ESA).

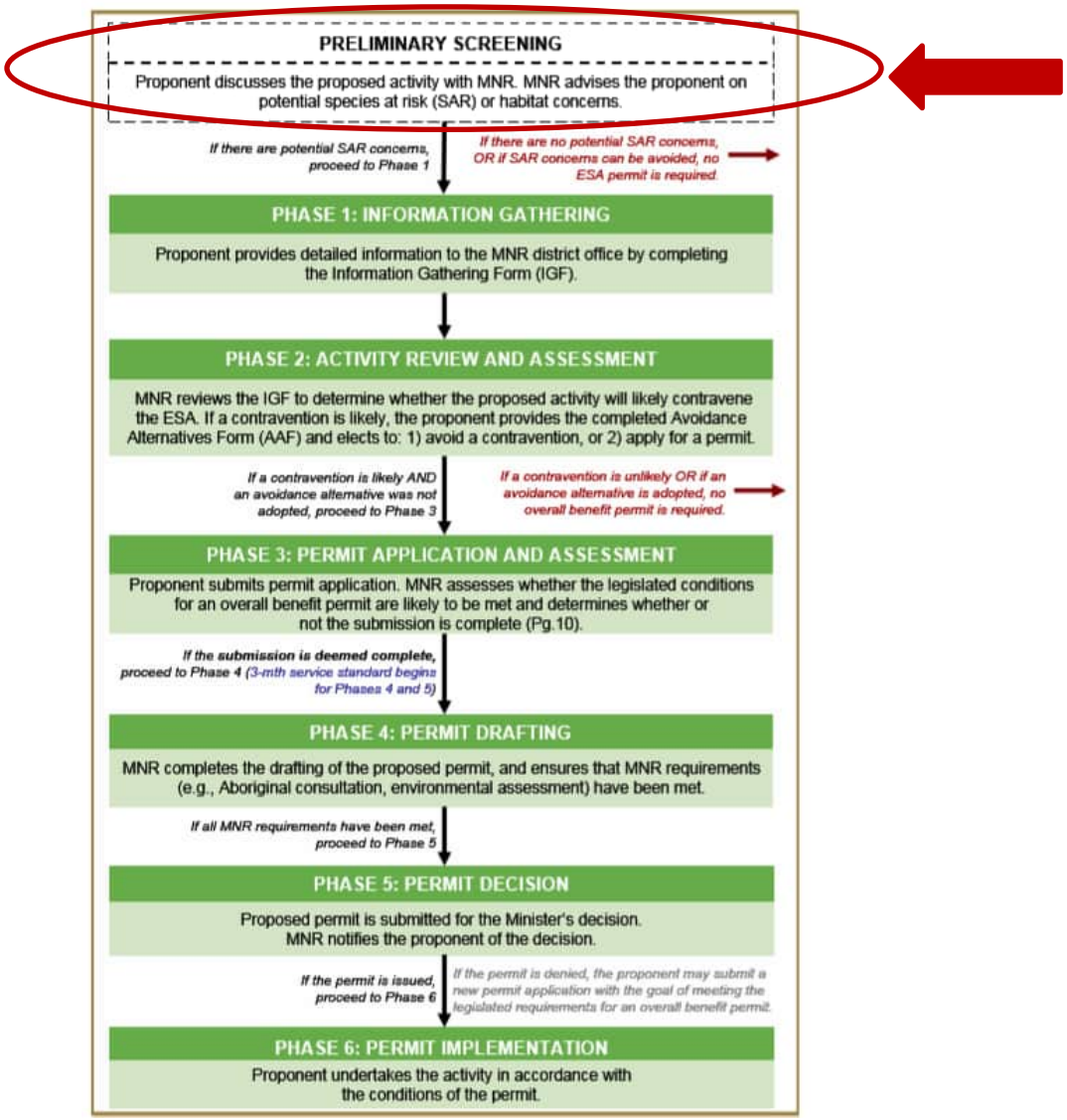
To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide, at a minimum, prior to contacting Government of Ontario ministry offices for further information or advice.

1.2 Scope

This guide is a resource for clients seeking to understand if their activity is likely to impact species at risk or if they are likely to trigger the need for an authorization under the ESA. It is not intended to circumvent any detailed site surveys that may be necessary to document species at risk or their habitat nor to circumvent the need to assess the impacts of a proposed activity on species at risk or their habitat. This guide is not an exhaustive list of available information sources for any given area as the availability of information on species at risk and their habitat varies across the province. This guide is intended to support projects and activities carried out on Crown and private land, by private landowners, businesses, other provincial ministries and agencies, or municipal government.

1.3 Background and Context

To receive advice on their proposed activity, clients must first determine whether any species at risk or their habitat exist or are likely to exist at or near their proposed activity, and whether their proposed activity is likely to contravene the ESA. Once this step is complete, clients may contact the ministry at SAROntario@ontario.ca to discuss the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. At this stage, the ministry can provide advice and guidance to the client about potential species at risk or habitat concerns, measures that the client is considering to avoid adverse effects on species at risk or their habitat and whether additional field surveys are advisable. This is referred to as the "Preliminary Screening" stage. For more information on additional phases in the diagram below, please refer to the *Endangered Species Act Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits* policy available online at https://www.ontario.ca/page/species-risk-overall-benefit-permits



2.0 Roles and Responsibilities

To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide prior to contacting Government of Ontario ministry offices for further information or advice.

Step 1: Client seeks information regarding species at risk or their habitat that exist, or are likely to exist, at or near their proposed activity by referring to all applicable information sources identified in this guide.

Step 2: Client reviews and consider guidance on whether their proposed activity is likely to contravene the ESA (see section 3.4 of this guide for guidance on what to consider).

Step 3: Client gathers information identified in the checklist in section 4 of this guide.

Step 4: Client contacts the ministry at SAROntario@ontario.ca to discuss their preliminary screening. Ministry staff will ask the client questions about the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. Ministry staff will also ask the client for their interpretation of the impacts of their activity on species at risk or their habitat as well as measures the client has considered to avoid any adverse impacts.

Step 5: Ministry staff will provide advice on next steps.

Option A: Ministry staff may advise the client they can proceed with their activity without an authorization under the ESA where the ministry is confident that:

- no protected species at risk or habitats are likely to be present at or near the proposed location of the activity; or
- protected species at risk or habitats are known to be present but the activity is not likely to contravene the ESA; or
- through the adoption of avoidance measures, the modified activity is not likely to contravene the ESA.

Option B: Ministry staff may advise the client to proceed to Phase 1 of the overall benefit permitting process (i.e. Information Gathering in the previous diagram), where:

- there is uncertainty as to whether any protected species at risk or habitats are present at or near the proposed location of the activity; or
- the potential impacts of the proposed activity are uncertain; or
- ministry staff anticipate the proposed activity is likely to contravene the ESA.

3.0 Information Sources

Land Information Ontario (LIO) and the Natural Heritage Information Centre (NHIC) maintain and provide information about species at risk, as well as related information about fisheries, wildlife, crown lands, protected lands and more. This information is made available to organizations, private individuals, consultants, and developers through online sources and is often considered under various pieces of legislation or as part of regulatory approvals and planning processes.

The information available from LIO or NHIC and the sources listed in this guide should not be considered as a substitute for site visits and appropriate field surveys. Generally, this information can be regarded as a starting point from which to conduct further field surveys, if needed. While this data represents best available current information, it is important to note that a lack of information for a site does not mean that species at risk or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in more remote parts of the province. The absence of species at risk location data at or near your site does not necessarily mean no species at risk are present at that location. On-site assessments can better verify site conditions, identify and confirm presence of species at risk and/or their habitats.

Information on the location (i.e. observations and occurrences) of species at risk is considered sensitive and therefore publicly available only on a 1km square grid as opposed to as a detailed point on a map. This generalized information can help you understand which species at risk are in the general vicinity of your proposed activity and can help inform field level studies you may want to undertake to confirm the presence, or absence of species at risk at or near your site.

Should you require specific and detailed information pertaining to species at risk observations and occurrences at or near your site on a finer geographic scale; you will be required to demonstrate your need to access this information, to complete data sensitivity training and to obtain a Sensitive Data Use License from the NHIC. Information on how to obtain a license can be found online at https://www.ontario.ca/page/get-natural-heritage-information.

Many organizations (e.g. other Ontario ministries, municipalities, conservation authorities) have ongoing licensing to access this data so be sure to check if your organization has this access and consult this data as part of your preliminary screening if your organization already has a license.

3.1 Make a Map: Natural Heritage Areas

The Make a Natural Heritage Area Map (available online at http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US provides public access to natural heritage information, including species at risk, without the user needing to have Geographic Information System (GIS) capability. It allows users to view and identify generalized species at risk information, mark areas of interest, and create and print a custom map directly from the web application. The tool also shows topographic information such as roads, rivers, contours and municipal boundaries.

Users are advised that sensitive information has been removed from the natural areas dataset and the occurrences of species at risk has been generalized to a 1-kilometre grid to mitigate the risks to the species (e.g. illegal harvest, habitat disturbance, poaching).

The web-based mapping tool displays natural heritage data, including:

- Generalized Species at risk occurrence data (based on a 1-km square grid),
- Natural Heritage Information Centre data.

Data cannot be downloaded directly from this web map; however, information included in this application is available digitally through Land Information Ontario (LIO) at https://www.ontario.ca/page/land-information-ontario.

3.2 Land Information Ontario (LIO)

Most natural heritage data is publicly available. This data is managed in a large provincial corporate database called the LIO Warehouse and can be accessed online through the LIO Metadata Management Tool at https://www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home. This tool provides descriptive information about the characteristics, quality and context of the data. Publicly available geospatial data can be downloaded directly from this site.

While most data are publicly available, some data may be considered highly sensitive (i.e. nursery areas for fish, species at risk observations) and as such, access to some data maybe restricted.

3.3 Additional Species at Risk Information Sources

- The Breeding Bird Atlas can be accessed online at http://www.birdsontario.org/atlas/index.jsp?lang=en
- eBird can be accessed online at https://ebird.org/home
- iNaturalist can be accessed online at https://www.inaturalist.org/
- The Ontario Reptile and Amphibian Atlas can be accessed online at https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas
- Your local Conservation Authority. Information to help you find your local Conservation Authority can be accessed online at https://conservationontario.ca/conservation-authorities/find-a-conservation-authority/

  Local naturalist groups or other similar community-based organizations
- Local Indigenous communities
- Local land trusts or other similar Environmental Non-Government Organizations
- Field level studies to identify if species at risk, or their habitat, are likely present or absent at or near the site.
- When an activity is proposed within one of the continuous caribou ranges, please be sure to consider the caribou Range Management Policy. This policy includes figures and maps of the continuous caribou range, can be found online at https://www.ontario.ca/page/range-management-policy-support-woodland-caribou-conservation-and-recovery

3.4 Information Sources to Support Impact Assessments

- Guidance to help you understand if your activity is likely to adversely impact species at risk or their habitat can be found online at https://www.ontario.ca/page/policy-guidance-harm-and-harass-under-endangered-species-act and https://www.ontario.ca/page/categorizing-and-protecting-habitat-under-endangered-species-act
- A list of species at risk in Ontario is available online at https://www.ontario.ca/page/species-risk-ontario. On this webpage, you can find out more about each species, including where is lives, what threatens it and any specific habitat protections that apply to it by clicking on the photo of the species.

4.0 Check-List

Please feel free to use the check list below to help you confirm you have explored all applicable information sources and to support your discussion with Ministry staff at the preliminary screening stage.

- ✓ Land Information Ontario (LIO)
- ✓ Natural Heritage Information Centre (NHIC)
- ✓ The Breeding Bird Atlas
- ✓ eBird
- ✓ iNaturalist
- ✓ Ontario Reptile and Amphibian Atlas
- ✓ List Conservation Authorities you contacted:_____

  _____
- ✓ List local naturalist groups you contacted:_____

  _____
- ✓ List local Indigenous communities you contacted:_____

  _____
- ✓ List any other local land trusts or Environmental Non-Government Organizations you contacted:_____

  _____
- ✓ List and field studies that were conducted to identify species at risk, or their habitat, likely to be present or absent at or near the site: _____

  _____
- ✓ List what you think the likely impacts of your activity are on species at risk and their habitat (e.g. damage or destruction of habitat, killing, harming or harassing species at risk):_____

  _____

John Tyrrell

From: Environmental Permissions (MECP) <enviropermissions@ontario.ca>
Sent: May 13, 2022 4:14 PM
To: Samya Chams
Cc: Environmental Permissions (MECP)
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

Categories: Filed by Newforma

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate before Replying or Clicking on any links

You're welcome, Samya.

Kind regards,
Krasi Panayotova, MEnvSc (on behalf of Enviropermissions)
Client Service Representative
Customer Services & Permissions Branch (CSPB)
Ontario Ministry of the Environment, Conservation and Parks (MECP)
135 St. Clair Avenue West, 1st Floor Toronto ON M4V 1P5
General Inquiries: E: enviropermissions@ontario.ca | **P:** 416-314-8001 | **F:** 416-314-8452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If you have any accommodation needs or require communication supports or alternate formats, please let me know. Si vous avez des besoins en matière d'adaptation, ou si vous nécessitez des aides à la communication ou des médias substituts, veuillez me le faire savoir.

From: Samya Chams <schams@rvanderson.com>
Sent: May 13, 2022 4:13 PM
To: Environmental Permissions (MECP) <enviropermissions@ontario.ca>
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.
Hello Krasi,

Thank you for your email below. I will complete and submit using the formal process provided below.

Kind regards,

Samya

Samya Chams, B.A (she/her)
ADMINISTRATIVE ASSISTANT/ PROJECT SUPPORT COORDINATOR

t 519 681 9916 ext. 5021
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

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From: Environmental Permissions (MECP) <enviropermissions@ontario.ca>
Sent: May 13, 2022 3:19 PM
To: Samya Chams <schams@rvanderson.com>
Cc: Environmental Permissions (MECP) <enviropermissions@ontario.ca>
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate before Replying or Clicking on any links

Hello Samya,

Thank you for your email to the Ministry of Environment, Conservation and Parks (MECP).
As with all projects, please ensure the formal process for submitting streamlined EA notices to the Ministry is completed for this project; you can find it here (https://www.ontario.ca/page/preparing-environmental-assessments#section-5).

If you have further questions or require further assistance, please respond to this email or contact us by phone at 416-314-8001 or 1-800-461-6290 (toll free).

Take care.

Kind regards,
Krasi Panayotova, MEnvSc (on behalf of Enviropermissions)
Client Service Representative
Customer Services & Permissions Branch (CSPB)
Ontario Ministry of the Environment, Conservation and Parks (MECP)
135 St. Clair Avenue West, 1st Floor Toronto ON M4V 1P5
General Inquiries: E: enviropermissions@ontario.ca | **P:** 416-314-8001 | **F:** 416-314-8452

Ontario

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From: Samya Chams <schams@rvanderson.com>
Sent: May 13, 2022 1:43 PM
To: Samya Chams <schams@rvanderson.com>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; nbokma@stthomas.ca
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

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Good afternoon,

Please see attached correct attachment. Please disregard previous attachment sent in error.

My apologies for any inconvenience.

Thank you,

Samya

arva

Samya Chams, B.A (she/her)
ADMINISTRATIVE ASSISTANT/ PROJECT SUPPORT COORDINATOR

t 519 681 9916 ext. 5021
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

rvanderson.com

From: Samya Chams
Sent: May 13, 2022 12:24 PM
To: Samya Chams <schams@rvanderson.com>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; nbokma@stthomas.ca
Subject: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

Dear Sir/Madam,

The City of St. Thomas is preparing a Master Plan for its wastewater treatment infrastructure as part of ongoing efforts to improve the performance of the City's infrastructure. St. Thomas Water Pollution Control Plant (WPCP) Wastewater Management Master Plan (WWMP) will provide the City with guidance for capital planning and project implementation for wastewater treatment to accommodate growth for the next 20 years and beyond in a cost effective and environmentally sustainable manner.

The study is being undertaken in accordance with the Municipal Class Environmental Assessment (EA) process for Master Plans (Municipal Engineer's Association Class EA document October 2000, as amended in 2007, 2011 & 2015).

There will be opportunities to participate throughout the study. Two public engagement events will be held during the study to provide opportunities to review project information and provide feedback to the study team.

For further information, please refer to the project website: www.stthomas.ca/wwmp. To be added to the study's distribution list to receive updates, or for more information, please contact a member of the study team below:

Nathan Bokma, P. Eng.
Manager of Development and Compliance
Environmental Services Dept.
City of St. Thomas
Tel: 519-631-1680 ext. 4151
nbokma@stthomas.ca
545 Talbot St., PO Box 520
St. Thomas, ON N5P 3V7

John Tyrrell, M.Sc. (Eng.), P. Eng.
Regional Manager
R.V. Anderson Associates Limited
Tel: 519-681-9916 ext. 5038
jtyrrell@rvanderson.com
557 Southdale Road East, Suite 200
London, ON N6E 1A2

With the exception of personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the Municipal Class Environmental Assessment, which is a planning process approved under Ontario's Environmental Assessment Act.

Thank you,

Samya

Samya Chams, B.A (she/her)
ADMINISTRATIVE ASSISTANT/ PROJECT SUPPORT COORDINATOR

t 519 681 9916 ext. 5021
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

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John Tyrrell

From: Barboza, Karla (MHSTCI) <Karla.Barboza@ontario.ca>
Sent: May 13, 2022 3:12 PM
To: John Tyrrell
Cc: Romeo, Laura (MHSTCI); Bokma, Nathan; Samya Chams
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

Categories: Filed by Newforma

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Thanks John and Nathan for your speedy replies!
Have a great weekend!
Karla

Karla Barboza MCIP, RPP, CAHP | (A) Team Lead, Heritage
Ministry of Heritage, Sport, Tourism and Culture Industries
Heritage, Tourism and Culture Division | Programs and Services Branch | Heritage Planning Unit
T. 416. 660.1027 | Email: karla.barboza@ontario.ca

From: John Tyrrell <JTyrrell@rvanderson.com>
Sent: May-13-22 3:08 PM
To: Barboza, Karla (MHSTCI) <Karla.Barboza@ontario.ca>
Cc: Romeo, Laura (MHSTCI) <Laura.Romeo@ontario.ca>; Bokma, Nathan <nbokma@stthomas.ca>; Samya Chams <schams@rvanderson.com>
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

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Hi Karla,

It is John from RVA,

The plan is to follow Approach # 1 under the MEA Class EA document: Preparation of a Master Plan document at the conclusion of Phases 1 and 2 MEA Class EA process requiring more detailed investigation at the project-specific level to fulfil the MEA Class EA documentation requirements for the specific Schedule B and C projects identified.

rva
John Tyrrell, M.Sc.(Eng.), P.Eng.
SENIOR PROJECT MANAGER/REGIONAL MANAGER
t 519 681 9916 ext. 5038 | m 519-878-7903
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

From: Barboza, Karla (MHSTCI) <Karla.Barboza@ontario.ca>
Sent: May 13, 2022 2:36 PM
To: Bokma, Nathan <nbokma@stthomas.ca>; Samya Chams <schams@rvanderson.com>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; Romeo, Laura (MHSTCI) <Laura.Romeo@ontario.ca>
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

Thanks Nathan! Could you please advise the number of the Approach for this Master Plan?

Thanks,
Karla

From: Bokma, Nathan <nbokma@stthomas.ca>
Sent: May-13-22 2:26 PM
To: Barboza, Karla (MHSTCI) <Karla.Barboza@ontario.ca>; Samya Chams <schams@rvanderson.com>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; Romeo, Laura (MHSTCI) <Laura.Romeo@ontario.ca>
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

Karla,

This is a new project.

Nathan Bokma, P. Eng.
Manager of Development and Compliance
545 Talbot St, P.O. Box 520
St. Thomas, ON N5P 3V7
t: (519) 631-1680 x4151
nbokma@stthomas.ca

ST. THOMAS
THE RAILWAY CITY

From: Barboza, Karla (MHSTCI) <Karla.Barboza@ontario.ca>
Sent: Friday, May 13, 2022 2:11 PM
To: Samya Chams <schams@rvanderson.com>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; Bokma, Nathan <nbokma@stthomas.ca>; Romeo, Laura (MHSTCI) <Laura.Romeo@ontario.ca>

Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

CAUTION:
This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Samya,

Thanks for sending the notice of commencement for the above referenced project.

In March 2022, we provided comments on the St. Thomas Pollution Prevention Control Plan Project notice of completion. Could you please advise if this is a new project?

Please note that there has been some changes in our office (see full MHSTCI contact below). Laura Romeo has been assigned to this project. Please continue to send notices to both Laura Romeo and I. You can remove Rosi Zirger from this project's contact list.

For future projects, please send the initial notice to me. You may also want to contact the Ministry of the Environment, Conservation and Parks for an updated Government Review Team List at 416-314-8001 or 1-800-461-6290.

Thanks in advance,
Karla

Karla Barboza MCIP, RPP, CAHP | (A) Team Lead, Heritage
Ministry of Heritage, Sport, Tourism and Culture Industries
Heritage, Tourism and Culture Division | Programs and Services Branch | Heritage Planning Unit
T. 416. 660.1027 | Email: karla.barboza@ontario.ca

Ministry of Heritage, Sport, Tourism and Culture Industries			
Heritage, Tourism and Culture Division			
Name, Position, Agency and Address	**Document Form**	**Phone, Fax and Email**	**Types of EA Projects to be Circulated**
Karla Barboza, Team Lead(A), Heritage Heritage Planning Unit Programs and Services Branch Ministry of Heritage, Sport, Tourism and Culture Industries 400 University Ave, 5th Floor Toronto ON M7A 2R9	1 electronic/ email copy each (preferred)	T: 416-660-1027 karla.barboza@ontario.ca	Receives the initial circulations for all individual and site-specific Class EAs for all regions of the province. The Team Lead will assign to a Heritage Planner for review. EA matters of province-wide significance (including Parent Class EAs and Environmental Assessment policies and guidelines).
Heritage Planners: Site-specific individual and Class EA projects – Heritage Planners review site-specific EAs impacts on cultural heritage resources.			

Joseph Harvey, Heritage Planner(A) Heritage Program Unit Programs and Services Branch Ministry of Heritage, Sport, Tourism and Culture Industries 400 University Ave, 5th Floor Toronto ON M7A 2R9	electronic/ email copy only	T. 613-242-3743 joseph.harvey@ontario.ca	Contact Karla Barboza as initial step prior to circulating documents. All individual and site-specific Class EAs for: • Southwestern Ontario which covers upper- and single-tier municipalities from Brant, Bruce, Chatham-Kent, Elgin, Essex, Grey, Haldimand, Huron, Middlesex, London, Lambton, Norfolk, Oxford, Perth, Pelee Island, , Waterloo and Wellington • Northwestern Ontario which covers upper- and single-tier municipalities from Kenora, Rainy River, Nipissing, Parry Sound,Thunder Bay District.
Laura Hatcher, Heritage Planner Heritage Planning Unit Programs and Services Branch Ministry of Heritage, Sport, Tourism and Culture Industries 400 University Ave, 5th Floor Toronto ON M7A 2R9	electronic/ email copy only	T: 437-239-3404 laura.e.hatcher@ontario.ca	Contact Karla Barboza as initial step prior to circulating documents. All individual and site-specific Class EAs for: • Central region, which covers upper- and single-tier municipalities from Hamilton, Halton, Niagara, Peel, Dufferin; Durham, York, Toronto, Simcoe, Muskoka, Kawartha Lakes, Haliburton, Peterborough and Northumberland.
Jack Mallon, Heritage Planner(A) Heritage Planning Unit Programs and Services Branch Ministry of Heritage, Sport, Tourism and Culture Industries 400 University Ave, 5th Floor Toronto ON M7A 2R9	electronic/ email copy only	T. 437-522-6582 jack.mallon@ontario.ca	Contact Karla Barboza as initial step prior to circulating documents. All individual and site-specific Class EAs for: • Eastern region which covers upper- and single-tier municipalities from Hastings, Prince Edward, Renfrew, Lennox & Addington, Frontenac Kingston, Ottawa, Lanark, Leeds & Grenville, Stormont Dundas & Glengarry, Prescott & Russell, and • Northeastern region which covers upper- and single-tier municipalities from Cochrane, Sudbury, Sault Ste. Marie and Algoma, Manitoulin, Timiskaming, Timmins.

Dan Minkin, Heritage Planner Heritage Planning Unit Programs and Services Branch Ministry of Heritage, Sport, Tourism and Culture Industries 400 University Ave, 5th Floor Toronto ON M7A 2R9	electronic/ email copy only	T: 416-786-7553 dan.minkin@ontario.ca	Contact Karla Barboza as initial step prior to circulating documents. All individual and site-specific Class EAs for: • Central region, which covers upper- and single-tier municipalities from Hamilton, Halton, Niagara, Peel, Dufferin; Durham, York, Toronto, Simcoe, Muskoka, Kawartha Lakes, Haliburton, Peterborough and Northumberland.
Laura Romeo, Heritage Planner(A) Heritage Planning Unit Programs and Services Branch Ministry of Heritage, Sport, Tourism and Culture Industries 400 University Ave, 5th Floor Toronto ON M7A 2R9	electronic/ email copy only	T. 437-996-5218 laura.romeo@ontario.ca	All individual and site-specific Class EAs for: • Southwestern region which covers upper- and single-tier municipalities from Brant, Bruce, Chatham-Kent, Elgin, Essex, Grey, Haldimand, Huron, Middlesex, London, Lambton, Norfolk, Oxford, Perth, Pelee Island, , Waterloo and Wellington • Northwestern region which covers upper- and single-tier municipalities from Kenora, Rainy River, Nipissing, Parry Sound, Thunder Bay District.

From: Samya Chams <schams@rvanderson.com>
Sent: May-13-22 1:43 PM
To: Samya Chams <schams@rvanderson.com>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; nbokma@stthomas.ca
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

Good afternoon,

Please see attached correct attachment. Please disregard previous attachment sent in error.

My apologies for any inconvenience.

Thank you,

Samya

Samya Chams, B.A (she/her)
ADMINISTRATIVE ASSISTANT/ PROJECT SUPPORT COORDINATOR

t 519 681 9916 ext. 5021
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

rvanderson.com

From: Samya Chams
Sent: May 13, 2022 12:24 PM
To: Samya Chams <schams@rvanderson.com>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; nbokma@stthomas.ca
Subject: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

Dear Sir/Madam,

The City of St. Thomas is preparing a Master Plan for its wastewater treatment infrastructure as part of ongoing efforts to improve the performance of the City's infrastructure. St. Thomas Water Pollution Control Plant (WPCP) Wastewater Management Master Plan (WWMP) will provide the City with guidance for capital planning and project implementation for wastewater treatment to accommodate growth for the next 20 years and beyond in a cost effective and environmentally sustainable manner.

The study is being undertaken in accordance with the Municipal Class Environmental Assessment (EA) process for Master Plans (Municipal Engineer's Association Class EA document October 2000, as amended in 2007, 2011 & 2015).

There will be opportunities to participate throughout the study. Two public engagement events will be held during the study to provide opportunities to review project information and provide feedback to the study team.

For further information, please refer to the project website: www.stthomas.ca/wwmp. To be added to the study's distribution list to receive updates, or for more information, please contact a member of the study team below:

Nathan Bokma, P. Eng.
Manager of Development and Compliance
Environmental Services Dept.
City of St. Thomas
Tel: 519-631-1680 ext. 4151
nbokma@stthomas.ca
545 Talbot St., PO Box 520
St. Thomas, ON N5P 3V7

John Tyrrell, M.Sc. (Eng.), P. Eng.
Regional Manager
R.V. Anderson Associates Limited
Tel: 519-681-9916 ext. 5038
jtyrrell@rvanderson.com
557 Southdale Road East, Suite 200
London, ON N6E 1A2

With the exception of personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the Municipal Class Environmental Assessment, which is a planning process approved under Ontario's Environmental Assessment Act.

Thank you,

Samya

Samya Chams, B.A (she/her)
ADMINISTRATIVE ASSISTANT/ PROJECT SUPPORT COORDINATOR

t 519 681 9916 ext. 5021
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

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John Tyrrell

From: John Tyrrell
Sent: June 15, 2022 8:41 AM
To: Samya Chams
Subject: FW: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan
Attachments: 2022-06-15_St. Thomas Water Pollution Control Plant - MHSTCI Ltr.pdf

Please file

John Tyrrell, M.Sc.(Eng.), P.Eng.
SENIOR PROJECT MANAGER/REGIONAL MANAGER

t 519 681 9916 ext. 5038 | m 519-878-7903
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

rvanderson.com

From: Romeo, Laura (MHSTCI) <Laura.Romeo@ontario.ca>
Sent: June 15, 2022 8:37 AM
To: John Tyrrell <JTyrrell@rvanderson.com>
Cc: Bokma, Nathan <nbokma@stthomas.ca>; Barboza, Karla (MHSTCI) <Karla.Barboza@ontario.ca>
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

Good morning John,

Please find attached the MHSTCI comments on the above referenced project. Please do not hesitate to contact me should you have any questions or concerns.

Kind regards,
Laura

Laura Romeo | Heritage Planner (A)
Heritage, Tourism and Culture Division | Programs and Services Branch | Heritage Planning Unit
Ministry of Heritage, Sport, Tourism and Culture Industries
Laura.Romeo@ontario.ca

From: John Tyrrell <JTyrrell@rvanderson.com>
Sent: May 13, 2022 3:08 PM
To: Barboza, Karla (MHSTCI) <Karla.Barboza@ontario.ca>
Cc: Romeo, Laura (MHSTCI) <Laura.Romeo@ontario.ca>; Bokma, Nathan <nbokma@stthomas.ca>; Samya Chams <schams@rvanderson.com>
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

Hi Karla,

It is John from RVA,

The plan is to follow Approach # 1 under the MEA Class EA document: Preparation of a Master Plan document at the conclusion of Phases 1 and 2 MEA Class EA process requiring more detailed investigation at the project-specific level to fulfil the MEA Class EA documentation requirements for the specific Schedule B and C projects identified.

John Tyrrell, M.Sc.(Eng.), P.Eng.
SENIOR PROJECT MANAGER/REGIONAL MANAGER
t 519 681 9916 ext. 5038 | m 519-878-7903
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2
rvanderson.com

From: Barboza, Karla (MHSTCI) <Karla.Barboza@ontario.ca>
Sent: May 13, 2022 2:36 PM
To: Bokma, Nathan <nbokma@stthomas.ca>; Samya Chams <schams@rvanderson.com>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; Romeo, Laura (MHSTCI) <Laura.Romeo@ontario.ca>
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

Thanks Nathan! Could you please advise the number of the Approach for this Master Plan?

Thanks,
Karla

From: Bokma, Nathan <nbokma@stthomas.ca>
Sent: May-13-22 2:26 PM

To: Barboza, Karla (MHSTCI) <Karla.Barboza@ontario.ca>; Samya Chams <schams@rvanderson.com>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; Romeo, Laura (MHSTCI) <Laura.Romeo@ontario.ca>
Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

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Nathan Bokma, P. Eng.
Manager of Development and Compliance
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Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

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Thanks in advance,
Karla

Ministry of Heritage, Sport, Tourism and Culture Industries			
Heritage, Tourism and Culture Division			
Name, Position, Agency and Address	**Document Form**	**Phone, Fax and Email**	**Types of EA Projects to be Circulated**
Karla Barboza, Team Lead(A), Heritage Heritage Planning Unit Programs and Services Branch Ministry of Heritage, Sport, Tourism and Culture Industries 400 University Ave, 5th Floor Toronto ON M7A 2R9	1 electronic/ email copy each (preferred)	T: 416-660-1027 karla.barboza@ontario.ca	Receives the initial circulations for all individual and site-specific Class EAs for all regions of the province. The Team Lead will assign to a Heritage Planner for review. EA matters of province-wide significance (including Parent Class EAs and Environmental Assessment policies and guidelines).
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Sent: May-13-22 1:43 PM
To: Samya Chams <schams@rvanderson.com>
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Subject: RE: Notice of Study Commencement: St. Thomas Water Pollution Control Plant Wastewater Management Master Plan

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My apologies for any inconvenience.

Thank you,

Samya

Samya Chams, B.A (she/her)
ADMINISTRATIVE ASSISTANT/ PROJECT SUPPORT COORDINATOR

t 519 681 9916 ext. 5021
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

rvanderson.com

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Cc: John Tyrrell <JTyrrell@rvanderson.com>; nbokma@stthomas.ca
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Dear Sir/Madam,

The City of St. Thomas is preparing a Master Plan for its wastewater treatment infrastructure as part of ongoing efforts to improve the performance of the City's infrastructure. St. Thomas Water Pollution Control Plant (WPCP) Wastewater Management Master Plan (WWMP) will provide the City with guidance for capital planning and project implementation for wastewater treatment to accommodate growth for the next 20 years and beyond in a cost effective and environmentally sustainable manner.

The study is being undertaken in accordance with the Municipal Class Environmental Assessment (EA) process for Master Plans (Municipal Engineer's Association Class EA document October 2000, as amended in 2007, 2011 & 2015).

There will be opportunities to participate throughout the study. Two public engagement events will be held during the study to provide opportunities to review project information and provide feedback to the study team.

For further information, please refer to the project website: www.stthomas.ca/wwmp. To be added to the study's distribution list to receive updates, or for more information, please contact a member of the study team below:

Nathan Bokma, P. Eng.
Manager of Development and Compliance
Environmental Services Dept.
City of St. Thomas
Tel: 519-631-1680 ext. 4151
nbokma@stthomas.ca
545 Talbot St., PO Box 520
St. Thomas, ON N5P 3V7

John Tyrrell, M.Sc. (Eng.), P. Eng.
Regional Manager
R.V. Anderson Associates Limited
Tel: 519-681-9916 ext. 5038
jtyrrell@rvanderson.com
557 Southdale Road East, Suite 200
London, ON N6E 1A2

With the exception of personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the Municipal Class Environmental Assessment, which is a planning process approved under Ontario's Environmental Assessment Act.

Thank you,

Samya

Samya Chams, B.A (she/her)
ADMINISTRATIVE ASSISTANT/ PROJECT SUPPORT COORDINATOR

t 519 681 9916 ext. 5021
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

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Ministry of Heritage, Sport, Tourism and Culture Industries

Programs and Services Branch
400 University Ave, 5th Flr
Toronto, ON M7A 2R9
Tel: 437.996.5218

Ministère des Industries du Patrimoine, du Sport, du Tourisme et de la Culture

Direction des programmes et des services
400, av. University, 5e étage
Toronto, ON M7A 2R9
Tél: 437.996.5218

Ontario

June 15, 2022 EMAIL ONLY

John Tyrrell
Senior Project Manager
R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200
London, ON N6E 1A2
jtyrrell@rvanderson.com

MHSTCI File	**:**	**0016631**
Proponent	**:**	**The City of St. Thomas**
Subject	**:**	**Notice of Commencement - Master Plan**
Project	**:**	**St. Thomas Water Pollution Control Plant Wastewater Management Master Plan**
Location	**:**	**St. Thomas, Ontario**

Dear Mr. Tyrrell:

Thank you for providing the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) with the Notice of Commencement for this project. MHSTCI's interest in this master plan relates to its mandate of conserving Ontario's cultural heritage, which includes archaeological resources, built heritage resources and cultural heritage landscapes.

MHSTCI understands that master plans are long range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. The Municipal Class Environmental Assessment (MCEA) outlines a framework for master plan and associated studies which should recognize the planning and design Process of this Class EA, and should incorporate the key principles of successful environmental assessment planning identified in Section A.1.1. The master planning process will, at minimum, address Phases 1 and 2 of the Planning and Design Process of the MCEA.

This letter provides advice on how to incorporate consideration of cultural heritage in the above-mentioned master planning process by outlining the technical cultural heritage studies and the level of detail required to address cultural heritage in master plans. In accordance with the MCEA, cultural heritage resources should be identified early in the process in order to determine known and potential resources and potential impacts.

Master Plan Summary
The City of St. Thomas is preparing a Master Plan for its wastewater treatment infrastructure as part of ongoing efforts to improve the performance of the City's infrastructure. St. Thomas Water Pollution Control Plant (WPCP) Wastewater Management Master Plan (WWMP) will provide the City with guidance for capital planning and project implementation for wastewater treatment to accommodate growth for the next 20 years and beyond in a cost effective and environmentally sustainable manner. MHSTCI understands that this Master Plan will follow Approach #1.

Identifying Cultural Heritage Resources
MHSTCI understands that the master plan would typically be done at a broad level of assessment thereby requiring more detailed investigations at the project-specific level. Therefore, a description of the existing conditions related to cultural heritage resources needs to be included in the master plan document.

Archaeological Resources
The existing conditions sub-section should indicate if the master plan includes areas of archaeological potential or not and acknowledge that archaeological assessments will be required for future project-specific projects. The proponents should refer to an archaeological management plan or a data sharing agreement, should they exist. In their absence, MHSTCI's screening checklists can help determine whether archaeological assessments will be needed for subsequent project undertakings: *Criteria for Evaluating Archaeological Potential* and *Criteria for Evaluating Marine Archaeological Potential*.

A statement should be included that archaeological assessments are to be undertaken by an archaeologist licensed under the Ontario Heritage Act and that archaeological assessment reports must be submitted for MHSTCI review prior to the completion of the environmental assessment and prior to any ground disturbance. Some municipalities may also elect to have a Stage 1 archaeological assessment undertaken for a master plan area.

Built Heritage Resources and Cultural Heritage Landscapes
MHSTCI recommends that an Existing Conditions Report be undertaken by a qualified person, which will include a historical summary of the study area's development, identifying all known or potential built heritage resources and cultural heritage landscapes within the study area. The findings of the existing conditions report should be included in the existing conditions subsection of the master plan document.

Community input should be sought to identify locally recognized and potential cultural heritage resources. Sources include, but are not limited to, Municipal Heritage Committees, community heritage registers, historical societies and other local heritage organizations.

Cultural heritage resources are often of critical importance to Indigenous communities. Indigenous communities may have knowledge that can contribute to the identification of cultural heritage resources, and any engagement with Indigenous communities should include a discussion about known or potential cultural heritage resources that are of value to them.

Subsequent Municipal Class EA Undertakings
The recommendations outlined above can be used in support of any future technical cultural heritage studies required for any Schedule B and C MCEA undertakings identified within the master planning area. Technical cultural heritage studies are to be undertaken by a qualified person who has expertise, recent experience, and knowledge relevant to the type of cultural heritage resources being considered and the nature of the activity being proposed. Please advise MHSTCI whether any technical cultural heritage studies will be completed for this master plan and provide them to MHSTCI before issuing a Notice of Completion.

Thank you for consulting MHSTCI on this project. Please continue to do so through the master plan process and contact myself for any questions or clarification.

Sincerely,

Laura Romeo

Heritage Planner (A)
laura.romeo@ontario.ca

Copied to: Nathan Bokma, Manager of Development and Compliance, City of St. Thomas
Karla Barboza, Team Lead (A), Heritage Planning Unit, MHSTCI

Appendix 1.4

Aboriginal Correspondence

As of December 21, 2023, no Aboriginal correspondence has been noted as being received for this project.

Appendix 1.5

PIC # 1 November 29, 2023

Public Consultation Meeting
St. Thomas Water Pollution Control Plant
Wastewater Management Master Plant

November 29, 2023

ATTENDANCE SHEET

Name	Affiliation (i.e., resident, landowner, agent, agency, consultant)	Contact Information (please include one of email address, phone number, address)
SHAUN MEEHAN	GORMAN-RUPP PUMPS	SHAUN.MEEHAN@GRCANADA.COM
JEFF COULOMBE	GORMAN-RUPP	519-521-7302
[redacted]	LANDOWNER	[redacted]
	Landowner	
	RESIDENT	
DON SHROPSHIRE	County of Elgin	cao@elgin.cc
ROBIN GREENALL	CENTRAL ELGIN	cao@centralelgin.org
[redacted]	landowner	[redacted]

Public Consultation Meeting
St. Thomas Water Pollution Control Plant
Wastewater Management Master Plant

November 29, 2023

COMMENT SHEET

If you have any comments/questions that you would like to provide the Study Team, please fill out this form and your comments will be reviewed, and you will receive a response.

Name:	DON SHRUPSHIRE
Contact Information: (to provide a reply)	cao @ elgin.ca (please include one of email address, phone number, address)

COMMENTS:

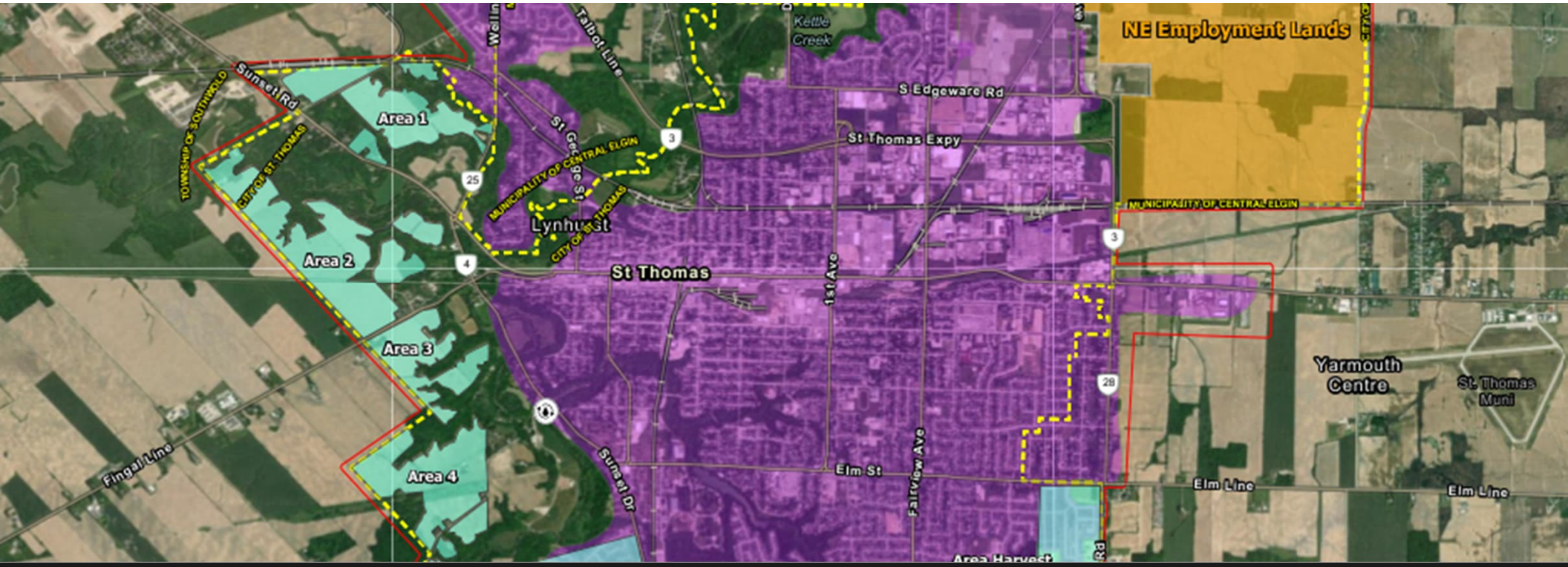
Can consideration be given to expanding capacity of the treatment plant to provide increased capacity for Central Elgin? and other parts of Elgin County

(Additional room on the back of the page to continue comments)

Please submit comments in comment box at meeting or else forward your comments to the following members of the study team below:

Patrick Anckaert, P.Eng.
Senior Project Manager
City of St. Thomas
Tel: 226-378-3671
panckaert@stthomas.ca
545 Talbot St., PO Box 520
St. Thomas, ON N5P 3V7

John Tyrrell, M.Sc. (Eng.), P. Eng.
Senior Project Manager
R.V. Anderson Associates Limited
Tel: 519-681-9916 ext. 5038
jtyrrell@rvanderson.com
557 Southdale Road East, Suite 200
London, ON N6E 1A2



PREPARED FOR THE CITY OF ST. THOMAS

Wastewater Master Plan

Public Information Centre

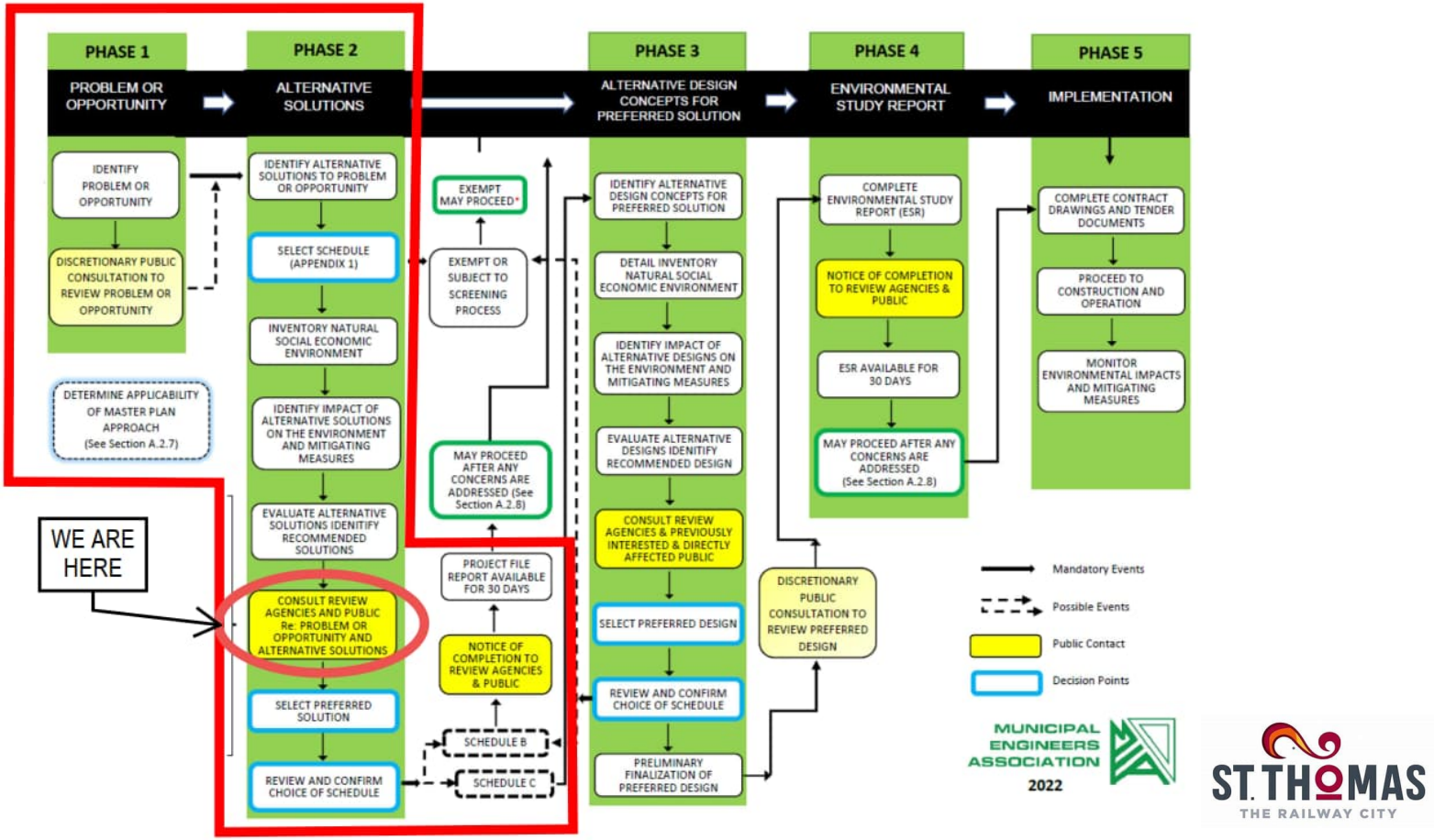
Wednesday November 29, 2023

Master Plan Goals (Problem/Opportunity Statement)

"St. Thomas Water Pollution Control Plant (WPCP) Wastewater Management Master Plan (WWMP) will provide the City with guidance for capital planning and project implementation for wastewater treatment to accommodate growth for the next 25 years and beyond in a cost effective and environmentally sustainable manner."

Master Plan through the Class EA Process

This study is being undertaken in accordance with the Municipal Class Environmental Assessment (MCEA) process for Master Plans.



Master Plan through the Class EA Process

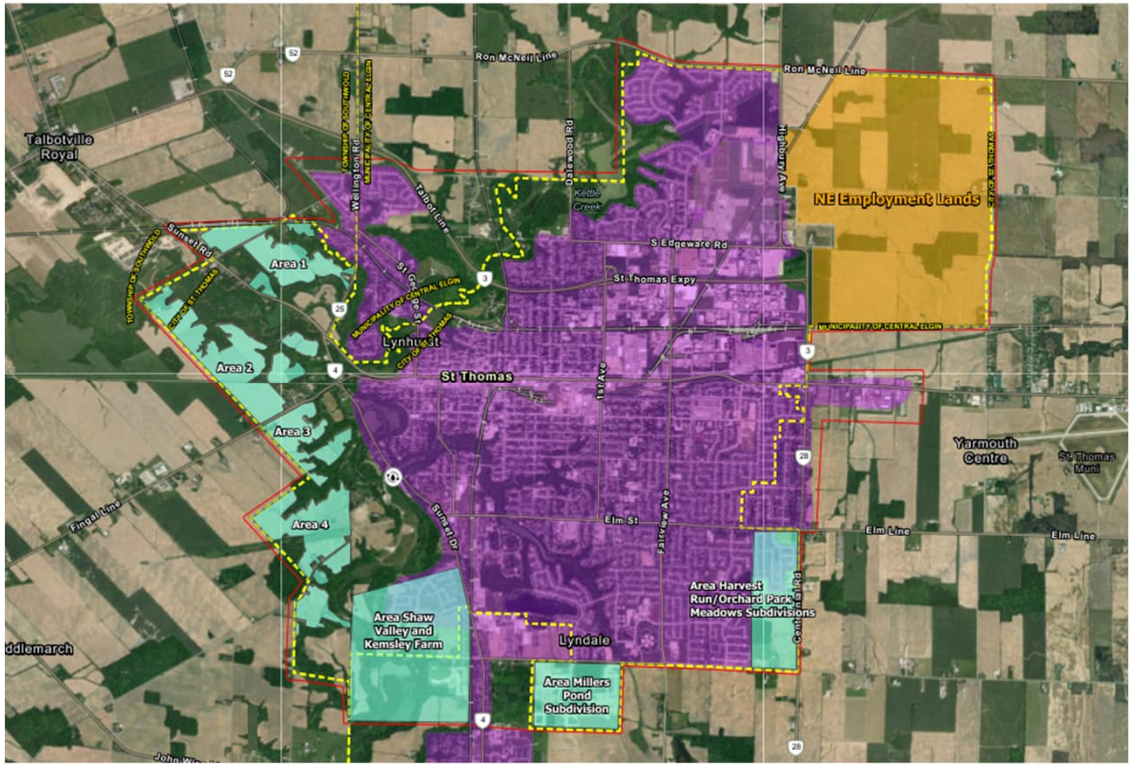
Master Plans are long range plans, which integrate infrastructure requirements for existing and future land use with environmental assessment principles.

This project follows Master Plan Approach # 1 under the MCEA process:

- Preparation of a Master Plan document at the conclusion of Phases 1 and 2 MCEA process
- This approach will identify projects which may require more detailed investigation at the project-specific level to fulfil the MCEA documentation requirements for any specific Schedule B and C projects identified

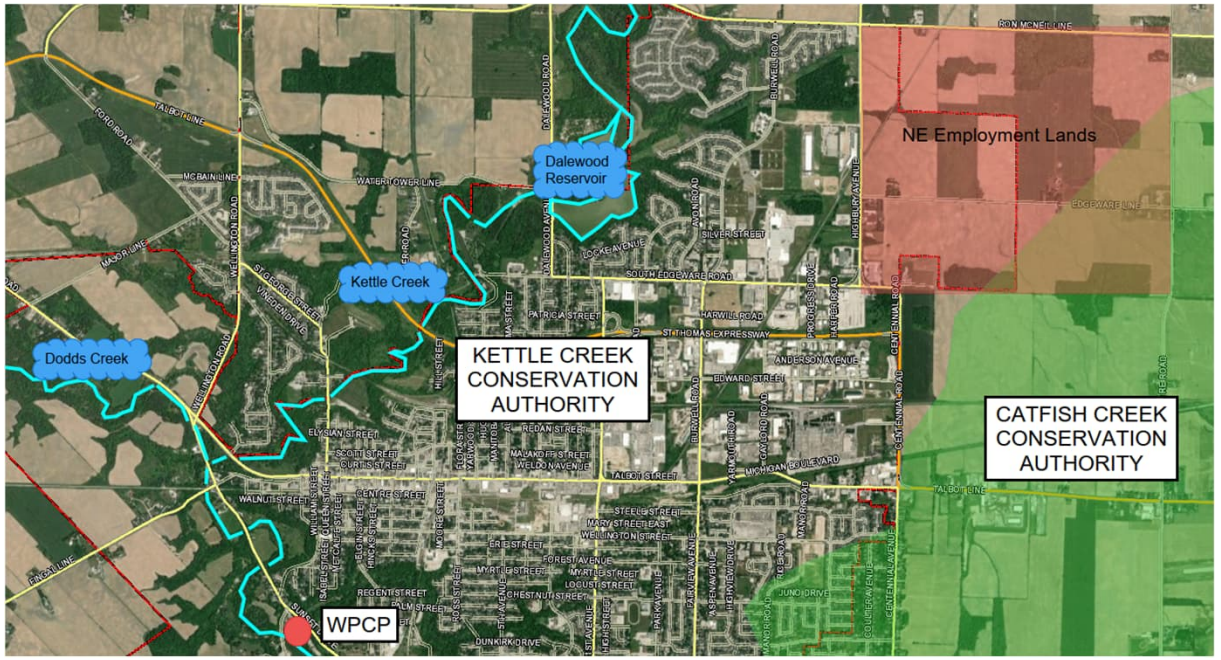
Study Area and Existing Environment

- City of St. Thomas, covers a land area of approximately 38.7 km^2 (including the NE Employment Lands and as of the 2021 census has a population of 42,840
- Based on historic data population growth rate is 1.26% per year
- May be higher with scale of NE Employment Lands development



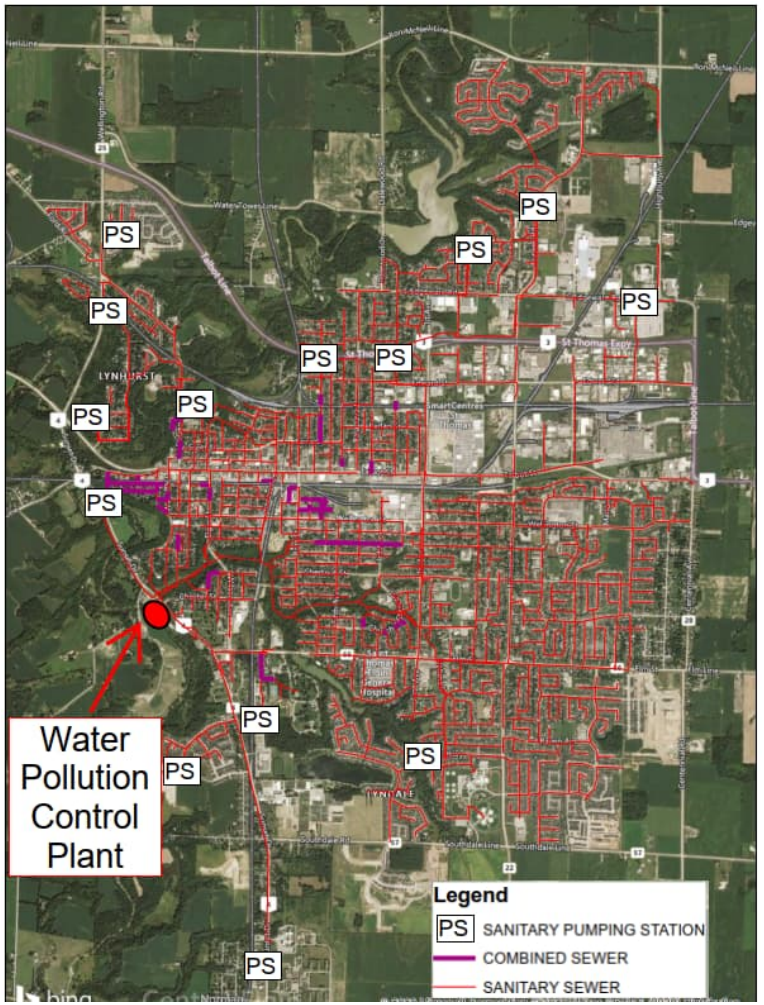
Existing Environment

- Located almost exclusively with the Kettle Creek watershed with a small area within the Catfish Watershed boundary.
- Poor water quality due primarily to high nutrient levels including phosphorus and nitrate



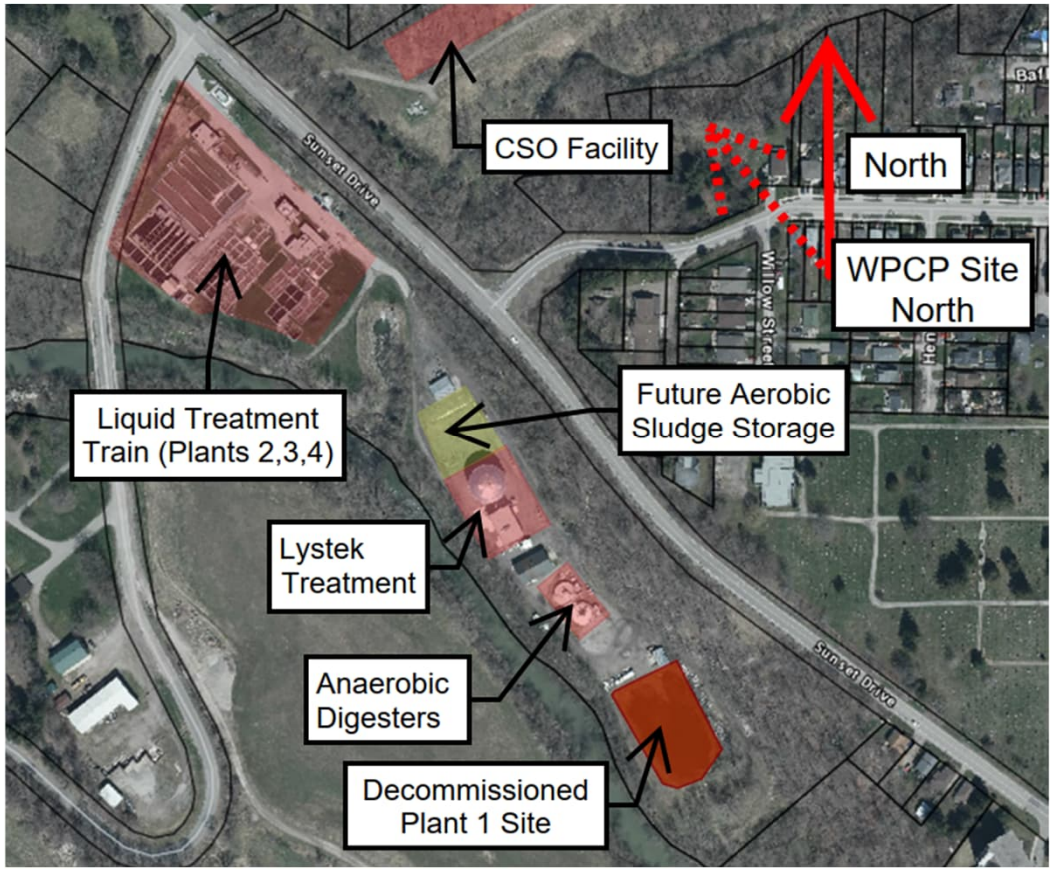
Existing Infrastructure

- Wastewater System consists of:
  - 220 km of sanitary sewers.
  - 16 Sanitary Pumping Stations.
- System connects to the St. Thomas WPCP



Existing WPCP

- Conventional Activated Sludge (CAS) treatment system
- Rated treatment capacity of 316 litres per second (27,300 m^3/day)
- Allowable peak flow capacity of 632 litres per second (54,600 m^3/day)
- Plant Age and Capacity:
  - Plant 2 – 70 years old (1953)/17% of capacity,
  - Plant 3 – 59 years old (1964))/34% of capacity,
  - Plant 4 - 20 to 43 years old (1980- 2003))/49% of capacity.
- Plants 2 and 3 will need to be refurbished/replaced within planning period of this Master Plan.

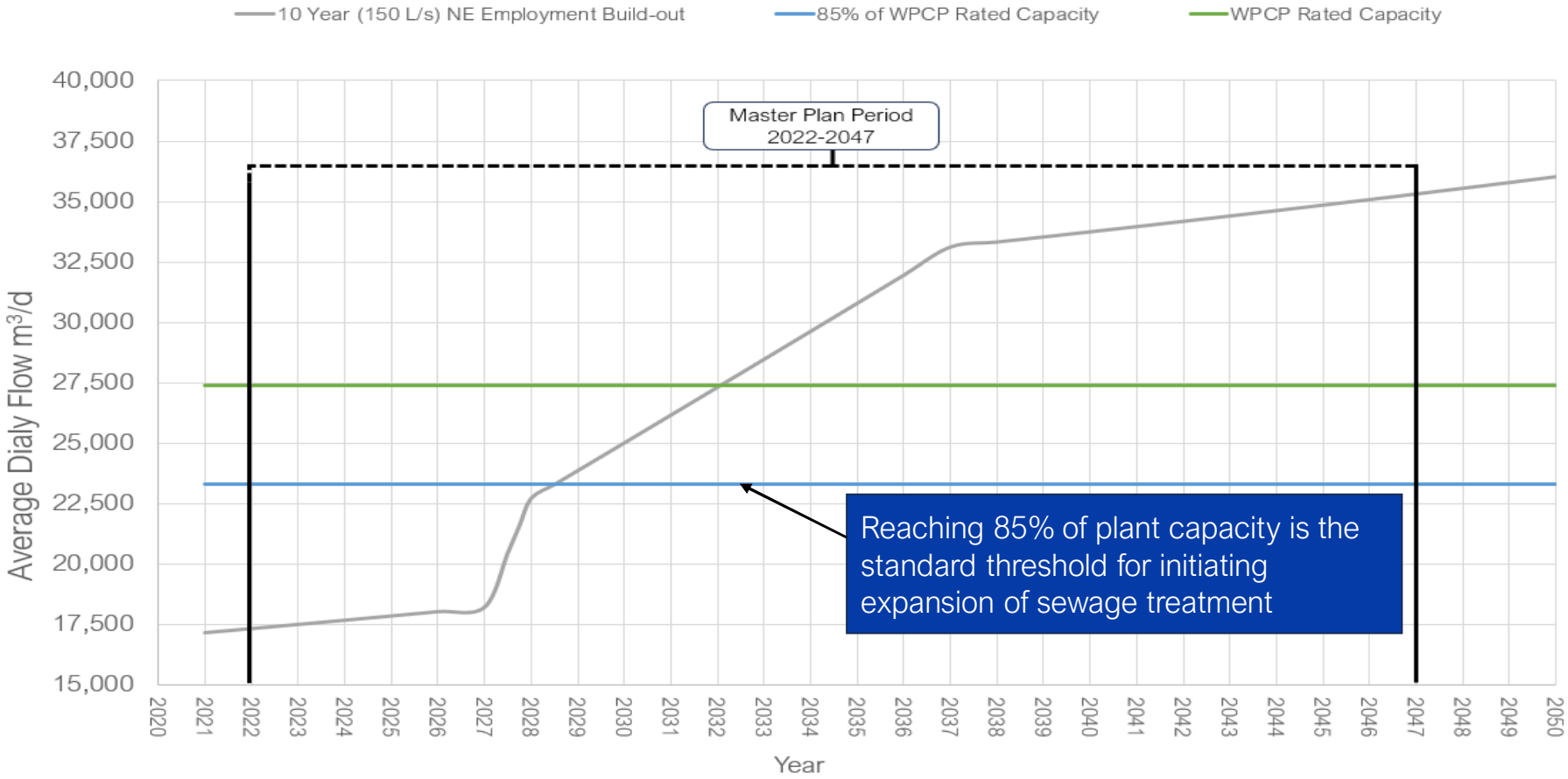


Future Sewage Flow Projections

Parameter	Year						
	2022	2027	2028[1]	2032	2037	2042	2047
Population	43,379	46,179	46,760	49,159	52,331	55,708	59,303
Flow L/s	201	226	257	301	365	399	412
Flow m^3/d	17,344	19,500	22,186	26,026	31,500	34,496	35,614

1 – Milestone year when initial flows from NE Employment Lands are anticipated.

Future Sewage Flow Projections



Solutions to Address Future Demand

- Options to address future sewage flows that exceed existing WPCP capacity:
  - Option 1 - Do Nothing
  - Option 2 - Increase capacity of existing WPCP
  - Option 3 - Build new WWTP
    - a. Solely for Northeast Employment Lands
    - b. Accommodate a portion of existing flow
- Option 1 - Do Nothing Option (MCEA required alternative)
  - For this alternative, no facilities or infrastructure would be constructed to solve the identified problem or opportunity.
  - This means that the problem would remain in the system, or an opportunity would not be addressed.

Solutions to Address Future Demand

Option	Advantages	Disadvantages
Option 2 - Increase Existing WWTP	• Reuse of existing infrastructure where capacity is available; and • A single point of discharge of treated sewage flows into the environment. • Potentially lower cost than Option 3 provided technical issues could be addressed.	• There would need to be significant upgrades to the conveyance system of sewers and pumping stations. • The WPCP is spatially constrained by Sunset Dr., Bush Ln., and the flood protection berm to the south and east of the plant. • Any new construction may need to be located at the southeastern end of the property, near the location of the original Plant 1. • Upgrading the plant with advanced technology, such as a membrane bioreactor (MBR) would require new headworks, disinfection system expansion will be challenging given the constraints of the site. • Would move forward timing of lifecycle refits. • The WPCP's capacity would be restricted during the retrofit and measures to maintain current capacity and address higher flow events are not technically feasible or cost effective.

Solutions to Address Future Demand

Option	Advantages	Disadvantages
Option 3a – New WWTP for NE Employment Lands Only	• Construction of a greenfield pant would alleviate constraints and construction staging concerns compared to Option 2 • Redundancy and operational flexibility to the wastewater collection and treatment systems possible if the ability to shift a portion of overall wastewater flows between the WPCP and the North WWTP is provided • Minimizing growth related flows to the existing WPCP would facilitate its refurbishment.	• Duplication of infrastructure. • Low initial flows and effluent characteristics of the sewage may be difficult to manage. • The conveyance issues that were noted in the PPCP will not be addressed.

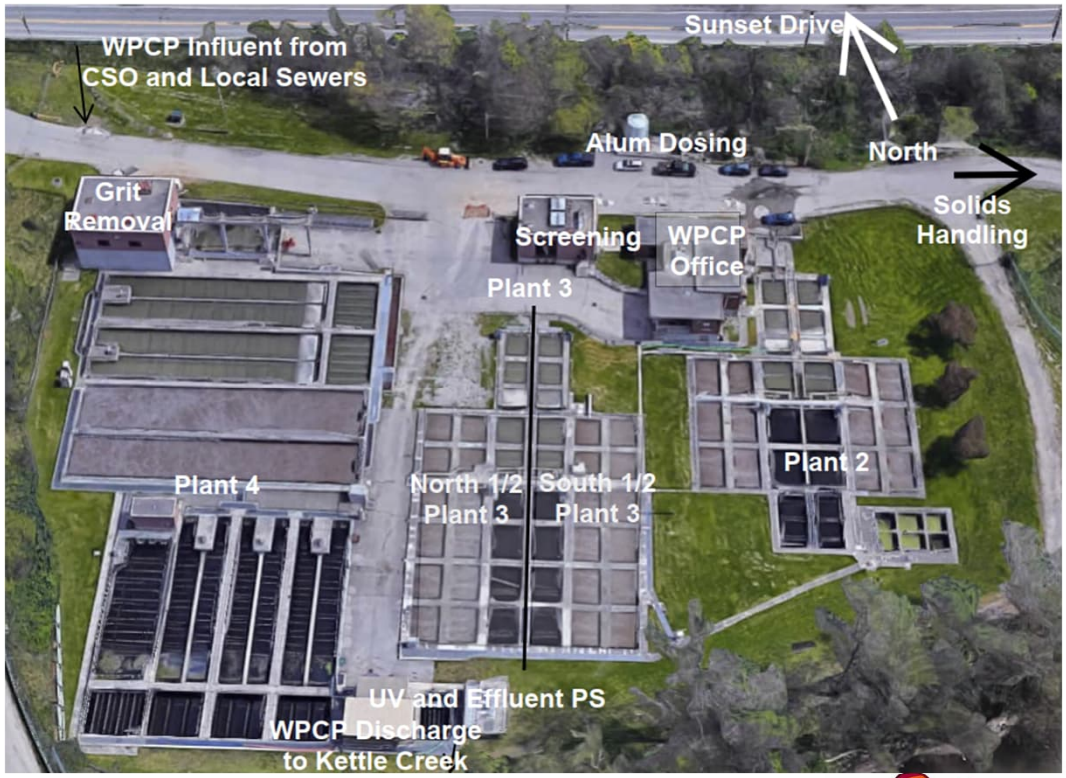
Solutions to Address Future Demand

Option	Advantages	Disadvantages
Option 3b - New WWTP for NE Employment Lands and Existing Areas	• Baseflow of municipal sewage will facilitate treatment of industrial flows from the NE Employment Lands. • Construction of a greenfield pant would not have the constraints, construction staging concerns and capacity limitations of Option 2. • Diversion of municipal flows to the New WWTP may alleviate some of issues noted in the PPCP and reduce or eliminate some of the projects identified in the PPCP. • Solution could provide overall redundancy and operational flexibility to the wastewater collection and treatment systems if the ability to shift a portion of overall wastewater flows between the WPCP and the North WWTP is provided. • Redirection of existing flows and growth-related flows to the existing WPCP would facilitate its refurbishment.	• Significantly higher cost compared to Options 2 and 3a.

- Option 3b is the preferred solution for the New WWTP

Existing WWTP Refurbishment

- Plant 2 and 3 are 70 and 59 years old and require rehabilitation in the planning horizon
- Options for refurbishment:
  - Upgrade based on current Technology Conventional Activated Sludge (CAS)
  - Upgrade using Membrane Bioreactor (MBR) technology
- The rehabilitation of Plants 2 and 3 needs to be staged in a manner that allows sufficient capacity to remain in the WPCP to treat anticipated flows.
- The optimum time to undertake this rehabilitation is following construction of the New WWTP construction as flows to WPCP would be temporarily reduced.



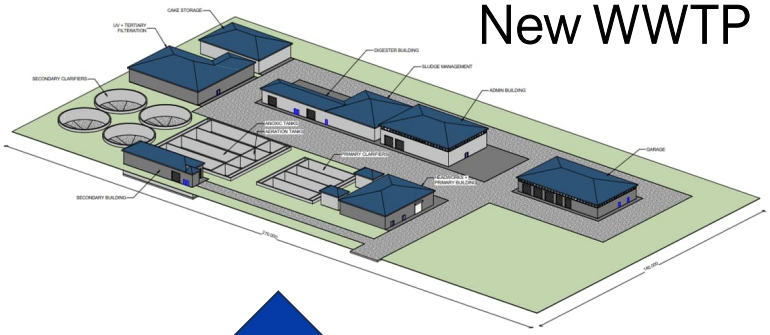
Solutions for WWTP Refurbishment

Option	Advantages	Disadvantages
Conventional Activated Sludge (CAS)	• Lower capital cost (approximately $20 million in $2023) • Allows flexibility to undertake in phases – Plant 2, ½ Plant 3, then other ½ Plant 3 • Can be undertaken throughout study period once New WWTP is constructed (2028 to 2047)	• May require higher level of treatment pending approvals for New WWTP
Membrane Bioreactor (MBR)	• Provides higher quality of effluent	• Higher capital cost (approximately $41 million in $2023) • Involves decommissioning – Plant 2 and change over , ½ Plant 3, then other ½ Plant 3 • Based on flow projections and the staging requirements has a shorter period to implement once the New WWTP is constructed (2028 to 2037).

- CAS Option is the preferred solution for WWTP Refurbishment

New WWTP to Provide Sanitary Servicing

- Based on Option 3b
- Components:



New Sanitary Forcemain

New Sanitary Pumping Station

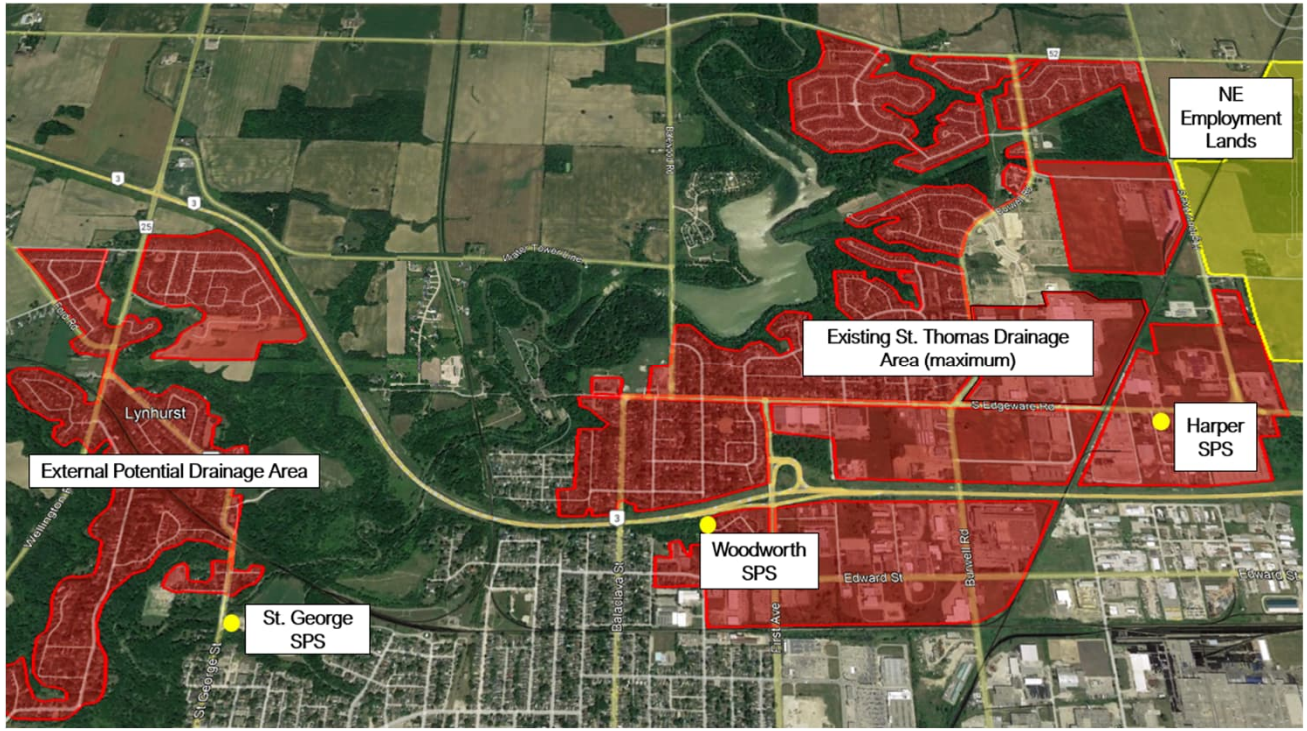
Sewer Connection from Existing St. Thomas Drainage Area

New Trunk Sewer from NE Employment Lands

Drainage Area for New WWTP and Flow Split

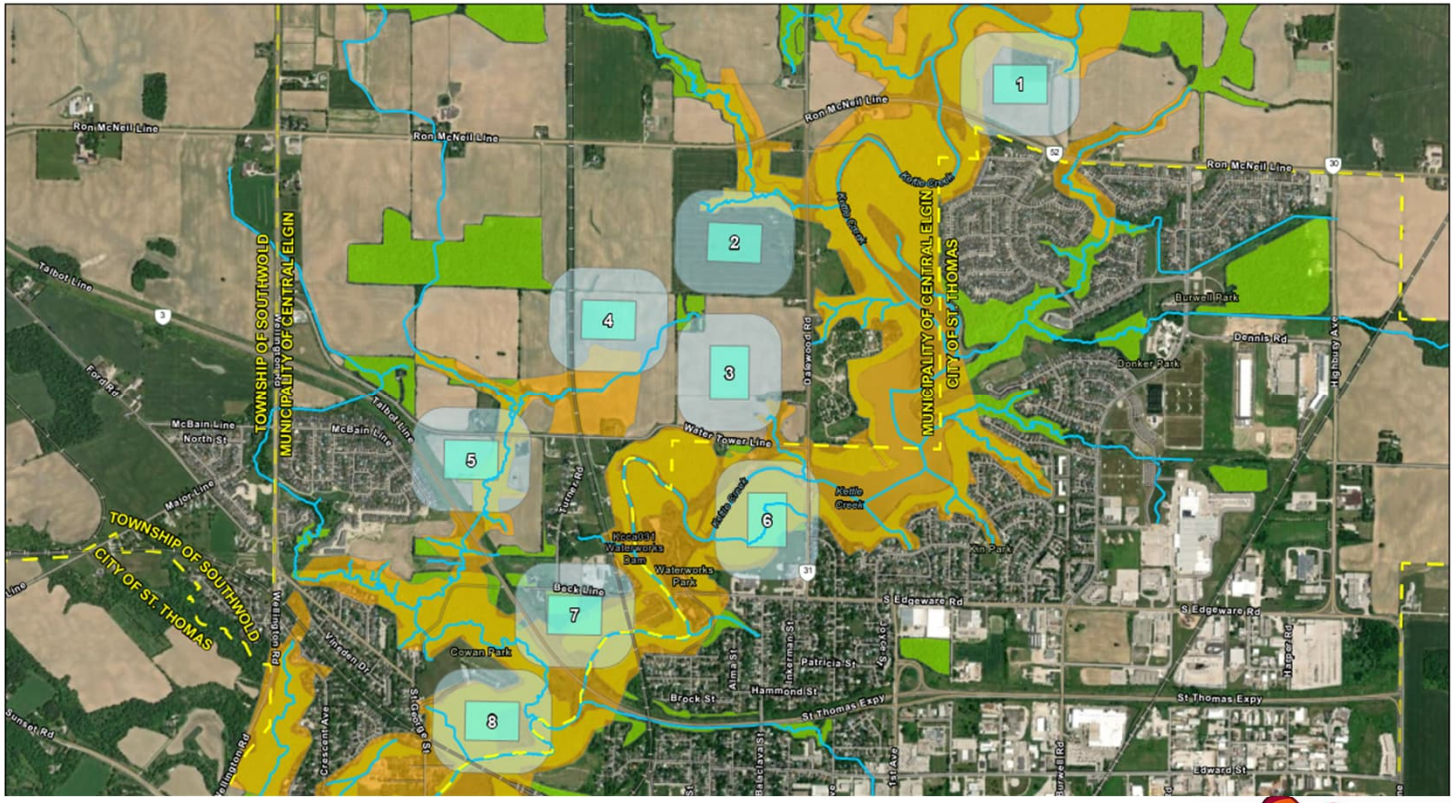
- Maximum Drainage Area to New WWTP
  - 2028 Annual Daily Flow (ADF)[1]
    - To New WWTP: 17,194 m^3/day
    - To WPCP: 5,534 m^3/day
  - 2038 Annual Daily Flow (ADF)[2]
    - To New WWTP: 25,142 m^3/day
    - To WPCP: 7,286 m^3/day
  - 2047 Annual Daily Flow (ADF)
    - To New WWTP: 25,142 m^3/day
    - To WPCP: 10,472 m^3/day

1- New WWTP on-line
2- NE Employment Lands buildout



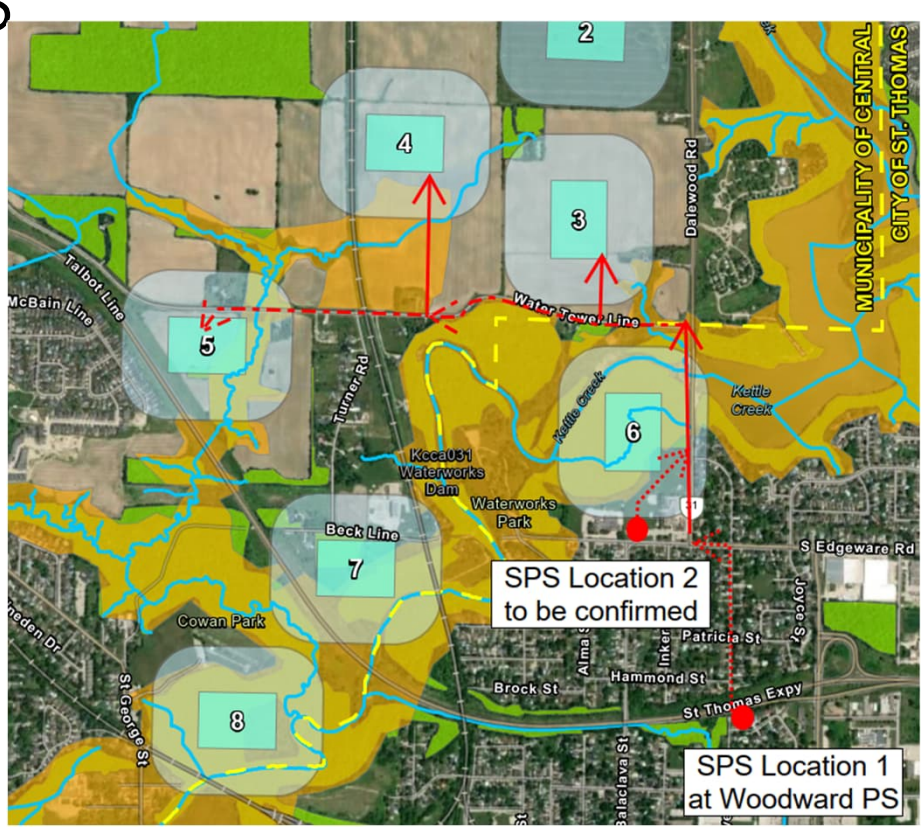
Candidate Sites for the WWTP

- 8 Candidate sites were reviewed
- Criteria used to review:
  - SAR Impacts
  - KCCA Requirements
  - DFO Requirements
  - Forcemain Length
  - Outfall Length
  - SPS Reduction
  - Odour Impacts
  - Property Cost
  - Constructability
  - Expansion
  - Social/Cultural
- At WWMP stage Sites 3, 4, and 5 ranked the highest b the City
- Sites to be confirmed as part of the Schedule C MCEA



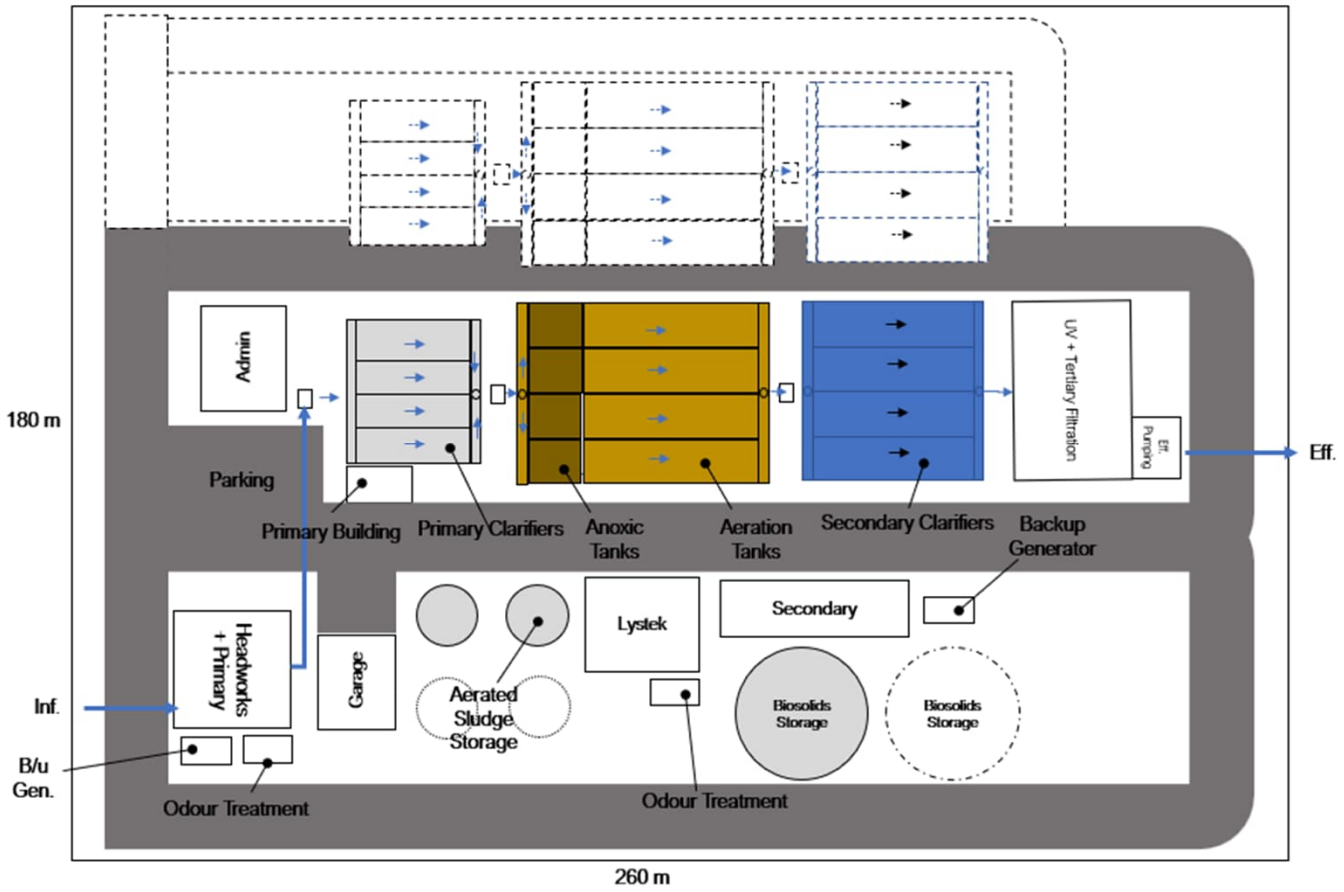
Candidate Sites for the SPS

- Based on review, there are two candidate sties to review:
  - Location 1 at existing Woodworth SPS site
  - Location 2 and western side of South Edgeware Road west of Dalewood Road
- SPS Locations will be reviewed in detail as part of the Schedule B MCEA



Forcemain Routing

Conceptual New WWTP Layout



- Based upon a CAS treatment system per City requirements
- ADF assumed to be 291 L/s
- Additional space provided for future expansion

New WWTP Cost Opinion (2023$)

Component	Capital Cost Opinion [1]
Gravity Sewer (525/600 mm)	$8,000,000
Sewage Pumping Station (capacity TBD)	$20,720,000
Forcemain (400mm)	$5,000,000
Wastewater Treatment Plant (25,140 m^3/day)	$81,000,000
Sludge Management	$31,000,000
Administration Building & Garage	$14,000,000
Subtotal (Base Capital)	$159,720,000
Subtotal: -30% (Low Range Capital)	$111,804,000
Subtotal: +50% (High Range Capital)	$239,580,000
Planning, Engineering, CA, and Testing (12.5% of Base)	$19,965,000
Total (Base Estimate + Engineering)	$179,685,000
Total (Low Range + Engineering)	$131,769,000
Total (High Range + Engineering)	$259,545,000

1 – Cost does not include property acquisition for New SPS or New WWTP

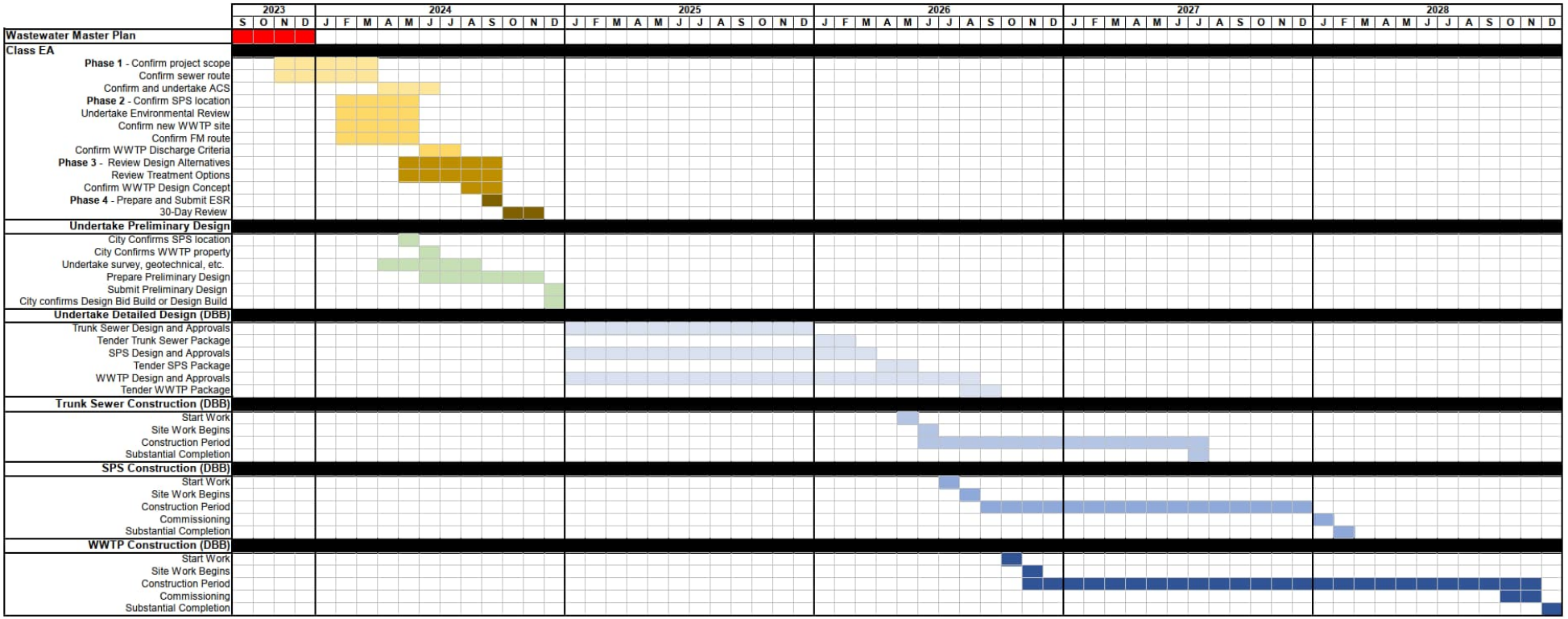
New WWTP Implementation

- Sewer from Employment Lands – this is considered Exempt (approved projects) under the MCEA and can proceed to design provided work is on municipal rights of way and trenchless crossings of water bodies are made
- Sewer connection from existing St Thomas lands in drainage catchment– this is considered Exempt (approved projects) under the MCEA and can proceed to design provided work is on municipal rights of way and trenchless crossings of water bodies are made

New WWTP Implementation

- The required MCEA Schedule B (SPS) and C (WWTP) studies for this project should review and confirm:
  - Confirm drainage areas and flows to the SPS and to the WWTP
  - Location of the new WWTP
  - Location of the new SPS
  - Routing of the sewers and forcemains
  - Confirm the effluent criteria (as approved by MECP based on an Assimilative Capacity Study to be undertaken by the City)
  - Which type of treatment system (CAS, MBR, or other)
  - Archaeological assessment, cultural heritage evaluation reports, heritage impact assessment for WWTP and SPS sites
  - Natural Heritage Reviews of WWTP and SPS sites

New WWTP Implementation



Your Input is Important

- Thank you for reviewing the information. Please provide your comments by completing a **Comment Form** on the project website by **December 13, 2023**, at https://www.stthomas.ca/city_hall/environmental_services/wastewater_management_master_plan_-_class_e_a
- Alternatively, you can email your comments to the project team contacts listed below by **December 13, 2023**

Patrick Anckaert, P.Eng.
Senior Project Manager, Industrial Development
City of St. Thomas
Phone: 519-631-1680 ext. 4260
Email: panckaert@stthomas.ca

John Tyrrell, P. Eng.
Associate, Regional Manager
R.V. Anderson Associates Limited
Phone: 519-681-9916 ext. 5038
Email: jtyrrell@rvanderson.com

Appendix 1.6

Post PIC # 1 Correspondence

John Tyrrell

From: [redacted]
Sent: November 30, 2023 9:05 AM
To: John Tyrrell
Subject: Waste Water St Thomas

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate before Replying or Clicking on any links

Hello John,

Nice to meet you last night and Thank you for the information.

If you have any more information or questions – let us know.

Thanks
[redacted]

APPENDIX 2

Projected Wastewater Flows

Year	Population	Annual Daily Flow (m^3/day)				
		Projected City Flow (not incl. NE lands)	NE Employment Lands	Total City Flow	Flow to New WWTP	Flow to WPCP
Flow Split between WPCP and New WWTP (Woodward SPS, St George SPS and Turner Rd Areas)						
2021	42,840	17,174	0	17,174	0	17,174
2022	43,379	17,344	0	17,344	0	17,344
2023	43,925	17,516	0	17,516	0	17,516
2024	44,478	17,690	0	17,690	0	17,690
2025	45,038	17,866	0	17,866	0	17,866
2026	45,605	18,044	0	18,044	0	18,044
2027	46,179	18,225	0	18,225	0	18,225
2028	46,760	18,501	1,080	19,581	16,502	3,079
2029	47,348	18,593	5,280	23,873	17,462	6,411
2030	47,944	18,781	6,240	25,021	18,422	6,598
2031	48,548	18,971	7,200	26,171	19,382	6,788
2032	49,159	19,163	8,160	27,323	20,342	6,981
2033	49,777	19,358	9,120	28,478	21,302	7,176
2034	50,404	19,555	10,080	29,635	22,262	7,373
2035	51,038	19,755	11,040	30,795	23,222	7,572
2036	51,681	19,957	12,000	31,957	24,182	7,775
2037	52,331	20,162	12,960	33,122	25,142	7,979
2038	52,990	20,369	12,960	33,329	25,142	8,187
2039	53,657	20,579	12,960	33,539	25,142	8,397
2040	54,332	20,792	12,960	33,752	25,142	8,609
2041	55,016	21,007	12,960	33,967	25,142	8,825
2042	55,708	21,225	12,960	34,185	25,142	9,043
2043	56,409	21,446	12,960	34,406	25,142	9,263
2044	57,119	21,669	12,960	34,629	25,142	9,487
2045	57,838	21,895	12,960	34,855	25,142	9,713
2046	58,566	22,125	12,960	35,085	25,142	9,942
2047	59,303	22,357	12,960	35,317	25,142	10,174
2048	60,050	22,592	12,960	35,552	25,142	10,409
2049	60,806	22,830	12,960	35,790	25,142	10,647
2050	61,571	23,070	12,960	36,030	25,142	10,888
2051	62,346	23,314	12,960	36,274	25,142	11,132
2052	63,130	23,561	12,960	36,521	25,142	11,379
2053	63,925	23,812	12,960	36,772	25,142	11,629
2054	64,730	24,065	12,960	37,025	25,142	11,882
2055	65,544	24,321	12,960	37,281	25,142	12,139
2056	66,369	24,581	12,960	37,541	25,142	12,399
2057	67,205	24,844	12,960	37,804	25,142	12,662
2058	68,050	25,110	12,960	38,070	25,142	12,928
2059	68,907	25,380	12,960	38,340	25,142	13,197
2060	69,774	25,653	12,960	38,613	25,142	13,470
2061	70,652	25,929	12,960	38,889	25,142	13,747
2062	71,542	26,209	12,960	39,169	25,142	14,027
2063	72,442	26,493	12,960	39,453	25,142	14,310
2064	73,354	26,780	12,960	39,740	25,142	14,597
2065	74,277	27,070	12,960	40,030	25,142	14,888
2066	75,212	27,365	12,960	40,325	25,142	15,182
2067	76,158	27,663	12,960	40,623	25,142	15,480
2068	77,117	27,964	12,960	40,924	25,142	15,782
2069	78,088	28,270	12,960	41,230	25,142	16,088
2070	79,070	28,579	12,960	41,539	25,142	16,397
2071	80,065	28,893	12,960	41,853	25,142	16,710
2072	81,073	29,210	12,960	42,170	25,142	17,027
2073	82,094	29,531	12,960	42,491	25,142	17,349

Study Period

NE Employment Lands Buildout Period

		Annual Daily Flow (m^3/day)				
Year	Population	Projected City Flow (not incl. NE lands)	NE Employment Lands	Total City Flow	Flow to New WWTP	Flow to WPCP
2074	83,127	29,856	12,960	42,816	25,142	17,674
2075	84,173	30,186	12,960	43,146	25,142	18,003
2076	85,232	30,519	12,960	43,479	25,142	18,337
2077	86,305	30,857	12,960	43,817	25,142	18,674
2078	87,391	31,199	12,960	44,159	25,142	19,016
2079	88,491	31,545	12,960	44,505	25,142	19,363
2080	89,605	31,896	12,960	44,856	25,142	19,713
2081	90,733	32,251	12,960	45,211	25,142	20,068
2082	91,875	32,610	12,960	45,570	25,142	20,428
2083	93,031	32,974	12,960	45,934	25,142	20,792
2084	94,202	33,343	12,960	46,303	25,142	21,160
2085	95,388	33,716	12,960	46,676	25,142	21,534
2086	96,588	34,094	12,960	47,054	25,142	21,912
2087	97,804	34,477	12,960	47,437	25,142	22,294
2088	99,035	34,864	12,960	47,824	25,142	22,682
2089	100,281	35,257	12,960	48,217	25,142	23,074
2090	101,543	35,654	12,960	48,614	25,142	23,471
2091	102,821	36,056	12,960	49,016	25,142	23,874
2092	104,116	36,464	12,960	49,424	25,142	24,281
2093	105,426	36,876	12,960	49,836	25,142	24,694
2094	106,753	37,294	12,960	50,254	25,142	25,111
2095	108,096	37,717	12,960	50,677	25,142	25,534
2096	109,457	38,145	12,960	51,105	25,142	25,963
2097	110,835	38,579	12,960	51,539	25,142	26,396
2098	112,230	39,018	12,960	51,978	25,142	26,835
2099	113,642	39,462	12,960	52,422	25,142	27,280
2100	115,072	39,913	12,960	52,873	25,142	27,730

Year	Population	Annual Daily Flow (m^3/day)				
		Projected City Flow (not incl. NE lands)	NE Employment Lands	Total City Flow	Flow to New WWTP	Flow to WPCP
Flow Split between WPCP and New WWTP (Woodward SPS north of South Edgeware Road and Harper SPS)						
2021	42,840	17,174	0	17,174	0	17,174
2022	43,379	17,344	0	17,344	0	17,344
2023	43,925	17,516	0	17,516	0	17,516
2024	44,478	17,690	0	17,690	0	17,690
2025	45,038	17,866	0	17,866	0	17,866
2026	45,605	18,044	0	18,044	0	18,044
2027	46,179	18,225	0	18,225	0	18,225
2028	46,760	18,501	4,320	22,821	8,861	13,960
2029	47,054	18,593	5,280	23,873	13,402	10,472
2030	47,348	18,781	6,240	25,021	14,362	10,659
2031	47,944	18,971	7,200	26,171	15,322	10,849
2032	48,548	19,163	8,160	27,323	16,282	11,042
2033	49,159	19,358	9,120	28,478	17,242	11,236
2034	49,777	19,555	10,080	29,635	18,202	11,434
2035	50,404	19,755	11,040	30,795	19,162	11,633
2036	51,038	19,957	12,000	31,957	20,122	11,835
2037	51,681	20,162	12,960	33,122	20,122	13,000
2038	52,331	20,369	12,960	33,329	21,082	12,248
2039	52,990	20,579	12,960	33,539	21,082	12,457
2040	53,657	20,792	12,960	33,752	21,082	12,670
2041	54,332	21,007	12,960	33,967	21,082	12,885
2042	55,016	21,225	12,960	34,185	21,082	13,103
2043	55,708	21,446	12,960	34,406	21,082	13,324
2044	56,409	21,669	12,960	34,629	21,082	13,548
2045	57,119	21,895	12,960	34,855	21,082	13,774
2046	57,838	22,125	12,960	35,085	21,082	14,003
2047	58,566	22,357	12,960	35,317	21,082	14,235
2048	59,303	22,592	12,960	35,552	21,082	14,470
2049	60,050	22,830	12,960	35,790	21,082	14,708
2050	60,806	23,070	12,960	36,030	21,082	14,949
2051	61,571	23,314	12,960	36,274	21,082	15,193
2052	62,346	23,561	12,960	36,521	21,082	15,440
2053	63,130	23,812	12,960	36,772	21,082	15,690
2054	63,925	24,065	12,960	37,025	21,082	15,943
2055	64,730	24,321	12,960	37,281	21,082	16,200
2056	65,544	24,581	12,960	37,541	21,082	16,459
2057	66,369	24,844	12,960	37,804	21,082	16,722
2058	67,205	25,110	12,960	38,070	21,082	16,989
2059	68,050	25,380	12,960	38,340	21,082	17,258
2060	68,907	25,653	12,960	38,613	21,082	17,531
2061	69,774	25,929	12,960	38,889	21,082	17,808
2062	70,652	26,209	12,960	39,169	21,082	18,088
2063	71,542	26,493	12,960	39,453	21,082	18,371
2064	72,442	26,780	12,960	39,740	21,082	18,658
2065	73,354	27,070	12,960	40,030	21,082	18,949
2066	74,277	27,365	12,960	40,325	21,082	19,243
2067	75,212	27,663	12,960	40,623	21,082	19,541
2068	76,158	27,964	12,960	40,924	21,082	19,843
2069	77,117	28,270	12,960	41,230	21,082	20,148
2070	78,088	28,579	12,960	41,539	21,082	20,458
2071	79,070	28,893	12,960	41,853	21,082	20,771
2072	80,065	29,210	12,960	42,170	21,082	21,088
2073	81,073	29,531	12,960	42,491	21,082	21,409

Study Period

NE Employment Lands Buildout Period

		Annual Daily Flow (m^3/day)				
Year	Population	Projected City Flow (not incl. NE lands)	NE Employment Lands	Total City Flow	Flow to New WWTP	Flow to WPCP
2074	82,094	29,856	12,960	42,816	21,082	21,735
2075	83,127	30,186	12,960	43,146	21,082	22,064
2076	84,173	30,519	12,960	43,479	21,082	22,398
2077	85,232	30,857	12,960	43,817	21,082	22,735
2078	86,305	31,199	12,960	44,159	21,082	23,077
2079	87,391	31,545	12,960	44,505	21,082	23,423
2080	88,491	31,896	12,960	44,856	21,082	23,774
2081	89,605	32,251	12,960	45,211	21,082	24,129
2082	90,733	32,610	12,960	45,570	21,082	24,489
2083	91,875	32,974	12,960	45,934	21,082	24,853
2084	93,031	33,343	12,960	46,303	21,082	25,221
2085	94,202	33,716	12,960	46,676	21,082	25,594
2086	95,388	34,094	12,960	47,054	21,082	25,972
2087	96,588	34,477	12,960	47,437	21,082	26,355
2088	97,804	34,864	12,960	47,824	21,082	26,743
2089	99,035	35,257	12,960	48,217	21,082	27,135
2090	100,281	35,654	12,960	48,614	21,082	27,532
2091	101,543	36,056	12,960	49,016	21,082	27,935
2092	102,821	36,464	12,960	49,424	21,082	28,342
2093	104,116	36,876	12,960	49,836	21,082	28,754
2094	105,426	37,294	12,960	50,254	21,082	29,172
2095	106,753	37,717	12,960	50,677	21,082	29,595
2096	108,096	38,145	12,960	51,105	21,082	30,023
2097	109,457	38,579	12,960	51,539	21,082	30,457
2098	110,835	39,018	12,960	51,978	21,082	30,896
2099	112,230	39,462	12,960	52,422	21,082	31,341
2100	113,642	39,913	12,960	52,873	21,082	31,791

APPENDIX 3

Discussions with MECP during WWMP

John Tyrrell

From: Munro, Alison (MECP) <Alison.Munro@ontario.ca>
Sent: May 18, 2023 11:42 AM
To: John Tyrrell; Harpreet Rai; Austin Bender; Justin Lawrence; panckaert@stthomas.ca
Cc: Badali, Mark (MECP); Morgan, Meghan (MECP); Grant, Adam (MECP); Adrien, Pierre (MECP); Suprovich, Jason (MECP); Romic, Zeljko (MECP)
Subject: RE: Pre-consultation Meeting - St. Thomas WW Servicing New Northeast

Categories: Filed by Newforma

Good morning, John.

Thank you for sharing the ToR for the planned assimilative capacity study.

After taking a closer look at the parameters in the available data sets, I noticed that there is no background information for BOD_5. If you are unable to obtain this information from another source I would recommend that some background samples be taken to confirm the BOD_5 concentrations in the potential receiver, in addition to any other contaminants of concern that may arise moving forward.

In addition to what was proposed, the report should include information on the following:

- Flow characteristics
- Channel morphology
- Biological Community (species at risk, benthic invertebrates, fish)
- Mixing Zone modeling and analysis
- Determination of surface water management policy (Policy 1 or 2) for limiting parameters

In addition to contacting the Ministry, further information can be found in the following locations:

- Deriving Receiving-Water Based, Point-Source Effluent Requirements For Ontario Waters (July, 1994). This publication also lists “F series” guidance which may be useful and is also available on our website.

- Guide for Applying for and Environmental Compliance Approval. https://www.ontario.ca/page/environmental-compliance-approval

If you have any questions or require clarification, please feel to reach out.

Take care,

Alison

Alison Munro, Surface Water Specialist
Ministry of the Environment, Conservation and Parks
733 Exeter Road, London, ON N6E 1L3
p: 519.860.5987 f: 519.873.5020

From: John Tyrrell <JTyrrell@rvanderson.com>
Sent: May-11-23 11:13 AM
To: Harpreet Rai <hrai@rvanderson.com>; Austin Bender <abender@rvanderson.com>; Justin Lawrence <jlawrence@stthomas.ca>; panckaert@stthomas.ca; Badali, Mark (MECP) <Mark.Badali1@ontario.ca>; Munro, Alison (MECP) <Alison.Munro@ontario.ca>; Morgan, Meghan (MECP) <Meghan.Morgan@ontario.ca>; Grant, Adam (MECP) <Adam.Grant@ontario.ca>; Adrien, Pierre (MECP) <Pierre.Adrien@ontario.ca>; Romic, Zeljko (MECP) <Zeljko.Romic@ontario.ca>; Suprovich, Jason (MECP) <Jason.Suprovich@ontario.ca>
Subject: RE: Pre-consultation Meeting - St. Thomas WW Servicing New Northeast
Importance: High

Good Morning,

As discussed at the pre-consultation meeting last week, RVA has prepared a terms of reference for the MECP's review. The attached document gives background information on the project and outlines the data to be used for the planned assimilative capacity study of Kettle Creek .

We welcome your feedback on the presented approach.

Thanks

John Tyrrell, M.Sc.(Eng.), P.Eng.

Associate/Regional Manager

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200, London ON N6E 1A2
t 519 681 9916 ext. 5038 | m 519 878 7903
LinkedIn | Facebook | Website

-----Original Appointment-----
From: John Tyrrell <JTyrrell@rvanderson.com>
Sent: Wednesday, April 19, 2023 4:03 PM
To: John Tyrrell; Harpreet Rai; Austin Bender; Lawrence, Justin <jlawrence@stthomas.ca>; panckaert@stthomas.ca; Mark.Badali1@ontario.ca; alison.munro@ontario.ca; Meghan.Morgan@ontario.ca; adam.grant@ontario.ca; pierre.adrien@ontario.ca; zeljko.romic@ontario.ca; jason.suprovich@ontario.ca
Subject: Pre-consultation Meeting - St. Thomas WW Servicing New Northeast
When: May 1, 2023 3:00 PM-4:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Microsoft Teams meeting

Join on your computer, mobile app or room device
Click here to join the meeting

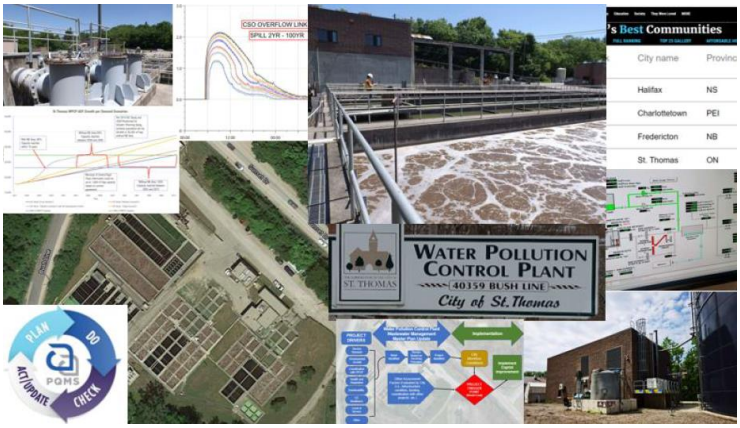
Meeting ID: 279 687 522 451
Passcode: zc6moN
Download Teams | Join on the web

Learn More | Meeting options

Wastewater Services Implementation Plan for the Northeast Employment Lands

Assimilative Capacity Study Terms of Reference

Draft



Prepared for:
The City of St. Thomas

RVA 226304

May 8, 2023

TERMS OF REFERENCE

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APPENDICES

1.0 INTRODUCTION

The City of St Thomas (the City) has a population of 42,840 residents based on the 2021 census. The City, as the upper-tier municipality, holds exclusive municipal authority and responsibility for its wastewater system services, as per Section 11(11) of the Municipal Act, 2001. The City owns, operates, and maintains all aspects of the municipal wastewater system which includes the sewage collection system comprising sewers, forcemains, and 16 sewage pumping stations, a Water Pollution Control Plant (WPCP), SCADA system, and a biosolids management facility.

The projected growth of the City requires it to assess the existing wastewater treatment capability and position itself to meet the future wastewater servicing needs. The anticipated growth is projected to come from seven residential zones with a total area of 592 ha. There is also the North East Employment Lands (NE Employment Lands) with a developable area of approximately 430 ha.

Upon completion of flow projections it was determined that a new plant will be required to manage future wastewater flows.

RVA, on behalf of the City, seeks to determine effluent limits for a new plant and therefore complete an assimilative capacity study (ASC) of Kettle Creek.

This document lays out the terms of reference for the data that will be used for the ACS and any additional sampling that may be required.

2.0 BACKGROUND

2.1 NE Employment Lands Flow Projections

The NE Employment Lands will contain a battery manufacturing facility as well as an industrial subdivision. Flows from the battery manufacturing facility were provided to the City and are presented in **Table 2.1**. Flows from this facility will consists of blowdown water as well and domestic and process wastewater. Any wastewater produced will be treated onsite to meet the limits set out in the City's sewer uses by-law agreement which is provided in Appendix A.

The location of the NE Employment Lands with respect to the City, as well as the current WPCP's service boundary, is shown in **Figure 2.1**.

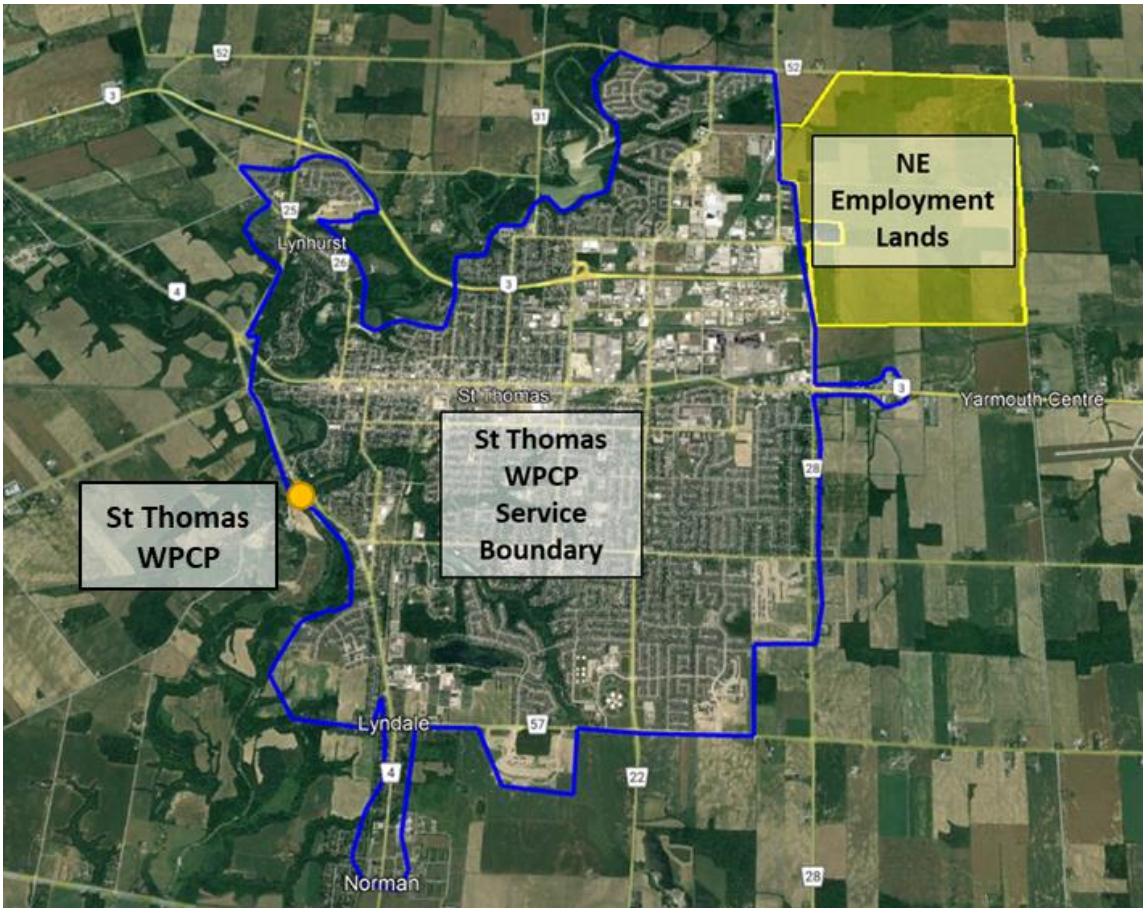


Figure 2.1 –Existing WPCP Service Boundary and the NE Employment Lands

Table 2.1 – Battery Manufacturing Facility Wastewater Parameters

Parameter	Units	Value	Notes
Domestic and Process Wastewater Production	L/s	5.7	Domestic and process wastewater production provided by the City. Process water consists of blowdown water.
Blowdown Production	L/s	28.6	

RVA was provided with the developable areas of the surrounding industrial subdivision which were used to estimate the future buildout flows.

The total buildout average daily flow and peak flow, including flows from the battery manufacturing facility, industrial subdivision and inflow and infiltration (I&I) is provided in Table 2.2.

Table 2.2 – Projected Employment Lands Wastewater Flows

Parameter	Units	Value	Notes
Developable Area	ha	431 ha	Measured from the City's preliminary site plan.
Equivalent Population		36,540	Population calculated based on calculated flows
Ave. Sanitary Flow	L/s	105.7	
Ave. I&I Flow	L/s	15.6	
Process Flow	L/s	28.6	Blowdown from the Battery Manufacturing Facility
Average Daily Flow	**L/s**	**149.9**	
Peak Sanitary Flow	L/s	324.9	Population of individual catchments used to calculate Harmon peaking factor
Peak I&I Flow	L/s	43.1	
Process Flow	L/s	28.6	Blowdown from the Battery Manufacturing Facility
Peak Flow	**L/s**	**396.6**	

2.2 Employment Lands Buildout Schedule

Per discussions with the City, the Battery plant will send first flows in 2026 which will be approximately one third of the values noted in **Table 2.1.** Full production is projected to start in 2027. It is anticipated that the ancillary industry will start developing in parallel with the battery plant with first flows starting in 2026. 5-year and 10-year buildout scenarios have been modeled to predict flow values in the planning horizon and beyond.

2.3 Capacity of the Existing WPCP

Based on discussions with the City and previous work completed as a part of Technical Memo #1 (TM #1 – Future Growth and Flow Projections, RVA, 2022), the following assumptions and information were used to develop wastewater flow projections which consider growth in the NE Employment Area as well as sustained growth throughout St. Thomas:

- Residential growth within the City will continue to occur at a compounded growth rate of 1.26% per year as has occurred historically.
- The City's residential design flow value of 250 L/cap-day is to be used for residential flow projections.
- An adjusted per capita infiltration rate of 0.00075 L/cap-s is to be used for inflow and infiltration (I&) flow projections occurring within the City.

- The NE Employment lands will produce an ultimate average daily buildout flow of 150 L/s, as presented in **Table 2.2** and flows will come online as outlined in Section 2.2.

Flow projections showing the increase in wastewater flow at the WPCP due to population growth in St Thomas as well as the NE Employment lands is shown in **Figure 2.2**.

Industry best practices recommend initiation of WPCPs expansion/upgrades planning at 85% capacity utilization, and upgrades completion at 90% utilization. In the case of a 5-year build-out of the NE lands, 85% capacity of the existing WPCP will be reached by 2026, while with 10-year build-out, it will be reached by 2027. As such there is insufficient residual capacity at the existing WPCP to support the residential and industrial growth within the planning horizon of the next 25 years.

The required total wastewater servicing capacity (collection and treatment) to support the future growth for the next 25 years (to 2048) is approximately 36,000 m^3/d. Assuming this to be the utilizable capacity (85% of total), total capacity requirement will be approximately 42,500 m^3/d or 490 L/s.

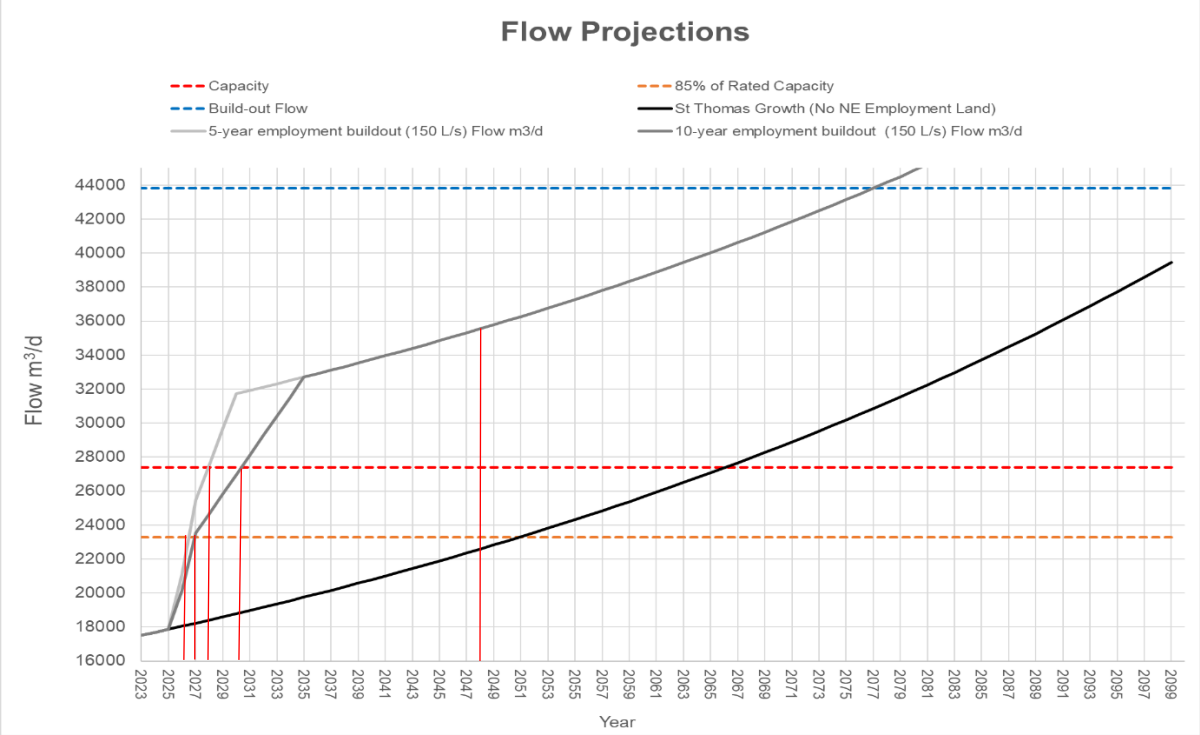


Figure 2.2 –Projected Wastewater Flows: All Flows to Existing WPCP

3.0 PROVISION OF ADDITIONAL CAPACITY

Two options to provide the required additional treatment capacity were considered:

3.1 Upgrading the Existing WPCP

The existing WPCP would be upgraded to a capacity of approximately 490 L/s to manage flows from the NE Employment lands as well as growth within the City. This option was determined to have a number of disadvantages making it unfeasible:

- The WPCP is spatially constrained by Sunset Dr., Bush Ln., and the flood protection berm to the south and east of the plant. There is no space available to add another conventional activated sludge (CAS) treatment train, as is currently used, near the existing facility's footprint especially considering that a ~55% increase in the existing WPCP's capacity (317 L/s) would be required to meet the projected future flows;
- Any new construction would need to be located at the southeastern end of the property, near the location of the original Plant 1, which would make benefiting from common plant infrastructure including the plant's headworks, aeration blowers, and disinfection challenging; and
- Upgrading the plant with an advanced technology, such as a membrane bioreactor (MBR), could provided the required capacity but the above spatial constraints would make adding new buildings and increasing the headworks and disinfection system challenging. In addition, staging construction within the current plant layout to maintain capacity during the upgrade would be very challenging.

3.2 Construction of a New WPCP

A new WPCP, referred to as the NE Employment Lands WPCP (NEWPCP), would be constructed to treat flows from the NE Employment lands as well as any flows that could be feasibly diverted from the existing plant. This option has several notable advantages:

- Construction of a greenfield pant would alleviate spatial constraints and construction staging concerns noted above;
- A second WPCP in the City will provide an overall redundancy and operational flexibility to the wastewater collection and treatment systems;
- Reducing the flows to the existing WPCP would facilitate its refurbishment and renewal giving it additional useful life; and

- Peak flows could be shared between the plants, potentially reducing their magnitude and associated overflows or by-pass events.

Given the magnitude of the capacity increase required, as well as the aforementioned benefits provided, a new plant is recommended.

3.3 Opportunities for Flow Diversion

As the construction of a new plant was determined to be the most feasible alternative, opportunities to divert flows from the existing WPCP were investigated.

In addition, to the benefits noted above in Section 3.2, diverting exiting flows to a new plant would provide a steady flow of residential wastewater to ensure a consistent supply of organics and nutrients as the strength of the battery plant effluent (primarily blowdown water with some domestic sewage) is likely to be inadequate to support a biological wastewater treatment plant on its own. Also, while the buildout of the industrial lands is likely to contribute to the sewage strength, it may take a few years after the battery plant commissioning to do so.

Several areas were identified that have the potential to be diverted, contingent on the final location of the NEWPCP which are shown in red in **Figure 3.1**. The sum of the future average daily flows of these areas was estimated to be 140 L/s.

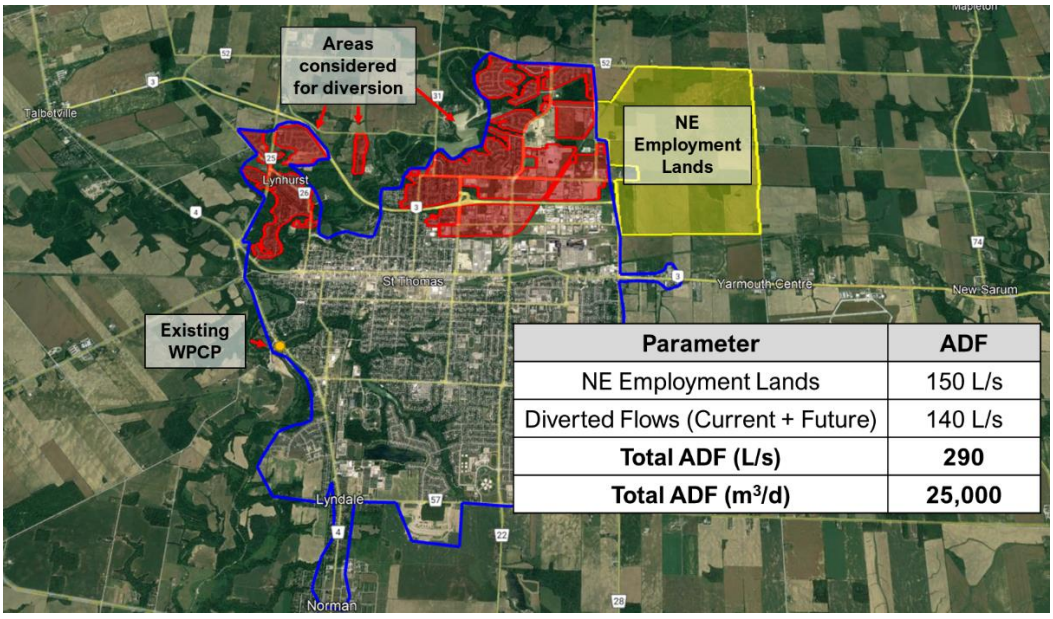


Figure 3.1 –Potential Areas to be Treated by the NEWPCP

3.4 Required Plant Capacity

A conservative capacity which could be required by the NEWPCP and includes all areas for diversion and connection discussed above was estimated to be 290 L/s (refer to Table 3.1).

Table 3.1 – Required Plant Capacity

Area	ADF (L/s)
NE Employment Lands	150
Woodworth Ave SPS. Diversion	140
Total	290

4.0 ASSIMALATIVE CAPACITY STUDY

An ACS will be completed to determine effluent criteria which will be protective to receiver and the natural environment. The outfall of the NEWPCP is expected to discharge into Kettle Creek, upstream of the existing WPCP's outfall.

4.1 Available Data:

4.1.1 Flow measurement

Three Water Survey of Canada (WSC) stream gauges relevant to this study are located on Kettle Creek as well as Dodd Creek, a major tributary to Kettle Creek:

Kettle Above St. Thomas (WSC 02GC029): located on Ferguson Line where it crosses Kettle Creek

- Flow data is available from 1985 to the present while level data is available from 2002 to the present.

Kettle At St. Thomas (WSC 02GC002): located on Fingal Line where it crosses Kettle Creek

- Flow data is available from 1968 to the present while level data is available from 2002 to the present.

Dodd Creek Below Payne's Mills (WSC 02GC031): located on Lyle Road where it crosses Dodd Creek

- Flow data is available from 1987 to the present while level data is available from 2002 to the present.

4.1.2 Water Quality

The Kettle Creek Conservation Authority (KCCA) collects water quality data at three locations relevant to this study. Key contaminants including phosphorus and nitrogen as well as receiver conditions such as pH and dissolved oxygen are available as well as many other parameters. The specific parameters measured, along with sampling frequency at each site is indicated below:

Station #7 – Lower Kettle Creek: Located south of the Sunset Dr., Talbot St. and Wellington Rd. roundabout where Sunset drive crosses Kettle Creek. Former PWQMN Site 16008701602.

- Monthly data (available from April to October and some in November), 2016 – 2022. Limited data available in 2020 due to the COVID-19 pandemic.

Station #4 – Downstream of Dalewood Reservoir: Located east of Dalewood road.

- Monthly data (available from April to October and some in November), 2016 – 2022. Limited data available in 2020 due to the COVID-19 pandemic.

Ron McNeil Line - Provincial Water Quality Monitoring Station 16008701502: Located where Ron McNeil Line crosses Kettle Creek.

- Monthly data (available from April to October and some in November), 2016 – 2022. Limited data available in 2020 due to the COVID-19 pandemic.
- Older data on select parameters is available from the Province of Ontario

Parameters available at each sampling location are detailed in Table 4.1 through Table 4.4 and are indicted to be a complete data set (C) in which essential all sampling occurrence include the respective parameter or partial (P) in which only some sampling occurrence include the respective parameter.

Table 4.1 – Available Historical Inorganic Parameters

Parameter – Inorganics	Units	Station #7	Station #4	Ron McNeil Line
Total Suspended Solids	mg/L	C	C	C
Total Dissolved Solids	mg/L	C	C	-
Chloride (Cl)	mg/L	C	C	C
Nitrate (N)	mg/L	C	C	-
Nitrite (N)	mg/L	C	C	C
Nitrate + Nitrite	mg/L	C	C	C
Dissolved Orthophosphate (P)	mg/L	C	C	C
Total Phosphorus	mg/L	C	C	C

Parameter – Inorganics	Units	Station #7	Station #4	Ron McNeil Line
Total Nitrogen	mg/L	-	-	C
Total Ammonia-N	mg/L	C	C	C
Total Kjeldahl Nitrogen (TKN)	mg/L	C	C	-
Conductivity	umho/cm	-	-	C
pH	pH	-	-	C
Hardness (CaCO3)	mg/L	-	-	C
Total Alkalinity (Total as CaCO3)	mg/L	-	-	C

Table 4.2 – Available Historical Metal Parameters

Parameter – Metals	Units	Station #7	Station #4	Ron McNeil Line
Total Aluminum (Al)	mg/L	C	C	C
Total Antimony (Sb)	mg/L	C	C	-
Total Arsenic (As)	mg/L	C	C	-
Total Barium (Ba)	mg/L	C	C	C
Total Beryllium (Be)	mg/L	C	C	C
Total Bismuth (Bi)	mg/L	C	C	C
Total Boron (B)	mg/L	C	C	-
Total Cadmium (Cd)	mg/L	C	C	C
Total Calcium (Ca)	mg/L	C	C	C
Total Chromium (Cr)	mg/L	C	C	C
Total Cobalt (Co)	mg/L	C	C	C
Total Copper (Cu)	mg/L	C	C	C
Total Iron (Fe)	mg/L	C	C	C
Total Lead (Pb)	mg/L	C	C	C
Total Lithium (Li)	mg/L	C	C	C
Total Magnesium (Mg)	mg/L	C	C	C
Total Manganese (Mn)	mg/L	C	C	C
Total Molybdenum (Mo)	mg/L	C	C	C
Total Nickel (Ni)	mg/L	C	C	C
Total Potassium (K)	mg/L	C	C	C
Total Selenium (Se)	mg/L	C	C	-
Total Silicon (Si)	mg/L	C	C	-
Total Silver (Ag)	mg/L	C	C	C
Total Sodium (Na)	mg/L	C	C	C
Total Strontium (Sr)	mg/L	C	C	C
Total Tellurium	mg/L	C	C	-
Total Thallium (Tl)	mg/L	C	C	-
Total Thorium (Th)	mg/L	-	-	-
Total Tin (Sn)	mg/L	C	C	C
Total Titanium (Ti)	mg/L	C	C	C

Parameter – Metals	Units	Station #7	Station #4	Ron McNeil Line
Total Tungsten (W)	mg/L	C	C	-
Total Uranium (U)	mg/L	C	C	C
Total Vanadium (V)	mg/L	C	C	C
Total Zinc (Zn)	mg/L	C	C	C
Total Zirconium (Zr)	mg/L	C	C	C

Table 4.3 – Available Historical Field Measurement Parameters

Parameter – Metals	Units	Station #7	Station #4	Ron McNeil Line
Conductivity	µs/cm	C	C	C
Water Temperature	ºC	C	C	C
Dissolved Oxygen	mg/L	C	C	C
Dissolved Oxygen	%	C	P	-
pH	N/A	C	C	C
Turbidity	NTU / FNU	C	C	C

Table 4.4 – Available Historical Microbiological Parameters

Parameter – Metals	Units	Station #7	Station #4	Ron McNeil Line
Background	CFU/100mL	P	P	C
Coliform	CFU/100mL	C	C	C
Escherichia coli	CFU/100mL	C	C	C

4.2 Expected Contaminants of Concern

It is expected that effluent from the battery manufacturing facility, as well as businesses in the surrounding industrial subdivision could produce wastewater which could contain heavy metals. Any wastewater produced will be treated onsite to meet the limits set out in the City's sewer uses by-law (SUBL) agreement which include limits for a variety of metals. The SUBL limits for relevant contaminants in the battery plant effluent will be reviewed from a viewpoint of protection of the existing and new WPCPs, and adjustments needed if any to the SUBL limits for any specific contaminants will be made as needed.

The existing water quality data set for the receiver contains a comprehensive range of metals, including heavy metals, which will provide further input in this assessment and will be used to assess the level of treatment required at different steps (at the Battery plant and WPCPs) for protection of the receiver.

4.3 Supplemental Sampling

Based on a pre-consultation meeting held between RVA, the Ministry of Environment Conservation and Parks (MECP) and the City it is understood that the existing data set is sufficient to conduct an ACS.

If additional contaminants of concerns arise as more information regarding the future battery manufacturing plant becomes known, a short duration sampling campaign over the course of 1-2 weeks will be developed to quantify background levels of the indicated contaminants of concern.

APPENDIX 1

City of St Thomas Sewer Use By-Law

CITY OF ST. THOMAS

BY-LAW NO. 205-91

A BY-LAW

TO CONTROL

WASTE DISCHARGES

TO

MUNICIPAL SEWERS

TABLE OF CONTENTS

CITY OF ST. THOMAS

BY-LAW NO. 205-91

A by-law to prohibit and regulate the discharge of sewage, drainage, storm water and industrial waste into the municipal storm and sanitary sewer system and open watercourses.

WHEREAS it is expedient to prohibit and regulate the discharge of sewage including drainage, storm water, industrial wastes and sanitary sewage into the municipal sewerage system pursuant to paragraph 147 of Section 210 of the Municipal Act, Revised Statutes of Ontario, 1980, Chapter 302.

NOW THEREFORE THE COUNCIL of the CORPORATION

OF THE CITY OF ST. THOMAS ENACTS AS FOLLOWS:

SECTION 1

DEFINITIONS

1. In this by-law:

(a) "acute hazardous waste chemical" means a material which is an acute hazardous waste chemical within the meaning of Ontario Regulation 309 made under the Environmental Protection Act (Ontario);

(b) "authorized representative of the owner or operator" means
(i) A principal executive officer of at least the level of vice president, if the owner or operator is a corporation; or
(ii) A general partner or proprietor if the owner or operator is a partnership or proprietorship, respectively; or
(iii) A duly authorized representative of the individual designated above is such representative is responsible for the overall operation of the facilities from which the sewage discharge originates;

(c) "biochemical oxygen demand" means carbonaceous oxygen demand (biochemical) as determined by Method 507 in Standard Methods when an inhibiting chemical has been added to prevent ammonia oxidation;

(d) "blowdown" means the discharge of recirculating non-contact cooling water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentrations in amounts exceeding limits established by best engineering practices;

(e) "combined sewer" means a sewer intended to function simultaneously as a storm sewer and a sanitary sewer;

(f) "commercial waste chemical" means a material which is a commercial waste chemical within the meaning of Ontario Regulation 309 made under the Environmental Protection Act (Ontario);

(g) "composite sample" means a sample which is composed of a series of grab samples taken at intervals during the sampling period;

(h) "cyanide (total)" means cyanide as determined by Methods 412B plus one of Method 412C or 412D in Standard Methods;

(i) "de minimis dose" means a dose of radiation to an individual of .05 millisieverts per year;

(j) "de minimis waste" means any waste radioactive material that will not result in a dose of radiation exceeding the de minimis does regardless of the quantity of the material or how it is used or managed;

(k) "fuels" includes (i) any ignitable liquid intended for use as a fuel with a flash point less than 61° Celsius as determined by one of the methods in Ontario Regulation 309 made under the Environmental Protection Act (Ontario) and (ii) gasoline, naptha, diesel fuel or fuel oil;

(l) "grab sample" is an aliquot of the flow being sampled taken at one particular time and place;

(m) "hauled sewage" means waste removed from a cesspool, a septic tank system, a privy vault or privy pit, a chemical toilet, a portable toilet, a sewage system of a type regulated under Part VII of the Environmental Protection Act (Ontario);

(n) "hazardous industrial waste" means a material which is a hazardous industrial waste within the meaning of Ontario Regulation 309 made under the Environmental Protection Act (Ontario);

(o) "hazardous waste chemical" means a material which is a hazardous waste chemical within the meaning of Ontario Regulation 309 made under the Environmental Protection Act (Ontario);

(p) "ignitable waste" means a material which is an ignitable waste within the meaning of Ontario Regulation 309 made under the Environmental Protection Act (Ontario);

(q) "industrial" shall mean of or pertaining to industry, manufacturing, commerce, trade, business, or institutions as distinguished from domestic or residential;

(r) "industrial process area" means any industrial building, property or land area which during manufacturing, processing or storage comes into direct contact with any raw material, intermediate product, finished product, byproduct, or waste product;

(s) "Kjeldahl Nitrogen" means organic nitrogen as determined by one of Method 420A or 420B in Standard Methods;

(t) "matter" includes any solid, liquid or gas;

(u) "municipality" means The Corporation of the **CITY** of **ST. THOMAS** or its designated representative;

(v) "non-contact cooling water" means water which is used to reduce temperature for the purpose of cooling and which does not come into direct contact with any raw material, intermediate product other than heat, or finished product;

(w) "once-through cooling water" means non-contact cooling water that has been circulated once through the cooling device;

(x) "owner" or "operator" means the owner or operator of any facility or activity subject to the provisions of this by-law;

(y) "pathological waste" means a material which is a pathological waste within the meaning of Ontario Regulation 309 made under the Environmental Protection Act (Ontario) or any material which may be designated in writing by the Chief Medical Officer of Health (Ontario);

(z) "PCB" means any monochlorinated or poly-chlorinated biphenyl or any mixture of these or mixture that contains one or more of them;

(aa) "PCB waste" means a PCB waste within the meaning of Ontario Regulation 148/86 made under the Environmental Protection Act (Ontario);

(bb) "person" includes an individual, association, partnership, corporation, municipality, Provincial or Federal agency, or an agent or employee thereof;

(cc) "pesticides" means a pesticide regulated under the Pesticides Act (Ontario);

(dd) "pH" means the logarithm to the base 10 of the reciprocal of the concentration of hydrogen ions in moles per litre of solution;

(ee) "phenolic compounds" means those derivatives of aromatic hydrocarbons which have a hydroxyl group directly attached to the ring as determined by one Method 510B or 510C in Standard Methods;

(ff) "phosphorus" means total phosphorus as determined by both Method 424C plus one of method 424D, 424E, 424F, or 424G in Standard Methods;

(gg) "reactive waste" means a material which is a reactive waste within the meaning of Ontario Regulation 309 made under the Environmental Protection Act (Ontario);

(hh) "sanitary sewer" means a sewer for the collection and transmission of domestic, commercial, institutional and industrial sewage or any combination thereof;

(ii) "severely toxic material" means any material listed in Schedule 3 of Ontario Regulation 309 made under the Environmental Protection Act (Ontario);

(jj) "sewage" means any liquid waste containing animal, vegetable or mineral matter in solution or in suspension, except uncontaminated water;

(kk) "sewage works" means any works for the collection, transmission, treatment or disposal of sewage, or any part of such works;

(ll) "SIC code" means Standard Industrial Classification Code contained in either the Standard Industrial Classification Manual published by the Minister of Supply and Services Canada, 1980 (Canadian SIC) or the Standard Industrial Classification Manual published by the Executive Office of the President, Office of Management and Budget, 1972 (U.S. SIC);

(mm) "solvent extractable matter of animal or vegetable origin" means grease and oil as determined by Methods 503A, 503B, 503C, or 503D in Standard Methods;

(nn) "solvent extractable matter of mineral or synthetic origin" means grease and oil as determined by Method 503E in Standard Methods;

(oo) "Standard Methods" means a procedure set out in Standard Methods for the Examination of Water and Wastewater published jointly by the American Public Health Association, American Water Works Association and Water Pollution Control Federation, current at the date of testing, or a procedure published by the Ontario Ministry of the Environment as a standard method or the equivalent of a standard method;

(pp) "storm sewer" means a sewer for the collection and transmission of uncontaminated water, stormwater, drainage from land or from a watercourse or any combination thereof;

(qq) "stormwater" means water from rainfall or other natural precipitation or from the melting of snow or ice;

(rr) "suspended solids" means solid matter in or on a liquid which matter is removable by filtering and dried at 103-105°C as determined by Method 209C in Standard Methods;

(ss) "uncontaminated water" means water to which no matter has been added as a consequence of its use, or to modify its use, by any person;

(tt) "waste disposal site leachate" means leachate from any waste disposal site; and

(uu) "waste radioactive materials" means any waste material exhibiting the property of spontaneous disintegration of atomic nuclei usually with the emission of penetrating radiation or particles.

SECTION 2

DISCHARGES TO SANITARY SEWERS

DISCHARGES TO COMBINED SEWERS

2(1) No person shall discharge or deposit or cause or permit the discharge or deposit of matter of a kind listed below into or in land drainage works, private branch drains or connections to any sanitary sewer or combined sewer:

1. matter of any type or at any temperature or in any quantity which may be or may become a health or safety hazard to a sewage works employee, or which may be or may become harmful to a sewage works, or which may cause the sewage works effluent to contravene any requirement by or under the Ontario Water Resources Act or the Environmental Protection Act (Ontario), or which may cause the sludge from sewage works to fail to meet the criteria relating to contaminants for spreading the sludge on agricultural lands under Ontario's Guidelines for Sewage Sludge Utilization on Agricultural Lands (as revised January, 1986) unless the person has been advised in writing by the operator of the sewage treatment works that the sludge from the sewage treatment works will never be used on agricultural lands, or which may interfere with the proper operation of a sewage works, or which amy impair or interfere with any sewage treatment process, or which is or may result in a hazard to any person, animal, property or vegetation and;

2. without limiting the generality of the foregoing, any of the following:

   (a) Solid or viscous substances in quantities or of such size as to be capable of causing obstruction to the flow in a sewer, including but not limited to ashes, bones, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, underground garbage, animal guts or tissues, paunch manure, and whole blood.

   (b) Sewage that may cause an offensive odour to emanate from a sewage works, and without limiting the generality of the foregoing, sewage containing hydrogen sulphide, carbon disulphide, other reduced sulphur compounds, amine or ammonia in such quantity that may cause an offensive odour.

   (c) Except in the case of discharge into a combined sewer, stormwater, water from drainage of roofs or land, water from a watercourse or uncontaminated water or water from weeping tile and foundation drains.

   (d) Water other than stormwater that has originated from a source separate from the water distribution of the municipality.

   (e) Sewage or uncontaminated water at a temperature greater than 65 degrees Celsius.

   (f) Sewage having a pH less than 5.5 or greater than 9.5.

   (g) Sewage containing more than 15 milligrams per litre of solvent extractable matter of mineral or synthetic origin.

   (h) Sewage containing more than 150 milligrams per litre of solvent extractable matter of animal or vegetable origin.

   (i) Sewage in which the biochemical oxygen demand exceeds 300 milligrams per litre.

   (j) Sewage containing more than 350 milligrams per litre of suspended solids.

   (k) Sewage containing more than 10 milligrams per litre of phosphorus.

   (l) Sewage containing more than 100 milligrams per litre of Kjeldahl nitrogen.

   (m) Sewage containing more than 1 milligram per litre of phenolic compounds.

   (n) Sewage which consists of two or more separate liquid layers.

(o) Sewage containing dyes or colouring materials which pass through a sewage works and discolour the sewage works effluent.

(p) Sewage containing any of the following in excess of the indicated concentrations:

1500 milligrams/litre

Chlorides expressed as Cl
Sulphates expressed as SO_4

50 milligrams/litre

Aluminum expressed as Al
Iron expressed as Fe

10 milligrams/litre

Fluorides expressed as F

5 milligrams/litre

Antimony expressed as Sb
Bismuth expressed as Bi
Chromium expressed as Cr
Cobalt expressed as Co
Lead expressed as Pb
Manganese expressed as Mn
Molybdenum expressed as Mo
Selenium expressed as Se
Silver expressed as Ag
Tin expressed as Sn
Titanium expressed as Ti
Vanadium expressed as V

3 milligrams/litre

Copper expressed as Cu
Nickel expressed as Ni
Zinc expressed as Zn

2 milligrams/litre

Cyanide (total) expressed as CN

1 milligram/litre

Arsenic expressed as As
Cadmium expressed as Cd

0.1 milligrams/litre

Mercury expressed at Hg

(q) The following materials or sewage containing any of the following in any amount:

Fuels
PCBs
Pesticides
Severely Toxic Materials
Waste Radioactive Materials

(r) The following materials or sewage containing any of the following in any amount;

Hauled Sewage
Waste Disposal Site Leachate

(s) The following hazardous wastes in any amount;

Acute Hazardous Waste Chemicals
Hazardous Industrial Wastes
Hazardous Waste Chemicals
Ignitable Wastes
Pathological Wastes
PCB Wastes
Reactive Wastes

(2) In determining whether the limit with respect to any matter prescribed in subsection 2(1) is contravened, the volume of any water that has been added for the purpose of enabling the limit to be met and of any storm sewer discharges to a combined sewer shall be disregarded for the purposes of calculating whether the limit has been met so that compliance with the limit cannot be attained by dilution.

(3) Subclauses 2(1) 2.(b) and 2(1) 2.(s) do not apply to prevent the discharge of human waste.

(4) Subclause 2(1) 2.(d) does not apply to prevent the discharge of:

(a) Water taken in an amount greater than 50,000 litres per day from a separate source when the owner or operator of the premises has a Permit To Take Water issued by the Ontario Ministry of the Environment and a copy of such permit has been provided to the municipality, or

(b) Water taken in an amount less than 50,000 litres per day from a separate source when the owner or operator of the premises has provided the municipality with the following information:

(i) Address of premises where the water is being used;
(ii) Location of the water source; and
(iii) Amount of water being taken.

(5) Subclause 2(1) 2.(q) does not apply to prevent the discharge of waste radioactive materials where they are being discharged in accordance with a licence from the Atomic Energy Control Board and a copy of the licence has been provided to the municipality or to the discharge of de minimis waste.

(6) Subclause 2(1) 2.(q) does not apply to prevent the discharge of PBCs when,

(a) the owner or operator of the premises has a certificate of approval relating to the premises from the Ontario Ministry of the Environment which expressly allows the discharge or written approval from the Director of the Ontario Ministry of Environment which expressly authorizes the discharge from the premises;

(b) the owner or operator of the premises has written approval from the municipality which expressly authorizes the discharge from the premises;

(c) the discharge contains a concentration of less than 5 micrograms per litre of PCBs; and

d) a copy of the certificate of approval or written authorization referred to in clause (a) has been provided to the municipality.

(7) Subclause 2(1) 2.(r) does not apply to prevent the discharge of waste disposal site leachate when,

(a) the waste disposal site leachate is being discharged pursuant to a certificate of approval or order relating to the premises under the Environmental Protection Act (Ontario) or the Ontario Water Resources Act which expressly allows the discharge;

(b) the owner or operator of the premises has written approval from the municipality which expressly authorizes the discharge from the premises; and discharge from the premises; and

(c) a copy of the certificate of approval or written authorization referred to in clause (a) has been provided to the municipality.

(8) Subclause 2(1) 2.(r) does not apply to prevent the discharge of hauled sewage when,

(a) the carrier of the hauled sewage is a waste transportation system operating under a licence issued under Part VII of the Environmental Protection Act (Ontario);

(b) the carrier has written approval from the municipality which includes a specified time and location for the discharge; and

(c) the discharge occurs at the approved time and location.

(9) Subclause 2(1) 2.(s) does not apply to prevent the discharge of pathological waste that has been decontaminated prior to discharge when,

(a) the owner or operator of the premises has a certificate of approval from the Ontario Ministry of the Environment which expressly allows the discharge or written approval from the Director of the Ontario Ministry of the Environment which expressly authorizes the discharge from the premises;

(b) the owner or operator of the premises has written approval from the municipality which expressly authorizes the discharge from the premises; and;

(c) a copy of the certificate of approval or written authorization referred to in clause (a) has been provided to the municipality.

SECTION 3

DISCHARGES TO STORM SEWERS

3(1) No person shall discharge or deposit or cause or permit the discharge or deposit of matter of a kind listed below into or in land drainage works, private branch drains or connections to any storm sewer,

1. matter of any type or at any temperature or in any quantity which may:

(a) interference with the proper operation of a storm sewer;

(b) obstruct a storm sewer or the flow therein;

(c) result in a hazard to any person, animal, property or vegetation;

(d) impair the quality of the water in any well, lake, silver, pond, spring, stream, reservoir or other water or watercourse; or

(e) result in the contravention of an approval, requirement, direction or other order under the Ontario Water Resources Act or the Environmental Protection Act (Ontario) with respect to the storm sewer or its discharge; and

2. without limiting the generality of the foregoing, any of the following;

(a) water at a temperature greater than 40 degrees Celsius;

(b) water having a pH less than 6.0 or greater than 9.0;

(c) water containing more than 15 milligrams per litre of suspended solids;

(d) water containing dyes or colouring material which discolour the water;

(e) water containing solvent extractable matter or animal or vegetable origin or of mineral or synthetic origin which causes a visible film, sheen or discolouration on the water surface;

(f) water containing any of the following in excess of the indicated concentrations:

200 micrograms/litre

Chromium expressed as Cr

50 micrograms/litre

Zinc expressed in Zn
Lead expressed as Pb
Nickel expressed as Ni

10 microgram/litre

Copper expressed as Cu

1 microgram/litre

Cadmium expressed as Cd
Mercury expressed as Hg

200 per 100 millilitres

Fecal coliforms

(g) the following matter in any amount:

Sewage
Once-through cooling water
Blowdown

(h) the following materials in any amount:

Automotive or Machine Oils and Greases
Fuels
Paints and Organic Solvents
PCBs
Pesticides
Severely Toxic Materials
Waste Disposal Site Leachate
Waste Radioactive Materials

(i) the following hazardous wastes in any amount:

Acute Hazardous Waste Chemicals
Hazardous Industrial Wastes
Hazardous Waste Chemicals
Ignitable Wastes
Pathological Wastes
PCB Wastes
Reactive Wastes

3(2) Subclause 3(1) 2.(g) does not apply to prevent the discharge of once-through cooling water or blowdown when,

(a) the once-through cooling water or blowdown is being discharged pursuant to a certificate of approval or order relating to the premises under the Environmental Protection Act (Ontario) or the Ontario Water Resource Act which expressly allows the discharge.

(b) the owner or operator of the premises has written approval from the municipality which expressly authorizes the discharge from the premises; and

(c) a copy of the certificate of approval or order referred to in clause (a) has been provided to the municipality.

3(3) The provisions of Clause 3(1) 2. apply only to (1) the discharge of stormwater runoff from industrial process areas to a storm sewer, and (2) to any stormwater discharge to a storm sewer to which the matter prohibited by subsection 1 has been added for the purpose of disposing of the matter.

3(4) The provision of Subclauses 3(1) 2.(c), (d), (e), and (f) do not apply to prevent the discharge of stormwater runoff from industrial process areas to a storm sewer when,

(a) the owner or operator of the premises has a certificate of approval or order relating to the premises under the Environmental Protection Act (Ontario) or the Ontario Water Resources Act which expressly allows the discharge and a copy of the certificate of approval or order has been provided to the municipality; or

(b) the owner or operator of the premises has written approval from the municipality for a Best Management Practices Plan (BMP) which has been prepared in accordance with Schedule A.

SECTION 4

REPORTS

4(1) Notwithstanding sections 2 and 3, the owner or operator of any industrial premises or class of industrial premises listed in Schedule B shall not discharge or deposit or cause or permit the discharge or deposit of sewage into or in land drainage works, private branch drains or connections to any sanitary sewer, combined sewer or storm sewer, after the 1 day of Jan. 1992.

4(2) Subsection (1) does not apply with respect to any industrial premises for which a current Waste Survey Report prepared in accordance with Subsections (3) and (4) has been filed at the municipality.

4(3) The Waste Survey Report shall contain the following information and shall be signed by an authorized representative of the owner or operator:

(a) name and address of the premises, and names of its owner and operator;

(b) description of process operations, including waste discharge rates and contaminant concentrations, hours of operation, and Canadian or U.S. Standard Industrial Classification codes;

(c) a schematic process diagram indicating waste discharge points and wastes descriptions;

(d) the generator registration number, if any, assigned with respect to the premises under Ontario Regulation 309 made under the Environmental Protection Act (Ontario); and

(e) the waste class, hazardous waste number, primary and secondary characteristics and analytical data and the name of the laboratory, if any, furnished to the Ontario Ministry of the Environment under Ontario Regulation 309 made under the Environmental Protection Act (Ontario) relating to any material discharged into or in land drainage works, private branch drains or connections to any sanitary, combined or storm sewer.

4(4) The Waste Survey report shall be in the form attached as Schedule 'C'.

4(5) Where a change occurs in the information required under Clause (3) (a) contained in a Waste Survey Report, the owner or operator of the premises shall submit the new information within 30 days of the change.

4(6) Where a change occurs in any information required under Clauses (3)(b),(c),(d), or (e) described in a Waste Survey Report, the owner or operator of the premises shall not discharge or deposit or cause or permit the discharge or deposit of sewage into or in land drainage works, private branch drains or connections to any sanitary sewer, combined sewer or storm sewer, after 60 days after the change occurs unless a new Waste Survey Report has been submitted setting out the change.

SECTION 5

COMPLIANCE PROGRAM

5(1) A compliance program may be issued as set out in subsections (2) to (6) and (9) for the discharge of a non-complying effluent during the period of planning, design, construction or installation of facilities to eliminate the non-compliance.

5(2) The owner or operator of industrial premises may submit to the municipality a program to prevent or to reduce and control the discharge or deposit of sewage into or in land drainage works, private branch drains or connections to any sanitary sewer or combined sewer from premises.

5(3) The owner or operator of industrial premises may submit to the municipality a program to prevent or to reduce and control the discharge or deposit of uncontaminated water or stormwater or eliminate the discharge or deposit of sewage into or in land drainage works, private branch drains or connections to any storm sewer from the premises.

5(4) The municipality may issue an approval for a compliance program to the person who submitted the program.

5(5) Every compliance program shall be for a specified length of time during which the facilities are to be installed and shall be specific as to the remedial actions to be implemented, the dates of commencement and completion, and the materials or other characteristics of the sewage, uncontaminated water or stormwater to which it relates. The final activity completion date shall not be later than the final compliance date in the compliance program.

5(6) The compliance program shall be in the form attached as Schedule D and, upon recommendation of the Industrial Waste Water Inspector, the Director of Public Works and Engineering is authorized to execute such compliance programs under the authority of this by-law.

5(7) A person to whom a compliance program has been issued shall submit a compliance program progress report within 14 days after the scheduled completion date for each activity listed in the compliance program.

5(8) The compliance program progress report shall be in the form attached as Schedule E.

5(9) Where the operating authority for the sewage treatment plant, land drainage works, or storm sewer which is receiving sewage, uncontaminated water or stormwater from the premises identified in the letter of compliance program is not the municipality, the compliance program does not become effective unless the operating authority has reviewed and approved the compliance program.

5(10) A person to whom a compliance program has been issued shall not be prosecuted under section 2 or 3 of this by-law for the discharge or deposit of sewage, uncontaminated water or stormwater containing the matters specified in the compliance program and in compliance with the compliance program during the period within which the compliance program is applicable and so long as the compliance program is being fully complied with.

SECTION 5.1

EXTRA STRENGTH SEWAGE SURCHARGE AGREEMENT

5.1(1) The Municipality may authorize an extra strength sewage surcharge agreement to a discharger with a total flow of not more than 1,000 m^3 per month, to permit exceedances for any one or more of the following parameters referred to in Section 2(1)2 for the following, where sewage is discharged to a sanitary sewer or combined sewer:

(a) Biochemical Oxygen Demand;
(b) Phenolics;
(c) Solvent Extractables - animal or vegetable in origin;
(d) Kjeldahl Nitrogen, Total;
(e) Phosphorus, Total;
(f) Suspended Solids, Total.

5.1(2) **The agreement may contain terms and conditions including terms and conditions related to the calculation and payment for the discharge to the sanitary sewer or combined sewer.**

5.1(3) **During the term of the agreement, the discharger is exempt from meeting the limits set out in Section 2(1)2, for the parameter(s) included in the agreement, if all conditions stipulated by the Municipality in the agreement are met.**

5.1(4) **Notwithstanding the conditions in Section 4(5), where a discharger has entered into an extra strength sewage surcharge agreement, any change in the information required in Section 4 must be submitted to the Municipality prior to the change to allow sufficient assessment of the impact of the change on the agreement.**

5.1(5) **The Municipality may terminate the agreement at any time if the sewage discharges fail to comply with any requirements or conditions as outlined in the extra strength sewage surcharge agreement and the termination will be effective within 30 days of the delivery of a written notice sent by registered mail to the discharger's site or head office.**

SECTION 6

SAMPLING AND ANALYSIS

6(1) Where a sample is required for the purpose of determining the characteristics or contents of the sewage, uncontaminated water or stormwater to which reference is made in the by-law;

(a) one sample alone is sufficient and, without limiting the generality of the foregoing the sample may be a grab sample or a composite sample, may contain additives for its preservation and may be collected manually or by using an automatic sampling device;

(b) except as otherwise specifically provided in this by-law, all tests, measurements, analyses and examinations of sewage, uncontaminated water and stormwater, shall be carried out in accordance with Standard Methods; and

(c) for each one of the following metals: aluminum, antimony, arsenic, bismuth, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, tin, titanium, vanadium and zinc whose concentration is limited in Subclauses 2(1) 2.(p) and 3(1) 2.(f), the analysis shall be for the quantity of total metal, which includes all metal both dissolved and particulate.

SECTION 7

SPILLS

7(1) Every person who discharges or deposits or causes or permits the discharge or deposit of sewage into or in land drainage works, private branch drains or connections to any sanitary sewer or combined sewer shall, if such discharge or deposit is not in the ordinary course of events forthwith notify the municipality or the agency responsible for operating the sewage works receiving the discharge or deposit.

7(2) Every person who discharges or deposits or causes or permits the discharge or deposit of uncontaminated water or softwater into or in land drainage works, private branch drains or connections to any storm sewer shall, if such discharge or deposit is not in the ordinary course of events forthwith notify the municipality or agency responsible for managing the land drainage works or storm sewer.

7(3) Every person who discharges or deposits or causes or permits the discharge or deposit of any of the items listed in subclauses 2(1) 2.(q) and (s) into or in land drainage works, private branch drains or connections to any sanitary sewer or combined sewer shall, forthwith notify the municipality or the agency responsible for operating the sewage works receiving the discharge or deposit.

7(4) Every person who discharges or deposits or causes or permits the discharge or deposit of any of the items listed in subclauses 3(1) 2.(h) and (i) into or in land drainage works, private branch drains or connections to any storm sewer shall forthwith notify the municipality or agency responsible for managing the land drainage works or storm sewer.

7(5) For any of the discharges in subsections 7(1), (2), (3) and (4) for which the person is required to forthwith notify the municipality or agency, the notification shall include the following information:

(a) name of the company and the address of location of spill;
(b) name of person reporting the spill and telephone number where that person can be reached;
(c) time of the spill;
(d) type and volume of material discharged and any associated hazards; and
(e) corrective actions being taken to control the spill.

7(6) Within five days following a discharge to which subsection (5) applies, the person shall submit to the municipality or agency a detailed written report describing the cause of the spill and the actions taken or to be taken to prevent a recurrence.

SECTION 8

GENERAL

8(1) The owner or operator of industrial premises with one or more connections to a sewage works shall install and maintain in good repair in each connection a suitable manhole to allow observation and sampling of the sewage and measurement of the flow of sewage therein, provided that where installation of a manhole is not possible, an alternative device or facility may be substituted with the written approval of the Director of Public Works and Engineering of the municipality.

8(2) The manhole or alternate device shall be located on the property of the owner or operator of the premises, unless the Director of Public Works and Engineering of the municipality has given written approval for a different location.

8(3) Every manhole, device or facility installed as required by subsection (2) shall be designed and constructed in accordance with good engineering practice and the requirements of the municipality, and shall be constructed and maintained by the owner or operator of the premises at his expense.

8(4) The owner or operator of industrial premises shall at all times ensure that every manhole, device or facility installed as required by subsection (2) is at all times accessible for purposes of observing and sampling the sewage and measuring the flow of sewage therein.

8(5) The municipality may require the owner or operator of industrial premises to install and maintain devices to monitor sewage discharges and to submit regular reports regarding the discharges to the municipality.

8(6) For the purpose of the administration of this by-law, a person appointed by council for the purpose may, upon production of his identification, enter any industrial premises, to observe, to measure the flow of sewage to any sewer and to collect any samples required.

8(7) No person shall break, damage, destroy, deface or tamper or cause or permit the breaking, damaging, destroying, defacing or tampering with:

(a) any part of a sewage works; or

(b) any permanent or temporary device installed in a sewage works for the purpose of measuring, sampling and testing of sewage.

8(8) The compliance program contemplated by Section 5 may be terminated by the municipality on 30 days written notice if the discharge of sewage covered by such agreement or compliance program is causing contravention of Clauses 2(1)1. and 3(1)1. of the by-law.

8(9) The compliance program contemplated by Section 5 may be terminated by the municipality by written notice at any time where there is an emergency situation of immediate threat or danger to any person, property, plant or animal life, or waters.

SECTION 9

OFFENCES

9(1) Every person other than a corporation who contravenes any provision of this by-law is guilty of an offence and on conviction is liable for every day or part thereof upon which such offence occurs or continues to a fine of not more than $10,000 for a first offence and $25,000 for any subsequent conviction.

9(2) Every corporation which contravenes any provision of this by-law is guilty of an offence and on conviction is liable for every day or part thereof upon which such offence occurs or continues to a fine of not more than $50,000 for a first offence and $100,000 for any subsequent conviction.

9(3) In this by-law, subsequent conviction means a conviction for an offence which offence occurs after the date of conviction for an earlier offence under this by-law.

9(4) This by-law shall become effective and take force on the first day of January 1992.

9(5) By-Law 83-69 be and the same is hereby repealed on the first day of January 1992.

READ a First and Second time this 4th day of November A.D., 1991.

READ a Third time and Finally passed this 4th day of November A.D., 1991.

City Clerk

Mayor

SCHEDULE A - BEST MANAGEMENT PRACTICES (BMP) PLAN

A Best Management Practices Plan is a plan agreed to by the municipality with guidance from the Ontario Ministry of the Environment and is developed for activities which are associated with or ancillary to industrial manufacturing or treatment processes. The ancillary sources addressed in BMP plan are material storage areas; loading and unloading areas; plant site runoff; in-plant transfer, process, and material handling areas; and sludge and hazardous waste disposal areas. In general, the BMP Plan will include practices used by industry for pollution control from these source, safety programs, fire protection, protection against loss of valuable raw materials or products, etc. The following elements must be included in a BMP Plan:

General

1. Name and location of facility.
2. Statement of BMP policy and objectives.
3. Review by plant manager.

Specific

1. Establishment of BMP Committee
2. Risk Identification and Assessment
3. Reporting of BMP Incidents
4. Materials Compatibility
5. Good Housekeeping
6. Preventive Maintenance
7. Inspection and Records
8. Security
9. Employee Training

SCHEDULE B - INDUSTRIAL SECTORS

CATEGORY	SIC	SIC (CANADIAN)
Construction Industry	1600-1799	4011-4499
Food and Kindred Products		
Meat	2011-2013	1011
Poultry	2016-2017	1012
Dairy	2021-2026	1041-1049
Fruit and Vegetables	2031-2038	1031-1032
Grain Mills	2041-2048	1051-1059
Fats and Oils	2074-2079	1061
Bakery Products	2051-2052	1071-1072
Sugar Processing	2061-2067	1081-1089
Beverages	2082-2087	111-1141
Seafood Processing	2091-2092	1021
Misc. Food Processing	2095-2099	1091-1099
Tobacco	2110-2141	1211-1221
Textile Mill Products		
Primary Textiles	2211-2269	1800-1899
Textile Products	2271-2299	1900-1999
Apparel & Other Textile Prod.	2311-2399	2441-2400
Lumber and Wood Products		
Timber Products Processing	2411-2499	2511-2599
Wood Preserving	2491	2591
Wood & Metal Furniture Manu.	2510-2599	2611-2699
Paper and Allied Products		
Pulp, Paper & Paperboard Mills	2600-2631	2711-2712
Misc. Converted Paper Products	2640-2655	2731-2799
Building Paper and Board Mills	2661	2713-2719
Printing and Publishing		
Chemicals and Allied Products		
Inorganic Chemicals Manufact.	2810-2819	3711
Phosphate Manufacturing	2819	3721-3729
Plastics, Resins & Synthetic Fibers M.	2821-2824	3731
Pharmaceutical Manufacturing	2830-2834	3741
Soaps and Cosmetics	2840-2844	3761-3771
Paints, Varnished Manufacture	2851	3751
Gums and Wood Chemicals	2861	3712
Dye Manufacture	2865	3712
Organic Chemicals & Pesticide Man.	2869	3712
Pesticide Formulation	2879	37112
Fertilizer Manufacture	2873-2875	3721-3729
Adhesives and Sealants	2891	3792
Explosives	2892	3711
Ink Manufacture	2893	3791
Chemicals and Allied Products		
Carbon Black	2895	3711
Chemicals & Chemical Prepar.	2899	3711
Petroleum Refining	2911	3611
Paving and Roofing Materials	2951-2952	3699
Coal & Petroleum Products	2991-2999	3612-3698
Rubber and Misc. Plastic Products		
Rubber Products	3011-3069	1500-1599
Plastic Molding	3070-3079	1600-1699
Leather and Leather Products		
Leather Tanning and Finishing	3111	1711
Leather Goods	3131-3199	1712-1719

SCHEDULE B - INDUSTRIAL SECTORS

Stone Clay and Glass Products		
Stone, Clay and Glass Products	3200-3299	3511-3599
Asbestos Manufacturing	3292	3592
Glass Manufacturing	3211-3229	3561-3562
Cement Manufacturing	3271-3273	3521-3551
Primary Metal Industries		
Iron and Steel	3300-3317	2911-2921
Foundries	3321-3325	2941
Nonferrous Metals Forming/Manu.	3331-3369	2951-2999
Aluminum Forming	3353-3355	2951
Copper Forming	3351-3357	2959
Misc. Primary Metal Products	3390-3399	2999
Fabricated Metal Products		
Metal Finishing	3411-3469	3011-3099
Electroplating	3471	3011-3099
Coil Coating	3479	3011-3099
Ordnance and Accessories	3482-3489	3011-3099
Misc. Fabricated Metal Products	3490-3499	3011-3099
Equipment and Machinery		
Machinery Manufacturing	3500-3599	3111-3199
Electrical & Electronic Comp.	3612-3690	3311-3399
Battery Manufacturing	3691-3692	3391
Misc. Electrical Equipment	3693-3699	3392-3399
Transportation Equipment	3711-3799	3211-3299
Instruments & Related Products	3811-3873	3911-3914
Misc. Manufacturing	3911-3999	3921-3999
Photographic Chemicals Manu.	3861	
Transportation and Public Service		
Transportation Services	4000-4799	4511-4599
Electricity Generation & Dist.	4911-4931	4911
Water Supply	4941	4931
Waste Treatment and Disposal	4952	4999
Refuse Systems	4953	4999
Hazardous Waste Treaters	4953	4999
Wholesale and Retail Industry		
Petroleum Products Dealers	5983-5989	5111
Automobile Wrecking	5015	5911
Barrel and Drum Reclaimers	5085	5919
Scrap and Waste Materials	5093	5919
Solvent Reclaimers	5093	5919
Waste Oil Reclaimers	5093	5919
Services		
Furniture Refinishing	7641	6213
Gasoline Service Stations	5541	6331
Automotive Repair	7532-7549	6351-6399
Photographic Services	7384	6571
Hospitals and Clinics	8062-8072	8611-8619
Industrial and Commercial Laundries	7211-7219	9721-9729
Funeral Services	7261	9731
Disinfecting and Exterminating	7342	9951
Building Maintenance	7349	9952-9959

SCHEDULE C - WASTE SURVEY REPORT

WASTE SURVEY REPORT

CITY OF ST. THOMAS WASTE SURVEY REPORT

SECTION 1 - GENERAL INFORMATION

(a) Name of Person Submitting Report: _____

_____ _____
(company name, corporation, owner) (telephone number)

_____ _____
(postal address) (postal code)

(b) Company Officer responsible for effluent control:

_____ _____
(Name) (telephone Number)

(c) Location of Premises:

_____
(number, street, or road, municipality)

THE INFORMATION CONTAINED IN THIS REPORT TO THE BEST OF MY KNOWLEDGE AND BELIEF IS TRUE, COMPLETE AND ACCURATE.

_____
(authorized representative)

_____ _____
(title) (date)

SCHEDULE C - WASTE SURVEY REPORT
SECTION 2- PRODUCT OR SERVICE INFORMATION

(a) Canadian or Standard Industrial Classification Codes (SIC)
(See attached sheets)

_____ _____ _____

_____ _____ _____

These are [ ] Canadian SICs or [ ] SICs

(b) Brief description of manufacturing or service activities:
(starting from raw materials)

_____

_____

_____

(c) Principal products produced or services rendered:
(noting any intermediate stages)

_____

_____

_____

(d) Number of employees:

plant: _____ office: _____

(e) Number of shifts per day: _____ Number of days per week: _____

(f) Are major processes:

[ ] batch [ ] continuous [ ] both

If batch, average number of batches per 24-hour day: _____

(g) Is the production subject to seasonal variation:

[ ] yes [ ] no

If yes, briefly describe seasonal production cycle:

_____

_____

(h) Is there a special clean-up period: [ ] yes [ ] no

If yes, briefly describe clean-up period activities:

_____

_____

SCHEDULE C - WASTE SURVEY REPORT
SECTION 3 - WASTE CHARACTERISTICS

(a) List all sources of water supply:

_____

_____

(b) Amount of water consumed per month: _____

(c) Type of waste discharged (check all that apply):

TYPE		AVERAGE FLOW/DAY
[ ] sanitary	_____	[ ] estimated [ ] measured
[ ] noncontact cooling	_____	[ ] estimated [ ] measured
[ ] contact cooling	_____	[ ] estimated [ ] measured
[ ] process	_____	[ ] estimated [ ] measured
[ ] other	_____	[ ] estimated [ ] measured

(d) If flow was measured, briefly describe location:

_____

_____

(e) Waste are discharged to (chace all that apply):

TYPE		AVERAGE FLOW/DAY
[ ] sanitary # 1	_____	[ ] estimated [ ] measured
[ ] sanitary # 2	_____	[ ] estimated [ ] measured
[ ] storm sewer # 1	_____	[ ] estimated [ ] measured
[ ] storm sewer # 2	_____	[ ] estimated [ ] measured
[ ] ground water	_____	[ ] estimated [ ] measured
[ ] surface water	_____	[ ] estimated [ ] measured
[ ] evaporator	_____	[ ] estimated [ ] measured

(attach additional list as necessary)

(f) If flow was measured, briefly describe location:

_____

_____

(g) Expected characteristics of waste discharged to sanitary and storm sewers (complete Pollutant Information Sheets for the discharge to each sewer).

(h) Modes of storage and disposal for products and wastes:

_____

_____

(i) Is there a contingency plans for spills active:

[ ] yes [ ] no

If yes, briefly describe the plan:

_____

_____

_____

(j) List all equipment owned to deal with the contingency plans for spills:

_____

SCHEDULE C - WASTE SURVEY REPORT
SECTION 4 - PHYSICAL LAY-OUT

Layout sketch of property (to scale or approximate) to co-ordinate buildings, pretreatment works, property boundaries, effluent lines, and sanitary and storm sewer connections. (Number sewers so that they can be related to Pollutant Information Sheets).

SCHEDULE C - WASTE SURVEY REPORT
SECTION 5 - REGULATION 309 INFORMATION

For waste discharged into or in connections to any sanitary sewer or combined sewer or storm sewer.

(a) Generator registration number: _____

SCHEDULE C - WASTE SURVEY REPORT
SECTION 6 - REGULATION 309 INFORMATION

For waste discharged into or in connection to any sanitary sewer or combined sewer or storm sewer (complete Section 6 for each sewer).

(a) Description of waste: _____

_____

(b) Description of generating process: _____

_____

(c) Primary characteristic: _____

Analytical data (if applicable): _____

_____

Name of laboratory (if applicable): _____

_____

Waste Class: _____ Hazardous Waste Number: _____

(d) Secondary characteristics: _____

_____

Analytical data (if applicable): _____

_____

(e) Attach a copy of all Material Safety Data Sheets which are pertinent to the operation process.

(f) Attach a copy of the Schedule "A" for which acknowledges your waste registration as prescribed by Section 15(4) of Ontario Regulation 309.

SCHEDULE C - WASTE SURVEY REPORT
SECTION 7 - PRETREATMENT

Pretreatment devices or processes used for treating wastes or sludge before discharge to the sanitary sewer system (check as many as appropriate):

[ ] Air flotation
[ ] Centrifuge
[ ] Chemical precipitation
[ ] Chlorination
[ ] Cyclone
[ ] Filtration
[ ] Flow Equalization
[ ] Grease of oil separation, type _____
[ ] Grease trap
[ ] Grit Removal
[ ] Ion Exchange
[ ] Neutralization, pH correction
[ ] Reverse Osmosis
[ ] Screening
[ ] Sedimentation
[ ] Septic tank
[ ] Solvent separation
[ ] Spill protection
[ ] Sump
[ ] Biological treatment, type _____
[ ] Rainwater diversion or storage _____
[ ] Other chemical treatment, type _____
[ ] Other physical treatment, type _____
[ ] Other, type _____
[ ] No pretreatment provided

SCHEDULE C - WASTE SURVEY REPORT
SECTION 8 - POLLUTANT INFORMATION SHEET (CONTROLLED MATTER)

Information for: [ ] sanitary sewer [ ] storm sewer

Sewer number: _____

Sewer location (be specific): _____

_____

Indicate by placing an "X" in the appropriate box for each listed parameter whether it is "suspected to be absent", "known" to be absent", "suspected to be present", "known to be present", and the known or expected concentration in milligrams per litre.

PARAMETER	KNOWN PRESENT	SUSPECTED PRESENT	KNOWN ABSENT	SUSPECTED ABSENT	CONCENTRATION mg/litre
1. chlorides	[ ]	[ ]	[ ]	[ ]	_____
2. sulphates	[ ]	[ ]	[ ]	[ ]	_____
3. aluminum	[ ]	[ ]	[ ]	[ ]	_____
4. iron	[ ]	[ ]	[ ]	[ ]	_____
5. fluoride	[ ]	[ ]	[ ]	[ ]	_____
6. phosphr.	[ ]	[ ]	[ ]	[ ]	_____
7. antimony	[ ]	[ ]	[ ]	[ ]	_____
8. bismuth	[ ]	[ ]	[ ]	[ ]	_____
9. chromium	[ ]	[ ]	[ ]	[ ]	_____
10.cobalt	[ ]	[ ]	[ ]	[ ]	_____
11.lead	[ ]	[ ]	[ ]	[ ]	_____
12.mangnes.	[ ]	[ ]	[ ]	[ ]	_____
13.molybd.	[ ]	[ ]	[ ]	[ ]	_____
14.selenium	[ ]	[ ]	[ ]	[ ]	_____
15.silver	[ ]	[ ]	[ ]	[ ]	_____
16.tin	[ ]	[ ]	[ ]	[ ]	_____
17.titanium	[ ]	[ ]	[ ]	[ ]	_____
18.vanadium	[ ]	[ ]	[ ]	[ ]	_____
19.copper	[ ]	[ ]	[ ]	[ ]	_____
20.cyanide	[ ]	[ ]	[ ]	[ ]	_____
21.nickel	[ ]	[ ]	[ ]	[ ]	_____
22.zinc	[ ]	[ ]	[ ]	[ ]	_____
23.arsenic	[ ]	[ ]	[ ]	[ ]	_____
24.cadmium	[ ]	[ ]	[ ]	[ ]	_____
25.phenolic compounds	[ ]	[ ]	[ ]	[ ]	_____
26.mercury	[ ]	[ ]	[ ]	[ ]	_____
27.BOD	[ ]	[ ]	[ ]	[ ]	_____
28.TSS	[ ]	[ ]	[ ]	[ ]	_____
29.oil & grease (anim/veg.)	[ ]	[ ]	[ ]	[ ]	_____
30.oil & grease (min./syn)	[ ]	[ ]	[ ]	[ ]	_____
31.Kjeldahl nitrogen	[ ]	[ ]	[ ]	[ ]	_____

(a) Describe in detail sampling location:

_____

_____

(b) Describe technique used in sampling (check one):

[ ] grab sample
[ ] composite sample (24,12,8)
[ ] other _____

(c) Number of times analysis are completed annually: _____

SCHEDULE C - WASTE SURVEY REPORT
SECTION 9 - POLLUTANT INFORMATION SHEET (NO DISCHARGE)

Information for: [ ] sanitary sewer number: _____

(a) Describe in detail, sanitary sewer location: _____

_____

Indicate by placing an "X" in the appropriate box for each listed parameter whether it is "suspected to be absent", "known to be absent", "suspected to be present", or "known to be present", and the known of expected quantity in kg/month.

PARAMETER	KNOWN PRESENT	SUSPECTED PRESENT	KNOWN ABSENT	SUSPECTED ABSENT	QUANTITY
pesticides	[ ]	[ ]	[ ]	[ ]	_____
acute hazd. waste chemical	[ ]	[ ]	[ ]	[ ]	_____
fuels	[ ]	[ ]	[ ]	[ ]	_____
hazd. industrial wastes	[ ]	[ ]	[ ]	[ ]	_____
hazd. wastes chemicals	[ ]	[ ]	[ ]	[ ]	_____
ignitable wastes	[ ]	[ ]	[ ]	[ ]	_____
pathological wastes	[ ]	[ ]	[ ]	[ ]	_____
PCB waste	[ ]	[ ]	[ ]	[ ]	_____
reactive wastes	[ ]	[ ]	[ ]	[ ]	_____
severely toxic materials	[ ]	[ ]	[ ]	[ ]	_____
waste radioactive materials	[ ]	[ ]	[ ]	[ ]	_____

(b) Describe in detail sampling location:

_____

_____

(c) Describe the technique used in sampling (check one):

[ ] grab sample
[ ] composite sample (24, 12, 8 hour)
[ ] other _____

(d) Number of times analysis are completed annually: _____

(e) Is this Industry aware of the contents of the Municipal By-Law 205-91, to prohibit and regulate the discharge of sewage including drainage, storm water, industrial waste and sanitary sewage into the Municipal sewerage systems:

[ ] yes [ ] no

(f) Is a copy of the Municipal By-Law 205-91required:

[ ] yes [ ] no

SCHEDULE D - LETTER OF COMPLIANCE PROGRAM

LETTERHEAD

Address: _____ Date: _____

Attention of: _____

COMPLIANCE PROGRAM NUMBER _____

In accordance with the provision of Section 5 of The Municipality of the City of St. Thomas By-law 205-91, you are hereby granted a compliance program for the attached program subject to the following conditions:

1. During the period covered by this compliance program only, the quality of the _____ (sewage, uncontaminated water, or storm water) discharged by your Company from the said premised to the _____ (sanitary, combined or storm) sewer system or land drainage works may exceed the limits set by By-law 205-91 with respect to the parameters listed below provided that they shall not exceed the following limits at any time:

Parameter	Limit (mg/litre)
(a) _____	_____
(b) _____	_____
(c) _____	_____
(d) _____	_____
(e) _____	_____
(f) _____	_____

1. The discharge of _____ (sewage, uncontaminated water or stormwater) by your company from the said premises containing the parameters listed in Item 1 in excess of the limits listed in Item 1 shall constitute a contravention of this compliance program and thus a contravention of the said by-law.

3. The compliance program may be terminated at any time on 30 days written notice sent by registered mail addressed to the Company at the said premises, if

(a) The sewage is causing a health or safety hazard to a sewage works employee; or

(b) The sewage is causing damage to the sewers, materially increasing their maintenance costs or causing a dangerous condition; or

(c) The sewage is causing damage to the sewage treatment process or causing a dangerous condition in the treatment works; or

(d) The sewage is causing the sludge from the sewage works, to fail to meet criteria relating to contaminants for spreading the sludge on agricultural lands under Ontario's Guidelines for Sewage Sludge Utilization on Agricultural Lands (as revised January, 1986); or

(e) The sewage is causing the sewage works effluent to contravene any requirement by or under the Ontario Water Resources Act or the Environmental Protection Act (Ontario); or

(f) The sewage is causing a hazard to any person, animal, property, or vegetation; or

(g) The sewage is contrary to By-law No. 205-91 in any way other than as provide herein.

(The above clauses should be appropriately changed if the compliance program is being issued for the discharge of stormwater).

4. The compliance program may be terminated at nay time where there is an emergency situation of immediate threat or danger to any person, property, plant or animal life, or waters.

5. This compliance program shall remain in force until _____ provided the following timetable is adhered to:

COMPLIANCE PROGRAM ACTIVITIES	SCHEDULED COMMENCEMENT DATE	SCHEDULED COMPLETION DATE
a) Select Engineer	_____	_____
b) Engineering Investigation of Plant Conditions (Industrial Process Review and Wastewater Characterization)	_____	_____
c) Select Treatment Process & Design Criteria (Treatability Studies)	_____	_____
d) Detailed Design of Treatment System (Plans & Specs.)	_____	_____
e) Preparation of Operations Manual	_____	_____
f) Select Contractor for Installation/Construction	_____	_____
g) Commence Construction		
i. Site Preparation (survey, excavation, etc.)	_____	_____
ii. Foundation Work & Underground Utilities (slabs, sewer, etc.)	_____	_____
iii. Structural Work (bldg., etc.)	_____	_____
iv. Mechanical Work (control panels, etc.)	_____	_____
v. Electrical Work (control panels, etc.)	_____	_____
vi. Site Finish Work (fences, clean-up, etc.)	_____	_____
h) Pretreatment System Start Up	_____	_____

6. You must, however, take all necessary steps to ensure that all other conditions and parameters listed in the By-law are not exceeded, as there are no other exemptions.

7. You must acknowledge your acceptance of this compliance program by returning a signed copy of this letter of compliance program within 30 days of your receipt of the letter.

_____
Municipal Officer

Signed and Accepted by:

_____
Authorized Representative

_____
Company Name

SCHEDULE E - COMPLIANCE PROGRAM PROGRESS REPORT*

COMPANY NAME: _____

COMPANY ADDRESS: _____

DATE SUBMITTED: _____

AUTHORIZED REP: _____

1. Compliance Program Activity Description: _____

2. Schedule Completion Date for above activity: _____

3. Activity completed on schedule? Yes [ ] No [ ]

4. If not on schedule, indicated anticipated completion date: _____

5. State reason for delay, if applicable: _____

6. What action has been initiated to return project to original schedule?

* Report is to be submitted within 14 days after schedule completion of each Activity listed in the Compliance Program.

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200
London ON N6E 1A2 Canada
T 519 681 9916 F 855 833 4022
rvanderson.com

MEETING MINUTES

Project Name: St Thomas WPCP WWMP **Date:** May 1, 2023

Place: Teams Meeting **Project No.:** 226304

Present:

Justin Lawrence (JL)	The City of St Thomas (St Thomas)
Mark Badali (MB) Alison Munrro (AM) Adam Grant (AG) Meghan Morgan (MM) Jason Suprovich (JS)	Ministry of environment, Conservation and Parks (MECP)
John Tyrrell (JWT) Harpreet Rai (HSR) Austin Bender (ACB)	R.V. Anderson Associates Limited (RVA)

The purpose of the meeting to solicit feedback from the MECP regarding data and sampling requirements for an ACS and general feedback on the proposed path forward.

Discussion: **Action By:**

1. Introductions by all parties were made.

2. RVA presented the current information to date on the expected flows and the future wastewater treatment requirements in St Thomas. It was shown that a new plant would be required, and an approximate capacity, footprint and general area was shown. Available water quality and flow data was also presented.

3. Comments on the suitability of the historical data available for an ACS:

    - AM: Generally, the data available here if sufficient for an ASC but there is potential that the blowdown water could contain salts, sulphates or other contaminants of concern (COCs). If any COCs are identified that are not part of the data set some sampling will be required.
        - o HSR: Once we have identified the COCs is short term sampling required or is longer-term sampling required? AM:

Discussion: **Action By:**

Depending on what CoCs show up it is unlikely that a long-term sampling program would be required.

- AM: Care should be taken to choose the correct flow meter(s) data depending on where the outfall location is on Kettle Creek.
- AM: A terms of reference should be prepared and sent over to the MECP to confirm, what data exists, what data is required and what will be collected moving forward. RVA
    - o RVA to prepare the Terms of Reference before May 12 or earlier

4. Comments on the future plant:

- AM: The MECP will be looking to implement the best available technology (BAT) that is economically at the future plant.
    - o JL: Does the MECP have any example BAT plants or process in Ontario that could be sent over for review?
    - o AM: MB and AM to put together a list of ECAs. MB
- MM: Was happy to see opportunities for diversion discussed. AM

5. Comments on consultation:

- MB: has there been any consultation with indigenous communities so gar in the project?
    - o JWT: There has been some information sent out as part of the WWMP process.
    - o JL: The province has set up an engagement process via Ministry of Economic Development, Job Creation and Trade (MEDJCT) for the NE Employment lands to consolidate indigenous consultation and information into a single point of contact.
    - o MB: Information regarding consultation processes completed so far should be included in the final report.
- MB: has there been any public consultation so far and consideration of concerns such odours?
    - o HSR: Consideration of odours is top of mind and will continue to be considered.

6. Next Steps:

- RVA to prepare a Term of Reference for the MECP. RVA
- AM and MB to put together a list of ECAs for what the MECP considers to be BAT plants to share with RVA and the City. MB/AM

Minutes prepared by: ACB

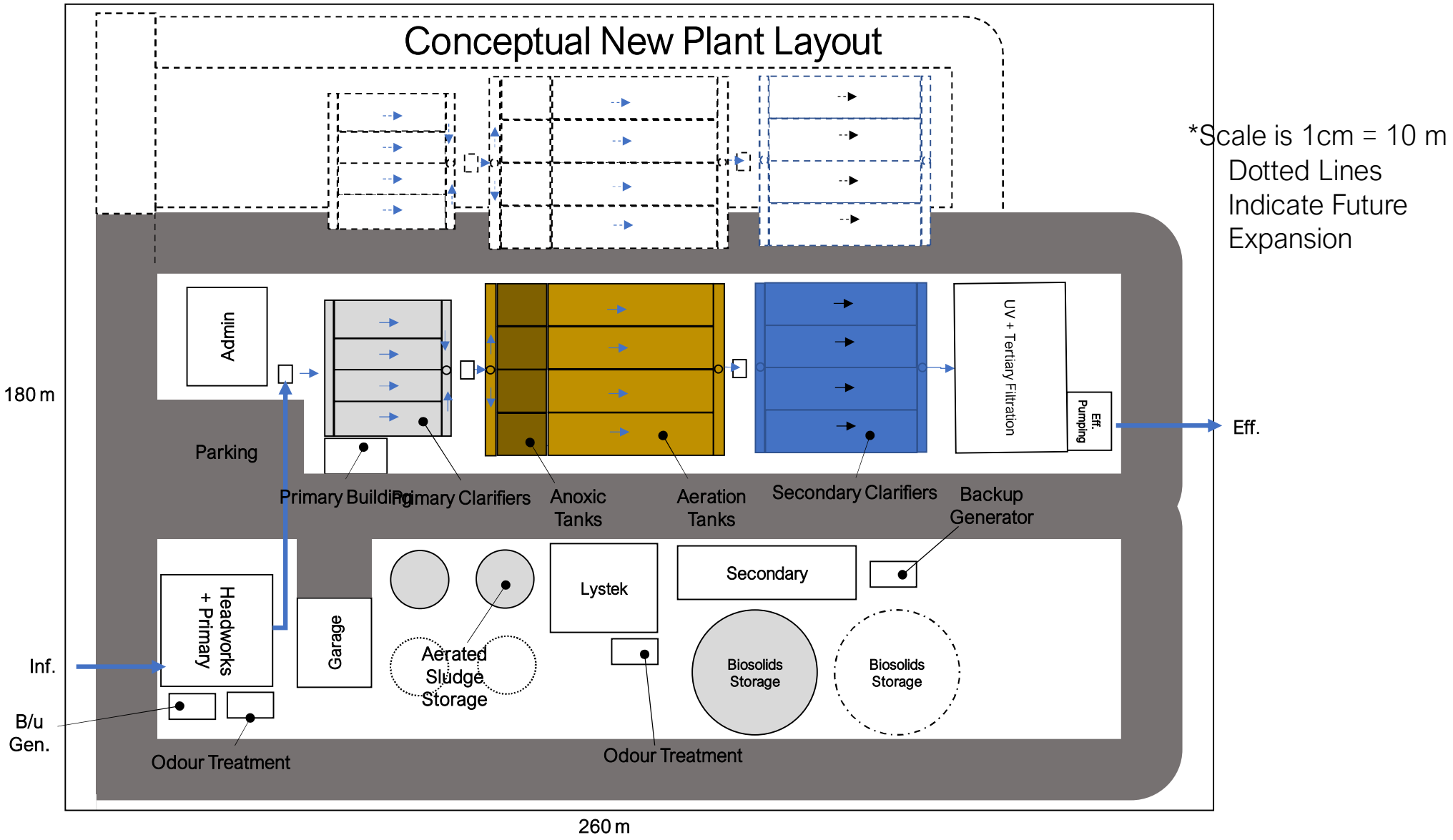
Distribution: RVA/City/MECP Teams

PLEASE ADVISE THE WRITER OF ANY ERRORS OR OMISSIONS WITHIN 1 WEEK OF RECEIPT OF THESE MINUTES

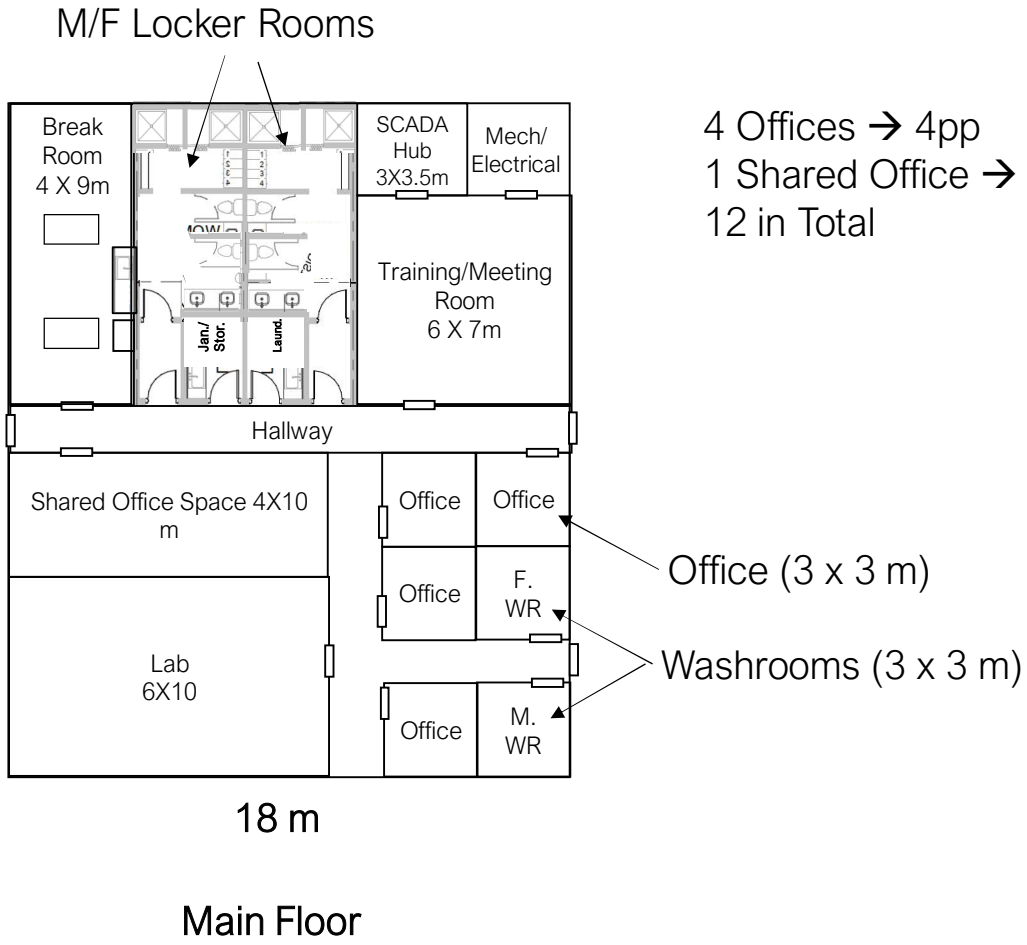
r:\2023\236956 - st thomas-ne area sanitary servicing\07 ea, planning, studies\02 meetings\mecp meeting 1may23\mecp update meeting minutes 20230501 v2.docx

APPENDIX 4

Concept Layouts of the New WWTP


Conceptual New Plant Layout
*Scale is 1cm = 10 m
Dotted Lines Indicate Future Expansion
180 m
260 m
Admin
Parking
Primary Building
Primary Clarifiers
Anoxic Tanks
Aeration Tanks
Secondary Clarifiers
UV + Tertiary Filtration
Eff. Pumping
Eff.
Backup Generator
Headworks + Primary
Garage
Aerated Sludge Storage
Lystek
Secondary
Biosolids Storage
Biosolids Storage
Inf.
B/u Gen.
Odour Treatment
Odour Treatment

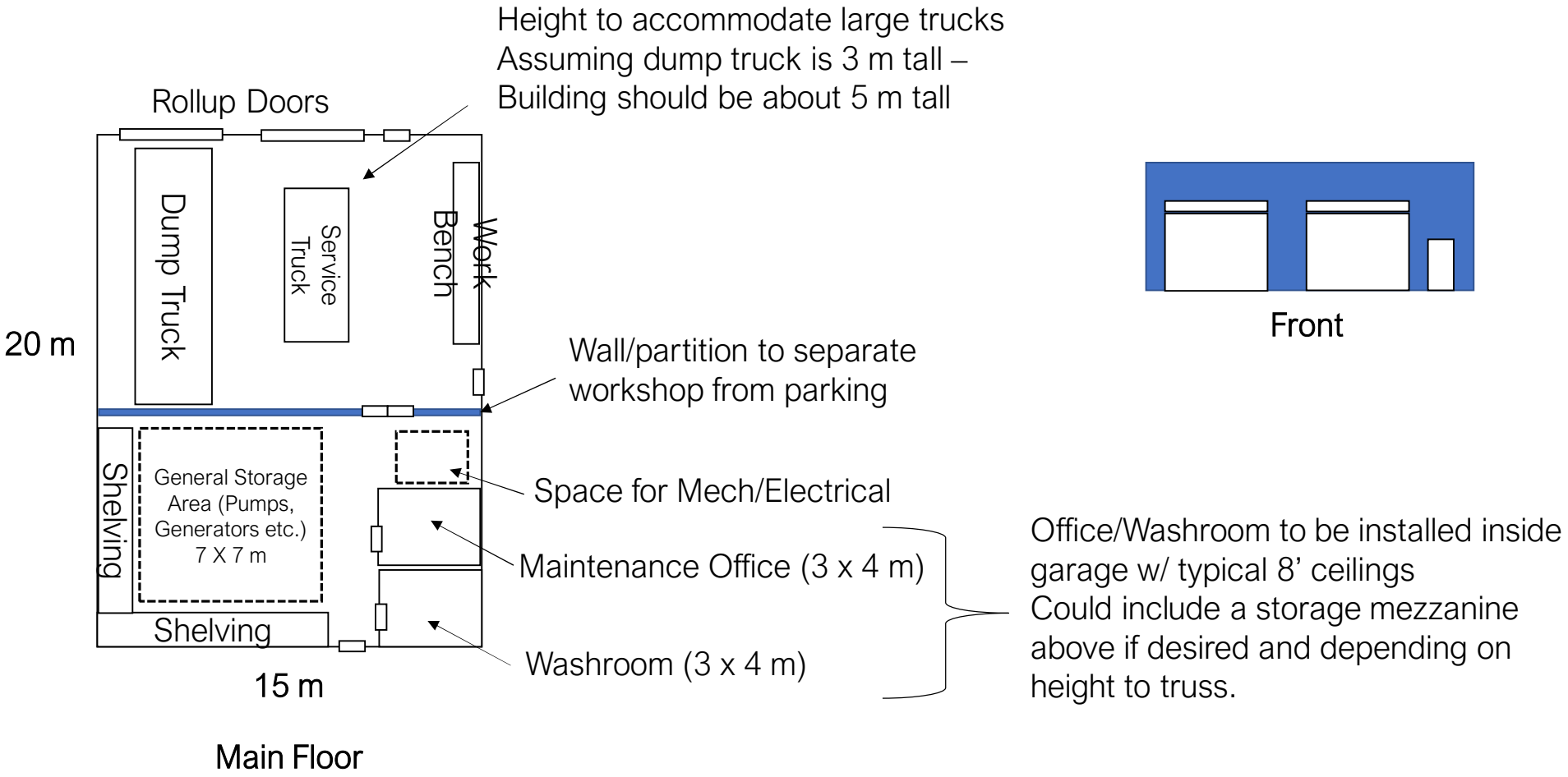
Administration Building



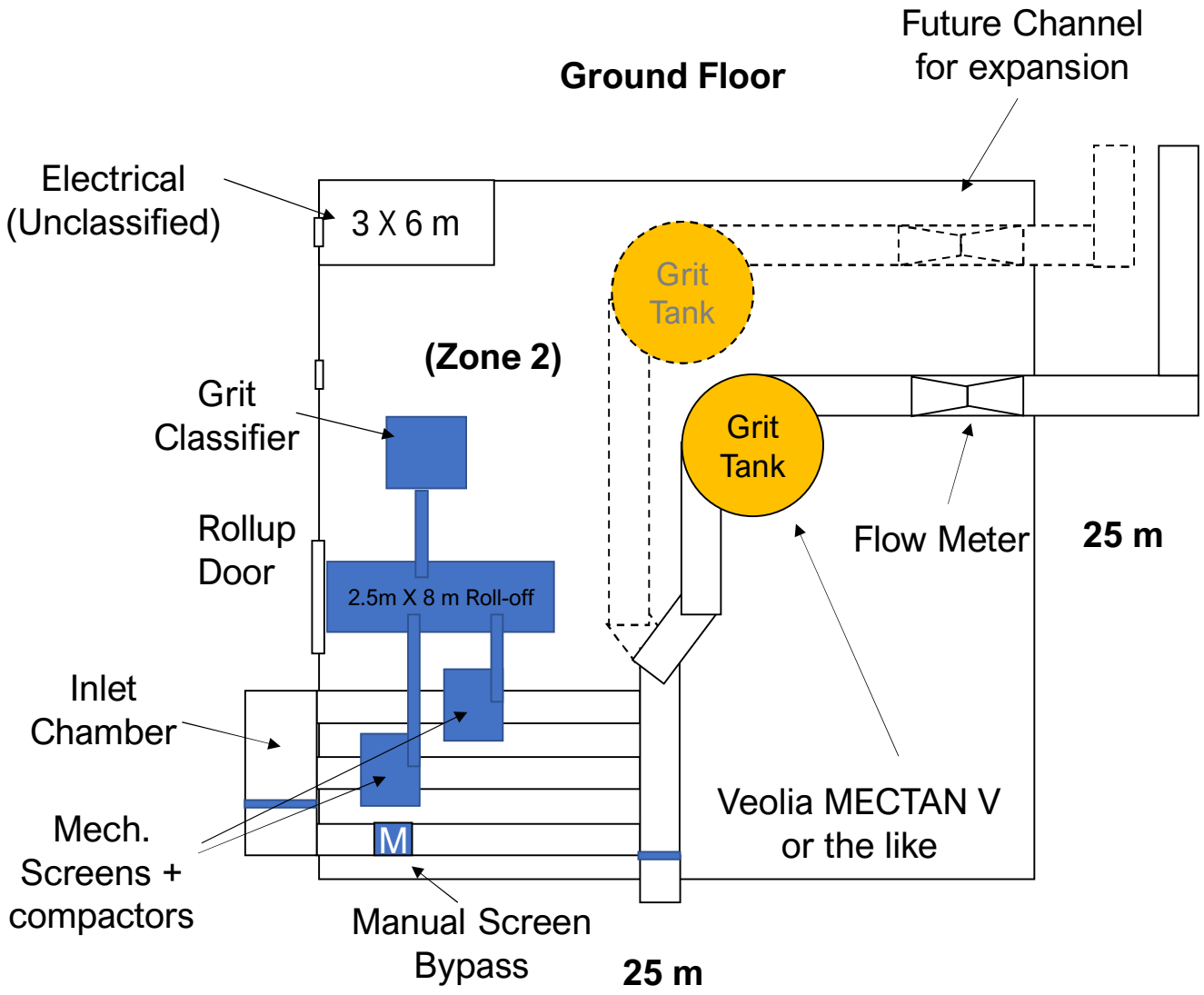
4 Offices → 4pp
1 Shared Office → 8 pp
12 in Total

Main Floor

Garage

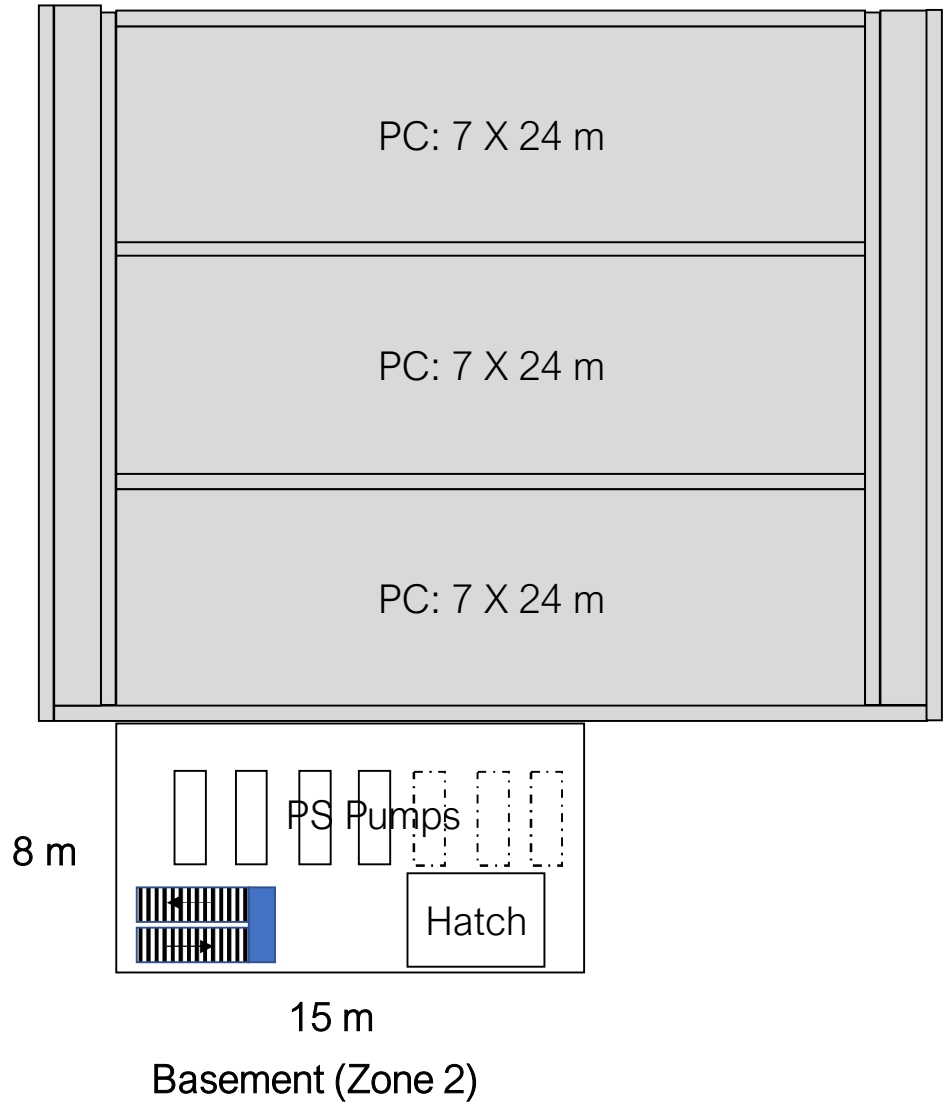

Height to accommodate large trucks
Assuming dump truck is 3 m tall –
Building should be about 5 m tall
Rollup Doors
Dump Truck
Service Truck
Work Bench
20 m
Wall/partition to separate workshop from parking
Shelving
General Storage Area (Pumps, Generators etc.) 7 X 7 m
Space for Mech/Electrical
Maintenance Office (3 x 4 m)
Shelving
Washroom (3 x 4 m)
15 m
Main Floor
Front
Office/Washroom to be installed inside garage w/ typical 8' ceilings
Could include a storage mezzanine above if desired and depending on height to truss.

Headworks



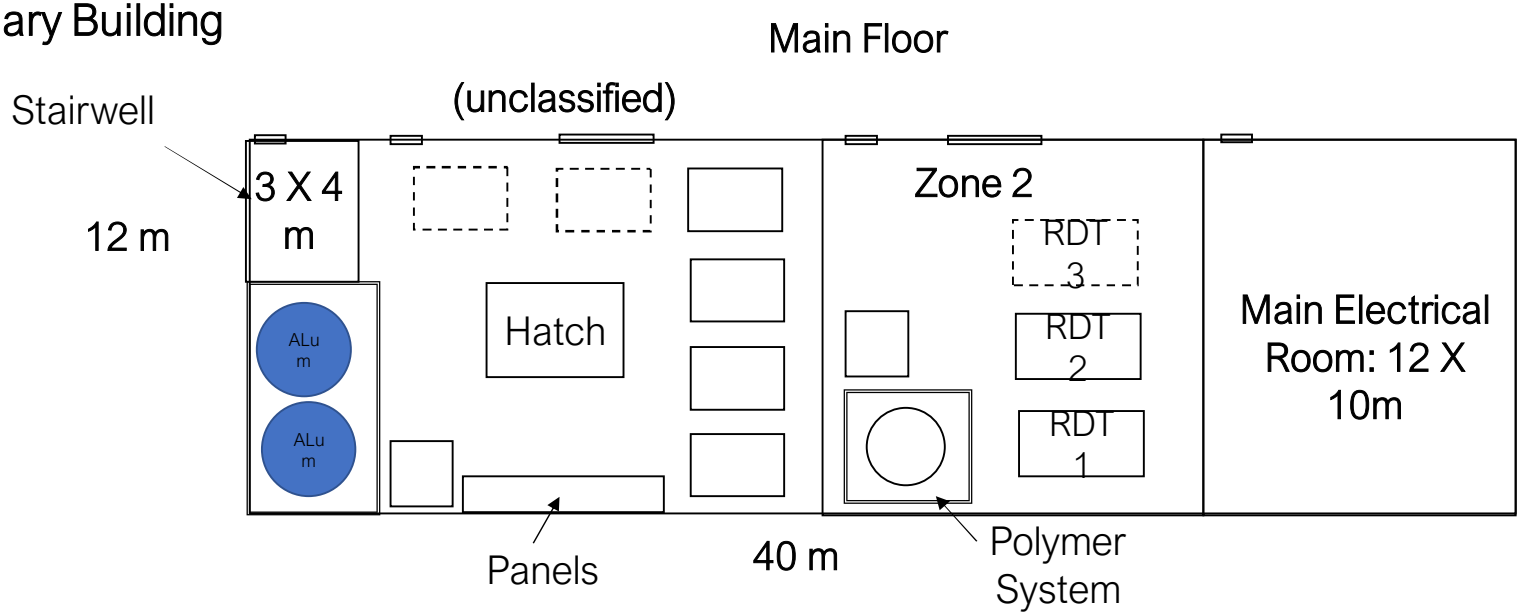
- Building/channels to be sized to accommodate future flows
- Mech. Screens could then be replaced in the future with larger units and a second grit tank added
- Screening and Grit to be disposed of in a roll-off bin
- Channels could be constructed above grade to permit a more favorable hydraulic profile in downstream processes

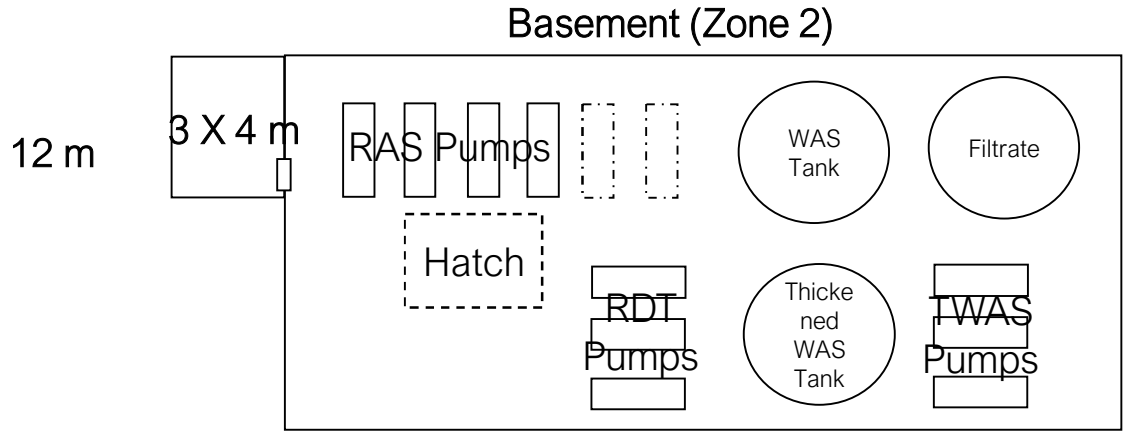
Primary Building



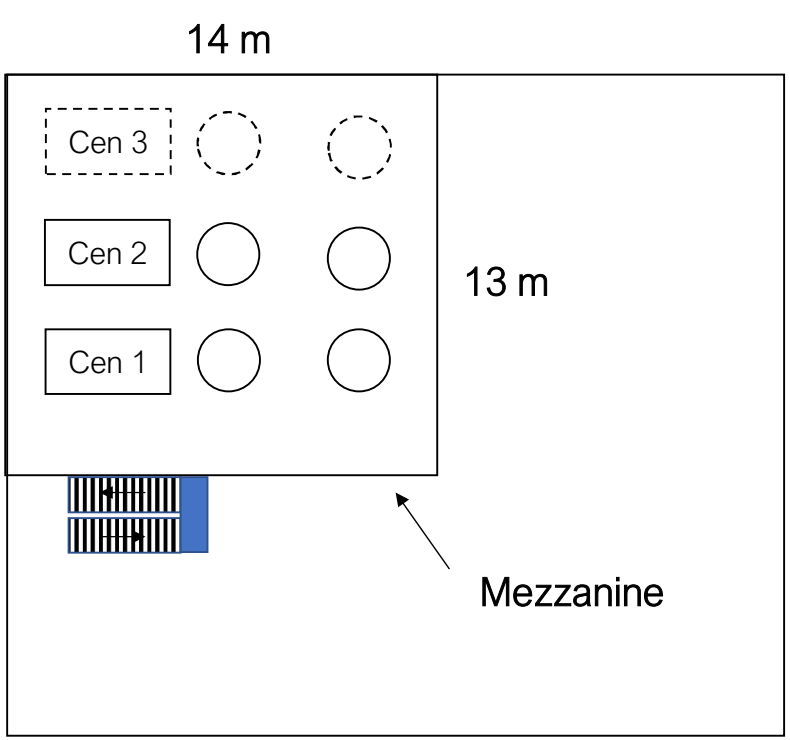
Basement (Zone 2)

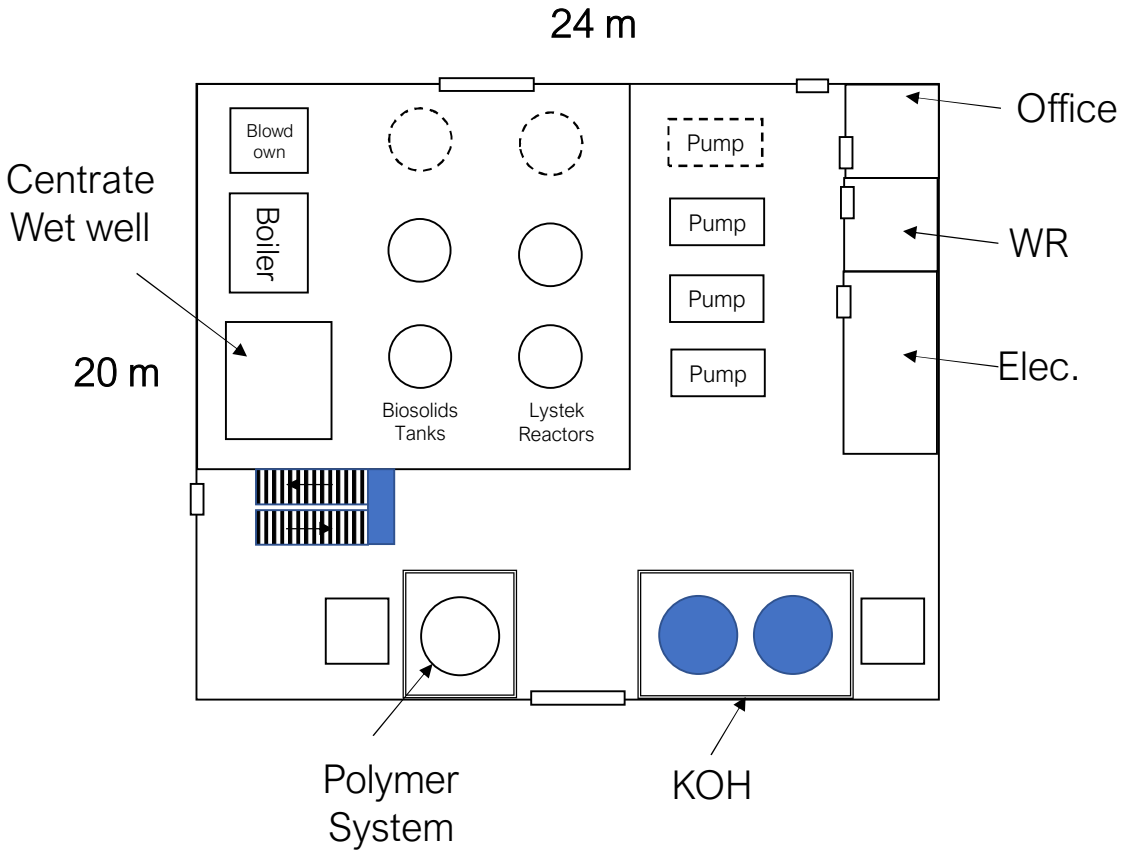
Secondary Building





New Lystek Building

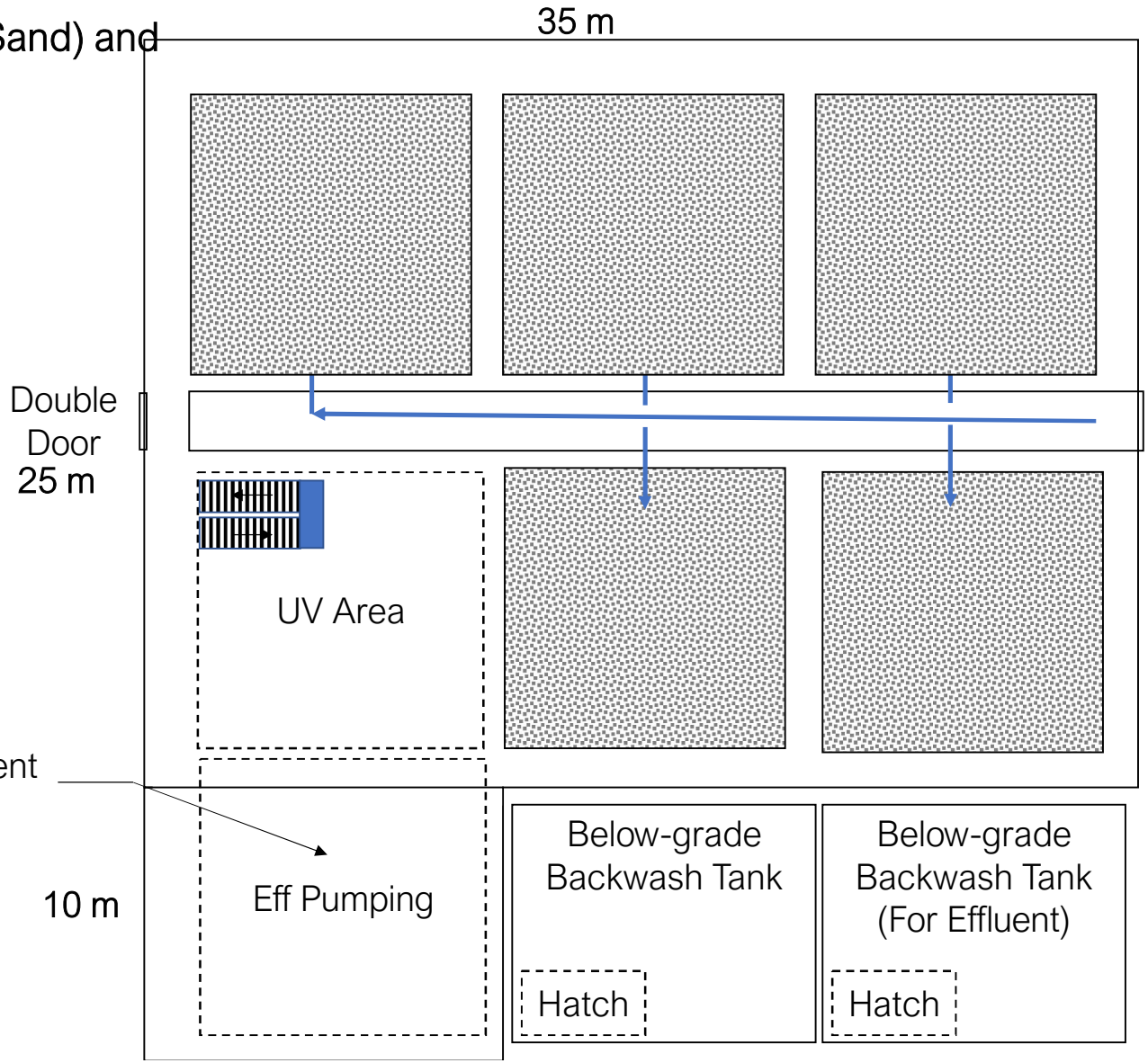




Mainfloor

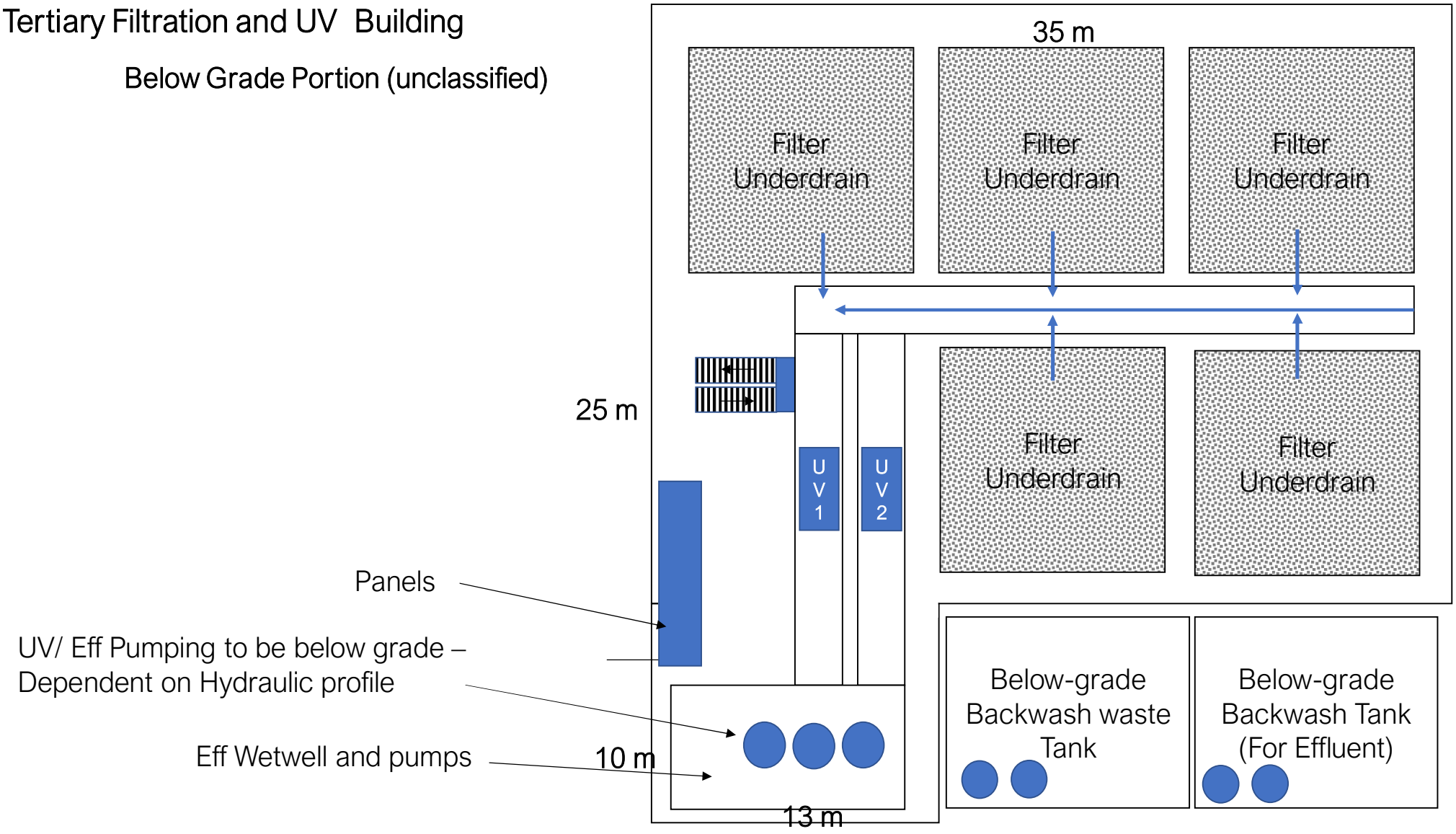
Tertiary Filtration (Shallow Sand) and UV Building

Main Floor (unclassified)



Tertiary Filtration and UV Building

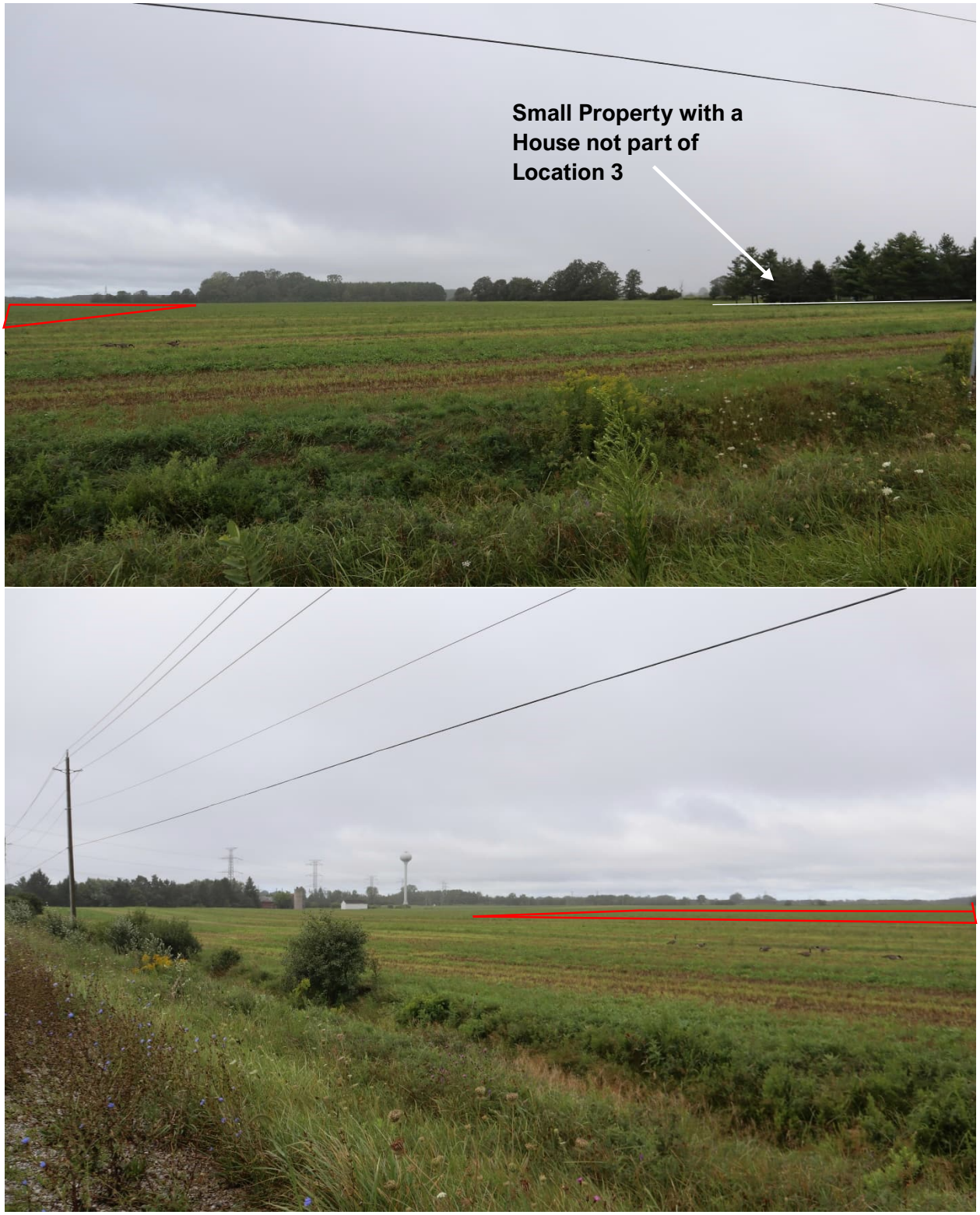
Below Grade Portion (unclassified)



APPENDIX 5

Photos of the Preferred Sites for the New WWTP

Location 3: Viewed from Dalewood Road, looking west and southwest respectively. Approximate Site Indicated below.

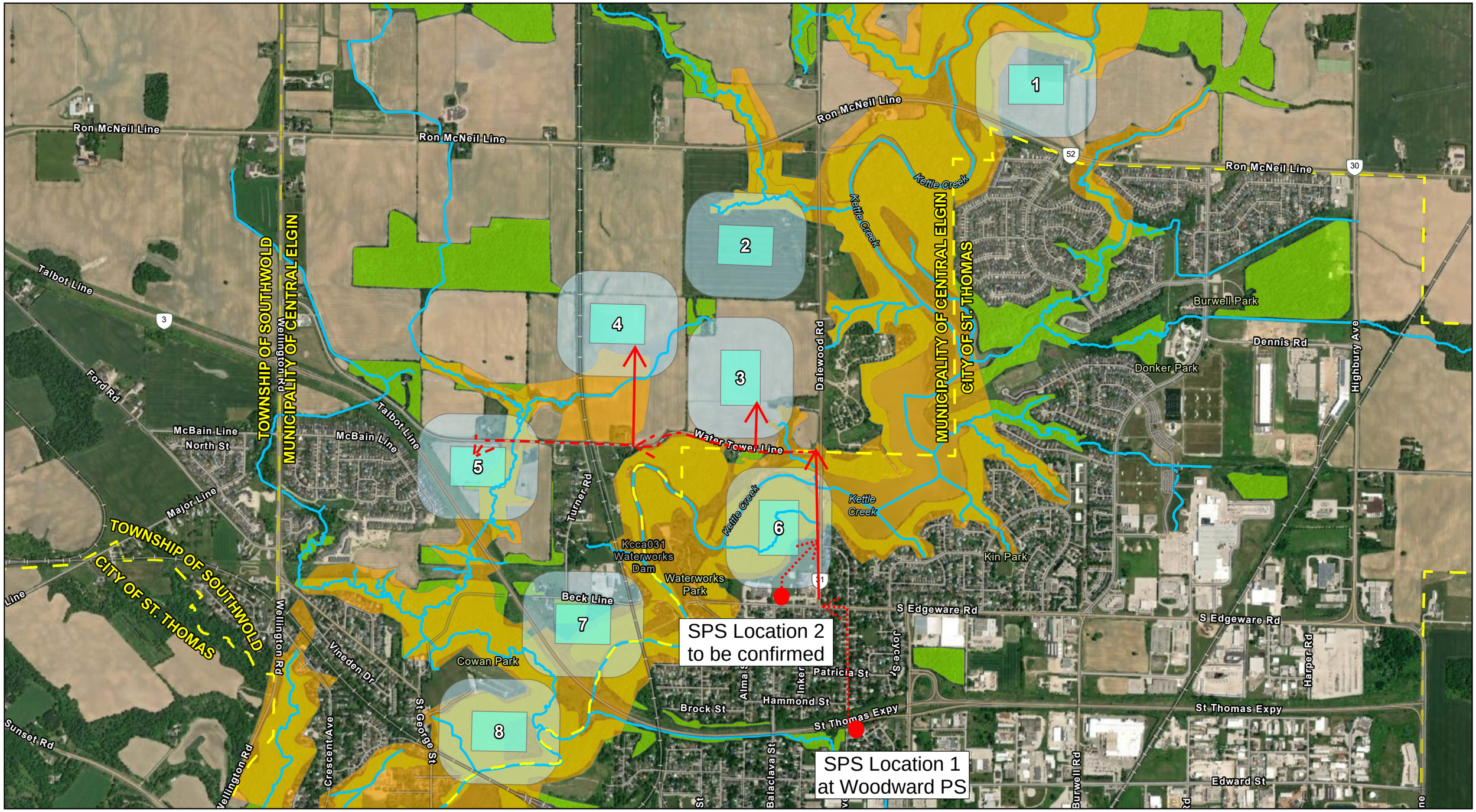


Location 4: Viewed from Water Tower Line looking north. Tall crops precluded a clear view of the site. A Google Streetview image from springtime is included for clarity.

Location 5: Viewed from Water Tower Line looking east by bend in road near H3y 3. Tall crops precluded a clear view of the site. A Google Streetview image from springtime is included for clarity.

APPENDIX 6

Forcemain Routes to the Preferred WWTP Sites



St. Thomas Water Pollution Control Plant
City of St. Thomas

Wastewater Management Master Plan Update

Forcemain Routes to Potential WWTP Sites

0 500 1,000 m

Scale: 1:16,000

Date: 10/12/2023 | Page 1

RVA: 226304 | Draft By: KW

N

Legend

- Forcemain Route
- Proposed Treatment Plant
- Buffer (150m)
- Municipal Boundary
- Watercourse (Unknown Thermal Regime)
- Woodland
- Approximate KCCA Regulation Limit

Data Source: Esri Community Maps Contributors, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada, Maxar, Ontario GeoHub, City of St. Thomas, Kettle Creek Conservation Authority

ST. THOMAS THE RAILWAY CITY

RVA